# STATA GLOSSARY AND INDEX

## RELEASE 14

A Stata Press Publication
StataCorp LP
College Station, Texas

Copyright © 1985–2015 StataCorp LP
All rights reserved
Version 14

Published by Stata Press, 4905 Lakeway Drive, College Station, Texas 77845
Typeset in TEX

ISBN-10: 1-59718-156-0
ISBN-13: 978-1-59718-156-3

This manual is protected by copyright. All rights are reserved. No part of this manual may be reproduced, stored in a retrieval system, or transcribed, in any form or by any means—electronic, mechanical, photocopy, recording, or otherwise—without the prior written permission of StataCorp LP unless permitted subject to the terms and conditions of a license granted to you by StataCorp LP to use the software and documentation. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

StataCorp provides this manual "as is" without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. StataCorp may make improvements and/or changes in the product(s) and the program(s) described in this manual at any time and without notice.

The software described in this manual is furnished under a license agreement or nondisclosure agreement. The software may be copied only in accordance with the terms of the agreement. It is against the law to copy the software onto DVD, CD, disk, diskette, tape, or any other medium for any purpose other than backup or archival purposes.

The automobile dataset appearing on the accompanying media is Copyright © 1979 by Consumers Union of U.S., Inc., Yonkers, NY 10703-1057 and is reproduced by permission from CONSUMER REPORTS, April 1979.

Stata, Stata Stata Press, Mata, Mata and NetCourse are registered trademarks of StataCorp LP.

Stata and Stata Press are registered trademarks with the World Intellectual Property Organization of the United Nations.

NetCourseNow is a trademark of StataCorp LP.

Other brand and product names are registered trademarks or trademarks of their respective companies.

For copyright information about the software, type `help copyright` within Stata.

The suggested citation for this software is

StataCorp. 2015. *Stata: Release 14*. Statistical Software. College Station, TX: StataCorp LP.

# Contents


Combined subject table of contents . . . . . 1
Acronym glossary . . . . . 39
Glossary . . . . . 47
Vignette index . . . . . 143
Author index . . . . . 145
Subject index . . . . . 185

# Combined subject table of contents

This is the complete contents for all manuals. Every estimation command has a postestimation entry; however, not all postestimation entries are listed here.

---


**Getting started**

**Data manipulation and management**

*Basic data commands*
*Creating and dropping variables*
*Functions and expressions*
*Strings*
*Dates and times*
*Loading, saving, importing, and exporting data*
*Combining data*
*Reshaping datasets*
*Labeling, display formats, and notes*
*Changing and renaming variables*
*Examining data*
*File manipulation*
*Miscellaneous data commands*
*Multiple imputation*

**Utilities**

*Basic utilities*
*Error messages*
*Stored results*
*Internet*
*Data types and memory*
*Advanced utilities*

**Graphics**

*Common graphs*
*Distributional graphs*
*Item response theory graphs*
*Multivariate graphs*
*Quality control*
*Regression diagnostic plots*
*ROC analysis*
*Smoothing and densities*
*Survival-analysis graphs*
*Time-series graphs*
*More statistical graphs*
*Editing*
*Graph utilities*
*Graph schemes*
*Graph concepts*

**Statistics**

*ANOVA and related*
*Basic statistics*
*Bayesian analysis*
*Binary outcomes*
*Categorical outcomes*
*Censored and truncated regression models*
*Cluster analysis*
*Correspondence analysis*
*Count outcomes*
*Discriminant analysis*
*Do-it-yourself generalized method of moments*
*Do-it-yourself maximum likelihood estimation*
*Endogenous covariates*
*Epidemiology and related*
*Estimation related*
*Exact statistics*
*Factor analysis and principal components*
*Fractional outcomes*
*Generalized linear models*
*Indicator and categorical variables*
*Multidimensional scaling and biplots*
*Multilevel mixed-effects models*
*Multiple imputation*
*Multivariate analysis of variance and related techniques*
*Nonlinear regression*
*Nonparametric statistics*
*Ordinal outcomes*
*Other statistics*
*Pharmacokinetic statistics*
*Power and sample size*
*Quality control*
*ROC analysis*
*Rotation*
*Sample selection models*
*Simulation/resampling*
*Standard postestimation tests, tables, and other analyses*
*Structural equation modeling*
*Survey data*

*Item response theory*
*Linear regression and related*
*Logistic and probit regression*
*Longitudinal data/panel data*
*Mixed models*
*Survival analysis*
*Time series, multivariate*
*Time series, univariate*
*Transforms and normality tests*
*Treatment effects*

**Matrix commands**
*Basics*
*Programming*
*Other*
*Mata*

**Programming**
*Basics*
*Program control*
*Parsing and program arguments*
*Console output*
*Commonly used programming commands*
*Debugging*
*Projects*
*Advanced programming commands*
*Special-interest programming commands*
*File formats*
*Mata*

**Interface features**

# Getting started

[GSM] *Getting Started with Stata for Mac* . . . . .
[GSU] *Getting Started with Stata for Unix* . . . . .
[GSW] *Getting Started with Stata for Windows* . . . . .
[U] Chapter 3 . . . . . Resources for learning and using Stata
[U] Chapter 4 . . . . . Stata's help and search facilities
[R] help . . . . . Display help in Stata
[R] search . . . . . Search Stata documentation and other resources

# Data manipulation and management

**Basic data commands**

[D] codebook . . . . . Describe data contents
[D] data management . . . . . Introduction to data management commands
[D] data types . . . . . Quick reference for data types
[D] datetime . . . . . Date and time values and variables
[D] describe . . . . . Describe data in memory or in file
[D] edit . . . . . Browse or edit data with Data Editor
[D] format . . . . . Set variables' output format
[D] insobs . . . . . Add or insert observations
[D] inspect . . . . . Display simple summary of data's attributes
[D] label . . . . . Manipulate labels
[D] list . . . . . List values of variables
[D] missing values . . . . . Quick reference for missing values
[D] rename . . . . . Rename variable
[D] save . . . . . Save Stata dataset
[D] sort . . . . . Sort data
[D] use . . . . . Load Stata dataset
[D] varmanage . . . . . Manage variable labels, formats, and other properties

### Creating and dropping variables


[FN] Date and time functions
[FN] Mathematical functions
[FN] Matrix functions
[FN] Programming functions
[FN] Random-number functions
[FN] Selecting time-span functions
[FN] Statistical functions
[FN] String functions
[FN] Trigonometric functions
[D] clear — Clear memory
[D] compress — Compress data in memory
[D] drop — Drop variables or observations
[D] egen — Extensions to generate
[D] generate — Create or change contents of variable
[R] orthog — Orthogonalize variables and compute orthogonal polynomials


### Functions and expressions


[U] Section 12.4.2.1 — Unicode string functions
[U] Chapter 13 — Functions and expressions
[FN] Date and time functions
[FN] Mathematical functions
[FN] Matrix functions
[FN] Programming functions
[FN] Random-number functions
[FN] Selecting time-span functions
[FN] Statistical functions
[FN] String functions
[FN] Trigonometric functions
[D] egen — Extensions to generate


### Strings


[U] Section 12.4 — Strings
[U] Section 12.4.2 — Handling Unicode strings
[U] Chapter 23 — Working with strings
[FN] String functions
[D] data types — Quick reference for data types
[D] unicode — Unicode utilities


### Dates and times


[U] Section 12.5.3 — Date and time formats
[U] Chapter 24 — Working with dates and times
[D] bcal — Business calendar file manipulation
[D] datetime — Date and time values and variables
[D] datetime business calendars — Business calendars
[D] datetime business calendars creation — Business calendars creation
[D] datetime display formats — Display formats for dates and times
[D] datetime translation — String to numeric date translation functions

### Loading, saving, importing, and exporting data


[GS] Chapter 6 (GSM, GSU, GSW) . . . . . Using the Data Editor
[U] Chapter 21 . . . . . Entering and importing data
[D] edit . . . . . Browse or edit data with Data Editor
[D] export . . . . . Overview of exporting data from Stata
[D] import . . . . . Overview of importing data into Stata
[D] import delimited . . . . . Import delimited text data
[D] import excel . . . . . Import and export Excel files
[D] import haver . . . . . Import data from Haver Analytics databases
[D] import sasxport . . . . . Import and export datasets in SAS XPORT format
[D] infile (fixed format) . . . . . Read text data in fixed format with a dictionary
[D] infile (free format) . . . . . Read unformatted text data
[D] infix (fixed format) . . . . . Read text data in fixed format
[D] input . . . . . Enter data from keyboard
[D] odbc . . . . . Load, write, or view data from ODBC sources
[D] outfile . . . . . Export dataset in text format
[P] putexcel . . . . . Export results to an Excel file
[D] save . . . . . Save Stata dataset
[D] sysuse . . . . . Use shipped dataset
[D] use . . . . . Load Stata dataset
[D] webuse . . . . . Use dataset from Stata website
[D] xmlsave . . . . . Export or import dataset in XML format


### Combining data


[U] Chapter 22 . . . . . Combining datasets
[D] append . . . . . Append datasets
[MI] mi append . . . . . Append mi data
[D] cross . . . . . Form every pairwise combination of two datasets
[D] joinby . . . . . Form all pairwise combinations within groups
[D] merge . . . . . Merge datasets
[MI] mi merge . . . . . Merge mi data


### Reshaping datasets


[D] collapse . . . . . Make dataset of summary statistics
[D] contract . . . . . Make dataset of frequencies and percentages
[D] expand . . . . . Duplicate observations
[D] expandcl . . . . . Duplicate clustered observations
[D] fillin . . . . . Rectangularize dataset
[D] obs . . . . . Increase the number of observations in a dataset
[D] reshape . . . . . Convert data from wide to long form and vice versa
[MI] mi reshape . . . . . Reshape mi data
[TS] rolling . . . . . Rolling-window and recursive estimation
[D] separate . . . . . Create separate variables
[SEM] ssd . . . . . Making summary statistics data (sem only)
[D] stack . . . . . Stack data
[D] statsby . . . . . Collect statistics for a command across a by list
[D] xpose . . . . . Interchange observations and variables

**Labeling, display formats, and notes**


[GS] Chapter 7 (GSM, GSU, GSW) . . . . . Using the Variables Manager
[U] Section 12.5 . . . . . Formats: Controlling how data are displayed
[U] Section 12.6 . . . . . Dataset, variable, and value labels
[D] format . . . . . Set variables' output format
[D] label . . . . . Manipulate labels
[D] label language . . . . . Labels for variables and values in multiple languages
[D] labelbook . . . . . Label utilities
[D] notes . . . . . Place notes in data
[D] varmanage . . . . . Manage variable labels, formats, and other properties


**Changing and renaming variables**


[GS] Chapter 7 (GSM, GSU, GSW) . . . . . Using the Variables Manager
[U] Chapter 25 . . . . . Working with categorical data and factor variables
[D] clonevar . . . . . Clone existing variable
[D] destring . . . . . Convert string variables to numeric variables and vice versa
[D] encode . . . . . Encode string into numeric and vice versa
[D] generate . . . . . Create or change contents of variable
[D] mvencode . . . . . Change missing values to numeric values and vice versa
[D] order . . . . . Reorder variables in dataset
[D] recode . . . . . Recode categorical variables
[D] rename . . . . . Rename variable
[D] rename group . . . . . Rename groups of variables
[D] split . . . . . Split string variables into parts
[D] varmanage . . . . . Manage variable labels, formats, and other properties


**Examining data**


[GS] Chapter 6 (GSM, GSU, GSW) . . . . . Using the Data Editor
[D] cf . . . . . Compare two datasets
[D] codebook . . . . . Describe data contents
[D] compare . . . . . Compare two variables
[D] count . . . . . Count observations satisfying specified conditions
[D] describe . . . . . Describe data in memory or in file
[D] ds . . . . . List variables matching name patterns or other characteristics
[D] duplicates . . . . . Report, tag, or drop duplicate observations
[D] edit . . . . . Browse or edit data with Data Editor
[D] gsort . . . . . Ascending and descending sort
[D] inspect . . . . . Display simple summary of data's attributes
[D] isid . . . . . Check for unique identifiers
[D] lookfor . . . . . Search for string in variable names and labels
[R] lv . . . . . Letter-value displays
[R] misstable . . . . . Tabulate missing values
[MI] mi describe . . . . . Describe mi data
[MI] mi misstable . . . . . Tabulate pattern of missing values
[D] pctile . . . . . Create variable containing percentiles
[ST] stdescribe . . . . . Describe survival-time data
[R] summarize . . . . . Summary statistics
[SVY] svy: tabulate oneway . . . . . One-way tables for survey data
[SVY] svy: tabulate twoway . . . . . Two-way tables for survey data
[P] tabdisp . . . . . Display tables
[R] table . . . . . Flexible table of summary statistics

[R] tabstat . . . . . Compact table of summary statistics
[R] tabulate oneway . . . . . One-way table of frequencies
[R] tabulate twoway . . . . . Two-way table of frequencies
[R] tabulate, summarize() . . . . . One- and two-way tables of summary statistics
[XT] xtdescribe . . . . . Describe pattern of xt data

**File manipulation**

[D] cd . . . . . Change directory
[D] cf . . . . . Compare two datasets
[D] changeeol . . . . . Convert end-of-line characters of text file
[D] checksum . . . . . Calculate checksum of file
[D] copy . . . . . Copy file from disk or URL
[D] dir . . . . . Display filenames
[D] erase . . . . . Erase a disk file
[D] filefilter . . . . . Convert ASCII or binary patterns in a file
[D] mkdir . . . . . Create directory
[D] rmdir . . . . . Remove directory
[D] type . . . . . Display contents of a file
[D] unicode convertfile . . . . . Low-level file conversion between encodings
[D] unicode translate . . . . . Translate files to Unicode
[D] zipfile . . . . . Compress and uncompress files and directories in zip archive format

**Miscellaneous data commands**

[D] corr2data . . . . . Create dataset with specified correlation structure
[D] drawnorm . . . . . Draw sample from multivariate normal distribution
[R] dydx . . . . . Calculate numeric derivatives and integrals
[D] icd . . . . . Introduction to ICD commands
[D] icd10 . . . . . ICD-10 diagnosis codes
[D] icd9 . . . . . ICD-9-CM diagnosis and procedure codes
[D] ipolate . . . . . Linearly interpolate (extrapolate) values
[D] range . . . . . Generate numerical range
[D] sample . . . . . Draw random sample

**Multiple imputation**

[MI] mi add . . . . . Add imputations from another mi dataset
[MI] mi append . . . . . Append mi data
[MI] mi convert . . . . . Change style of mi data
[MI] mi copy . . . . . Copy mi flongsep data
[MI] mi describe . . . . . Describe mi data
[MI] mi erase . . . . . Erase mi datasets
[MI] mi expand . . . . . Expand mi data
[MI] mi export . . . . . Export mi data
[MI] mi export ice . . . . . Export mi data to ice format
[MI] mi export nhanes1 . . . . . Export mi data to NHANES format
[MI] mi extract . . . . . Extract original or imputed data from mi data
[MI] mi import . . . . . Import data into mi
[MI] mi import flong . . . . . Import flong-like data into mi
[MI] mi import flongsep . . . . . Import flongsep-like data into mi
[MI] mi import ice . . . . . Import ice-format data into mi
[MI] mi import nhanes1 . . . . . Import NHANES-format data into mi
[MI] mi import wide . . . . . Import wide-like data into mi

[MI] mi merge . . . . . Merge mi data
[MI] mi misstable . . . . . Tabulate pattern of missing values
[MI] mi passive . . . . . Generate/replace and register passive variables
[MI] mi ptrace . . . . . Load parameter-trace file into Stata
[MI] mi rename . . . . . Rename variable
[MI] mi replace0 . . . . . Replace original data
[MI] mi reset . . . . . Reset imputed or passive variables
[MI] mi reshape . . . . . Reshape mi data
[MI] mi set . . . . . Declare multiple-imputation data
[MI] mi stsplit . . . . . Stsplit and stjoin mi data
[MI] mi update . . . . . Ensure that mi data are consistent
[MI] mi varying . . . . . Identify variables that vary across imputations
[MI] mi xeq . . . . . Execute command(s) on individual imputations
[MI] mi XXXset . . . . . Declare mi data to be svy, st, ts, xt, etc.
[MI] noupdate option . . . . . The noupdate option
[MI] styles . . . . . Dataset styles
[MI] workflow . . . . . Suggested workflow

# Utilities

### Basic utilities

[GS] Chapter 13 (GSM, GSU, GSW) . . . . . Using the Do-file Editor—automating Stata
[U] Chapter 4 . . . . . Stata's help and search facilities
[U] Chapter 15 . . . . . Saving and printing output—log files
[U] Chapter 16 . . . . . Do-files
[R] about . . . . . Display information about your Stata
[D] by . . . . . Repeat Stata command on subsets of the data
[R] cls . . . . . Clear Results window
[R] copyright . . . . . Display copyright information
[R] do . . . . . Execute commands from a file
[R] doedit . . . . . Edit do-files and other text files
[R] exit . . . . . Exit Stata
[R] help . . . . . Display help in Stata
[R] level . . . . . Set default confidence level
[R] log . . . . . Echo copy of session to file
[D] obs . . . . . Increase the number of observations in a dataset
[R] postest . . . . . Postestimation Selector
[R] #review . . . . . Review previous commands
[R] search . . . . . Search Stata documentation and other resources
[BAYES] set clevel . . . . . Set default credible level
[R] translate . . . . . Print and translate logs
[D] unicode translate . . . . . Translate files to Unicode
[R] view . . . . . View files and logs
[D] zipfile . . . . . Compress and uncompress files and directories in zip archive format

### Error messages

[U] Chapter 8 . . . . . Error messages and return codes
[P] error . . . . . Display generic error message and exit
[R] error messages . . . . . Error messages and return codes
[P] rmsg . . . . . Return messages

### Stored results


[U] Section 13.5 . . . . . Accessing coefficients and standard errors
[U] Section 18.8 . . . . . Accessing results calculated by other programs
[U] Section 18.9 . . . . . Accessing results calculated by estimation commands
[U] Section 18.10 . . . . . Storing results
[P] creturn . . . . . Return c-class values
[P] ereturn . . . . . Post the estimation results
[R] estimates . . . . . Save and manipulate estimation results
[R] estimates describe . . . . . Describe estimation results
[R] estimates for . . . . . Repeat postestimation command across models
[R] estimates notes . . . . . Add notes to estimation results
[R] estimates replay . . . . . Redisplay estimation results
[R] estimates save . . . . . Save and use estimation results
[R] estimates stats . . . . . Model-selection statistics
[R] estimates store . . . . . Store and restore estimation results
[R] estimates table . . . . . Compare estimation results
[R] estimates title . . . . . Set title for estimation results
[P] _return . . . . . Preserve stored results
[P] return . . . . . Return stored results
[R] stored results . . . . . Stored results


### Internet


[U] Chapter 28 . . . . . Using the Internet to keep up to date
[R] adoupdate . . . . . Update user-written ado-files
[D] checksum . . . . . Calculate checksum of file
[D] copy . . . . . Copy file from disk or URL
[R] net . . . . . Install and manage user-written additions from the Internet
[R] net search . . . . . Search the Internet for installable packages
[R] netio . . . . . Control Internet connections
[R] news . . . . . Report Stata news
[R] sj . . . . . Stata Journal and STB installation instructions
[R] ssc . . . . . Install and uninstall packages from SSC
[R] update . . . . . Check for official updates
[D] use . . . . . Load Stata dataset


### Data types and memory


[U] Chapter 6 . . . . . Managing memory
[U] Section 12.2.2 . . . . . Numeric storage types
[U] Section 12.4 . . . . . Strings
[U] Section 12.4.2 . . . . . Handling Unicode strings
[U] Section 13.12 . . . . . Precision and problems therein
[U] Chapter 23 . . . . . Working with strings
[D] compress . . . . . Compress data in memory
[D] data types . . . . . Quick reference for data types
[R] matsize . . . . . Set the maximum number of variables in a model
[D] memory . . . . . Memory management
[D] missing values . . . . . Quick reference for missing values
[D] recast . . . . . Change storage type of variable

### Advanced utilities


[D] assert . . . Verify truth of claim
[D] cd . . . Change directory
[D] changeeol . . . Convert end-of-line characters of text file
[D] checksum . . . Calculate checksum of file
[D] copy . . . Copy file from disk or URL
[P] _datasignature . . . Determine whether data have changed
[D] datasignature . . . Determine whether data have changed
[R] db . . . Launch dialog
[P] dialog programming . . . Dialog programming
[D] dir . . . Display filenames
[P] discard . . . Drop automatically loaded programs
[D] erase . . . Erase a disk file
[P] file . . . Read and write text and binary files
[D] filefilter . . . Convert ASCII or binary patterns in a file
[D] hexdump . . . Display hexadecimal report on file
[D] mkdir . . . Create directory
[R] more . . . The —more— message
[R] query . . . Display system parameters
[P] quietly . . . Quietly and noisily perform Stata command
[D] rmdir . . . Remove directory
[R] set . . . Overview of system parameters
[R] set cformat . . . Format settings for coefficient tables
[R] set_defaults . . . Reset system parameters to original Stata defaults
[R] set emptycells . . . Set what to do with empty cells in interactions
[P] set locale_functions . . . Specify default locale for functions
[P] set locale_ui . . . Specify a localization package for the user interface
[R] set rng . . . Set which random-number generator (RNG) to use
[R] set seed . . . Specify random-number seed and state
[R] set showbaselevels . . . Display settings for coefficient tables
[D] shell . . . Temporarily invoke operating system
[P] signestimationsample . . . Determine whether the estimation sample has changed
[P] smcl . . . Stata Markup and Control Language
[P] sysdir . . . Query and set system directories
[D] type . . . Display contents of a file
[D] unicode collator . . . Language-specific Unicode collators
[D] unicode convertfile . . . Low-level file conversion between encodings
[D] unicode encoding . . . Unicode encoding utilities
[D] unicode locale . . . Unicode locale utilities
[R] which . . . Display location and version for an ado-file


## Graphics

### Common graphs


[G-1] graph intro . . . Introduction to graphics
[G-2] graph . . . The graph command
[G-2] graph bar . . . Bar charts
[G-2] graph box . . . Box plots
[G-2] graph close . . . Close Graph windows
[G-2] graph combine . . . Combine multiple graphs

[G-2] graph copy . . . . . Copy graph in memory
[G-2] graph describe . . . . . Describe contents of graph in memory or on disk
[G-2] graph dir . . . . . List names of graphs in memory and on disk
[G-2] graph display . . . . . Display graph stored in memory
[G-2] graph dot . . . . . Dot charts (summary statistics)
[G-2] graph drop . . . . . Drop graphs from memory
[G-2] graph export . . . . . Export current graph
[G-2] graph manipulation . . . . . Graph manipulation commands
[G-2] graph matrix . . . . . Matrix graphs
[G-2] graph other . . . . . Other graphics commands
[G-2] graph pie . . . . . Pie charts
[G-2] graph play . . . . . Apply edits from a recording on current graph
[G-2] graph print . . . . . Print a graph
[G-2] graph query . . . . . List available schemes and styles
[G-2] graph rename . . . . . Rename graph in memory
[G-2] graph replay . . . . . Replay multiple graphs
[G-2] graph save . . . . . Save graph to disk
[G-2] graph set . . . . . Set graphics options
[G-2] graph twoway . . . . . Twoway graphs
[G-2] graph twoway area . . . . . Twoway line plot with area shading
[G-2] graph twoway bar . . . . . Twoway bar plots
[G-2] graph twoway connected . . . . . Twoway connected plots
[G-2] graph twoway contour . . . . . Twoway contour plot with area shading
[G-2] graph twoway contourline . . . . . Twoway contour-line plot
[G-2] graph twoway dot . . . . . Twoway dot plots
[G-2] graph twoway dropline . . . . . Twoway dropped-line plots
[G-2] graph twoway fpfit . . . . . Twoway fractional-polynomial prediction plots
[G-2] graph twoway fpfitci . . . . Twoway fractional-polynomial prediction plots with CIs
[G-2] graph twoway function . . . . . Twoway line plot of function
[G-2] graph twoway histogram . . . . . Histogram plots
[G-2] graph twoway kdensity . . . . . Kernel density plots
[G-2] graph twoway lfit . . . . . Twoway linear prediction plots
[G-2] graph twoway lfitci . . . . . Twoway linear prediction plots with CIs
[G-2] graph twoway line . . . . . Twoway line plots
[G-2] graph twoway lowess . . . . . Local linear smooth plots
[G-2] graph twoway lpoly . . . . . Local polynomial smooth plots
[G-2] graph twoway lpolyci . . . . . Local polynomial smooth plots with CIs
[G-2] graph twoway mband . . . . . Twoway median-band plots
[G-2] graph twoway mspline . . . . . Twoway median-spline plots
[G-2] graph twoway pcarrow . . . . . Paired-coordinate plot with arrows
[G-2] graph twoway pcarrowi . . . . . Twoway pcarrow with immediate arguments
[G-2] graph twoway pccapsym . . Paired-coordinate plot with spikes and marker symbols
[G-2] graph twoway pci . . . . . Twoway paired-coordinate plot with immediate arguments
[G-2] graph twoway pcscatter . . . . . Paired-coordinate plot with markers
[G-2] graph twoway pcspike . . . . . Paired-coordinate plot with spikes
[G-2] graph twoway qfit . . . . . Twoway quadratic prediction plots
[G-2] graph twoway qfitci . . . . . Twoway quadratic prediction plots with CIs
[G-2] graph twoway rarea . . . . . Range plot with area shading
[G-2] graph twoway rbar . . . . . Range plot with bars
[G-2] graph twoway rcap . . . . . Range plot with capped spikes
[G-2] graph twoway rcapsym . . . . . Range plot with spikes capped with marker symbols

[G-2] graph twoway rconnected . . . . . Range plot with connected lines
[G-2] graph twoway rline . . . . . Range plot with lines
[G-2] graph twoway rscatter . . . . . Range plot with markers
[G-2] graph twoway rspike . . . . . Range plot with spikes
[G-2] graph twoway scatter . . . . . Twoway scatterplots
[G-2] graph twoway scatteri . . . . . Scatter with immediate arguments
[G-2] graph twoway spike . . . . . Twoway spike plots
[G-2] graph twoway tsline . . . . . Twoway line plots
[G-2] graph use . . . . . Display graph stored on disk
[R] histogram . . . . . Histograms for continuous and categorical variables
[R] marginsplot . . . . . Graph results from margins (profile plots, etc.)
[G-2] palette . . . . . Display palettes of available selections

**Distributional graphs**

[R] cumul . . . . . Cumulative distribution
[R] diagnostic plots . . . . . Distributional diagnostic plots
[R] dotplot . . . . . Comparative scatterplots
[R] histogram . . . . . Histograms for continuous and categorical variables
[R] ladder . . . . . Ladder of powers
[R] spikeplot . . . . . Spike plots and rootograms
[R] sunflower . . . . . Density-distribution sunflower plots

**Item response theory graphs**

[MV] biplot . . . . . Biplots
[IRT] irtgraph icc . . . . . Item characteristic curve plot
[IRT] irtgraph iif . . . . . Item information function plot
[IRT] irtgraph tcc . . . . . Test characteristic curve plot
[IRT] irtgraph tif . . . . . Test information function plot

**Multivariate graphs**

[MV] biplot . . . . . Biplots
[MV] ca postestimation . . . . . Postestimation tools for ca and camat
[MV] ca postestimation plots . . . . . Postestimation plots for ca and camat
[MV] cluster dendrogram . . . . . Dendrograms for hierarchical cluster analysis
[MV] mca postestimation . . . . . Postestimation tools for mca
[MV] mca postestimation plots . . . . . Postestimation plots for mca
[MV] mds postestimation . . . . . Postestimation tools for mds, mdsmat, and mdslong
[MV] mds postestimation plots . . . . . Postestimation plots for mds, mdsmat, and mdslong
[MV] procrustes postestimation . . . . . Postestimation tools for procrustes
[MV] scoreplot . . . . . Score and loading plots
[MV] screeplot . . . . . Scree plot

**Quality control**

[R] cusum . . . . . Cusum plots and tests for binary variables
[R] qc . . . . . Quality control charts
[R] serrbar . . . . . Graph standard error bar chart

**Regression diagnostic plots**

[R] regress postestimation diagnostic plots . . . . . Postestimation plots for regress

### ROC analysis


[R] estat classification . . . . . Classification statistics and table
[R] estat gof . . . . . Pearson or Hosmer–Lemeshow goodness-of-fit test
[R] logistic postestimation . . . . . Postestimation tools for logistic
[R] lroc . . . . . Compute area under ROC curve and graph the curve
[R] lsens . . . . . Graph sensitivity and specificity versus probability cutoff
[R] roccomp . . . . . Tests of equality of ROC areas
[R] rocfit postestimation . . . . . Postestimation tools for rocfit
[R] rocregplot . . . . . Plot marginal and covariate-specific ROC curves after rocreg
[R] roctab . . . . . Nonparametric ROC analysis


### Smoothing and densities


[R] kdensity . . . . . Univariate kernel density estimation
[R] lowess . . . . . Lowess smoothing
[R] lpoly . . . . . Kernel-weighted local polynomial smoothing


### Survival-analysis graphs


[ST] ltable . . . . . Life tables for survival data
[ST] stci . . . . . Confidence intervals for means and percentiles of survival time
[ST] stcox PH-assumption tests . . . . . Tests of proportional-hazards assumption
[ST] stcurve . Plot survivor, hazard, cumulative hazard, or cumulative incidence function
[ST] strate . . . . . Tabulate failure rates and rate ratios
[ST] sts graph . . . . . Graph the survivor, hazard, or cumulative hazard function


### Time-series graphs


[TS] corrgram . . . . . Tabulate and graph autocorrelations
[TS] cumsp . . . . . Cumulative spectral distribution
[TS] estat acplot . . . . . Plot parametric autocorrelation and autocovariance functions
[TS] estat aroots . . . . . Check the stability condition of ARIMA estimates
[TS] fcast graph . . . . . Graph forecasts after fcast compute
[TS] irf cgraph . . Combined graphs of IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf graph . . . . . Graphs of IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf ograph . . . . Overlaid graphs of IRFs, dynamic-multiplier functions, and FEVDs
[TS] pergram . . . . . Periodogram
[TS] tsline . . . . . Plot time-series data
[TS] varstable . . . . . Check the stability condition of VAR or SVAR estimates
[TS] vecstable . . . . . Check the stability condition of VECM estimates
[TS] wntestb . . . . . Bartlett's periodogram-based test for white noise
[TS] xcorr . . . . . Cross-correlogram for bivariate time series


### More statistical graphs


[BAYES] bayesgraph . . . . . Graphical summaries and convergence diagnostics
[R] epitab . . . . . Tables for epidemiologists
[R] fp postestimation . . . . . Postestimation tools for fp
[R] grmeanby . . . . . Graph means and medians by categorical variables
[R] pkexamine . . . . . Calculate pharmacokinetic measures
[R] pksumm . . . . . Summarize pharmacokinetic data
[PSS] power, graph . . . . . Graph results from the power command

[R] stem . . . . . Stem-and-leaf displays
[TE] teffects overlap . . . . . Overlap plots
[XT] xtline . . . . . Panel-data line plots

### Editing

[G-1] graph editor . . . . . Graph Editor

### Graph utilities

[G-2] set graphics . . . . . Set whether graphs are displayed
[G-2] set printcolor . . . . . Set how colors are treated when graphs are printed
[G-2] set scheme . . . . . Set default scheme

### Graph schemes

[G-4] schemes intro . . . . . Introduction to schemes
[G-4] scheme economist . . . . . Scheme description: economist
[G-4] scheme s1 . . . . . Scheme description: s1 family
[G-4] scheme s2 . . . . . Scheme description: s2 family
[G-4] scheme sj . . . . . Scheme description: sj

### Graph concepts

[G-4] concept: gph files . . . . . Using gph files
[G-4] concept: lines . . . . . Using lines
[G-4] concept: repeated options . . . . . Interpretation of repeated options
[G-4] text . . . . . Text in graphs

## Statistics

### ANOVA and related

[U] Chapter 26 . . . . . Overview of Stata estimation commands
[R] anova . . . . . Analysis of variance and covariance
[R] contrast . . . . . Contrasts and linear hypothesis tests after estimation
[R] icc . . . . . Intraclass correlation coefficients
[R] loneway . . . . . Large one-way ANOVA, random effects, and reliability
[MV] manova . . . . . Multivariate analysis of variance and covariance
[ME] meglm . . . . . Multilevel mixed-effects generalized linear model
[ME] mixed . . . . . Multilevel mixed-effects linear regression
[R] oneway . . . . . One-way analysis of variance
[R] pkcross . . . . . Analyze crossover experiments
[R] pkshape . . . . . Reshape (pharmacokinetic) Latin-square data
[R] pwcompare . . . . . Pairwise comparisons
[R] regress . . . . . Linear regression
[XT] xtreg Fixed-, between-, and random-effects and population-averaged linear models

### Basic statistics

[R] anova . . . . . Analysis of variance and covariance
[R] bitest . . . . . Binomial probability test
[R] ci . . . . . Confidence intervals for means, proportions, and counts
[R] correlate . . . . . Correlations (covariances) of variables or coefficients
[D] egen . . . . . Extensions to generate

[R] esize . . . Effect size based on mean comparison
[R] icc . . . Intraclass correlation coefficients
[R] mean . . . Estimate means
[R] misstable . . . Tabulate missing values
[MV] mvtest . . . Multivariate tests
[R] oneway . . . One-way analysis of variance
[R] proportion . . . Estimate proportions
[R] prtest . . . Tests of proportions
[R] pwmean . . . Pairwise comparisons of means
[R] ranksum . . . Equality tests on unmatched data
[R] ratio . . . Estimate ratios
[R] regress . . . Linear regression
[R] sdtest . . . Variance-comparison tests
[R] signrank . . . Equality tests on matched data
[D] statsby . . . Collect statistics for a command across a by list
[R] summarize . . . Summary statistics
[R] table . . . Flexible table of summary statistics
[R] tabstat . . . Compact table of summary statistics
[R] tabulate oneway . . . One-way table of frequencies
[R] tabulate twoway . . . Two-way table of frequencies
[R] tabulate, summarize() . . . One- and two-way tables of summary statistics
[R] total . . . Estimate totals
[R] ttest . . . $t$ tests (mean-comparison tests)
[R] ztest . . . $z$ tests (mean-comparison tests, known variance)

**Bayesian analysis**

[BAYES] bayes . . . Introduction to commands for Bayesian analysis
[BAYES] bayesgraph . . . Graphical summaries and convergence diagnostics
[BAYES] bayesmh . . . Bayesian regression using Metropolis–Hastings algorithm
[BAYES] bayesmh evaluators . . . User-defined evaluators with bayesmh
[BAYES] bayesmh postestimation . . . Postestimation tools for bayesmh
[BAYES] bayesstats . . . Bayesian statistics after bayesmh
[BAYES] bayesstats ess . . . Effective sample sizes and related statistics
[BAYES] bayesstats ic . . . Bayesian information criteria and Bayes factors
[BAYES] bayesstats summary . . . Bayesian summary statistics
[BAYES] bayestest . . . Bayesian hypothesis testing
[BAYES] bayestest interval . . . Interval hypothesis testing
[BAYES] bayestest model . . . Hypothesis testing using model posterior probabilities

**Binary outcomes**

[U] Chapter 20 . . . Estimation and postestimation commands
[U] Section 26.7 . . . Binary-outcome qualitative dependent-variable models
[R] binreg . . . Generalized linear models: Extensions to the binomial family
[R] biprobit . . . Bivariate probit regression
[R] cloglog . . . Complementary log-log regression
[TE] eteffects . . . Endogenous treatment-effects estimation
[R] exlogistic . . . Exact logistic regression
[R] glm . . . Generalized linear models
[R] heckprobit . . . Probit model with sample selection
[R] hetprobit . . . Heteroskedastic probit model
[IRT] irt 1pl . . . One-parameter logistic model

[IRT] irt 2pl . . . . . Two-parameter logistic model
[IRT] irt 3pl . . . . . Three-parameter logistic model
[IRT] irt hybrid . . . . . Hybrid IRT models
[R] ivprobit . . . . . Probit model with continuous endogenous covariates
[R] logistic . . . . . Logistic regression, reporting odds ratios
[R] logit . . . . . Logistic regression, reporting coefficients
[ME] mecloglog . . . . . Multilevel mixed-effects complementary log-log regression
[ME] melogit . . . . . Multilevel mixed-effects logistic regression
[ME] meprobit . . . . . Multilevel mixed-effects probit regression
[ME] meqrlogit . . . . . Multilevel mixed-effects logistic regression (QR decomposition)
[R] probit . . . . . Probit regression
[R] rocfit . . . . . Parametric ROC models
[R] rocreg . . . . . Receiver operating characteristic (ROC) regression
[R] scobit . . . . . Skewed logistic regression
[TE] teffects aipw . . . . . Augmented inverse-probability weighting
[TE] teffects ipw . . . . . Inverse-probability weighting
[TE] teffects ipwra . . . . . Inverse-probability-weighted regression adjustment
[TE] teffects nnmatch . . . . . Nearest-neighbor matching
[TE] teffects psmatch . . . . . Propensity-score matching
[TE] teffects ra . . . . . Regression adjustment
[XT] xtcloglog . . . . . Random-effects and population-averaged cloglog models
[XT] xtlogit . . . . . Fixed-effects, random-effects, and population-averaged logit models
[XT] xtprobit . . . . . Random-effects and population-averaged probit models

**Categorical outcomes**

[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.11 . . . . . Multiple-outcome qualitative dependent-variable models
[R] asclogit . . . . . Alternative-specific conditional logit (McFadden's choice) model
[R] asmprobit . . . . . Alternative-specific multinomial probit regression
[R] clogit . . . . . Conditional (fixed-effects) logistic regression
[IRT] irt nrm . . . . . Nominal response model
[R] mlogit . . . . . Multinomial (polytomous) logistic regression
[R] mprobit . . . . . Multinomial probit regression
[R] nlogit . . . . . Nested logit regression
[R] slogit . . . . . Stereotype logistic regression

**Censored and truncated regression models**

[R] churdle . . . . . Cragg hurdle regression
[R] cpoisson . . . . . Censored Poisson regression
[R] heckman . . . . . Heckman selection model
[R] heckoprobit . . . . . Ordered probit model with sample selection
[R] heckprobit . . . . . Probit model with sample selection
[R] intreg . . . . . Interval regression
[ME] mestreg . . . . . Multilevel mixed-effects parametric survival models
[ST] streg . . . . . Parametric survival models
[TE] stteffects . . . . . Treatment-effects estimation for observational survival-time data
[R] tnbreg . . . . . Truncated negative binomial regression
[R] tobit . . . . . Tobit regression
[R] tpoisson . . . . . Truncated Poisson regression
[R] truncreg . . . . . Truncated regression

[XT] xtintreg ..... Random-effects interval-data regression models
[XT] xtstreg ..... Random-effects parametric survival models
[XT] xttobit ..... Random-effects tobit models

**Cluster analysis**

[U] Section 26.28 ..... Multivariate and cluster analysis
[MV] cluster ..... Introduction to cluster-analysis commands
[MV] cluster dendrogram ..... Dendrograms for hierarchical cluster analysis
[MV] cluster generate .. Generate summary or grouping variables from a cluster analysis
[MV] cluster kmeans and kmedians ..... Kmeans and kmedians cluster analysis
[MV] cluster linkage ..... Hierarchical cluster analysis
[MV] cluster notes ..... Place notes in cluster analysis
[MV] cluster programming subroutines ..... Add cluster-analysis routines
[MV] cluster programming utilities ..... Cluster-analysis programming utilities
[MV] cluster stop ..... Cluster-analysis stopping rules
[MV] cluster utility ..... List, rename, use, and drop cluster analyses
[MV] clustermat ..... Introduction to clustermat commands
[MV] matrix dissimilarity ..... Compute similarity or dissimilarity measures
[MV] *measure_option* ..... Option for similarity and dissimilarity measures
[MV] multivariate ..... Introduction to multivariate commands

**Correspondence analysis**

[MV] ca ..... Simple correspondence analysis
[MV] mca ..... Multiple and joint correspondence analysis

**Count outcomes**

[U] Chapter 20 ..... Estimation and postestimation commands
[U] Section 26.13 ..... Count dependent-variable models
[U] Section 26.20.5 ..... Count dependent-variable models with panel data
[R] cpoisson ..... Censored Poisson regression
[TE] eteffects ..... Endogenous treatment-effects estimation
[TE] etpoisson ..... Poisson regression with endogenous treatment effects
[R] expoisson ..... Exact Poisson regression
[ME] menbreg ..... Multilevel mixed-effects negative binomial regression
[ME] mepoisson ..... Multilevel mixed-effects Poisson regression
[ME] meqrpoisson .... Multilevel mixed-effects Poisson regression (QR decomposition)
[R] nbreg ..... Negative binomial regression
[R] poisson ..... Poisson regression
[TE] teffects aipw ..... Augmented inverse-probability weighting
[TE] teffects ipw ..... Inverse-probability weighting
[TE] teffects ipwra ..... Inverse-probability-weighted regression adjustment
[TE] teffects nnmatch ..... Nearest-neighbor matching
[TE] teffects psmatch ..... Propensity-score matching
[TE] teffects ra ..... Regression adjustment
[R] tnbreg ..... Truncated negative binomial regression
[R] tpoisson ..... Truncated Poisson regression
[XT] xtnbreg Fixed-effects, random-effects, & population-averaged negative binomial models
[XT] xtpoisson .. Fixed-effects, random-effects, and population-averaged Poisson models
[R] zinb ..... Zero-inflated negative binomial regression
[R] zip ..... Zero-inflated Poisson regression

### Discriminant analysis


[MV] candisc . . . . . Canonical linear discriminant analysis
[MV] discrim . . . . . Discriminant analysis
[MV] discrim estat . . . . . Postestimation tools for discrim
[MV] discrim knn . . . . . kth-nearest-neighbor discriminant analysis
[MV] discrim lda . . . . . Linear discriminant analysis
[MV] discrim logistic . . . . . Logistic discriminant analysis
[MV] discrim qda . . . . . Quadratic discriminant analysis
[MV] scoreplot . . . . . Score and loading plots
[MV] screeplot . . . . . Scree plot


### Do-it-yourself generalized method of moments


[U] Section 26.24 . . . . . Generalized method of moments (GMM)
[R] gmm . . . . . Generalized method of moments estimation
[P] matrix . . . . . Introduction to matrix commands


### Do-it-yourself maximum likelihood estimation


[P] matrix . . . . . Introduction to matrix commands
[R] ml . . . . . Maximum likelihood estimation
[R] mlexp . . . . . Maximum likelihood estimation of user-specified expressions


### Endogenous covariates


[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Chapter 26 . . . . . Overview of Stata estimation commands
[TE] eteffects . . . . . Endogenous treatment-effects estimation
[TE] etpoisson . . . . . Poisson regression with endogenous treatment effects
[TE] etregress . . . . . Linear regression with endogenous treatment effects
[TS] forecast . . . . . Econometric model forecasting
[R] gmm . . . . . Generalized method of moments estimation
[R] ivpoisson . . . . . Poisson model with continuous endogenous covariates
[R] ivprobit . . . . . Probit model with continuous endogenous covariates
[R] ivregress . . . . . Single-equation instrumental-variables regression
[R] ivtobit . . . . . Tobit model with continuous endogenous covariates
[R] reg3 . . . . . Three-stage estimation for systems of simultaneous equations
[XT] xtabond . . . . . Arellano–Bond linear dynamic panel-data estimation
[XT] xtdpd . . . . . Linear dynamic panel-data estimation
[XT] xtdpdsys . . . . Arellano–Bover/Blundell–Bond linear dynamic panel-data estimation
[XT] xthtaylor . . . . . Hausman–Taylor estimator for error-components models
[XT] xtivreg . . . Instrumental variables and two-stage least squares for panel-data models


### Epidemiology and related


[R] binreg . . . . . Generalized linear models: Extensions to the binomial family
[R] brier . . . . . Brier score decomposition
[R] clogit . . . . . Conditional (fixed-effects) logistic regression
[R] dstdize . . . . . Direct and indirect standardization
[R] epitab . . . . . Tables for epidemiologists
[R] exlogistic . . . . . Exact logistic regression
[D] icd . . . . . Introduction to ICD commands
[D] icd10 . . . . . ICD-10 diagnosis codes
[D] icd9 . . . . . ICD-9-CM diagnosis and procedure codes

[R] kappa . . . . . Interrater agreement
[R] logistic . . . . . Logistic regression, reporting odds ratios
[R] pk . . . . . Pharmacokinetic (biopharmaceutical) data
[R] pkcollapse . . . . . Generate pharmacokinetic measurement dataset
[R] pkcross . . . . . Analyze crossover experiments
[R] pkequiv . . . . . Perform bioequivalence tests
[R] pkexamine . . . . . Calculate pharmacokinetic measures
[R] pkshape . . . . . Reshape (pharmacokinetic) Latin-square data
[R] pksumm . . . . . Summarize pharmacokinetic data
[R] poisson . . . . . Poisson regression
[R] roc . . . . . Receiver operating characteristic (ROC) analysis
[R] roccomp . . . . . Tests of equality of ROC areas
[R] rocfit . . . . . Parametric ROC models
[R] rocreg . . . . . Receiver operating characteristic (ROC) regression
[R] roctab . . . . . Nonparametric ROC analysis
[R] symmetry . . . . . Symmetry and marginal homogeneity tests
[R] tabulate twoway . . . . . Two-way table of frequencies


Also see *Treatment effects*

**Estimation related**


[R] BIC note . . . . . Calculating and interpreting BIC
[R] constraint . . . . . Define and list constraints
[R] *eform_option* . . . . . Displaying exponentiated coefficients
[R] estimation options . . . . . Estimation options
[R] fp . . . . . Fractional polynomial regression
[R] maximize . . . . . Details of iterative maximization
[R] mfp . . . . . Multivariable fractional polynomial models
[R] mkspline . . . . . Linear and restricted cubic spline construction
[R] stepwise . . . . . Stepwise estimation
[R] *vce_option* . . . . . Variance estimators
[XT] *vce_options* . . . . . Variance estimators


**Exact statistics**


[U] Section 26.14 . . . . . Exact estimators
[R] bitest . . . . . Binomial probability test
[R] centile . . . . . Report centile and confidence interval
[R] ci . . . . . Confidence intervals for means, proportions, and counts
[R] dstdize . . . . . Direct and indirect standardization
[R] epitab . . . . . Tables for epidemiologists
[R] exlogistic . . . . . Exact logistic regression
[R] expoisson . . . . . Exact Poisson regression
[R] ksmirnov . . . . . Kolmogorov–Smirnov equality-of-distributions test
[R] loneway . . . . . Large one-way ANOVA, random effects, and reliability
[R] ranksum . . . . . Equality tests on unmatched data
[R] roctab . . . . . Nonparametric ROC analysis
[R] symmetry . . . . . Symmetry and marginal homogeneity tests
[R] tabulate twoway . . . . . Two-way table of frequencies
[R] tetrachoric . . . . . Tetrachoric correlations for binary variables

### Factor analysis and principal components


[MV] alpha . . . . . Compute interitem correlations (covariances) and Cronbach's alpha
[MV] canon . . . . . Canonical correlations
[MV] factor . . . . . Factor analysis
[MV] pca . . . . . Principal component analysis
[MV] rotate . . . . . Orthogonal and oblique rotations after factor and pca
[MV] rotatemat . . . . . Orthogonal and oblique rotations of a Stata matrix
[MV] scoreplot . . . . . Score and loading plots
[MV] screeplot . . . . . Scree plot
[R] tetrachoric . . . . . Tetrachoric correlations for binary variables


### Fractional outcomes


[R] betareg . . . . . Beta regression
[TE] eteffects . . . . . Endogenous treatment-effects estimation
[R] fracreg . . . . . Fractional response regression
[TE] teffects ipw . . . . . Inverse-probability weighting
[TE] teffects nnmatch . . . . . Nearest-neighbor matching
[TE] teffects psmatch . . . . . Propensity-score matching


### Generalized linear models


[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.6 . . . . . Generalized linear models
[R] binreg . . . . . Generalized linear models: Extensions to the binomial family
[R] fracreg . . . . . Fractional response regression
[R] glm . . . . . Generalized linear models
[XT] xtgee . . . . . Fit population-averaged panel-data models by using GEE


### Indicator and categorical variables


[U] Section 11.4.3 . . . . . Factor variables
[U] Chapter 25 . . . . . Working with categorical data and factor variables
[R] fvset . . . . . Declare factor-variable settings


### Item response theory


[U] Section 26.12 . . . . . Item response theory
[IRT] Control Panel . . . . . IRT Control Panel
[IRT] difmh . . . . . Differential item functioning
[IRT] estat report . . . . . Report estimated IRT parameters
[IRT] irt 1pl . . . . . One-parameter logistic model
[IRT] irt 2pl . . . . . Two-parameter logistic model
[IRT] irt 3pl . . . . . Three-parameter logistic model
[IRT] irt grm . . . . . Graded response model
[IRT] irt hybrid . . . . . Hybrid IRT models
[IRT] irt nrm . . . . . Nominal response model
[IRT] irt pcm . . . . . Partial credit model
[IRT] irt rsm . . . . . Rating scale model
[IRT] irtgraph icc . . . . . Item characteristic curve plot
[IRT] irtgraph iif . . . . . Item information function plot
[IRT] irtgraph tcc . . . . . Test characteristic curve plot
[IRT] irtgraph tif . . . . . Test information function plot

**Linear regression and related**


[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Chapter 26 . . . . . Overview of Stata estimation commands
[R] areg . . . . . Linear regression with a large dummy-variable set
[R] cnsreg . . . . . Constrained linear regression
[R] constraint . . . . . Define and list constraints
[R] eivreg . . . . . Errors-in-variables regression
[TE] etpoisson . . . . . Poisson regression with endogenous treatment effects
[TE] etregress . . . . . Linear regression with endogenous treatment effects
[R] fp . . . . . Fractional polynomial regression
[R] frontier . . . . . Stochastic frontier models
[R] glm . . . . . Generalized linear models
[R] heckman . . . . . Heckman selection model
[R] ivpoisson . . . . . Poisson model with continuous endogenous covariates
[R] ivregress . . . . . Single-equation instrumental-variables regression
[R] ivtobit . . . . . Tobit model with continuous endogenous covariates
[R] lpoly . . . . . Kernel-weighted local polynomial smoothing
[ME] meglm . . . . . Multilevel mixed-effects generalized linear model
[R] mfp . . . . . Multivariable fractional polynomial models
[ME] mixed . . . . . Multilevel mixed-effects linear regression
[MV] mvreg . . . . . Multivariate regression
[R] nestreg . . . . . Nested model statistics
[TS] newey . . . . . Regression with Newey–West standard errors
[TS] prais . . . . . Prais–Winsten and Cochrane–Orcutt regression
[R] qreg . . . . . Quantile regression
[R] reg3 . . . . . Three-stage estimation for systems of simultaneous equations
[R] regress . . . . . Linear regression
[R] rocfit . . . . . Parametric ROC models
[R] rreg . . . . . Robust regression
[ST] stcox . . . . . Cox proportional hazards model
[ST] stcrreg . . . . . Competing-risks regression
[R] stepwise . . . . . Stepwise estimation
[ST] streg . . . . . Parametric survival models
[R] sureg . . . . . Zellner's seemingly unrelated regression
[R] tnbreg . . . . . Truncated negative binomial regression
[R] vwls . . . . . Variance-weighted least squares
[XT] xtabond . . . . . Arellano–Bond linear dynamic panel-data estimation
[XT] xtdpd . . . . . Linear dynamic panel-data estimation
[XT] xtdpdsys . . . . Arellano–Bover/Blundell–Bond linear dynamic panel-data estimation
[XT] xtgee . . . . . Fit population-averaged panel-data models by using GEE
[XT] xtgls . . . . . Fit panel-data models by using GLS
[XT] xthtaylor . . . . . Hausman–Taylor estimator for error-components models
[XT] xtivreg . . . Instrumental variables and two-stage least squares for panel-data models
[XT] xtpcse . . . . . Linear regression with panel-corrected standard errors
[XT] xtrc . . . . . Random-coefficients model
[XT] xtreg Fixed-, between-, and random-effects and population-averaged linear models
[XT] xtregar . . . . . Fixed- and random-effects linear models with an AR(1) disturbance
[XT] xtstreg . . . . . Random-effects parametric survival models

**Logistic and probit regression**


[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Chapter 26 . . . . . Overview of Stata estimation commands
[R] asclogit . . . . . Alternative-specific conditional logit (McFadden's choice) model
[R] asmprobit . . . . . Alternative-specific multinomial probit regression
[R] asroprobit . . . . . Alternative-specific rank-ordered probit regression
[R] biprobit . . . . . Bivariate probit regression
[R] clogit . . . . . Conditional (fixed-effects) logistic regression
[R] cloglog . . . . . Complementary log-log regression
[R] exlogistic . . . . . Exact logistic regression
[R] heckoprobit . . . . . Ordered probit model with sample selection
[R] heckprobit . . . . . Probit model with sample selection
[R] hetprobit . . . . . Heteroskedastic probit model
[IRT] irt 1pl . . . . . One-parameter logistic model
[IRT] irt 2pl . . . . . Two-parameter logistic model
[IRT] irt 3pl . . . . . Three-parameter logistic model
[IRT] irt grm . . . . . Graded response model
[IRT] irt hybrid . . . . . Hybrid IRT models
[IRT] irt nrm . . . . . Nominal response model
[IRT] irt pcm . . . . . Partial credit model
[IRT] irt rsm . . . . . Rating scale model
[R] ivprobit . . . . . Probit model with continuous endogenous covariates
[R] logistic . . . . . Logistic regression, reporting odds ratios
[R] logit . . . . . Logistic regression, reporting coefficients
[ME] melogit . . . . . Multilevel mixed-effects logistic regression
[ME] meologit . . . . . Multilevel mixed-effects ordered logistic regression
[ME] meoprobit . . . . . Multilevel mixed-effects ordered probit regression
[ME] meprobit . . . . . Multilevel mixed-effects probit regression
[ME] meqrlogit . . . . . Multilevel mixed-effects logistic regression (QR decomposition)
[R] mlogit . . . . . Multinomial (polytomous) logistic regression
[R] mprobit . . . . . Multinomial probit regression
[R] nlogit . . . . . Nested logit regression
[R] ologit . . . . . Ordered logistic regression
[R] oprobit . . . . . Ordered probit regression
[R] probit . . . . . Probit regression
[R] rologit . . . . . Rank-ordered logistic regression
[R] scobit . . . . . Skewed logistic regression
[R] slogit . . . . . Stereotype logistic regression
[XT] xtcloglog . . . . . Random-effects and population-averaged cloglog models
[XT] xtgee . . . . . Fit population-averaged panel-data models by using GEE
[XT] xtlogit . . . . . Fixed-effects, random-effects, and population-averaged logit models
[XT] xtologit . . . . . Random-effects ordered logistic models
[XT] xtoprobit . . . . . Random-effects ordered probit models
[XT] xtprobit . . . . . Random-effects and population-averaged probit models


**Longitudinal data/panel data**


[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.20 . . . . . Panel-data models
[ME] meologit . . . . . Multilevel mixed-effects ordered logistic regression
[ME] meoprobit . . . . . Multilevel mixed-effects ordered probit regression
[ME] mepoisson . . . . . Multilevel mixed-effects Poisson regression

[ME] meprobit . . . . . Multilevel mixed-effects probit regression
[ME] meqrpoisson . . . . Multilevel mixed-effects Poisson regression (QR decomposition)
[ME] mixed . . . . . Multilevel mixed-effects linear regression
[XT] quadchk . . . . . Check sensitivity of quadrature approximation
[XT] xt . . . . . Introduction to xt commands
[XT] xtabond . . . . . Arellano–Bond linear dynamic panel-data estimation
[XT] xtcloglog . . . . . Random-effects and population-averaged cloglog models
[XT] xtdata . . . . . Faster specification searches with xt data
[XT] xtdescribe . . . . . Describe pattern of xt data
[XT] xtdpd . . . . . Linear dynamic panel-data estimation
[XT] xtdpdsys . . . . Arellano–Bover/Blundell–Bond linear dynamic panel-data estimation
[XT] xtfrontier . . . . . Stochastic frontier models for panel data
[XT] xtgee . . . . . Fit population-averaged panel-data models by using GEE
[XT] xtgls . . . . . Fit panel-data models by using GLS
[XT] xthtaylor . . . . . Hausman–Taylor estimator for error-components models
[XT] xtintreg . . . . . Random-effects interval-data regression models
[XT] xtivreg . . . Instrumental variables and two-stage least squares for panel-data models
[XT] xtline . . . . . Panel-data line plots
[XT] xtlogit . . . . . Fixed-effects, random-effects, and population-averaged logit models
[XT] xtnbreg Fixed-effects, random-effects, & population-averaged negative binomial models
[XT] xtologit . . . . . Random-effects ordered logistic models
[XT] xtoprobit . . . . . Random-effects ordered probit models
[XT] xtpcse . . . . . Linear regression with panel-corrected standard errors
[XT] xtpoisson . . Fixed-effects, random-effects, and population-averaged Poisson models
[XT] xtprobit . . . . . Random-effects and population-averaged probit models
[XT] xtrc . . . . . Random-coefficients model
[XT] xtreg Fixed-, between-, and random-effects and population-averaged linear models
[XT] xtregar . . . . . Fixed- and random-effects linear models with an AR(1) disturbance
[XT] xtset . . . . . Declare data to be panel data
[XT] xtstreg . . . . . Random-effects parametric survival models
[XT] xtsum . . . . . Summarize xt data
[XT] xttab . . . . . Tabulate xt data
[XT] xttobit . . . . . Random-effects tobit models
[XT] xtunitroot . . . . . Panel-data unit-root tests

**Mixed models**

[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.21 . . . . . Multilevel mixed-effects models
[R] anova . . . . . Analysis of variance and covariance
[R] icc . . . . . Intraclass correlation coefficients
[MV] manova . . . . . Multivariate analysis of variance and covariance
[ME] me . . . . . Introduction to multilevel mixed-effects models
[ME] mecloglog . . . . . Multilevel mixed-effects complementary log-log regression
[ME] meglm . . . . . Multilevel mixed-effects generalized linear model
[ME] melogit . . . . . Multilevel mixed-effects logistic regression
[ME] menbreg . . . . . Multilevel mixed-effects negative binomial regression
[ME] meologit . . . . . Multilevel mixed-effects ordered logistic regression
[ME] meoprobit . . . . . Multilevel mixed-effects ordered probit regression
[ME] mepoisson . . . . . Multilevel mixed-effects Poisson regression
[ME] meprobit . . . . . Multilevel mixed-effects probit regression
[ME] meqrlogit . . . . . Multilevel mixed-effects logistic regression (QR decomposition)

[ME] meqrpoisson .... Multilevel mixed-effects Poisson regression (QR decomposition)
[ME] mestreg ..... Multilevel mixed-effects parametric survival models
[ME] mixed ..... Multilevel mixed-effects linear regression
[XT] xtcloglog ..... Random-effects and population-averaged cloglog models
[XT] xtintreg ..... Random-effects interval-data regression models
[XT] xtlogit ..... Fixed-effects, random-effects, and population-averaged logit models
[XT] xtologit ..... Random-effects ordered logistic models
[XT] xtoprobit ..... Random-effects ordered probit models
[XT] xtprobit ..... Random-effects and population-averaged probit models
[XT] xtrc ..... Random-coefficients model
[XT] xtreg Fixed-, between-, and random-effects and population-averaged linear models
[XT] xttobit ..... Random-effects tobit models

**Multidimensional scaling and biplots**

[MV] biplot ..... Biplots
[MV] mds ..... Multidimensional scaling for two-way data
[MV] mdslong ..... Multidimensional scaling of proximity data in long format
[MV] mdsmat ..... Multidimensional scaling of proximity data in a matrix
[MV] *measure_option* ..... Option for similarity and dissimilarity measures

**Multilevel mixed-effects models**

[U] Section 26.21 ..... Multilevel mixed-effects models
[ME] me ..... Introduction to multilevel mixed-effects models
[ME] mecloglog ..... Multilevel mixed-effects complementary log-log regression
[ME] meglm ..... Multilevel mixed-effects generalized linear model
[ME] melogit ..... Multilevel mixed-effects logistic regression
[ME] menbreg ..... Multilevel mixed-effects negative binomial regression
[ME] meologit ..... Multilevel mixed-effects ordered logistic regression
[ME] meoprobit ..... Multilevel mixed-effects ordered probit regression
[ME] mepoisson ..... Multilevel mixed-effects Poisson regression
[ME] meprobit ..... Multilevel mixed-effects probit regression
[ME] meqrlogit ..... Multilevel mixed-effects logistic regression (QR decomposition)
[ME] meqrpoisson .... Multilevel mixed-effects Poisson regression (QR decomposition)
[ME] mestreg ..... Multilevel mixed-effects parametric survival models
[ME] mixed ..... Multilevel mixed-effects linear regression

**Multiple imputation**

[U] Section 26.27 ..... Multiple imputation
[MI] estimation ..... Estimation commands for use with mi estimate
[MI] intro substantive ..... Introduction to multiple-imputation analysis
[MI] mi estimate ..... Estimation using multiple imputations
[MI] mi estimate using ..... Estimation using previously saved estimation results
[MI] mi estimate postestimation ..... Postestimation tools for mi estimate
[MI] mi impute ..... Impute missing values
[MI] mi impute chained ..... Impute missing values using chained equations
[MI] mi impute intreg ..... Impute using interval regression
[MI] mi impute logit ..... Impute using logistic regression
[MI] mi impute mlogit ..... Impute using multinomial logistic regression
[MI] mi impute monotone ..... Impute missing values in monotone data
[MI] mi impute mvn ..... Impute using multivariate normal regression
[MI] mi impute nbreg ..... Impute using negative binomial regression

[MI] mi impute ologit . . . . . Impute using ordered logistic regression
[MI] mi impute pmm . . . . . Impute using predictive mean matching
[MI] mi impute poisson . . . . . Impute using Poisson regression
[MI] mi impute regress . . . . . Impute using linear regression
[MI] mi impute truncreg . . . . . Impute using truncated regression
[MI] mi predict . . . . . Obtain multiple-imputation predictions
[MI] mi test . . . . . Test hypotheses after mi estimate

**Multivariate analysis of variance and related techniques**

[U] Section 26.28 . . . . . Multivariate and cluster analysis
[MV] canon . . . . . Canonical correlations
[MV] hotelling . . . . . Hotelling's T-squared generalized means test
[MV] manova . . . . . Multivariate analysis of variance and covariance
[MV] mvreg . . . . . Multivariate regression
[MV] mvtest covariances . . . . . Multivariate tests of covariances
[MV] mvtest means . . . . . Multivariate tests of means

**Nonlinear regression**

[R] boxcox . . . . . Box–Cox regression models
[R] nl . . . . . Nonlinear least-squares estimation
[R] nlsur . . . . . Estimation of nonlinear systems of equations

**Nonparametric statistics**

[R] bitest . . . . . Binomial probability test
[R] bootstrap . . . . . Bootstrap sampling and estimation
[R] bsample . . . . . Sampling with replacement
[R] bstat . . . . . Report bootstrap results
[R] centile . . . . . Report centile and confidence interval
[R] cusum . . . . . Cusum plots and tests for binary variables
[R] kdensity . . . . . Univariate kernel density estimation
[R] ksmirnov . . . . . Kolmogorov–Smirnov equality-of-distributions test
[R] kwallis . . . . . Kruskal–Wallis equality-of-populations rank test
[R] lowess . . . . . Lowess smoothing
[R] lpoly . . . . . Kernel-weighted local polynomial smoothing
[R] nptrend . . . . . Test for trend across ordered groups
[R] prtest . . . . . Tests of proportions
[R] qreg . . . . . Quantile regression
[R] ranksum . . . . . Equality tests on unmatched data
[R] roc . . . . . Receiver operating characteristic (ROC) analysis
[R] roccomp . . . . . Tests of equality of ROC areas
[R] rocreg . . . . . Receiver operating characteristic (ROC) regression
[R] rocregplot . . . . . Plot marginal and covariate-specific ROC curves after rocreg
[R] roctab . . . . . Nonparametric ROC analysis
[R] runtest . . . . . Test for random order
[R] signrank . . . . . Equality tests on matched data
[R] simulate . . . . . Monte Carlo simulations
[R] smooth . . . . . Robust nonlinear smoother
[R] spearman . . . . . Spearman's and Kendall's correlations
[R] symmetry . . . . . Symmetry and marginal homogeneity tests
[R] tabulate twoway . . . . . Two-way table of frequencies

### Ordinal outcomes


[U] Chapter 20 . . . . . Estimation and postestimation commands
[R] asroprobit . . . . . Alternative-specific rank-ordered probit regression
[R] heckoprobit . . . . . Ordered probit model with sample selection
[IRT] irt grm . . . . . Graded response model
[IRT] irt pcm . . . . . Partial credit model
[IRT] irt rsm . . . . . Rating scale model
[ME] meologit . . . . . Multilevel mixed-effects ordered logistic regression
[ME] meoprobit . . . . . Multilevel mixed-effects ordered probit regression
[R] ologit . . . . . Ordered logistic regression
[R] oprobit . . . . . Ordered probit regression
[R] rologit . . . . . Rank-ordered logistic regression
[XT] xtologit . . . . . Random-effects ordered logistic models
[XT] xtoprobit . . . . . Random-effects ordered probit models


### Other statistics


[MV] alpha . . . . . Compute interitem correlations (covariances) and Cronbach's alpha
[R] ameans . . . . . Arithmetic, geometric, and harmonic means
[R] brier . . . . . Brier score decomposition
[R] centile . . . . . Report centile and confidence interval
[R] kappa . . . . . Interrater agreement
[MV] mvtest correlations . . . . . Multivariate tests of correlations
[R] pcorr . . . . . Partial and semipartial correlation coefficients
[D] pctile . . . . . Create variable containing percentiles
[D] range . . . . . Generate numerical range


### Pharmacokinetic statistics


[U] Section 26.29 . . . . . Pharmacokinetic data
[R] pk . . . . . Pharmacokinetic (biopharmaceutical) data
[R] pkcollapse . . . . . Generate pharmacokinetic measurement dataset
[R] pkcross . . . . . Analyze crossover experiments
[R] pkequiv . . . . . Perform bioequivalence tests
[R] pkexamine . . . . . Calculate pharmacokinetic measures
[R] pkshape . . . . . Reshape (pharmacokinetic) Latin-square data
[R] pksumm . . . . . Summarize pharmacokinetic data


### Power and sample size


[U] Section 26.31 . . . . . Power and sample-size analysis
[PSS] GUI . . . . . Graphical user interface for power and sample-size analysis
[PSS] power . . . . . Power and sample-size analysis for hypothesis tests
[PSS] power cmh . . . . . Power and sample size for the Cochran–Mantel–Haenszel test
[PSS] power cox . . . . . Power analysis for the Cox proportional hazards model
[PSS] power exponential . . . . . Power analysis for the exponential test
[PSS] power logrank . . . . . Power analysis for the log-rank test
[PSS] power mcc . . . . . Power analysis for matched case–control studies
[PSS] power onecorrelation . . . . . Power analysis for a one-sample correlation test
[PSS] power onemean . . . . . Power analysis for a one-sample mean test
[PSS] power oneproportion . . . . . Power analysis for a one-sample proportion test
[PSS] power onevariance . . . . . Power analysis for a one-sample variance test
[PSS] power oneway . . . . . Power analysis for one-way analysis of variance

[PSS] power pairedmeans . . . . . Power analysis for a two-sample paired-means test
[PSS] power pairedproportions . . . Power analysis for a two-sample paired-proportions test
[PSS] power repeated . . . . . Power analysis for repeated-measures analysis of variance
[PSS] power trend . . . . . Power analysis for the Cochran–Armitage trend test
[PSS] power twocorrelations . . . . . Power analysis for a two-sample correlations test
[PSS] power twomeans . . . . . Power analysis for a two-sample means test
[PSS] power twoproportions . . . . . Power analysis for a two-sample proportions test
[PSS] power twovariances . . . . . Power analysis for a two-sample variances test
[PSS] power twoway . . . . . Power analysis for two-way analysis of variance
[PSS] unbalanced designs . . . . . Specifications for unbalanced designs

**Quality control**

[R] cusum . . . . . Cusum plots and tests for binary variables
[R] qc . . . . . Quality control charts
[R] serrbar . . . . . Graph standard error bar chart

**ROC analysis**

[U] Section 26.8 . . . . . ROC analysis
[R] roc . . . . . Receiver operating characteristic (ROC) analysis
[R] roccomp . . . . . Tests of equality of ROC areas
[R] rocfit . . . . . Parametric ROC models
[R] rocfit postestimation . . . . . Postestimation tools for rocfit
[R] rocreg . . . . . Receiver operating characteristic (ROC) regression
[R] rocreg postestimation . . . . . Postestimation tools for rocreg
[R] rocregplot . . . . . Plot marginal and covariate-specific ROC curves after rocreg
[R] roctab . . . . . Nonparametric ROC analysis

**Rotation**

[MV] procrustes . . . . . Procrustes transformation
[MV] rotate . . . . . Orthogonal and oblique rotations after factor and pca
[MV] rotatemat . . . . . Orthogonal and oblique rotations of a Stata matrix

**Sample selection models**

[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.18 . . . . . Models with endogenous sample selection
[TE] etpoisson . . . . . Poisson regression with endogenous treatment effects
[TE] etregress . . . . . Linear regression with endogenous treatment effects
[R] heckman . . . . . Heckman selection model
[R] heckoprobit . . . . . Ordered probit model with sample selection
[R] heckprobit . . . . . Probit model with sample selection

**Simulation/resampling**

[R] bootstrap . . . . . Bootstrap sampling and estimation
[R] bsample . . . . . Sampling with replacement
[R] jackknife . . . . . Jackknife estimation
[R] permute . . . . . Monte Carlo permutation tests
[R] simulate . . . . . Monte Carlo simulations

**Standard postestimation tests, tables, and other analyses**


[U] Section 13.5 . . . . . Accessing coefficients and standard errors
[U] Chapter 20 . . . . . Estimation and postestimation commands
[R] contrast . . . . . Contrasts and linear hypothesis tests after estimation
[R] correlate . . . . . Correlations (covariances) of variables or coefficients
[R] estat . . . . . Postestimation statistics
[R] estat ic . . . . . Display information criteria
[R] estat summarize . . . . . Summarize estimation sample
[R] estat vce . . . . . Display covariance matrix estimates
[R] estimates . . . . . Save and manipulate estimation results
[R] estimates describe . . . . . Describe estimation results
[R] estimates for . . . . . Repeat postestimation command across models
[R] estimates notes . . . . . Add notes to estimation results
[R] estimates replay . . . . . Redisplay estimation results
[R] estimates save . . . . . Save and use estimation results
[R] estimates stats . . . . . Model-selection statistics
[R] estimates store . . . . . Store and restore estimation results
[R] estimates table . . . . . Compare estimation results
[R] estimates title . . . . . Set title for estimation results
[TS] forecast . . . . . Econometric model forecasting
[TS] forecast adjust . . . . . Adjust a variable by add factoring, replacing, etc.
[TS] forecast clear . . . . . Clear current model from memory
[TS] forecast coefvector . . . . . Specify an equation via a coefficient vector
[TS] forecast create . . . . . Create a new forecast model
[TS] forecast describe . . . . . Describe features of the forecast model
[TS] forecast drop . . . . . Drop forecast variables
[TS] forecast estimates . . . . . Add estimation results to a forecast model
[TS] forecast exogenous . . . . . Declare exogenous variables
[TS] forecast identity . . . . . Add an identity to a forecast model
[TS] forecast list . . . . . List forecast commands composing current model
[TS] forecast query . . . . . Check whether a forecast model has been started
[TS] forecast solve . . . . . Obtain static and dynamic forecasts
[R] hausman . . . . . Hausman specification test
[R] lincom . . . . . Linear combinations of parameters
[R] linktest . . . . . Specification link test for single-equation models
[R] lrtest . . . . . Likelihood-ratio test after estimation
[R] margins . . . . . Marginal means, predictive margins, and marginal effects
[R] margins, contrast . . . . . Contrasts of margins
[R] margins, pwcompare . . . . . Pairwise comparisons of margins
[R] marginsplot . . . . . Graph results from margins (profile plots, etc.)
[MV] mvtest . . . . . Multivariate tests
[R] nlcom . . . . . Nonlinear combinations of estimators
[R] postest . . . . . Postestimation Selector
[R] predict . . . . . Obtain predictions, residuals, etc., after estimation
[R] predictnl . . . . . Obtain nonlinear predictions, standard errors, etc., after estimation
[R] pwcompare . . . . . Pairwise comparisons
[R] suest . . . . . Seemingly unrelated estimation
[R] test . . . . . Test linear hypotheses after estimation
[R] testnl . . . . . Test nonlinear hypotheses after estimation

**Structural equation modeling**


[U] Section 26.4 . . . . . Structural equation modeling (SEM)
[SEM] Builder . . . . . SEM Builder
[SEM] Builder, generalized . . . . . SEM Builder for generalized models
[SEM] estat eform . . . . . Display exponentiated coefficients
[SEM] estat eqgof . . . . . Equation-level goodness-of-fit statistics
[SEM] estat eqtest . . . . . Equation-level test that all coefficients are zero
[SEM] estat framework . . . . . Display estimation results in modeling framework
[SEM] estat ggof . . . . . Group-level goodness-of-fit statistics
[SEM] estat ginvariant . . . . . Tests for invariance of parameters across groups
[SEM] estat gof . . . . . Goodness-of-fit statistics
[SEM] estat mindices . . . . . Modification indices
[SEM] estat residuals . . . . . Display mean and covariance residuals
[SEM] estat scoretests . . . . . Score tests
[SEM] estat stable . . . . . Check stability of nonrecursive system
[SEM] estat stdize . . . . . Test standardized parameters
[SEM] estat summarize . . . . . Report summary statistics for estimation sample
[SEM] estat teffects . . . . . Decomposition of effects into total, direct, and indirect
[SEM] example 1 . . . . . Single-factor measurement model
[SEM] example 2 . . . . . Creating a dataset from published covariances
[SEM] example 3 . . . . . Two-factor measurement model
[SEM] example 4 . . . . . Goodness-of-fit statistics
[SEM] example 5 . . . . . Modification indices
[SEM] example 6 . . . . . Linear regression
[SEM] example 7 . . . . . Nonrecursive structural model
[SEM] example 8 . . . . . Testing that coefficients are equal, and constraining them
[SEM] example 9 . . . . . Structural model with measurement component
[SEM] example 10 . . . . . MIMIC model
[SEM] example 11 . . . . . estat framework
[SEM] example 12 . . . . . Seemingly unrelated regression
[SEM] example 13 . . . . . Equation-level Wald test
[SEM] example 14 . . . . . Predicted values
[SEM] example 15 . . . . . Higher-order CFA
[SEM] example 16 . . . . . Correlation
[SEM] example 17 . . . . . Correlated uniqueness model
[SEM] example 18 . . . . . Latent growth model
[SEM] example 19 . . . . . Creating multiple-group summary statistics data
[SEM] example 20 . . . . . Two-factor measurement model by group
[SEM] example 21 . . . . . Group-level goodness of fit
[SEM] example 22 . . . . . Testing parameter equality across groups
[SEM] example 23 . . . . . Specifying parameter constraints across groups
[SEM] example 24 . . . . . Reliability
[SEM] example 25 . . . . . Creating summary statistics data from raw data
[SEM] example 26 . . . . . Fitting a model with data missing at random
[SEM] example 27g . . . . . Single-factor measurement model (generalized response)
[SEM] example 28g . . . . . One-parameter logistic IRT (Rasch) model
[SEM] example 29g . . . . . Two-parameter logistic IRT model
[SEM] example 30g . . . . Two-level measurement model (multilevel, generalized response)
[SEM] example 31g . . . . . Two-factor measurement model (generalized response)
[SEM] example 32g . . . . . Full structural equation model (generalized response)
[SEM] example 33g . . . . . Logistic regression

[SEM] example 34g . . . . . Combined models (generalized responses)
[SEM] example 35g . . . . . Ordered probit and ordered logit
[SEM] example 36g . . . . . MIMIC model (generalized response)
[SEM] example 37g . . . . . Multinomial logistic regression
[SEM] example 38g . . . . . Random-intercept and random-slope models (multilevel)
[SEM] example 39g . . . . . Three-level model (multilevel, generalized response)
[SEM] example 40g . . . . . Crossed models (multilevel)
[SEM] example 41g . . . . . Two-level multinomial logistic regression (multilevel)
[SEM] example 42g . . . . . One- and two-level mediation models (multilevel)
[SEM] example 43g . . . . . Tobit regression
[SEM] example 44g . . . . . Interval regression
[SEM] example 45g . . . . . Heckman selection model
[SEM] example 46g . . . . . Endogenous treatment-effects model
[SEM] gsem . . . . . Generalized structural equation model estimation command
[SEM] gsem estimation options . . . . . Options affecting estimation
[SEM] gsem family-and-link options . . . . . Family-and-link options
[SEM] gsem model description options . . . . . Model description options
[SEM] gsem path notation extensions . . . . . Command syntax for path diagrams
[SEM] gsem postestimation . . . . . Postestimation tools for gsem
[SEM] gsem reporting options . . . . . Options affecting reporting of results
[SEM] intro 1 . . . . . Introduction
[SEM] intro 2 . . . . . Learning the language: Path diagrams and command language
[SEM] intro 3 . . . . . Learning the language: Factor-variable notation (gsem only)
[SEM] intro 4 . . . . . Substantive concepts
[SEM] intro 5 . . . . . Tour of models
[SEM] intro 6 . . . . . Comparing groups (sem only)
[SEM] intro 7 . . . . . Postestimation tests and predictions
[SEM] intro 8 . . . . . Robust and clustered standard errors
[SEM] intro 9 . . . . . Standard errors, the full story
[SEM] intro 10 . . . . . Fitting models with survey data
[SEM] intro 11 . . . . . Fitting models with summary statistics data (sem only)
[SEM] intro 12 . . . . . Convergence problems and how to solve them
[SEM] lincom . . . . . Linear combinations of parameters
[SEM] lrtest . . . . . Likelihood-ratio test of linear hypothesis
[SEM] methods and formulas for gsem . . . . . Methods and formulas for gsem
[SEM] methods and formulas for sem . . . . . Methods and formulas for sem
[SEM] nlcom . . . . . Nonlinear combinations of parameters
[SEM] predict after gsem . . . . . Generalized linear predictions, etc.
[SEM] predict after sem . . . . . Factor scores, linear predictions, etc.
[SEM] sem . . . . . Structural equation model estimation command
[SEM] sem and gsem option constraints( ) . . . . . Specifying constraints
[SEM] sem and gsem option covstructure( ) . . . . . Specifying covariance restrictions
[SEM] sem and gsem option from( ) . . . . . Specifying starting values
[SEM] sem and gsem option reliability( ) Fraction of variance not due to measurement error
[SEM] sem and gsem path notation . . . . . Command syntax for path diagrams
[SEM] sem and gsem syntax options . . . . . Options affecting interpretation of syntax
[SEM] sem estimation options . . . . . Options affecting estimation
[SEM] sem group options . . . . . Fitting models on different groups
[SEM] sem model description options . . . . . Model description options
[SEM] sem option method( ) . . . . . Specifying method and calculation of VCE
[SEM] sem option noxconditional Computing means, etc., of observed exogenous variables

[SEM] sem option select( ) . . . . . Using sem with summary statistics data
[SEM] sem path notation extensions . . . . . Command syntax for path diagrams
[SEM] sem postestimation . . . . . Postestimation tools for sem
[SEM] sem reporting options . . . . . Options affecting reporting of results
[SEM] sem ssd options . . . . . Options for use with summary statistics data
[SEM] ssd . . . . . Making summary statistics data (sem only)
[SEM] test . . . . . Wald test of linear hypotheses
[SEM] testnl . . . . . Wald test of nonlinear hypotheses

**Survey data**

[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.26 . . . . . Survey data
[SVY] survey . . . . . Introduction to survey commands
[SVY] *bootstrap_options* . . . . . More options for bootstrap variance estimation
[SVY] *brr_options* . . . . . More options for BRR variance estimation
[SVY] direct standardization . . . . . Direct standardization of means, proportions, and ratios
[SVY] estat . . . . . Postestimation statistics for survey data
[SVY] *jackknife_options* . . . . . More options for jackknife variance estimation
[SVY] ml for svy . . . . . Maximum pseudolikelihood estimation for survey data
[SVY] poststratification . . . . . Poststratification for survey data
[P] _robust . . . . . Robust variance estimates
[SVY] *sdr_options* . . . . . More options for SDR variance estimation
[SVY] subpopulation estimation . . . . . Subpopulation estimation for survey data
[SVY] svy . . . . . The survey prefix command
[SVY] svy bootstrap . . . . . Bootstrap for survey data
[SVY] svy brr . . . . . Balanced repeated replication for survey data
[SVY] svy estimation . . . . . Estimation commands for survey data
[SVY] svy jackknife . . . . . Jackknife estimation for survey data
[SVY] svy postestimation . . . . . Postestimation tools for svy
[SVY] svy sdr . . . . . Successive difference replication for survey data
[SVY] svy: tabulate oneway . . . . . One-way tables for survey data
[SVY] svy: tabulate twoway . . . . . Two-way tables for survey data
[SVY] svydescribe . . . . . Describe survey data
[SVY] svymarkout . Mark observations for exclusion on the basis of survey characteristics
[SVY] svyset . . . . . Declare survey design for dataset
[MI] mi XXXset . . . . . Declare mi data to be svy, st, ts, xt, etc.
[SVY] variance estimation . . . . . Variance estimation for survey data

**Survival analysis**

[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.20.6 . . . . . Survival models with panel data
[U] Section 26.22 . . . . . Survival-time (failure-time) models
[U] Section 26.23 . . . . . Treatment-effect models
[U] Section 26.31 . . . . . Power and sample-size analysis
[ST] survival analysis . . . . . Introduction to survival analysis
[ST] ct . . . . . Count-time data
[ST] ctset . . . . . Declare data to be count-time data
[ST] cttost . . . . . Convert count-time data to survival-time data
[ST] discrete . . . . . Discrete-time survival analysis
[ST] ltable . . . . . Life tables for survival data
[ME] mestreg . . . . . Multilevel mixed-effects parametric survival models

[ST] snapspan . . . . . Convert snapshot data to time-span data
[ST] st . . . . . Survival-time data
[ST] st_is . . . . . Survival analysis subroutines for programmers
[ST] stbase . . . . . Form baseline dataset
[ST] stci . . . . . Confidence intervals for means and percentiles of survival time
[ST] stcox . . . . . Cox proportional hazards model
[ST] stcox PH-assumption tests . . . . . Tests of proportional-hazards assumption
[ST] stcrreg . . . . . Competing-risks regression
[ST] stcurve . Plot survivor, hazard, cumulative hazard, or cumulative incidence function
[ST] stdescribe . . . . . Describe survival-time data
[R] stepwise . . . . . Stepwise estimation
[ST] stfill . . . . . Fill in by carrying forward values of covariates
[ST] stgen . . . . . Generate variables reflecting entire histories
[ST] stir . . . . . Report incidence-rate comparison
[ST] stptime . . . . . Calculate person-time, incidence rates, and SMR
[ST] strate . . . . . Tabulate failure rates and rate ratios
[ST] streg . . . . . Parametric survival models
[ST] sts . . . Generate, graph, list, and test the survivor and cumulative hazard functions
[ST] sts generate . . . . . Create variables containing survivor and related functions
[ST] sts graph . . . . . Graph the survivor, hazard, or cumulative hazard function
[ST] sts list . . . . . List the survivor or cumulative hazard function
[ST] sts test . . . . . Test equality of survivor functions
[ST] stset . . . . . Declare data to be survival-time data
[MI] mi XXXset . . . . . Declare mi data to be svy, st, ts, xt, etc.
[ST] stsplit . . . . . Split and join time-span records
[MI] mi stsplit . . . . . Stsplit and stjoin mi data
[ST] stsum . . . . . Summarize survival-time data
[TE] stteffects ipw . . . . . Survival-time inverse-probability weighting
[TE] stteffects ipwra . . Survival-time inverse-probability-weighted regression adjustment
[TE] stteffects ra . . . . . Survival-time regression adjustment
[TE] stteffects wra . . . . . Survival-time weighted regression adjustment
[ST] sttocc . . . . . Convert survival-time data to case–control data
[ST] sttoct . . . . . Convert survival-time data to count-time data
[ST] stvary . . . . . Report variables that vary over time
[XT] xtstreg . . . . . Random-effects parametric survival models


Also see *Power and sample size*

**Time series, multivariate**


[U] Section 11.4.4 . . . . . Time-series varlists
[U] Section 13.10 . . . . . Time-series operators
[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.19 . . . . . Models with time-series data
[TS] time series . . . . . Introduction to time-series commands
[TS] dfactor . . . . . Dynamic-factor models
[TS] fcast compute . . . . . Compute dynamic forecasts after var, svar, or vec
[TS] fcast graph . . . . . Graph forecasts after fcast compute
[TS] forecast . . . . . Econometric model forecasting
[TS] forecast adjust . . . . . Adjust a variable by add factoring, replacing, etc.
[TS] forecast clear . . . . . Clear current model from memory
[TS] forecast coefvector . . . . . Specify an equation via a coefficient vector
[TS] forecast create . . . . . Create a new forecast model

[TS] forecast describe . . . . . Describe features of the forecast model
[TS] forecast drop . . . . . Drop forecast variables
[TS] forecast estimates . . . . . Add estimation results to a forecast model
[TS] forecast exogenous . . . . . Declare exogenous variables
[TS] forecast identity . . . . . Add an identity to a forecast model
[TS] forecast list . . . . . List forecast commands composing current model
[TS] forecast query . . . . . Check whether a forecast model has been started
[TS] forecast solve . . . . . Obtain static and dynamic forecasts
[TS] irf . . . . . Create and analyze IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf add . . . . . Add results from an IRF file to the active IRF file
[TS] irf cgraph . . Combined graphs of IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf create . . . . . Obtain IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf ctable . . . . Combined tables of IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf describe . . . . . Describe an IRF file
[TS] irf drop . . . . . Drop IRF results from the active IRF file
[TS] irf graph . . . . . Graphs of IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf ograph . . . . Overlaid graphs of IRFs, dynamic-multiplier functions, and FEVDs
[TS] irf rename . . . . . Rename an IRF result in an IRF file
[TS] irf set . . . . . Set the active IRF file
[TS] irf table . . . . . Tables of IRFs, dynamic-multiplier functions, and FEVDs
[TS] mgarch . . . . . Multivariate GARCH models
[TS] mgarch ccc . . . . . Constant conditional correlation multivariate GARCH models
[TS] mgarch dcc . . . . . Dynamic conditional correlation multivariate GARCH models
[TS] mgarch dvech . . . . . Diagonal vech multivariate GARCH models
[TS] mgarch vcc . . . . . Varying conditional correlation multivariate GARCH models
[TS] rolling . . . . . Rolling-window and recursive estimation
[TS] sspace . . . . . State-space models
[TS] tsappend . . . . . Add observations to a time-series dataset
[TS] tsfill . . . . . Fill in gaps in time variable
[TS] tsline . . . . . Plot time-series data
[TS] tsreport . . . . . Report time-series aspects of a dataset or estimation sample
[TS] tsrevar . . . . . Time-series operator programming command
[TS] tsset . . . . . Declare data to be time-series data
[TS] var intro . . . . . Introduction to vector autoregressive models
[TS] var svar . . . . . Structural vector autoregressive models
[TS] var . . . . . Vector autoregressive models
[TS] varbasic . . . . . Fit a simple VAR and graph IRFs or FEVDs
[TS] vargranger . . . . . Perform pairwise Granger causality tests after var or svar
[TS] varlmar . . . . . Perform LM test for residual autocorrelation after var or svar
[TS] varnorm . . . . . Test for normally distributed disturbances after var or svar
[TS] varsoc . . . . . Obtain lag-order selection statistics for VARs and VECMs
[TS] varstable . . . . . Check the stability condition of VAR or SVAR estimates
[TS] varwle . . . . . Obtain Wald lag-exclusion statistics after var or svar
[TS] vec intro . . . . . Introduction to vector error-correction models
[TS] vec . . . . . Vector error-correction models
[TS] veclmar . . . . . Perform LM test for residual autocorrelation after vec
[TS] vecnorm . . . . . Test for normally distributed disturbances after vec
[TS] vecrank . . . . . Estimate the cointegrating rank of a VECM
[TS] vecstable . . . . . Check the stability condition of VECM estimates
[TS] xcorr . . . . . Cross-correlogram for bivariate time series

**Time series, univariate**


[U] Section 11.4.4 . . . . . Time-series varlists
[U] Section 13.10 . . . . . Time-series operators
[U] Chapter 20 . . . . . Estimation and postestimation commands
[U] Section 26.19 . . . . . Models with time-series data
[TS] time series . . . . . Introduction to time-series commands
[TS] arch . . . Autoregressive conditional heteroskedasticity (ARCH) family of estimators
[TS] arfima . . . . . Autoregressive fractionally integrated moving-average models
[TS] arima . . . . . ARIMA, ARMAX, and other dynamic regression models
[TS] corrgram . . . . . Tabulate and graph autocorrelations
[TS] cumsp . . . . . Cumulative spectral distribution
[TS] dfgls . . . . . DF-GLS unit-root test
[TS] dfuller . . . . . Augmented Dickey–Fuller unit-root test
[TS] estat acplot . . . . . Plot parametric autocorrelation and autocovariance functions
[TS] estat aroots . . . . . Check the stability condition of ARIMA estimates
[TS] estat sbknown . . . . . Test for a structural break with a known break date
[TS] estat sbsingle . . . . . Test for a structural break with an unknown break date
[TS] forecast . . . . . Econometric model forecasting
[TS] forecast adjust . . . . . Adjust a variable by add factoring, replacing, etc.
[TS] forecast clear . . . . . Clear current model from memory
[TS] forecast coefvector . . . . . Specify an equation via a coefficient vector
[TS] forecast create . . . . . Create a new forecast model
[TS] forecast describe . . . . . Describe features of the forecast model
[TS] forecast drop . . . . . Drop forecast variables
[TS] forecast estimates . . . . . Add estimation results to a forecast model
[TS] forecast exogenous . . . . . Declare exogenous variables
[TS] forecast identity . . . . . Add an identity to a forecast model
[TS] forecast list . . . . . List forecast commands composing current model
[TS] forecast query . . . . . Check whether a forecast model has been started
[TS] forecast solve . . . . . Obtain static and dynamic forecasts
[TS] mswitch . . . . . Markov-switching regression models
[TS] newey . . . . . Regression with Newey–West standard errors
[TS] pergram . . . . . Periodogram
[TS] pperron . . . . . Phillips–Perron unit-root test
[TS] prais . . . . . Prais–Winsten and Cochrane–Orcutt regression
[TS] psdensity . . . . . Parametric spectral density estimation after arima, arfima, and ucm
[R] regress postestimation time series . Postestimation tools for regress with time series
[TS] rolling . . . . . Rolling-window and recursive estimation
[TS] sspace . . . . . State-space models
[TS] tsappend . . . . . Add observations to a time-series dataset
[TS] tsfill . . . . . Fill in gaps in time variable
[TS] tsfilter . . . . . Filter a time-series, keeping only selected periodicities
[TS] tsfilter bk . . . . . Baxter–King time-series filter
[TS] tsfilter bw . . . . . Butterworth time-series filter
[TS] tsfilter cf . . . . . Christiano–Fitzgerald time-series filter
[TS] tsfilter hp . . . . . Hodrick–Prescott time-series filter
[TS] tsline . . . . . Plot time-series data
[TS] tsreport . . . . . Report time-series aspects of a dataset or estimation sample
[TS] tsrevar . . . . . Time-series operator programming command
[TS] tsset . . . . . Declare data to be time-series data
[TS] tssmooth . . . . . Smooth and forecast univariate time-series data

[TS] tssmooth dexponential . . . . . Double-exponential smoothing
[TS] tssmooth exponential . . . . . Single-exponential smoothing
[TS] tssmooth hwinters . . . . . Holt–Winters nonseasonal smoothing
[TS] tssmooth ma . . . . . Moving-average filter
[TS] tssmooth nl . . . . . Nonlinear filter
[TS] tssmooth shwinters . . . . . Holt–Winters seasonal smoothing
[TS] ucm . . . . . Unobserved-components model
[TS] wntestb . . . . . Bartlett's periodogram-based test for white noise
[TS] wntestq . . . . . Portmanteau (Q) test for white noise
[TS] xcorr . . . . . Cross-correlogram for bivariate time series

**Transforms and normality tests**

[R] boxcox . . . . . Box–Cox regression models
[R] fp . . . . . Fractional polynomial regression
[R] ladder . . . . . Ladder of powers
[R] lnskew0 . . . . . Find zero-skewness log or Box–Cox transform
[R] mfp . . . . . Multivariable fractional polynomial models
[MV] mvtest normality . . . . . Multivariate normality tests
[R] sktest . . . . . Skewness and kurtosis test for normality
[R] swilk . . . . . Shapiro–Wilk and Shapiro–Francia tests for normality

**Treatment effects**

[U] Section 26.23 . . . . . Treatment-effect models
[TE] eteffects . . . . . Endogenous treatment-effects estimation
[TE] etpoisson . . . . . Poisson regression with endogenous treatment effects
[TE] etregress . . . . . Linear regression with endogenous treatment effects
[TE] stteffects . . . . . Treatment-effects estimation for observational survival-time data
[TE] stteffects intro Introduction to treatment effects for observational survival-time data
[TE] stteffects ipw . . . . . Survival-time inverse-probability weighting
[TE] stteffects ipwra . . Survival-time inverse-probability-weighted regression adjustment
[TE] stteffects ra . . . . . Survival-time regression adjustment
[TE] stteffects wra . . . . . Survival-time weighted regression adjustment
[TE] tebalance . . . . . Check balance after teffects or stteffects estimation
[TE] tebalance box . . . . . Covariate balance box
[TE] tebalance density . . . . . Covariate balance density
[TE] tebalance overid . . . . . Test for covariate balance
[TE] tebalance summarize . . . . . Covariate-balance summary statistics
[TE] teffects . . . . . Treatment-effects estimation for observational data
[TE] teffects aipw . . . . . Augmented inverse-probability weighting
[TE] teffects intro . . . . . Introduction to treatment effects for observational data
[TE] teffects intro advanced Advanced introduction to treatment effects for observational data
[TE] teffects ipw . . . . . Inverse-probability weighting
[TE] teffects ipwra . . . . . Inverse-probability-weighted regression adjustment
[TE] teffects multivalued . . . . . Multivalued treatment effects
[TE] teffects nnmatch . . . . . Nearest-neighbor matching
[TE] teffects overlap . . . . . Overlap plots
[TE] teffects psmatch . . . . . Propensity-score matching
[TE] teffects ra . . . . . Regression adjustment
[TE] treatment effects . . . . . Introduction to treatment-effects commands

# Matrix commands

### Basics


[U] Chapter 14 . . . . . Matrix expressions
[P] matlist . . . . . Display a matrix and control its format
[P] matrix . . . . . Introduction to matrix commands
[P] matrix define . . . . . Matrix definition, operators, and functions
[P] matrix utility . . . . . List, rename, and drop matrices


### Programming


[P] ereturn . . . . . Post the estimation results
[P] matrix accum . . . . . Form cross-product matrices
[P] matrix rownames . . . . . Name rows and columns
[P] matrix score . . . . . Score data from coefficient vectors
[R] ml . . . . . Maximum likelihood estimation
[M] *Mata Reference Manual* . . . . .


### Other


[P] makecns . . . . . Constrained estimation
[P] matrix dissimilarity . . . . . Compute similarity or dissimilarity measures
[P] matrix eigenvalues . . . . . Eigenvalues of nonsymmetric matrices
[P] matrix get . . . . . Access system matrices
[P] matrix mkmat . . . . . Convert variables to matrix and vice versa
[P] matrix svd . . . . . Singular value decomposition
[P] matrix symeigen . . . . . Eigenvalues and eigenvectors of symmetric matrices


### Mata


[D] putmata . . . . . Put Stata variables into Mata and vice versa
[M] *Mata Reference Manual* . . . . .


# Programming

### Basics


[U] Chapter 18 . . . . . Programming Stata
[U] Section 18.3 . . . . . Macros
[U] Section 18.11 . . . . . Ado-files
[P] comments . . . . . Add comments to programs
[P] fvexpand . . . . . Expand factor varlists
[P] macro . . . . . Macro definition and manipulation
[P] program . . . . . Define and manipulate programs
[P] return . . . . . Return stored results


### Program control


[U] Section 18.11.1 . . . . . Version
[P] capture . . . . . Capture return code
[P] continue . . . . . Break out of loops
[P] error . . . . . Display generic error message and exit
[P] foreach . . . . . Loop over items
[P] forvalues . . . . . Loop over consecutive values

[P] if . . . . . if programming command
[P] version . . . . . Version control
[P] while . . . . . Looping

**Parsing and program arguments**

[U] Section 18.4 . . . . . Program arguments
[P] confirm . . . . . Argument verification
[P] gettoken . . . . . Low-level parsing
[P] levelsof . . . . . Levels of variable
[P] numlist . . . . . Parse numeric lists
[P] syntax . . . . . Parse Stata syntax
[P] tokenize . . . . . Divide strings into tokens

**Console output**

[U] Section 12.4.2 . . . . . Handling Unicode strings
[P] dialog programming . . . . . Dialog programming
[P] display . . . . . Display strings and values of scalar expressions
[P] smcl . . . . . Stata Markup and Control Language
[P] tabdisp . . . . . Display tables
[D] unicode . . . . . Unicode utilities

**Commonly used programming commands**

[P] byable . . . . . Make programs byable
[P] #delimit . . . . . Change delimiter
[P] exit . . . . . Exit from a program or do-file
[R] fvrevar . . . . . Factor-variables operator programming command
[P] mark . . . . . Mark observations for inclusion
[P] matrix . . . . . Introduction to matrix commands
[P] more . . . . . Pause until key is pressed
[P] nopreserve option . . . . . nopreserve option
[P] preserve . . . . . Preserve and restore data
[P] quietly . . . . . Quietly and noisily perform Stata command
[P] scalar . . . . . Scalar variables
[P] smcl . . . . . Stata Markup and Control Language
[P] sortpreserve . . . . . Sort within programs
[P] timer . . . . . Time sections of code by recording and reporting time spent
[TS] tsrevar . . . . . Time-series operator programming command

**Debugging**

[P] pause . . . . . Program debugging command
[P] timer . . . . . Time sections of code by recording and reporting time spent
[P] trace . . . . . Debug Stata programs

**Advanced programming commands**

[U] Section 12.4.2.5 . . . . . Sorting strings containing Unicode characters
[M-5] Pdf*( ) . . . . . Create a PDF file
[M-5] _docx*( ) . . . . . Generate Office Open XML (.docx) file
[P] automation . . . . . Automation
[P] break . . . . . Suppress Break key
[P] char . . . . . Characteristics

[M-2] class . . . . . Object-oriented programming (classes)
[P] class . . . . . Class programming
[P] class exit . . . . . Exit class-member program and return result
[P] classutil . . . . . Class programming utility
[P] estat programming . . . . . Controlling estat after user-written commands
[P] _estimates . . . . . Manage estimation results
[P] file . . . . . Read and write text and binary files
[P] findfile . . . . . Find file in path
[P] include . . . . . Include commands from file
[P] java . . . . . Java plugins
[P] javacall . . . . . Call a static Java method
[P] macro . . . . . Macro definition and manipulation
[P] macro lists . . . . . Manipulate lists
[R] ml . . . . . Maximum likelihood estimation
[M-5] moptimize( ) . . . . . Model optimization
[M-5] optimize( ) . . . . . Function optimization
[P] plugin . . . . . Load a plugin
[P] postfile . . . . . Post results in Stata dataset
[P] _predict Obtain predictions, residuals, etc., after estimation programming command
[P] program properties . . . . . Properties of user-defined programs
[P] putexcel . . . . . Export results to an Excel file
[D] putmata . . . . . Put Stata variables into Mata and vice versa
[P] _return . . . . . Preserve stored results
[P] _rmcoll . . . . . Remove collinear variables
[P] _robust . . . . . Robust variance estimates
[P] serset . . . . . Create and manipulate sersets
[D] snapshot . . . . . Save and restore data snapshots
[P] unab . . . . . Unabbreviate variable list
[P] unabcmd . . . . . Unabbreviate command name
[D] unicode collator . . . . . Language-specific Unicode collators
[D] unicode convertfile . . . . . Low-level file conversion between encodings
[P] varabbrev . . . . . Control variable abbreviation
[P] viewsource . . . . . View source code
[M-5] xl( ) . . . . . Excel file I/O class


**Special-interest programming commands**


[R] bstat . . . . . Report bootstrap results
[MV] cluster programming subroutines . . . . . Add cluster-analysis routines
[MV] cluster programming utilities . . . . . Cluster-analysis programming utilities
[R] fvrevar . . . . . Factor-variables operator programming command
[P] matrix dissimilarity . . . . . Compute similarity or dissimilarity measures
[MI] mi select . . . . . Programmer's alternative to mi extract
[ST] st_is . . . . . Survival analysis subroutines for programmers
[SVY] svymarkout . Mark observations for exclusion on the basis of survey characteristics
[MI] technical . . . . . Details for programmers
[TS] tsrevar . . . . . Time-series operator programming command


**Projects**


[P] Project Manager . . . . . Organize Stata files

### File formats


[P] file formats .dta . . . . . Description of .dta file format
[D] unicode convertfile . . . . . Low-level file conversion between encodings
[D] unicode translate . . . . . Translate files to Unicode


### Mata


[M] *Mata Reference Manual* . . . . .


## Interface features


[GS] Chapter 1 (GSM, GSU, GSW) . . . . . Introducing Stata—sample session
[GS] Chapter 2 (GSM, GSU, GSW) . . . . . The Stata user interface
[GS] Chapter 3 (GSM, GSU, GSW) . . . . . Using the Viewer
[GS] Chapter 6 (GSM, GSU, GSW) . . . . . Using the Data Editor
[GS] Chapter 7 (GSM, GSU, GSW) . . . . . Using the Variables Manager
[GS] Chapter 13 (GSM, GSU, GSW) . . . . . Using the Do-file Editor—automating Stata
[GS] Chapter 15 (GSM, GSU, GSW) . . . . . Editing graphs
[P] dialog programming . . . . . Dialog programming
[R] doedit . . . . . Edit do-files and other text files
[D] edit . . . . . Browse or edit data with Data Editor
[P] set locale_ui . . . . . Specify a localization package for the user interface
[P] sleep . . . . . Pause for a specified time
[P] smcl . . . . . Stata Markup and Control Language
[D] unicode locale . . . . . Unicode locale utilities
[D] varmanage . . . . . Manage variable labels, formats, and other properties
[P] viewsource . . . . . View source code
[P] window fopen . . . . . Display open/save dialog box
[P] window manage . . . . . Manage window characteristics
[P] window menu . . . . . Create menus
[P] window programming . . . . . Programming menus and windows
[P] window push . . . . . Copy command into Review window
[P] window stopbox . . . . . Display message box

# Acronym glossary

| | |
|---|---|
| 2SIV | two-step instrumental variables |
| 2SLS | two-stage least squares |
| 3SLS | three-stage least squares |
| ADF | asymptotic distribution free |
| AF | attributable fraction for the population |
| AFE | attributable fraction among the exposed |
| AFT | accelerated failure time |
| AIC | Akaike information criterion |
| AIDS | almost-ideal demand system |
| AIPW | augmented inverse-probability weights |
| ANCOVA | analysis of covariance |
| ANOVA | analysis of variance |
| APE | average partial effects |
| AR | autoregressive |
| AR(1) | first-order autoregressive |
| ARCH | autoregressive conditional heteroskedasticity |
| ARFIMA | autoregressive fractionally integrated moving average |
| ARIMA | autoregressive integrated moving average |
| ARMA | autoregressive moving average |
| ARMAX | autoregressive moving-average exogenous |
| ASCII | American Standard Code for Information Interchange |
| ASE | asymptotic standard error |
| ASL | achieved significance level |
| ATE | average treatment effect |
| ATET | average treatment effect on the treated |
| AUC | area under the time-versus-concentration curve |
| BC | bias corrected |
| BCa | bias-corrected and accelerated |
| BCC | boundary characteristic curve |
| BE | between effects |
| BFGS | Broyden–Fletcher–Goldfarb–Shanno |
| BHHH | Berndt–Hall–Hall–Hausman |
| BIC | Bayesian information criterion |
| BLOB | binary large object |
| BLUP | best linear unbiased prediction |
| BRR | balanced repeated replication |

| | |
|---|---|
| CA | correspondence analysis |
| CCC | category characteristic curve |
| CCI | conservative confidence interval |
| CCT | controlled clinical trial |
| CD | coefficient of determination |
| CDC | Centers for Disease Control and Prevention |
| CDF | cumulative distribution function |
| CES | constant elasticity of substitution |
| CFA | confirmatory factor analysis |
| CFI | comparative fit index |
| CI | conditional independence |
| CI | confidence interval |
| CIF | cumulative incidence function |
| CMI | conditional mean independence |
| CMLE | conditional maximum likelihood estimates |
| ct | count time |
| cusum | cumulative sum |
| c.v. | coefficient of variation |
| DA | data augmentation |
| DDF | denominator degrees of freedom |
| DDFs | multiple denominator degrees of freedom |
| DEFF | design effect |
| DEFT | design effect (standard deviation metric) |
| DF | dynamic factor |
| df / d.f. | degree(s) of freedom |
| d.f. | distribution function |
| DFAR | dynamic factors with vector autoregressive errors |
| DFP | Davidon–Fletcher–Powell |
| DPD | dynamic panel data |
| EBCDIC | extended binary coded decimal interchange code |
| EGARCH | exponential GARCH |
| EGLS | estimated generalized least squares |
| EIM | expected information matrix |
| EM | expectation maximization |
| EPS | Encapsulated PostScript |
| ESS | error sum of squares |
| ESS | effective sample size |

| | |
|---|---|
| FCS | fully conditional specification |
| FD | first-differenced estimator |
| FDA | Food and Drug Administration |
| FE | fixed effects |
| FEVD | forecast-error variance decomposition |
| FGLS | feasible generalized least squares |
| FGNLS | feasible generalized nonlinear least squares |
| FIML | full information maximum likelihood |
| FIVE estimator | full-information instrumental-variables efficient estimator |
| flong | full long |
| flongsep | full long and separate |
| FMI | fraction of missing information |
| FP | fractional polynomial |
| FPC | finite population correction |
| GARCH | generalized autoregressive conditional heteroskedasticity |
| GEE | generalized estimating equations |
| GEV | generalized extreme value |
| GHK | Geweke–Hajivassiliou–Keane |
| GHQ | Gauss–Hermite quadrature |
| GLIM | generalized linear interactive modeling |
| GLLAMM | generalized linear latent and mixed models |
| GLM | generalized linear models |
| GLS | generalized least squares |
| GMM | generalized method of moments |
| GPCM | generalized partial credit model |
| GRM | graded response model |
| GSEM | generalized structural equation modeling/model |
| GUI | graphical user interface |
| HAC | heteroskedasticity- and autocorrelation-consistent |
| HR | hazard ratio |
| HRF | human readable form |

| | |
|---|---|
| IC | information criteria |
| ICC | item characteristic curve |
| ICD-9 | International Classification of Diseases, Ninth Revision |
| ICD-10 | International Classification of Diseases, Tenth Revision |
| ICU | International Components for Unicode |
| IIA | independence of irrelevant alternatives |
| i.i.d. | independent and identically distributed |
| IIF | item information function |
| IPW | inverse-probability weighting |
| IPWRA | inverse-probability-weighted regression adjustment |
| IQR | interquartile range |
| IR | incidence rate |
| IRF | impulse–response function |
| IRLS | iterated, reweighted least squares |
| IRR | incidence-rate ratio |
| IRT | item response theory |
| IV | instrumental variables |
| JAR | Java Archive file |
| JCA | joint correspondence analysis |
| JRE | Java Runtime Environment |
| LAPACK | linear algebra package |
| LAV | least absolute value |
| LDA | linear discriminant analysis |
| LIML | limited-information maximum likelihood |
| LM | Lagrange multiplier |
| LOO | leave one out |
| LOWESS | locally weighted scatterplot smoothing |
| LR | likelihood ratio |
| LSB | least-significant byte |
| MA | moving average |
| MAD | median absolute deviation |
| MANCOVA | multivariate analysis of covariance |
| MANOVA | multivariate analysis of variance |
| MAR | missing at random |
| MCA | multiple correspondence analysis |
| MCAGHQ | mode-curvature adaptive Gauss–Hermite quadrature |
| MCAR | missing completely at random |
| MCE | Monte Carlo error |
| MCMC | Markov chain Monte Carlo |
| MCSE | MCMC standard errors |
| MDES | minimum detectable effect size |
| MDS | multidimensional scaling |
| ME | multiple equation |

| | |
|---|---|
| MEFF | misspecification effect |
| MEFT | misspecification effect (standard deviation metric) |
| MFP | multivariable fractional polynomial |
| MI / mi | multiple imputation |
| midp | mid-*p*-value |
| MIMIC | multiple indicators and multiple causes |
| MINQUE | minimum norm quadratic unbiased estimation |
| MIVQUE | minimum variance quadratic unbiased estimation |
| ML | maximum likelihood |
| MLE | maximum likelihood estimate |
| MLMV | maximum likelihood with missing values |
| mlong | marginal long |
| MM | method of moments |
| MNAR | missing not at random |
| MNP | multinomial probit |
| MPL | modified profile likelihood |
| MS | mean square |
| MSAR | Markov-switching autoregression |
| MSB | most-significant byte |
| MSDR | Markov-switching dynamic regression |
| MSE | mean squared error |
| MSL | maximum simulated likelihood |
| MSS | model sum of squares |
| MUE | median unbiased estimates |
| MVAGHQ | mean–variance adaptive Gauss–Hermite quadrature |
| MVN | multivariate normal |
| MVREG | multivariate regression |
| NARCH | nonlinear ARCH |
| NHANES | National Health and Nutrition Examination Survey |
| NLS | nonlinear least squares |
| NPARCH | nonlinear power ARCH |
| NR | Newton–Raphson |
| NRM | nominal response model |
| ODBC | Open DataBase Connectivity |
| OIM | observed information matrix |
| OIRF | orthogonalized impulse–response function |
| OLE | Object Linking and Embedding (Microsoft product) |
| OLS | ordinary least squares |
| OPG | outer product of the gradient |
| OR | odds ratio |

| | |
|---|---|
| PA | population averaged |
| PARCH | power ARCH |
| PCA | principal component analysis |
| PCM | partial credit model |
| PCSE | panel-corrected standard error |
| p.d.f. | probability density function |
| PF | prevented fraction for the population |
| PFE | prevented fraction among the exposed |
| PH | proportional hazards |
| pk | pharmacokinetic data |
| p.m.f. | probability mass function |
| PMM | predictive mean matching |
| PNG | Portable Network Graphics |
| POM | potential-outcome means |
| PSS | power and sample size |
| PSU | primary sampling unit |
| QDA | quadratic discriminant analysis |
| QML | quasimaximum likelihood |
| RA | regression adjustment |
| rc | return code |
| RCT | randomized controlled trial |
| RE | random effects |
| REML | restricted (or residual) maximum likelihood |
| RESET | regression specification-error test |
| RMSE | root mean squared error |
| RMSEA | root mean squared error of approximation |
| RNG | random-number generator |
| ROC | receiver operating characteristic |
| ROP | rank-ordered probit |
| ROT | rule of thumb |
| RR | relative risk |
| RRR | relative-risk ratio |
| RSM | rating scale model |
| RSS | residual sum of squares |
| RUM | random utility maximization |
| RVI | relative variance increase |

| | |
|---|---|
| SAARCH | simple asymmetric ARCH |
| SARIMA | seasonal ARIMA |
| s.d. | standard deviation |
| SE / s.e. | standard error |
| SEM | structural equation modeling/model |
| SF | static factor |
| SFAR | static factors with vector autoregressive errors |
| SIF | Stata internal form |
| SIR | standardized incidence ratio |
| SJ | Stata Journal |
| SMCL | Stata Markup and Control Language |
| SMR | standardized mortality/morbidity ratio |
| SMSA | standard metropolitan statistical area |
| SOR | standardized odds ratio |
| SQL | Structured Query Language |
| SRD | standardized rate difference |
| SRMR | standardized root mean squared residual |
| SRR | standardized risk ratio |
| SRS | simple random sample/sampling |
| SRSWR | SRS with replacement |
| SSC | Statistical Software Components |
| SSCP | sum of squares and cross products |
| SSD | summary statistics data |
| SSU | secondary sampling unit |
| st | survival time |
| STB | Stata Technical Bulletin |
| STS | structural time series |
| SUR | seemingly unrelated regression |
| SURE | seemingly unrelated regression estimation |
| SUTVA | stable unit treatment value assumption |
| SVAR | structural vector autoregressive model |
| SVD | singular value decomposition |
| | |
| TAR | target acceptance rate |
| TARCH | threshold ARCH |
| TCC | test characteristic curve |
| TDT | transmission/disequilibrium test |
| TIF | test information function |
| TIFF | tagged image file format |
| TLI | Tucker–Lewis index |
| TSS | total sum of squares |

| | |
|---|---|
| UCA | Unicode Collation Algorithm |
| UCM | unobserved-components model |
| UI | user interface |
| UTF-8 | Universal character set + Transformation Format—8-bit |
| VAR | vector autoregressive model |
| VAR(1) | first-order vector autoregressive |
| VARMA | vector autoregressive moving average |
| VARMA(1,1) | first-order vector autoregressive moving average |
| VCE | variance–covariance estimate |
| VECM | vector error-correction model |
| VIF | variance inflation factor |
| WLC | worst linear combination |
| WLF | worst linear function |
| WLS | weighted least squares |
| WNLS | weighted nonlinear least squares |
| wrt | with respect to |
| XML | Extensible Markup Language |
| ZINB | zero-inflated negative binomial |
| ZIP | zero-inflated Poisson |
| ZTNB | zero-truncated negative binomial |
| ZTP | zero-truncated Poisson |

# Glossary

**1PL**. See *one-parameter logistic model*.

**1 : M matched case–control study**. See *matched study*.

**2PL**. See *two-parameter logistic model*.

**2 × 2 contingency table**. A 2 × 2 contingency table is used to describe the association between a binary independent variable and a binary response variable of interest.

**2 × 2 × K contingency table**. See *stratified 2 × 2 tables*.

**3PL**. See *three-parameter logistic model*.

**100% sample**. See *census*.

**a posteriori**. In the context of Bayesian analysis, we use a posteriori to mean "after the sample is observed". For example, a posteriori information is any information obtained after the data sample is observed. See *posterior distribution, posterior*.

**a priori**. In the context of Bayesian analysis, we use a priori to mean "before the sample is observed". For example, a priori information is any information obtained before the data sample is observed. In a Bayesian model, a priori information about model parameters is specified by prior distributions.

**ability**. See *latent trait*.

**accelerated failure-time model**. A model in which everyone has, in a sense, the same survivor function, $S(\tau)$, and an individual's $\tau_j$ is a function of his or her characteristics and of time, such as $\tau_j = t * \exp(\beta_0 + \beta_1 x_{1j} + \beta_2 x_{2j})$.

**acceptance rate**. In the context of the MH algorithm, acceptance rate is the fraction of the proposed samples that is accepted. The optimal acceptance rate depends on the properties of the target distribution and is not known in general. If the target distribution is normal, however, the optimal acceptance rate is known to be 0.44 for univariate distributions and 0.234 for multivariate distributions.

**acceptance region**. In hypothesis testing, an acceptance region is a set of sample values for which the null hypothesis cannot be rejected or can be accepted. It is the complement of the rejection region.

**accrual period** or **recruitment period** or **accrual**. The accrual period (or recruitment period) is the period during which subjects are being enrolled (recruited) into a study. Also see *follow-up period*.

**actual alpha**, **actual significance level**. This is an attained or observed significance level.

**adaptation**. In the context of the MH algorithm, adaptation refers to the process of tuning or adapting the proposal distribution to optimize the MCMC sampling. Typically, adaptation is performed periodically during the MCMC sampling. The `bayesmh` command performs adaptation every # of iterations as specified in option `adaptation(every(#))` for a maximum of `adaptation(maxiter())` iterations. In a continuous-adaptation regimes, the adaptation lasts during the entire process of the MCMC sampling. See [BAYES] **bayesmh**.

**adaptation period**. Adaptation period includes all MH adaptive iterations. It equals the length of the adaptation interval, as specified by `adaptation(every())`, times the maximum number of adaptations, `adaptation(maxiter())`.

**adaptive iteration**. In the adaptive MH algorithm, adaptive iterations are iterations during which adaptation is performed.

**add factor**. An add factor is a quantity added to an endogenous variable in a forecast model. Add factors can be used to incorporate outside information into a model, and they can be used to produce forecasts under alternative scenarios.

**ADF, method(adf)**. ADF stands for asymptotic distribution free and is a method used to obtain fitted parameters for standard linear SEMs. ADF is used by `sem` when option `method(adf)` is specified. Other available methods are ML, QML, and MLMV.

**administrative censoring**. Administrative censoring is the right-censoring that occurs when the study observation period ends. All subjects complete the course of the study and are known to have experienced one of two outcomes at the end of the study: survival or failure. This type of censoring should not be confused with *withdrawal* and *loss to follow-up*. Also see *censored, censoring, left-censoring, and right-censoring*.

**AFT, accelerated failure time**. See *accelerated failure-time model*.

**agglomerative hierarchical clustering methods**. Agglomerative hierarchical clustering methods are bottom-up methods for hierarchical clustering. Each observation begins in a separate group. The closest pair of groups is agglomerated or merged in each iteration until all the data are in one cluster. This process creates a hierarchy of clusters. Contrast to *divisive hierarchical clustering methods*.

**AIPW estimator**. See *augmented inverse-probability-weighted estimator*.

**Akaike information criterion, AIC.** Akaike information criterion (AIC) is an information-based model-selection criterion. It is given by the formula $-2 \times \log$ likelihood $+ 2k$, where $k$ is the number of parameters. AIC favors simpler models by penalizing for the number of model parameters. It does not, however, account for the sample size. As a result, the AIC penalization diminishes as the sample size increases, as does its ability to guard against overparameterization.

**allocation ratio**. This ratio $n_2/n_1$ represents the number of subjects in the comparison, experimental group relative to the number of subjects in the reference, control group. Also see [PSS] **unbalanced designs**.

**alpha**. Alpha, $\alpha$, denotes the significance level.

**alternative hypothesis**. In hypothesis testing, the alternative hypothesis represents the counterpoint to which the null hypothesis is compared. When the parameter being tested is a scalar, the alternative hypothesis can be either one sided or two sided.

**alternative value, alternative parameter**. This value of the parameter of interest under the alternative hypothesis is fixed by the investigator in a power and sample-size analysis. For example, alternative mean value and alternative mean refer to a value of the mean parameter under the alternative hypothesis.

**analysis of variance, ANOVA**. This is a class of statistical models that studies differences between means from multiple populations by partitioning the variance of the continuous outcome into independent sources of variation due to effects of interest and random variation. The test statistic is then formed as a ratio of the expected variation due to the effects of interest to the expected random variation. Also see *one-way ANOVA*, *two-way ANOVA*, *one-way repeated-measures ANOVA*, and *two-way repeated-measures ANOVA*.

**analysis time**. Analysis time is like time, except that 0 has a special meaning: $t = 0$ is the time of onset of risk, the time when failure first became possible.

Analysis time is usually not what is recorded in a dataset. A dataset of patients might record calendar time. Calendar time must then be mapped to analysis time.

The letter $t$ is reserved for time in analysis-time units. The term *time* is used for time measured in other units.

The *origin* is the *time* corresponding to $t = 0$, which can vary subject to subject. Thus $t = time - origin$.

**anchoring**, **anchor variable**. A variable is said to be the anchor of a latent variable if the path coefficient between the latent variable and the anchor variable is constrained to be 1. `sem` and `gsem` use anchoring as a way of normalizing latent variables and thus identifying the model.

**ANOVA denominator degrees of freedom (DDF) method**. This method uses the traditional ANOVA for computing DDF. According to this method, the DDF for a test of a fixed effect of a given variable depends on whether that variable is also included in any of the random-effects equations. For traditional ANOVA models with balanced designs, this method provides exact sampling distributions of the test statistics. For more complex mixed-effects models or with unbalanced data, this method typically leads to poor approximations of the actual sampling distributions of the test statistics.

**anti-image correlation matrix** or **anti-image covariance matrix**. The image of a variable is defined as that part which is predictable by regressing each variable on all the other variables; hence, the anti-image is the part of the variable that cannot be predicted. The anti-image correlation matrix $\mathbf{A}$ is a matrix of the negatives of the partial correlations among variables. Partial correlations represent the degree to which the factors explain each other in the results. The diagonal of the anti-image correlation matrix is the Kaiser–Meyer–Olkin measure of sampling adequacy for the individual variables. Variables with small values should be eliminated from the analysis. The anti-image covariance matrix $\mathbf{C}$ contains the negatives of the partial covariances and has one minus the squared multiple correlations in the principal diagonal. Most of the off-diagonal elements should be small in both anti-image matrices in a good factor model. Both anti-image matrices can be calculated from the inverse of the correlation matrix $\mathbf{R}$ via

$$\mathbf{A} = \{\text{diag}(\mathbf{R})\}^{-1}\mathbf{R}\{\text{diag}(\mathbf{R})\}^{-1}$$
$$\mathbf{C} = \{\text{diag}(\mathbf{R})\}^{-1/2}\mathbf{R}\{\text{diag}(\mathbf{R})\}^{-1/2}$$

Also see *Kaiser–Meyer–Olkin measure of sampling adequacy*.

**approximation denominator degrees of freedom (DDF) methods**. The Kenward–Roger and Satterthwaite DDF methods are referred to as approximation methods because they approximate the sampling distributions of test statistics using $t$ and $F$ distributions with the DDF specific to the method for complicated mixed-effects models and for simple mixed models with unbalanced data. Also see *exact denominator degrees of freedom (DDF) methods*.

**arbitrary missing pattern**. Any missing-value pattern. Some imputation methods are suitable only when the pattern of missing values is special, such as a monotone-missing pattern. An imputation method suitable for use with an arbitrary missing pattern may be used regardless of the pattern.

**ARCH model**. An autoregressive conditional heteroskedasticity (ARCH) model is a regression model in which the conditional variance is modeled as an autoregressive (AR) process. The ARCH($m$) model is

$$y_t = \mathbf{x}_t\boldsymbol{\beta} + \epsilon_t$$
$$E(\epsilon_t^2|\epsilon_{t-1}^2, \epsilon_{t-2}^2, \ldots) = \alpha_0 + \alpha_1\epsilon_{t-1}^2 + \cdots + \alpha_m\epsilon_{t-m}^2$$

where $\epsilon_t$ is a white-noise error term. The equation for $y_t$ represents the conditional mean of the process, and the equation for $E(\epsilon_t^2|\epsilon_{t-1}^2, \epsilon_{t-2}^2, \ldots)$ specifies the conditional variance as an autoregressive function of its past realizations. Although the conditional variance changes over time, the unconditional variance is time invariant because $y_t$ is a stationary process. Modeling the conditional variance as an AR process raises the implied unconditional variance, making this model particularly appealing to researchers modeling fat-tailed data, such as financial data.

**Arellano–Bond estimator**. The Arellano–Bond estimator is a generalized method of moments (GMM) estimator for linear dynamic panel-data models that uses lagged levels of the endogenous variables as well as first differences of the exogenous variables as instruments. The Arellano–Bond estimator removes the panel-specific heterogeneity by first-differencing the regression equation.

**ARFIMA model**. An autoregressive fractionally integrated moving-average (ARFIMA) model is a time-series model suitable for use with long-memory processes. ARFIMA models generalize autoregressive integrated moving-average (ARIMA) models by allowing the differencing parameter to be a real number in $(-0.5, 0.5)$ instead of requiring it to be an integer.

**arguments**. The values a function receives are called the function's arguments. For instance, in `lud(`*A*`,` *L*`,` *U*`)`, *A*, *L*, and *U* are the arguments.

**ARIMA model**. An autoregressive integrated moving-average (ARIMA) model is a time-series model suitable for use with integrated processes. In an ARIMA$(p, d, q)$ model, the data is differenced $d$ times to obtain a stationary series, and then an ARMA$(p, q)$ model is fit to this differenced data. ARIMA models that include exogenous explanatory variables are known as ARMAX models.

**ARMA model**. An autoregressive moving-average (ARMA) model is a time-series model in which the current period's realization is the sum of an autoregressive (AR) process and a moving-average (MA) process. An ARMA$(p, q)$ model includes $p$ AR terms and $q$ MA terms. ARMA models with just a few lags are often able to fit data as well as pure AR or MA models with many more lags.

**ARMAX model**. An ARMAX model is a time-series model in which the current period's realization is an ARMA process plus a linear function of a set of exogenous variables. Equivalently, an ARMAX model is a linear regression model in which the error term is specified to follow an ARMA process.

**array**. An array is any indexed object that holds other objects as elements. Vectors are examples of 1-dimensional arrays. Vector $\mathbf{v}$ is an array, and $\mathbf{v}[1]$ is its first element. Matrices are 2-dimensional arrays. Matrix $\mathbf{X}$ is an array, and $\mathbf{X}[1, 1]$ is its first element. In theory, one can have 3-dimensional, 4-dimensional, and higher arrays, although Mata does not directly provide them. See [M-2] **subscripts** for more information on arrays in Mata.

Arrays are usually indexed by sequential integers, but in associative arrays, the indices are strings that have no natural ordering. Associative arrays can be 1-dimensional, 2-dimensional, or higher. If *A* were an associative array, then *A*["first"] might be one of its elements. See [M-5] **asarray()** for associative arrays in Mata.

**ASCII**. ASCII stands for American Standard Code for Information Interchange. It is a way of representing text and the characters that form text in computers. It can be divided into two sections: plain, or lower, ASCII, which includes numbers, punctuation, plain letters without diacritical marks, whitespace characters such as space and tab, and some control characters such as carriage return; and extended ASCII, which includes letters with diacritical marks as well as other special characters.

Before Stata 14, datasets, do-files, ado-files, and other Stata files were encoded using ASCII.

**at risk**. A subject is at risk from the instant the first failure event becomes possible and usually stays that way until failure, but a subject can have periods of being at risk and not at risk.

**ATE**. See *average treatment effect*.

**ATET**. See *average treatment effect on the treated*.

**attributable fraction**. An attributable fraction is the reduction in the risk of a disease or other condition of interest when a particular risk factor is removed.

**augmented inverse-probability-weighted estimator**. An augmented inverse-probability-weighted (AIPW) estimator is an inverse-probability-weighted estimator that includes an augmentation term that corrects the estimator when the treatment model is misspecified. When the treatment is correctly

specified, the augmentation term vanishes as the sample size becomes large. An AIPW estimator uses both an outcome model and a treatment model and is a doubly robust estimator.

**augmented regression**. Regression performed on the augmented data, the data with a few extra observations with small weights. The data are augmented in a way that prevents perfect prediction, which may arise during estimation of categorical data. See *The issue of perfect prediction during imputation of categorical data* under *Remarks and examples* of [MI] **mi impute**.

**autocorrelation function**. The autocorrelation function (ACF) expresses the correlation between periods $t$ and $t-k$ of a time series as function of the time $t$ and the lag $k$. For a stationary time series, the ACF does not depend on $t$ and is symmetric about $k=0$, meaning that the correlation between periods $t$ and $t-k$ is equal to the correlation between periods $t$ and $t+k$.

**autoregressive process**. An autoregressive process is a time-series model in which the current value of a variable is a linear function of its own past values and a white-noise error term. A first-order autoregressive process, denoted as an AR(1) process, is $y_t = \rho y_{t-1} + \epsilon_t$. An AR($p$) model contains $p$ lagged values of the dependent variable.

An autoregressive processes can be extended to panel data. An AR(1) process in this is $y_{it} = \rho y_{i,t-1} + \epsilon_{it}$, where $i$ denotes panels, $t$ denotes time, and $\epsilon_{it}$ is white noise. In some applications, the parameter $\rho$ is written as $\rho_i$ and is allowed to differ across panels.

**average treatment effect**. The average treatment effect is the average among all individuals in a population.

**average treatment effect on the treated**. The average treatment effect on the treated is the average among those individuals who actually get the treatment.

**average-linkage clustering**. Average-linkage clustering is a hierarchical clustering method that uses the average proximity of observations between groups as the proximity measure between the two groups.

**balanced data**. A longitudinal or panel dataset is said to be balanced if each panel has the same number of observations. See also *weakly balanced* and *strongly balanced*.

**balanced design**. A balanced design represents an experiment in which the numbers of treated and untreated subjects are equal. For many types of two-sample hypothesis tests, the power of the test is maximized with balanced designs.

**balanced repeated replication**. Balanced repeated replication (BRR) is a method of variance estimation for designs with two PSUs in every stratum. The BRR variance estimator tends to give more reasonable variance estimates for this design than does the linearized variance estimator, which can result in large values and undesirably wide confidence intervals. The BRR variance estimator is described in [SVY] **variance estimation**.

**band-pass filter**. Time-series filters are designed to pass or block stochastic cycles at specified frequencies. Band-pass filters, such as those implemented in `tsfilter bk` and `tsfilter cf`, pass through stochastic cycles in the specified range of frequencies and block all other stochastic cycles.

**baseline**. In survival analysis, baseline is the state at which the covariates, usually denoted by the row vector $\mathbf{x}$, are zero. For example, if the only measured covariate is systolic blood pressure, the baseline survivor function would be the survivor function for someone with zero systolic blood pressure. This may seem ridiculous, but covariates are usually centered so that the mathematical definition of baseline (covariate is zero) translates into something meaningful (mean systolic blood pressure).

**baseline model**. A baseline model is a covariance model—a model of fitted means and covariances of observed variables without any other paths—with most of the covariances constrained to 0. That

is, a baseline model is a model of fitted means and variances but typically not all the covariances. Also see *saturated model*. Baseline models apply only to standard linear SEMs.

**batch means**. Batch means are means obtained from batches of sample values of equal size. Batch means provide an alternative method for estimating MCMC standard errors (MCSE). The batch size is usually chosen to minimize the correlation between different batches of means.

**Bayes factor**. Bayes factor is given by the ratio of the marginal likelihoods of two models, $M_1$ and $M_2$. It is a widely used criterion for Bayesian model comparison. Bayes factor is used in calculating the posterior odds ratio of model $M_1$ versus $M_2$,

$$\frac{P(M_1|\mathbf{y})}{P(M_2|\mathbf{y})} = \frac{P(\mathbf{y}|M_1)}{P(\mathbf{y}|M_2)} \frac{P(M_1)}{P(M_2)}$$

where $P(M_i|\mathbf{y})$ is a posterior probability of model $M_i$, and $P(M_i)$ is a prior probability of model $M_i$. When the two models are equally likely, that is, when $P(M_1) = P(M_2)$, the Bayes factor equals the posterior odds ratio of the two models.

**Bayes's rule**. The Bayes's rule is a formal method for relating conditional probability statements. For two (random) events $X$ and $Y$, the Bayes's rule states that

$$P(X|Y) \propto P(Y|X)P(X)$$

that is, the probability of $X$ conditional on $Y$ is proportional to the probability of $X$ and the probability of $Y$ conditional on $X$. In Bayesian analysis, the Bayes's rule is used for combining prior information about model parameters and evidence from the observed data to form the posterior distribution.

**Bayes's theorem**. Bayes's theorem states that the probability of an event, $A$, conditional on another event, $B$, is generally different from the probability of $B$ conditional on $A$, although the two are related. Bayes's theorem is that

$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$

where $P(A)$ is the marginal probability of $A$, and $P(A|B)$ is the conditional probability of $A$ given $B$, and likewise for $P(B)$ and $P(B|A)$.

**Bayesian analysis**. Bayesian analysis is a statistical methodology that considers model parameters to be random quantities and estimates their posterior distribution by combining prior knowledge about parameters with the evidence from the observed data sample. Prior knowledge about parameters is described by prior distributions and evidence from the observed data is incorporated through a likelihood model. Using the Bayes's rule, the prior distribution and the likelihood model are combined to form the posterior distribution of model parameters. The posterior distribution is then used for parameter inference, hypothesis testing, and prediction.

**Bayesian hypothesis testing**. Bayesian hypothesis testing computes probabilities of hypotheses conditional on the observed data. In contrast to the frequentist hypothesis testing, the Bayesian hypothesis testing computes the actual probability of a hypothesis $H$ by using the Bayes's rule,

$$P(H|\mathbf{y}) \propto P(\mathbf{y}|H)P(H)$$

where $\mathbf{y}$ is the observed data, $P(\mathbf{y}|H)$ is the marginal likelihood of $\mathbf{y}$ given $H$, and $P(H)$ is the prior probability of $H$. Two different hypotheses, $H_1$ and $H_2$, can be compared by simply comparing $P(H_1|\mathbf{y})$ to $P(H_2|\mathbf{y})$.

**Bayesian information criterion, BIC**. The Bayesian information criterion (BIC), also known as Schwarz criterion, is an information based criterion used for model selection in classical statistics. It is given by the formula $-0.5 \times \log$ likelihood $+ k \times \ln n$, where $k$ is the number of parameters and $n$ is the sample size. BIC favors simpler, in terms of complexity, models and it is more conservative than AIC.

**BCC**. See *boundary characteristic curve*.

**Bentler's invariant pattern simplicity rotation**. Bentler's (1977) rotation maximizes the invariant pattern simplicity. It is an oblique rotation that minimizes the criterion function

$$c(\mathbf{\Lambda}) = -\log[|(\mathbf{\Lambda}^2)'\mathbf{\Lambda}^2|] + \log[|\text{diag}\{(\mathbf{\Lambda}^2)'\mathbf{\Lambda}^2\}|]$$

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$. Also see *oblique rotation*.

**Bentler–Weeks formulation**. The Bentler and Weeks (1980) formulation of standard linear SEMs places the results in a series of matrices organized around how results are calculated. See [SEM] **estat framework**.

**beta**. Beta, $\beta$, denotes the probability of committing a type II error, namely, failing to reject the null hypothesis even though it is false.

**between estimator**. The between estimator is a panel-data estimator that obtains its estimates by running OLS on the panel-level means of the variables. This estimator uses only the between-panel variation in the data to identify the parameters, ignoring any within-panel variation. For it to be consistent, the between estimator requires that the panel-level means of the regressors be uncorrelated with the panel-specific heterogeneity terms.

**between matrix** and **within matrix**. The between and within matrices are SSCP matrices that measure the spread between groups and within groups, respectively. These matrices are used in multivariate analysis of variance and related hypothesis tests: Wilks's lambda, Roy's largest root, Lawley–Hotelling trace, and Pillai's trace.

Here we have $k$ independent random samples of size $n$. The between matrix $\mathbf{H}$ is given by

$$\mathbf{H} = n\sum_{i=1}^{k}(\overline{\mathbf{y}}_{i\bullet} - \overline{\mathbf{y}}_{\bullet\bullet})(\overline{\mathbf{y}}_{i\bullet} - \overline{\mathbf{y}}_{\bullet\bullet})' = \sum_{i=1}^{k}\frac{1}{n}\mathbf{y}_{i\bullet}\mathbf{y}_{i\bullet}' - \frac{1}{kn}\mathbf{y}_{\bullet\bullet}\mathbf{y}_{\bullet\bullet}'$$

The within matrix $\mathbf{E}$ is defined as

$$\mathbf{E} = \sum_{i=1}^{k}\sum_{j=1}^{n}(\mathbf{y}_{ij} - \overline{\mathbf{y}}_{i\bullet})(\mathbf{y}_{ij} - \mathbf{y}_{i\bullet})' = \sum_{i=1}^{k}\sum_{j=1}^{n}\mathbf{y}_{ij}\mathbf{y}_{ij}' - \sum_{i=1}^{k}\frac{1}{n}\mathbf{y}_{i\bullet}\mathbf{y}_{i\bullet}'$$

Also see *SSCP matrix*.

**between–within denominator degrees of freedom (DDF) method**. See *repeated denominator degrees of freedom (DDF) method*.

**between-subjects design**. This is an experiment that has only between-subjects factors. See [PSS] **power oneway** and [PSS] **power twoway**.

**between-subjects factor**. This is a factor for which each subject receives only one of the levels.

**binary 0**. Binary 0, also known as the null character, is traditionally used to indicate the end of a string, such as an ASCII or UTF-8 string.

Binary 0 is obtained by using `char(0)` and is sometimes displayed as `\0`. See [U] **12.4.10 strL variables and binary strings** for more information.

**binary item**. A binary item is an item that is scored as either 0 or 1.

**binary operator**. A binary operator is an operator applied to two arguments. In `2-3`, the minus sign is a binary operator, as opposed to the minus sign in `-9`, which is a unary operator.

**binary string**. A binary string is, technically speaking, any string that does not contain text. In Stata, however, a string is only marked as binary if it contains binary 0, or if it contains the contents of a file read in using the `fileread()` function, or if it is the result of a string expression containing a string that has already been marked as binary.

In Stata, `strL` variables, string scalars, and Mata strings can store binary strings.

See [U] **12.4.10 strL variables and binary strings** for more information.

**binomial test**. A binomial test is a test for which the exact sampling distribution of the test statistic is binomial; see [R] **bitest**. Also see [PSS] **power oneproportion**.

**biplot**. A biplot is a scatterplot which represents both observations and variables simultaneously. There are many different biplots; variables in biplots are usually represented by arrows and observations are usually represented by points.

**biquartimax rotation** or **biquartimin rotation**. Biquartimax rotation and biquartimin rotation are synonyms. They put equal weight on the varimax and quartimax criteria, simplifying the columns and rows of the matrix. This is an oblique rotation equivalent to an oblimin rotation with $\gamma = 0.5$. Also see *varimax rotation*, *quartimax rotation*, and *oblimin rotation*.

**bisection method**. This method finds a root $x$ of a function $f(x)$ such that $f(x) = 0$ by repeatedly subdividing an interval on which $f(x)$ is defined until the change in successive root estimates is within the requested tolerance and function $f(\cdot)$ evaluated at the current estimate is sufficiently close to zero.

**BLOB**. BLOB is database jargon for binary large object. In Stata, BLOBs can be stored in `strL`s. Thus `strL`s can contain BLOBs such as Word documents, JPEG images, or anything else. See *strL*.

**blocking**. In the context of the MH algorithm, blocking refers to the process of separating model parameters into different subsets or blocks to be sampled independently of each other. MH algorithm generates proposals and applies the acceptance–rejection rule sequentially for each block. It is recommended that correlated parameters are kept in one block. Separating less-correlated or independent model parameters in different blocks may improve the mixing of the MH algorithm.

**BLUPs**. BLUPs are best linear unbiased predictions of either random effects or linear combinations of random effects. In linear models containing random effects, these effects are not estimated directly but instead are integrated out of the estimation. Once the fixed effects and variance components have been estimated, you can use these estimates to predict group-specific random effects. These predictions are called BLUPs because they are unbiased and have minimal mean squared errors among all linear functions of the response.

**bootstrap**. The bootstrap is a method of variance estimation. The bootstrap variance estimator for survey data is described in [SVY] **variance estimation**.

**bootstrap**, **vce(bootstrap)**. The bootstrap is a replication method for obtaining variance estimates. Consider an estimation method $E$ for estimating $\theta$. Let $\widehat{\theta}$ be the result of applying $E$ to dataset $D$ containing $N$ observations. The bootstrap is a way of obtaining variance estimates for $\widehat{\theta}$ from repeated estimates $\widehat{\theta}_1$, $\widehat{\theta}_2$, ..., where each $\widehat{\theta}_i$ is the result of applying $E$ to a dataset of size $N$ drawn with replacement from $D$. See [SEM] **sem option method()** and [R] **bootstrap**.

vce(bootstrap) is allowed with sem but not gsem. You can obtain bootstrap results by prefixing the gsem command with bootstrap:, but remember to specify bootstrap's cluster() and idcluster() options if you are fitting a multilevel model. See [SEM] **intro 9**.

**boundary characteristic curve**. A boundary characteristic curve (BCC) expresses the probability of transitioning across a given boundary threshold that separates the ordered item categories into two groups as a function of the latent trait.

**boundary kernel**. A boundary kernel is a special kernel used to smooth hazard functions in the boundaries of the data range. Boundary kernels are applied when the epan2, biweight, or rectangle kernel() is specified with stcurve, hazard or sts graph, hazard.

**boundary solution** or **Heywood solution**. See *Heywood case*.

**broad type**. Two matrices are said to be of the same broad type if the elements in each are numeric, are string, or are pointers. Mata provides two numeric types, real and complex. The term *broad type* is used to mask the distinction within numeric and is often used when discussing operators or functions. One might say, "The comma operator can be used to join the rows of two matrices of the same broad type," and the implication of that is that one could join a real to a complex. The result would be complex. Also see *type, eltype, and orgtype*.

**BRR**. See *balanced repeated replication*.

**Builder**. The Builder is Stata's graphical interface for building sem and gsem models. The Builder is also known as the SEM Builder. See [SEM] **intro 2**, [SEM] **Builder**, and [SEM] **Builder, generalized**.

**burn-between period**. The number of iterations between two draws of an MCMC sequence such that these draws may be regarded as independent.

**burn-in period**. The burn-in period is the number of iterations it takes for an MCMC sequence to reach stationarity.

**byte**. Formally, a byte is eight binary digits (bits), the units used to record computer data. Each byte can also be considered as representing a value from 0 through 255. Do not confuse this with Stata's byte variable storage type, which allows values from −127 to 100 to be stored. With regard to strings, all strings are composed of individual characters that are encoded using either one byte or several bytes to represent each character.

For example, in UTF-8, the encoding system used by Stata, byte value 97 encodes "a". Byte values 195 and 161 in sequence encode "á".

**CA**. See *correspondence analysis*.

**calibration**. The procedure of estimating parameters of an IRT model.

**canonical correlation analysis**. Canonical correlation analysis attempts to describe the relationships between two sets of variables by finding linear combinations of each so that the correlation between the linear combinations is maximized.

**canonical discriminant analysis**. Canonical linear discriminant analysis is LDA where describing how groups are separated is of primary interest. Also see *linear discriminant analysis*.

**canonical link**. Corresponding to each family of distributions in a generalized linear model is a canonical link function for which there is a sufficient statistic with the same dimension as the number of parameters in the linear predictor. The use of canonical link functions provides the GLM with desirable statistical properties, especially when the sample size is small.

**canonical loadings**. The canonical loadings are coefficients of canonical linear discriminant functions. Also see *canonical discriminant analysis* and *loading*.

**canonical variate set**. The canonical variate set is a linear combination or weighted sum of variables obtained from canonical correlation analysis. Two sets of variables are analyzed in canonical correlation analysis. The first canonical variate of the first variable set is the linear combination in standardized form that has maximal correlation with the first canonical variate from the second variable set. The subsequent canonical variates are uncorrelated to the previous and have maximal correlation under that constraint.

**case–control studies**. In case–control studies, cases meeting a fixed criterion are matched to noncases ex post to study differences in possible covariates. Relative sample sizes are usually fixed at 1:1 or 1:2 but sometimes vary once the survey is complete. In any case, sample sizes do not reflect the distribution in the underlying population.

**casewise deletion**. See *listwise deletion*.

**categorical item**. A categorical item is an item that is either ordinal or nominal.

**category boundary curve**. See *boundary characteristic curve*.

**category boundary location**. See *difficulty*.

**category characteristic curve**. A category characteristic curve (CCC) expresses the probability of a response in a given item category as a function of the latent trait.

**category response function**. See *category characteristic curve*.

**cause-specific hazard**. In a competing-risks analysis, the cause-specific hazard is the hazard function that generates the events of a given type. For example, if heart attack and stroke are competing events, then the cause-specific hazard for heart attacks describes the biological mechanism behind heart attacks independently of that for strokes. Cause-specific hazards can be modeled using Cox regression, treating the other events as censored.

**CCC**. See *category characteristic curve*.

**c-conformability**. Matrix, vector, or scalar $A$ is said to be c-conformable with matrix, vector, or scalar $B$ if they have the same number of rows and columns (they are *p-conformable*), or if they have the same number of rows and one is a vector, or if they have the same number of columns and one is a vector, or if one or the other is a scalar. c stands for colon; c-conformable matrices are suitable for being used with Mata's *:op* operators. $A$ and $B$ are c-conformable if and only if

| $A$ | $B$ |
|---|---|
| $r \times c$ | $r \times c$ |
| $r \times 1$ | $r \times c$ |
| $1 \times c$ | $r \times c$ |
| $1 \times 1$ | $r \times c$ |
| $r \times c$ | $r \times 1$ |
| $r \times c$ | $1 \times c$ |
| $r \times c$ | $1 \times 1$ |

The idea behind c-conformability is generalized elementwise operation. Consider $C$=$A$ *:*$*$*$B$. If $A$ and $B$ have the same number of rows and have the same number of columns, then $||C_{ij}|| = ||A_{ij}*B_{ij}||$. Now say that $A$ is a column vector and $B$ is a matrix. Then $||C_{ij}|| = ||A_i*B_{ij}||$: each element of $A$ is applied to the entire row of $B$. If $A$ is a row vector, each column of $A$ is applied to the entire column of $B$. If $A$ is a scalar, $A$ is applied to every element of $B$. And then all the rules repeat, with the roles of $A$ and $B$ interchanged. See [M-2] **op_colon** for a complete definition.

**CCT**. See *controlled clinical trial study*.

**cell means**. These are means of the outcome of interest within cells formed by the cross-classification of the two factors. See [PSS] **power twoway** and [PSS] **power repeated**.

**cell-means model**. A cell-means model is an ANOVA model formulated in terms of cell means.

**censored**, **censoring**, **left-censoring**, and **right-censoring**. An observation is left-censored when the exact time of failure is not known; it is merely known that the failure occurred before $t_l$. Suppose that the event of interest is becoming employed. If a subject is already employed when first interviewed, his outcome is left-censored.

An observation is right-censored when the time of failure is not known; it is merely known that the failure occurred after $t_r$. If a patient survives until the end of a study, the patient's time of death is right-censored.

In common usage, *censored* without a modifier means right-censoring.

Also see *truncation, left-truncation, and right-truncation*.

**census**. When a census of the population is conducted, every individual in the population participates in the survey. Because of the time, cost, and other constraints, the data collected in a census are typically limited to items that can be quickly and easily determined, usually through a questionnaire.

**centered data**. Centered data has zero mean. You can center data $\mathbf{x}$ by taking $\mathbf{x} - \overline{\mathbf{x}}$.

**central posterior interval**. See *equal-tailed credible interval*.

**centroid-linkage clustering**. Centroid-linkage clustering is a hierarchical clustering method that computes the proximity between two groups as the proximity between the group means.

**CFA**, **CFA models**. CFA stands for confirmatory factor analysis. It is a way of analyzing measurement models. CFA models is a synonym for measurement models.

**chained equations**. See *fully conditional specification*.

**chi-squared test**, $\chi^2$ **test**. This test for which either an asymptotic sampling distribution or a sampling distribution of a test statistic is $\chi^2$. See [PSS] **power onevariance** and [PSS] **power twoproportions**.

**Cholesky ordering**. Cholesky ordering is a method used to orthogonalize the error term in a VAR or VECM to impose a recursive structure on the dynamic model, so that the resulting impulse–response functions can be given a causal interpretation. The method is so named because it uses the Cholesky decomposition of the error-covariance matrix.

**CI**. CI is an abbreviation for confidence interval.

**CI assumption**. See *conditional-independence assumption*.

**CIF**. See *cumulative incidence function*.

**class programming**. See *object-oriented programming*.

**classical scaling**. Classical scaling is a method of performing MDS via an eigen decomposition. This is contrasted to modern MDS, which is achieved via the minimization of a loss function. Also see *multidimensional scaling* and *modern scaling*.

**classification**. Classification is the act of allocating or classifying observations to groups as part of discriminant analysis. In some sources, classification is synonymous with cluster analysis.

**classification function**. Classification functions can be obtained after LDA or QDA. They are functions based on Mahalanobis distance for classifying observations to the groups. See *discriminant function* for an alternative. Also see *linear discriminant analysis* and *quadratic discriminant analysis*.

**classification table**. A classification table, also known as a confusion matrix, gives the count of observations from each group that are classified into each of the groups as part of a discriminant analysis. The element at $(i, j)$ gives the number of observations that belong to the $i$th group but were classified into the $j$th group. High counts are expected on the diagonal of the table where observations are correctly classified, and small values are expected off the diagonal. The columns of the matrix are categories of the predicted classification; the rows represent the actual group membership.

**clinical trial**. A clinical trials is an experiment testing a medical treatment or procedure on human subjects.

**clinically meaningful difference**, **clinically meaningful effect**, **clinically significant difference**. Clinically meaningful difference represents the magnitude of an effect of interest that is of clinical importance. What is meant by "clinically meaningful" may vary from study to study. In clinical trials, for example, if no prior knowledge is available about the performance of the considered clinical procedure, a standardized effect size (adjusted for standard deviation) between 0.25 and 0.5 may be considered of clinical importance.

**cluster**. A cluster is a collection of individuals that are sampled as a group. Although the cost in time and money can be greatly decreased, cluster sampling usually results in larger variance estimates when compared with designs in which individuals are sampled independently.

**cluster analysis**. Cluster analysis is a method for determining natural groupings or clusters of observations.

**cluster tree**. See *dendrogram*.

**clustered**, **vce(cluster clustvar)**. Clustered is the name we use for the generalized Huber/White/sandwich estimator of the VCE, which is the `robust` technique generalized to relax the assumption that errors are independent across observations to be that they are independent across clusters of observations. Within cluster, errors may be correlated.

Clustered standard errors are reported when `sem` or `gsem` option `vce(cluster` *clustvar*`)` is specified. The other available techniques are OIM, OPG, robust, bootstrap, and jackknife. Also available for `sem` only is EIM.

**clustering**. See *cluster analysis*.

**Cochran–Armitage test**. The Cochran–Armitage test is a test for a linear trend in a probability of response in a $J \times 2$ contingency table. The test statistic has an asymptotic $\chi^2$ distribution under the null hypothesis. See [PSS] **power trend**.

**Cochran–Mantel–Haenszel test**. See *Mantel–Haenszel test*.

**Cochrane–Orcutt estimator**. This estimation is a linear regression estimator that can be used when the error term exhibits first-order autocorrelation. An initial estimate of the autocorrelation parameter $\rho$ is obtained from OLS residuals, and then OLS is performed on the transformed data $\widetilde{y}_t = y_t - \rho y_{t-1}$ and $\widetilde{\mathbf{x}}_t = \mathbf{x}_t - \rho \mathbf{x}_{t-1}$.

**code pages**. A code page maps extended ASCII values to a set of characters, typically for a specific language or set of languages. For example, the most commonly used code page is Windows-1252, which maps extended ASCII values to characters used in Western European languages. Code pages are essentially encodings for extended ASCII characters.

**code point**. A code point is the numerical value or position that represents a single character in a text system such as ASCII or Unicode. The original ASCII encoding system contains only 128 code points and thus can represent only 128 characters. Historically, the 128 additional bytes of extended ASCII have been encoded in many different and inconsistent ways to provide additional sets of 128 code points. The formal Unicode specification has 1,114,112 possible code points, of

which roughly 250,000 have been assigned to actual characters. Stata uses UTF-8 encoding for Unicode. Note that the UTF-8–encoded version of a code point does not have the same numeric value as the code point itself.

**coefficient of determination**. The coefficient of determination is the fraction (or percentage) of variation (variance) explained by an equation of a model. The coefficient of determination is thus like $R^2$ in linear regression.

**cohort studies**. In cohort studies, a group that is well defined is monitored over time to track the transition of noncases to cases. Cohort studies differ from incidence studies in that they can be retrospective as well as prospective.

**cointegrating vector**. A cointegrating vector specifies a stationary linear combination of nonstationary variables. Specifically, if each of the variables $x_1, x_2, \ldots, x_k$ is integrated of order one and there exists a set of parameters $\beta_1, \beta_2, \ldots, \beta_k$ such that $z_t = \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_k x_k$ is a stationary process, the variables $x_1, x_2, \ldots, x_k$ are said to be cointegrated, and the vector $\boldsymbol{\beta}$ is known as a cointegrating vector.

**colon operators**. Colon operators are operators preceded by a colon, and the colon indicates that the operator is to be performed elementwise. *A*`:*`*B* indicates element-by-element multiplication, whereas *A*`*`*B* indicates matrix multiplication. Colons may be placed in front of any operator. Usually one thinks of elementwise as meaning $c_{ij} = a_{ij}$ <*op*> $b_{ij}$, but in Mata, elementwise is also generalized to include c-conformability. See [M-2] **op_colon**.

**column stripes**. See *row and column stripes*.

**column-major order**. Matrices are stored as vectors. Column-major order specifies that the vector form of a matrix is created by stacking the columns. For instance,

```
: A
      1   2
    +-------+
  1 |  1   4|
  2 |  2   5|
  3 |  3   6|
    +-------+
```

is stored as

```
      1   2   3   4   5   6
    +-----------------------+
  1 |  1   2   3   4   5   6|
    +-----------------------+
```

in column-major order. The LAPACK functions use column-major order. Mata uses row-major order. See *row-major order*.

**colvector**. See *vector, colvector, and rowvector*.

**command language**. Stata's `sem` and `gsem` command provide a way to specify SEMs. The alternative is to use the Builder to draw path diagrams; see [SEM] **intro 2**, [SEM] **Builder**, and [SEM] **Builder, generalized**.

**common factors**. Common factors are found by factor analysis. They linearly reconstruct the original variables. In factor analysis, reconstruction is defined in terms of prediction of the correlation matrix of the original variables.

**common odds ratio**. A measure of association in stratified $2 \times 2$ tables. It can be viewed as a weighted aggregate of stratum-specific odds ratios.

**communality**. Communality is the proportion of a variable's variance explained by the common factors in factor analysis. It is also "1 − uniqueness". Also see *uniqueness*.

**comparison value**. See *alternative value*.

**competing risks**. Competing risks models are survival-data models in which the failures are generated by more than one underlying process. For example, death may be caused by either heart attack or stroke. There are various methods for dealing with competing risks. One direct way is to duplicate failures for one competing risk as censored observations for the other risk and stratify on the risk type. Another is to directly model the cumulative incidence of the event of interest in the presence of competing risks. The former method uses `stcox` and the latter, `stcrreg`.

**complementary log-log regression**. Complementary log-log regression is a term for generalized linear response functions that are family Bernoulli, link cloglog. It is used for binary outcome data. Complementary log-log regression is also known in Stata circles as cloglog regression or just cloglog. See *generalized linear response functions*.

**complete and incomplete observations**. An observation in the $m = 0$ data is said to be complete if no imputed variable in the observation contains soft missing (`.`). Observations that are not complete are said to be incomplete.

**complete data**. Data that do not contain any missing values.

**complete degrees of freedom**. The degrees of freedom that would have been used for inference if the data were complete.

**complete DF**. See *complete degrees of freedom*.

**complete-cases analysis**. See *listwise deletion*.

**completed data**. See *imputed data*.

**complete-data analysis**. The analysis or estimation performed on the complete data, the data for which all values are observed. This term does not refer to analysis or estimation performed on the subset of complete observations. Do not confuse this with completed-data analysis.

**completed-data analysis**. The analysis or estimation performed on the made-to-be completed (imputed) data. This term does not refer to analysis or estimation performed on the subset of complete observations.

**complete-linkage clustering**. Complete-linkage clustering is a hierarchical clustering method that uses the farthest pair of observations between two groups to determine the proximity of the two groups.

**complex**. A matrix is said to be complex if its elements are complex numbers. Complex is one of two numeric types in Stata, the other being real. Complex is generally used to describe how a matrix is stored and not the kind of numbers that happen to be in it: complex matrix $Z$ might happen to contain real numbers. Also see *type, eltype, and orgtype*.

**component scores**. Component scores are calculated after PCA. Component scores are the coordinates of the original variables in the space of principal components.

**compound symmetry**. A covariance matrix has a compound-symmetry structure if all the variances are equal and all the covariances are equal. This is a special case of the sphericity assumption.

**Comrey's tandem 1 and 2 rotations**. Comrey (1967) describes two rotations, the first (tandem 1) to judge which "small" factors should be dropped, the second (tandem 2) for "polishing".

Tandem principle 1 minimizes the criterion

$$c(\mathbf{\Lambda}) = \left\langle \mathbf{\Lambda}^2, (\mathbf{\Lambda}\mathbf{\Lambda}')^2\mathbf{\Lambda}^2 \right\rangle$$

Tandem principle 2 minimizes the criterion

$$c(\mathbf{\Lambda}) = \langle \mathbf{\Lambda}^2, \{\mathbf{1}\mathbf{1}' - (\mathbf{\Lambda}\mathbf{\Lambda}')^2\}\mathbf{\Lambda}^2 \rangle$$

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$.

**concordant pairs**. In a $2 \times 2$ contingency table, a concordant pair is a pair of observations that are both either successes or failures. Also see *discordant pairs* and *Introduction* under *Remarks and examples* in [PSS] **power pairedproportions**.

**condition number**. The condition number associated with a numerical problem is a measure of that quantity's amenability to digital computation. A problem with a low condition number is said to be well conditioned, whereas a problem with a high condition number is said to be ill conditioned.

Sometimes reciprocals of condition numbers are reported and yet authors will still refer to them sloppily as condition numbers. Reciprocal condition numbers are often scaled between 0 and 1, with values near `epsilon(1)` indicating problems.

**conditional conjugacy**. See *semiconjugate prior*.

**conditional fixed-effects model**. In general, including panel-specific dummies to control for fixed effects in nonlinear models results in inconsistent estimates. For some nonlinear models, the fixed-effect term can be removed from the likelihood function by conditioning on a sufficient statistic. For example, the conditional fixed-effect logit model conditions on the number of positive outcomes within each panel.

**conditional hazard function**. In the context of mixed- and random-effects survival models, the conditional hazard function is the hazard function computed conditionally on the random effects. Even within the same covariate pattern, the conditional hazard function varies among individuals who belong to different random-effects clusters.

**conditional hazard ratio**. In the context of mixed- and random effects survival models, the conditional hazard ratio is the ratio of two conditional hazard functions evaluated at different values of the covariates. Unless stated differently, the denominator corresponds to the conditional hazard function at baseline, that is, with all the covariates set to zero.

**conditional imputation**. Imputation performed using a conditional sample, a restricted part of the sample. Missing values outside the conditional sample are replaced with a conditional constant, the constant value of the imputed variable in the nonmissing observations outside the conditional sample. See *Conditional imputation* under *Remarks and examples* of [MI] **mi impute**.

**conditional independence**. The assumption that responses are not correlated after controlling for the latent trait.

**conditional mean**. The conditional mean expresses the average of one variable as a function of some other variables. More formally, the mean of $y$ conditional on $\mathbf{x}$ is the mean of $y$ for given values of $\mathbf{x}$; in other words, it is $E(y|\mathbf{x})$.

A conditional mean is also known as a regression or as a conditional expectation.

**conditional normality assumption**. See *normality assumption, joint and conditional*.

**conditional overdispersion**. In a negative binomial mixed-effects model, conditional overdispersion is overdispersion conditional on random effects. Also see *overdispersion*.

**conditional variance**. Although the conditional variance is simply the variance of a conditional distribution, in time-series analysis the conditional variance is often modeled as an autoregressive process, giving rise to ARCH models.

**conditional-independence assumption**. The conditional-independence assumption requires that the common variables that affect treatment assignment and treatment-specific outcomes be observable. The dependence between treatment assignment and treatment-specific outcomes can be removed by conditioning on these observable variables.

This assumption is also known as a selection-on-observables assumption because its central tenet is the observability of the common variables that generate the dependence.

**configuration**. The configuration in MDS is a representation in a low-dimensional (usually 2-dimensional) space with distances in the low-dimensional space approximating the dissimilarities or disparities in high-dimensional space. Also see *multidimensional scaling*, *dissimilarity*, and *disparity*.

**configuration plot**. A configuration plot after MDS is a (usually 2-dimensional) plot of labeled points showing the low-dimensional approximation to the dissimilarities or disparities in high-dimensional space. Also see *multidimensional scaling*, *dissimilarity*, and *disparity*.

**conformability**. Conformability refers to row-and-column matching between two or more matrices. For instance, to multiply $A*B$, $A$ must have the same number of columns as $B$ has rows. If that is not true, then the matrices are said to be nonconformable (for multiplication).

Three kinds of conformability are often mentioned in the Mata documentation: *p-conformability*, *c-conformability*, and *r-conformability*.

**confounding**. In the analysis of epidemiological tables, factor or interaction effects are said to be confounded when the effect of one factor is combined with that of another. For example, the effect of alcohol consumption on esophageal cancer may be confounded with the effects of age, smoking, or both. In the presence of confounding, it is often useful to stratify on the confounded factors that are not of primary interest, in the above example, age and smoking.

**confusion matrix**. A confusion matrix is a synonym for a classification table after discriminant analysis. See *classification table*.

**conjugate**. If $z = a + b\mathrm{i}$, the conjugate of $z$ is $\mathrm{conj}(z) = a - b\mathrm{i}$. The conjugate is obtained by reversing the sign of the imaginary part. The conjugate of a real number is the number itself.

**conjugate prior**. A prior distribution is conjugate for a family of likelihood distributions if the prior and posterior distributions belong to the same family of distributions. For example, the gamma distribution is a conjugate prior for the Poisson likelihood. Conjugacy may provide an efficient way of sampling from posterior distributions and is used in Gibbs sampling.

**conjugate transpose**. See *transpose*.

**constraints**. See *parameter constraints*.

**containment denominator degrees of freedom (DDF) method**. See *ANOVA denominator degrees of freedom (DDF) method*.

**continuous parameters**. Continuous parameters are parameters with continuous prior distributions.

**contrast** or **contrasts**. In ANOVA, a contrast in $k$ population means is defined as a linear combination

$$\delta = c_1\mu_1 + c_2\mu_2 + \cdots + c_k\mu_k$$

where the coefficients satisfy

$$\sum_{i=1}^{k} c_i = 0$$

In the multivariate setting (MANOVA), a contrast in $k$ population mean vectors is defined as

$$\boldsymbol{\delta} = c_1\boldsymbol{\mu}_1 + c_2\boldsymbol{\mu}_2 + \cdots c_k\boldsymbol{\mu}_k$$

where the coefficients again satisfy

$$\sum_{i=1}^{k} c_i = 0$$

The univariate hypothesis $\delta = 0$ may be tested with `contrast` (or `test`) after ANOVA. The multivariate hypothesis $\boldsymbol{\delta} = 0$ may be tested with `manovatest` after MANOVA.

**control group**. A control group comprises subjects that are randomly assigned to a group where they receive no treatment or receives a standard treatment. In hypothesis testing, this is usually a reference group. Also see *experimental group*.

**controlled clinical trial study**. This is an experimental study in which treatments are assigned to two or more groups of subjects without the randomization.

**correlated uniqueness model**. A correlated uniqueness model is a kind of measurement model in which the errors of the measurements has a structured correlation. See [SEM] **intro 5**.

**correlation structure**. A correlation structure is a set of assumptions imposed on the within-panel variance–covariance matrix of the errors in a panel-data model. See [XT] **xtgee** for examples of different correlation structures.

**correlogram**. A correlogram is a table or graph showing the sample autocorrelations or partial autocorrelations of a time series.

**correspondence analysis**. Correspondence analysis (CA) gives a geometric representation of the rows and columns of a two-way frequency table. The geometric representation is helpful in understanding the similarities between the categories of variables and associations between variables. CA is calculated by singular value decomposition. Also see *singular value decomposition*.

**correspondence analysis projection**. A correspondence analysis projection is a line plot of the row and column coordinates after CA. The goal of this graph is to show the ordering of row and column categories on each principal dimension of the analysis. Each principal dimension is represented by a vertical line; markers are plotted on the lines where the row and column categories project onto the dimensions. Also see *correspondence analysis*.

**costs**. Costs in discriminant analysis are the cost of misclassifying observations.

**counterfactual**. A counterfactual is an outcome a subject would have obtained had that subject received a different level of treatment. In the binary-treatment case, the counterfactual outcome for a person who received treatment is the outcome that person would have obtained had the person instead not received treatment; similarly, the counterfactual outcome for a person who did not receive treatment is the outcome that person would have obtained had the person received treatment.

Also see *potential outcome*.

**count-time data**. See *ct data*.

**covariance stationarity**. A process is covariance stationary if the mean of the process is finite and independent of $t$, the unconditional variance of the process is finite and independent of $t$, and the covariance between periods $t$ and $t-s$ is finite and depends on $t-s$ but not on $t$ or $s$ themselves. Covariance-stationary processes are also known as weakly stationary processes.

**covariance structure**. In a mixed-effects model, covariance structure refers to the variance–covariance structure of the random effects.

**covariates**. Covariates are the explanatory variables that appear in a model. For instance, if survival time were to be explained by age, sex, and treatment, then those variables would be the covariates. Also see *time-varying covariates*.

**covarimin rotation**. Covarimin rotation is an orthogonal rotation equivalent to varimax. Also see *varimax rotation*.

**Crawford–Ferguson rotation**. Crawford–Ferguson (1970) rotation is a general oblique rotation with several interesting special cases.

Special cases of the Crawford–Ferguson rotation include

| $\kappa$ | Special case |
|---|---|
| 0 | quartimax / quartimin |
| $1/p$ | varimax / covarimin |
| $f/(2p)$ | equamax |
| $(f-1)/(p+f-2)$ | parsimax |
| 1 | factor parsimony |

$p$ = number of rows of $\mathbf{A}$.
$f$ = number of columns of $\mathbf{A}$.

Where $\mathbf{A}$ is the matrix to be rotated, $\mathbf{T}$ is the rotation and $\mathbf{\Lambda} = \mathbf{AT}$. The Crawford–Ferguson rotation is achieved by minimizing the criterion

$$c(\mathbf{\Lambda}) = \frac{1-\kappa}{4}\left\langle \mathbf{\Lambda}^2, \mathbf{\Lambda}^2(\mathbf{1}\mathbf{1}' - \mathbf{I})\right\rangle + \frac{\kappa}{4}\left\langle \mathbf{\Lambda}^2, (\mathbf{1}\mathbf{1}' - \mathbf{I})\mathbf{\Lambda}^2\right\rangle$$

Also see *oblique rotation*.

**credible interval**. In Bayesian analysis, the credible interval of a scalar model parameter is an interval from the domain of the marginal posterior distribution of that parameter. Two types of credible intervals are typically used in practice: equal-tailed credible intervals and HPD credible intervals.

**credible level**. The credible level is a probability level between 0% and 100% used for calculating credible intervals in Bayesian analysis. For example, a 95% credible interval for a scalar parameter is an interval the parameter belongs to with the probability of 95%.

**critical region**. See *rejection region*.

**critical value**. In hypothesis testing, a critical value is a boundary of the rejection region.

**cross-correlation function**. The cross-correlation function expresses the correlation between one series at time $t$ and another series at time $t-k$ as a function of the time $t$ and lag $k$. If both series are stationary, the function does not depend on $t$. The function is not symmetric about $k = 0$: $\rho_{12}(k) \neq \rho_{12}(-k)$.

**crossed variables** or **stacked variables**. In CA and MCA crossed categorical variables may be formed from the interactions of two or more existing categorical variables. Variables that contain these interactions are called crossed or stacked variables.

**crossed-effects model**. A crossed-effects model is a mixed-effects model in which the levels of random effects are not nested. A simple crossed-effects model for cross-sectional time-series data would contain a random effect to control for panel-specific variation and a second random effect to control for time-specific random variation. Rather than being nested within panel, in this model a random effect due to a given time is the same for all panels.

**crossed-random effects**. See *crossed-effects model*.

**crossing variables** or **stacking variables**. In CA and MCA, crossing or stacking variables are the existing categorical variables whose interactions make up a crossed or stacked variable.

**cross-sectional** or **prevalence studies**. Cross-sectional studies sample distributions of healthy and diseased subjects in the population at one point in time.

**cross-sectional data**. Cross-sectional data refers to data collected over a set of individuals, such as households, firms, or countries sampled from a population at a given point in time.

**cross-sectional study.** This type of observational study measures various population characteristics at one point in time or over a short period of time. For example, a study of the prevalence of breast cancer in the population is a cross-sectional study.

**cross-sectional time-series data**. Cross-sectional time-series data is another name for panel data. The term *cross-sectional time-series data* is sometimes reserved for datasets in which a relatively small number of panels were observed over many periods. See also *panel data*.

**crude estimate**. A crude estimate has not been adjusted for the effects of other variables. Disregarding a stratification variable, for example, yields a crude estimate.

**ct data**. ct stands for count time. ct data are an aggregate organized like a life table. Each observation records a time, the number known to fail at that time, the number censored, and the number of new entries. See [ST] **ctset**.

**cumulative hazard**. See *hazard, cumulative hazard, and hazard ratio*.

**cumulative incidence estimator**. In a competing-risks analysis, the cumulative incidence estimator estimates the cumulative incidence function (CIF). Assume for now that you have one event of interest (type 1) and one competing event (type 2). The cumulative incidence estimator for type 1 failures is then obtained by

$$\widehat{\text{CIF}}_1(t) = \sum_{j:t_j \le t} \widehat{h}_1(t_j)\widehat{S}(t_{j-1})$$

with

$$\widehat{S}(t) = \prod_{j:t_j \le t} \left\{1 - \widehat{h}_1(t_j) - \widehat{h}_2(t_j)\right\}$$

The $t_j$ index the times at which events (of any type) occur, and $\widehat{h}_1(t_j)$ and $\widehat{h}_2(t_j)$ are the cause-specific hazard contributions for type 1 and type 2, respectively. $\widehat{S}(t)$ estimates the probability that you are event free at time $t$.

The above generalizes to multiple competing events in the obvious way.

**cumulative incidence function**. In a competing-risks analysis, the cumulative incidence function, or CIF, is the probability that you will observe the event of primary interest before a given time. Formally,

$$\text{CIF}(t) = P(T \le t \text{ and event type of interest})$$

for time-to-failure, $T$.

**cumulative subhazard**. See *subhazard, cumulative subhazard, and subhazard ratio*.

**curse of dimensionality**. The curse of dimensionality is a term coined by Richard Bellman (1961) to describe the problem caused by the exponential increase in size associated with adding extra dimensions to a mathematical space. On the unit interval, 10 evenly spaced points suffice to sample with no more distance than 0.1 between them; however a unit square requires 100 points, and a unit cube requires 1000 points. Many multivariate statistical procedures suffer from the curse of dimensionality. Adding variables to an analysis without adding sufficient observations can lead to imprecision.

**curved path**. See *path*.

**cusum plot, CUSUM plot**. The cusum (CUSUM) plot of an MCMC sample is a plot of cumulative sums of the differences between sample values and their overall mean against the iteration number. Cusum plots are useful graphical summaries for detecting early drifts in MCMC samples.

**cyclical component**. A cyclical component is a part of a time series that is a periodic function of time. Deterministic functions of time are deterministic cyclical components, and random functions of time are stochastic cyclical components. For example, fixed seasonal effects are deterministic cyclical components and random seasonal effects are stochastic seasonal components.

Random coefficients on time inside of periodic functions form an especially useful class of stochastic cyclical components; see [TS] **ucm**.

**DA**. See *data augmentation*.

**data augmentation**. An MCMC method used for the imputation of missing data.

**data matrix**. A dataset containing $n$ observations on $k$ variables in often stored in an $n \times k$ matrix. An observation refers to a row of that matrix; a variable refers to a column. When the rows are observations and the columns are variables, the matrix is called a data matrix.

**declarations**. Declarations state the *eltype* and *orgtype* of functions, arguments, and variables. In

```
real matrix myfunc(real vector A, complex scalar B)
{
     real scalar i
     ...
}
```

the `real matrix` is a function declaration, the `real vector` and `complex scalar` are argument declarations, and `real scalar i` is a variable declaration. The `real matrix` states the function returns a real matrix. The `real vector` and `complex scalar` state the kind of arguments `myfunc()` expects and requires. The `real scalar i` helps Mata to produce more efficient compiled code.

Declarations are optional, so the above could just as well have read

```
function myfunc(A, B)
{
     ...
}
```

When you omit the function declaration, you must substitute the word `function`.

When you omit the other declarations, `transmorphic matrix` is assumed, which is fancy jargon for a matrix that can hold anything. The advantages of explicit declarations are that they reduce the chances you make a mistake either in coding or in using the function, and they assist Mata in producing more efficient code. Working interactively, most people omit the declarations.

See [M-2] **declarations** for more information.

**defective matrix**. An $n \times n$ matrix is defective if it does not have $n$ linearly independent eigenvectors.

**DEFF** and **DEFT**. DEFF and DEFT are design effects. Design effects compare the sample-to-sample variability from a given survey dataset with a hypothetical SRS design with the same number of individuals sampled from the population.

DEFF is the ratio of two variance estimates. The design-based variance is in the numerator; the hypothetical SRS variance is in the denominator.

DEFT is the ratio of two standard-error estimates. The design-based standard error is in the numerator; the hypothetical SRS with-replacement standard error is in the denominator. If the given survey design is sampled with replacement, DEFT is the square root of DEFF.

**degree-of-freedom adjustment**. In estimates of variances and covariances, a finite-population degree-of-freedom adjustment is sometimes applied to make the estimates unbiased.

Let's write an estimated variance as $\widehat{\sigma}_{ii}$ and write the "standard" formula for the variance as $\widehat{\sigma}_{ii} = S_{ii}/N$. If $\widehat{\sigma}_{ii}$ is the variance of observable variable $x_i$, it can readily be proven that $S_{ii}/N$ is a biased estimate of the variances in samples of size $N$ and that $S_{ii}/(N-1)$ is an unbiased estimate. It is usual to calculate variances using $S_{ii}/(N-1)$, which is to say, the "standard" formula has a multiplicative degree-of-freedom adjustment of $N/(N-1)$ applied to it.

If $\widehat{\sigma}_{ii}$ is the variance of estimated parameter $\beta_i$, a similar finite-population degree-of-freedom adjustment can sometimes be derived that will make the estimate unbiased. For instance, if $\beta_i$ is a coefficient from a linear regression, an unbiased estimate of the variance of regression coefficient $\beta_i$ is $S_{ii}/(N-p-1)$, where $p$ is the total number of regression coefficients estimated excluding the intercept. In other cases, no such adjustment can be derived. Such estimators have no derivable finite-sample properties and one is left only with the assurances provided by its provable asymptotic properties. In such cases, the variance of coefficient $\beta_i$ is calculated as $S_{ii}/N$, which can be derived on theoretical grounds. SEM is an example of such an estimator.

SEM is a remarkably flexible estimator and can reproduce results that can sometimes be obtained by other estimators. SEM might produce asymptotically equivalent results, or it might produce identical results depending on the estimator. Linear regression is an example in which `sem` and `gsem` produce the same results as `regress`. The reported standard errors, however, will not look identical because the linear-regression estimates have the finite-population degree-of-freedom adjustment applied to them and the SEM estimates do not. To see the equivalence, you must undo the adjustment on the reported linear regression standard errors by multiplying them by $\sqrt{\{(N-p-1)/N\}}$.

**delta**. Delta, $\delta$, in the context of power and sample-size calculations, denotes the effect size.

**delta method**. See *linearization*.

**dendrogram** or **cluster tree**. A dendrogram or cluster tree graphically presents information about how observations are grouped together at various levels of (dis)similarity in hierarchical cluster analysis. At the bottom of the dendrogram, each observation is considered its own cluster. Vertical lines extend up for each observation, and at various (dis)similarity values, these lines are connected to the lines from other observations with a horizontal line. The observations continue to combine until, at the top of the dendrogram, all observations are grouped together. Also see *hierarchical clustering*.

**dereference**. Dereferencing is an action performed on pointers. Pointers contain memory addresses, such as 0x2a1228. One assumes something of interest is stored at 0x2a1228, say, a real scalar equal to 2. When one accesses that 2 via the pointer by coding `*p`, one is said to be dereferencing the pointer. Unary `*` is the dereferencing operator.

**design effects**. See *DEFF* and *DEFT*.

**deterministic trend**. A deterministic trend is a deterministic function of time that specifies the long-run tendency of a time series.

**deviance information criterion, DIC**. The deviance information criterion (DIC) is an information based criterion used for Bayesian model selection. It is an analog of AIC and is given by the formula $D(\bar{\theta}) + 2 \times p_D$, where $D(\bar{\theta})$ is the deviance at the sample mean and $p_D$ is the effective complexity, a quantity equivalent to the number of parameters in the model. Models with smaller DIC are preferred.

**DFBETA**. A DFBETA measures the change in the regressor's coefficient because of deletion of that subject. Also see *partial DFBETA*.

**diagonal matrix**. A matrix is diagonal if its off-diagonal elements are zero; $A$ is diagonal if $A[i,j]==0$ for $i!=j$. Usually, diagonal matrices are also *square*. Some definitions require that a diagonal matrix also be a square matrix.

**diagonal of a matrix**. The diagonal of a matrix is the set of elements $A[i,j]$.

**dichotomous item**. See *binary item*.

**difference operator**. The difference operator $\Delta$ denotes the change in the value of a variable from period $t-1$ to period $t$. Formally, $\Delta y_t = y_t - y_{t-1}$, and $\Delta^2 y_t = \Delta(y_t - y_{t-1}) = (y_t - y_{t-1}) - (y_{t-1} - y_{t-2}) = y_t - 2y_{t-1} + y_{t-2}$.

**difficulty**. A level of the latent trait needed to pass an item or an item category.

**dilation**. A dilation stretches or shrinks distances in Procrustes rotation.

**dimension**. A dimension is a parameter or measurement required to define a characteristic of an object or observation. Dimensions are the variables in the dataset. Weight, height, age, blood pressure, and drug dose are examples of dimensions in health data. Number of employees, gross income, net income, tax, and year are examples of dimensions in data about companies.

**diminishing adaptation**. Diminishing adaptation of the adaptive algorithm is the type of adaptation in which the amount of adaptation decreases with the size of the MCMC chain.

**direct**, **indirect**, and **total effects**. Consider the following system of equations:

$$\begin{aligned} y_1 &= b_{10} + b_{11}y_2 + b_{12}x_1 + b_{13}x_3 + e_1 \\ y_2 &= b_{20} + b_{21}y_3 + b_{22}x_1 + b_{23}x_4 + e_2 \\ y_3 &= b_{30} + \qquad\quad b_{32}x_1 + b_{33}x_5 + e_3 \end{aligned}$$

The total effect of $x_1$ on $y_1$ is $b_{12} + b_{11}b_{22} + b_{11}b_{21}b_{32}$. It measures the full change in $y_1$ based on allowing $x_1$ to vary throughout the system.

The direct effect of $x_1$ on $y_1$ is $b_{12}$. It measures the change in $y_1$ caused by a change in $x_1$ holding other endogenous variables—namely, $y_2$ and $y_3$—constant.

The indirect effect of $x_1$ on $y_1$ is obtained by subtracting the total and direct effect and is thus $b_{11}b_{22} + b_{11}b_{21}b_{32}$.

**direct standardization**. Direct standardization is an estimation method that allows comparing rates that come from different frequency distributions.

Estimated rates (means, proportions, and ratios) are adjusted according to the frequency distribution from a standard population. The standard population is partitioned into categories called standard strata. The stratum frequencies for the standard population are called standard weights. The standardizing frequency distribution typically comes from census data, and the standard strata are most commonly identified by demographic information such as age, sex, and ethnicity.

**directional test**. See *one-sided test*.

**disambiguation: characters, and bytes, and display columns**. A character is simply the letter or symbol that you want to represent—the letter "a", the punctuation mark ".", or a Chinese logogram. A byte or sequence of bytes is how that character is stored in the computer. And, a display column is the space required to display one typical character in the fixed-width display used by Stata's Results window and Viewer. Some characters are too wide for one display column. Each character is displayed in one or two display columns.

For plain ASCII characters, the number of characters always equals the number of bytes and equals the number of display columns.

For UTF-8 characters that are not plain ASCII, there are usually two bytes per character but there are sometimes three or even four bytes per character, such as for Chinese, Japanese, and Korean (CJK) characters. Characters that are too wide to fit in one display column (such as CJK characters) are displayed in two display columns.

In general, for Unicode characters, the relationship between the number of characters and the number of bytes and the relationship between the number of characters and the number of display columns is more ambiguous. All characters can be stored in four or fewer bytes and are displayed in Stata using two or fewer display columns.

See **[U] 12.4.2.1 Unicode string functions** and **[U] 12.4.2.2 Displaying Unicode characters** to learn how to deal with the distinction between characters, bytes, and display columns in your code.

**discordant pairs**. In a $2 \times 2$ contingency table, discordant pairs are the success-failure or failure-success pairs of observations. Also see *concordant pairs* and *Introduction* under *Remarks and examples* in [PSS] **power pairedproportions**.

**discordant proportion**. This is a proportion of discordant pairs or discordant sets. Also see *Introduction* under *Remarks and examples* in [PSS] **power pairedproportions** as well as *Introduction* under *Remarks and examples* in [PSS] **power mcc**.

**discordant sets**. In a matched study with multiple controls matched to a case, discordant sets are the sets in which there is any success–failure or failure–success match between the case and any matched control. Also see *Introduction* under *Remarks and examples* in [PSS] **power mcc**.

**discrete parameters**. Discrete parameters are parameters with discrete prior distributions.

**discriminant analysis**. Discriminant analysis is used to describe the differences between groups and to exploit those differences when allocating (classifying) observations of unknown group membership. Discriminant analysis is also called classification in many references.

**discriminant function**. Discriminant functions are formed from the eigenvectors from Fisher's approach to LDA. See *linear discriminant analysis*. See *classification function* for an alternative.

**discriminating variables**. Discriminating variables in a discriminant analysis are analyzed to determine differences between groups where group membership is known. These differences between groups are then exploited when classifying observations to the groups.

**discrimination**. A measure of how well an item can distinguish between contiguous latent trait levels near the inflection point of an item characteristic curve.

**disparity**. Disparities are transformed dissimilarities, that is, dissimilarity values transformed by some function. The class of functions to transform dissimilarities to disparities may either be (1) a class of metric, or known functions such as linear functions or power functions that can be parameterized by real scalars or (2) a class of more general (nonmetric) functions, such as any monotonic function. Disparities are used in MDS. Also see *dissimilarity*, *multidimensional scaling*, *metric scaling*, and *nonmetric scaling*.

**display column**. A display column is the space required to display one typical character in the fixed-width display used by Stata's Results window and Viewer. Some characters are too wide for one display column. Each character is displayed in one or two display columns.

All plain ASCII characters (for example, "M" and "9") and many UTF-8 characters that are not plain ASCII (for example, "é") require the same space when using a fixed-width font. That is to say, they all require a single display column.

Characters from non-Latin alphabets, such as Chinese, Cyrillic, Japanese, and Korean, may require two display columns.

See [U] **12.4.2.2 Displaying Unicode characters** for more information.

**dissimilarity**, **dissimilarity matrix**, and **dissimilarity measure**. Dissimilarity or a dissimilarity measure is a quantification of the difference between two things, such as observations or variables or groups of observations or a method for quantifying that difference. A dissimilarity matrix is a matrix containing dissimilarity measurements. Euclidean distance is one example of a dissimilarity measure. Contrast to *similarity*. Also see *proximity* and *Euclidean distance*.

**disturbance term**. The disturbance term encompasses any shocks that occur to the dependent variable that cannot be explained by the conditional (or deterministic) portion of the model.

**divisive hierarchical clustering methods**. Divisive hierarchical clustering methods are top-down methods for hierarchical clustering. All the data begin as a part of one large cluster; with each iteration, a cluster is broken into two to create two new clusters. At the first iteration there are two clusters, then three, and so on. Divisive methods are very computationally expensive. Contrast to *agglomerative hierarchical clustering methods*.

**doubly robust estimator**. A doubly robust estimator only needs one of two auxiliary models to be correctly specified to estimate a parameter of interest.

Doubly robust estimators for treatment effects are consistent when either the outcome model or the treatment model is correctly specified.

**drift**. Drift is the constant term in a unit-root process. In

$$y_t = \alpha + y_{t-1} + \epsilon_t$$

$\alpha$ is the drift when $\epsilon_t$ is a stationary, zero-mean process.

**dropout**. Dropout is the withdrawal of subjects before the end of a study and leads to incomplete or missing data.

**dyadic operator**. Synonym for binary operator.

**dynamic forecast**. A dynamic forecast uses forecast values wherever lagged values of the endogenous variables appear in the model, allowing one to forecast multiple periods into the future.

**dynamic model**. A dynamic model is one in which prior values of the dependent variable or disturbance term affect the current value of the dependent variable.

**dynamic-multiplier function**. A dynamic-multiplier function measures the effect of a shock to an exogenous variable on an endogenous variable. The $k$th dynamic-multiplier function of variable $i$ on variable $j$ measures the effect on variable $j$ in period $t + k$ in response to a one-unit shock to variable $i$ in period $t$, holding everything else constant.

**EB**. See *empirical Bayes*.

**EE estimator**. See *estimating-equation estimator*.

**effect size**. The effect size is the size of the clinically significant difference between the treatments being compared, often expressed as the hazard ratio (or the log of the hazard ratio) in survival analysis.

**effective sample size, ESS**. Effective sample size (ESS) is the MCMC sample size $T$ adjusted for the autocorrelation in the sample. It represents the number of independent observations in an MCMC sample. ESS is used instead of $T$ in calculating MCSE. Small ESS relative to $T$ indicates high autocorrelation and consequently poor mixing of the chain.

**effect-size curve**. The effect-size curve is a graph of the estimated effect size or target parameter as a function of some other study parameter such as the sample size. The effect size or target parameter is plotted on the $y$ axis, and the sample size or other parameter is plotted on the $x$ axis.

**effect-size determination**. This pertains to the computation of an effect size or a target parameter given power, sample size, and other study parameters.

**efficiency**. In the context of MCMC, efficiency is a term used for assessing the mixing quality of an MCMC procedure. Efficient MCMC algorithms are able to explore posterior domains in less time (using fewer iterations). Efficiency is typically quantified by the sample autocorrelation and effective sample size. An MCMC procedure that generates samples with low autocorrelation and consequently high ESS is more efficient.

**eigenvalues and eigenvectors**. A scalar, $\lambda$, is said to be an eigenvalue of square matrix $\mathbf{A}$: $n \times n$ if there is a nonzero column vector $\mathbf{x}$: $n \times 1$ (called an eigenvector) such that

$$\mathbf{A}\mathbf{x} = \lambda\mathbf{x} \tag{1}$$

Equation (1) can also be written

$$(\mathbf{A} - \lambda\mathbf{I})\mathbf{x} = 0$$

where $\mathbf{I}$ is the $n \times n$ identity matrix. A nontrivial solution to this system of $n$ linear homogeneous equations exists if and only if

$$\det(\mathbf{A} - \lambda\mathbf{I}) = 0 \tag{2}$$

This $n$th-degree polynomial in $\lambda$ is called the characteristic polynomial or characteristic equation of $\mathbf{A}$, and the eigenvalues $\lambda$ are its roots, also known as the characteristic roots.

The eigenvector defined by (1) is also known as the right eigenvector, because matrix $\mathbf{A}$ is postmultiplied by eigenvector $\mathbf{x}$. See [M-5] **eigensystem()** and *left eigenvectors*.

**EIM**, **vce(eim)**. EIM stands for expected information matrix, defined as the inverse of the negative of the expected value of the matrix of second derivatives, usually of the log-likelihood function. The EIM is an estimate of the VCE. EIM standard errors are reported when `sem` option `vce(eim)` is specified. EIM is available only with `sem`. The other available techniques are OIM, OPG, robust, clustered, bootstrap, and jackknife.

**eltype**. See *type, eltype, and orgtype*.

**EM**. See *expectation-maximization algorithm*.

**empirical Bayes**. In generalized linear mixed-effects models, empirical Bayes refers to the method of prediction of the random effects after the model parameters have been estimated. The empirical Bayes method uses Bayesian principles to obtain the posterior distribution of the random effects, but instead of assuming a prior distribution for the model parameters, the parameters are treated as given.

In IRT models, empirical Bayes refers to the method of prediction of the latent trait after the model parameters have been estimated. The empirical Bayes method uses Bayesian principles to obtain the posterior distribution of the latent trait. However, instead of assuming a prior distribution for the model parameters, one treats the parameters as given.

**empirical Bayes mean**. See *posterior mean*.

**empirical Bayes mode**. See *posterior mode*.

**encodings**. An encoding is a way of representing a character as a byte or series of bytes. Examples of encoding systems are ASCII and UTF-8. Stata uses UTF-8 encoding.

For more information, see **[U] 12.4.2.3 Encodings**.

**endogenous variable**. An endogenous variable is a regressor that is correlated with the unobservable error term. Equivalently, an endogenous variable is one whose values are determined by the equilibrium or outcome of a structural model.

In the context of structural equation modeling and path diagrams, a variable, either observed or latent, is endogenous if any paths point to it.

Also see *exogenous variable*.

**epsilon(1), etc.**. epsilon(1) refers to the unit roundoff error associated with a computer, also informally called machine precision. It is the smallest amount by which a number may differ from 1. For IEEE double-precision variables, epsilon(1) is approximately 2.22045e–16.

`epsilon(`*x*`)` is the smallest amount by which a real number can differ from *x*, or an approximation thereof; see [M-5] **epsilon( )**.

**equal-allocation design**. See *balanced design*.

**equal-tailed credible interval**. An equal-tailed credible interval is a credible interval defined in such a way that both tails of the marginal posterior distribution have the same probability. A $\{100 \times (1-\alpha)\}\%$ equal-tailed credible interval is defined by the $\alpha/2$th and $\{(1-\alpha)/2\}$th quantiles of the marginal posterior distribution.

**equamax rotation**. Equamax rotation is an orthogonal rotation whose criterion is a weighted sum of the varimax and quartimax criteria. Equamax reflects a concern for simple structure within the rows and columns of the matrix. It is equivalent to oblimin with $\gamma = p/2$, or to the Crawford–Ferguson family with $\kappa = f/2p$, where $p$ is the number of rows of the matrix to be rotated, and $f$ is the number of columns. Also see *orthogonal rotation*, *varimax rotation*, *quartimax rotation*, *oblimin rotation*, and *Crawford–Ferguson rotation*.

**error**, **error variable**. The error is random disturbance $e$ in a linear equation:

$$y = b_0 + b_1 x_1 + b_2 x_2 + \cdots + e$$

An error variable is an unobserved exogenous variable in path diagrams corresponding to $e$. Mathematically, error variables are just another example of latent exogenous variables, but in `sem` and `gsem`, error variables are considered to be in a class by themselves. All (Gaussian) endogenous variables—observed and latent—have a corresponding error variable. Error variables automatically and inalterably have their path coefficients fixed to be 1. Error variables have a fixed naming convention in the software. If a variable is the error for (observed or latent) endogenous variable `y`, then the residual variable's name is `e.y`.

In `sem` and `gsem`, error variables are uncorrelated with each other unless explicitly indicated otherwise. That indication is made in path diagrams by drawing a curved path between the error variables and is indicated in command notation by including `cov(e.`*name1*`*e.`*name2*`)` among the options specified on the `sem` command. In `gsem`, errors for family Gaussian, link log responses are not allowed to be correlated.

**error-components model**. The error-components model is another name for the random-effects model. See also *random-effects model*.

**estimating-equation estimator**. An estimating-equation (EE) estimator calculates parameters estimates by solving a system of equations. Each equation in this system is the sample average of a function that has mean zero.

These estimators are also known as $M$ estimators or $Z$ estimators in the statistics literature and as generalized method of moments (GMM) estimators in the econometrics literature.

**estimation method**. There are a variety of ways that one can solve for the parameters of an SEM. Different methods make different assumptions about the data-generation process, and so it is important that you choose a method appropriate for your model and data; see [SEM] **intro 4**.

**Euclidean distance**. The Euclidean distance between two observations is the distance one would measure with a ruler. The distance between vector $\mathbf{P} = (P_1, P_2, \ldots, P_n)$ and $\mathbf{Q} = (Q_1, Q_2, \ldots, Q_n)$ is given by

$$D(\mathbf{P}, \mathbf{Q}) = \sqrt{(P_1 - Q_1)^2 + (P_2 - Q_2)^2 + \cdots + (P_n - Q_n)^2} = \sqrt{\sum_{i=1}^{n} (P_i - Q_i)^2}$$

**event**. An event is something that happens at an instant in time, such as being exposed to an environmental hazard, being diagnosed as myopic, or becoming employed.

The failure event is of special interest in survival analysis, but there are other equally important events, such as the exposure event, from which analysis time is defined.

In st data, events occur at the end of the recorded time span.

**event of interest**. In a competing-risks analysis, the event of interest is the event that is the focus of the analysis, that for which the cumulative incidence in the presence of competing risks is estimated.

**exact denominator degrees of freedom (DDF) methods**. Residual, repeated, and ANOVA DDF methods are referred to as exact methods because they provide exact $t$ and $F$ sampling distributions of test statistics for special classes of mixed-effects models—linear regression, repeated-measures designs, and traditional ANOVA models—with balanced data. Also see *approximation denominator degrees of freedom (DDF) methods*.

**exact test**. An exact test is one for which the probability of observing the data under the null hypothesis is calculated directly, often by enumeration. Exact tests do not rely on any asymptotic approximations and are therefore widely used with small datasets. See [PSS] **power oneproportion** and [PSS] **power twoproportions**.

**exogenous variable**. An exogenous variable is a regressor that is not correlated with any of the unobservable error terms in the model. Equivalently, an exogenous variable is one whose values change independently of the other variables in a structural model.

In the context of structural equation modeling and path diagrams, a variable, either observed or latent, is exogenous if paths only originate from it, or, equivalently, no paths point to it.

Also see *endogenous variable*.

**exp**. *exp* is used in syntax diagrams to mean "any valid expression may appear here"; see [M-2] **exp**.

**expectation-maximization algorithm**. In the context of MI, an iterative procedure for obtaining maximum likelihood or posterior-mode estimates in the presence of missing data.

**experimental group**. An experimental group is a group of subjects that receives a treatment or procedure of interest defined in a controlled experiment. In hypothesis testing, this is usually a comparison group. Also see *control group*.

**experimental study.** In an experimental study, as opposed to an observational study, the assignment of subjects to treatments is controlled by investigators. For example, a study that compares a new treatment with a standard treatment by assigning each treatment to a group of subjects is an experimental study.

**exponential smoothing**. Exponential smoothing is a method of smoothing a time series in which the smoothed value at period $t$ is equal to a fraction $\alpha$ of the series value at time $t$ plus a fraction $1-\alpha$ of the previous period's smoothed value. The fraction $\alpha$ is known as the smoothing parameter.

**exponential test**. The exponential test is the parametric test comparing the hazard rates, $\lambda_1$ and $\lambda_2$, (or log hazards) from two independent exponential (constant only) regression models with the null hypothesis $H_0$: $\lambda_2 - \lambda_1 = 0$ [or $H_0$: $\ln(\lambda_2) - \ln(\lambda_1) = \ln(\lambda_2/\lambda_1) = 0$].

**exposure odds ratio**. An odds ratio of exposure in cases relative to controls in a case–control study.

**extended ASCII**. Extended ASCII, also known as higher ASCII, is the byte values 128 to 255, which were not defined as part of the original ASCII specification. Various code pages have been defined over the years to map the extended ASCII byte values to many characters not supported in the original ASCII specification, such as Latin letters with diacritical marks, such as "á" and "Á"; non-Latin alphabets, such as Chinese, Cyrillic, Japanese, and Korean; punctuation marks used in non-English languages, such as "<", complex mathematical symbols such as "±", and more.

Although extended ASCII characters are stored in a single byte in ASCII encoding, UTF-8 stores the same characters in two to four bytes. Because each code page maps the extended ASCII values differently, another distinguishing feature of extended ASCII characters is that their meaning can change across fonts and operating systems.

**external variable**. See *global variable*.

**f test**. An $f$ test is a test for which a sampling distribution of a test statistic is an $F$ distribution. See [PSS] **power twovariances**.

**factor**. A factor is an unobserved random variable that is thought to explain variability among observed random variables.

**factor analysis**. Factor analysis is a statistical technique used to explain variability among observed random variables in terms of fewer unobserved random variables called factors. The observed variables are then linear combinations of the factors plus error terms.

If the correlation matrix of the observed variables is $\mathbf{R}$, then $\mathbf{R}$ is decomposed by factor analysis as

$$\mathbf{R} = \mathbf{\Lambda}\mathbf{\Phi}\mathbf{\Lambda}' + \mathbf{\Psi}$$

$\mathbf{\Lambda}$ is the loading matrix, and $\mathbf{\Psi}$ contains the specific variances, for example, the variance specific to the variable not explained by the factors. The default unrotated form assumes uncorrelated common factors, $\mathbf{\Phi} = \mathbf{I}$.

**factor loading plot**. A factor loading plot produces a scatter plot of the factor loadings after factor analysis.

**factor loadings**. Factor loadings are the regression coefficients which multiply the factors to produce the observed variables in the factor analysis.

**factor parsimony**. Factor parsimony is an oblique rotation, which maximizes the column simplicity of the matrix. It is equivalent to a Crawford–Ferguson rotation with $\kappa = 1$. Also see *oblique rotation* and *Crawford–Ferguson rotation*.

**factor scores**. Factor scores are computed after factor analysis. Factor scores are the coordinates of the original variables, $\mathbf{x}$, in the space of the factors. The two types of scoring are regression scoring (Thomson 1951) and Bartlett (1937, 1938) scoring.

Using the symbols defined in *factor analysis*, the formula for regression scoring is

$$\widehat{\mathbf{f}} = \mathbf{\Lambda}'\mathbf{R}^{-1}\mathbf{x}$$

In the case of oblique rotation the formula becomes

$$\widehat{\mathbf{f}} = \boldsymbol{\Phi}\boldsymbol{\Lambda}'\mathbf{R}^{-1}\mathbf{x}$$

The formula for Bartlett scoring is

$$\widehat{\mathbf{f}} = \boldsymbol{\Gamma}^{-1}\boldsymbol{\Lambda}'\boldsymbol{\Psi}^{-1}\mathbf{x}$$

where

$$\boldsymbol{\Gamma} = \boldsymbol{\Lambda}'\boldsymbol{\Psi}^{-1}\boldsymbol{\Lambda}$$

Also see *factor analysis*.

**failure event**. Survival analysis is really time-to-failure analysis, and the failure event is the event under analysis. The failure event can be death, heart attack, myopia, or finding employment. Many authors—including Stata—write as if the failure event can occur only once per subject, but when we do, we are being sloppy. Survival analysis encompasses repeated failures, and all of Stata's survival analysis features can be used with repeated-failure data.

**family distribution**. See *generalized linear response functions*.

**FCS**. See *fully conditional specification*.

**feasible initial value**. An initial-value vector is feasible if it corresponds to a state with a positive posterior probability.

**fictional data**. Fictional data are data that have no basis in reality even though they might look real; they are data that are made up for use in examples.

**finite population correction**. Finite population correction (FPC) is an adjustment applied to the variance of a point estimator because of sampling without replacement, resulting in variance estimates that are smaller than the variance estimates from comparable with-replacement sampling designs.

**first- and second-order latent variables**. If a latent variable is measured by other latent variables only, the latent variable that does the measuring is called first-order latent variable, and the latent variable being measured is called the second-order latent variable.

**first-, second-, and higher-level (latent) variables**. Consider a multilevel model of patients within doctors within hospitals. First-level variables are variables that vary at the observational (patient) level. Second-level variables vary across doctors but are constant within doctors. Third-level variables vary across hospitals but are constant within hospitals. This jargon is used whether variables are latent or not.

**Fisher–Irwin's exact test**. See *Fisher's exact test*.

**Fisher's exact test**. Fisher's exact test is an exact small-sample test of independence between rows and columns in a $2 \times 2$ contingency table. Conditional on the marginal totals, the test statistic has a hypergeometric distribution under the null hypothesis. See [PSS] **power twoproportions** and [R] **tabulate twoway**.

**Fisher's z test**. This is a $z$ test comparing one or two correlations. See [PSS] **power onecorrelation** and [PSS] **power twocorrelations**. Also see *Fisher's z transformation*.

**Fisher's z transformation**. Fisher's $z$ transformation applies an inverse hyperbolic tangent transformation to the sample correlation coefficient. This transformation is useful for testing hypothesis concerning Pearson's correlation coefficient. The exact sampling distribution of the correlation coefficient is complicated, while the transformed statistic is approximately standard normal.

**fixed effects**. In the context of multilevel mixed-effects models, fixed effects represent effects that are constant for all groups at any level of nesting. In the ANOVA literature, fixed effects represent the levels of a factor for which the inference is restricted to only the specific levels observed in the study. See also *fixed-effects model* in [XT] **Glossary**.

**fixed-effects model**. The fixed-effects model is a model for panel data in which the panel-specific errors are treated as fixed parameters. These parameters are panel-specific intercepts and therefore allow the conditional mean of the dependent variable to vary across panels. The linear fixed-effects estimator is consistent, even if the regressors are correlated with the fixed effects. See also *random-effects model*.

**flong data**. See *style*.

**flongsep data**. See *style*.

**FMI**. See *fraction of missing information*.

**follow-up period** or **follow-up**. The (minimum) follow-up period is the period after the last subject entered the study until the end of the study. The follow-up defines the phase of a study during which subjects are under observation and no new subjects enter the study. If $T$ is the total duration of a study, and $R$ is the accrual period of the study, then follow-up period $f$ is equal to $T - R$. Also see *accrual period*.

**follow-up study**. See *cohort study*.

**forecast-error variance decomposition**. Forecast-error variance decompositions measure the fraction of the error in forecasting variable $i$ after $h$ periods that is attributable to the orthogonalized shocks to variable $j$.

**forward operator**. The forward operator $F$ denotes the value of a variable at time $t + 1$. Formally, $Fy_t = y_{t+1}$, and $F^2y_t = Fy_{t+1} = y_{t+2}$.

**FPC**. See *finite population correction*.

**fraction of missing information**. The ratio of information lost due to the missing data to the total information that would be present if there were no missing data.

An equal FMI test is a test under the assumption that FMIs are equal across parameters.

An unrestricted FMI test is a test without the equal FMI assumption.

**fractional polynomial**. A polynomial that may include logarithms, noninteger powers, and repeated powers.

Each time a power repeats in a fractional polynomial of $x$, it is multiplied by another $\ln(x)$.

We write a fractional polynomial in $x$ as

$$x^{(p_1,p_2,\ldots,p_m)'}\boldsymbol{\beta}$$

A fractional polynomial in $x$ with powers $(-1, 0, 0.5, 3, 3)$ and coefficients $\boldsymbol{\beta}$ has the following form:

$$x^{(-1,0,0.5,3,3)'}\boldsymbol{\beta} = \beta_0 + \beta_1 x^{-1} + \beta_2 \ln(x) + \beta_3 x^{.5} + \beta_4 x^3 + \beta_5 x^3 \ln(x)$$

The notation $x^{(-2,3)}$, for example, means the variable $x^{-2}$ and the variable $x^3$.

**frailty**. In survival analysis, it is often assumed that subjects are alike—homogeneous—except for their observed differences. The probability that subject $j$ fails at time $t$ may be a function of $j$'s covariates and random chance. Subjects $j$ and $k$, if they have equal covariate values, are equally likely to fail.

Frailty relaxes that assumption. The probability that subject $j$ fails at time $t$ becomes a function of $j$'s covariates and $j$'s unobserved frailty value, $\nu_j$. Frailty $\nu$ is assumed to be a random variable. Parametric survival models can be fit even in the presence of such heterogeneity.

Shared frailty refers to the case in which groups of subjects share the same frailty value. For instance, subjects 1 and 2 may share frailty value $\nu$ because they are genetically related. Both parametric and semiparametric models can be fit under the shared-frailty assumption.

**frequency-domain analysis**. Frequency-domain analysis is analysis of time-series data by considering its frequency properties. The spectral density and distribution functions are key components of frequency-domain analysis, so it is often called spectral analysis. In Stata, the `cumsp` and `pergram` commands are used to analyze the sample spectral distribution and density functions, respectively. `psdensity` estimates the spectral density or the spectral distribution function after estimating the parameters of a parametric model using `arfima`, `arima`, or `ucm`.

**frequentist analysis**. Frequentist analysis is a form of statistical analysis where model parameters are considered to be unknown but fixed constants and the observed data are viewed as a repeatable random sample. Inference is based on the sampling distribution of the data.

**full conditionals**. A full conditional is the probability distribution of a random variate conditioned on all other random variates in a joint probability model. Full conditional distributions are used in Gibbs sampling.

**full Gibbs sampling**. See *Gibbs sampling, Gibbs sampler*.

**full joint and conditional normality assumption**. See *normality assumption, joint and conditional*.

**fully conditional specification**. Consider imputation variables $X_1, X_2, \ldots, X_p$. Fully conditional specification of the prediction equation for $X_j$ includes all variables except $X_j$; that is, variables $\mathbf{X}_{-j} = (X_1, X_2, \ldots, X_{j-1}, X_{j+1}, \ldots, X_p)$.

**function**. The words *program* and *function* are used interchangeably. The programs that you write in Mata are in fact functions. Functions receive arguments and optionally return results.

Examples of functions that are included with Mata are `sqrt()`, `ttail()`, and `substr()`. Such functions are often referred to as the built-in functions or the library functions. Built-in functions refer to functions implemented in the C code that implements Mata, and library functions refer to functions written in the Mata programming language, but many users use the words interchangeably because how functions are implemented is of little importance. If you have a choice between using a built-in function and a library function, however, the built-in function will usually execute more quickly and the library function will be easier to use. Mostly, however, features are implemented one way or the other and you have no choice.

Also see *underscore functions*.

For a list of the functions that Mata provides, see [M-4] **intro**.

**future history**. Future history is information recorded after a subject is no longer at risk. The word *history* is often dropped, and the term becomes simply *future*. Perhaps the failure event is cardiac infarction, and you want to know whether the subject died soon in the *future*, in which case you might exclude the subject from analysis.

Also see *past history*.

**gain (of a linear filter)**. The gain of a linear filter scales the spectral density of the unfiltered series into the spectral density of the filtered series for each frequency. Specifically, at each frequency, multiplying the spectral density of the unfiltered series by the square of the gain of a linear filter yields the spectral density of the filtered series. If the gain at a particular frequency is 1, the filtered and unfiltered spectral densities are the same at that frequency and the corresponding stochastic

cycles are passed through perfectly. If the gain at a particular frequency is 0, the filter removes all the corresponding stochastic cycles from the unfiltered series.

**gamma regression**. Gamma regression is a term for generalized linear response functions that are family gamma, link log. It is used for continuous, nonnegative, positively skewed data. Gamma regression is also known as log-gamma regression. See *generalized linear response functions*.

**gaps**. Gaps refers to gaps in observation between entry time and exit time; see *under observation*.

**GARCH model**. A generalized autoregressive conditional heteroskedasticity (GARCH) model is a regression model in which the conditional variance is modeled as an ARMA process. The GARCH$(m, k)$ model is

$$y_t = \mathbf{x}_t\boldsymbol{\beta} + \epsilon_t$$
$$\sigma_t^2 = \gamma_0 + \gamma_1\epsilon_{t-1}^2 + \cdots + \gamma_m\epsilon_{t-m}^2 + \delta_1\sigma_{t-1}^2 + \cdots + \delta_k\sigma_{t-k}^2$$

where the equation for $y_t$ represents the conditional mean of the process and $\sigma_t$ represents the conditional variance. See [TS] **arch** or Hamilton (1994, chap. 21) for details on how the conditional variance equation can be viewed as an ARMA process. GARCH models are often used because the ARMA specification often allows the conditional variance to be modeled with fewer parameters than are required by a pure ARCH model. Many extensions to the basic GARCH model exist; see [TS] **arch** for those that are implemented in Stata. See also *ARCH model*.

**Gauss–Hermite quadrature**. In the context of generalized linear mixed models, Gauss–Hermite quadrature is a method of approximating the integral used in the calculation of the log likelihood. The quadrature locations and weights for individual clusters are fixed during the optimization process.

In the context of IRT models, Gauss–Hermite quadrature (GHQ) is a method of approximating the integral used in the calculation of the log likelihood. The quadrature locations and weights for individuals are fixed during the optimization process.

**Gaussian regression**. Gaussian regression is another term for linear regression. It is most often used when referring to generalized linear response functions. In that framework, Gaussian regression is family Gaussian, link identity. See *generalized linear response functions*.

**generalized eigenvalues**. A scalar, $\lambda$, is said to be a generalized eigenvalue of a pair of $n \times n$ square numeric matrices $\mathbf{A}$, $\mathbf{B}$ if there is a nonzero column vector $\mathbf{x}$: $n \times 1$ (called a generalized eigenvector) such that

$$\mathbf{A}\mathbf{x} = \lambda\mathbf{B}\mathbf{x} \tag{1}$$

Equation (1) can also be written

$$(\mathbf{A} - \lambda\mathbf{B})\mathbf{x} = 0$$

A nontrivial solution to this system of $n$ linear homogeneous equations exists if and only if

$$\det(\mathbf{A} - \lambda\mathbf{B}) = 0 \tag{2}$$

In practice, the generalized eigenvalue problem for the matrix pair $(\mathbf{A}, \mathbf{B})$ is usually formulated as finding a pair of scalars $(w, b)$ and a nonzero column vector $\mathbf{x}$ such that

$$w\mathbf{A}\mathbf{x} = b\mathbf{B}\mathbf{x}$$

The scalar $w/b$ is a generalized eigenvalue if $b$ is not zero.

Infinity is a generalized eigenvalue if $b$ is zero or numerically close to zero. This situation may arise if $\mathbf{B}$ is singular.

The Mata functions that compute generalized eigenvalues return them in two complex vectors, $\mathbf{w}$ and $\mathbf{b}$ of length $n$. If $\mathbf{b}[i] = 0$, the $i$th generalized eigenvalue is infinite, otherwise the $i$th generalized eigenvalue is $\mathbf{w}[i]/\mathbf{b}[i]$.

**generalized estimating equations (GEE)**. The method of generalized estimating equations is used to fit population-averaged panel-data models. GEE extends the GLM method by allowing the user to specify a variety of different within-panel correlation structures.

**generalized least-squares estimator**. A generalized least-squares (GLS) estimator is used to estimate the parameters of a regression function when the error term is heteroskedastic or autocorrelated. In the linear case, GLS is sometimes described as "OLS on transformed data" because the GLS estimator can be implemented by applying an appropriate transformation to the dataset and then using OLS.

**generalized linear mixed-effects model**. A generalized linear mixed-effects model is an extension of a generalized linear model allowing for the inclusion of random deviations (effects).

**generalized linear model**. The generalized linear model is an estimation framework in which the user specifies a distributional family for the dependent variable and a link function that relates the dependent variable to a linear combination of the regressors. The distribution must be a member of the exponential family of distributions. The generalized linear model encompasses many common models, including linear, probit, and Poisson regression.

**generalized linear response functions**. Generalized linear response functions include linear functions and include functions such as probit, logit, multinomial logit, ordered probit, ordered logit, Poisson, and more.

These generalized linear functions are described by a link function $g(\cdot)$ and statistical distribution $F$. The link function $g(\cdot)$ specifies how the response variable $y_i$ is related to a linear equation of the explanatory variables, $\mathbf{x}_i\boldsymbol{\beta}$, and the family $F$ specifies the distribution of $y_i$:

$$g\{E(y_i)\} = \mathbf{x}_i\boldsymbol{\beta}, \qquad y_i \sim F$$

If we specify that $g(\cdot)$ is the identity function and $F$ is the Gaussian (normal) distribution, then we have linear regression. If we specify that $g(\cdot)$ is the logit function and $F$ the Bernoulli distribution, then we have logit (logistic) regression.

In this generalized linear structure, the family may be Gaussian, gamma, Bernoulli, binomial, Poisson, negative binomial, ordinal, or multinomial. The link function may be the identity, log, logit, probit, or complementary log-log.

`gsem` fits models with generalized linear response functions.

**generalized method of moments**. Generalized method of moments (GMM) is a method used to obtain fitted parameters. In this documentation, GMM is referred to as ADF, which stands for asymptotic distribution free and is available for use with `sem`. Other available methods for use with `sem` are ML, QML, ADF, and MLMV.

The SEM moment conditions are cast in terms of second moments, not the first moments used in many other applications associated with GMM.

**generalized partial credit model**. The generalized partial credit model (GPCM) is an IRT model for ordinal responses. The categories within each item vary in their difficulty and share the same discrimination parameter.

**generalized SEM**. Generalized SEM is a term we have coined to mean SEM optionally allowing generalized linear response functions or multilevel models. `gsem` fits generalized SEMs.

**GHQ**. See *Gauss–Hermite quadrature*.

**Gibbs sampling, Gibbs sampler**. Gibbs sampling is an MCMC method, according to which each random variable from a joint probability model is sampled according to its full conditional distribution.

**GLM**. See *generalized linear model*.

**GLME model**. See *generalized linear mixed-effects model*.

**GLMM**. Generalized linear mixed model. See *generalized linear mixed-effects model*.

**global variable**. Global variables, also known as external variables and as global external variables, refer to variables that are common across programs and which programs may access without the variable being passed as an argument.

The variables you create interactively are global variables. Even so, programs cannot access those variables without engaging in another step, and global variables can be created without your creating them interactively.

To access (and create if necessary) global external variables, you declare the variable in the body of your program:

```
function myfunction(...)
{
     external real scalar globalvar
     ...
}
```

See *Linking to external globals* in [M-2] **declarations**.

There are other ways of creating and accessing global variables, but the declaration method is recommended. The alternatives are `crexternal()`, `findexternal()`, and `rmexternal()` documented in [M-5] **findexternal( )** and `valofexternal()` documented in [M-5] **valofexternal( )**.

**GMM**. See *generalized method of moments*.

**goodness-of-fit statistic**. A goodness-of-fit statistic is a value designed to measure how well the model reproduces some aspect of the data the model is intended to fit. SEM reproduces the first- and second-order moments of the data, with an emphasis on the second-order moments, and thus goodness-of-fit statistics appropriate for use after `sem` compare the predicted covariance matrix (and mean vector) with the matrix (and vector) observed in the data.

**GPCM**. See *generalized partial credit model*.

**graded response model**. The graded response model (GRM) is an extension of the two-parameter logistic model to ordinal responses. The categories within each item vary in their difficulty and share the same discrimination parameter.

**Granger causality**. The variable $x$ is said to Granger-cause variable $y$ if, given the past values of $y$, past values of $x$ are useful for predicting $y$.

**Greenhouse–Geisser correction**. See *nonsphericity correction*.

**GRM**. See *graded response model*.

**gsem**. `gsem` is the Stata command that fits generalized SEMs. Also see *sem*.

**guessing**. The guessing parameter incorporates the impact of chance on an observed response. The parameter lifts the lower asymptote of the item characteristic curve above zero.

**GUI**. See *Builder*.

**Hadamard matrix**. A Hadamard matrix is a square matrix with $r$ rows and columns that has the property

$$H_r' H_r = rI_r$$

where $I_r$ is the identity matrix of order $r$. Generating a Hadamard matrix with order $r = 2^p$ is easily accomplished. Start with a Hadamard matrix of order 2 ($H_2$), and build your $H_r$ by repeatedly applying Kronecker products with $H_2$.

**hard missing and soft missing**. A hard missing value is a value of `.a`, `.b`, ..., `.z` in $m = 0$ in an imputed variable. Hard missing values are not replaced in $m > 0$.

A soft missing value is a value of `.` in $m = 0$ in an imputed variable. If an imputed variable contains soft missing, then that value is eligible to be imputed, and perhaps is imputed, in $m > 0$.

Although you can use the terms hard missing and soft missing for passive, regular, and unregistered variables, it has no special significance in terms of how the missing values are treated.

**hashing, hash functions, and hash tables**. Hashing refers to a technique for quickly finding information corresponding to an identifier. The identifier might be a name, a Social Security number, fingerprints, or anything else on which the information is said to be indexed. The hash function returns a many-to-one mapping of identifiers onto a dense subrange of the integers. Those integers, called hashes, are then used to index a hash table. The selected element of the hash table specifies a list containing identifiers and information. The list is then searched for the particular identifier desired. The advantage is that rather than searching a single large list, one need only search one of $K$ smaller lists. For this to be fast, the hash function must be quick to compute and produce roughly equal frequencies of hashes over the range of identifiers likely to be observed.

**hazard**, **cumulative hazard**, and **hazard ratio**. The hazard or hazard rate at time $t$, $h(t)$, is the instantaneous rate of failure at time $t$ conditional on survival until time $t$. Hazard rates can exceed 1. Say that the hazard rate were 3. If an individual faced a constant hazard of 3 over a unit interval and if the failure event could be repeated, the individual would be expected to experience three failures during the time span.

The cumulative hazard, $H(t)$, is the integral of the hazard function $h(t)$, from 0 (the onset of risk) to $t$. It is the total number of failures that would be expected to occur up until time $t$, if the failure event could be repeated. The relationship between the cumulative hazard function, $H(t)$, and the survivor function, $S(t)$, is

$$S(t) = \exp\{-H(t)\}$$
$$H(t) = -\ln\{S(t)\}$$

The hazard ratio is the ratio of the hazard function evaluated at two different values of the covariates: $h(t \mid \mathbf{x})/h(t \mid \mathbf{x}_0)$. The hazard ratio is often called the relative hazard, especially when $h(t \mid \mathbf{x}_0)$ is the baseline hazard function.

**hazard contributions**. Hazard contributions are the increments of the estimated cumulative hazard function obtained through either a nonparametric or semiparametric analysis. For these analysis types, the estimated cumulative hazard is a step function that increases every time a failure occurs. The hazard contribution for that time is the magnitude of that increase.

Because the time between failures usually varies from failure to failure, hazard contributions do not directly estimate the hazard. However, one can use the hazard contributions to formulate an estimate of the hazard function based on the method of smoothing.

**Hermitian matrix**. Matrix $A$ is Hermitian if it is equal to its conjugate transpose; $A = A'$; see *transpose*. This means that each off-diagonal element $a_{ij}$ must equal the conjugate of $a_{ji}$, and that the diagonal elements must be real. The following matrix is Hermitian:

$$\begin{bmatrix} 2 & 4+5i \\ 4-5i & 6 \end{bmatrix}$$

The definition $A = A'$ is the same as the definition for a symmetric matrix, although usually the word *symmetric* is reserved for real matrices and Hermitian, for complex matrices. In this manual, we use the word *symmetric* for both; see *symmetric matrices*.

**Hessenberg decomposition**. The Hessenberg decomposition of a matrix, **A**, can be written as

$$\mathbf{Q}'\mathbf{A}\mathbf{Q} = \mathbf{H}$$

where **H** is in upper Hessenberg form and **Q** is orthogonal if **A** is real or unitary if **A** is complex. See [M-5] **hessenbergd( )**.

**Hessenberg form**. A matrix, **A**, is in upper Hessenberg form if all entries below the first subdiagonal are zero: $A_{ij} = 0$ for all $i > j + 1$.

A matrix, **A**, is in lower Hessenberg form if all entries above the first superdiagonal are zero: $A_{ij} = 0$ for all $j > i + 1$.

**Heywood case** or **Heywood solution**. A Heywood case can appear in factor analysis output; this indicates that a boundary solution, called a Heywood solution, was produced. The geometric assumptions underlying the likelihood-ratio test are violated, though the test may be useful if interpreted cautiously.

**hierarchical clustering** and **hierarchical clustering methods**. In hierarchical clustering, the data is placed into clusters via iterative steps. Contrast to *partition clustering*. Also see *agglomerative hierarchical clustering methods* and *divisive hierarchical clustering methods*.

**hierarchical model**. A hierarchical model is one in which successively more narrowly defined groups are nested within larger groups. For example, in a hierarchical model, patients may be nested within doctors who are in turn nested within the hospital at which they practice.

**higher ASCII**. See *extended ASCII*.

**highest posterior density credible interval, HPD credible interval**. The highest posterior density (HPD) credible interval is a type of a credible interval with the highest marginal posterior density. An HPD interval has the shortest width among all other credible intervals. For some multimodal marginal distributions, HPD may not exists. See *highest posterior density region, HPD region*.

**highest posterior density region, HPD region**. The highest posterior density (HPD) region for model parameters has the highest marginal posterior probability among all domain regions. Unlike an HPD credible interval, an HPD region always exist.

**high-pass filter**. Time-series filters are designed to pass or block stochastic cycles at specified frequencies. High-pass filters, such as those implemented in `tsfilter bw` and `tsfilter hp`, pass through stochastic cycles above the cutoff frequency and block all other stochastic cycles.

**Holt–Winters smoothing**. A set of methods for smoothing time-series data that assume that the value of a time series at time $t$ can be approximated as the sum of a mean term that drifts over time, as well as a time trend whose strength also drifts over time. Variations of the basic method allow for seasonal patterns in data, as well.

**Hotelling's T-squared generalized means test**. Hotelling's T-squared generalized means test is a multivariate test that reduces to a standard $t$ test if only one variable is specified. It tests whether one set of means is zero or if two sets of means are equal.

**hybrid MH sampling, hybrid MH sampler**. A hybrid MH sampler is an MCMC method in which some blocks of parameters are updated using the MH algorithms and other blocks are updated using Gibbs sampling.

**hybrid model**. A hybrid IRT model is a model that performs a single calibration of an instrument consisting of different response formats.

**hyperparameter**. In Bayesian analysis, hyperparameter is a parameter of a prior distribution, in contrast to a model parameter.

**hyperprior**. In Bayesian analysis, hyperprior is a prior distribution of hyperparameters. See *hyperparameter*.

**hypothesis**. A hypothesis is a statement about a population parameter of interest.

**hypothesis testing, hypothesis test**. This method of inference evaluates the validity of a hypothesis based on a sample from the population. See *Hypothesis testing* under *Remarks and examples* in [PSS] **intro**.

**hypothesized value**. See *null value*.

**ICC**. See *item characteristic curve*.

**ID variable**. An ID variable identifies groups; equal values of an ID variable indicate that the observations are for the same group. For instance, a stratification ID variable would indicate the strata to which each observation belongs.

When an ID variable is referred to without modification, it means subjects, and usually this occurs in multiple-record st data. In multiple-record data, each physical observation in the dataset represents a time span, and the ID variable ties the separate observations together:

| *idvar* | *t*0 | *t* |
|---|---|---|
| 1 | 0 | 5 |
| 1 | 5 | 7 |

ID variables are usually numbered 1, 2, ..., but that is not required. An ID variable might be numbered 1, 3, 7, 22, ..., or −5, −4, ..., or even 1, 1.1, 1.2, ....

**identification**. Identification refers to the conceptual constraints on parameters of a model that are required for the model's remaining parameters to have a unique solution. A model is said to be unidentified if these constraints are not supplied. These constraints are of two types: substantive constraints and normalization constraints.

Normalization constraints deal with the problem that one scale works as well as another for each latent variable in the model. One can think, for instance, of propensity to write software as being measured on a scale of 0 to 1, 1 to 100, or any other scale. The normalization constraints are the constraints necessary to choose one particular scale. The normalization constraints are provided automatically by `sem` and `gsem` by anchoring with unit loadings.

Substantive constraints are the constraints you specify about your model so that it has substantive content. Usually, these constraints are zero constraints implied by the paths omitted, but they can include explicit parameter constraints as well. It is easy to write a model that is not identified for substantive reasons; See [SEM] **intro 4**.

**idiosyncratic error term**. In longitudinal or panel-data models, the idiosyncratic error term refers to the observation-specific zero-mean random-error term. It is analogous to the random-error term of cross-sectional regression analysis.

**ignorable missing-data mechanism**. The missing-data mechanism is said to be ignorable if missing data are missing at random and the parameters of the data model and the parameters of the missing-data mechanism are distinct; that is, the joint distribution of the model and the missing-data parameters can be factorized into two independent marginal distributions of model parameters and of missing-data parameters.

**i.i.d. sampling assumption**. See *independent and identically distributed sampling assumption*.

**IIF**. See *item information function*.

**improper prior**. A prior is said to be improper if it does not integrate to a finite number. Uniform distributions over unbounded intervals are improper. Improper priors may still yield proper posterior distributions. When using improper priors, however, one has to make sure that the resulting posterior distribution is proper for Bayesian inference to be invalid.

**impulse–response function**. An impulse–response function (IRF) measures the effect of a shock to an endogenous variable on itself or another endogenous variable. The $k$th impulse–response function of variable $i$ on variable $j$ measures the effect on variable $j$ in period $t + k$ in response to a one-unit shock to variable $i$ in period $t$, holding everything else constant.

**imputed, passive, and regular variables**. An imputed variable is a variable that has missing values and for which you have or will have imputations.

A passive variable is a varying variable that is a function of imputed variables or of other passive variables. A passive variable will have missing values in $m = 0$ and varying values for observations in $m > 0$.

A regular variable is a variable that is neither imputed nor passive and that has the same values, whether missing or not, in all $m$.

Imputed, passive, and regular variables can be registered using the `mi register` command; see [MI] **mi set**. You are required to register imputed variables, and we recommend that you register passive variables. Regular variables can also be registered. See *registered and unregistered variables*.

**imputed data**. Data in which all missing values are imputed.

**incidence** and **incidence rate**. Incidence is the number of new failures (for example, number of new cases of a disease) that occur during a specified period in a population at risk (for example, of the disease).

Incidence rate is incidence divided by the sum of the length of time each individual was exposed to the risk.

Do not confuse incidence with prevalence. Prevalence is the fraction of a population that has the disease. Incidence refers to the rate at which people contract a disease, whereas prevalence is the total number actually sick at a given time.

**incidence studies**, **longitudinal studies**, and **follow-up studies**. Whichever word is used, these studies monitor a population for a time to track the transition of noncases into cases. Incidence studies are prospective. Also see *cohort studies*.

**incomplete observations**. See *complete and incomplete observations*.

**independent a posteriori**. Parameters are considered independent a posteriori if their marginal posterior distributions are independent; that is, their joint posterior distribution is the product of their individual marginal posterior distributions.

**independent a priori**. Parameters are considered independent a priori if their prior distributions are independent; that is, their joint prior distribution is the product of their individual marginal prior distributions.

**independent and identically distributed**. A series of observations is independent and identically distributed (i.i.d.) if each observation is an independent realization from the same underlying distribution. In some contexts, the definition is relaxed to mean only that the observations are independent and have identical means and variances; see Davidson and MacKinnon (1993, 42).

**independent and identically distributed sampling assumption**. The independent and identically distributed (i.i.d.) sampling assumption specifies that each observation is unrelated to (independent of) all the other observations and that each observation is a draw from the same (identical) distribution.

**indicator variables, indicators**. The term "indicator variable" has two meanings. An indicator variable is a 0/1 variable that contains whether something is true. The other usage is as a synonym for measurement variables.

**indirect effects**. See *direct, indirect, and total effects*.

**individual-level treatment effect**. An individual-level treatment effect is the difference in an individual's outcome that would occur because this individual is given one treatment instead of another. In other words, an individual-level treatment effect is the difference between two potential outcomes for an individual.

For example, the blood pressure an individual would obtain after taking a pill minus the blood pressure an individual would obtain had that person not taken the pill is the individual-level treatment effect of the pill on blood pressure.

**ineligible missing value**. An ineligible missing value is a missing value in a to-be-imputed variable that is due to inability to calculate a result rather than an underlying value being unobserved. For instance, assume that variable `income` had some missing values and so you wish to impute it. Because `income` is skewed, you decide to impute the log of income, and you begin by typing

```
. generate lnincome = log(income)
```

If `income` contained any zero values, the corresponding missing values in `lnincome` would be ineligible missing values. To ensure that values are subsequently imputed correctly, it is of vital importance that any ineligible missing values be recorded as hard missing. You would do that by typing

```
. replace lnincome = .a if lnincome==. & income!=.
```

As an aside, if after imputing `lnincome` using `mi impute` (see [MI] **mi impute**), you wanted to fill in `income`, `income` surprisingly would be a passive variable because `lnincome` is the imputed variable and `income` would be derived from it. You would type

```
. mi register passive income
. mi passive: replace income = cond(lnincome==.a, 0, exp(lnincome))
```

In general, you should avoid using transformations that produce ineligible missing values to avoid the loss of information contained in other variables in the corresponding observations. For example, in the above, for zero values of `income` we could have assigned the log of income, `lnincome`, to be the smallest value that can be stored as `double`, because the logarithm of zero is negative infinity:

```
. generate lnincome = cond(income==0, mindouble(), log(income))
```

This way, all observations for which `income==0` will be used in the imputation model for `lnincome`.

**inertia**. In CA, the inertia is related to the definition in applied mathematics of "moment of inertia", which is the integral of the mass times the squared distance to the centroid. Inertia is defined as the total Pearson chi-squared for the two-way table divided by the total number of observations or the sum of the squared singular values found in the singular value decomposition.

$$\text{total inertia} = \frac{1}{n}\chi^2 = \sum_k \lambda_k^2$$

In MCA, the inertia is defined analogously. In the case of the indicator or Burt matrix approach, it is given by the formula

$$\text{total inertia} = \left(\frac{q}{q-1}\right)\sum \phi_t^2 - \frac{(J-q)}{q^2}$$

where $q$ is the number of active variables, $J$ is the number of categories and $\phi_t$ is the $t$th (unadjusted) eigenvalue of the eigen decomposition. In JCA the total inertia of the modified Burt matrix is defined as the sum of the inertias of the off-diagonal blocks. Also see *correspondence analysis* and *multiple correspondence analysis*.

**information**. Precision with which an item or an instrument measures the latent trait; also see *item information function* and *test information function*.

**informative prior**. An informative prior is a prior distribution that has substantial influence on the posterior distribution.

**initial values**. See *starting values*.

**instance and realization**. Instance and realization are synonyms for variable, as in Mata variable. For instance, consider a real scalar variable *X*. One can equally well say that *X* is an instance of a real scalar or a realization of a real scalar. Authors represent a variable this way when they wish to emphasize that *X* is not representative of all real scalars but is just one of many real scalars. Instance is often used with structures and classes when the writer wishes to emphasize the difference between the values contained in the variable and the definition of the structure or the class. It is confusing to say that *V* is a class *C*, even though it is commonly said, because the reader might confuse the definition of *C* with the specific values contained in *V*. Thus careful authors say that *V* is an instance of class *C*.

**instrument**. A collection of items, usually called a test, a survey, or a questionnaire.

**instrumental variables**. Instrumental variables are exogenous variables that are correlated with one or more of the endogenous variables in a structural model. The term *instrumental variable* is often reserved for those exogenous variables that are not included as regressors in the model.

**instrumental-variables (IV) estimator**. An instrumental variables estimator uses instrumental variables to produce consistent parameter estimates in models that contain endogenous variables. IV estimators can also be used to control for measurement error.

**integrated process**. A nonstationary process is integrated of order $d$, written $\mathrm{I}(d)$, if the process must be differenced $d$ times to produce a stationary series. An $\mathrm{I}(1)$ process $y_t$ is one in which $\Delta y_t$ is stationary.

**interaction effects**. Interaction effects measure the dependence of the effects of one factor on the levels of the other factor. Mathematically, they can be defined as the differences among treatment means that are left after main effects are removed from these differences.

**intercept**. An intercept for the equation of endogenous variable $y$, observed or latent, is the path coefficient from `_cons` to $y$. `_cons` is Stata-speak for the built-in variable containing 1 in all observations. In SEM-speak, `_cons` is an observed exogenous variable.

**interval data**. Interval data are data in which the true value of the dependent variable is not observed. Instead, all that is known is that the value lies within a given interval.

**interval hypothesis testing**. Interval hypothesis testing performs interval hypothesis tests for model parameters and functions of model parameters.

**interval test**. In Bayesian analysis, an interval test applied to a scalar model parameter calculates the marginal posterior probability for the parameter to belong to the specified interval.

**intraclass correlation**. In the context of mixed-effects models, intraclass correlation refers to the correlation for pairs of responses at each nested level of the model.

**invariance**. When an IRT model fits the data exactly in the population, then the estimated item parameters should be the same, within sampling error, regardless of what sample the data were derived from, and the estimated person latent traits should be the same regardless of what items they are based on.

**inverse-probability-weighted estimators**. Inverse-probability-weighted (IPW) estimators use weighted averages of the observed outcome variable to estimate the potential-outcome means. The weights are the reciprocals of the treatment probabilities estimated by a treatment model.

**inverse-probability-weighted regression-adjustment estimators**. Inverse-probability-weighted regression-adjustment (IPWRA) estimators use the reciprocals of the estimated treatment probability as weights to estimate missing-data-corrected regression coefficients that are subsequently used to compute the potential-outcome means.

**IPW estimators**. See *inverse-probability-weighted estimators*.

**IPWRA estimators**. See *inverse-probability-weighted regression-adjustment estimators*.

**IRT**. See *item response theory*.

**istmt**. An *istmt* is an interactive statement, a statement typed at Mata's colon prompt.

**item**. An item is a single question or task on a test or an instrument.

**item characteristic curve**. An item characteristic curve (ICC) expresses the probability for a given response to a binary item as a function of the latent trait.

**item information function**. An item information function (IIF) indicates the precision of an item along the latent trait continuum.

**item location**. Location of an item on the difficulty scale.

**item response function**. See *item characteristic curve*.

**item response theory**. Item response theory (IRT) is a theoretical framework organized around the concept of the latent trait. IRT encompasses a set of models and associated statistical procedures that relate observed responses on an instrument to a person's level of the latent trait.

**iterated principal-factor method**. The iterated principal-factor method is a method for performing factor analysis in which the communalities $\widehat{h}_i^2$ are estimated iteratively from the loadings in $\widehat{\mathbf{\Lambda}}$ using

$$\widehat{h}_i^2 = \sum_{j=1}^{m} \widehat{\lambda}_{ij}^2$$

Also see *factor analysis* and *communality*.

**J × 2 contingency table.** A $J \times 2$ contingency table is used to describe the association between an ordinal independent variable with $J$ levels and a binary response variable of interest.

**J(r, c, value)**. `J()` is the function that returns an $r \times c$ matrix with all elements set to *value*; see [M-5] **J()**. Also, `J()` is often used in the documentation to describe the various types of *void* matrices; see *void matrix*. Thus the documentation might say that such-and-such returns `J(0, 0, .)` under certain conditions. That is another way of saying that such-and-such returns a $0 \times 0$ real matrix.

When $r$ or $c$ is 0, there are no elements to be filled in with *value*, but even so, *value* is used to determine the type of the matrix. Thus `J(0, 0, 1i)` refers to a $0 \times 0$ complex matrix, `J(0, 0, "")` refers to a $0 \times 0$ string matrix, and `J(0, 0, NULL)` refers to a $0 \times 0$ *pointer* matrix.

In the documentation, `J()` is used for more than describing $0 \times 0$ matrices. Sometimes, the matrices being described are $r \times 0$ or are $0 \times c$. Say that a function `example(`$X$`)` is supposed to return a column vector; perhaps it returns the last column of $X$. Now say that $X$ is $0 \times 0$. Function `example()` still should return a column vector, and so it returns a $0 \times 1$ matrix. This would be documented by noting that `example()` returns `J(0, 1, .)` when $X$ is $0 \times 0$.

**jackknife**. The jackknife is a data-dependent way to estimate the variance of a statistic, such as a mean, ratio, or regression coefficient. Unlike BRR, the jackknife can be applied to practically any survey design. The jackknife variance estimator is described in [SVY] **variance estimation**.

**jackknife**, **vce(jackknife)**. The jackknife is a replication method for obtaining variance estimates. Consider an estimation method $E$ for estimating $\theta$. Let $\widehat{\theta}$ be the result of applying $E$ to dataset $D$ containing $N$ observations. The jackknife is a way of obtaining variance estimates for $\widehat{\theta}$ from repeated estimates $\widehat{\theta}_1, \widehat{\theta}_2, \ldots, \widehat{\theta}_N$, where each $\widehat{\theta}_i$ is the result of applying $E$ to $D$ with observation $i$ removed. See [SEM] **sem option method()** and [R] **jackknife**.

`vce(jackknife)` is allowed with `sem` but not `gsem`. You can obtain jackknife results by prefixing the `gsem` command with `jackknife:`, but remember to specify `jackknife`'s `cluster()` and `idcluster()` options if you are fitting a multilevel model. See [SEM] **intro 9**.

**jackknifed standard error**. See *Monte Carlo error*.

**JCA**. An acronym for joint correspondence analysis; see *multiple correspondence analysis*.

**Jeffreys prior**. The Jeffreys prior of a vector of model parameters $\boldsymbol{\theta}$ is proportional to the square root of the determinant of its Fisher information matrix $I(\boldsymbol{\theta})$. Jeffreys priors are locally uniform and, by definition, agree with the likelihood function. Jeffreys priors are considered noninformative priors that have minimal impact on the posterior distribution.

**joint correspondence analysis**. See *multiple correspondence analysis*.

**joint normality assumption**. See *normality assumption, joint and conditional*.

**Kaiser–Meyer–Olkin measure of sampling adequacy**. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy takes values between 0 and 1, with small values meaning that the variables have too little in common to warrant a factor analysis or PCA. Historically, the following labels have been given to values of KMO (Kaiser 1974):

| | |
|---|---|
| 0.00 to 0.49 | unacceptable |
| 0.50 to 0.59 | miserable |
| 0.60 to 0.69 | mediocre |
| 0.70 to 0.79 | middling |
| 0.80 to 0.89 | meritorious |
| 0.90 to 1.00 | marvelous |

**Kalman filter**. The Kalman filter is a recursive procedure for predicting the state vector in a state-space model.

**Kaplan–Meier product-limit estimate**. This is an estimate of the survivor function, which is the product of conditional survival to each time at which an event occurs. The simple form of the calculation, which requires tallying the number at risk and the number who die and at each time, makes accounting for censoring easy. The resulting estimate is a step function with jumps at the event times.

**Kenward–Roger denominator degrees of freedom (DDF) method**. This method implements the Kenward and Roger (1997) method, which is designed to approximate unknown sampling distributions of test statistics for complex linear mixed-effects models. This method is supported only with restricted maximum-likelihood estimation.

**kmeans**. Kmeans is a method for performing partition cluster analysis. The user specifies the number of clusters, $k$, to create using an iterative process. Each observation is assigned to the group whose mean is closest, and then based on that categorization, new group means are determined. These steps continue until no observations change groups. The algorithm begins with $k$ seed values, which act as the $k$ group means. There are many ways to specify the beginning seed values. Also see *partition clustering*.

**kmedians**. Kmedians is a variation of kmeans. The same process is performed, except that medians instead of means are computed to represent the group centers at each step. Also see *kmeans* and *partition clustering*.

**KMO**. See *Kaiser–Meyer–Olkin measure of sampling adequacy*.

**KNN**. See *kth nearest neighbor*.

**Kruskal stress**. The Kruskal stress measure (Kruskal 1964; Cox and Cox 2001, 63) used in MDS is given by

$$\text{Kruskal}(\widehat{\mathbf{D}}, \mathbf{E}) = \left\{ \frac{\sum (E_{ij} - \widehat{D}_{ij})^2}{\sum E_{ij}^2} \right\}^{1/2}$$

where $D_{ij}$ is the dissimilarity between objects $i$ and $j$, $1 \leq i, j \leq n$, and $\widehat{D}_{ij}$ is the disparity, that is, the transformed dissimilarity, and $E_{ij}$ is the Euclidean distance between rows $i$ and $j$ of the matching configuration. Kruskal stress is an example of a loss function in modern MDS. After classical MDS, `estat stress` gives the Kruskal stress. Also see *classical scaling*, *multidimensional scaling*, and *stress*.

**kth nearest neighbor**. $k$th-nearest-neighbor (KNN) discriminant analysis is a nonparametric discrimination method based on the $k$ nearest neighbors of each observation. Both continuous and binary data can be handled through the different similarity and dissimilarity measures. KNN analysis can distinguish irregular-shaped groups, including groups with multiple modes. Also see *discriminant analysis* and *nonparametric methods*.

**lag operator**. The lag operator $L$ denotes the value of a variable at time $t-1$. Formally, $Ly_t = y_{t-1}$, and $L^2 y_t = Ly_{t-1} = y_{t-2}$.

**Lagrange multiplier test**. Synonym for *score test*.

**LAPACK** LAPACK stands for Linear Algebra PACKage and forms the basis for many of Mata's linear algebra capabilities; see [M-1] **LAPACK**.

**Laplacian approximation**. Laplacian approximation is a technique used to approximate definite integrals without resorting to quadrature methods. In the context of mixed-effects models, Laplacian approximation is as a rule faster than quadrature methods at the cost of producing biased parameter estimates of variance components.

**latent growth model**. A latent growth model is a kind of measurement model in which the observed values are collected over time and are allowed to follow a trend. See [SEM] **intro 5**.

**latent space**. Number of latent traits that are measured by an instrument. All IRT models described in this manual assume a unidimensional latent space or, in other words, that a single latent trait explains the response pattern.

**latent trait**. A variable or construct that cannot be directly observed.

**latent variable**. A variable is latent if it is not observed. A variable is latent if it is not in your dataset but you wish it were. You wish you had a variable recording the propensity to commit violent crime, or socioeconomic status, or happiness, or true ability, or even income accurately recorded. Latent variables are sometimes described as imagined variables.

In the software, latent variables are usually indicated by having at least their first letter capitalized.

Also see *first- and second-order latent variables*, *first-, second-, and higher-level (latent) variables*, and *observed variables*.

**Lawley–Hotelling trace**. The Lawley–Hotelling trace is a test statistic for the hypothesis test $H_0 : \boldsymbol{\mu}_1 = \boldsymbol{\mu}_2 = \cdots = \boldsymbol{\mu}_k$ based on the eigenvalues $\lambda_1, \lambda_2, \ldots, \lambda_s$ of $\mathbf{E}^{-1}\mathbf{H}$. It is defined as

$$U^{(s)} = \text{trace}(\mathbf{E}^{-1}\mathbf{H}) = \sum_{i=1}^{s} \lambda_i$$

where $\mathbf{H}$ is the between matrix and $\mathbf{E}$ is the within matrix, see *between matrix*.

**LDA**. See *linear discriminant analysis*.

**leave one out**. In discriminant analysis, classification of an observation while leaving it out of the estimation sample is done to check the robustness of the analysis; thus the phrase "leave one out" (LOO). Also see *discriminant analysis*.

**left eigenvectors**. A vector $\mathbf{x}$: $n \times 1$ is said to be a left eigenvector of square matrix $\mathbf{A}$: $n \times n$ if there is a nonzero scalar, $\lambda$, such that

$$\mathbf{x}\mathbf{A} = \lambda\mathbf{x}$$

**left-censoring**. See *censored, censoring, left-censoring, and right-censoring*.

**left-truncation**. See *truncation, left-truncation, and right-truncation*.

**life table**. Also known as a mortality table or actuarial table, a life table is a table that shows for each analysis time the fraction that survive to that time. In mortality tables, analysis time is often age.

**likelihood displacement value**. A likelihood displacement value is an influence measure of the effect of deleting a subject on the overall coefficient vector. Also see *partial likelihood displacement value*.

**likelihood-ratio test**. The likelihood-ratio (LR) test is one of the three classical testing procedures used to compare the fit of two models, one of which, the constrained model, is nested within the full (unconstrained) model. Under the null hypothesis, the constrained model fits the data as well as the full model. The LR test requires one to determine the maximal value of the log-likelihood function for both the constrained and the full models. See [PSS] **power twoproportions** and [R] **lrtest**.

**linear discriminant analysis**. Linear discriminant analysis (LDA) is a parametric form of discriminant analysis. In Fisher's (1936) approach to LDA, linear combinations of the discriminating variables provide maximal separation between the groups. The Mahalanobis (1936) formulation of LDA assumes that the observations come from multivariate normal distributions with equal covariance matrices. Also see *discriminant analysis* and *parametric methods*.

**linear filter**. A linear filter is a sequence of weights used to compute a weighted average of a time series at each time period. More formally, a linear filter $\alpha(L)$ is

$$\alpha(L) = \alpha_0 + \alpha_1 L + \alpha_2 L^2 + \cdots = \sum_{\tau=0}^{\infty} \alpha_\tau L^\tau$$

where $L$ is the lag operator. Applying the linear filter $\alpha(L)$ to the time series $x_t$ yields a sequence of weighted averages of $x_t$:

$$\alpha(L)x_t = \sum_{\tau=0}^{\infty} \alpha_\tau L^\tau x_{t-\tau}$$

**linear mixed model**. See *linear mixed-effects model*.

**linear mixed-effects model**. A linear mixed-effects model is an extension of a linear model allowing for the inclusion of random deviations (effects).

**linear regression**. Linear regression is a kind of SEM in which there is a single equation. See [SEM] **intro 5**.

**linearization**. Linearization is short for Taylor linearization. Also known as the delta method or the Huber/White/robust sandwich variance estimator, linearization is a method for deriving an approximation to the variance of a point estimator, such as a ratio or regression coefficient. The linearized variance estimator is described in [SVY] **variance estimation**.

**link function**. See *generalized linear response functions*.

**linkage**. In cluster analysis, the linkage refers to the measure of proximity between groups or clusters.

**listwise deletion**, **casewise deletion**. Omitting from analysis observations containing missing values.

**LMAX value**. An LMAX value is an influence measure of the effect of deleting a subject on the overall coefficient vector and is based on an eigensystem analysis of efficient score residuals. Also see *partial LMAX value*.

**LME model**. See *linear mixed-effects model*.

**loading**. A loading is a coefficient or weight in a linear transformation. Loadings play an important role in many multivariate techniques, including factor analysis, PCA, MANOVA, LDA, and canonical correlations. In some settings, the loadings are of primary interest and are examined for interpretability. For many multivariate techniques, loadings are based on an eigenanalysis of a correlation or covariance matrix. Also see *eigenvalues and eigenvector*.

**loading plot**. A loading plot is a scatter plot of the loadings after LDA, factor analysis or PCA.

**local independence**. See *conditional independence*.

**locale**. A locale is a code that identifies a community with a certain set of rules for how their language should be written. A locale can refer to something as general as an entire language (for example, "en" for English) or something as specific as a language in a particular country (for example, "en_HK" for English in Hong Kong).

A locale specifies a set of rules that govern how the language should be written. Stata uses locales to determine how certain language-specific operations are carried out. For more information, see [U] **12.4.2.4 Locales in Unicode**.

**logistic discriminant analysis**. Logistic discriminant analysis is a form of discriminant analysis based on the assumption that the likelihood ratios of the groups have an exponential form. Multinomial logistic regression provides the basis for logistic discriminant analysis. Because multinomial logistic regression can handle binary and continuous regressors, logistic discriminant analysis is also appropriate for binary and continuous discriminating variables. Also see *discriminant analysis*.

**logit regression**. Logit regression is a term for generalized linear response functions that are family Bernoulli, link logit. It is used for binary outcome data. Logit regression is also known as logistic regression and also simply as logit. See *generalized linear response functions*.

**longitudinal data**. Longitudinal data is another term for panel data. See also *panel data*.

**long-memory process**. A long-memory process is a stationary process whose autocorrelations decay at a slower rate than a short-memory process. ARFIMA models are typically used to represent long-memory processes, and ARMA models are typically used to represent short-memory processes.

**LOO**. See *leave one out*.

**loss**. Modern MDS is performed by minimizing a loss function, also called a loss criterion. The loss quantifies the difference between the disparities and the Euclidean distances.

Loss functions include Kruskal's stress and its square, both normalized with either disparities or distances, the strain criterion which is equivalent to classical metric scaling when the disparities equal the dissimilarities, and the Sammon (1969) mapping criterion which is the sum of the scaled, squared differences between the distances and the disparities, normalized by the sum of the disparities.

Also see *multidimensional scaling*, *Kruskal stress*, *classical scaling*, and *disparity*.

**loss to follow-up**. Subjects are lost to follow-up if they do not complete the course of the study for reasons unrelated to the event of interest. For example, loss to follow-up occurs if subjects move to a different area or decide to no longer participate in a study. Loss to follow-up should not be confused with administrative censoring. If subjects are lost to follow-up, the information about the outcome these subjects would have experienced at the end of the study, had they completed the study, is unavailable. Also see *withdrawal*, *administrative censoring*, and *follow-up period or follow-up*.

**lower ASCII**. See *plain ASCII*.

**lower asymptote**. See *guessing*.

**lower one-sided test**, **lower one-tailed test**. A lower one-sided test is a one-sided test of a scalar parameter in which the alternative hypothesis is lower one sided, meaning that the alternative hypothesis states that the parameter is less than the value conjectured under the null hypothesis. Also see *One-sided test versus two-sided test* under *Remarks and examples* in [PSS] **intro**.

**lval**. *lval* stands for left-hand-side value and is defined as the property of being able to appear on the left-hand side of an equal-assignment operator. Matrices are *lvals* in Mata, and thus

```
X = ...
```

is valid. Functions are not *lvals*; thus, you cannot code

```
substr(mystr,1,3) = "abc"
```

*lvals* would be easy to describe except that *pointers* can also be lvals. Few people ever use pointers. See [M-2] **op_assignment** for a complete definition.

**M**, **m**. $M$ is the number of imputations. $m$ refers to a particular imputation, $m = 1, 2, \ldots, M$. In `mi`, $m = 0$ is used to refer to the original data, the data containing the missing values. Thus `mi` data in effect contain $M + 1$ datasets, corresponding to $m = 0$, $m = 1$, ..., and $m = M$.

**machine precision**. See *epsilon(1), etc.*

**Mahalanobis distance**. The Mahalanobis distance measure is a scale-invariant way of measuring distance. It takes into account the correlations of the dataset.

**Mahalanobis transformation**. The Mahalanobis transformation takes a Cholesky factorization of the inverse of the covariance matrix $\mathbf{S}^{-1}$ in the formula for Mahalanobis distance and uses it to transform the data. If we have the Cholesky factorization $\mathbf{S}^{-1} = \mathbf{L}'\mathbf{L}$, then the Mahalanobis transformation of $\mathbf{x}$ is $\mathbf{z} = \mathbf{L}\mathbf{x}$, and $\mathbf{z}'\mathbf{z} = D_M^2(\mathbf{x})$.

**main effects**. These are average, additive effects that are associated with each level of each factor. For example, the main effect of level $j$ of a factor is the difference between the mean of all observations on the outcome of interest at level $j$ and the grand mean.

**MANCOVA**. MANCOVA is multivariate analysis of covariance. See *multivariate analysis of variance*.

**manifest variables**. Synonym for *observed variables*.

**MANOVA**. *multivariate analysis of variance*.

**Mantel–Haenszel test**. The Mantel–Haenszel test evaluates whether the overall degree of association in stratified $2 \times 2$ tables is significant assuming that the exposure effect is the same across strata. See [PSS] **power cmh**.

**MAR**. See *missing at random*.

**marginal distribution**. In Bayesian context, a distribution of the data after integrating out parameters from the joint distribution of the parameters and the data.

**marginal homogeneity**. Marginal homogeneity refers to the equality of one or more row marginal proportions with the corresponding column proportions. Also see *Introduction* under *Remarks and examples* in [PSS] **power pairedproportions**.

**marginal likelihood**. In the context of Bayesian model comparison, a marginalized over model parameters $\boldsymbol{\theta}$ likelihood of data $\mathbf{y}$ for a given model $M$, $P(\mathbf{y}|M) = m(\mathbf{y}) = \int P(\mathbf{y}|\boldsymbol{\theta}, M)P(\boldsymbol{\theta}|M)d\boldsymbol{\theta}$. Also see *Bayes factor*.

**marginal posterior distribution**. In Bayesian context, a marginal posterior distribution is a distribution resulting from integrating out all but one parameter from the joint posterior distribution.

**marginal proportion**. This represents a ratio of the number of observations in a row or column of a contingency table relative to the total number of observations. Also see *Introduction* under *Remarks and examples* in [PSS] **power pairedproportions**.

**Markov chain**. Markov chain is a random process that generates sequences of random vectors (or states) and satisfies the Markov property: the next state depends only on the current state and not on any of the previous states. MCMC is the most common methodology for simulating Markov chains.

**mass**. In CA and MCA, the mass is the marginal probability. The sum of the mass over the active row or column categories equals 1.

**.mata file**. By convention, we store the Mata source code for function *function*`()` in file *function*`.mata`; see [M-1] **source**.

**matched case–control study**. Also known as a retrospective study, a matched case–control study is a study in which persons with positive outcomes are each matched with one or more persons with negative outcomes but with similar characteristics.

**matched study**. In a matched study, an observation from one group is matched to one or more observations from another group with respect to one or more characteristics of interest. When multiple matches occur, the study design is $1 : M$, where $M$ is the number of matches. Also see *paired data*, also known as $1 : 1$ matched data.

**matching coefficient**. The matching similarity coefficient is used to compare two binary variables. If $a$ is the number of observations that both have value 1, and $d$ is the number of observations that both have value 0, and $b, c$ are the number of $(1,0)$ and $(0,1)$ observations, respectively, then the matching coefficient is given by

$$\frac{a+d}{a+b+c+d}$$

Also see *similarity measure*.

**matching configuration**. In MDS, the matching configuration is the low dimensional configuration whose distances approximate the high-dimensional dissimilarities or disparities. Also see *multidimensional scaling*, *dissimilarity*, and *disparity*.

**matching configuration plot**. After MDS, this is a scatter plot of the matching configuration.

**matching estimator**. An estimator that compares differences between the outcomes of similar—that is, matched—individuals. Each individual that receives a treatment is matched to a similar individual that does not get the treatment, and the difference in their outcomes is used to estimate the individual-level treatment effect. Likewise, each individual that does not receive a treatment is matched to a similar individual that does get the treatment, and the difference in their outcomes is used to estimate the individual-level treatment effect.

**matrix**. The most general organization of data, containing $r$ rows and $c$ columns. Vectors, column vectors, row vectors, and scalars are special cases of matrices.

**matrix model parameter**. A matrix model parameter is any model parameter that is a matrix. Matrix elements, however, are viewed as scalar model parameters.

Matrix model parameters are defined and referred to within the `bayesmh` command as `{`*param*`,matrix}` or `{`*eqname*`:`*param*`,matrix}` with the equation name *eqname*. For example, `{Sigma, matrix}` and `{Scale:Omega, matrix}` are matrix model parameters. Individual matrix elements cannot be referred to within the `bayesmh` command, but they can be referred within postestimation commands accepting parameters. For example, to refer to the individual elements of the defined above, say, $2 \times 2$ matrices, use `{Sigma_1_1}`, `{Sigma_2_1}`, `{Sigma_1_2}`, `{Sigma_2_2}` and `{Scale:Omega_1_1}`, `{Scale:Omega_2_1}`, `{Scale:Omega_1_2}`, `{Scale:Omega_2_2}`, respectively. See [BAYES] **bayesmh**.

**matrix parameter**. See *matrix model parameter*.

**maximum likelihood factor method**. The maximum likelihood factor method is a method for performing factor analysis that assumes multivariate normal observations. It maximizes the determinant of the partial correlation matrix; thus, this solution is also meaningful as a descriptive method for nonnormal data. Also see *factor analysis*.

**MCA**. See *multiple correspondence analysis*.

**MCAGHQ**. See *mode-curvature adaptive Gauss–Hermite quadrature*.

**MCAR**. See *missing completely at random*.

**MCE**. See *Monte Carlo error*.

**MCMC, Markov chain Monte Carlo**. MCMC is a class of simulation-based methods for generating samples from probability distributions. Any MCMC algorithm simulates a Markov chain with a target distribution as its stationary or equilibrium distribution. The precision of MCMC algorithms increases with the number of iterations. The lack of a stopping rule and convergence rule, however, makes it difficult to determine for how long to run MCMC. The time needed to converge to the target distribution within a prespecified error is referred to as mixing time. Better MCMC algorithms have faster mixing times. Some of the popular MCMC algorithms are random-walk Metropolis, Metropolis–Hastings, and Gibbs sampling.

**MCMC sample**. An MCMC sample is obtained from MCMC sampling. An MCMC sample approximates a target distribution and is used for summarizing this distribution.

**MCMC sample size**. MCMC sample size is the size of the MCMC sample. It is specified in `bayesmh`'s option `mcmcsize()`; see [BAYES] **bayesmh**.

**MCMC sampling, MCMC sampler**. MCMC sampling is an MCMC algorithm that generates samples from a target probability distribution.

**MCMC standard error, MCSE** MCSE is the standard error of the posterior mean estimate. It is defined as the standard deviation divided by the square root of ESS. MCSEs are analogs of standard errors in frequentist statistics and measure the accuracy of the simulated MCMC sample.

**McNemar's test**. McNemar's test is a test used to compare two dependent binary populations. The null hypothesis is formulated in the context of a $2 \times 2$ contingency table as a hypothesis of marginal homogeneity. See [PSS] **power pairedproportions** and the `mcc` command in [R] **epitab**.

**MDES**. See *minimum detectable effect size*.

**MDS**. See *multidimensional scaling*.

**MDS configuration plot**. See *configuration plot*.

**mean contrasts**. See *contrasts*.

**mean–variance adaptive Gauss–Hermite quadrature**. In the context of generalized linear mixed models, mean–variance adaptive Gauss–Hermite quadrature is a method of approximating the integral used in the calculation of the log likelihood. The quadrature locations and weights for individual clusters are updated during the optimization process by using the posterior mean and the posterior standard deviation.

In the context of IRT models, mean–variance adaptive Gauss–Hermite quadrature (MVAGHQ) is a method of approximating the integral used in the calculation of the log likelihood. The quadrature locations and weights for individuals are updated during the optimization process by using the posterior mean and the posterior standard deviation.

**measure**. A measure is a quantity representing the proximity between objects or method for determining the proximity between objects. Also see *proximity*.

**measure**, **measurement**, **x a measurement of X**, **x measures X**. See *measurement variables*.

**measurement models**, **measurement component**. A measurement model is a particular kind of model that deals with the problem of translating observed values to values suitable for modeling. Measurement models are often combined with structural models and then the measurement model part is referred to as the measurement component. See [SEM] **intro 5**.

**measurement variables**, **measure**, **measurement**, **x a measurement of X**, **x measures X**. Observed variable $x$ is a measurement of latent variable $X$ if there is a path connecting $x \leftarrow X$. Measurement variables are modeled by measurement models. Measurement variables are also called indicator variables.

**median-linkage clustering**. Median-linkage clustering is a hierarchical clustering method that uses the distance between the medians of two groups to determine the similarity or dissimilarity of the two groups. Also see *cluster analysis* and *agglomerative hierarchical clustering methods*.

**MEFF** and **MEFT**. MEFF and MEFT are misspecification effects. Misspecification effects compare the variance estimate from a given survey dataset with the variance from a misspecified model. In Stata, the misspecified model is fit without weighting, clustering, or stratification.

MEFF is the ratio of two variance estimates. The design-based variance is in the numerator; the misspecified variance is in the denominator.

MEFT is the ratio of two standard-error estimates. The design-based standard error is in the numerator; the misspecified standard error is in the denominator. MEFT is the square root of MEFF.

**method**. Method is just an English word and should be read in context. Nonetheless, method is used here usually to refer to the method used to solve for the fitted parameters of an SEM. Those methods are ML, QML, MLMV, and ADF. Also see *technique*.

**metric scaling**. Metric scaling is a type of MDS, in which the dissimilarities are transformed to disparities via a class of known functions. This is contrasted to *nonmetric scaling*. Also see *multidimensional scaling*.

**Metropolis–Hastings (MH) sampling, MH sampler**. A Metropolis–Hastings (MH) sampler is an MCMC method for simulating probability distributions. According to this method, at each step of the Markov chain, a new proposal state is generated from the current state according to a prespecified proposal distribution. Based on the current and new state, an acceptance probability is calculated and then used to accept or reject the proposed state. Important characteristics of MH sampling is the acceptance rate and mixing time. The MH algorithm is very general and can be applied to an arbitrary target distribution. However, its efficiency is limited, in terms of mixing time, and decreases as the dimension of the target distribution increases. Gibbs sampling, when available, can provide much more efficient sampling than MH sampling.

**mi data**. Any data that have been `mi set` (see [MI] **mi set**), whether directly by `mi set` or indirectly by `mi import` (see [MI] **mi import**). The `mi` data might have no imputations (have $M = 0$) and no imputed variables, at least yet, or they might have $M > 0$ and no imputed variables, or vice versa. An `mi` dataset might have $M > 0$ and imputed variables, but the missing values have not yet been replaced with imputed values. Or `mi` data might have $M > 0$ and imputed variables and the missing values of the imputed variables filled in with imputed values.

**MIMIC**. See *multiple indicators and multiple causes*.

**minimum detectable effect size**. The minimum detectable effect size is the smallest effect size that can be detected by hypothesis testing for a given power and sample size.

**minimum detectable value**. The minimum detectable value represents the smallest amount or concentration of a substance that can be reliably measured.

**minimum entropy rotation**. The minimum entropy rotation is an orthogonal rotation achieved by minimizing the deviation from uniformity (entropy). The minimum entropy criterion (Jennrich 2004) is

$$c(\mathbf{\Lambda}) = -\frac{1}{2}\left\langle \mathbf{\Lambda}^2, \log \mathbf{\Lambda}^2 \right\rangle$$

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$. Also see *orthogonal rotation*.

**misclassification rate**. The misclassification rate calculated after discriminant analysis is, in its simplest form, the fraction of observations incorrectly classified. See *discriminant analysis*.

**missing at random**. Missing data are said to be missing at random (MAR) if the probability that data are missing does not depend on unobserved data but may depend on observed data. Under MAR, the missing-data values do not contain any additional information given observed data about the missing-data mechanism. Thus the process that causes missing data can be ignored.

**missing completely at random**. Missing data are said to be missing completely at random (MCAR) if the probability that data are missing does not depend on observed or unobserved data. Under MCAR, the missing data values are a simple random sample of all data values, so any analysis that discards the missing values remains consistent, albeit perhaps inefficient.

**missing not at random**. Missing data are missing not at random (MNAR) if the probability that data are missing depends on unobserved data. Under MNAR, a missing-data mechanism (the process that causes missing data) must be modeled to obtain valid results.

**misspecification effects**. See *MEFF* and *MEFT*.

**mixed design**. A mixed design is an experiment that has at least one between-subjects factor and one within-subject factor. See [PSS] **power repeated**.

**mixed model**. See *mixed-effects model*.

**mixed-effects model**. A mixed-effects model contains both fixed and random effects. The fixed effects are estimated directly, whereas the random effects are summarized according to their (co)variances. Mixed-effects models are used primarily to perform estimation and inference on the regression coefficients in the presence of complicated within-subject correlation structures induced by multiple levels of grouping.

**mixing of Markov chain**. Mixing refers to the rate at which a Markov chain traverses the parameter space. It is a property of the Markov chain that is different from convergence. Poor mixing indicates a slow rate at which the chain explores the stationary distribution and will require more iterations to provide inference at a given precision. Poor (slow) mixing is typically a result of high correlation between model parameters or of weakly-defined model specifications.

**ML**, **method(ml)**. ML stands for maximum likelihood. It is a method to obtain fitted parameters. ML is the default method used by `sem` and `gsem`. Other available methods for `sem` are QML, MLMV, and ADF. Also available for `gsem` is QML.

**.mlib library**. The object code of functions can be collected and stored in a library. Most Mata functions, in fact, are located in the official libraries provided with Stata. You can create your own libraries. See [M-3] **mata mlib**.

**MLMV**, **method(mlmv)**. MLMV stands for maximum likelihood with missing values. It is an ML method used to obtain fitted parameters in the presence of missing values. MLMV is the method used by `sem` when the `method(mlmv)` option is specified; `method(mlmv)` is not available with `gsem`. Other available methods for use with `sem` are ML, QML, and ADF. These methods omit from the calculation observations that contain missing values.

**mlong data**. See *style*.

**MNAR**. See *missing not at random*.

**.mo file**. The object code of a function can be stored in a `.mo` file, where it can be later reused. See [M-1] **how** and [M-3] **mata mosave**.

**mode-curvature adaptive Gauss–Hermite quadrature**. In the context of generalized linear mixed models, mode-curvature adaptive Gauss–Hermite quadrature is a method of approximating the integral used in the calculation of the log likelihood. The quadrature locations and weights for individual clusters are updated during the optimization process by using the posterior mode and the standard deviation of the normal density that approximates the log posterior at the mode.

In the context of IRT models, mode-curvature adaptive Gauss–Hermite quadrature (MCAGHQ) is a method of approximating the integral used in the calculation of the log likelihood. The quadrature locations and weights for individuals are updated during the optimization process by using the posterior mode and the standard deviation of the normal density that approximates the log posterior at the mode.

**model hypothesis testing**. Model hypothesis testing tests hypotheses about models by computing model posterior probabilities.

**model parameter**. A model parameter refers to any (random) parameter in a Bayesian model. Model parameters can be scalars or matrices. Examples of model parameters as defined in `bayesmh` are `{mu}`, `{scale:s}`, `{Sigma,matrix}`, and `{Scale:Omega,matrix}`. See [BAYES] **bayesmh** and, specifically, *Declaring model parameters* and *Referring to model parameters* in that entry. Also see *Different ways of specifying model parameters* in [BAYES] **bayesmh postestimation**.

**model posterior probability**. Model posterior probability is probability of a model $M$ computed conditional on the observed data $\mathbf{y}$,

$$P(M|\mathbf{y}) = P(M)P(\mathbf{y}|M) = P(M)m(\mathbf{y})$$

where $P(M)$ is the prior probability of a model $M$ and $m(\mathbf{y})$ is the marginal likelihood under model $M$.

**modern scaling**. Modern scaling is a form of MDS that is achieved via the minimization of a loss function that compares the disparities (transformed dissimilarities) in the higher-dimensional space and the distances in the lower-dimensional space. Contrast to *classical scaling*. Also see *dissimilarity*, *disparity*, *multidimensional scaling*, and *loss*.

**modification indices**. Modification indices are score tests for adding paths where none appear. The paths can be for either coefficients or covariances.

**moments (of a distribution)**. The moments of a distribution are the expected values of powers of a random variable or centralized (demeaned) powers of a random variable. The first moments are the expected or observed means, and the second moments are the expected or observed variances and covariances.

**monadic operator**. Synonym for unary operator.

**monotone-missing pattern**, **monotone missingness**. A special pattern of missing values in which if the variables are ordered from least to most missing, then all observations of a variable contain missing in the observations in which the prior variable contains missing.

**Monte Carlo error**. Within the multiple-imputation context, a Monte Carlo error is defined as the standard deviation of the multiple-imputation results across repeated runs of the same imputation procedure using the same data. The Monte Carlo error is useful for evaluating the statistical reproducibility of multiple-imputation results. See *Example 6: Monte Carlo error estimates* under *Remarks and examples* of [MI] **mi estimate**.

**moving-average process**. A moving-average process is a time-series process in which the current value of a variable is modeled as a weighted average of current and past realizations of a white-noise process and, optionally, a time-invariant constant. By convention, the weight on the current realization of the white-noise process is equal to one, and the weights on the past realizations are known as the moving-average (MA) coefficients. A first-order moving-average process, denoted as an MA(1) process, is $y_t = \theta\epsilon_{t-1} + \epsilon_t$.

**multiarm trial**. A multiarm trial is a trial comparing survivor functions of more than two groups.

**multidimensional scaling**. Multidimensional scaling (MDS) is a dimension-reduction and visualization technique. Dissimilarities (for instance, Euclidean distances) between observations in a high-dimensional space are represented in a lower-dimensional space which is typically two dimensions so that the Euclidean distance in the lower-dimensional space approximates in some sense the dissimilarities in the higher-dimensional space. Often the higher-dimensional dissimilarities are first transformed to disparities, and the disparities are then approximated by the distances in the lower-dimensional space. Also see *dissimilarity*, *disparity*, *classical scaling*, *loss*, *modern scaling*, *metric scaling*, and *nonmetric scaling*.

**multilevel models**. Multilevel models are models that include unobserved effects (latent variables) for different groups in the data. For instance, in a dataset of students, groups of students might share the same teacher. If the teacher's identity is recorded in the data, then one can introduce a latent variable that is constant within teacher and that varies across teachers. This is called a two-level model.

If teachers could in turn be grouped into schools, and school identities were recorded in the data, then one can introduce another latent variable that is constant within school and varies across schools. This is called a three-level (nested-effects) model.

In the above example, observations (students) are said to be nested within teacher nested within school. Sometimes there is no such subsequent nesting structure. Consider workers nested within occupation and industry. The same occupations appear in various industries and the same industries appear within various occupations. We can still introduce latent variables at the occupation and industry level. In such cases, the model is called a crossed-effects model.

The latent variables that we have discussed are also known as random effects. Any coefficients on observed variables in the model are known as the fixed portion of the model. Models that contain fixed and random portions are known as mixed-effects models.

**multinomial logit regression**. Multinomial logit regression is a term for generalized linear response functions that are family multinomial, link logit. It is used for categorical-outcome data when the outcomes cannot be ordered. Multinomial logit regression is also known as multinomial logistic regression and as mlogit in Stata circles. See *generalized linear response functions*.

**multiple correlation**. The multiple correlation is the correlation between endogenous variable $y$ and its linear prediction.

**multiple correspondence analysis**. Multiple correspondence analysis (MCA) and joint correspondence analysis (JCA) are methods for analyzing observations on categorical variables. MCA and JCA analyze a multiway table and are usually viewed as an extension of CA. Also see *correspondence analysis*.

**multiple indicators and multiple causes**. Multiple indicators and multiple causes is a kind of structural model in which observed causes determine a latent variable, which in turn determines multiple indicators. See [SEM] **intro 4**.

**multiple-record st data**. See *st data*.

**multivalued treatment effect**. A multivalued treatment refers to a treatment that has more than two values. For example, a person could have taken a 20 mg dose of a drug, a 40 mg dose of the drug, or not taken the drug at all.

**multivariate analysis of covariance**. See *multivariate analysis of variance*.

**multivariate analysis of variance**. Multivariate analysis of variance (MANOVA) is used to test hypotheses about means. Four multivariate statistics are commonly computed in MANOVA: Wilks's lambda, Pillai's trace, Lawley–Hotelling trace, and Roy's largest root. Also see *Wilks's lambda*, *Pillai's trace*, *Lawley–Hotelling trace*, and *Roy's largest root*.

**multivariate GARCH models**. Multivariate GARCH models are multivariate time-series models in which the conditional covariance matrix of the errors depends on its own past and its past shocks. The acute trade-off between parsimony and flexibility has given rise to a plethora of models; see [TS] **mgarch**.

**multivariate regression**. A multivariate regression is a linear regression model in which the regressand is vector valued. Equivalently, a mutivariate regression is a linear regression model in which multiple left-hand-side variables are regressed on the same set of explanatory variables simultaneously, allowing the disturbance terms to be contemporaneously correlated. Multivariate regression is

a special case of *seemingly unrelated regression* in which all equations share the same set of explanatory variables.

**MVAGHQ**. See *mean–variance adaptive Gauss–Hermite quadrature*.

**NaN**. NaN stands for Not a Number and is a special computer floating-point code used for results that cannot be calculated. Mata (and Stata) do not use NaNs. When NaNs arise, they are converted into . (missing value).

**nearest neighbor**. See *kth nearest neighbor*.

**nearest-neighbor matching**. Nearest-neighbor matching uses the distance between observed variables to find similar individuals.

**negative binomial regression**. Negative binomial regression is a term for generalized linear response functions that are family negative binomial, link log. It is used for count data that are overdispersed relative to Poisson. Negative binomial regression is also known as nbreg in Stata circles. See *generalized linear response functions*.

**negative binomial regression model**. The negative binomial regression model is for applications in which the dependent variable represents the number of times an event occurs. The negative binomial regression model is an alternative to the Poisson model for use when the dependent variable is overdispersed, meaning that the variance of the dependent variable is greater than its mean.

**negative effect size**. In power and sample-size analysis, we obtain a negative effect size when the postulated value of the parameter under the alternative hypothesis is less than the hypothesized value of the parameter under the null hypothesis. Also see *positive effect size*.

**nested random effects**. In the context of mixed-effects models, nested random effects refer to the nested grouping factors for the random effects. For example, we may have data on students who are nested in classes that are nested in schools.

**nested-effects models**. See *multilevel models*.

**Newey–West covariance matrix**. The Newey–West covariance matrix is a member of the class of heteroskedasticity- and autocorrelation-consistent (HAC) covariance matrix estimators used with time-series data that produces covariance estimates that are robust to both arbitrary heteroskedasticity and autocorrelation up to a prespecified lag.

**nominal alpha**, **nominal significance level**. This is a desired or requested significance level.

**nominal item**. A nominal item is an item scored in categories that have no natural ordering.

**nominal response model**. The nominal response model (NRM) is an IRT model for nominal responses. The categories within each item vary in their difficulty and discrimination.

**noncentrality parameter**. In power and sample-size analysis, a noncentrality parameter is the expected value of the test statistic under the alternative hypothesis.

**nondirectional test**. See *two-sided test*.

**noninformative prior**. A noninformative prior is a prior with negligible influence on the posterior distribution. See, for example, *Jeffreys prior*.

**nonmetric scaling**. Nonmetric scaling is a type of modern MDS in which the dissimilarities may be transformed to disparities via any monotonic function as opposed to a class of known functions. Contrast to *metric scaling*. Also see *multidimensional scaling*, *dissimilarity*, *disparity*, and *modern scaling*.

**nonparametric methods**. Nonparametric statistical methods, such as KNN discriminant analysis, do not assume the population fits any parameterized distribution.

**nonrecursive (structural) model (system), recursive (structural) model (system)**. A structural model (system) is said to be nonrecursive if there are paths in both directions between one or more pairs of endogenous variables. A system is recursive if it is a system—it has endogenous variables that appear with paths from them—and it is not nonrecursive.

A nonrecursive model may be unstable. Consider, for instance,

$$y_1 = 2y_2 + 1x_1 + e_1$$
$$y_2 = 3y_1 - 2x_2 + e_2$$

This model is unstable. To see this, without loss of generality, treat $x_1 + e_1$ and $2x_2 + e_2$ as if they were both 0. Consider $y_1 = 1$ and $y_2 = 1$. Those values result in new values $y_1 = 2$ and $y_2 = 3$, and those result in new values $y_1 = 6$ and $y_2 = 6$, and those result in new values, .... Continue in this manner, and you reach infinity for both endogenous variables. In the jargon of the mathematics used to check for this property, the eigenvalues of the coefficient matrix lie outside the unit circle.

On the other hand, consider these values:

$$y_1 = 0.5y_2 + 1x_1 + e_1$$
$$y_2 = 1.0y_1 - 2x_2 + e_2$$

These results are stable in that the resulting values converge to $y_1 = 0$ and $y_2 = 0$. In the jargon of the mathematics used to check for this property, the eigenvalues of the coefficients matrix lie inside the unit circle. Finally, consider the values

$$y_1 = 0.5y_2 + 1x_1 + e_1$$
$$y_2 = 2.0y_1 - 2x_2 + e_2$$

Start with $y_1 = 1$ and $y_2 = 1$ and that yields new values $y_1 = 0.5$ and $y_2 = 2$ and that yields new values $y_1 = 1$ and $y_2 = 1$, and that yields $y_1 = 0.5$ and $y_2 = 2$, and it will oscillate forever. In the jargon of the mathematics used to check for this property, the eigenvalues of the coefficients matrix lie on the unit circle. These coefficients are also considered to be unstable.

**nonsphericity correction**. This is a correction used for the degrees of freedom of a regular $F$ test in a repeated-measures ANOVA to compensate for the lack of sphericity of the repeated-measures covariance matrix.

**norm**. A norm is a real-valued function $f(x)$ satisfying

$$\begin{aligned} f(0) &= 0 \\ f(x) &> 0 \qquad \text{for all } x \neq 0 \\ f(cx) &= |c| f(x) \\ f(x+y) &\leq f(x) + f(y) \end{aligned}$$

The word *norm* applied to a vector $x$ usually refers to its Euclidean norm, $p = 2$ norm, or length: the square root of the sum of its squared elements. The are other norms, the popular ones being $p = 1$ (the sum of the absolute values of its elements) and $p =$ infinity (the maximum element). Norms can also be generalized to deal with matrices. See [M-5] **norm( )**.

**normality assumption, joint and conditional**. The derivation of the standard, linear SEM estimator usually assumes the full joint normality of the observed and latent variables. However, full joint normality can replace the assumption of normality conditional on the values of the exogenous variables, and all that is lost is one goodness-of-fit test (the test reported by `sem` on the output) and the justification for use of optional method MLMV for dealing with missing values. This substitution of assumptions is important for researchers who cannot reasonably assume normality of the observed variables. This includes any researcher including, say, variables age and age-squared in his or her model.

Meanwhile, the generalized SEM makes only the conditional normality assumption.

Be aware that even though the full joint normality assumption is not required for the standard linear SEM, `sem` calculates the log-likelihood value under that assumption. This is irrelevant except that log-likelihood values reported by `sem` cannot be compared with log-likelihood values reported by `gsem`, which makes the lesser assumption.

See [SEM] **intro 4**.

**normalization**. Normalization presents information in a standard form for interpretation. In CA the row and column coordinates can be normalized in different ways depending on how one wishes to interpret the data. Normalization is also used in rotation, MDS, and MCA.

**normalization constraints**. See *identification*.

**normalized residuals**. See *standardized residuals*.

**NRM**. See *nominal response model*.

**NULL**. A special value for a *pointer* that means "points to nothing". If you list the contents of a pointer variable that contains `NULL`, the address will show as `0x0`. See *pointer*.

**null hypothesis**. In hypothesis testing, the null hypothesis typically represents the conjecture that one is attempting to disprove. Often the null hypothesis is that a treatment has no effect or that a statistic is equal across populations.

**null value**, **null parameter**. This value of the parameter of interest under the null hypothesis is fixed by the investigator in a power and sample-size analysis. For example, null mean value and null mean refer to the value of the mean parameter under the null hypothesis.

**null-terminator**. See *binary 0*.

**numeric**. A matrix is said to be numeric if its elements are real or complex; see *type, eltype, and orgtype*.

**object code**. Object code refers to the binary code that Mata produces from the source code you type as input. See [M-1] **how**.

**objective prior**. See *noninformative prior*.

**object-oriented programming**. Object-oriented programming is a programming concept that treats programming elements as objects and concentrates on actions affecting those objects rather than merely on lists of instructions. Object-oriented programming uses classes to describe objects. Classes are much like structures with a primary difference being that classes can contain functions (known as methods) as well as variables. Unlike structures, however, classes may inherit variables and functions from other classes, which in theory makes object-oriented programs easier to extend and modify than non–object-oriented programs.

**oblimax rotation**. Oblimax rotation is a method for oblique rotation which maximizes the number of high and low loadings. When restricted to orthogonal rotation, oblimax is equivalent to quartimax rotation. Oblimax minimizes the oblimax criterion

$$c(\mathbf{\Lambda}) = -\log(\langle \mathbf{\Lambda}^2, \mathbf{\Lambda}^2 \rangle) + 2\log(\langle \mathbf{\Lambda}, \mathbf{\Lambda} \rangle)$$

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$. Also see *oblique rotation*, *orthogonal rotation*, and *quartimax rotation*.

**oblimin rotation**. Oblimin rotation is a general method for oblique rotation, achieved by minimizing the oblimin criterion

$$c(\mathbf{\Lambda}) = \frac{1}{4}\left\langle \mathbf{\Lambda}^2, \{\mathbf{I} - (\gamma/p)\mathbf{1}\mathbf{1}'\}\mathbf{\Lambda}^2(\mathbf{1}\mathbf{1}' - \mathbf{I})\right\rangle$$

Oblimin has several interesting special cases:

| $\gamma$ | Special case |
|---|---|
| 0 | quartimax / quartimin |
| 1/2 | biquartimax / biquartimin |
| 1 | varimax / covarimin |
| $p/2$ | equamax |

$p$ = number of rows of $\mathbf{A}$.

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$ and $\mathbf{A}$. Also see *oblique rotation*.

**oblique rotation** or **oblique transformation**. An oblique rotation maintains the norms of the rows of the matrix but not their inner products. In geometric terms, this maintains the lengths of vectors, but not the angles between them. In contrast, in orthogonal rotation, both are preserved.

**observational data**. In observational data, treatment assignment is not controlled by those who collected the data; thus some common variables affect treatment assignment and treatment-specific outcomes.

**observational study.** In an observational study, as opposed to an experimental study, the assignment of subjects to treatments happens naturally and is thus beyond the control of investigators. Investigators can only observe subjects and measure their characteristics. For example, a study that evaluates the effect of exposure of children to household pesticides is an observational study.

**observations and variables**. A dataset containing $n$ observations on $k$ variables in often stored in an $n \times k$ matrix. An observation refers to a row of that matrix; a variable refers to a column.

**observed level of significance**. See *p-value*.

**observed variables**. A variable is observed if it is a variable in your dataset. In this documentation, we often refer to observed variables by using `x1`, `x2`, ..., `y1`, `y2`, and so on; in reality, observed variables have names such as `mpg`, `weight`, `testscore`, etc.

In the software, observed variables are usually indicated by having names that are all lowercase.

Also see *latent variable*.

**odds** and **odds ratio**. The odds in favor of an event are $o = p/(1-p)$, where $p$ is the probability of the event. Thus if $p = 0.2$, the odds are 0.25, and if $p = 0.8$, the odds are 4.

The log of the odds is $\ln(o) = \text{logit}(p) = \ln\{p/(1-p)\}$, and logistic-regression models, for instance, fit $\ln(o)$ as a linear function of the covariates.

The odds ratio is a ratio of two odds: $o_1/o_0$. The individual odds that appear in the ratio are usually for an experimental group and a control group, or two different demographic groups.

**offset variable** and **exposure variable**. An offset variable is a variable that is to appear on the right-hand side of a model with coefficient 1:

$$y_j = \text{offset}_j + b_0 + b_1 x_j + \cdots$$

In the above, $b_0$ and $b_1$ are to be estimated. The offset is not constant. Offset variables are often included to account for the amount of exposure. Consider a model where the number of events observed over a period is the length of the period multiplied by the number of events expected in a unit of time:

$$n_j = T_j e(X_j)$$

When we take logs, this becomes

$$\log(n_j) = \log(T_j) + \log\{e(X_j)\}$$

$\ln(T_j)$ is an offset variable in this model.

When the log of a variable is an offset variable, the variable is said to be an exposure variable. In the above, $T_j$ is an exposure variable.

**OIM**, **vce(oim)**. OIM stands for observed information matrix, defined as the inverse of the negative of the matrix of second derivatives, usually of the log likelihood function. The OIM is an estimate of the VCE. OIM is the default VCE that `sem` and `gsem` report. The other available techniques are EIM, OPG, robust, clustered, bootstrap, and jackknife.

**one-at-a-time MCMC sampling**. A one-at-a-time MCMC sample is an MCMC sampling procedure in which random variables are sampled individually, one at a time. For example, in Gibbs sampling, individual variates are sampled one at a time, conditionally on the most recent values of the rest of the variates.

**one-level model**. A one-level model has no multilevel structure and no random effects. Linear regression is a one-level model.

**one-parameter logistic model**. The one-parameter logistic (1PL) model is an IRT model for binary responses where items vary in their difficulty but share the same discrimination parameter.

**one-sample test**. A one-sample test compares a parameter of interest from one sample with a reference value. For example, a one-sample mean test compares a mean of the sample with a reference value.

**one-sided test**, **one-tailed test**. A one-sided test is a hypothesis test of a scalar parameter in which the alternative hypothesis is one sided, meaning that the alternative hypothesis states that the parameter is either less than or greater than the value conjectured under the null hypothesis but not both. Also see *One-sided test versus two-sided test* under *Remarks and examples* in [PSS] **intro**.

**one-step-ahead forecast**. See *static forecast*.

**one-way ANOVA**, **one-way analysis of variance**. A one-way ANOVA model has a single factor. Also see [PSS] **power oneway**.

**one-way repeated-measures ANOVA**. A one-way repeated-measures ANOVA model has a single within-subject factor. Also see [PSS] **power repeated**.

**operating characteristic curve**. See *category characteristic curve*.

**operator**. An operator is `+`, `-`, and the like. Most operators are binary (or dyadic), such as `+` in *A*+*B* and `*` in *C***D*. Binary operators also include logical operators such as `&` and `|` ("and" and "or") in *E*&*F* and *G*|*H*. Other operators are unary (or monadic), such as `!` (not) in !*J*, or both unary and binary, such as `-` in -*K* and in *L*-*M*. When we say "operator" without specifying which, we mean binary operator. Thus colon operators are in fact colon binary operators. See [M-2] **exp**.

**OPG**, **vce(opg)**. OPG stands for outer product of the gradients, defined as the cross product of the observation-level first derivatives, usually of the log likelihood function. The OPG is an estimate of the VCE. The other available techniques are OIM, EIM, robust, clustered, bootstrap, and jackknife.

**optimization**. Mata compiles the code that you write. After compilation, Mata performs an *optimization* step, the purpose of which is to make the compiled code execute more quickly. You can turn off the optimization step—see [M-3] **mata set**—but doing so is not recommended.

**ordered complementary log-log regression**. Ordered complementary log-log regression is a term for generalized linear response functions that are family ordinal, link cloglog. It is used for ordinal-outcome data. Ordered complementary log-log regression is also known as ocloglog in Stata circles. See *generalized linear response functions*.

**ordered logit regression**. Ordered logit regression is a term for generalized linear response functions that are family ordinal, link logit. It is used for ordinal outcome data. Ordered logit regression is also known as ordered logistic regression, as just ordered logit, and as ologit in Stata circles. See *generalized linear response functions*.

**ordered probit regression**. Ordered probit regression is a term for generalized linear response functions that are family ordinal, link probit. It is used for ordinal-outcome data. Ordered probit regression is also known as just ordered probit and known as oprobit in Stata circles. See *generalized linear response functions*.

**ordinal item**. An ordinal item is an item scored on a scale where a higher score indicates a "higher" outcome.

**ordination**. Ordination is the ordering of a set of data points with respect to one or more axes. MDS is a form of ordination.

**orgtype**. See *type, eltype, and orgtype*.

**original data**. Original data are the data as originally collected, with missing values in place. In `mi` data, the original data are stored in $m = 0$. The original data can be extracted from `mi` data by using `mi extract`; see [MI] **mi extract**.

**orthogonal matrix and unitary matrix**. $A$ is orthogonal if $A$ is *square* and $A'A$==$I$. The word orthogonal is usually reserved for real matrices; if the matrix is complex, it is said to be unitary (and then transpose means conjugate-transpose). We use the word orthogonal for both real and complex matrices.

If $A$ is orthogonal, then $\det(A) = \pm 1$.

**orthogonal rotation** or **orthogonal transformation**. Orthogonal rotation maintains both the norms of the rows of the matrix and also inner products of the rows of the matrix. In geometric terms, this maintains both the lengths of vectors and the angles between them. In contrast, oblique rotation maintains only the norms, that is, the lengths of vectors.

**orthogonalized impulse–response function**. An orthogonalized impulse–response function (OIRF) measures the effect of an orthogonalized shock to an endogenous variable on itself or another endogenous variable. An orthogonalized shock is one that affects one variable at time $t$ but no other variables. See [TS] **irf create** for a discussion of the difference between IRFs and OIRFs.

**outcome model**. An outcome model is a model used to predict the outcome as a function of covariates and parameters.

**overdispersion**. In count-data models, overdispersion occurs when there is more variation in the data than would be expected if the process were Poisson.

**overidentifying restrictions**. The order condition for model identification requires that the number of exogenous variables excluded from the model be at least as great as the number of endogenous

regressors. When the number of excluded exogenous variables exceeds the number of endogenous regressors, the model is overidentified, and the validity of the instruments can then be checked via a test of overidentifying restrictions.

**overlap assumption**. The overlap assumption requires that each individual have a positive probability of each possible treatment level.

**paired data**. Paired data consist of pairs of observations that share some characteristics of interest. For example, measurements on twins, pretest and posttest measurements, before and after measurements, repeated measurements on the same individual. Paired data are correlated and thus must be analyzed by using a paired test.

**paired observations**. See *paired data*.

**paired test**. A paired test is used to test whether the parameters of interest of two paired populations are equal. The test takes into account the dependence between measurements. For this reason, paired tests are usually more powerful than their two-sample counterparts. For example, a paired-means or paired-difference test is used to test whether the means of two paired (correlated) populations are equal.

**panel data**. Panel data are data in which the same units were observed over multiple periods. The units, called panels, are often firms, households, or patients who were observed at several points in time. In a typical panel dataset, the number of panels is large, and the number of observations per panel is relatively small.

**panel-corrected standard errors (PCSEs)**. The term *panel-corrected standard errors* refers to a class of estimators for the variance–covariance matrix of the OLS estimator when there are relatively few panels with many observations per panel. PCSEs account for heteroskedasticity, autocorrelation, or cross-sectional correlation.

**parameter constraints**. Parameter constraints are restrictions placed on the parameters of the model. These constraints are typically in the form of 0 constraints and equality constraints. A 0 constraint is implied, for instance, when no path is drawn connecting $x$ with $y$. An equality constraint is specified when one path coefficient is forced to be equal to another or one covariance is forced to be equal to another.

Also see *identification*.

**parameters, ancillary parameters**. The parameters are the to-be-estimated coefficients of a model. These include all path coefficients, means, variances, and covariances. In mathematical notation, the theoretical parameters are often written as $\boldsymbol{\theta} = (\boldsymbol{\alpha}, \boldsymbol{\beta}, \boldsymbol{\mu}, \boldsymbol{\Sigma})$, where $\boldsymbol{\alpha}$ is the vector of intercepts, $\boldsymbol{\beta}$ is the vector of path coefficients, $\boldsymbol{\mu}$ is the vector of means, and $\boldsymbol{\Sigma}$ is the matrix of variances and covariances. The resulting parameters estimates are written as $\widehat{\boldsymbol{\theta}}$.

Ancillary parameters are extra parameters beyond the ones just described that concern the distribution. These include the scale parameter of gamma regression, the dispersion parameter for negative binomial regression, and the cutpoints for ordered probit, logit, and cloglog regression, and the like. These parameters are also included in $\theta$.

**parametric methods**. Parametric statistical methods, such as LDA and QDA, assume the population fits a parameterized distribution. For example, for LDA we assume the groups are multivariate normal with equal covariance matrices.

**parsimax rotation**. Parsimax rotation is an orthogonal rotation that balances complexity between the rows and the columns. It is equivalent to the Crawford–Ferguson family with $\kappa = (f-1)/(p+f-2)$, where $p$ is the number of rows of the original matrix, and $f$ is the number of columns. See *orthogonal rotation* and *Crawford–Ferguson rotation*.

**partial autocorrelation function**. The partial autocorrelation function (PACF) expresses the correlation between periods $t$ and $t-k$ of a time series as a function of the time $t$ and lag $k$, after controlling for the effects of intervening lags. For a stationary time series, the PACF does not depend on $t$. The PACF is not symmetric about $k = 0$: the partial autocorrelation between $y_t$ and $y_{t-k}$ is not equal to the partial autocorrelation between $y_t$ and $y_{t+k}$.

**partial credit model**. The partial credit model (PCM) is an IRT model for ordinal responses. The categories across all items vary in their difficulty and share the same discrimination parameter.

**partial DFBETA**. A partial DFBETA measures the change in the regressor's coefficient because of deletion of that individual record. In single-record data, the partial DFBETA is equal to the DFBETA. Also see *DFBETA*.

**partial likelihood displacement value**. A partial likelihood displacement value is an influence measure of the effect of deleting an individual record on the coefficient vector. For single-record data, the partial likelihood displacement value is equal to the likelihood displacement value. Also see *likelihood displacement value*.

**partial LMAX value**. A partial LMAX value is an influence measure of the effect of deleting an individual record on the overall coefficient vector and is based on an eigensystem analysis of efficient score residuals. In single-record data, the partial LMAX value is equal to the LMAX value. Also see *LMAX value*.

**partially specified target rotation**. Partially specified target rotation minimizes the criterion

$$c(\mathbf{\Lambda}) = \|\mathbf{W} \otimes (\mathbf{\Lambda} - \mathbf{H})\|^2$$

for a given target matrix $\mathbf{H}$ and a nonnegative weighting matrix $\mathbf{W}$ (usually zero–one valued). See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$.

**partition clustering** and **partition cluster-analysis methods**. Partition clustering methods break the observations into a distinct number of nonoverlapping groups. This is accomplished in one step, unlike hierarchical cluster-analysis methods, in which an iterative procedure is used. Consequently, this method is quicker and will allow larger datasets than the hierarchical clustering methods. Contrast to *hierarchical clustering*. Also see *kmeans* and *kmedians*.

**passive variable**. See *imputed, passive, and regular variables*.

**past history**. Past history is information recorded about a subject before the subject was both *at risk* and *under observation*. Consider a dataset that contains information on subjects from birth to death and an analysis in which subjects became at risk once diagnosed with a particular kind of cancer. The past history on the subject would then refer to records before the subjects were diagnosed.

The word *history* is often dropped, and the term becomes simply *past*. For instance, we might want to know whether a subject smoked in the past.

Also see *future history*.

**path**. A path, typically shown as an arrow drawn from one variable to another, states that the first variable determines the second variable, at least partially. If $x \to y$, or equivalently $y \leftarrow x$, then $y_j = \alpha + \cdots + \beta x_j + \cdots + e.y_j$, where $\beta$ is said to be the $x \to y$ path coefficient. The ellipses are included to account for paths to $y$ from other variables. $\alpha$ is said to be the intercept and is automatically added when the first path to $y$ is specified.

A curved path is a curved line connecting two variables, and it specifies that the two variables are allowed to be correlated. If there is no curved path between variables, the variables are usually assumed to be uncorrelated. We say usually because correlation is assumed among observed exogenous variables and, in the command language, assumed among latent exogenous variables, and if some of the correlations are not desired, they must be suppressed. Many authors refer to

covariances rather than correlations. Strictly speaking, the curved path denotes a nonzero covariance. A correlation is often called a standardized covariance.

A curved path can connect a variable to itself and in that case, indicates a variance. In path diagrams in this manual, we typically do not show such variance paths even though variances are assumed.

**path coefficient**. The path coefficient is associated with a path; see *path*. Also see *intercept*.

**path diagram**. A path diagram is a graphical representation that shows the relationships among a set of variables using *paths*. See [SEM] **intro 2** for a description of path diagrams.

**path notation**. Path notation is a syntax defined by the authors of Stata's `sem` and `gsem` commands for entering path diagrams in a command language. Models to be fit may be specified in path notation or they may be drawn using path diagrams into the Builder.

**PCA**. See *principal component analysis*.

**PCM**. See *partial credit model*.

**p-conformability**. Matrix, vector, or scalar $A$ is said to be p-conformable with matrix, vector, or scalar $B$ if `rows(`$A$`)==rows(`$B$`)` and `cols(`$A$`)==cols(`$B$`)`. *p* stands for plus; p-conformability is one of the properties necessary to be able to add matrices together. p-conformability, however, does not imply that the matrices are of the same type. Thus `(1,2,3)` is p-conformable with `(4,5,6)` and with `("this","that","what")` but not with `(4\5\6)`.

**Pearson's correlation**. Pearson's correlation $\rho$, also known as the product-moment correlation, measures the degree of association between two variables. Pearson's correlation equals the variables' covariance divided by their respective standard deviations, and ranges between $-1$ and 1. Zero indicates no correlation between the two variables.

**penalized log-likelihood function**. This is a log-likelihood function that contains an added term, usually referred to as a roughness penalty, that reduces its value when the model overfits the data. In Cox models with frailty, such functions are used to prevent the variance of the frailty from growing too large, which would allow the individual frailty values to perfectly fit the data.

**periodogram**. A periodogram is a graph of the spectral density function of a time series as a function of frequency. The `pergram` command first standardizes the amplitude of the density by the sample variance of the time series, and then plots the logarithm of that standardized density. Peaks in the periodogram represent cyclical behavior in the data.

**permutation matrix and permutation vector**. A *permutation matrix* is an $n \times n$ matrix that is a row (or column) permutation of the identity matrix. If $P$ is a permutation matrix, then $P*A$ permutes the rows of $A$ and $A*P$ permutes the columns of $A$. Permutation matrices also have the property that $P^{-1} = P'$.

A *permutation vector* is a $1 \times n$ or $n \times 1$ vector that contains a permutation of the integers $1, 2, \ldots, n$. Permutation vectors can be used with subscripting to reorder the rows or columns of a matrix. Permutation vectors are a memory-conserving way of recording permutation matrices; see [M-1] **permutation**.

**person location**. Location of a person on the latent trait scale.

**phase function**. The phase function of a linear filter specifies how the filter changes the relative importance of the random components at different frequencies in the frequency domain.

**Pillai's trace**. Pillai's trace is a test statistic for the hypothesis test $H_0 : \boldsymbol{\mu}_1 = \boldsymbol{\mu}_2 = \cdots = \boldsymbol{\mu}_k$ based on the eigenvalues $\lambda_1, \ldots, \lambda_s$ of $\mathbf{E}^{-1}\mathbf{H}$. It is defined as

$$V^{(s)} = \text{trace}[(\mathbf{E}+\mathbf{H})^{-1}\mathbf{H}] = \sum_{i=1}^{s} \frac{\lambda_i}{1+\lambda_i}$$

where $\mathbf{H}$ is the between matrix and $\mathbf{E}$ is the within matrix. See *between matrix*.

**plain ASCII**. We use plain ASCII as a nontechnical term to refer to what computer programmers call lower ASCII. These are the plain Latin letters "a" to "z" and "A" to "Z"; numbers "0" through "9"; many punctuation marks, such as "!"; simple mathematical symbols, such as "+"; and whitespace and control characters such as space (" "), tab, and carriage return.

Each plain ASCII characters is stored as a single byte with a value between 0 and 127. Another distinguishing feature is that the byte values used to encode plain ASCII characters are the same across different operating systems and are common between ASCII and UTF-8.

Also see *ASCII* and *encodings*.

**point estimate**. A point estimate is another name for a statistic, such as a mean or regression coefficient.

**pointer**. A matrix is said to be a pointer matrix if its elements are pointers.

A pointer is the address of a *variable*. Say that variable $X$ contains a matrix. Another variable $p$ might contain 137,799,016 and, if 137,799,016 were the address at which $X$ were stored, then $p$ would be said to point to $X$. Addresses are seldom written in base 10, and so rather than saying $p$ contains 137,799,016, we would be more likely to say that $p$ contains 0x836a568, which is the way we write numbers in base 16. Regardless of how we write addresses, however, $p$ contains a number and that number corresponds to the address of another variable.

In our program, if we refer to $p$, we are referring to $p$'s contents, the number 0x836a568. The monadic operator * is defined as "refer to the address" or "dereference": $*p$ means $X$. We could code `Y = *p` or `Y = X`, and either way, we would obtain the same result. In our program, we could refer to $X[i,j]$ or $(*p)[i,j]$, and either way, we would obtain the $i, j$ element of $X$.

The monadic operator `&` is how we put addresses into $p$. To load $p$ with the address of $X$, we code $p$ `= &`$X$.

The special address 0 (zero, written in hexadecimal as $0 \times 0$), also known as `NULL`, is how we record that a pointer variable points to nothing. A pointer variable contains `NULL` or it contains a valid address of another variable.

See [M-2] **pointers** for a complete description of pointers and their use.

**Poisson regression**. Poisson regression is a term for generalized linear response functions that are family Poisson, link log. It is used for count data. See *generalized linear response functions*.

**Poisson regression model**. The Poisson regression model is used when the dependent variable represents the number of times an event occurs. In the Poisson model, the variance of the dependent variable is equal to the conditional mean.

**polytomous item**. See *categorical item*.

**POMs**. See *potential-outcome means*.

**pooled estimator**. A pooled estimator ignores the longitudinal or panel aspect of a dataset and treats the observations as if they were cross-sectional.

**population-averaged model**. A population-averaged model is used for panel data in which the parameters measure the effects of the regressors on the outcome for the average individual in the population. The panel-specific errors are treated as uncorrelated random variables drawn from a population with zero mean and constant variance, and the parameters measure the effects of the regressors on the dependent variable after integrating over the distribution of the random effects.

**portmanteau statistic**. The portmanteau, or $Q$, statistic is used to test for white noise and is calculated using the first $m$ autocorrelations of the series, where $m$ is chosen by the user. Under the null hypothesis that the series is a white-noise process, the portmanteau statistic has a $\chi^2$ distribution with $m$ degrees of freedom.

**positive effect size**. In power and sample-size analysis, we obtain a positive effect size when the postulated value of the parameter under the alternative hypothesis is greater than the hypothesized value of the parameter under the null hypothesis. Also see *negative effect size*.

**posterior distribution, posterior**. A posterior distribution is a probability distribution of model parameters conditional on observed data. The posterior distribution is determined by the likelihood of the parameters and their prior distribution. For a parameter vector $\boldsymbol{\theta}$ and data $\mathbf{y}$, the posterior distribution is given by

$$P(\boldsymbol{\theta}|\mathbf{y}) = \frac{P(\boldsymbol{\theta})P(\mathbf{y}|\boldsymbol{\theta})}{P(\mathbf{y})}$$

where $P(\boldsymbol{\theta})$ is the prior distribution, $P(\mathbf{y}|\boldsymbol{\theta})$ is the model likelihood, and $P(\mathbf{y})$ is the marginal distribution for $\mathbf{y}$. Bayesian inference is based on a posterior distribution.

**posterior independence**. See *independent a posteriori*.

**posterior interval**. See *credible interval*.

**posterior mean**. In generalized linear mixed-effects models, posterior mean refers to the predictions of random effects based on the mean of the posterior distribution.

In IRT models, posterior mean refers to the predictions of the latent trait based on the mean of the posterior distribution.

**posterior mode**. In generalized linear mixed-effects models, posterior mode refers to the predictions of random effects based on the mode of the posterior distribution.

In IRT models, posterior mode refers to the predictions of the latent trait based on the mode of the posterior distribution.

**posterior odds**. Posterior odds for $\boldsymbol{\theta}_1$ compared with $\boldsymbol{\theta}_2$ is the ratio of posterior density evaluated at $\boldsymbol{\theta}_1$ and $\boldsymbol{\theta}_2$ under a given model,

$$\frac{p(\boldsymbol{\theta}_1|\mathbf{y})}{p(\boldsymbol{\theta}_2|\mathbf{y})} = \frac{p(\boldsymbol{\theta}_1)}{p(\boldsymbol{\theta}_2)}\frac{p(\mathbf{y}|\boldsymbol{\theta}_1)}{p(\mathbf{y}|\boldsymbol{\theta}_2)}$$

In other words, posterior odds are prior odds times the likelihood ratio.

**posterior predictive distribution**. A posterior predictive distribution is a distribution of unobserved (future) data conditional on the currently observed data. Posterior predictive distribution is derived by marginalizing the likelihood function with respect to the posterior distribution of model parameters.

**posterior probabilities**. After discriminant analysis, the posterior probabilities are the probabilities of a given observation being assigned to each of the groups based on the prior probabilities, the training data, and the particular discriminant model. Contrast to *prior probabilities*.

**poststratification**. Poststratification is a method for adjusting sampling weights, usually to account for underrepresented groups in the population. This usually results in decreased bias because of nonresponse and underrepresented groups in the population. Poststratification also tends to result in smaller variance estimates.

The population is partitioned into categories, called poststrata. The sampling weights are adjusted so that the sum of the weights within each poststratum is equal to the respective poststratum size. The poststratum size is the number of individuals in the population that are in the poststratum. The frequency distribution of the poststrata typically comes from census data, and the poststrata are most commonly identified by demographic information such as age, sex, and ethnicity.

**postulated value**. See *alternative value*.

**potential outcome**. The potential outcome is the outcome an individual would obtain if given a specific treatment.

For example, an individual has one potential blood pressure after taking a pill and another potential blood pressure had that person not taken the pill.

**potential-outcome means**. The potential-outcome means refers to the means of the potential outcomes for a specific treatment level.

The mean blood pressure if everyone takes a pill and the mean blood pressure if no one takes a pill are two examples.

The average treatment effect is the difference between potential-outcome mean for the treated and the potential-outcome mean for the not treated.

**power**. The power of a test is the probability of correctly rejecting the null hypothesis when it is false. It is often denoted as $1-\beta$ in statistical literature, where $\beta$ is the type II error probability. Commonly used values for power are 80% and 90%. Also see *type I error* and *type II error*. **power and sample-size analysis**. Power and sample-size analysis investigates the optimal allocation of study resources to increase the likelihood of the successful achievement of a study objective. See [PSS] **intro**.

**power curve**. A power curve is a graph of the estimated power as a function of some other study parameter such as the sample size. The power is plotted on the $y$ axis, and the sample size or other parameter is plotted on the $x$ axis. See [PSS] **power, graph**.

**power determination**. This pertains to the computation of a power given sample size, effect size, and other study parameters.

**power function**. The power functions is a function of the population parameter $\theta$, defined as the probability that the observed sample belongs to the rejection region of a test for given $\theta$. See *Hypothesis testing* under *Remarks and examples* in [PSS] **intro**.

**power graph**. See *power curve*.

**pragma**. "(Pragmatic information) A standardised form of comment which has meaning to a compiler. It may use a special syntax or a specific form within the normal comment syntax. A pragma usually conveys non-essential information, often intended to help the compiler to optimise the program." See *The Free On-line Dictionary of Computing*, http://www.foldoc.org/, Editor Denis Howe. For Mata, see [M-2] **pragma**.

**Prais–Winsten estimator**. A Prais–Winsten estimator is a linear regression estimator that is used when the error term exhibits first-order autocorrelation; see also *Cochrane–Orcutt estimator*. Here the first observation in the dataset is transformed as $\widetilde{y}_1 = \sqrt{1-\rho^2}\, y_1$ and $\widetilde{\mathbf{x}}_1 = \sqrt{1-\rho^2}\, \mathbf{x}_1$, so that the first observation is not lost. The Prais–Winsten estimator is a generalized least-squares estimator.

**predetermined variable**. A predetermined variable is a regressor in which its contemporaneous and future values are not correlated with the unobservable error term but past values are correlated with the error term.

**predictive margins**. Predictive margins provide a way of exploring the response surface of a fitted model in any response metric of interest—means, linear predictions, probabilities, marginal effects, risk differences, and so on. Predictive margins are estimates of responses (or outcomes) for the groups represented by the levels of a factor variable, controlling for the differing covariate distributions across the groups. They are the survey-data and nonlinear response analogue to what are often called estimated marginal means or least-squares means for linear models.

Because these margins are population-weighted averages over the estimation sample or subsamples, and because they take account of the sampling distribution of the covariates, they can be used to make inferences about treatment effects for the population.

**prevented fraction**. A prevented fraction is the reduction in the risk of a disease or other condition of interest caused by including a protective risk factor or public-health intervention.

**prewhiten**. To prewhiten is to apply a transformation to a time series so that it becomes white noise.

**primary sampling unit**. Primary sampling unit (PSU) is a cluster that was sampled in the first sampling stage; see *cluster*.

**priming values**. Priming values are the initial, preestimation values used to begin a recursive process.

**principal component analysis**. Principal component analysis (PCA) is a statistical technique used for data reduction. The leading eigenvectors from the eigen decomposition of the correlation or the covariance matrix of the variables describe a series of uncorrelated linear combinations of the variables that contain most of the variance. In addition to data reduction, the eigenvectors from a PCA are often inspected to learn more about the underlying structure of the data.

**principal factor method**. The principal factor method is a method for factor analysis in which the factor loadings, sometimes called factor patterns, are computed using the squared multiple correlations as estimates of the communality. Also see *factor analysis* and *communality*.

**prior distribution, prior**. In Bayesian statistics, prior distributions are probability distributions of model parameters formed based on some a priori knowledge about parameters. Prior distributions are independent of the observed data.

**prior independence**. See *independent a priori*.

**prior odds**. Prior odds for $\boldsymbol{\theta}_1$ compared with $\boldsymbol{\theta}_2$ is the ratio of prior density evaluated at $\boldsymbol{\theta}_1$ and $\boldsymbol{\theta}_2$ under a given model, $p(\boldsymbol{\theta}_1)/p(\boldsymbol{\theta}_2)$. Also see *posterior odds*.

**prior probabilities** Prior probabilities in discriminant analysis are the probabilities of an observation belonging to a group before the discriminant analysis is performed. Prior probabilities are often based on the prevalence of the groups in the population as a whole. Contrast to *posterior probabilities*.

**probability of a type I error**. This is the probability of committing a type I error of incorrectly rejecting the null hypothesis. Also see *significance level*.

**probability of a type II error**. This is the probability of committing a type II error of incorrectly accepting the null hypothesis. Common values for the probability of a type II error are 0.1 and 0.2 or, equivalently, 10% and 20%. Also see *beta* and *power*.

**probability weight**. Probability weight is another term for sampling weight.

**probit regression**. Probit regression is a term for generalized linear response functions that are family Bernoulli, link probit. It is used for binary outcome data. Probit regression is also known simply as probit. See *generalized linear response functions*.

**Procrustes rotation**. A Procrustes rotation is an orthogonal or oblique transformation, that is, a restricted Procrustes transformation without translation or dilation (uniform scaling).

**Procrustes transformation**. The goal of Procrustes transformation is to transform the source matrix $\mathbf{X}$ to be as close as possible to the target $\mathbf{Y}$. The permitted transformations are any combination of dilation (uniform scaling), rotation and reflection (that is, orthogonal or oblique transformations), and translation. Closeness is measured by residual sum of squares. In some cases, unrestricted Procrustes transformation is desired; this allows the data to be transformed not just by orthogonal or oblique rotations, but by all conformable regular matrices $\mathbf{A}$. Unrestricted Procrustes transformation is equivalent to a multivariate regression.

The name comes from Procrustes of Greek mythology; Procrustes invited guests to try his iron bed. If the guest was too tall for the bed, Procrustes would amputate the guest's feet, and if the guest was too short, he would stretch the guest out on a rack.

Also see *orthogonal rotation*, *oblique rotation*, *dilation*, and *multivariate regression*.

**production function**. A production function describes the maximum amount of a good that can be produced, given specified levels of the inputs.

**promax power rotation**. Promax power rotation is an oblique rotation. It does not fit in the minimizing-a-criterion framework that is at the core of most other rotations. The promax method (Hendrickson and White 1964) was proposed before computing power became widely available. The promax rotation consists of three steps:

1. Perform an orthogonal rotation.
2. Raise the elements of the rotated matrix to some power, preserving the sign of the elements. Typically the power is in the range $2 \leq \text{power} \leq 4$. This operation is meant to distinguish clearly between small and large values.
3. The matrix from step two is used as the target for an oblique Procrustean rotation from the original matrix.

**propensity score**. The propensity score is the probability that an individual receives a treatment.

**propensity-score matching**. Propensity-score matching uses the distance between estimated propensity scores to find similar individuals.

**proportional hazards model**. This is a model in which, between individuals, the ratio of the instantaneous failure rates (the hazards) is constant over time.

**proposal distribution**. In the context of the MH algorithm, a proposal distribution is used for defining the transition steps of the Markov chain. In the standard random-walk Metropolis algorithm, the proposal distribution is a multivariate normal distribution with zero mean and adaptable covariance matrix.

**prospective study**. In a prospective study, the population or cohort is classified according to specific risk factors, such that the outcome of interest, typically various manifestations of a disease, can be observed over time and tied in to the initial classification. Also see *retrospective study*.

Also known as a prospective longitudinal study, a prospective study is a study based on observations over the same subjects for a given period.

**proximity**, **proximity matrix**, and **proximity measure**. Proximity or a proximity measure means the nearness or farness of two things, such as observations or variables or groups of observations or a method for quantifying the nearness or farness between two things. A proximity is measured by a similarity or dissimilarity. A proximity matrix is a matrix of proximities. Also see *similarity* and *dissimilarity*.

**pseudoconvergence**. A Markov chain may appear to converge when in fact it did not. We refer to this phenomenon as pseudoconvergence. Pseudoconvergence is typically caused by multimodality of the stationary distribution, in which case the chain may fail to traverse the weakly connected regions of the distribution space. A common way to detect pseudoconvergence is to run multiple chains using different starting values and to verify that all of the chain converge to the same target distribution.

**pseudolikelihood**. A pseudolikelihood is a weighted likelihood that is used for point estimation. Pseudolikelihoods are not true likelihoods because they do not represent the distribution function for the sample data from a survey. The sampling distribution is instead determined by the survey design.

**PSS analysis**. See *power and sample-size analysis*.

**PSS Control Panel**. The PSS Control Panel is a point-and-click graphical user interface for power and sample-size analysis. See [PSS] **GUI**.

**PSU**. See *primary sampling unit*.

**p-value**. $P$-value is a probability of obtaining a test statistic as extreme or more extreme as the one observed in a sample assuming the null hypothesis is true.

**QDA**. See *quadratic discriminant analysis*.

**QML, method(ml) vce(robust)**. QML stands for quasimaximum likelihood. It is a method used to obtain fitted parameters, and a technique used to obtain the corresponding VCE. QML is used by `sem` and `gsem` when options `method(ml)` and `vce(robust)` are specified. Other available methods are ML, MLMV, and ADF. Other available techniques are OIM, EIM, OPG, clustered, bootstrap, and jackknife.

**QR decomposition**. QR decomposition is an orthogonal-triangular decomposition of an augmented data matrix that speeds up the calculation of the log likelihood; see *Methods and formulas* in [ME] **mixed** for more details.

**quadratic discriminant analysis**. Quadratic discriminant analysis (QDA) is a parametric form of discriminant analysis and is a generalization of LDA. Like LDA, QDA assumes that the observations come from a multivariate normal distribution, but unlike LDA, the groups are not assumed to have equal covariance matrices. Also see *discriminant analysis*, *linear discriminant analysis*, and *parametric methods*.

**quadrature**. Quadrature is generic method for performing numerical integration. `gsem` uses quadrature in any model including latent variables (excluding error variables). `sem`, being limited to linear models, does not need to perform quadrature.

**quartimax rotation**. Quartimax rotation maximizes the variance of the squared loadings within the rows of the matrix. It is an orthogonal rotation that is equivalent to minimizing the criterion

$$c(\mathbf{\Lambda}) = \sum_i \sum_r \lambda_{ir}^4 = -\frac{1}{4}\left\langle \mathbf{\Lambda}^2, \mathbf{\Lambda}^2 \right\rangle$$

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$.

**quartimin rotation**. Quartimin rotation is an oblique rotation that is equivalent to quartimax rotation when quartimin is restricted to orthogonal rotations. Quartimin is equivalent to oblimin rotation with $\gamma = 0$. Also see *quartimax rotation*, *oblique rotation*, *orthogonal rotation*, and *oblimin rotation*.

**random coefficient**. In the context of mixed-effects models, a random coefficient is a counterpart to a slope in the fixed-effects equation. You can think of a random coefficient as a randomly varying slope at a specific level of nesting.

**random effects**. In the context of mixed-effects models, random effects represent effects that may vary from group to group at any level of nesting. In the ANOVA literature, random effects represent the levels of a factor for which the inference can be generalized to the underlying population represented by the levels observed in the study. See also *random-effects model* in [XT] **Glossary**.

**random intercept**. In the context of mixed-effects models, a random intercept is a counterpart to the intercept in the fixed-effects equation. You can think of a random intercept as a randomly varying intercept at a specific level of nesting.

**random walk**. A random walk is a time-series process in which the current period's realization is equal to the previous period's realization plus a white-noise error term: $y_t = y_{t-1} + \epsilon_t$. A *random*

*walk with drift* also contains a nonzero time-invariant constant: $y_t = \delta + y_{t-1} + \epsilon_t$. The constant term $\delta$ is known as the drift parameter. An important property of random-walk processes is that the best predictor of the value at time $t + 1$ is the value at time $t$ plus the value of the drift parameter.

**random-coefficients model**. A random-coefficients model is a panel-data model in which group-specific heterogeneity is introduced by assuming that each group has its own parameter vector, which is drawn from a population common to all panels.

**random-effects model**. A random-effects model for panel data treats the panel-specific errors as uncorrelated random variables drawn from a population with zero mean and constant variance. The regressors must be uncorrelated with the random effects for the estimates to be consistent. See also *fixed-effects model*.

**randomized controlled trial**. In this experimental study, treatments are randomly assigned to two or more groups of subjects.

**rank**. Terms in common use are rank, row rank, and column rank. The row rank of a matrix $A$: $m \times n$ is the number of rows of $A$ that are linearly independent. The column rank is defined similarly, as the number of columns that are linearly independent. The terms *row rank* and *column rank*, however, are used merely for emphasis; the ranks are equal and the result is simply called the rank of A.

For a square matrix $A$ (where $m$==$n$), the matrix is invertible if and only if `rank(`$A$`)==`$n$. One often hears that A is of full rank in this case and rank deficient in the other. See [M-5] **rank( )**.

**rating scale model**. The rating scale model (RSM) is an IRT model for ordinal responses. The categories within each item vary in their difficulty; however, the distances between adjacent difficulty parameters are constrained to be the same across the items. The categories across all items share the same discrimination parameter.

**r-conformability**. A set of two or more matrices, vectors, or scalars $A$, $B$, ..., are said to be r-conformable if each is *c-conformable* with a matrix of `max(rows(`$A$`), rows(`$B$`), ...)` rows and `max(cols(`$A$`), cols(`$B$`), ...)` columns.

r-conformability is a more relaxed form of *c-conformability* in that, if two matrices are c-conformable, they are r-conformable, but not vice versa. For instance, $A$: $1 \times 3$ and $B$: $3 \times 1$ are r-conformable but not c-conformable. Also, c-conformability is defined with respect to a pair of matrices only; r-conformability can be applied to a set of matrices.

r-conformability is often required of the arguments for functions that would otherwise naturally be expected to require scalars. See *R-conformability* in [M-5] **normal( )** for an example. **RCT**. See *randomized controlled trial*.

**real**. A matrix is said to be a real matrix if its elements are all reals and it is stored in a `real` matrix. Real is one of the two numeric types in Mata, the other being complex. Also see *type, eltype, and orgtype*.

**recursive regression analysis**. A recursive regression analysis involves performing a regression at time $t$ by using all available observations from some starting time $t_0$ through time $t$, performing another regression at time $t + 1$ by using all observations from time $t_0$ through time $t + 1$, and so on. Unlike a rolling regression analysis, the first period used for all regressions is held fixed.

**reference prior**. See *noninformative prior*.

**reference value**. See *null value*.

**reflection**. A reflection is an orientation reversing orthogonal transformation, that is, a transformation that involves negating coordinates in one or more dimensions. A reflection is a Procrustes transformation.

**registered and unregistered variables**. Variables in `mi` data can be registered as imputed, passive, or regular by using the `mi register` command; see [MI] **mi set**.

You are required to register imputed variables.

You should register passive variables; if your data are style wide, you are required to register them. The `mi passive` command (see [MI] **mi passive**) makes creating passive variables easy, and it automatically registers them for you.

Whether you register regular variables is up to you. Registering them is safer in all styles except wide, where it does not matter. By definition, regular variables should be the same across $m$. In the long styles, you can unintentionally create variables that vary. If the variable is registered, `mi` will detect and fix your mistakes.

Super-varying variables, which rarely occur and can be stored only in flong and flongsep data, should never be registered.

The registration status of variables is listed by the `mi describe` command; see [MI] **mi describe**.

**regressand**. The regressand is the variable that is being explained or predicted in a regression model. Synonyms include dependent variable, left-hand-side variable, and endogenous variable.

**regression**. A regression is a model in which an endogenous variable is written as a function of other variables, parameters to be estimated, and a random disturbance.

**regression-adjustment estimators**. Regression-adjustment estimators use means of predicted outcomes for each treatment level to estimate each potential-outcome mean.

**regressor**. Regressors are variables in a regression model used to predict the regressand. Synonyms include independent variable, right-hand-side variable, explanatory variable, predictor variable, and exogenous variable.

**regular variable**. See *imputed, passive, and regular variables*.

**rejection region**. In hypothesis testing, a rejection region is a set of sample values for which the null hypothesis can be rejected.

**relative efficiency**. Ratio of variance of a parameter given estimation with finite $M$ to the variance if $M$ were infinite.

**relative risk**. See *risk ratio*.

**relative variance increase**. The increase in variance of a parameter estimate due to nonresponse.

**reliability**. Reliability is the proportion of the variance of a variable not due to measurement error. A variable without measure error has reliability 1.

**REML**. See *restricted maximum likelihood*.

**repeated denominator degrees of freedom (DDF) method**. This method uses the repeated-measures ANOVA for computing DDF. It is used with balanced repeated-measures designs with spherical correlation error structures. It partitions the residual degrees of freedom into the between-subject degrees of freedom and the within-subject degrees of freedom. The repeated method is supported only with two-level models. For more complex mixed-effects models or with unbalanced data, this method typically leads to poor approximations of the actual sampling distributions of the test statistics.

**repeated measures**. Repeated measures data have repeated measurements for the subjects over some dimension, such as time—for example test scores at the start, midway, and end of the class. The repeated observations are typically not independent. Repeated-measures ANOVA is one approach for analyzing repeated measures data, and MANOVA is another. Also see *sphericity*.

**replicate-weight variable**. A replicate-weight variable contains sampling weight values that were adjusted for resampling the data; see [SVY] **variance estimation** for more details.

**resampling**. Resampling refers to the process of sampling from the dataset. In the delete-one jackknife, the dataset is resampled by dropping one PSU and producing a replicate of the point estimates. In the BRR method, the dataset is resampled by dropping combinations of one PSU from each stratum. The resulting replicates of the point estimates are used to estimate their variances and covariances.

**residual**. In this manual, we reserve the word "residual" for the difference between the observed and fitted moments of an SEM model. We use the word error for the disturbance associated with a (Gaussian) linear equation; see *error*. Also see *standardized residuals*.

**residual denominator degrees of freedom (DDF) method**. This method uses the residual degrees of freedom, $n - \text{rank}(X)$, as the DDF for all tests of fixed effects. For a linear model without random effects with independent and identically distributed errors, the distributions of the test statistics for fixed effects are $t$ or $F$ distributions with the residual DDF. For other mixed-effects models, this method typically leads to poor approximations of the actual sampling distributions of the test statistics.

**restricted maximum likelihood**. Restricted maximum likelihood is a method of fitting linear mixed-effects models that involves transforming out the fixed effects to focus solely on variance–component estimation.

**retrospective study**. In a retrospective study, a group with a disease of interest is compared with a group without the disease, and information is gathered in a retrospective way about the exposure in each group to various risk factors that might be associated with the disease. Also see *prospective study*.

**right-censoring**. See *censored, censoring, left-censoring, and right-censoring*.

**right-truncation**. See *truncation, left-truncation, and right-truncation*.

**risk difference**. A risk difference is defined as the probability of an event occurring when a risk factor is increased by one unit minus the probability of the event occurring without the increase in the risk factor.

When the risk factor is binary, the risk difference is the probability of the outcome when the risk factor is present minus the probability when the risk factor is not present.

When one compares two populations, a risk difference is defined as a difference between the probabilities of an event in the two groups. It is typically a difference between the probability in the comparison group or experimental group and the probability in the reference group or control group.

**risk factor**. This is a variable associated with an increased or decreased risk of failure.

**risk pool**. At a particular point in time, this is the subjects at risk of failure.

**risk ratio**. In a log-linear model, this is the ratio of probability of survival associated with a one-unit increase in a risk factor relative to that calculated without such an increase, that is, $R(x+1)/R(x)$. Given the exponential form of the model, $R(x+1)/R(x)$ is constant and is given by the exponentiated coefficient.

**robust**, **vce(robust)**. Robust is the name we use here for the Huber/White/sandwich estimator of the VCE. This technique requires fewer assumptions than most other techniques. In particular, it

merely assumes that the errors are independently distributed across observations and thus allows the errors to be heteroskedastic. Robust standard errors are reported when the `sem` (`gsem`) option `vce(robust)` is specified. The other available techniques are OIM, EIM, OPG, clustered, bootstrap, and jackknife.

**robust standard errors.** Robust standard errors, also known as Huber/White or Taylor linearization standard errors, are based on the sandwich estimator of variance. Robust standard errors can be interpreted as representing the sample-to-sample variability of the parameter estimates, even when the model is misspecified. See also *semirobust standard errors*.

**rolling regression analysis**. A rolling, or moving window, regression analysis involves performing regressions for each period by using the most recent $m$ periods' data, where $m$ is known as the window size. At time $t$ the regression is fit using observations for times $t-19$ through time $t$; at time $t+1$ the regression is fit using the observations for time $t-18$ through $t+1$; and so on.

**rotation**. A rotation is an orientation preserving orthogonal transformation. A rotation is a Procrustes transformation.

**row and column stripes**. Stripes refer to the labels associated with the rows and columns of a Stata matrix; see *Stata matrix*.

**row-major order**. Matrices are stored as vectors. Row-major order specifies that the vector form of a matrix is created by stacking the rows. For instance,

```
: A
        1   2   3
    +-------------+
  1 |  1   2   3  |
  2 |  4   5   6  |
    +-------------+
```

is stored as

```
        1   2   3   4   5   6
    +-----------------------------+
  1 |  1   2   3   4   5   6      |
    +-----------------------------+
```

in row-major order. Mata uses row-major order. The LAPACK functions use column-major order. See *column-major order*.

**rowvector**. See *vector, colvector, and rowvector*.

**Roy's largest root**. Roy's largest root test is a test statistic for the hypothesis test $H_0 : \boldsymbol{\mu}_1 = \cdots = \boldsymbol{\mu}_k$ based on the largest eigenvalue of $\mathbf{E}^{-1}\mathbf{H}$. It is defined as

$$\theta = \frac{\lambda_1}{1+\lambda_1}$$

Here $\mathbf{H}$ is the between matrix, and $\mathbf{E}$ is the within matrix. See *between matrix*.

**RSM**. See *rating scale model*.

**RVI**. See *relative variance increase*.

**Sammon mapping criterion**. The Sammon (1969) mapping criterion is a loss criterion used with MDS; it is the sum of the scaled, squared differences between the distances and the disparities, normalized by the sum of the disparities. Also see *multidimensional scaling*, *modern scaling*, and *loss*.

**sample**. A sample is the collection of individuals in the population that were chosen as part of the survey. Sample is also used to refer to the data, typically in the form of answered questions, collected from the sampled individuals.

**sample size**. This is the number of subjects in a sample. See [PSS] **intro** to learn more about the relationship between sample size and the power of a test.

**sample-size curve**. A sample-size curve is a graph of the estimated sample size as a function of some other study parameter such as power. The sample size is plotted on the $y$ axis, and the power or other parameter is plotted on the $x$ axis.

**sample-size determination**. This pertains to the computation of a sample size given power, effect size, and other study parameters.

**sampling stage**. Complex survey data are typically collected using multiple stages of clustered sampling. In the first stage, the PSUs are independently selected within each stratum. In the second stage, smaller sampling units are selected within the PSUs. In later stages, smaller and smaller sampling units are selected within the clusters from the previous stage.

**sampling unit**. A sampling unit is an individual or collection of individuals from the population that can be selected in a specific stage of a given survey design. Examples of sampling units include city blocks, high schools, hospitals, and houses.

**sampling weight**. Given a survey design, the sampling weight for an individual is the reciprocal of the probability of being sampled. The probability for being sampled is derived from stratification and clustering in the survey design. A sampling weight is typically considered to be the number of individuals in the population represented by the sampled individual.

**sampling with and without replacement**. Sampling units may be chosen more than once in designs that use sampling with replacement. Sampling units may be chosen at most once in designs that use sampling without replacement. Variance estimates from with-replacement designs tend to be larger than those from corresponding without-replacement designs.

**Satterthwaite denominator degrees of freedom (DDF) method**. This method implements a generalization of the Satterthwaite (1946) approximation of the unknown sampling distributions of test statistics for complex linear mixed-effects models. This method is supported only with restricted maximum-likelihood estimation.

**Satterthwaite's t test**. Satterthwaite's $t$ test is a modification of the two-sample $t$ test to account for unequal variances in the two populations. See *Methods and formulas* in [PSS] **power twomeans** for details.

**saturated model**. A saturated model is a full covariance model—a model of fitted means and covariances of observed variables without any restrictions on the values. Also see *baseline model*. Saturated models apply only to standard linear SEMs.

**scalar**. A special case of a *matrix* with one row and one column. A scalar may be substituted anywhere a matrix, vector, column vector, or row vector is required, but not vice versa.

**scalar model parameter**. A scalar model parameter is any model parameter that is a scalar. For example, `{mean}` and `{hape:alpha}` are scalar parameters, as declared by the `bayesmh` command. Elements of matrix model parameters are viewed as scalar model parameters. For example, for a $2 \times 2$ matrix parameter `{Sigma,matrix}`, individual elements `{Sigma_1_1}`, `{Sigma_2_1}`, `{Sigma_1_2}`, and `{Sigma_2_2}` are scalar parameters. If a matrix parameter contains a label, the label should be included in the specification of individual elements as well. See [BAYES] **bayesmh**.

**scalar parameter**. See *scalar model parameter*.

**Schur decomposition**. The Schur decomposition of a matrix, $\mathbf{A}$, can be written as

$$\mathbf{Q}'\mathbf{A}\mathbf{Q} = \mathbf{T}$$

where $\mathbf{T}$ is in Schur form and $\mathbf{Q}$, the matrix of Schur vectors, is orthogonal if $\mathbf{A}$ is real or unitary if $\mathbf{A}$ is complex. See [M-5] **schurd( )**.

**Schur form**. There are two Schur forms: real Schur form and complex Schur form.

A real matrix is in Schur form if it is block upper triangular with $1 \times 1$ and $2 \times 2$ diagonal blocks. Each $2 \times 2$ diagonal block has equal diagonal elements and opposite sign off-diagonal elements. The real eigenvalues are on the diagonal and complex eigenvalues can be obtained from the $2 \times 24$ diagonal blocks.

A complex square matrix is in Schur form if it is upper triangular with the eigenvalues on the diagonal.

**score**. A score for an observation after factor analysis, PCA, or LDA is derived from a column of the loading matrix and is obtained as the linear combination of that observation's data by using the coefficients found in the loading.

**score plot**. A score plot produces scatterplots of the score variables after factor analysis, PCA, or LDA.

**score test**, **Lagrange multiplier test**. A score test is a test based on first derivatives of a likelihood function. Score tests are especially convenient for testing whether constraints on parameters should be relaxed or parameters should be added to a model. Also see *Wald test*.

**scores**. Scores has two unrelated meanings. First, scores are the observation-by-observation first-derivatives of the (quasi) log-likelihood function. When we use the word "scores", this is what we mean. Second, in the factor-analysis literature, scores (usually in the context of factor scores) refers to the expected value of a latent variable conditional on all the observed variables. We refer to this simply as the predicted value of the latent variable.

**scree plot**. A scree plot is a plot of eigenvalues or singular values ordered from greatest to least after an eigen decomposition or singular value decomposition. Scree plots help determine the number of factors or components in an eigen analysis. Scree is the accumulation of loose stones or rocky debris lying on a slope or at the base of a hill or cliff; this plot is called a scree plot because it looks like a scree slope. The goal is to determine the point where the mountain gives way to the fallen rock.

**SDR**. See *successive difference replication*.

**seasonal difference operator**. The period-$s$ seasonal difference operator $\Delta_s$ denotes the difference in the value of a variable at time $t$ and time $t-s$. Formally, $\Delta_s y_t = y_t - y_{t-s}$, and $\Delta_s^2 y_t = \Delta_s(y_t - y_{t-s}) = (y_t - y_{t-s}) - (y_{t-s} - y_{t-2s}) = y_t - 2y_{t-s} + y_{t-2s}$.

**secondary sampling unit**. Secondary sampling unit (SSU) is a cluster that was sampled from within a PSU in the second sampling stage. SSU is also used as a generic term unit to indicate any sampling unit that is not from the first sampling stage.

**second-level latent variable**. See *first-, second-, and higher-order latent variables*.

**second-order latent variable**. See *first- and second-order latent variables*.

**seemingly unrelated regression**. Seemingly unrelated regression is a kind of structural model in which each member of a set of observed endogenous variables is a function of a set of observed exogenous variables and a unique random disturbance term. The disturbances are correlated and the sets of exogenous variables may overlap. If the sets of exogenous variables are identical, this is referred to as multivariate regression.

**selection-on-observables**. See *conditional-independence assumption*.

**SEM**. SEM stands for structural equation modeling and for structural equation model. We use SEM in capital letters when writing about theoretical or conceptual issues as opposed to issues of the particular implementation of SEM in Stata with the `sem` or `gsem` commands.

**sem**. `sem` is the Stata command that fits standard linear SEMs. Also see *gsem*.

**semiconjugate prior**. A prior distribution is semiconjugate for a family of likelihood distributions if the prior and (full) conditional posterior distributions belong to the same family of distributions. For semiconjugacy to hold, parameters must typically be independent a priori; that is, their joint prior distribution must be the product of the individual marginal prior distributions. For example, the normal prior distribution for a mean parameter of a normal data distribution with an unknown variance (which is assumed to be independent of the mean a priori) is a semiconjugate prior. Semiconjugacy may provide an efficient way of sampling from posterior distributions and is used in Gibbs sampling.

**semiparametric model**. This is a model that is not fully parameterized. The Cox proportional hazards model is such a model:

$$h(t) = h_0(t)\exp(\beta_1 x_1 + \cdots + \beta_k x_k)$$

In the Cox model, $h_o(t)$ is left unparameterized and not even estimated. Meanwhile, the relative effects of covariates are parameterized as $\exp(\beta_1 x_1 + \cdots + \beta_k x_k)$.

**semirobust standard errors.** Semirobust standard errors are closely related to robust standard errors and can be interpreted as representing the sample-to-sample variability of the parameter estimates, even when the model is misspecified, as long as the mean structure of the model is specified correctly. See also *robust standard errors*.

**sensitivity analysis**. Sensitivity analysis investigates the effect of varying study parameters on power, sample size, and other components of a study. The true values of study parameters are usually unknown, and power and sample-size analysis uses best guesses for these values. It is therefore important to evaluate the sensitivity of the computed power or sample size in response to changes in study parameters. See [PSS] **power, table** and [PSS] **power, graph** for details.

**sequential limit theory**. The sequential limit theory is a method of determining asymptotic properties of a panel-data statistic in which one index, say, $N$, the number of panels, is held fixed, while $T$, the number of time periods, goes to infinity, providing an intermediate limit. Then one obtains a final limit by studying the behavior of this intermediate limit as the other index ($N$ here) goes to infinity.

**serial correlation**. Serial correlation refers to regression errors that are correlated over time. If a regression model does not contained lagged dependent variables as regressors, the OLS estimates are consistent in the presence of mild serial correlation, but the covariance matrix is incorrect. When the model includes lagged dependent variables and the residuals are serially correlated, the OLS estimates are biased and inconsistent. See, for example, Davidson and MacKinnon (1993, chap. 10) for more information.

**serial correlation tests**. Because OLS estimates are at least inefficient and potentially biased in the presence of serial correlation, econometricians have developed many tests to detect it. Popular ones include the Durbin–Watson (1950, 1951, 1971) test, the Breusch–Pagan (1980) test, and Durbin's (1970) alternative test. See [R] **regress postestimation time series**.

**shape parameter**. A shape parameter governs the shape of a probability distribution. One example is the parameter $p$ of the Weibull model.

**Shepard diagram**. A Shepard diagram after MDS is a 2-dimensional plot of high-dimensional dissimilarities or disparities versus the resulting low-dimensional distances. Also see *multidimensional scaling*.

**sign test**. A sign test is used to test the null hypothesis that the median of a distribution is equal to some reference value. A sign test is carried out as a test of binomial proportion with a reference value of 0.5. See [PSS] **power oneproportion** and [R] **bitest**.

**significance level**. In hypothesis testing, the significance level $\alpha$ is an upper bound for a probability of a type I error. See [PSS] **intro** to learn more about the relationship between significance level and the power of a test.

**similarity**, **similarity matrix**, and **similarity measure**. A similarity or a similarity measure is a quantification of how alike two things are, such as observations or variables or groups of observations, or a method for quantifying that alikeness. A similarity matrix is a matrix containing similarity measurements. The matching coefficient is one example of a similarity measure. Contrast to *dissimilarity*. Also see *proximity* and *matching coefficient*.

**simple random sample**. In a simple random sample (SRS), individuals are independently sampled—each with the same probability of being chosen.

**single-linkage clustering**. Single-linkage clustering is a hierarchical clustering method that computes the proximity between two groups as the proximity between the closest pair of observations between the two groups.

**single-record st data**. See *st data*.

**singleton-group data**. A singleton is a frailty group that contains only 1 observation. A dataset containing only singletons is known as singleton-group data.

**singular value decomposition**. A singular value decomposition (SVD) is a factorization of a rectangular matrix. It says that if $\mathbf{M}$ is an $m \times n$ matrix, there exists a factorization of the form

$$\mathbf{M} = \mathbf{U}\mathbf{\Sigma}\mathbf{V}^*$$

where $\mathbf{U}$ is an $m \times m$ unitary matrix, $\mathbf{\Sigma}$ is an $m \times n$ matrix with nonnegative numbers on the diagonal and zeros off the diagonal, and $\mathbf{V}^*$ is the conjugate transpose of $\mathbf{V}$, an $n \times n$ unitary matrix. If $\mathbf{M}$ is a real matrix, then so is $\mathbf{V}$, and $\mathbf{V}^* = \mathbf{V}'$.

**size of test**. See *significance level*.

**slope**. See *discrimination*.

**smooth treatment-effects estimator**. A smooth treatment-effects estimator is a smooth function of the data so that standard methods approximate the distribution of the estimator. The RA, IPW, AIPW, and IPWRA estimators are all smooth treatment-effects estimators while the nearest-neighbor matching estimator and the propensity-score matching estimator are not.

**smoothing**. Smoothing a time series refers to the process of extracting an overall trend in the data. The motivation behind smoothing is the belief that a time series exhibits a trend component as well as an irregular component and that the analyst is interested only in the trend component. Some smoothers also account for seasonal or other cyclical patterns.

**SMR**. See *standardized mortality (morbidity) ratio*.

**snapshot data**. Snapshot data are those in which each record contains the values of a set of variables for a subject at an instant in time. The name arises because each observation is like a snapshot of the subject.

In snapshot datasets, one usually has a group of observations (snapshots) for each subject.

Snapshot data must be converted to st data before they can be analyzed. This requires making assumptions about what happened between the snapshots. See [ST] **snapspan**.

**source code**. Source code refers to the human-readable code that you type into Mata to define a function. Source code is compiled into object code, which is binary. See [M-1] **how**.

**spectral analysis**. See *frequency-domain analysis*.

**spectral density function**. The spectral density function is the derivative of the spectral distribution function. Intuitively, the spectral density function $f(\omega)$ indicates the amount of variance in a time series that is attributable to sinusoidal components with frequency $\omega$. See also *spectral distribution function*. The spectral density function is sometimes called the *spectrum*.

**spectral distribution function**. The (normalized) spectral distribution function $F(\omega)$ of a process describes the proportion of variance that can be explained by sinusoids with frequencies in the range $(0, \omega)$, where $0 \leq \omega \leq \pi$. The spectral distribution and density functions used in frequency-domain analysis are closely related to the autocorrelation function used in time-domain analysis; see Chatfield (2004, chap. 6) and Wei (2006, chap. 12).

**spectrum**. See *spectral density function*.

**spell data**. Spell data are survival data in which each record represents a fixed period, consisting of a begin time, an end time, possibly a censoring/failure indicator, and other measurements (covariates) taken during that specific period.

**sphericity**. Sphericity is the state or condition of being a sphere. In repeated measures ANOVA, sphericity concerns the equality of variance in the difference between successive levels of the repeated measure. The multivariate alternative to ANOVA, called MANOVA, does not require the assumption of sphericity. Also see *repeated measures*.

**square matrix**. A matrix is square if it has the same number of rows and columns. A $3 \times 3$ matrix is square; a $3 \times 4$ matrix is not.

**SRS**. See *simple random sample*.

**SSCP matrix**. SSCP is an acronym for the sums of squares and cross products. Also see *between matrix*.

**SSD**, **ssd**. See *summary statistics data*.

**SSU**. See *secondary sampling unit*.

**st data**. st stands for survival time. In survival-time data, each observation represents a span of survival, recorded in variables $t0$ and $t$. For instance, if in an observation $t0$ were 3 and $t$ were 5, the span would be $(t0, t]$, meaning from just after $t0$ up to and including $t$.

Sometimes variable $t0$ is not recorded; $t0$ is then assumed to be 0. In such a dataset, an observation that had $t = 5$ would record the span $(0, 5]$.

Each observation also includes a variable $d$, called the failure variable, which contains 0 or nonzero (typically, 1). The failure variable records what happened at the end of the span: 0, the subject was still alive (had not yet failed) or 1, the subject died (failed).

Sometimes variable $d$ is not recorded; $d$ is then assumed to be 1. In such a dataset, all time-span observations would be assumed to end in failure.

Finally, each observation in an st dataset can record the entire history of a subject or each can record a part of the history. In the latter case, groups of observations record the full history. One observation might record the period $(0, 5]$ and the next, $(5, 8]$. In such cases, there is a variable ID that records the subject for which the observation records a time span. Such data are called multiple-record st data. When each observation records the entire history of a subject, the data are called single-record st data. In the single-record case, the ID variable is optional.

See [ST] **stset**.

**stacked variables**. See *crossed variables*.

**stacking variables**. See *crossing variables*.

**standard linear SEM**. An SEM without multilevel effects in which all response variables are given by a linear equation. Standard linear SEM is what most people mean when they refer to just SEM. Standard linear SEMs are fit by `sem`, although they can also be fit by `gsem`; see *generalized SEM*.

**standard strata**. See *direct standardization*.

**standard weights**. See *direct standardization*.

**standardized coefficient**. In a linear equation $y = \ldots\ bx + \ldots$, the standardized coefficient $\beta$ is $(\widehat{\sigma}_y/\widehat{\sigma}_x)b$. Standardized coefficients are scaled to units of standard deviation change in $y$ for a standard deviation change in $x$.

**standardized covariance**. A standardized covariance between $y$ and $x$ is equal to the correlation of $y$ and $x$, which is to say, it is equal to $\sigma_{xy}/\sigma_x\sigma_y$. The covariance is equal to the correlation when variables are standardized to have variance 1.

**standardized data**. Standardized data has a mean of zero and a standard deviation of one. You can standardize data $\mathbf{x}$ by taking $(\mathbf{x} - \overline{\mathbf{x}})/\sigma$, where $\sigma$ is the standard deviation of the data.

**standardized mortality (morbidity) ratio**. Standardized mortality (morbidity) ratio (SMR) is the observed number of deaths divided by the expected number of deaths. It is calculated using indirect standardization: you take the population of the group of interest—say, by age, sex, and other factors—and calculate the expected number of deaths in each cell (expected being defined as the number of deaths that would have been observed if those in the cell had the same mortality as some other population). You then take the ratio to compare the observed with the expected number of deaths. For instance,

| Age | (1) Population of group | (2) Deaths per 100,000 in general pop. | (1)×(2) Expected # of deaths | (4) Observed deaths |
|---|---|---|---|---|
| 25–34 | 95,965 | 105.2 | 100.9 | 92 |
| 34–44 | 78,280 | 203.6 | 159.4 | 180 |
| 44–54 | 52,393 | 428.9 | 224.7 | 242 |
| 55–64 | 28,914 | 964.6 | 278.9 | 312 |
| Total | | | 763.9 | 826 |

$$\text{SMR} = 826/763.9 = 1.08$$

**standardized residuals**, **normalized residuals**. Standardized residuals are residuals adjusted so that they follow a standard normal distribution. The difficulty is that the adjustment is not always possible. Normalized residuals are residuals adjusted according to a different formula that roughly follow a standard normal distribution. Normalized residuals can always be calculated.

**starting values**. The estimation methods provided by `sem` and `gsem` are iterative. The starting values are values for each of the parameters to be estimated that are used to initialize the estimation process. The `sem` software provides starting values automatically, but in some cases, these are not good enough and you must (1) diagnose the problem and (2) provide better starting values. See [SEM] **intro 12**.

**Stata matrix**. Stata itself, separate from Mata, has matrix capabilities. Stata matrices are separate from those of Mata, although Stata matrices can be gotten from and put into Mata matrices; see [M-5] **st_matrix( )**. Stata matrices are described in [P] **matrix** and [U] **14 Matrix expressions**.

Stata matrices are exclusively numeric and contain real elements only. Stata matrices also differ from Mata matrices in that, in addition to the matrix itself, a Stata matrix has text labels on the rows and columns. These labels are called row stripes and column stripes. One can think of rows

and columns as having names. The purpose of these names is discussed in [U] **14.2 Row and column names**. Mata matrices have no such labels. Thus three steps are required to get or to put all the information recorded in a Stata matrix: 1) getting or putting the matrix itself; 2) getting or putting the row stripe from or into a string matrix; and 3) getting or putting the column stripe from or into a string matrix. These steps are discussed in [M-5] **st_matrix( )**.

**state-space model**. A state-space model describes the relationship between an observed time series and an unobservable state vector that represents the "state" of the world. The measurement equation expresses the observed series as a function of the state vector, and the transition equation describes how the unobserved state vector evolves over time. By defining the parameters of the measurement and transition equations appropriately, one can write a wide variety of time-series models in the state-space form.

**static forecast**. A static forecast uses actual values wherever lagged values of the endogenous variables appear in the model. As a result, static forecasts perform at least as well as dynamic forecasts, but static forecasts cannot produce forecasts into the future if lags of the endogenous variables appear in the model.

Because actual values will be missing beyond the last historical time period in the dataset, static forecasts can only forecast one period into the future (assuming only first lags appear in the model); for that reason, they are often called one-step-ahead forecasts.

**stationary distribution**. Stationary distribution of a stochastic process is a joint distribution that does not change over time. In the context of MCMC, stationary distribution is the target probability distribution to which the Markov chain converges. When MCMC is used for simulating a Bayesian model, the stationary distribution is the target joint posterior distribution of model parameters.

**steady-state equilibrium**. The steady-state equilibrium is the predicted value of a variable in a dynamic model, ignoring the effects of past shocks, or, equivalently, the value of a variable, assuming that the effects of past shocks have fully died out and no longer affect the variable of interest.

**stochastic equation**. A stochastic equation, in contrast to an identity, is an equation in a forecast model that includes a random component, most often in the form of an additive error term. Stochastic equations include parameters that must be estimated from historical data.

**stochastic trend**. A stochastic trend is a nonstationary random process. Unit-root process and random coefficients on time are two common stochastic trends. See [TS] **ucm** for examples and discussions of more commonly applied stochastic trends.

**stopping rules**. Stopping rules for hierarchical cluster analysis are used to determine the number of clusters. A stopping-rule value (also called an index) is computed for each cluster solution, that is, at each level of the hierarchy in hierarchical cluster analysis. Also see *hierarchical clustering*.

**str1**, **str2**, . . . , **str2045**. See *strL*.

**stratification**. The population is partitioned into well-defined groups of individuals, called strata. In the first sampling stage, PSUs are independently sampled from within each stratum. In later sampling stages, SSUs are independently sampled from within each stratum for that stage.

Survey designs that use stratification typically result in smaller variance estimates than do similar designs that do not use stratification. Stratification is most effective in decreasing variability when sampling units are more similar within the strata than between them.

**stratified 2 × 2 tables**. Describe the association between a binary independent variable and a binary response variable of interest. The analysis is stratified by a nominal (categorical) variable with $K$ levels.

**stratified model**. A stratified survival model constrains regression coefficients to be equal across levels of the stratification variable, while allowing other features of the model to vary across strata.

**stratified test**. A stratified test is performed separately for each stratum. The stratum-specific results are then combined into an overall test statistic.

**stress**. See *Kruskal stress* and *loss*.

**strict stationarity**. A process is strictly stationary if the joint distribution of $y_1, \ldots, y_k$ is the same as the joint distribution of $y_{1+\tau}, \ldots, y_{k+\tau}$ for all $k$ and $\tau$. Intuitively, shifting the origin of the series by $\tau$ units has no effect on the joint distributions.

**string**. A matrix is said to be a string matrix if its elements are strings (text); see *type, eltype, and orgtype*. In Mata, a string may be text or binary and may be up to 2,147,483,647 characters (bytes) long.

**strL**. `strL` is a storage type for string variables. The full list of string storage types is `str1`, `str2`, ..., `str2045`, and `strL`.

`str1`, `str2`, ..., `str2045` are fixed-length storage types. If variable `mystr` is `str8`, then 8 bytes are allocated in each observation to store `mystr`'s value. If you have 2,000 observations, then 16,000 bytes in total are allocated.

Distinguish between storage length and string length. If `myvar` is `str8`, that does not mean the strings are 8 characters long in every observation. The maximum length of strings is 8 characters. Individual observations may have strings of length 0, 1, ..., 8. Even so, every string requires 8 bytes of storage.

You need not concern yourself with the storage length because string variables are automatically promoted. If `myvar` is `str8`, and you changed the contents of `myvar` in the third observation to "Longer than 8", then `myvar` would automatically become `str13`.

If you changed the contents of `myvar` in the third observation to a string longer than 2,045 characters, `myvar` would become `strL`.

`strL` variables are not necessarily longer than 2,045 characters; they can be longer or shorter than 2,045 characters. The real difference is that `strL` variables are stored as varying length. Pretend that `myothervar` is a `strL` and its third observation contains "this". The total memory consumed by the observation would be $64+4+1 = 69$ bytes. There would be 64 bytes of tracking information, 4 bytes for the contents (there are 4 characters), and 1 more byte to terminate the string. If the fifth observation contained a 2,000,000-character string, then $64 + 2{,}000{,}000 + 1 = 2{,}000{,}069$ bytes would be used to store it.

Another difference between `str1`, `str2`, ..., `str2045`, and `strL`s is that the `str#` storage types can store only ASCII strings. `strL` can store ASCII or binary strings. Thus a `strL` variable could contain, for instance, the contents of a Word document or a JPEG image or anything else.

`strL` is pronounce *sturl*.

**strongly balanced**. A longitudinal or panel dataset is said to be strongly balanced if each panel has the same number of observations, and the observations for different panels were all made at the same times.

**structural equation model**. Different authors use the term "structural equation model" in different ways, but all would agree that an SEM sometimes carries the connotation of being a structural model with a measurement component, that is, combined with a measurement model.

**structural model**. A structural model is one that describes the relationship among a set of variables, based on underlying theoretical considerations. In particular, the parameters of a structural model are posited to quantify an actual causal relationship among the variables rather than a mere description of the variables' correlations.

Structural models often have multiple equations and dependencies between endogenous variables, although that is not a requirement.

Structural models can be viewed in a structural equation modeling (SEM) framework and can thus be fitted by `sem` and `gsem`, though these commands are not limited to fitting just structural models. See [SEM] **intro 5** and *structural equation model*.

Structural models are also used in econometric forecasting applications. See [TS] **forecast** for information about forecasting from structural models based on time-series data.

**structure** (programming version). A structure is an *eltype*, indicating a set of variables tied together under one name. `struct mystruct` might be

```
        struct mystruct {
               real scalar     n1, n2
               real matrix     X
  }
```

If variable `a` was declared a `struct mystruct scalar`, then the scalar `a` would contain three pieces: two real scalars and one real matrix. The pieces would be referred to as `a.n1`, `a.n2`, and `a.X`. If variable `b` were also declared a `struct mystruct scalar`, it too would contain three pieces, `b.n1`, `b.n2`, and `b.X`. The advantage of structures is that they can be referred to as a whole. You can code `a.n1=b.n1` to copy one piece, or you can code `a=b` if you wanted to copy all three pieces. In all ways, `a` and `b` are variables. You may pass `a` to a subroutine, for instance, which amounts to passing all three values.

Structures variables are usually scalar, but they are not limited to being so. If `A` were a `struct mystruct matrix`, then each element of `A` would contain three pieces, and one could refer, for instance, to `A[2,3].n1`, `A[2,3].n2`, and `A[2,3].X`, and even to `A[2,3].X[3,2]`.

See [M-2] **struct**.

**structure** (statistics version). Structure, as in factor structure, is the correlations between the variables and the common factors after factor analysis. Structure matrices are available after factor analysis and LDA. Also see *factor analysis* and *linear discriminant analysis*.

**structured (correlation or covariance)**. See *unstructured and structured (correlation or covariance)*.

**style**. Style refers to the format in which the `mi` data are stored. There are four styles: flongsep, flong, mlong, and wide. You can ignore styles, except for making an original selection, because all `mi` commands work regardless of style. You will be able to work more efficiently, however, if you understand the details of the style you are using; see [MI] **styles**. Some tasks are easier in one style than another. You can switch between styles by using the `mi convert` command; see [MI] **mi convert**.

The flongsep style is best avoided unless your data are too big to fit into one of the other styles. In flongsep style, a separate `.dta` set is created for $m = 0$, for $m = 1$, ..., and for $m = M$. Flongsep is best avoided because `mi` commands work more slowly with it.

In all the other styles, the $M + 1$ datasets are stored in one `.dta` file. The other styles are both more convenient and more efficient.

The most easily described of these `.dta` styles is flong; however, flong is also best avoided because mlong style is every bit as convenient as flong, and mlong is memorywise more efficient. In flong, each observation in the original data is repeated $M$ times in the `.dta` dataset, once for $m = 1$, again for $m = 2$, and so on. Variable `_mi_m` records $m$ and takes on values 0, 1, 2, ..., $M$. Within each value of $m$, variable `_mi_id` takes on values 1, 2, ..., $N$ and thus connects imputed with original observations.

The mlong style is recommended. It is efficient and easy to use. Mlong is much like flong except that complete observations are not repeated.

Equally recommended is the wide style. In wide, each imputed and passive variable has an additional $M$ variables associated with it, one for the variable's value in $m = 1$, another for its value in $m = 2$, and so on. If an imputed or passive variable is named *vn*, then the values of *vn* in $m = 1$ are stored in variable `_1_`*vn*; the values for $m = 2$, in `_2_`*vn*; and so on.

What makes mlong and wide so convenient? In mlong, there is a one-to-one correspondence of your idea of a variable and Stata's idea of a variable—variable *vn* refers to *vn* for all values of $m$. In wide, there is a one-to-one correspondence of your idea of an observation and Stata's idea—physical observation 5 is observation 5 in all datasets.

Choose the style that matches the problem at hand. If you want to create new variables or modify existing ones, choose mlong. If you want to drop observations or create new ones, choose wide. You can switch styles with the `mi convert` command; see [MI] **mi convert**.

For instance, if you want to create new variable `ageXexp` equal to `age*exp` and your data are mlong, you can just type `generate ageXexp = age*exp`, and that will work even if `age` and `exp` are imputed, passive, or a mix. Theoretically, the right way to do that is to type `mi passive: generate agexExp = age*exp`, but concerning variables, if your data are mlong, you can work the usual Stata way.

If you want to drop observation 20 or drop `if sex==2`, if your data are wide, you can just type `drop in 20` or `drop if sex==2`. Here the "right" way to do the problem is to type the `drop` command and then remember to type `mi update` so that `mi` can perform whatever machinations are required to carry out the change throughout $m > 0$; however, in the wide form, there are no machinations required.

**subhazard**, **cumulative subhazard**, and **subhazard ratio**. In a competing-risks analysis, the hazard of the subdistribution (or subhazard for short) for the event of interest (type 1) is defined formally as

$$\overline{h}_1(t) = \lim_{\delta \to 0} \left\{ \frac{P(t < T \leq t + \delta \text{ and event type 1 } | \ T > t \text{ or } (T \leq t \text{ and not event type 1})}{\delta} \right\}$$

Less formally, think of this hazard as that which generates failure events of interest while keeping subjects who experience competing events "at risk" so that they can be adequately counted as not having any chance of failing.

The cumulative subhazard $\overline{H}_1(t)$ is the integral of the subhazard function $\overline{h}_1(t)$, from 0 (the onset of risk) to $t$. The cumulative subhazard plays a very important role in competing-risks analysis. The cumulative incidence function (CIF) is a direct function of the cumulative subhazard:

$$\text{CIF}_1(t) = 1 - \exp\{-\overline{H}_1(t)\}$$

The subhazard ratio is the ratio of the subhazard function evaluated at two different values of the covariates: $\overline{h}_1(t|\mathbf{x})/\overline{h}_1(t|\mathbf{x}_0)$. The subhazard ratio is often called the relative subhazard, especially when $\overline{h}_1(t|\mathbf{x}_0)$ is the baseline subhazard function.

**subjective prior**. See *informative prior*.

**subpopulation estimation**. Subpopulation estimation focuses on computing point and variance estimates for part of the population. The variance estimates measure the sample-to-sample variability,

assuming that the same survey design is used to select individuals for observation from the population. This approach results in a different variance than measuring the sample-to-sample variability by restricting the samples to individuals within the subpopulation; see [SVY] **subpopulation estimation**.

**subsampling the chain**. See *thinning*.

**subscripts**. Subscripts are how you refer to an element or even a submatrix of a matrix.

Mata provides two kinds of subscripts, known as list subscripts and range subscripts.

In list subscripts, *A*`[2,3]` refers to the (2,3) element of *A*. *A*`[(2\3), (4,6)]` refers to the submatrix made up of the second and third rows, fourth and sixth columns, of *A*.

In range subscripts, *A*`[|2,3|]` also refers to the (2,3) element of *A*. *A*`[|2,3\4,6|]` refers to the submatrix beginning at the (2,3) element and ending at the (4,6) element.

See [M-2] **subscripts** for more information.

**substantive constraints**. See *identification*.

**successive difference replication**. Successive difference replication (SDR) is a method of variance typically applied to systematic samples, where the observed sampling units are somehow ordered. The SDR variance estimator is described in [SVY] **variance estimation**.

**summary statistics data**. Data are sometimes available only in summary statistics form, as (1) means and covariances, (2) means, standard deviations or variances, and correlations, (3) covariances, (4) standard deviations or variances and correlations, or (5) correlations. SEM can be used to fit models using such data in place of the underlying raw data. The `ssd` command creates datasets containing summary statistics.

**super-varying variables**. See *varying and super-varying variables*.

**supplementary rows or columns** or **supplementary variables**. Supplementary rows or columns can be included in CA, and supplementary variables can be included in MCA. They do not affect the CA or MCA solution, but they are included in plots and tables with statistics of the corresponding row or column points. Also see *correspondence analysis* and *multiple correspondence analysis*.

**survey data**. Survey data consist of information about individuals that were sampled from a population according to a survey design. Survey data distinguishes itself from other forms of data by the complex nature under which individuals are selected from the population.

In survey data analysis, the sample is used to draw inferences about the population. Furthermore, the variance estimates measure the sample-to-sample variability that results from the survey design applied to the fixed population. This approach differs from standard statistical analysis, in which the sample is used to draw inferences about a physical process and the variance measures the sample-to-sample variability that results from independently collecting the same number of observations from the same process.

**survey design**. A survey design describes how to sample individuals from the population. Survey designs typically include stratification and cluster sampling at one or more stages.

**survival-time data**. See *st data*.

**survivor function**. Also known as the survivorship function and the survival function, the survivor function, $S(t)$, is 1) the probability of surviving beyond time $t$, or equivalently, 2) the probability that there is no failure event prior to $t$, 3) the proportion of the population surviving to time $t$, or equivalently, 4) the reverse cumulative distribution function of $T$, the time to the failure event: $S(t) = \Pr(T > t)$. Also see *hazard*.

**SVAR**. A structural vector autoregressive (SVAR) model is a type of VAR in which short- or long-run constraints are placed on the resulting impulse–response functions. The constraints are usually motivated by economic theory and therefore allow causal interpretations of the IRFs to be made.

**SVD**. See *singular value decomposition*.

**symmetric matrices**. Matrix $A$ is symmetric if $A = A'$. The word *symmetric* is usually reserved for real matrices, and in that case, a symmetric matrix is a square matrix with $a_{ij}$==$a_{ji}$.

Matrix $A$ is said to be Hermitian if $A = A'$, where the transpose operator is understood to mean the conjugate-transpose operator; see *Hermitian matrix*. In Mata, the $'$ operator is the conjugate-transpose operator, and thus, in this manual, we will use the word *symmetric* both to refer to real, symmetric matrices and to refer to complex, Hermitian matrices.

Sometimes, you will see us follow the word *symmetric* with a parenthesized Hermitian, as in, "the resulting matrix is symmetric (Hermitian)". That is done only for emphasis.

The inverse of a symmetric (Hermitian) matrix is symmetric (Hermitian).

**symmetriconly**. Symmetriconly is a word we have coined to refer to a square matrix whose corresponding off-diagonal elements are equal to each other, whether the matrix is real or complex. Symmetriconly matrices have no mathematical significance, but sometimes, in data-processing and memory-management routines, it is useful to be able to distinguish such matrices.

**symmetry**. In a $2 \times 2$ contingency table, symmetry refers to the equality of the off-diagonal elements. For a $2 \times 2$ table, a test of marginal homogeneity reduces to a test of symmetry.

**t test**. A $t$ test is a test for which the sampling distribution of the test statistic is a Student's $t$ distribution.

A one-sample $t$ test is used to test whether the mean of a population is equal to a specified value when the variance must also be estimated. The test statistic follows Student's $t$ distribution with $N - 1$ degrees of freedom, where $N$ is the sample size.

A two-sample $t$ test is used to test whether the means of two populations are equal when the variances of the populations must also be estimated. When the two populations' variances are unequal, a modification to the standard two-sample $t$ test is used; see *Satterthwaite's $t$ test*.

**target parameter**. In power and sample-size analysis, the target parameter is the parameter of interest or the parameter in the study about which hypothesis tests are conducted.

**target rotation**. Target rotation minimizes the criterion

$$c(\mathbf{\Lambda}) = \frac{1}{2}\|\mathbf{\Lambda} - \mathbf{H}\|^2$$

for a given target matrix $\mathbf{H}$.

See *Crawford–Ferguson rotation* for a definition of $\mathbf{\Lambda}$.

**taxonomy**. Taxonomy is the study of the general principles of scientific classification. It also denotes classification, especially the classification of plants and animals according to their natural relationships. Cluster analysis is a tool used in creating a taxonomy and is synonymous with numerical taxonomy. Also see *cluster analysis*.

**Taylor linearization**. See *linearization*.

**TCC**. See *test characteristic curve*.

**technique**. Technique is just an English word and should be read in context. Nonetheless, technique is usually used here to refer to the technique used to calculate the estimated VCE. Those techniques are OIM, EIM, OPG, robust, clustered, bootstrap, and jackknife.

Technique is also used to refer to the available techniques used with `ml`, Stata's optimizer and likelihood maximizer, to find the solution.

**test characteristic curve**. A test characteristic curve (TCC) is the sum of item characteristic curves and represents the expected score on the instrument.

**test information function** A test information function (TIF) is the sum of item information functions and indicates the precision of the entire instrument along the latent trait continuum.

**test statistic**. In hypothesis testing, a test statistic is a function of the sample that does not depend on any unknown parameters.

**tetrachoric correlation**. A tetrachoric correlation estimates the correlation coefficients of binary variables by assuming a latent bivariate normal distribution for each pair of variables, with a threshold model for manifest variables.

**thinning**. Thinning is a way of reducing autocorrelation in the MCMC sample by subsampling the MCMC chain every prespecified number of iterations determined by the thinning interval. For example, the thinning interval of 1 corresponds to using the entire MCMC sample; the thinning interval of 2 corresponds to using every other sample value; and the thinning interval of 3 corresponds to using values from iterations 1, 4, 7, 10, and so on. Thinning should be applied with caution when used to reduce autocorrelation because it may not always be the most appropriate way of improving the precision of estimates.

**thrashing**. Subjects are said to thrash when they are censored and immediately reenter with different covariates.

**three-level model**. A three-level mixed-effects model has one level of observations and two levels of grouping. Suppose that you have a dataset consisting of patients overseen by doctors at hospitals, and each doctor practices at one hospital. Then a three-level model would contain a set of random effects to control for hospital-specific variation, a second set of random effects to control for doctor-specific random variation within a hospital, and a random-error term to control for patients' random variation.

**three-parameter logistic model**. The three-parameter logistic (3PL) model is an IRT model for binary responses where items vary in their difficulty and discrimination and can share or have their own guessing parameter.

**ties**. After discriminant analysis, ties in classification occur when two or more posterior probabilities are equal for an observation. They are most common with KNN discriminant analysis.

**TIF**. See *test information function*.

**time-domain analysis**. Time-domain analysis is analysis of data viewed as a sequence of observations observed over time. The autocorrelation function, linear regression, ARCH models, and ARIMA models are common tools used in time-domain analysis.

**time-series–operated variable**. Time-series–operated variables are a Stata concept. The term refers to *op*`.`*varname* combinations such as `L.gnp` to mean the lagged value of variable `gnp`. Mata's [M-5] **st_data( )** function works with time-series–operated variables just as it works with other variables, but many other Stata-interface functions do not allow *op*`.`*varname* combinations. In those cases, you must use [M-5] **st_tsrevar( )**.

**time-varying covariates**. Time-varying covariates appear in a survival model whose values vary over time. The values of the covariates vary, not the effect. For instance, in a proportional hazards model, the log hazard at time $t$ might be $b \times \text{age}_t + c \times \text{treatment}_t$. Variable age might be time varying, meaning that as the subject ages, the value of age changes, which correspondingly causes the hazard to change. The effect $b$, however, remains constant.

Time-varying variables are either continuously varying or discretely varying.

In the continuously varying case, the value of the variable $x$ at time $t$ is $x_t = x_o + f(t)$, where $f()$ is some function and often is the identity function, so that $x_t = x_o + t$.

In the discretely varying case, the value of $x$ changes at certain times and often in no particular pattern:

| *idvar* | *t0* | *t* | *bp* |
|---|---|---|---|
| 1 | 0 | 5 | 150 |
| 1 | 5 | 7 | 130 |
| 1 | 7 | 9 | 135 |

In the above data, the value of *bp* is 150 over the period $(0, 5]$, then 130 over $(5, 7]$, and 135 over $(7, 9]$.

**titlecase**, **title-cased string**, and **Unicode title-cased string**. In grammar, titlecase refers to the capitalization of the key words in a phrase. In Stata, titlecase refers to (a) the capitalization of the first letter of each word in a string and (b) the capitalization of each letter after a nonletter character. There is no judgment of the word's importance in the string or whether the letter after a nonletter character is part of the same word. For example, "it's" in titlecase is "It'S".

A title-cased string is any string to which the above rules have been applied. For example, if we used the `strproper()` function with the book title *Zen and the Art of Motorcycle Maintenance*, Stata would return the title-cased string `Zen And The Art Of Motorcycle Maintenance`.

A Unicode title-cased string is a string that has had Unicode title-casing rules applied to Unicode words. This is almost, but not exactly, like capitalizing the first letter of each Unicode word. Like capitalization, title-casing letters is locale-dependent, which means that the same letter might have different titlecase forms in different locales. For example, in some locales, capital letters at the beginning of words are not supposed to have accents on them, even if that capital letter by itself would have an accent.

If you do not have characters beyond plain ASCII and your locale is English, there is no distinction in results. For example, `ustrtitle()` with an English locale locale also would return the title-cased string `Zen And The Art Of Motorcycle Maintenance`.

Use the `ustrtitle()` function to apply the appropriate capitalization rules for your language (locale).

**total characteristic curve**. See *test characteristic curve*.

**total effects**. See *direct, indirect, and total effects*.

**total inertia** or **total principal inertia**. The total (principal) inertia in CA and MCA is the sum of the principal inertias. In CA, total inertia is the Pearson $\chi^2/n$. In CA, the principal inertias are the singular values; in MCA the principal inertias are the eigenvalues. Also see *correspondence analysis* and *multiple correspondence analysis*.

**total information function**. See *test information function*.

**traceback log**. When a function fails—either because of a programming error or because it was used incorrectly—it produces a traceback log:

```
: myfunction(2,3)
             solve():  3200  conformability error
             mysub():     -  function returned error
       myfunction():     -  function returned error
            <istmt>:     -  function returned error
r(3200);
```

The log says that `solve()` detected the problem—arguments are not conformable—and that `solve()` was called by `mysub()` was called by `myfunction()` was called by what you typed at the keyboard. See [M-2] **errors** for more information.

**transmorphic**. Transmorphic is an *eltype*. A scalar, vector, or matrix can be transmorphic, which indicates that its elements may be real, complex, string, pointer, or even a structure. The elements are all the same type; you are just not saying which they are. Variables that are not declared are assumed to be transmorphic, or a variable can be explicitly declared to be `transmorphic`. Transmorphic is just fancy jargon for saying that the elements of the scalar, vector, or matrix can be anything and that, from one instant to the next, the scalar, vector, or matrix might change from holding elements of one type to elements of another.

See [M-2] **declarations**.

**transpose**. The transpose operator is written different ways in different books, including $'$, superscript *, superscript $T$, and superscript $H$. Here we use the $'$ notation: $A'$ means the transpose of $A$, $A$ with its rows and columns interchanged.

In complex analysis, the transpose operator, however it is written, is usually defined to mean the conjugate transpose; that is, one interchanges the rows and columns of the matrix and then one takes the conjugate of each element, or one does it in the opposite order—it makes no difference. Conjugation simply means reversing the sign of the imaginary part of a complex number: the conjugate of `1+2i` is `1-2i`. The conjugate of a real is the number itself; the conjugate of 2 is 2.

In Mata, $'$ is defined to mean conjugate transpose. Since the conjugate of a real is the number itself, $A'$ is regular transposition when $A$ is real. Similarly, we have defined $'$ so that it performs regular transposition for string and pointer matrices. For complex matrices, however, $'$ also performs conjugation.

If you have a complex matrix and simply want to transpose it without taking the conjugate of its elements, see [M-5] **transposeonly()**. Or code `conj(A')`. The extra `conj()` will undo the undesired conjugation performed by the transpose operator.

Usually, however, you want transposition and conjugation to go hand in hand. Most mathematical formulas, generalized to complex values, work that way.

**treatment model**. A treatment model is a model used to predict treatment-assignment probabilities as a function of covariates and parameters.

**trend**. The trend specifies the long-run behavior in a time series. The trend can be deterministic or stochastic. Many economic, biological, health, and social time series have long-run tendencies to increase or decrease. Before the 1980s, most time-series analysis specified the long-run tendencies as deterministic functions of time. Since the 1980s, the stochastic trends implied by unit-root processes have become a standard part of the toolkit.

**triangular matrix**. A triangular matrix is a matrix with all elements equal to zero above the diagonal or all elements equal to zero below the diagonal.

A matrix $A$ is *lower triangular* if all elements are zero above the diagonal, that is, if $A[i,j]==0$, $j > i$.

A matrix $A$ is *upper triangular* if all elements are zero below the diagonal, that is, if $A[i,j]==0$, $j < i$.

A *diagonal matrix* is both lower and upper triangular. That is worth mentioning because any function suitable for use with triangular matrices is suitable for use with diagonal matrices.

A triangular matrix is usually *square*.

The inverse of a triangular matrix is a triangular matrix. The determinant of a triangular matrix is the product of the diagonal elements. The eigenvalues of a triangular matrix are the diagonal elements.

**truncation, left-truncation, and right-truncation**. In survival analysis, truncation occurs when subjects are observed only if their failure times fall within a certain observational period of a study. Censoring, on the other hand, occurs when subjects are observed for the whole duration of a study, but the exact times of their failures are not known; it is known only that their failures occurred within a certain time span.

Left-truncation occurs when subjects come under observation only if their failure times exceed some time $t_l$. It is only because they did not fail before $t_l$ that we even knew about their existence. Left-truncation differs from left-censoring in that, in the censored case, we know that the subject failed before time $t_l$, but we just do not know exactly when.

Imagine a study of patient survival after surgery, where patients cannot enter the sample until they have had a post-surgical test. The patients' survival times will be left-truncated. This is a "delayed entry" problem, one common type of left-truncation.

Right-truncation occurs when subjects come under observation only if their failure times do not exceed some time $t_r$. Right-truncated data typically occur in registries. For example, a cancer registry includes only subjects who developed a cancer by a certain time, and thus survival data from this registry will be right-truncated.

**two-independent-samples test**. See *two-sample test*.

**two-level model**. A two-level mixed-effects model has one level of observations and one level of grouping. Suppose that you have a panel dataset consisting of patients at hospitals; a two-level model would contain a set of random effects at the hospital level (the second level) to control for hospital-specific random variation and a random-error term at the observation level (the first level) to control for within-hospital variation.

**two-parameter logistic model**. The two-parameter logistic (2PL) model is an IRT model for binary responses where items vary in their difficulty and discrimination.

**two-sample paired test**. See *paired test*.

**two-sample test**. A two-sample test is used to test whether the parameters of interest of the two independent populations are equal. For example, two-sample means test, two-sample variances, two-sample proportions test, two-sample correlations test.

**two-sided test**, **two-tailed test**. A two-sided test is a hypothesis test of a parameter in which the alternative hypothesis is the complement of the null hypothesis. In the context of a test of a scalar parameter, the alternative hypothesis states that the parameter is less than or greater than the value conjectured under the null hypothesis.

**two-way ANOVA**, **two-way analysis of variance**. A two-way ANOVA model contains two factors. Also see [PSS] **power twoway**.

**two-way repeated-measures** ANOVA, **two-factor** ANOVA. This is a repeated-measures ANOVA model with one within-subject factor and one between-subjects factor. The model can be additive (contain only main effects of the factors) or can contain main effects and an interaction between the two factors. Also see [PSS] **power repeated**.

**type, eltype, and orgtype**. The *type* of a matrix (or vector or scalar) is formally defined as the matrix's *eltype* and *orgtype*, listed one after the other—such as `real vector`—but it can also mean just one or the other—such as the *eltype* `real` or the *orgtype* `vector`.

*eltype* refers to the type of the elements. The *eltypes* are

| | |
|---|---|
| `real` | numbers such as 1, 2, 3.4 |
| `complex` | numbers such as 1+2i, 3+0i |
| `string` | strings such as `"bill"` |
| `pointer` | pointers such as `&`*varname* |
| `struct` | structures |
| `numeric` | meaning `real` or `complex` |
| `transmorphic` | meaning any of the above |

*orgtype* refers to the organizational type. *orgtype* specifies how the elements are organized. The *orgtypes* are

| | |
|---|---|
| `matrix` | two-dimensional arrays |
| `vector` | one-dimensional arrays |
| `colvector` | one-dimensional column arrays |
| `rowvector` | one-dimensional row arrays |
| `scalar` | single items |

The fully specified type is the element and organization types combined, as in `real vector`.

**type I error** or **false-positive result**. The type I error of a test is the error of rejecting the null hypothesis when it is true. The probability of committing a type I error, significance level of a test, is often denoted as $\alpha$ in statistical literature. One traditionally used value for $\alpha$ is 5%. Also see *type II error* and *power*.

**type I error probability**. See *probability of a type I error*.

**type I study**. A type I study is a study in which all subjects fail (or experience an event) by the end of the study; that is, no censoring of subjects occurs.

**type II error** or **false-negative result**. The type II error of a test is the error of not rejecting the null hypothesis when it is false. The probability of committing a type II error is often denoted as $\beta$ in statistical literature. Commonly used values for $\beta$ are 20% or 10%. Also see *type I error* and *power*.

**type II error probability**. See *probability of a type II error*.

**type II study**. A type II study is a study in which there are subjects who do not fail (or do not experience an event) by the end of the study. These subjects are known to be censored.

**unary operator**. A unary operator is an operator applied to one argument. In `-2`, the minus sign is a unary operator. In `!(`*a*`==`*b* `|` *a*`==`*c*`)`, `!` is a unary operator.

**unbalanced data**. A longitudinal or panel dataset is said to be unbalanced if each panel does not have the same number of observations. See also *weakly balanced* and *strongly balanced*.

**unbalanced design**. An unbalanced design indicates an experiment in which the numbers of treated and untreated subjects differ. Also see [PSS] **unbalanced designs**.

**unconfoundedness**. See *conditional-independence assumption*.

**under observation**. A subject is under observation when failure events, should they occur, would be observed (and so recorded in the dataset). Being under observation does not mean that a subject is necessarily at risk. Subjects usually come under observation before they are at risk. The statistical concern is with periods when subjects are at risk but not under observation, even when the subject is (later) known not to have failed during the hiatus.

In such cases, since failure events would not have been observed, the subject necessarily had to survive the observational hiatus, and that leads to bias in statistical results unless the hiatus is accounted for properly.

Entry time and exit time record when a subject first and last comes under observation, between which there may be observational gaps, but usually there are not. There is only one entry time and one exit time for each subject. Often, entry time corresponds to analysis time $t = 0$, or before, and exit time corresponds to the time of failure.

Delayed entry means that the entry time occurred after $t = 0$.

**underscore functions**. *Functions* whose names start with an underscore are called underscore functions, and when an underscore function exists, usually a function without the underscore prefix also exists. In those cases, the function is usually implemented in terms of the underscore function, and the underscore function is harder to use but is faster or provides greater control. Usually, the difference is in the handling of errors.

For instance, function `fopen()` opens a file. If the file does not exist, execution of your program is aborted. Function `_fopen()` does the same thing, but if the file cannot be opened, it returns a special value indicating failure, and it is the responsibility of your program to check the indicator and to take the appropriate action. This can be useful when the file might not exist, and if it does not, you wish to take a different action. Usually, however, if the file does not exist, you will wish to abort, and use of `fopen()` will allow you to write less code.

**unequal-allocation design**. See *unbalanced design*.

**Unicode**. Unicode is a standard for encoding and dealing with text written in almost any conceivable living or dead language. Unicode specifies a set of encoding systems that are designed to hold (and, unlike extended ASCII, to keep separate) characters used in different languages. The Unicode standard defines not only the characters and encodings for them, but also rules on how to perform various operations on words in a given language (locale), such as capitalization and ordering. The most common Unicode encodings are mUTF-8, UTF-16, and UTF-32. Stata uses UTF-8.

**Unicode character**. Technically, a Unicode character is any character with a Unicode encoding. Colloquially, we use the term to refer to any character other than the plain ASCII characters.

**Unicode normalization**. Unicode normalization allows us to use a common representation and therefore compare Unicode strings that appear the same when displayed but could have more than one way of being encoded. This rarely arises in practice, but because it is possible in theory, Stata provides the `ustrnormalize()` function for converting between different normalized forms of the same string.

For example, suppose we wish to search for "ñ" (the lowercase n with a tilde over it from the Spanish alphabet). This letter may have been encoded with the single code point U+00F1. However, the sequence U+006E (the Latin lowercase "n") followed by U+0303 (the tilde) is defined by Unicode to be equivalent to U+00F1. This type of visual identicalness is called canonical equivalence. The one-code-point form is known as the canonical composited form, and the multiple-code-point form is known as the canonical decomposed form. Normalization modifies one or the other string to the opposite canonical equivalent form so that the underlying byte sequences match. If we had strings in a mixture of forms, we would want to use this normalization when sorting or when searching for strings or substrings.

Another form of Unicode normalization allows characters that appear somewhat different to be given the same meaning or interpretation. For example, when sorting or indexing, we may want the code point U+FB00 (the typographic ligature "ff") to match the sequence of two Latin "f" letters encoded as U+0066 U+0066. This is called compatible equivalence.

**Unicode title-cased string**. See *titlecase, title-cased string, and Unicode title-cased string*.

**unidimensionality**. See *latent space*.

**uniqueness**. In factor analysis, the uniqueness is the percentage of a variable's variance that is not explained by the common factors. It is also "1 − communality". Also see *communality*.

**unitary matrix**. See *orthogonal matrix*.

**unit-root process**. A unit-root process is one that is integrated of order one, meaning that the process is nonstationary but that first-differencing the process produces a stationary series. The simplest example of a unit-root process is the random walk. See Hamilton (1994, chap. 15) for a discussion of when general ARMA processes may contain a unit root.

**unit-root tests**. Whether a process has a unit root has both important statistical and economic ramifications, so a variety of tests have been developed to test for them. Among the earliest tests proposed is the one by Dickey and Fuller (1979), though most researchers now use an improved variant called the augmented Dickey–Fuller test instead of the original version. Other common unit-root tests implemented in Stata include the DF–GLS test of Elliott, Rothenberg, and Stock (1996) and the Phillips–Perron (1988) test. See [TS] **dfuller**, [TS] **dfgls**, and [TS] **pperron**.

Variants of unit-root tests suitable for panel data have also been developed; see [XT] **xtunitroot**.

**unregistered variables**. See *registered and unregistered variables*.

**unrestricted transformation**. An unrestricted transformation is a Procrustes transformation that allows the data to be transformed, not just by orthogonal and oblique rotations, but by all conformable regular matrices. This is equivalent to a multivariate regression. Also see *Procrustes transformation* and *multivariate regression*.

**unstandardized coefficient**. A coefficient that is not standardized. If `mpg` $= -0.006 \times$ `weight` $+$ 39.44028, then $-0.006$ is an unstandardized coefficient and, as a matter of fact, is measured in mpg-per-pound units.

**unstructured and structured (correlation or covariance)**. A set of variables, typically error variables, is said to have an unstructured correlation or covariance if the covariance matrix has no particular pattern imposed by theory. If a pattern is imposed, the correlation or covariance is said to be structured.

**upper one-sided test**, **upper one-tailed test**. An upper one-sided test is a one-sided test of a scalar parameter in which the alternative hypothesis is upper one sided, meaning that the alternative hypothesis states that the parameter is greater than the value conjectured under the null hypothesis. Also see *One-sided test versus two-sided test* under *Remarks and examples* in [PSS] **intro**.

**UTF-8**. UTF-8 stands for Universal character set + Transformation Format—8-bit. It is a type of Unicode encoding system that was designed for backward compatibility with ASCII and is used by Stata 14.

**vague prior**. See *noninformative prior*.

**valid initial state**. See *feasible initial value*.

**vanishing adaptation**. See *diminishing adaptation*.

**VAR**. A vector autoregressive (VAR) model is a multivariate regression technique in which each dependent variable is regressed on lags of itself and on lags of all the other dependent variables in the model. Occasionally, exogenous variables are also included in the model.

**variable**. In a program, the entities that store values ($a$, $b$, $c$, ..., $x$, $y$, $z$) are called variables. Variables are given names of 1 to 32 characters long. To be terribly formal about it: a variable is a container; it contains a matrix, vector, or scalar and is referred to by its variable name or by another variable containing a *pointer* to it.

Also, *variable* is sometimes used to refer to columns of data matrices; see *data matrix*.

**variance components**. In a mixed-effects model, the variance components refer to the variances and covariances of the various random effects.

**variance–covariance matrix of the estimator**. The estimator is the formula used to solve for the fitted parameters, sometimes called the fitted coefficients. The VCE is the estimated variance–covariance matrix of the parameters. The diagonal elements of the VCE are the variances of the parameters or equivalent, the square root of those elements are the reported standard errors of the parameters.

**variance estimation**. Variance estimation refers to the collection of methods used to measure the amount of sample-to-sample variation of point estimates; see [SVY] **variance estimation**.

**varimax rotation**. Varimax rotation maximizes the variance of the squared loadings within the columns of the matrix. It is an orthogonal rotation equivalent to oblimin with $\gamma = 1$ or to the Crawford–Ferguson family with $\kappa = 1/p$, where $p$ is the number of rows of the matrix to be rotated. Also see *orthogonal rotation*, *oblimin rotation*, and *Crawford–Ferguson rotation*.

**varying and super-varying variables**. A variable is said to be varying if its values in the incomplete observations differ across $m$. Imputed and passive variables are varying. Regular variables are nonvarying. Unregistered variables can be either.

Imputed variables are supposed to vary because their incomplete values are filled in with different imputed values, although an imputed variable can be temporarily nonvarying if you have not imputed its values yet. Similarly, passive variables should vary because they are or will be filled in based on values of varying imputed variables.

**VCE**. See *variance–covariance matrix of the estimator*.

**VECM**. A vector error-correction model (VECM) is a type of VAR that is used with variables that are cointegrated. Although first-differencing variables that are integrated of order one makes them stationary, fitting a VAR to such first-differenced variables results in misspecification error if the variables are cointegrated. See *The multivariate VECM specification* in [TS] **vec intro** for more on this point.

**vector, colvector, and rowvector**. A special case of a matrix with either one row or one column. A vector may be substituted anywhere a matrix is required. A matrix, however, may not be substituted for a vector.

A `colvector` is a vector with one column.

A `rowvector` is a vector with one row.

A `vector` is either a `rowvector` or `colvector`, without saying which.

**view**. A view is a special type of matrix that appears to be an ordinary matrix, but in fact the values in the matrix are the values of certain or all variables and observations in the Stata dataset that is currently in memory. Its values are not just equal to the dataset's values; they are the dataset's values: if an element of the matrix is changed, the corresponding variable and observation in the Stata dataset also changes. Views are obtained by `st_view()` and are efficient; see [M-5] **st_view()**.

**void function**. A function is said to be void if it returns nothing. For instance, the function [M-5] **printf()** is a void function; it prints results, but it does not return anything in the sense that, say, [M-5] **sqrt()** does. It would not make any sense to code `x = printf("hi there")`, but coding `x = sqrt(2)` is perfectly logical.

**void matrix**. A matrix is said to be void if it is $0 \times 0$, $r \times 0$, or $0 \times c$; see [M-2] **void**.

**Wald test**. A Wald test is a statistical test based on the estimated variance–covariance matrix of the parameters. Wald tests are especially convenient for testing possible constraints to be placed on the estimated parameters of a model. Also see *score test*.

**Ward's linkage clustering**. Ward's-linkage clustering is a hierarchical clustering method that joins the two groups resulting in the minimum increase in the error sum of squares.

**weakly balanced**. A longitudinal or panel dataset is said to be weakly balanced if each panel has the same number of observations but the observations for different panels were not all made at the same times.

**weighted least squares**. Weighted least squares (WLS) is a method used to obtain fitted parameters. In this documentation, WLS is referred to as ADF, which stands for asymptotic distribution free. Other available methods are ML, QML, and MLMV. ADF is, in fact, a specific kind of the more generic WLS.

**weighted-average linkage clustering**. Weighted-average linkage clustering is a hierarchical clustering method that uses the weighted average similarity or dissimilarity of the two groups as the measure between the two groups.

**weighted-regression-adjustment estimator**. Weighted-regression-adjustment estimators use means of predicted outcomes for each treatment level to estimate each potential-outcome mean. The weights are used to estimate censoring-adjusted regression coefficients.

**white noise**. A variable $u_t$ represents a white-noise process if the mean of $u_t$ is zero, the variance of $u_t$ is $\sigma^2$, and the covariance between $u_t$ and $u_s$ is zero for all $s \neq t$.

**wide data**. See *style*.

**Wilks's lambda**. Wilks's lambda is a test statistic for the hypothesis test $H_0 : \boldsymbol{\mu}_1 = \boldsymbol{\mu}_2 = \cdots = \boldsymbol{\mu}_k$ based on the eigenvalues $\lambda_1, \ldots, \lambda_s$ of $\mathbf{E}^{-1}\mathbf{H}$. It is defined as

$$\Lambda = \frac{|\mathbf{E}|}{|\mathbf{E}+\mathbf{H}|} = \prod_{i=1}^{s} \frac{1}{1+\lambda_i}$$

where $\mathbf{H}$ is the between matrix and $\mathbf{E}$ is the within matrix. See *between matrix*.

**Wishart distribution**. The Wishart distribution is a family of probability distributions for nonnegative-definite matrix-valued random variables ("random matrices"). These distributions are of great importance in the estimation of covariance matrices in multivariate statistics.

**withdrawal**. Withdrawal is the process under which subjects withdraw from a study for reasons unrelated to the event of interest. For example, withdrawal occurs if subjects move to a different area or decide to no longer participate in a study. Withdrawal should not be confused with administrative censoring. If subjects withdraw from the study, the information about the outcome those subjects would have experienced at the end of the study, had they completed the study, is unavailable. Also see *loss to follow-up* and *administrative censoring*.

**within estimator**. The within estimator is a panel-data estimator that removes the panel-specific heterogeneity by subtracting the panel-level means from each variable and then performing ordinary least squares on the demeaned data. The within estimator is used in fitting the linear fixed-effects model.

**within matrix**. See *between matrix*.

**within-subject design**. This is an experiment that has at least one within-subject factor. See [PSS] **power repeated**.

**within-subject factor**. This is a factor for which each subject receives several or all the levels.

**WLF**. See *worst linear function*.

**WLS**. See *weighted least squares*.

**worst linear function**. A linear combination of all parameters being estimated by an iterative procedure that is thought to converge slowly.

**Yule–Walker equations**. The Yule–Walker equations are a set of difference equations that describe the relationship among the autocovariances and autocorrelations of an autoregressive moving-average (ARMA) process.

**z test**. A $z$ test is a test for which a potentially asymptotic sampling distribution of the test statistic is a normal distribution. For example, a one-sample $z$ test of means is used to test whether the mean of a population is equal to a specified value when the variance is assumed to be known. The distribution of its test statistic is normal. See [PSS] **power onemean**, [PSS] **power twomeans**, and [PSS] **power pairedmeans**.

**Zellner's g-prior**. Zellner's $g$-prior is a form of a weakly informative prior for the regression coefficients in a linear model. It accounts for the correlation between the predictor variables and controls the impact of the prior of the regression coefficients on the posterior with parameter $g$. For example, $g = 1$ means that prior weight is 50% and $g \to \infty$ means diffuse prior.

# References


Bartlett, M. S. 1937. The statistical conception of mental factors. *British Journal of Psychology* 28: 97–104.

——. 1938. Methods of estimating mental factors. *Nature, London* 141: 609–610.

Bellman, R. E. 1961. *Adaptive Control Processes*. Princeton, NJ: Princeton University Press.

Bentler, P. M. 1977. Factor simplicity index and transformations. *Psychometrika* 42: 277–295.

Bentler, P. M., and D. G. Weeks. 1980. Linear structural equations with latent variables. *Psychometrika* 45: 289–308.

Breusch, T. S., and A. R. Pagan. 1980. The Lagrange multiplier test and its applications to model specification in econometrics. *Review of Economic Studies* 47: 239–253.

Chatfield, C. 2004. *The Analysis of Time Series: An Introduction*. 6th ed. Boca Raton, FL: Chapman & Hall/CRC.

Comrey, A. L. 1967. Tandem criteria for analytic rotation in factor analysis. *Psychometrika* 32: 277–295.

Cox, T. F., and M. A. A. Cox. 2001. *Multidimensional Scaling*. 2nd ed. Boca Raton, FL: Chapman & Hall/CRC.

Crawford, C. B., and G. A. Ferguson. 1970. A general rotation criterion and its use in orthogonal rotation. *Psychometrika* 35: 321–332.

Davidson, R., and J. G. MacKinnon. 1993. *Estimation and Inference in Econometrics*. New York: Oxford University Press.

Dickey, D. A., and W. A. Fuller. 1979. Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association* 74: 427–431.

Durbin, J. 1970. Testing for serial correlation in least-squares regressions when some of the regressors are lagged dependent variables. *Econometrica* 38: 410–421.

Durbin, J., and G. S. Watson. 1950. Testing for serial correlation in least squares regression. I. *Biometrika* 37: 409–428.

——. 1951. Testing for serial correlation in least squares regression. II. *Biometrika* 38: 159–177.

——. 1971. Testing for serial correlation in least squares regression. III. *Biometrika* 58: 1–19.

Elliott, G. R., T. J. Rothenberg, and J. H. Stock. 1996. Efficient tests for an autoregressive unit root. *Econometrica* 64: 813–836.

Fisher, R. A. 1936. The use of multiple measurements in taxonomic problems. *Annals of Eugenics* 7: 179–188.

Hamilton, J. D. 1994. *Time Series Analysis*. Princeton: Princeton University Press.

Hendrickson, A. E., and P. O. White. 1964. Promax: A quick method for rotation to oblique simple structure. *British Journal of Statistical Psychology* 17: 65–70.

Jennrich, R. I. 2004. Rotation to simple loadings using component loss functions: The orthogonal case. *Psychometrika* 69: 257–273.

Kaiser, H. F. 1974. An index of factor simplicity. *Psychometrika* 39: 31–36.

Kenward, M. G., and J. H. Roger. 1997. Small sample inference for fixed effects from restricted maximum likelihood. *Biometrics* 53: 983–997.

Kruskal, J. B. 1964. Multidimensional scaling by optimizing goodness of fit to a nonmetric hypothesis. *Psychometrika* 29: 1–27.

Mahalanobis, P. C. 1936. On the generalized distance in statistics. *National Institute of Science of India* 12: 49–55.

Phillips, P. C. B., and P. Perron. 1988. Testing for a unit root in time series regression. *Biometrika* 75: 335–346.

Sammon, J. W., Jr. 1969. A nonlinear mapping for data structure analysis. *IEEE Transactions on Computers* 18: 401–409.

Satterthwaite, F. E. 1946. An approximate distribution of estimates of variance components. *Biometrics Bulletin* 2: 110–114.

Thomson, G. H. 1951. *The Factorial Analysis of Human Ability*. London: University of London Press.

Wei, W. W. S. 2006. *Time Series Analysis: Univariate and Multivariate Methods*. 2nd ed. Boston: Pearson.

# Vignette index


Aalen, O. O. (1947– ), [ST] **sts**
Agnesi, M. G. (1718–1799), [R] **dydx**
Akaike, H. (1927–2009), [R] **estat ic**
Arellano, M. (1957– ), [XT] **xtabond**

Bartlett, M. S. (1910–2002), [TS] **wntestb**
Bayes, T. (1701(?)–1761), [BAYES] **intro**
Berkson, J. (1899–1982), [R] **logit**
Bliss, C. I. (1899–1979), [R] **probit**
Bond, S. R. (1963– ), [XT] **xtabond**
Bonferroni, C. E. (1892–1960), [R] **correlate**
Box, G. E. P. (1919–2013), [TS] **arima**
Breusch, T. S. (1953– ), [R] **regress postestimation time series**
Brier, G. W. (1913–1998), [R] **brier**

Cholesky, A.-L. (1875–1918), [M-5] **cholesky( )**
Cleveland, W. S. (1943– ), [R] **lowess**
Cochran, W. G. (1909–1980), [SVY] **survey**
Cochrane, D. (1917–1983), [TS] **prais**
Cohen, J. (1923–1998), [R] **kappa**
Cornfield, J. (1912–1979), [R] **epitab**
Cox, D. R. (1924– ), [ST] **stcox**
Cox, G. M. (1900–1978), [R] **anova**
Cronbach, L. J. (1916–2001), [MV] **alpha**
Cunliffe, S. (1917–2012), [R] **ttest**

David, F. N. (1909–1993), [R] **correlate**
Dickey, D. A. (1945– ), [TS] **dfuller**
Dunnett, C. W. (1921–2007), [FN] **Statistical functions**
Durbin, J. (1923–2012), [R] **regress postestimation time series**

Efron, B. (1938– ), [R] **bootstrap**
Engle, R. F. (1942– ), [TS] **arch**

Fisher, R. A. (1890–1962), [R] **anova**
Fourier, J. B. J. (1768–1830), [R] **cumul**
Fuller, W. A. (1931– ), [TS] **dfuller**

Gabriel, K. R. (1929–2003), [MV] **biplot**
Galton, F. (1822–1911), [R] **regress**
Gauss, J. C. F. (1777–1855), [R] **regress**
Gnanadesikan, R. (1932– ), [R] **diagnostic plots**
Godfrey, L. G. (1946– ), [R] **regress postestimation time series**
Gompertz, B. (1779–1865), [ST] **streg**
Gosset, W. S. (1876–1937), [R] **ttest**
Granger, C. W. J. (1934–2009), [TS] **vargranger**
Greenwood, M. (1880–1949), [ST] **sts**

Hadamard, J. S. (1865–1963), [FN] **Matrix functions**
Haenszel, W. M. (1910–1998), [ST] **strate**
Halton, J. H. (1931– ), [M-5] **halton( )**
Hammersley, J. M. (1920–2004), [M-5] **halton( )**
Hartley, H. O. (1912–1980), [MI] **mi impute**
Harvey, A. C. (1947– ), [TS] **ucm**
Hastings, W. K. (1930– ), [BAYES] **bayesmh**
Hausman, J. A. (1946– ), [R] **hausman**
Hays, W. L. (1926–1995), [R] **esize**
Heckman, J. J. (1944– ), [R] **heckman**
Henderson, C. R. (1911–1989), [ME] **mixed**
Hermite, C. (1822–1901), [M-5] **issymmetric( )**
Hesse, L. O. (1811–1874), [M-5] **moptimize( )**
Hessenberg, K. A. (1904–1959), [M-5] **hessenbergd( )**
Hilbert, D. (1862–1943), [M-5] **Hilbert( )**
Hopper, G. M. (1906–1992), [P] **trace**
Hotelling, H. (1895–1973), [MV] **hotelling**
Householder, A. S. (1904–1993), [M-5] **qrd( )**
Huber, P. J. (1934– ), [U] **20 Estimation and postestimation commands**

Jaccard, P. (1868–1944), [MV] ***measure_option***
Jacobi, C. G. J. (1804–1851), [M-5] **deriv( )**
Jeffreys, H. (1891–1989), [BAYES] **bayesmh**
Jenkins, G. M. (1933–1982), [TS] **arima**
Johansen, S. (1939– ), [TS] **vecrank**

Kaiser, H. F. (1927–1992), [MV] **rotate**
Kaplan, E. L. (1920–2006), [ST] **sts**
Kendall, M. G. (1907–1983), [R] **spearman**
Kerlinger, F. N. (1910–1991), [R] **esize**
King, A. A. (1815–1852), [M-2] **intro**
Kish, L. (1910–2000), [SVY] **survey**
Kolmogorov, A. N. (1903–1987), [R] **ksmirnov**
Kronecker, L. (1823–1891), [M-2] **op_kronecker**
Kruskal, J. B. (1928–2010), [MV] **mds**
Kruskal, W. H. (1919–2005), [R] **kwallis**

Lane-Claypon, J. E. (1877–1967), [R] **epitab**
Laplace, P.-S. (1749–1827), [R] **regress**
Legendre, A.-M. (1752–1833), [R] **regress**
Lexis, W. (1837–1914), [ST] **stsplit**
Lorenz, M. O. (1876–1959), [R] **inequality**
Loutit, I. (1909–2009), [R] **qc**
Lovelace, A. (1815–1852), [M-2] **intro**

Mahalanobis, P. C. (1893–1972), [MV] **hotelling**
Mann, H. B. (1905–2000), [R] **ranksum**
Mantel, N. (1919–2002), [ST] **strate**
Markov, A. (1856–1922), [BAYES] **intro**
Marquardt, D. W. (1929–1997), [M-5] **moptimize( )**
Martin, M. E. (1912–2012), [SVY] **svy: tabulate oneway**
martingale, [ST] **stcox postestimation**
McFadden, D. L. (1937– ), [R] **asclogit**
McNemar, Q. (1900–1986), [R] **epitab**
Meier, P. (1924–2011), [ST] **sts**
Metropolis, N. C. (1915–1999), [BAYES] **bayesmh**
Moore, E. H. (1862–1932), [M-5] **pinv( )**
Murrill, W. A. (1867–1957), [MV] **discrim knn**

Nelder, J. A. (1924–2010), [R] **glm**
Nelson, W. B. (1936– ), [ST] **sts**
Newey, W. K. (1954– ), [TS] **newey**
Newton, I. (1643–1727), [M-5] **optimize( )**
Neyman, J. (1894–1981), [R] **ci**
Nightingale, F. (1820–1910), [G-2] **graph pie**

Orcutt, G. H. (1917–2006), [TS] **prais**

Pearson, K. (1857–1936), [R] **correlate**
Penrose, R. (1931– ), [M-5] **pinv( )**
Perron, P. (1959– ), [TS] **pperron**
Phillips, P. C. B. (1948– ), [TS] **pperron**
Playfair, W. (1759–1823), [G-2] **graph pie**
Poisson, S.-D. (1781–1840), [R] **poisson**
Prais, S. J. (1928–2014), [TS] **prais**

Raphson, J. (1648–1715), [M-5] **optimize( )**
Rubin, D. B. (1943– ), [MI] **intro substantive**

Scheffé, H. (1907–1977), [R] **oneway**
Schur, I. (1875–1941), [M-5] **schurd( )**
Schwarz, G. E. (1933–2007), [R] **estat ic**
Scott, E. L. (1917–1988), [R] **intro**
scree, [MV] **screeplot**
Shapiro, S. S. (1930– ), [R] **swilk**
Shepard, R. N. (1929– ), [MV] **mds postestimation plots**
Shewhart, W. A. (1891–1967), [R] **qc**
Šidák, Z. (1933–1999), [R] **correlate**
Simpson, T. (1710–1761), [M-5] **optimize( )**
singular value decompositions, [M-5] **svd( )**
Smirnov, N. V. (1900–1966), [R] **ksmirnov**
Sneath, P. H. A. (1923–2011), [MV] ***measure_option***
Snow, J. (1813–1858), [R] **epitab**
Sokal, R. R. (1926–2012), [MV] ***measure_option***
Spearman, C. E. (1863–1945), [R] **spearman**

Theil, H. (1924–2000), [R] **reg3**
Thiele, T. N. (1838–1910), [R] **summarize**
Tobin, J. (1918–2002), [R] **tobit**
Toeplitz, O. (1881–1940), [M-5] **Toeplitz( )**
Tukey, J. W. (1915–2000), [R] **jackknife**

Vandermonde, A.-T. (1735–1796), [M-5] **Vandermonde( )**

Wald, A. (1902–1950), [TS] **varwle**
Wallis, W. A. (1912–1998), [R] **kwallis**
Ward, J. H., Jr. (1926–2011), [MV] **cluster linkage**
Watson, G. S. (1921–1998), [R] **regress postestimation time series**
Wedderburn, R. W. M. (1947–1975), [R] **glm**
Weibull, E. H. W. (1887–1979), [ST] **streg**
West, K. D. (1953– ), [TS] **newey**
White, H. L., Jr. (1950–2012), [U] **20 Estimation and postestimation commands**
Whitney, D. R. (1915–2007), [R] **ranksum**
Wilcoxon, F. (1892–1965), [R] **signrank**
Wilk, M. B. (1922–2013), [R] **diagnostic plots**
Wilks, S. S. (1906–1964), [MV] **manova**
Wilson, E. B. (1879–1964), [R] **ci**
Winsten, C. B. (1923–2005), [TS] **prais**
Woolf, B. (1902–1983), [R] **epitab**

Zellner, A. (1927–2010), [R] **sureg**

# Author index

## A


Aalen, O. O., [ST] **stcrreg postestimation**, [ST] **sts**
Abadie, A., [TE] **teffects intro advanced**, [TE] **teffects multivalued**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**
Abayomi, K. A., [MI] **intro substantive**, [MI] **mi impute**
Abraham, B., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Abraira-García, L., [R] **epitab**
Abramowitz, M., [FN] **Mathematical functions**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [R] **contrast**, [R] **orthog**
Abrams, K. R., [R] **meta**, [ST] **streg**
Abrevaya, J., [R] **boxcox postestimation**
Achen, C. H., [R] **scobit**
Achenback, T. M., [MV] **mvtest**
Acock, A. C., [MV] **alpha**, [R] **anova**, [R] **correlate**, [R] **nestreg**, [R] **oneway**, [R] **prtest**, [R] **ranksum**, [R] **ttest**, [SEM] **intro 4**, [SEM] **intro 5**, [SEM] **intro 6**, [SEM] **intro 11**, [SEM] **example 1**, [SEM] **example 3**, [SEM] **example 7**, [SEM] **example 9**, [SEM] **example 18**, [SEM] **example 20**
Adkins, L. C., [R] **heckman**, [R] **regress**, [R] **regress postestimation**, [TS] **arch**
Afifi, A. A., [MV] **canon**, [MV] **discrim**, [MV] **factor**, [MV] **pca**, [R] **anova**, [R] **stepwise**, [U] **20.25 References**
Agnesi, M. G., [R] **dydx**
Agresti, A., [ME] **me**, [ME] **meologit**, [ME] **meoprobit**, [PSS] **intro**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power trend**, [R] **ci**, [R] **epitab**, [R] **expoisson**, [R] **tabulate twoway**
Ahn, S. K., [TS] **vec intro**
Ahrens, J. H., [FN] **Random-number functions**
Aielli, G. P., [TS] **mgarch**, [TS] **mgarch dcc**
Aigner, D. J., [R] **frontier**, [XT] **xtfrontier**
Aiken, L. S., [R] **pcorr**
Aisbett, C. W., [ST] **stcox**, [ST] **streg**
Aitchison, J., [BAYES] **intro**, [R] **ologit**, [R] **oprobit**
Aitken, A. C., [R] **reg3**
Aitkin, M. A., [MV] **mvtest correlations**
Aivazian, S. A., [R] **ksmirnov**
Akaike, H., [MV] **factor postestimation**, [R] **BIC note**, [R] **estat ic**, [R] **glm**, [SEM] **estat gof**, [SEM] **methods and formulas for sem**, [ST] **streg**, [TS] **varsoc**
Akman, V. E., [BAYES] **bayesmh**
Albert, A., [MI] **mi impute**, [MV] **discrim**, [MV] **discrim logistic**
Albert, P. S., [XT] **xtgee**
Aldenderfer, M. S., [MV] **cluster**
Alderman, M. H., [PSS] **intro**, [PSS] **power repeated**
Aldrich, J. H., [R] **logit**, [R] **probit**
Alexander, J. T., [R] **mlexp**
Alexandersson, A., [R] **regress**
Alf, E., Jr., [R] **rocfit**, [R] **rocreg**
Alfaro, R., [MI] **intro**
Algina, J., [R] **esize**
Alldredge, J. R., [R] **pk**, [R] **pkcross**
Allen, M. J., [MV] **alpha**
ALLHAT Officers and Coordinators for the ALLHAT Collaborative Research Group, [PSS] **intro**, [PSS] **power repeated**
Allison, M. J., [MV] **manova**
Allison, P. D., [MI] **intro substantive**, [MI] **mi impute**, [R] **rologit**, [R] **testnl**, [ST] **discrete**, [ST] **stcox PH-assumption tests**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtreg**
Almås, I., [R] **inequality**
Aloisio, K. M., [MI] **mi estimate**, [MI] **mi impute**, [XT] **xtgee**
Alonzo, T. A., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Altman, D. G., [R] **anova**, [R] **fp**, [R] **kappa**, [R] **kwallis**, [R] **meta**, [R] **mfp**, [R] **nptrend**, [R] **oneway**
Alvarez, J., [XT] **xtabond**
Alwin, D. F., [SEM] **example 9**
Ambler, G., [R] **fp**, [R] **fp postestimation**, [R] **mfp**, [R] **regress**
Amemiya, T., [R] **intreg**, [R] **ivprobit**, [R] **nlogit**, [R] **tobit**, [TS] **varsoc**, [XT] **xthtaylor**, [XT] **xtivreg**
Amisano, G., [TS] **irf create**, [TS] **var intro**, [TS] **var svar**, [TS] **vargranger**, [TS] **varwle**
An, S., [TS] **arfima**
Anderberg, M. R., [MV] **cluster**, [MV] ***measure_option***
Andersen, E. B., [R] **clogit**
Andersen, P. K., [R] **glm**, [ST] **stcox**, [ST] **stcrreg**
Anderson, B. D. O., [TS] **sspace**
Anderson, E., [M-1] **LAPACK**, [M-5] **lapack( )**, [MV] **clustermat**, [MV] **discrim estat**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **mvtest**, [MV] **mvtest normality**, [P] **matrix eigenvalues**
Anderson, J. A., [MI] **mi impute**, [R] **ologit**, [R] **slogit**
Anderson, M. L., [ST] **stcrreg**
Anderson, R. E., [R] **rologit**
Anderson, R. L., [R] **anova**
Anderson, S., [R] **pkequiv**
Anderson, T. W., [MI] **intro substantive**, [MV] **discrim**, [MV] **manova**, [MV] **pca**, [PSS] **intro**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [R] **ivregress postestimation**, [TS] **vec**, [TS] **vecrank**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtivreg**
Andersson, T. M.-L., [ST] **stcox**

Andrews, D. F., [D] **egen**, [MV] **discrim lda postestimation**, [MV] **discrim qda**, [MV] **discrim qda postestimation**, [MV] **manova**, [R] **rreg**
Andrews, D. W. K., [R] **ivregress**, [TS] **estat sbsingle**
Andrews, M. J., [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [XT] **xtreg**
Andrich, D., [IRT] **irt rsm**, [SEM] **example 28g**
Andrieu, C., [BAYES] **intro**, [BAYES] **bayesmh**
Ängquist, L., [G-2] **graph combine**, [R] **bootstrap**, [R] **permute**
Angrist, J. D., [R] **ivregress**, [R] **ivregress postestimation**, [R] **qreg**, [R] **regress**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [U] **20.25 References**
Anscombe, F. J., [R] **binreg postestimation**, [R] **glm**, [R] **glm postestimation**
Ansley, C. F., [TS] **arima**
Arbuthnott, J., [R] **signrank**
Archer, K. J., [R] **estat gof**, [R] **logistic**, [R] **logit**, [SVY] **estat**
Arellano, M., [R] **areg postestimation**, [R] **gmm**, [XT] **xtabond**, [XT] **xtcloglog**, [XT] **xtdpd**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys**, [XT] **xtdpdsys postestimation**, [XT] **xtivreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtstreg**
Arminger, G., [R] **suest**
Armitage, P., [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power cmh**, [PSS] **power trend**, [R] **ameans**, [R] **expoisson**, [R] **pkcross**, [R] **sdtest**
Armstrong, R. D., [R] **qreg**
Arnold, B. C., [MI] **intro substantive**, [MI] **mi impute chained**
Arnold, S. F., [MV] **manova**
Aronow, W. S., [ME] **mestreg**
Arora, S. S., [XT] **xtivreg**, [XT] **xtreg**
Arseven, E., [MV] **discrim lda**
Arthur, M., [R] **symmetry**
Atchadé, Y. F., [BAYES] **intro**, [BAYES] **bayesmh**
Atella, V., [R] **frontier**, [XT] **xtfrontier**
Aten, B., [XT] **xtunitroot**
Atkinson, A. C., [FN] **Random-number functions**, [R] **boxcox**, [R] **nl**
Austin, P. C., [TE] **tebalance**
Azen, S. P., [R] **anova**, [U] **20.25 References**
Aznar, A., [TS] **vecrank**

## B

Babiker, A. G., [PSS] **intro**, [PSS] **power cox**, [R] **epitab**, [ST] **sts test**
Babin, B. J., [R] **rologit**
Babu, A. J. G., [FN] **Random-number functions**
Bai, X., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**
Bai, Z., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
Baillie, R. T., [TS] **arfima**
Baker, F. B., [IRT] **irt**, [IRT] **irt nrm**
Baker, M. J., [BAYES] **bayes**
Baker, R. J., [R] **glm**
Baker, R. M., [R] **ivregress postestimation**
Bakker, A., [R] **mean**
Balaam, L. N., [R] **pkcross**
Balakrishnan, N., [FN] **Statistical functions**
Baldus, W. P., [ST] **stcrreg**
Balestra, P., [XT] **xtivreg**
Baltagi, B. H., [ME] **mixed**, [R] **hausman**, [XT] **xt**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xthtaylor**, [XT] **xthtaylor postestimation**, [XT] **xtivreg**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtreg postestimation**, [XT] **xtregar**, [XT] **xtunitroot**
Bamber, D., [R] **rocfit**, [R] **rocregplot**, [R] **roctab**
Bancroft, T. A., [R] **stepwise**
Banerjee, A., [XT] **xtunitroot**
Bang, H., [TE] **teffects intro advanced**
Barbin, É., [M-5] **cholesky( )**
Barlow, R. E., [BAYES] **intro**
Barnard, G. A., [R] **spearman**, [R] **ttest**
Barnard, J., [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi predict**, [MI] **mi test**
Barnett, A. G., [R] **glm**
Barnow, B. S., [TE] **etregress**
Baron, R. M., [SEM] **example 42g**
Barrett, J. H., [PSS] **intro**
Barrison, I. G., [R] **binreg**
Barthel, F. M.-S., [PSS] **intro**, [PSS] **power cox**, [ST] **stcox PH-assumption tests**
Bartlett, M. S., [I] **Glossary**, [MV] **factor**, [MV] **factor postestimation**, [MV] **Glossary**, [R] **oneway**, [TS] **wntestb**
Barton, C. N., [PSS] **power repeated**
Bartus, T., [R] **margins**
Basford, K. E., [G-2] **graph matrix**, [ME] **me**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**
Basilevsky, A. T., [MV] **factor**, [MV] **pca**
Basmann, R. L., [R] **ivregress**, [R] **ivregress postestimation**
Basu, A., [R] **betareg**, [R] **glm**
Bates, D. M., [ME] **me**, [ME] **meglm**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mixed**, [ME] **mixed postestimation**
Batistatou, E., [PSS] **power**
Battese, G. E., [XT] **xtfrontier**

Bauldry, S., [R] **ivregress**, [SEM] **intro 5**
Baum, C. F., [D] **cross**, [D] **fillin**, [D] **icd**, [D] **joinby**, [D] **reshape**, [D] **separate**, [D] **stack**, [D] **xpose**, [M-1] **intro**, [MV] **mvtest**, [MV] **mvtest normality**, [P] **intro**, [P] **levelsof**, [R] **gmm**, [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **margins**, [R] **net**, [R] **net search**, [R] **regress postestimation**, [R] **regress postestimation time series**, [R] **ssc**, [TS] **time series**, [TS] **arch**, [TS] **arima**, [TS] **dfgls**, [TS] **rolling**, [TS] **tsfilter**, [TS] **tsset**, [TS] **var**, [TS] **wntestq**, [U] **11.7 References**, [U] **16.5 References**, [U] **18.14 References**, [U] **20.25 References**, [XT] **xtgls**, [XT] **xtreg**, [XT] **xtunitroot**
Bauwens, L., [TS] **mgarch**
Baxter, M., [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **tsfilter cf**
Bayart, D., [R] **qc**
Bayes, T., [BAYES] **intro**
Beale, E. M. L., [R] **stepwise**, [R] **test**
Beall, G., [MV] **mvtest**, [MV] **mvtest covariances**
Bean, J. A., [PSS] **power cmh**
Beaton, A. E., [R] **rreg**
Beck, N. L., [XT] **xtgls**, [XT] **xtpcse**
Becker, R. A., [G-2] **graph matrix**
Becker, S. O., [TE] **teffects intro advanced**
Becketti, S., [P] **pause**, [R] **fp**, [R] **fp postestimation**, [R] **regress**, [R] **runtest**, [R] **spearman**, [TS] **time series**, [TS] **arch**, [TS] **arima**, [TS] **corrgram**, [TS] **dfuller**, [TS] **irf**, [TS] **prais**, [TS] **tssmooth**, [TS] **var intro**, [TS] **var svar**, [TS] **vec intro**, [TS] **vec**
Beerstecher, E., [MV] **manova**
Beggs, S., [R] **rologit**
Belanger, A. J., [R] **sktest**, [R] **swilk**
Bellman, R. E., [I] **Glossary**, [MV] **Glossary**
Bellocco, R., [R] **epitab**, [R] **glm**, [R] **logit**, [XT] **xtgee**
Belotti, F., [R] **frontier**, [XT] **xtfrontier**
Belsley, D. A., [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [U] **18.14 References**
Beltrami, E., [M-5] **svd( )**
Bendel, R. B., [R] **stepwise**
Benedetti, J. K., [R] **tetrachoric**
Beniger, J. R., [G-2] **graph bar**, [G-2] **graph pie**, [G-2] **graph twoway histogram**, [R] **cumul**
Bentham, G., [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [SEM] **example 39g**
Bentler, P. M., [I] **Glossary**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**, [SEM] **intro 4**, [SEM] **intro 7**, [SEM] **intro 9**, [SEM] **estat eqgof**, [SEM] **estat framework**, [SEM] **estat gof**, [SEM] **estat stable**, [SEM] **example 1**, [SEM] **example 3**, [SEM] **methods and formulas for sem**
Bera, A. K., [R] **sktest**, [TS] **arch**, [TS] **varnorm**, [TS] **vecnorm**, [XT] **xtreg**, [XT] **xtreg postestimation**, [XT] **xtregar**
Beran, J., [TS] **arfima**, [TS] **arfima postestimation**
Beran, R. J., [R] **regress postestimation time series**
Berger, J. O., [BAYES] **intro**
Berger, R. L., [PSS] **intro**
Berglund, P. A., [SVY] **survey**, [SVY] **subpopulation estimation**
Berk, K. N., [R] **stepwise**
Berk, R. A., [R] **rreg**
Berkes, I., [TS] **mgarch**
Berkson, J., [R] **logit**, [R] **probit**
Berliner, L. M., [BAYES] **intro**
Bern, P. H., [R] **nestreg**
Bernaards, C. A., [MV] **rotatemat**
Bernardo, J. M., [BAYES] **intro**
Bernasco, W., [R] **tetrachoric**
Berndt, E. K., [M-5] **optimize( )**, [R] **glm**, [TS] **arch**, [TS] **arima**
Berndt, E. R., [R] **truncreg**
Bernstein, I. H., [MV] **alpha**
Berry, D. A., [BAYES] **intro**, [BAYES] **intro**
Berry, G., [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power cmh**, [R] **ameans**, [R] **expoisson**, [R] **sdtest**
Berry, K. J., [R] **ranksum**
Besag, J., [BAYES] **intro**
Best, D. J., [FN] **Random-number functions**
Best, N. G., [BAYES] **bayesstats ic**
Bewley, R., [R] **reg3**
Beyer, W. H., [R] **qc**
Beyersman, J., [ST] **stcrreg**
Bhargava, A., [XT] **xtregar**
Bianchi, G., [TS] **tsfilter**, [TS] **tsfilter bw**
Bibby, J. M., [MI] **mi impute mvn**, [MV] **discrim**, [MV] **discrim lda**, [MV] **factor**, [MV] **manova**, [MV] **matrix dissimilarity**, [MV] **mds**, [MV] **mds postestimation**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **mvtest**, [MV] **mvtest means**, [MV] **mvtest normality**, [MV] **pca**, [MV] **procrustes**, [P] **matrix dissimilarity**
Bickeböller, H., [R] **symmetry**
Bickel, P. J., [D] **egen**, [R] **rreg**
Binder, D. A., [MI] **intro substantive**, [P] **_robust**, [SVY] **svy estimation**, [SVY] **variance estimation**, [U] **20.25 References**
Birdsall, T. G., [R] **lroc**
Birnbaum, A., [IRT] **irt**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irtgraph iif**
Bischof, C., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
Bishai, D., [R] **betareg**
Bishop, D. T., [PSS] **intro**
Black, F., [TS] **arch**
Black, H. R., [PSS] **intro**, [PSS] **power repeated**
Black, W. C., [R] **rologit**
Blackburne, E. F., III, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
Blackford, S., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**

Blackwell, J. L., III, [R] **areg**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtreg**
Bland, M., [R] **ranksum**, [R] **sdtest**, [R] **signrank**, [R] **spearman**
Blashfield, R. K., [MV] **cluster**
Blasius, J., [MV] **ca**, [MV] **mca**
Blasnik, M., [D] **clonevar**, [D] **split**, [D] **statsby**
Bleda, M.-J., [MV] **alpha**
Blevins, J. R., [R] **hetprobit**
Bliese, P. D., [R] **icc**
Bliss, C. I., [R] **probit**
Bloch, D. A., [R] **brier**
Bloomfield, P., [R] **qreg**, [TS] **arfima**
Blossfeld, H.-P., [ME] **mestreg**
Blum, A. L., [PSS] **power cmh**
Blundell, R., [R] **gmm**, [R] **ivprobit**, [TE] **teffects intro advanced**, [TE] **teffects multivalued**, [XT] **xtdpd**, [XT] **xtdpdsys**
BMDP, [R] **symmetry**
Boardley, D., [IRT] **irt**
Bobee, B., [BAYES] **intro**
Bock, R. D., [IRT] **irt nrm**
Bofinger, E., [R] **qreg**
Boggess, M. M., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Boice, J. D., Jr., [R] **bitest**, [R] **epitab**
Boland, P. J., [R] **ttest**
Bolduc, D., [R] **asmprobit**
Bollen, K. A., [MV] **factor postestimation**, [R] **regress postestimation**, [SEM] **intro 4**, [SEM] **intro 5**, [SEM] **estat residuals**, [SEM] **estat teffects**, [SEM] **example 10**, [SEM] **example 15**, [SEM] **methods and formulas for sem**, [SEM] **predict after sem**, [SEM] **sem reporting options**
Bollerslev, T., [TS] **arch**, [TS] **arima**, [TS] **mgarch**, [TS] **mgarch ccc**, [TS] **mgarch dvech**
Bond, S., [R] **gmm**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys**, [XT] **xtdpdsys postestimation**, [XT] **xtivreg**
Bond, T. G., [IRT] **irt**, [SEM] **example 28g**
Bonferroni, C. E., [R] **correlate**
Boos, D. D., [TE] **teffects aipw**
Borenstein, M., [R] **meta**
Borg, I., [MV] **mds**, [MV] **mds postestimation**, [MV] **mdslong**, [MV] **mdsmat**
Borgan, Ø., [ST] **stcrreg**
Bornhorst, F., [XT] **xtunitroot**
Borowczyk, J., [M-5] **cholesky( )**
Bos, J. M., [R] **betareg**
Boshuizen, H. C., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**
Boswell, T. M., [ST] **streg postestimation**
Boswijk, H. P., [TS] **vec**
Bottai, M., [R] **epitab**, [R] **qreg**, [ST] **streg**, [XT] **xtreg**
Bound, J., [R] **ivregress postestimation**
Bover, O., [XT] **xtdpd**, [XT] **xtdpdsys**
Bowerman, B. L., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Bowker, A. H., [R] **symmetry**
Box, G. E. P., [MV] **manova**, [MV] **mvtest covariances**, [R] **anova**, [R] **boxcox**, [R] **lnskew0**, [TS] **arfima**, [TS] **arima**, [TS] **corrgram**, [TS] **cumsp**, [TS] **dfuller**, [TS] **estat acplot**, [TS] **pergram**, [TS] **pperron**, [TS] **psdensity**, [TS] **wntestq**, [TS] **xcorr**
Box, J. F., [R] **anova**
Box-Steffensmeier, J. M., [ST] **stcox**, [ST] **streg**, [TS] **time series**, [TS] **arima**, [TS] **forecast**, [TS] **irf**, [TS] **var**, [TS] **vec**
Boyd, N. F., [R] **kappa**
Boyle, J. M., [P] **matrix symeigen**
Boyle, P., [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [SEM] **example 39g**
Bozzette, S. A., [IRT] **irt**
Brackstone, G. J., [R] **diagnostic plots**, [R] **swilk**
Bradley, R. A., [R] **signrank**
Brady, A. R., [PSS] **intro**, [R] **logistic**, [R] **spikeplot**
Brady, T., [D] **edit**
Brand, J. P. L., [MI] **intro substantive**, [MI] **mi impute chained**
Brännäs, K., [R] **cpoisson**
Brannon, B. R., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Brant, R., [R] **ologit**
Brave, S., [TE] **etregress**
Bray, R. J., [MV] **clustermat**
Bray, T. A., [FN] **Random-number functions**
Breitung, J., [XT] **xtunitroot**
Brent, R. P., [MV] **mdsmat**, [MV] **mvtest means**
Breslow, N. E., [IRT] **difmh**, [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [PSS] **power mcc**, [R] **clogit**, [R] **dstdize**, [R] **epitab**, [R] **symmetry**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **sts**, [ST] **sts test**
Breusch, T. S., [I] **Glossary**, [MV] **mvreg**, [R] **regress postestimation**, [R] **regress postestimation time series**, [R] **sureg**, [TS] **Glossary**, [XT] **xtreg postestimation**
Brier, G. W., [R] **brier**
Brillinger, D. R., [R] **jackknife**
Brockwell, P. J., [TS] **corrgram**, [TS] **sspace**
Brody, H., [R] **epitab**
Brook, R. H., [R] **brier**
Brooks, S., [BAYES] **intro**
Brown, B. W., [ST] **sts graph**
Brown, C. C., [R] **epitab**
Brown, D. R., [ME] **mixed**, [PSS] **intro**, [PSS] **power repeated**, [R] **anova**, [R] **contrast**, [R] **loneway**, [R] **oneway**, [R] **pwcompare**

Brown, G. K., [TE] **etregress**, [TE] **teffects intro advanced**
Brown, H., [ME] **mixed**
Brown, J. D., [MV] **manova**
Brown, L. D., [R] **ci**
Brown, M. B., [R] **sdtest**, [R] **tetrachoric**
Brown, S. E., [R] **symmetry**
Brown, T. A., [SEM] **intro 4**
Brown, W., [R] **icc**
Browne, M. W., [MV] **procrustes**, [SEM] **estat gof**, [SEM] **methods and formulas for sem**
Broyden, C. G., [TS] **forecast solve**
Bru, B., [R] **poisson**
Brückner, E., [ME] **mestreg**
Bruno, G. S. F., [TS] **forecast**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtreg**
Bryk, A. S., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**
Brzezinski, M., [R] **swilk**
Brzinsky-Fay, C., [G-2] **graph twoway rbar**
Buchholz, A., [ST] **stcrreg**
Buchner, D. M., [R] **ladder**
Buis, M. L., [FN] **Random-number functions**, [G-3] ***by_option***, [R] **betareg**, [R] **constraint**, [R] ***eform_option***, [R] **logistic**, [R] **logit**, [R] **margins**
Buja, A., [U] **20.25 References**
Bunch, D. S., [R] **asmprobit**
Buot, M.-L. G., [MV] **mvtest means**
Burden, R. L., [M-5] **solvenl( )**
Burden Study Group, [D] **icd10**
Burke, W. J., [R] **tobit**
Burket, G. R., [IRT] **irt 3pl**
Burkhauser, R. V., [MI] **intro substantive**
Burnam, M. A., [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**
Burns, A. F., [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **tsfilter bw**, [TS] **tsfilter cf**, [TS] **tsfilter hp**, [TS] **ucm**
Burns, J. C., [ME] **mixed**
Burr, I. W., [R] **qc**
Burwell, D. T., [ME] **mestreg**
Buskens, V., [R] **tabstat**
Busso, M., [TE] **stteffects ipwra**, [TE] **teffects overlap**
Butterworth, S., [TS] **tsfilter**, [TS] **tsfilter bw**

## C

Caffo, B. S., [BAYES] **bayesstats summary**
Cai, T., [R] **rocreg**
Cai, T. T., [R] **ci**
Cailliez, F., [MV] **mdsmat**
Cain, G. G., [TE] **etregress**
Caines, P. E., [TS] **sspace**
Caliendo, M., [TE] **teffects intro advanced**
Califf, R. M., [ST] **stcox postestimation**
Caliński, T., [MV] **cluster**, [MV] **cluster stop**
Cameron, A. C., [ME] **meglm**, [ME] **mixed**, [R] **asclogit**, [R] **asmprobit**, [R] **betareg**, [R] **bootstrap**, [R] **cpoisson**, [R] **gmm**, [R] **heckman**, [R] **heckoprobit**, [R] **intreg**, [R] **ivpoisson**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **logit**, [R] **mprobit**, [R] **nbreg**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **probit**, [R] **qreg**, [R] **regress**, [R] **regress postestimation**, [R] **simulate**, [R] **sureg**, [R] **tnbreg**, [R] **tobit**, [R] **tpoisson**, [R] **zinb postestimation**, [R] **zip postestimation**, [TE] **etregress**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ra**, [TS] **forecast estimates**, [XT] **xt**, [XT] **xtnbreg**, [XT] **xtpoisson**
Camilli, G., [IRT] **difmh**
Campbell, D. T., [SEM] **example 17**
Campbell, M. J., [PSS] **intro**, [PSS] **power**, [PSS] **power cox**, [PSS] **power logrank**, [R] **ci**, [R] **kappa**, [R] **poisson**, [R] **tabulate twoway**
Canette, I., [ME] **meglm**, [ME] **mixed**, [R] **nl**, [R] **nlsur**
Canner, J., [D] **icd10**
Cappellari, L., [D] **corr2data**, [D] **egen**, [R] **asmprobit**
Cardell, S., [R] **rologit**
Carey, R. B., [D] **icd10**
Caria, M. P., [XT] **xtgee**
Carle, A. C., [ME] **mixed**
Carlile, T., [R] **kappa**
Carlin, B. P., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**
Carlin, J. B., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [MI] **intro substantive**, [MI] **intro**, [MI] **mi estimate**, [MI] **mi impute**, [MI] **mi impute mvn**, [MI] **mi impute regress**, [R] **ameans**, [R] **epitab**
Carnes, B. A., [ST] **streg**
Carpenter, J. R., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meqrlogit**, [MI] **intro substantive**, [MI] **intro**, [MI] **mi impute**, [R] **bootstrap**, [R] **bstat**
Carroll, J. B., [MV] **rotatemat**
Carroll, R. J., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **mixed**, [ME] **mixed**, [R] **boxcox**, [R] **rreg**, [R] **sdtest**
Carson, R. T., [R] **tnbreg**, [R] **tpoisson**
Carter, S. L., [ME] **me**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [R] **frontier**, [R] **lrtest**, [R] **nbreg**, [ST] **stcox**, [ST] **streg**, [XT] **xt**
Casagrande, J. T., [PSS] **intro**, [PSS] **power twoproportions**
Casals, J., [TS] **sspace**

Casella, G., [BAYES] **intro**, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **mixed**, [PSS] **intro**
Castellani, M., [R] **betareg**
Castillo, E., [MI] **intro substantive**, [MI] **mi impute chained**
Castro, L. M., [IRT] **irt 3pl**
Cattaneo, M. D., [R] **gmm**, [TE] **eteffects**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **tebalance**, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects multivalued**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**, [TE] **teffects ra**
Cattelan, A. M., [R] **betareg**
Cattell, R. B., [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **procrustes**, [MV] **screeplot**
Caudill, S. B., [R] **frontier**, [XT] **xtfrontier**
Caulcutt, R., [R] **qc**
Cefalu, M. S., [ST] **stcox postestimation**, [ST] **stcurve**, [ST] **sts graph**
Center for Human Resource Research, [SEM] **example 38g**, [SEM] **example 46g**, [XT] **xt**
Centers for Disease Control and Prevention, [D] **icd**, [D] **icd9**
Cerulli, G., [TE] **eteffects**, [TE] **teffects ipw**
Chabert, J.-L., [M-5] **cholesky( )**
Chadwick, J., [R] **poisson**
Chaimani, A., [R] **meta**
Chakraborti, S., [R] **ksmirnov**
Chaloner, K., [BAYES] **intro**
Chamberlain, G., [R] **clogit**, [R] **gmm**, [R] **qreg**
Chambers, J. M., [G-2] **graph box**, [G-2] **graph matrix**, [G-3] ***by_option***, [R] **diagnostic plots**, [R] **grmeanby**, [R] **lowess**, [U] **1.4 References**
Chang, I. M., [R] **margins**
Chang, Y., [TS] **sspace**
Chang, Y.-J., [XT] **xtivreg**, [XT] **xtreg**
Chao, E. C., [ME] **me**, [ME] **meqrlogit**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson**, [ME] **meqrpoisson postestimation**
Charlett, A., [R] **fp**
Chatfield, C., [I] **Glossary**, [TS] **arima**, [TS] **corrgram**, [TS] **pergram**, [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth ma**, [TS] **tssmooth shwinters**, [TS] **Glossary**
Chatfield, M., [R] **anova**
Chatterjee, S., [R] **poisson**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**
Chávez Juárez, F. W., [R] **inequality**
Chen, H., [TS] **mswitch**
Chen, M.-H., [BAYES] **intro**, [BAYES] **bayesstats summary**
Chen, X., [ME] **mixed**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [R] **logistic**, [R] **logistic postestimation**, [R] **logit**
Chernick, M. R., [PSS] **intro**, [PSS] **power oneproportion**, [PSS] **power twoproportions**
Chernozhukov, V., [BAYES] **intro**
Cheung, Y.-W., [TS] **dfgls**
Chiang, C. L., [ST] **ltable**
Chib, S., [BAYES] **intro**
Chiburis, R., [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [R] **oprobit**
Choi, B. C. K., [R] **rocfit**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **roctab**
Choi, I., [XT] **xtunitroot**
Choi, M.-D., [M-5] **Hilbert( )**
Choi, S. C., [MV] **discrim knn**
Cholesky, A.-L., [M-5] **cholesky( )**
Chou, R. Y., [TS] **arch**
Chow, G. C., [R] **contrast**, [TS] **estat sbknown**
Chow, S.-C., [PSS] **intro**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power exponential**, [R] **pk**, [R] **pkcross**, [R] **pkequiv**, [R] **pkexamine**, [R] **pkshape**
Christakis, N., [R] **rologit**
Christensen, W. F., [MV] **biplot**, [MV] **ca**, [MV] **candisc**, [MV] **canon**, [MV] **canon postestimation**, [MV] **cluster**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim knn**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **discrim logistic**, [MV] **discrim qda**, [MV] **discrim qda postestimation**, [MV] **factor**, [MV] **manova**, [MV] **mca**, [MV] **mvtest**, [MV] **mvtest correlations**, [MV] **mvtest covariances**, [MV] **mvtest means**, [MV] **mvtest normality**, [MV] **pca**, [MV] **screeplot**
Christiano, L. J., [TS] **irf create**, [TS] **tsfilter**, [TS] **tsfilter cf**, [TS] **var svar**
Chu, C.-S. J., [XT] **xtunitroot**
Chu-Chun-Lin, S., [TS] **sspace**
Clark, V. A., [MV] **canon**, [MV] **discrim**, [MV] **factor**, [MV] **pca**, [R] **stepwise**, [ST] **ltable**
Clarke, M. R. B., [MV] **factor**
Clarke, R. D., [R] **poisson**
Clarke-Pearson, D. L., [R] **roccomp**, [R] **rocreg**, [R] **roctab**
Clarkson, D. B., [R] **tabulate twoway**
Clarotti, C. A., [BAYES] **intro**

Clayton, D. G., [D] **egen**, [ME] **me**, [ME] **meglm**, [ME] **mepoisson**, [ME] **meqrpoisson**, [R] **cloglog**, [R] **cumul**, [R] **epitab**, [ST] **stptime**, [ST] **strate**, [ST] **stsplit**, [ST] **sttocc**
Cleland, J., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meprobit**, [ME] **meqrlogit**
Clerc-Urmès, I., [ST] **sts**
Clerget-Darpoux, F., [R] **symmetry**
Cleveland, W. S., [G-1] **graph intro**, [G-2] **graph box**, [G-2] **graph dot**, [G-2] **graph matrix**, [G-2] **graph twoway lowess**, [G-3] ***by_option***, [R] **diagnostic plots**, [R] **lowess**, [R] **lpoly**, [R] **sunflower**, [U] **1.4 References**
Cleves, M. A., [ME] **mestreg**, [MI] **mi estimate**, [PSS] **power exponential**, [PSS] **power logrank**, [R] **binreg**, [R] **dstdize**, [R] **logistic**, [R] **logit**, [R] **roccomp**, [R] **rocfit**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **roctab**, [R] **sdtest**, [R] **symmetry**, [ST] **survival analysis**, [ST] **st**, [ST] **stcox**, [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **stcurve**, [ST] **stdescribe**, [ST] **streg**, [ST] **sts**, [ST] **stset**, [ST] **stsplit**, [ST] **stvary**, [TE] **stteffects intro**, [XT] **xtstreg**
Cliff, N., [MV] **canon postestimation**
Clogg, C. C., [R] **suest**
Clopper, C. J., [R] **ci**
Cobb, G. W., [R] **anova**
Cochran, W. G., [P] **levelsof**, [PSS] **intro**, [PSS] **power cmh**, [PSS] **power trend**, [R] **ameans**, [R] **anova**, [R] **correlate**, [R] **dstdize**, [R] **mean**, [R] **oneway**, [R] **poisson**, [R] **probit**, [R] **proportion**, [R] **ranksum**, [R] **ratio**, [R] **signrank**, [R] **total**, [SVY] **survey**, [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svyset**, [SVY] **variance estimation**
Cochrane, D., [TS] **prais**
Coelli, T. J., [R] **frontier**, [XT] **xtfrontier**
Coffey, C., [MI] **intro substantive**
Cohen, J., [PSS] **intro**, [PSS] **power oneway**, [PSS] **power twoway**, [R] **esize**, [R] **kappa**, [R] **pcorr**
Cohen, P., [R] **pcorr**
Coleman, J. S., [R] **poisson**
Collett, D., [PSS] **intro**, [PSS] **power logrank**, [R] **clogit**, [R] **logistic**, [R] **logistic postestimation**, [ST] **stci**, [ST] **stcox postestimation**, [ST] **stcrreg postestimation**, [ST] **streg postestimation**, [ST] **sts test**, [ST] **stsplit**
Collins, E., [SVY] **survey**, [SVY] **svy estimation**
Compostella, F. A., [R] **betareg**
Comrey, A. L., [I] **Glossary**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Comstock, T. J., [BAYES] **bayesmh**
Comte, F., [TS] **mgarch**
Cone-Wesson, B., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Conejo, N. M., [ME] **mixed**
Conesa, D., [TS] **mswitch**
Cong, R., [R] **tobit**, [R] **tobit postestimation**, [R] **truncreg**, [TE] **etregress**
Connor, R. J., [PSS] **intro**, [PSS] **power pairedproportions**
Conover, W. J., [R] **centile**, [R] **ksmirnov**, [R] **kwallis**, [R] **nptrend**, [R] **sdtest**, [R] **spearman**, [R] **tabulate twoway**
Conroy, R. M., [R] **intreg**, [R] **ranksum**
Consonni, D., [R] **dstdize**
Conway, M. R., [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**
Cook, A., [R] **ci**
Cook, I. T., [U] **1.4 References**
Cook, N. R., [R] **rocreg**
Cook, R. D., [P] **_predict**, [R] **boxcox**, [R] **regress postestimation**
Cooper, M. C., [MV] **cluster**, [MV] **cluster programming subroutines**, [MV] **cluster stop**
Cornelius, P. L., [ME] **mixed**
Cornfield, J., [R] **epitab**
Corten, R., [MV] **mds**
Coster, D., [R] **contrast**
Coull, B. A., [R] **ci**
Cousens, S. N., [TE] **teffects intro advanced**
Coviello, V., [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **sttocc**
Cowles, M. K., [BAYES] **intro**
Cox, C., [SEM] **example 2**
Cox, C. S., [SVY] **survey**, [SVY] **svy estimation**
Cox, D. R., [PSS] **intro**, [PSS] **power cox**, [R] **boxcox**, [R] **exlogistic**, [R] **expoisson**, [R] **lnskew0**, [ST] **ltable**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcrreg**, [ST] **streg**, [ST] **streg postestimation**, [ST] **sts**
Cox, G. M., [P] **levelsof**, [R] **anova**
Cox, M. A. A., [I] **Glossary**, [MV] **biplot**, [MV] **ca**, [MV] **mds**, [MV] **mds postestimation**, [MV] **mdsmat**, [MV] **procrustes**, [MV] **Glossary**
Cox, N. J., [D] **by**, [D] **clonevar**, [D] **codebook**, [D] **contract**, [D] **count**, [D] **datetime**, [D] **describe**, [D] **destring**, [D] **drop**, [D] **ds**, [D] **duplicates**, [D] **egen**, [D] **expand**, [D] **fillin**, [D] **format**, [D] **icd**, [D] **lookfor**, [D] **missing values**, [D] **rename**, [D] **reshape**, [D] **sample**, [D] **separate**, [D] **split**, [D] **statsby**, [FN] **intro**, [FN] **Mathematical functions**, [FN] **Programming functions**, [FN] **String functions**, [G-1] **graph intro**, [G-2] **graph bar**, [G-2] **graph box**, [G-2] **graph dot**, [G-2] **graph twoway dot**, [G-2] **graph twoway function**, [G-2] **graph twoway histogram**, [G-2] **graph twoway kdensity**, [G-2] **graph twoway lowess**, [G-2] **graph twoway lpoly**, [G-2] **graph twoway pcarrow**, [G-2] **graph twoway pcspike**, [G-2] **graph twoway scatter**, [G-3] ***added_line_options***, [G-3] ***added_text_options***, [G-3] ***aspect_option***, [G-3] ***axis_label_options***, [G-3] ***axis_scale_options***, [G-3] ***by_option***, [G-3] ***title_options***, [G-4] ***linestyle***,

Cox, N. J., *continued*
[MV] **mvtest**, [MV] **mvtest normality**, [P] **forvalues**, [P] **levelsof**, [P] **matrix define**, [P] **unab**, [R] **betareg**, [R] **ci**, [R] **cumul**, [R] **diagnostic plots**, [R] **grmeanby**, [R] **histogram**, [R] **inequality**, [R] **kappa**, [R] **kdensity**, [R] **ladder**, [R] **lowess**, [R] **lpoly**, [R] **net**, [R] **net search**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [R] **search**, [R] **serrbar**, [R] **sktest**, [R] **smooth**, [R] **spikeplot**, [R] **ssc**, [R] **stem**, [R] **summarize**, [R] **sunflower**, [R] **tabulate oneway**, [R] **tabulate twoway**, [TS] **tsline**, [TS] **tsset**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**, [U] **3.9 References**, [U] **11.7 References**, [U] **12.10 References**, [U] **13.13 References**, [U] **17.10 Reference**, [U] **23.5 Reference**, [U] **24.8 References**, [XT] **xtdescribe**
Cox, T. F., [I] **Glossary**, [MV] **biplot**, [MV] **ca**, [MV] **mds**, [MV] **mds postestimation**, [MV] **mdsmat**, [MV] **procrustes**, [MV] **Glossary**
Cozad, J. B., [MV] **discrim lda**
Cragg, J. G., [R] **churdle**, [R] **ivregress postestimation**
Craig, A. S., [D] **icd10**
Cramer, E. M., [MV] **procrustes**
Cramér, H., [R] **tabulate twoway**
Cramer, J. S., [R] **logit**
Crawford, C. B., [I] **Glossary**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Creel, M. D., [R] **cpoisson**
Cribari-Neto, F., [R] **betareg**
Critchley, F., [MV] **mdsmat**
Cronbach, L. J., [MV] **alpha**, [R] **icc**
Crouchley, R., [ME] **mestreg**
Croux, C., [R] **rreg**
Crow, K., [D] **import excel**, [P] **putexcel**, [U] **13.13 References**
Crowder, M. J., [ST] **stcrreg**, [ST] **streg**
Crowe, P. R., [G-2] **graph box**
Crowley, J., [ST] **stcox**, [ST] **stcrreg**, [ST] **stset**
Crowther, M. J., [PSS] **intro**, [R] **meta**, [ST] **streg**
Cudeck, R., [SEM] **estat gof**, [SEM] **methods and formulas for sem**
Cui, J., [R] **symmetry**, [ST] **stcox**, [ST] **streg**, [XT] **xtgee**
Cumming, G., [R] **esize**, [R] **regress postestimation**
Cummings, P., [R] **binreg**, [R] **epitab**, [R] **glm**, [R] **margins**, [XT] **xtpoisson**
Cunliffe, S., [R] **ttest**
Curtis, J. T., [MV] **clustermat**
Curts-García, J., [R] **smooth**
Cushman, W. C., [PSS] **intro**, [PSS] **power repeated**
Cutler, J. A., [PSS] **intro**, [PSS] **power repeated**
Cutler, S. J., [ST] **ltable**
Cuzick, J., [R] **kappa**, [R] **nptrend**
Czekanowski, J., [MV] ***measure_option***

## D

D'Agostino, R. B., [MV] **mvtest normality**, [R] **sktest**, [R] **swilk**
D'Agostino, R. B., Jr., [R] **sktest**, [R] **swilk**
Daidone, S., [R] **frontier**, [XT] **xtfrontier**
Danahy, D. T., [ME] **mestreg**
Daniel, C., [R] **diagnostic plots**, [R] **oneway**
Daniel, R. M., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**, [TE] **teffects intro advanced**
Danuso, F., [R] **nl**
Dardanoni, V., [MI] **intro substantive**
Das, S., [XT] **xtunitroot**
DasGupta, A., [R] **ci**
Davey, P. G., [D] **icd10**
Davey Smith, G., [R] **meta**
David, F. N., [R] **correlate**
David, H. A., [D] **egen**, [R] **spearman**, [R] **summarize**
David, J. S., [TS] **arima**
Davidon, W. C., [M-5] **optimize( )**
Davidson, J., [TS] **mswitch postestimation**
Davidson, R., [I] **Glossary**, [R] **boxcox**, [R] **cnsreg**, [R] **gmm**, [R] **intreg**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **mlogit**, [R] **nl**, [R] **nlsur**, [R] **reg3**, [R] **regress**, [R] **regress postestimation time series**, [R] **truncreg**, [TS] **arch**, [TS] **arima**, [TS] **prais**, [TS] **sspace**, [TS] **varlmar**, [TS] **Glossary**, [XT] **xtgls**, [XT] **xtpcse**
Davies, R. B., [TS] **estat sbsingle**
Davis, B. R., [PSS] **intro**, [PSS] **power repeated**
Davis, G., [TS] **arima**
Davis, R. A., [TS] **corrgram**, [TS] **sspace**
Davison, A. C., [R] **bootstrap**
Day, N. E., [PSS] **power mcc**, [R] **clogit**, [R] **dstdize**, [R] **epitab**, [R] **symmetry**
Day, W. H. E., [MV] **cluster**
de Ayala, R. J., [IRT] **irt**, [IRT] **irt nrm**, [IRT] **irt pcm**, [IRT] **irt hybrid**
De Backer, M., [ME] **meqrlogit postestimation**
De Boeck, P., [IRT] **irt**, [IRT] **Control Panel**, [IRT] **difmh**, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt hybrid**, [ME] **me**
De Hoyos, R. E., [XT] **xtreg**
de Irala-Estévez, J., [R] **logistic**
De Jong, P., [TS] **dfactor**, [TS] **sspace**, [TS] **sspace postestimation**, [TS] **ucm**
De Keyser, P., [ME] **meqrlogit postestimation**
de Kraker, M. E. A., [D] **icd10**
de Leeuw, J., [MV] **ca postestimation**
De Luca, G., [MI] **intro substantive**, [R] **biprobit**, [R] **heckoprobit**, [R] **heckprobit**, [R] **oprobit**, [R] **probit**
De Stavola, B. L., [ST] **stcox**, [ST] **stset**, [TE] **teffects intro advanced**
De Vroey, C., [ME] **meqrlogit postestimation**
de Wolf, I., [R] **rologit**

Deady, S., [R] **betareg**
Dearden, L., [TE] **teffects intro advanced**, [TE] **teffects multivalued**
Deaton, A. S., [R] **nlsur**, [U] **20.25 References**
Deb, P., [R] **nbreg**
Debarsy, N., [R] **lpoly**
DeGroot, M. H., [BAYES] **intro**, [TS] **arima**
Dehon, C., [R] **correlate**
Deistler, M., [TS] **sspace**
del Rio, A., [TS] **tsfilter hp**
DeLong, D. M., [R] **roccomp**, [R] **rocreg**, [R] **roctab**
DeLong, E. R., [R] **roccomp**, [R] **rocreg**, [R] **roctab**
DeMaris, A., [R] **regress postestimation**
Demidenko, E., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **mixed**
Demmel, J., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
Demnati, A., [SVY] **direct standardization**, [SVY] **poststratification**, [SVY] **variance estimation**
Dempster, A. P., [ME] **me**, [ME] **mixed**, [MI] **intro substantive**, [MI] **mi impute mvn**
Denis, D., [G-2] **graph twoway scatter**
Desbordes, R., [R] **ivregress**
Desmarais, B. A., [R] **zinb**, [R] **zip**
Desu, M. M., [PSS] **power exponential**
Deville, J.-C., [SVY] **direct standardization**, [SVY] **poststratification**, [SVY] **variance estimation**
Devroye, L., [FN] **Random-number functions**
Dewey, M. E., [R] **correlate**
Dey, D. D., [BAYES] **intro**
Dey, D. K., [BAYES] **intro**
Dice, L. R., [MV] ***measure_option***
Dickens, R., [TS] **prais**
Dickey, D. A., [I] **Glossary**, [TS] **dfgls**, [TS] **dfuller**, [TS] **pperron**, [TS] **Glossary**
Dickson, E. R., [ST] **stcrreg**
Dicle, M. F., [D] **import**
Didelez, V., [R] **ivregress**
Diebold, F. X., [TS] **arch**
Dieter, U., [FN] **Random-number functions**
Digby, P. G. N., [R] **tetrachoric**
Diggle, P. J., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **mixed**, [TS] **arima**, [TS] **wntestq**
Dijksterhuis, G. B., [MV] **procrustes**
DiNardo, J., [TE] **stteffects ipwra**, [TE] **teffects overlap**, [XT] **xtrc**
Ding, Z., [TS] **arch**
Dinno, A., [MV] **factor**, [MV] **pca**
Dixon, W. J., [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power onevariance**, [PSS] **power twovariances**, [R] **ttest**, [R] **ztest**
Djulbegovic, B., [R] **meta**
Dobbin, K., [PSS] **power**
Dobson, A. J., [R] **glm**
Dodd, L. E., [R] **rocreg**
Dohoo, I., [R] **epitab**, [R] **regress**
Doll, R., [R] **epitab**, [R] **poisson**
Donald, A., [R] **meta**
Donald, S. G., [R] **ivregress postestimation**
Dongarra, J. J., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**, [P] **matrix symeigen**
Donner, A., [R] **loneway**
Donoho, D. L., [R] **lpoly**
Doornik, J. A., [MV] **mvtest**, [MV] **mvtest normality**, [TS] **arfima**, [TS] **vec**
Dore, C. J., [R] **fp**
Dorfman, D. D., [R] **rocfit**, [R] **rocreg**
Doris, A., [R] **gmm**, [R] **inequality**
Draper, N., [R] **eivreg**, [R] **oneway**, [R] **regress**, [R] **stepwise**
Driver, H. E., [MV] ***measure_option***
Drukker, D. M., [ME] **me**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [R] **asmprobit**, [R] **boxcox**, [R] **frontier**, [R] **gmm**, [R] **lrtest**, [R] **nbreg**, [R] **tobit**, [ST] **stcox**, [ST] **streg**, [TE] **etregress**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects multivalued**, [TE] **teffects nnmatch**, [TS] **arfima postestimation**, [TS] **sspace**, [TS] **vec**, [XT] **xt**, [XT] **xtregar**
Du Croz, J., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
Duan, N., [R] **boxcox postestimation**, [R] **heckman**, [TS] **forecast estimates**
Dubes, R. C., [MV] **cluster**
Duda, R. O., [MV] **cluster**, [MV] **cluster stop**
Dumyati, G., [D] **icd10**
Duncan, A. J., [R] **qc**
Duncan, O. D., [SEM] **example 7**
Dunlop, D. D., [PSS] **intro**, [PSS] **power onemean**, [R] **ztest**
Dunn, G., [MV] **discrim**, [MV] **discrim qda postestimation**, [MV] **mca**, [R] **kappa**, [TE] **teffects multivalued**
Dunnett, C. W., [FN] **Statistical functions**, [R] **mprobit**, [R] **pwcompare**
Dunnington, G. W., [R] **regress**
Dunsmore, I. R., [BAYES] **intro**
Dunson, D. B., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [MI] **intro substantive**, [MI] **mi impute mvn**, [MI] **mi impute regress**
Dupont, W. D., [PSS] **power mcc**, [R] **epitab**, [R] **logistic**, [R] **mkspline**, [R] **sunflower**, [ST] **stcox**, [ST] **stir**, [ST] **sts**

Durbin, J., [I] **Glossary**, [R] **ivregress postestimation**, [R] **regress postestimation time series**, [TS] **prais**, [TS] **ucm**, [TS] **Glossary**
Duren, P., [R] **regress**
Durlauf, S. N., [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**
Duval, R. D., [R] **bootstrap**, [R] **jackknife**, [R] **rocreg**, [R] **rocregplot**
Dwyer, J. H., [XT] **xtreg**
Dyck, A., [D] **datetime**

## E

Eaves, R. C., [SEM] **example 2**
Eberhardt, M., [XT] **xtrc**
Eberly, L. E., [BAYES] **intro**
Ecob, R., [MI] **mi estimate**
Eddings, W. D., [MI] **mi impute**
Edelsbrunner, H., [MV] **cluster**
Ederer, F., [ST] **ltable**
Edgington, E. S., [R] **runtest**
Edwards, A. L., [R] **anova**
Edwards, A. W. F., [R] **tetrachoric**
Edwards, J. H., [R] **tetrachoric**
Efron, B., [R] **bootstrap**, [R] **qreg**
Efroymson, M. A., [R] **stepwise**
Egger, M., [R] **meta**
Eichenbaum, M., [TS] **irf create**, [TS] **var svar**
Eisenhart, C., [R] **correlate**, [R] **runtest**
Elashoff, J. D., [ME] **mixed**
Ellenberg, S. S., [BAYES] **bayesmh**
Elliott, G. R., [I] **Glossary**, [TS] **dfgls**, [TS] **Glossary**
Ellis, C. D., [R] **poisson**
Ellis, P. D., [R] **esize**, [R] **regress postestimation**
Elston, D. A., [ME] **mixed**
Eltinge, J. L., [R] **test**, [SVY] **survey**, [SVY] **estat**, [SVY] **svy postestimation**, [SVY] **svydescribe**, [SVY] **variance estimation**
Embretson, S. E., [IRT] **irt**, [SEM] **example 28g**, [SEM] **example 29g**
Emerson, J. D., [R] **lv**, [R] **stem**
Emsley, R., [TE] **teffects multivalued**
Enas, G. G., [MV] **discrim knn**
Ender, P. B., [MV] **canon**, [R] **marginsplot**
Enders, W., [TS] **arch**, [TS] **arima**, [TS] **arima postestimation**, [TS] **corrgram**
Engel, A., [R] **boxcox**, [R] **marginsplot**, [SVY] **survey**, [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy**, [SVY] **svy brr**, [SVY] **svy estimation**, [SVY] **svy jackknife**, [SVY] **svy postestimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**, [SVY] **svydescribe**
Engel, C., [R] **churdle**, [TS] **mswitch**
Engle, R. F., [R] **regress postestimation time series**, [TS] **arch**, [TS] **arima**, [TS] **dfactor**, [TS] **mgarch**, [TS] **mgarch dcc**, [TS] **mgarch dvech**, [TS] **mgarch vcc**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**
Erdreich, L. S., [R] **roccomp**, [R] **rocfit**, [R] **roctab**
Esman, R. M., [D] **egen**
Eubank, R. L., [R] **lpoly**
Evans, C. L., [TS] **irf create**, [TS] **var svar**
Evans, M. A., [R] **pk**, [R] **pkcross**
Everitt, B. S., [MV] **cluster**, [MV] **cluster stop**, [MV] **discrim**, [MV] **discrim qda postestimation**, [MV] **mca**, [MV] **pca**, [MV] **screeplot**, [R] **gllamm**, [R] **glm**, [U] **1.4 References**
Everson, H. T., [IRT] **difmh**
Ewens, W. J., [R] **symmetry**
Ezekiel, M., [R] **regress postestimation diagnostic plots**
Ezzati-Rice, T. M., [MI] **intro substantive**

## F

Facchin, C., [R] **betareg**
Fagerland, M. F., [R] **epitab**
Fagerland, M. W., [R] **estat gof**, [R] **mlogit postestimation**, [R] **ologit**
Fai, A. H.-T., [ME] **mixed**
Fair, R. C., [TS] **forecast solve**
Faires, J. D., [M-5] **solvenl( )**
Falcaro, M., [MV] **cluster dendrogram**
Fan, J., [R] **lpoly**
Fan, Y.-A., [R] **tabulate twoway**
Fang, K.-T., [R] **asmprobit**
Farbmacher, H., [R] **churdle**, [R] **cpoisson**, [R] **tpoisson**
Fay, R. E., [SVY] **survey**, [SVY] **svy sdr**, [SVY] **variance estimation**
Feinleib, M., [XT] **xtreg**
Feiveson, A. H., [PSS] **intro**, [R] **nlcom**, [R] **ranksum**
Feldman, J. J., [SVY] **survey**, [SVY] **svy estimation**
Feldt, L. S., [PSS] **power repeated**, [R] **anova**
Feller, W., [TS] **wntestb**
Fellingham, G. W., [ME] **mixed**
Feltbower, R., [R] **epitab**
Feng, S., [MI] **intro substantive**
Ferguson, G. A., [I] **Glossary**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Fernández, P., [ME] **mixed**
Ferrari, S. L. P., [R] **betareg**
Ferri, H. A., [R] **kappa**
Festinger, L., [R] **ranksum**
Fibrinogen Studies Collaboration, [ST] **stcox postestimation**
Fidell, L. S., [MV] **discrim**, [MV] **discrim lda**
Field, A., [MI] **mi estimate**, [MI] **mi impute**, [XT] **xtgee**
Field, C. A., [R] **bootstrap**
Fieller, E. C., [R] **pkequiv**
Fienberg, S. E., [BAYES] **intro**, [R] **kwallis**, [R] **tabulate twoway**
Filon, L. N. G., [R] **correlate**
Filoso, V., [R] **regress**
Finch, S., [R] **esize**

Findley, D. F., [R] **estat ic**
Findley, T. W., [R] **ladder**
Fine, J. P., [ST] **stcrreg**
Finlay, K., [R] **ivprobit**, [R] **ivregress**, [R] **ivtobit**
Finney, D. J., [IRT] **irt 3pl**, [R] **probit**, [R] **tabulate twoway**
Fiocco, M., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Fiorentini, G., [TS] **mgarch**
Fiorio, C. V., [R] **kdensity**
Fischer, G. H., [IRT] **irt**, [SEM] **example 28g**
Fiser, D. H., [R] **estat gof**, [R] **lroc**
Fishell, E., [R] **kappa**
Fisher, L. D., [MV] **factor**, [MV] **pca**, [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power oneway**, [PSS] **power twoway**, [R] **anova**, [R] **dstdize**, [R] **oneway**
Fisher, M. R., [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xttobit**
Fisher, N. I., [R] **regress postestimation time series**
Fisher, R. A., [I] **Glossary**, [MV] **clustermat**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim lda**, [MV] **Glossary**, [P] **levelsof**, [PSS] **intro**, [PSS] **power twoproportions**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [R] **anova**, [R] **anova**, [R] **esize**, [R] **ranksum**, [R] **signrank**, [R] **tabulate twoway**, [ST] **streg**
Fiske, D. W., [SEM] **example 17**
Fitzgerald, T. J., [TS] **tsfilter**, [TS] **tsfilter cf**
Fitzmaurice, G. M., [ME] **mixed**
Fix, E., [MV] **discrim knn**
Flannery, B. P., [FN] **Statistical functions**, [G-2] **graph twoway contour**, [M-5] **solvenl( )**, [P] **matrix symeigen**, [R] **dydx**, [R] **vwls**, [TS] **arch**, [TS] **arima**
Flay, B. R., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Flegal, J. M., [BAYES] **bayesstats summary**
Fleiss, J. L., [PSS] **intro**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [R] **dstdize**, [R] **epitab**, [R] **icc**, [R] **kappa**
Fleming, T. R., [ST] **stcox**, [ST] **sts test**
Fletcher, K., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Fletcher, R., [M-5] **optimize( )**
Flood, S., [R] **mlexp**
Flynn, Z. L., [R] **gmm**
Folsom, R. C., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Ford, C. E., [PSS] **intro**, [PSS] **power repeated**
Ford, J. M., [R] **frontier**, [XT] **xtfrontier**
Forsythe, A. B., [R] **sdtest**
Forthofer, R. N., [R] **dstdize**
Fosheim, G. E., [D] **icd10**
Foster, A., [R] **regress**
Fouladi, R. T., [R] **esize**
Foulkes, M. A., [PSS] **power cox**, [PSS] **power exponential**
Fourier, J. B. J., [R] **cumul**
Fox, C. M., [IRT] **irt**, [SEM] **example 28g**
Fox, J., [R] **kdensity**, [R] **lv**
Fox, W. C., [R] **lroc**
Francia, R. S., [R] **swilk**
Francis, C., [PSS] **intro**, [PSS] **power repeated**
Frank, M. W., [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
Frankel, M. R., [P] **_robust**, [SVY] **variance estimation**, [U] **20.25 References**
Franklin, C. H., [D] **cross**
Franzese, R. J., Jr., [XT] **xtpcse**
Franzini, L., [XT] **xtregar**
Fraser, M. W., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **tebalance**
Frechette, G. R., [XT] **xtprobit**
Freedman, L. S., [PSS] **intro**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**
Freeman, D. H., Jr., [SVY] **svy: tabulate twoway**
Freeman, E. H., [SEM] **estat stable**
Freeman, J. L., [R] **epitab**, [SVY] **svy: tabulate twoway**
Freeman, J. R., [TS] **time series**, [TS] **arima**, [TS] **forecast**, [TS] **irf**, [TS] **var**, [TS] **vec**
Freese, J., [R] **asroprobit**, [R] **clogit**, [R] **cloglog**, [R] **logistic**, [R] **logit**, [R] **mlogit**, [R] **mprobit**, [R] **nbreg**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **probit**, [R] **regress**, [R] **regress postestimation**, [R] **tnbreg**, [R] **tpoisson**, [R] **zinb**, [R] **zip**, [U] **20.25 References**
Fridkin, S. K., [D] **icd10**
Friedman, J. H., [MV] **discrim knn**
Friedman, M., [TS] **arima**
Friendly, M., [G-2] **graph twoway scatter**
Frölich, M., [R] **qreg**, [TE] **teffects multivalued**
Frome, E. L., [R] **qreg**
Frühwirth-Schnatter, S., [TS] **mswitch**
Frydenberg, M., [R] **dstdize**, [R] **roccomp**, [R] **roctab**
Fu, V. K., [R] **ologit**
Fuller, W. A., [I] **Glossary**, [MV] **factor**, [P] **_robust**, [R] **regress**, [R] **spearman**, [SVY] **svy: tabulate twoway**, [SVY] **variance estimation**, [TS] **dfgls**, [TS] **dfuller**, [TS] **pperron**, [TS] **psdensity**, [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **ucm**, [TS] **Glossary**, [U] **20.25 References**
Funkhouser, H. G., [G-2] **graph pie**
Furberg, C. D., [PSS] **intro**, [PSS] **power repeated**
Futuyma, D. J., [MV] ***measure_option***
Fyler, D. C., [R] **epitab**
Fyles, A., [ST] **stcrreg**, [ST] **stcrreg postestimation**

## G

Gabriel, K. R., [MV] **biplot**
Gail, M. H., [P] **_robust**, [PSS] **power exponential**, [R] **rocreg**, [R] **rocreg postestimation**, [ST] **stcrreg**, [ST] **strate**, [U] **20.25 References**

Galanti, M. R., [XT] **xtgee**
Galati, J. C., [MI] **intro substantive**, [MI] **intro**, [MI] **mi estimate**
Gałecki, A. T., [ME] **mixed**, [ME] **mixed postestimation**
Gali, J., [TS] **estat sbsingle**
Gall, J.-R. L., [R] **estat gof**, [R] **logistic**
Gallant, A. R., [R] **ivregress**, [R] **nl**
Gallup, J. L., [M-5] **_docx*( )**, [P] **putexcel**, [R] **estimates table**
Galton, F., [R] **correlate**, [R] **cumul**, [R] **regress**, [R] **summarize**
Gamerman, D., [BAYES] **intro**
Gan, F. F., [R] **diagnostic plots**
Gange, S. J., [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xttobit**
Gani, J., [TS] **wntestb**
Garbow, B. S., [P] **matrix symeigen**
García, B., [R] **churdle**
Garcia, R., [TS] **mswitch**
Gardiner, J. S., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Gardner, E. S., Jr., [TS] **tssmooth dexponential**, [TS] **tssmooth hwinters**
Garnett, W. R., [BAYES] **bayesmh**
Garrett, J. M., [R] **logistic**, [R] **logistic postestimation**, [R] **regress postestimation**, [ST] **stcox PH-assumption tests**
Garsd, A., [R] **exlogistic**
Gart, J. J., [R] **epitab**
Gasser, T., [R] **lpoly**
Gastwirth, J. L., [R] **sdtest**
Gates, R., [R] **asmprobit**
Gauss, J. C. F., [R] **regress**
Gauvreau, K., [PSS] **intro**, [R] **dstdize**, [R] **logistic**, [ST] **ltable**, [ST] **sts**
Gavin, M. D., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Gehan, E. A., [ST] **sts test**
Geisser, S., [PSS] **power repeated**, [R] **anova**
Gel, Y. R., [R] **sdtest**
Gelbach, J., [R] **ivprobit**, [R] **ivtobit**
Gelfand, A. E., [BAYES] **intro**, [BAYES] **bayesmh**, [MI] **mi impute chained**
Gelman, A., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [ME] **me**, [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute mvn**, [MI] **mi impute regress**
Gelman, R., [R] **margins**
Geman, D., [BAYES] **intro**, [MI] **mi impute chained**
Geman, S., [BAYES] **intro**, [MI] **mi impute chained**
Genadek, K., [R] **mlexp**
Genest, C., [R] **diagnostic plots**, [R] **swilk**
Gentle, J. E., [FN] **Random-number functions**, [R] **anova**, [R] **nl**
Genton, M. G., [R] **sktest**
Genz, A., [R] **asmprobit**
George, S. L., [PSS] **power exponential**
Gerkins, V. R., [R] **symmetry**
Gerow, K. G., [SVY] **survey**
Gershman, K., [D] **icd10**
Gertler, M., [TS] **estat sbsingle**
Geskus, R. B., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Geweke, J., [BAYES] **intro**, [BAYES] **bayesmh**, [R] **asmprobit**, [TS] **dfactor**
Geyer, C. J., [BAYES] **bayesmh**
Ghosh, S. K., [BAYES] **intro**
Giannini, C., [TS] **irf create**, [TS] **var intro**, [TS] **var svar**, [TS] **vargranger**, [TS] **varwle**
Gibbons, J. D., [R] **ksmirnov**, [R] **spearman**
Gibbons, R. D., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**
Gichangi, A., [ST] **stcrreg**
Giesbrecht, F. G., [ME] **mixed**
Giesen, D., [R] **tetrachoric**
Gifi, A., [MV] **mds**
Gijbels, I., [R] **lpoly**
Gilbert, G. K., [MV] ***measure_option***
Giles, D. E. A., [TS] **prais**
Gilks, W. R., [BAYES] **intro**, [BAYES] **bayesmh**
Gill, R. D., [ST] **stcrreg**
Gillham, N. W., [R] **regress**
Gillispie, C. C., [R] **regress**
Gini, R., [R] **epitab**, [R] **vwls**
Ginther, O. J., [ME] **mixed**
Giordani, P., [BAYES] **intro**, [BAYES] **bayesmh**
Girshick, M. A., [MV] **pca**
Glass, G. V., [R] **esize**
Glass, R. I., [R] **epitab**
Gleason, J. R., [D] **cf**, [D] **describe**, [D] **generate**, [D] **infile (fixed format)**, [D] **label**, [D] **notes**, [D] **order**, [FN] **Random-number functions**, [R] **anova**, [R] **bootstrap**, [R] **ci**, [R] **correlate**, [R] **epitab**, [R] **loneway**, [R] **summarize**, [R] **ttest**
Gleason, L. R., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Gleick, J., [M-5] **optimize( )**
Gleser, G., [MV] **alpha**
Glidden, D. V., [R] **logistic**, [ST] **stcox**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**
Gloeckler, L. A., [ST] **discrete**
Glosten, L. R., [TS] **arch**
Glowacz, K. M., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**

Gnanadesikan, R., [MV] **manova**, [R] **cumul**, [R] **diagnostic plots**
Godambe, V. P., [SVY] **variance estimation**
Godfrey, L. G., [R] **regress postestimation time series**
Godsill, S. J., [BAYES] **intro**
Goeden, G. B., [R] **kdensity**
Goerg, S. J., [R] **ksmirnov**
Golbe, D. L., [D] **label language**, [D] **merge**, [U] **22.1 References**
Goldberger, A. S., [R] **intreg**, [R] **tobit**, [TE] **etregress**
Goldblatt, A., [R] **epitab**
Golden, C. D., [SVY] **survey**, [SVY] **svy estimation**
Goldfarb, D., [M-5] **optimize( )**
Goldfeld, S. M., [TS] **mswitch**
Goldman, N., [ME] **me**
Goldstein, H., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**
Goldstein, R., [D] **ds**, [D] **egen**, [R] **brier**, [R] **correlate**, [R] **inequality**, [R] **nl**, [R] **ologit**, [R] **oprobit**, [R] **ranksum**, [R] **regress postestimation**, [XT] **xtreg**
Golsch, K., [ME] **mestreg**
Golub, G. H., [M-5] **svd( )**, [R] **orthog**, [R] **tetrachoric**, [TS] **arfima**, [TS] **arfima postestimation**
Gómez, V., [TS] **tsfilter**, [TS] **tsfilter hp**
Gompertz, B., [ST] **streg**
Gönen, M., [ST] **stcox postestimation**
Gonzalez, J. F., Jr., [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy bootstrap**, [SVY] **svy estimation**
Gonzalo, J., [TS] **vec intro**, [TS] **vecrank**
Good, P. I., [G-1] **graph intro**, [R] **permute**, [R] **symmetry**, [R] **tabulate twoway**
Goodall, C., [R] **lowess**, [R] **rreg**
Goodman, L. A., [R] **tabulate twoway**
Gooley, T. A., [ST] **stcrreg**
Gordon, A. D., [MV] **biplot**, [MV] **cluster**, [MV] **cluster stop**, [MV] ***measure_option***
Gordon, D. J., [PSS] **intro**, [PSS] **power repeated**
Gordon, M. G., [R] **binreg**
Gordon, N. J., [BAYES] **intro**
Gorga, M. P., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Gorman, J. W., [R] **stepwise**
Gorst-Rasmussen, A., [MV] **pca**
Gorsuch, R. L., [MV] **factor**, [MV] **rotate**, [MV] **rotatemat**
Gosset [Student, pseud.], W. S., [R] **ttest**
Gosset, W. S., [R] **ttest**
Gould, W. W., [D] **datasignature**, [D] **datetime**, [D] **destring**, [D] **drawnorm**, [D] **ds**, [D] **egen**, [D] **format**, [D] **icd9**, [D] **infile (fixed format)**, [D] **merge**, [D] **putmata**, [D] **reshape**, [D] **sample**, [FN] **Random-number functions**, [M-1] **how**, [M-1] **interactive**, [M-2] **exp**, [M-2] **goto**, [M-2] **pointers**, [M-2] **struct**, [M-2] **subscripts**, [M-2] **syntax**, [M-4] **io**, [M-4] **stata**, [M-5] **deriv( )**,
Gould, W. W., *continued*
[M-5] **eigensystem( )**, [M-5] **geigensystem( )**, [M-5] **inbase( )**, [M-5] **moptimize( )**, [M-5] **runiform( )**, [M-5] **st_addvar( )**, [M-5] **st_global( )**, [M-5] **st_local( )**, [M-5] **st_view( )**, [ME] **mestreg**, [MI] **mi estimate**, [P] **intro**, [P] **_datasignature**, [P] **matrix eigenvalues**, [P] **matrix mkmat**, [P] **postfile**, [P] **_robust**, [PSS] **power exponential**, [PSS] **power logrank**, [R] **bootstrap**, [R] **bsample**, [R] **dydx**, [R] **frontier**, [R] **gmm**, [R] **grmeanby**, [R] **jackknife**, [R] **kappa**, [R] **logistic**, [R] **margins**, [R] **maximize**, [R] **mkspline**, [R] **ml**, [R] **net search**, [R] **nlcom**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **predictnl**, [R] **qreg**, [R] **regress**, [R] **rreg**, [R] **simulate**, [R] **sktest**, [R] **smooth**, [R] **swilk**, [R] **testnl**, [ST] **survival analysis**, [ST] **stcox**, [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **stdescribe**, [ST] **streg**, [ST] **stset**, [ST] **stsplit**, [ST] **stvary**, [SVY] **survey**, [SVY] **ml for svy**, [TE] **stteffects intro**, [U] **13.13 References**, [U] **18.14 References**, [U] **22.1 References**, [U] **26.34 References**, [XT] **xtfrontier**, [XT] **xtstreg**
Gourieroux, C. S., [R] **hausman**, [R] **suest**, [R] **test**, [TS] **arima**, [TS] **mgarch ccc**, [TS] **mgarch dcc**, [TS] **mgarch vcc**
Gower, J. C., [MV] **biplot**, [MV] **ca**, [MV] **mca**, [MV] ***measure_option***, [MV] **procrustes**
Gracik, L., [R] **betareg**
Gradshteyn, I. S., [TS] **arfima**
Graham, J. W., [MI] **intro substantive**, [MI] **mi impute**
Grambsch, P. M., [ME] **mestreg**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **stcrreg**
Granger, C. W. J., [TS] **arch**, [TS] **arfima**, [TS] **vargranger**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**
Grasman, R. P. P. P., [TS] **mswitch**
Graubard, B. I., [ME] **mixed**, [PSS] **power trend**, [R] **margins**, [R] **ml**, [R] **test**, [SVY] **survey**, [SVY] **direct standardization**, [SVY] **estat**, [SVY] **svy**, [SVY] **svy estimation**, [SVY] **svy postestimation**, [SVY] **svy: tabulate twoway**, [SVY] **variance estimation**
Gray, R. J., [ST] **stcrreg**
Graybill, F. A., [PSS] **intro**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [R] **centile**
Green, B. F., [MV] **discrim lda**, [MV] **procrustes**
Green, D. M., [R] **lroc**
Green, P. E., [MV] **cluster**
Green, P. J., [BAYES] **intro**
Greenacre, M. J., [MV] **ca**, [MV] **mca**, [MV] **mca postestimation**, [SEM] **example 35g**, [SEM] **example 36g**
Greenbaum, A., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**

Greenberg, E., [BAYES] **intro**
Greene, W. H., [P] **matrix accum**, [R] **asclogit**, [R] **asmprobit**, [R] **biprobit**, [R] **clogit**, [R] **cnsreg**, [R] **frontier**, [R] **gmm**, [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [R] **hetprobit**, [R] **ivregress**, [R] **logit**, [R] **lrtest**, [R] **margins**, [R] **mkspline**, [R] **mlexp**, [R] **mlogit**, [R] **nlogit**, [R] **nlsur**, [R] **pcorr**, [R] **probit**, [R] **reg3**, [R] **regress**, [R] **regress postestimation time series**, [R] **sureg**, [R] **testnl**, [R] **truncreg**, [R] **zinb**, [R] **zip**, [TE] **etregress**, [TS] **arch**, [TS] **arima**, [TS] **corrgram**, [TS] **var**, [XT] **xt**, [XT] **xtgls**, [XT] **xthtaylor postestimation**, [XT] **xtpcse**, [XT] **xtpoisson**, [XT] **xtrc**, [XT] **xtreg**
Greenfield, S., [MV] **alpha**, [MV] **factor**, [MV] **factor postestimation**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**, [SEM] **example 37g**
Greenhouse, J. B., [R] **epitab**
Greenhouse, S. W., [PSS] **power repeated**, [R] **anova**, [R] **epitab**
Greenland, S., [BAYES] **intro**, [IRT] **difmh**, [R] **ci**, [R] **epitab**, [R] **mkspline**, [R] **ologit**, [R] **poisson**
Greenwood, M., [ST] **ltable**, [ST] **sts**
Greenwood, P., [MI] **intro substantive**
Gregoire, A., [R] **kappa**
Grieve, R., [R] **bootstrap**, [R] **bstat**
Griffith, J. L., [R] **brier**
Griffith, R., [R] **gmm**
Griffiths, W. E., [R] **cnsreg**, [R] **estat ic**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **logit**, [R] **probit**, [R] **regress**, [R] **regress postestimation**, [R] **test**, [TS] **arch**, [TS] **prais**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtrc**, [XT] **xtreg**
Griliches, Z., [ME] **me**, [XT] **xtgls**, [XT] **xtnbreg**, [XT] **xtpcse**, [XT] **xtpoisson**, [XT] **xtrc**
Grimm, R. H., [PSS] **intro**, [PSS] **power repeated**
Grimmett, G., [M-5] **halton( )**
Grisetti, R., [R] **betareg**
Grissom, R. J., [R] **esize**, [R] **regress postestimation**
Grizzle, J. E., [R] **vwls**
Groenen, P. J. F., [MV] **mds**, [MV] **mds postestimation**, [MV] **mdslong**, [MV] **mdsmat**
Grogger, J. T., [R] **tnbreg**, [R] **tpoisson**
Gronau, R., [R] **heckman**, [SEM] **example 45g**
Groothuis-Oudshoorn, C. G. M., [MI] **intro substantive**, [MI] **mi impute chained**
Gropper, D. M., [R] **frontier**, [XT] **xtfrontier**
Gross, A. J., [ST] **ltable**
Grundmann, H., [D] **icd10**
Grunfeld, Y., [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtrc**
Grzebyk, M., [ST] **sts**
Guan, W., [R] **bootstrap**
Guenther, W. C., [PSS] **intro**
Guerry, A.-M., [G-2] **graph twoway histogram**
Guidolin, M., [TS] **mswitch**
Guilkey, D. K., [XT] **xtprobit**
Guillemot, M., [M-5] **cholesky( )**
Guimarães, P., [XT] **xtnbreg**
Guo, G., [ME] **mecloglog**, [ME] **melogit**, [ME] **meprobit**
Guo, S., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **tebalance**
Gurmu, S., [R] **cpoisson**
Gutierrez, R. G., [ME] **me**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [MI] **mi estimate**, [PSS] **power exponential**, [PSS] **power logrank**, [R] **frontier**, [R] **lpoly**, [R] **lrtest**, [R] **nbreg**, [ST] **survival analysis**, [ST] **stcox**, [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **stdescribe**, [ST] **streg**, [ST] **streg postestimation**, [ST] **stset**, [ST] **stsplit**, [ST] **stvary**, [TE] **stteffects intro**, [XT] **xt**, [XT] **xtstreg**

## H

Haaland, J.-A., [G-1] **graph intro**
Haan, P., [R] **asmprobit**, [R] **mlogit**, [R] **mprobit**
Haario, H., [BAYES] **intro**, [BAYES] **bayesmh**
Haas, K., [M-5] **moptimize( )**
Hadamard, J. S., [FN] **Matrix functions**
Hadi, A. S., [R] **poisson**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**
Hadorn, D. C., [R] **brier**
Hadri, K., [XT] **xtunitroot**
Haenszel, W., [IRT] **difmh**, [PSS] **power cmh**, [R] **epitab**, [ST] **strate**, [ST] **sts test**
Hahn, G. J., [M-5] **moptimize( )**
Hahn, J., [R] **ivregress postestimation**
Hair, J. F., Jr., [R] **rologit**
Hajian-Tilaki, K. O., [R] **rocreg**
Hajivassiliou, V. A., [R] **asmprobit**
Hakkio, C. S., [D] **egen**
Hald, A., [R] **qreg**, [R] **regress**, [R] **signrank**, [R] **summarize**
Haldane, J. B. S., [R] **epitab**, [R] **ranksum**
Hall, A. D., [R] **frontier**
Hall, A. R., [R] **gmm**, [R] **gmm postestimation**, [R] **ivpoisson**, [R] **ivpoisson postestimation**, [R] **ivregress**, [R] **ivregress postestimation**
Hall, B. H., [M-5] **optimize( )**, [ME] **me**, [R] **glm**, [TS] **arch**, [TS] **arima**, [XT] **xtnbreg**, [XT] **xtpoisson**
Hall, N. S., [R] **anova**
Hall, P., [R] **bootstrap**, [R] **qreg**, [R] **regress postestimation time series**
Hall, R. E., [M-5] **optimize( )**, [R] **glm**, [TS] **arch**, [TS] **arima**
Hall, W. J., [MV] **biplot**, [R] **roccomp**, [R] **rocfit**, [R] **roctab**
Haller, A. O., [SEM] **example 7**
Halley, E., [ST] **ltable**
Hallock, K., [R] **qreg**

Halton, J. H., [M-5] **halton( )**
Halvorsen, K. T., [R] **tabulate twoway**
Hamaker, E. L., [TS] **mswitch**
Hamann, U., [MV] ***measure_option***
Hambleton, R. K., [IRT] **irt**, [SEM] **example 28g**, [SEM] **example 29g**
Hamer, R. M., [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**
Hamerle, A., [R] **clogit**
Hamilton, J. D., [I] **Glossary**, [P] **matrix eigenvalues**, [R] **gmm**, [TS] **time series**, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **corrgram**, [TS] **dfuller**, [TS] **estat aroots**, [TS] **fcast compute**, [TS] **forecast solve**, [TS] **irf**, [TS] **irf create**, [TS] **mswitch**, [TS] **mswitch postestimation**, [TS] **pergram**, [TS] **pperron**, [TS] **psdensity**, [TS] **sspace**, [TS] **sspace postestimation**, [TS] **tsfilter**, [TS] **ucm**, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **vargranger**, [TS] **varnorm**, [TS] **varsoc**, [TS] **varstable**, [TS] **varwle**, [TS] **vec intro**, [TS] **vec**, [TS] **vecnorm**, [TS] **vecrank**, [TS] **vecstable**, [TS] **xcorr**, [TS] **Glossary**
Hamilton, L. C., [D] **xpose**, [G-1] **graph intro**, [MV] **factor**, [MV] **screeplot**, [R] **bootstrap**, [R] **diagnostic plots**, [R] **estat vce**, [R] **ladder**, [R] **lv**, [R] **mlogit**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [R] **rreg**, [R] **simulate**, [R] **summarize**, [R] **ttest**
Hammarling, S., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
Hammersley, J. M., [M-5] **halton( )**
Hampel, F. R., [D] **egen**, [R] **rreg**, [U] **20.25 References**
Hancock, G. R., [SEM] **estat gof**, [SEM] **methods and formulas for sem**
Hand, D. J., [MV] **biplot**, [MV] **ca**, [MV] **discrim**, [MV] **mca**
Handscomb, D. C., [M-5] **halton( )**
Hankey, B., [ST] **strate**
Hanley, J. A., [R] **roccomp**, [R] **rocfit**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **roctab**
Hannachi, A., [MV] **pca**
Hannan, E. J., [TS] **sspace**
Hansen, B. E., [TS] **estat sbsingle**
Hansen, H., [MV] **mvtest**, [MV] **mvtest normality**
Hansen, L. P., [R] **gmm**, [R] **ivregress**, [R] **ivregress postestimation**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
Hansen, W. B., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Hao, L., [R] **qreg**
Harabasz, J., [MV] **cluster**, [MV] **cluster stop**
Haran, M., [BAYES] **bayesstats summary**
Harbord, R. M., [ME] **melogit**, [ME] **meoprobit**, [ME] **meqrlogit**, [R] **roccomp**, [R] **roctab**
Harden, J. J., [R] **zinb**, [R] **zip**
Hardin, J. W., [D] **statsby**, [G-1] **graph intro**, [ME] **meglm postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [R] **binreg**, [R] **biprobit**, [R] **estat ic**, [R] **glm**, [R] **glm postestimation**, [R] **lroc**, [R] **nbreg**, [R] **poisson**, [R] **ranksum**, [R] **regress postestimation**, [R] **signrank**, [R] **zinb**, [TS] **newey**, [TS] **prais**, [XT] **xtgee**, [XT] **xtpoisson**
Harel, O., [MI] **mi estimate**
Haritou, A., [R] **suest**
Harkness, J., [R] **ivprobit**, [R] **ivtobit**
Harley, J. B., [PSS] **power cox**
Harman, H. H., [MV] **factor**, [MV] **factor postestimation**, [MV] **rotate**, [MV] **rotatemat**
Harrell, F. E., Jr., [R] **mkspline**, [R] **ologit**, [ST] **stcox postestimation**
Harrington, D. P., [ST] **stcox**, [ST] **sts test**
Harris, E. K., [MV] **discrim**, [MV] **discrim logistic**
Harris, R. D. F., [XT] **xtunitroot**
Harris, R. J., [MV] **canon postestimation**
Harris, R. L., [R] **qc**
Harris, T., [R] **nbreg**, [R] **poisson**, [R] **qreg**, [R] **ranksum**, [R] **signrank**, [R] **zinb**
Harrison, D. A., [D] **list**, [G-2] **graph twoway histogram**, [PSS] **intro**, [R] **histogram**, [R] **tabulate oneway**, [R] **tabulate twoway**
Harrison, J., [BAYES] **intro**
Harrison, J. A., [R] **dstdize**
Harrison, J. M., [ST] **stcrreg**
Harrison, L. H., [D] **icd10**
Hart, P. E., [MV] **cluster**, [MV] **cluster stop**
Hartigan, J. A., [G-2] **graph matrix**
Hartley, H. O., [MI] **intro substantive**, [MI] **mi impute**
Hartmann, D. P., [R] **icc**
Harvey, A. C., [R] **hetprobit**, [TS] **arch**, [TS] **arima**, [TS] **prais**, [TS] **psdensity**, [TS] **sspace**, [TS] **sspace postestimation**, [TS] **tsfilter**, [TS] **tsfilter hp**, [TS] **tssmooth hwinters**, [TS] **ucm**, [TS] **var svar**
Harville, D. A., [ME] **meglm**, [ME] **mixed**
Hassell, J. F., [ST] **sts**
Hassler, U., [TS] **irf create**
Hastie, T. J., [MV] **discrim knn**, [R] **grmeanby**, [R] **slogit**
Hastings, W. K., [BAYES] **intro**, [BAYES] **bayesmh**
Hastorf, A. H., [R] **epitab**
Hauck, W. W., [R] **pkequiv**, [XT] **xtcloglog**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**
Haughton, J. H., [R] **inequality**
Hauser, M. A., [TS] **arfima**
Hausman, J. A., [M-5] **optimize( )**, [ME] **me**, [R] **glm**, [R] **hausman**, [R] **ivregress postestimation**, [R] **nlogit**, [R] **rologit**, [R] **suest**, [SEM] **estat residuals**, [SEM] **methods and formulas for sem**, [TS] **arch**, [TS] **arima**, [XT] **xthtaylor**, [XT] **xtnbreg**, [XT] **xtpoisson**, [XT] **xtreg postestimation**

Havnes, T., [R] **inequality**
Hawkins, C. M., [PSS] **intro**, [PSS] **power repeated**
Hayashi, F., [R] **gmm**, [R] **ivpoisson**, [R] **ivregress**, [R] **ivregress postestimation**
Hayes, R. J., [R] **permute**
Hays, R. D., [IRT] **irt**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**
Hays, W. L., [R] **esize**, [R] **regress postestimation**
He, X., [ST] **stcox PH-assumption tests**
Heagerty, P. J., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **mixed**, [MV] **factor**, [MV] **pca**, [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power oneway**, [PSS] **power twoway**, [R] **anova**, [R] **dstdize**, [R] **oneway**
Heckman, J., [R] **biprobit**, [R] **heckman**, [R] **heckman postestimation**, [R] **heckoprobit**, [R] **heckprobit**, [SEM] **example 45g**, [TE] **etregress**, [TE] **stteffects intro**, [TE] **teffects intro advanced**
Hedeker, D., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**
Hédelin, G., [ST] **sts**
Hedges, L. V., [R] **esize**, [R] **meta**
Hedley, D., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Heeringa, S. G., [SVY] **survey**, [SVY] **subpopulation estimation**
Heidelberger, P., [BAYES] **intro**
Heinecke, K., [P] **matrix mkmat**
Heinonen, O. P., [R] **epitab**
Heiss, F., [R] **nlogit**
Heitjan, D. F., [MI] **intro substantive**, [MI] **mi impute**
Heller, G., [ST] **stcox postestimation**
Hemming, K., [PSS] **intro**
Hempel, S., [R] **epitab**
Henderson, B. E., [R] **symmetry**
Henderson, C. R., [ME] **me**, [ME] **mixed**
Hendrickson, A. E., [I] **Glossary**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Hendrickx, J., [R] **mlogit**, [R] **xi**
Hennevogl, W., [ME] **me**
Henry-Amar, M., [ST] **ltable**
Hensher, D. A., [R] **nlogit**
Henze, N., [MV] **mvtest**, [MV] **mvtest normality**
Hermite, C., [M-5] **issymmetric( )**
Herr, J. L., [TE] **teffects intro advanced**, [TE] **teffects nnmatch**
Herrero, F. J., [ME] **mixed**
Herrin, J., [U] **18.14 References**
Herriot, J. G., [M-5] **spline3( )**
Hertz, S., [ST] **stsplit**
Herzberg, A. M., [MV] **discrim lda postestimation**, [MV] **discrim qda**, [MV] **discrim qda postestimation**, [MV] **manova**
Hess, K. R., [ST] **stcox PH-assumption tests**, [ST] **sts graph**
Hesse, L. O., [M-5] **moptimize( )**
Hessenberg, K. A., [M-5] **hessenbergd( )**
Heston, A., [XT] **xtunitroot**
Heyde, C. C., [U] **1.4 References**
Hickam, D. H., [R] **brier**
Higbee, K. T., [D] **clonevar**, [D] **ds**
Higdon, D., [BAYES] **intro**
Higgins, J. E., [R] **anova**
Higgins, J. P. T., [R] **meta**
Higgins, M. L., [TS] **arch**
Hilbe, J. M., [FN] **Random-number functions**, [ME] **meglm postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [MV] **discrim lda**, [MV] **manova**, [MV] ***measure_option***, [R] **cloglog**, [R] **cpoisson**, [R] **estat ic**, [R] **glm**, [R] **glm postestimation**, [R] **logistic**, [R] **logit**, [R] **lroc**, [R] **nbreg**, [R] **poisson**, [R] **probit**, [R] **simulate**, [R] **tnbreg**, [R] **tpoisson**, [R] **zinb**, [XT] **xtgee**, [XT] **xtpoisson**
Hilbert, D., [M-5] **Hilbert( )**
Hildreth, C., [TS] **prais**
Hilferty, M. M., [MV] **mvtest normality**
Hilgard, E. R., [R] **epitab**
Hill, A. B., [R] **epitab**, [R] **poisson**
Hill, J., [ME] **me**
Hill, R. C., [R] **cnsreg**, [R] **estat ic**, [R] **heckman**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **logit**, [R] **probit**, [R] **regress**, [R] **regress postestimation**, [R] **test**, [TS] **arch**, [TS] **prais**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtrc**, [XT] **xtreg**
Hill, R. P., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Hill, W. G., [R] **epitab**
Hills, M., [D] **egen**, [R] **cloglog**, [R] **cumul**, [R] **epitab**, [ST] **stcox**, [ST] **stptime**, [ST] **strate**, [ST] **stset**, [ST] **stsplit**, [ST] **sttocc**
Hills, S. E., [BAYES] **intro**, [BAYES] **bayesmh**
Hinchliffe, S. R., [R] **meta**, [ST] **stcox**, [ST] **stcrreg**
Hinkley, D. V., [R] **bootstrap**
Hipel, K. W., [TS] **arima**, [TS] **ucm**
Hirano, K., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **teffects intro advanced**
Hirji, K. F., [R] **exlogistic**, [R] **expoisson**
Hitt, M. P., [TS] **time series**, [TS] **arima**, [TS] **forecast**, [TS] **irf**, [TS] **var**, [TS] **vec**
Hlouskova, J., [XT] **xtunitroot**
Hoaglin, D. C., [R] **diagnostic plots**, [R] **lv**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [R] **smooth**, [R] **stem**
Hobert, J. P., [BAYES] **intro**
Hocevar, D., [SEM] **example 19**
Hochberg, Y., [R] **oneway**
Hocking, R. R., [ME] **meglm**, [ME] **mixed**, [MI] **intro substantive**, [R] **stepwise**
Hodges, J. L., [MV] **discrim knn**
Hodrick, R. J., [TS] **tsfilter**, [TS] **tsfilter hp**
Hoechle, D., [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtreg**, [XT] **xtregar**

Hoel, P. G., [R] **bitest**, [R] **ttest**, [R] **ztest**
Hoff, P. D., [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**
Hoffmann, J. P., [R] **glm**
Hofman, A. F., [ST] **stcrreg**
Hogben, L. T., [ST] **sts**
Holan, S. H., [TS] **arima**
Hole, A. R., [R] **asmprobit**, [R] **clogit**, [R] **mlogit**, [R] **mprobit**
Holland, A. D., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects multivalued**
Holland, P. W., [IRT] **difmh**, [IRT] **irt 3pl**, [TE] **stteffects intro**, [TE] **teffects intro advanced**
Holloway, L., [R] **brier**
Holm, S., [R] **test**
Holmes, D. J., [ME] **mixed**
Holmes, S., [R] **bootstrap**
Holmgren, J., [R] **epitab**
Holt, C. C., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Holt, D., [SVY] **survey**, [SVY] **estat**
Holtz-Eakin, D., [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
Hong, H., [BAYES] **intro**
Honoré, B. E., [XT] **xttobit**
Hood, W. C., [R] **ivregress**
Hooker, P. F., [ST] **streg**
Hooper, R., [PSS] **intro**
Hopper, G. M., [P] **trace**
Horncastle, A. P., [R] **frontier**, [XT] **xtfrontier**
Horst, P., [MV] **factor postestimation**, [MV] **rotate**, [MV] **rotatemat**
Horton, N. J., [ME] **meglm**, [ME] **mixed**, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi impute**, [XT] **xtgee**
Horváth, L., [TS] **mgarch**
Horvitz, D. G., [TE] **teffects intro advanced**
Hosking, J. R. M., [TS] **arfima**
Hosmer, D. W., Jr., [PSS] **intro**, [PSS] **power mcc**, [PSS] **power cox**, [R] **clogit**, [R] **clogit postestimation**, [R] **estat classification**, [R] **estat gof**, [R] **glm**, [R] **lincom**, [R] **logistic**, [R] **logistic postestimation**, [R] **logit**, [R] **logit postestimation**, [R] **lroc**, [R] **lrtest**, [R] **lsens**, [R] **mlogit**, [R] **mlogit postestimation**, [R] **predictnl**, [R] **stepwise**, [SEM] **example 33g**, [SEM] **example 34g**, [ST] **stcox**, [ST] **streg**, [XT] **xtgee**
Hossain, K. M., [R] **epitab**
Hoşten, S., [MV] **mvtest means**
Hotelling, H., [MV] **canon**, [MV] **hotelling**, [MV] **manova**, [MV] **pca**, [R] **roccomp**, [R] **rocfit**, [R] **roctab**
Hougaard, P., [ST] **streg**
Householder, A. S., [M-5] **qrd( )**, [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**
Howell, D. C., [PSS] **intro**, [PSS] **power pairedmeans**
Hozo, I., [R] **meta**
Hsiao, C., [XT] **xt**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtivreg**
Hsieh, F. Y., [PSS] **intro**, [PSS] **power cox**, [PSS] **power logrank**
Hu, M., [ST] **stcox**, [ST] **stset**
Huang, C., [R] **sunflower**
Huang, D. S., [R] **nlsur**, [R] **sureg**
Hubálek, Z., [MV] ***measure_option***
Hubben, G. A. A., [R] **betareg**
Huber, C., [R] **esize**, [R] **regress postestimation**, [SEM] **Builder**, [SEM] **Builder, generalized**
Huber, P. J., [D] **egen**, [P] **_robust**, [R] **qreg**, [R] **rreg**, [R] **suest**, [U] **20.25 References**
Hubert, P., [BAYES] **intro**
Huberty, C. J., [MV] **candisc**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **discrim qda**
Hubrich, K., [TS] **vec intro**, [TS] **vecrank**
Hughes, J. B., [MV] **manova**
Hunter, D. R., [R] **qreg**
Huq, M. I., [R] **epitab**
Huq, N. M., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meprobit**, [ME] **meqrlogit**
Hurd, M., [R] **intreg**, [R] **tobit**
Hurley, J. R., [MV] **procrustes**
Hurst, H. E., [TS] **arfima**
Hutto, C., [R] **exlogistic**
Huynh, H., [PSS] **power repeated**, [R] **anova**

## I

Ibrahim, J. G., [BAYES] **intro**
Ickstadt, K., [BAYES] **intro**
Iglewicz, B., [R] **lv**
Ikebe, Y., [P] **matrix symeigen**
Ilardi, G., [R] **frontier**, [XT] **xtfrontier**
Im, K. S., [XT] **xtunitroot**
Imai, K., [TE] **tebalance**, [TE] **tebalance overid**
Imbens, G. W., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [TE] **teffects multivalued**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**
Irwin, J. O., [PSS] **intro**, [PSS] **power twoproportions**
Isaacs, D., [R] **fp**
Ishiguro, M., [R] **BIC note**
ISSP, [MV] **ca**, [MV] **mca**, [MV] **mca postestimation**
Iversen, E., Jr, [BAYES] **intro**

## J


Jaccard, P., [MV] *measure_option*
Jackman, R. W., [R] **regress postestimation**
Jackson, J. E., [MV] **pca**, [MV] **pca postestimation**
Jacobi, C. G. J., [M-5] **deriv( )**
Jacobs, K. B., [R] **symmetry**
Jacobs, M., [D] **duplicates**
Jacoby, W. G., [MV] **biplot**
Jaeger, A., [TS] **tsfilter**, [TS] **tsfilter hp**
Jaeger, D. A., [R] **ivregress postestimation**
Jagannathan, R., [TS] **arch**
Jain, A. K., [MV] **cluster**
James, B. R., [R] **rocreg**, [R] **rocreg postestimation**
James, G. S., [MV] **mvtest**, [MV] **mvtest means**
James, I. M., [M-2] **op_kronecker**, [M-5] **deriv( )**, [M-5] **issymmetric( )**, [M-5] **pinv( )**
James, K. L., [R] **rocreg**, [R] **rocreg postestimation**
Janes, H., [R] **rocfit**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Jang, D. S., [SVY] **variance estimation**
Jann, B., [P] **mark**, [R] **estimates store**, [R] **ksmirnov**, [R] **marginsplot**, [R] **stored results**, [R] **tabulate twoway**, [SVY] **svy: tabulate twoway**
Jarque, C. M., [R] **sktest**, [TS] **varnorm**, [TS] **vecnorm**
Jarrett, R. G., [BAYES] **bayesmh**
Jeantheau, T., [TS] **mgarch**
Jeanty, P. W., [D] **destring**, [D] **import excel**, [D] **reshape**, [FN] **String functions**
Jeffreys, H., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [R] **ci**, [R] **spearman**
Jenkins, B., [M-5] **hash1( )**
Jenkins, G. M., [TS] **arfima**, [TS] **arima**, [TS] **corrgram**, [TS] **cumsp**, [TS] **dfuller**, [TS] **estat acplot**, [TS] **pergram**, [TS] **pperron**, [TS] **psdensity**, [TS] **xcorr**
Jenkins, S. P., [D] **corr2data**, [D] **egen**, [D] **rename**, [MI] **intro substantive**, [R] **asmprobit**, [R] **betareg**, [R] **do**, [R] **inequality**, [ST] **discrete**, [ST] **stcox**
Jennrich, R. I., [I] **Glossary**, [MV] **mvtest**, [MV] **mvtest correlations**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Jensen, A. R., [MV] **rotate**
Jensen, D. R., [MV] **mvtest**, [MV] **mvtest means**
Jerez, M., [TS] **sspace**
Jewell, N. P., [R] **epitab**
Jick, H., [R] **epitab**
Joe, H., [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [R] **tabulate twoway**
Johansen, S., [TS] **irf create**, [TS] **varlmar**, [TS] **vec intro**, [TS] **vec**, [TS] **veclmar**, [TS] **vecnorm**, [TS] **vecrank**, [TS] **vecstable**
Johnson, C. A., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Johnson, D. E., [MV] **manova**, [R] **anova**, [R] **contrast**, [R] **pwcompare**
Johnson, L. A., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Johnson, M. E., [R] **sdtest**
Johnson, M. M., [R] **sdtest**
Johnson, N. L., [FN] **Statistical functions**, [R] **ksmirnov**, [R] **nbreg**, [R] **poisson**, [U] **1.4 References**
Johnson, R. A., [MV] **canon**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **mvtest**, [MV] **mvtest correlations**, [MV] **mvtest covariances**, [MV] **mvtest means**
Johnson, S., [R] **epitab**
Johnson, V. E., [BAYES] **intro**
Johnson, W., [MI] **intro substantive**, [SVY] **survey**
Johnston, J., [XT] **xtrc**
Johnston, J. E., [R] **ranksum**
Jolliffe, D., [R] **inequality**, [R] **qreg**, [R] **regress**
Jolliffe, I. T., [MV] **biplot**, [MV] **pca**, [R] **brier**
Jones, A., [R] **heckman**, [R] **logit**, [R] **probit**
Jones, B. D., [TS] **mswitch**
Jones, B. S., [ST] **stcox**, [ST] **streg**
Jones, D. R., [R] **meta**
Jones, G. L., [BAYES] **intro**, [BAYES] **bayesstats summary**
Jones, M. C., [R] **kdensity**, [R] **lpoly**
Jones, P. S., [M-5] **Vandermonde( )**
Jordan, C., [M-5] **svd( )**
Jöreskog, K. G., [MV] **factor postestimation**, [SEM] **estat residuals**
Jorgensen, R. A., [ST] **stcrreg**
Jorner, U., [G-1] **graph intro**
Joyeux, R., [TS] **arfima**
Judge, G. G., [R] **estat ic**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **logit**, [R] **probit**, [R] **regress postestimation**, [R] **test**, [TS] **arch**, [TS] **prais**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtrc**, [XT] **xtreg**
Judkins, D. R., [SVY] **svy brr**, [SVY] **svyset**, [SVY] **variance estimation**
Judson, D. H., [R] **cpoisson**, [R] **poisson**, [R] **tabulate twoway**, [R] **tpoisson**
Judson, R. A., [TS] **forecast**
Julious, S. A., [PSS] **intro**
Jung, B. C., [ME] **mixed**
Juul, S., [R] **dstdize**, [R] **roccomp**, [R] **roctab**


## K


Kachitvichyanukul, V., [FN] **Random-number functions**
Kackar, R. N., [ME] **mixed**
Kadane, J. B., [BAYES] **intro**, [ME] **me**, [ME] **meqrlogit**, [ME] **meqrpoisson**
Kahn, H. A., [PSS] **intro**, [R] **dstdize**, [R] **epitab**, [ST] **ltable**, [ST] **stcox**

Kaiser, H. F., [I] **Glossary**, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Kaiser, J., [R] **ksmirnov**, [R] **permute**, [R] **signrank**
Kalbfleisch, J. D., [ST] **ltable**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **streg**, [ST] **sts**, [ST] **sts test**, [ST] **stset**, [TE] **stteffects intro**, [TE] **stteffects ra**, [XT] **xtcloglog**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**
Kalman, R. E., [TS] **arima**
Kalmijn, M., [R] **tetrachoric**
Kamphuis, J. H., [TS] **mswitch**
Kang, J. D. Y., [TE] **teffects intro advanced**
Kantor, D., [D] **cf**, [FN] **Programming functions**
Kaplan, E. L., [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **sts**
Karim, M. R., [ME] **meglm**
Karlin, S., [TS] **mswitch**
Kass, R. E., [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesstats ic**
Katz, J. N., [XT] **xtgls**, [XT] **xtpcse**
Kaufman, J., [D] **ds**
Kaufman, L., [MV] **cluster**, [MV] **clustermat**, [MV] **matrix dissimilarity**, [MV] ***measure_option***, [P] **matrix dissimilarity**
Kaufman, R. L., [U] **20.25 References**
Keane, M. P., [R] **asmprobit**
Keeler, E. B., [R] **brier**
Keiding, N., [ST] **stcrreg**, [ST] **stsplit**
Kelley, K., [R] **esize**, [R] **regress postestimation**
Kelly, S., [IRT] **irt**
Kemp, A. W., [FN] **Random-number functions**, [R] **nbreg**, [R] **poisson**
Kemp, C. D., [FN] **Random-number functions**
Kempthorne, P. J., [R] **regress postestimation**
Kendall, D. G., [MV] **mds**
Kendall, M. G., [MV] ***measure_option***, [R] **centile**, [R] **spearman**, [R] **tabulate twoway**
Kennedy, W. J., Jr., [P] **_robust**, [R] **anova**, [R] **nl**, [R] **regress**, [R] **stepwise**, [SVY] **svy: tabulate twoway**
Kenny, D. A., [SEM] **intro 4**, [SEM] **example 42g**
Kent, J. T., [MI] **mi impute mvn**, [MV] **discrim**, [MV] **discrim lda**, [MV] **factor**, [MV] **manova**, [MV] **matrix dissimilarity**, [MV] **mds**, [MV] **mds postestimation**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **mvtest**, [MV] **mvtest means**, [MV] **mvtest normality**, [MV] **pca**, [MV] **procrustes**, [P] **matrix dissimilarity**, [P] **_robust**, [U] **20.25 References**
Kenward, M. G., [I] **Glossary**, [ME] **mixed**, [ME] **Glossary**, [MI] **intro substantive**, [MI] **mi impute**
Kerlinger, F. N., [R] **esize**, [R] **regress postestimation**
Keselman, H. J., [R] **esize**
Kettenring, J. R., [R] **diagnostic plots**
Keynes, J. M., [R] **ameans**
Khan, M. R., [R] **epitab**
Khan, S., [R] **hetprobit**
Khandker, S. R., [R] **inequality**
Khanti-Akom, S., [XT] **xthtaylor**
Khare, M., [MI] **intro substantive**
Khuri, A. I., [ME] **mixed**
Kiernan, M., [R] **kappa**
Kieser, M., [PSS] **intro**
Kilian, L., [TS] **forecast solve**
Kim, C.-J., [TS] **mswitch**, [TS] **mswitch postestimation**
Kim, H.-J., [TS] **estat sbsingle**
Kim, I.-M., [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**
Kim, J. J., [R] **esize**, [R] **regress postestimation**
Kim, J. O., [MV] **factor**
Kim, S., [BAYES] **intro**, [IRT] **irt**
Kimber, A. C., [ST] **streg**
Kimbrough, J. W., [MV] **discrim knn**
Kinderman, A. J., [FN] **Random-number functions**
King, A. A., [M-2] **intro**
King, J., [IRT] **irt**
King, M., [R] **mlexp**
King, M. L., [TS] **prais**
King, R. G., [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **tsfilter cf**, [TS] **tsfilter hp**, [TS] **vecrank**
Kirk, R. E., [R] **esize**, [R] **regress postestimation**
Kirkwood, B. R., [R] **dstdize**, [R] **summarize**
Kish, L., [P] **_robust**, [R] **loneway**, [SVY] **survey**, [SVY] **estat**, [SVY] **variance estimation**, [U] **20.25 References**
Kitagawa, G., [R] **BIC note**
Kiviet, J. F., [XT] **xtabond**
Klar, J., [R] **estat gof**
Klecka, W. R., [MV] **discrim**, [MV] **discrim lda**
Kleiber, C., [R] **inequality**
Klein, J. P., [PSS] **intro**, [PSS] **power cox**, [ST] **stci**, [ST] **stcox**, [ST] **stcox postestimation**, [ST] **stcrreg**, [ST] **streg**, [ST] **sts**, [ST] **sts graph**, [ST] **sts test**
Klein, L. R., [R] **reg3**, [R] **reg3 postestimation**, [R] **regress postestimation time series**, [TS] **forecast**, [TS] **forecast adjust**, [TS] **forecast describe**, [TS] **forecast estimates**, [TS] **forecast list**, [TS] **forecast solve**
Klein, M., [R] **binreg**, [R] **clogit**, [R] **logistic**, [R] **lrtest**, [R] **mlogit**, [R] **ologit**, [XT] **xtgee**
Kleinbaum, D. G., [R] **binreg**, [R] **clogit**, [R] **epitab**, [R] **logistic**, [R] **lrtest**, [R] **mlogit**, [R] **ologit**, [XT] **xtgee**
Kleiner, B., [G-2] **graph box**, [G-2] **graph matrix**, [G-3] ***by_option***, [R] **diagnostic plots**, [R] **lowess**, [U] **1.4 References**
Kleinman, K. P., [MI] **intro substantive**
Klema, V. C., [P] **matrix symeigen**
Klevens, R. M., [D] **icd10**
Kline, R. B., [R] **esize**, [R] **regress postestimation**, [SEM] **intro 4**, [SEM] **example 3**, [SEM] **example 4**, [SEM] **example 5**

Kmenta, J., [R] **eivreg**, [R] **ivregress**, [R] **regress**, [TS] **arch**, [TS] **prais**, [TS] **rolling**, [XT] **xtpcse**
Knook, D. L., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**
Knuth, D. E., [FN] **Random-number functions**
Koch, G. G., [R] **anova**, [R] **kappa**, [R] **vwls**, [SVY] **svy: tabulate twoway**
Koehler, A. B., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Koehler, K. J., [R] **diagnostic plots**
Koenker, R., [R] **qreg**, [R] **regress postestimation**
Kohler, U., [D] **egen**, [D] **input**, [G-2] **graph twoway rbar**, [MV] **biplot**, [R] **estat classification**, [R] **kdensity**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**
Kohn, R. J., [BAYES] **intro**, [BAYES] **bayesmh**, [TS] **arima**
Kokoszka, P., [TS] **irf create**
Kolenikov, S., [MV] **factor**, [SVY] **svy bootstrap**, [SVY] **variance estimation**
Kolev, G. I., [P] **scalar**, [U] **11.7 References**
Kolmogorov, A. N., [R] **ksmirnov**
Kontopantelis, E., [R] **meta**
Koopman, S. J., [R] **regress postestimation time series**, [TS] **ucm**
Koopmans, T. C., [R] **ivregress**
Korin, B. P., [MV] **mvtest**
Korn, E. L., [ME] **mixed**, [PSS] **power trend**, [R] **margins**, [R] **ml**, [R] **test**, [SVY] **survey**, [SVY] **direct standardization**, [SVY] **estat**, [SVY] **svy**, [SVY] **svy estimation**, [SVY] **svy postestimation**, [SVY] **svy: tabulate twoway**, [SVY] **variance estimation**
Kotz, S., [FN] **Statistical functions**, [R] **inequality**, [R] **ksmirnov**, [R] **nbreg**, [R] **nlogit**, [R] **poisson**, [U] **1.4 References**
Krakauer, H., [ST] **ltable**
Krall, J. M., [PSS] **power cox**
Kramer, C. Y., [MV] **mvtest**, [MV] **mvtest means**, [R] **pwcompare**
Krauss, N., [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy bootstrap**, [SVY] **svy estimation**
Kreidberg, M. B., [R] **epitab**
Kreuter, F., [R] **estat classification**, [R] **kdensity**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [SVY] **survey**
Krishnaiah, P. R., [MV] **mvtest**
Krishnamoorthy, K., [MV] **mvtest**, [MV] **mvtest means**, [PSS] **intro**, [PSS] **power oneproportion**
Kroeber, A. L., [MV] ***measure_option***
Krolzig, H.-M., [TS] **mswitch**
Kronecker, L., [M-2] **op_kronecker**
Kroner, K. F., [TS] **arch**
Krull, J. L., [SEM] **example 42g**
Krus, D. J., [MV] **canon postestimation**
Krushelnytskyy, B., [R] **inequality**, [R] **qreg**
Kruskal, J. B., [I] **Glossary**, [MV] **mds**, [MV] **mds postestimation**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **Glossary**
Kruskal, W. H., [R] **kwallis**, [R] **ranksum**, [R] **spearman**, [R] **tabulate twoway**
Kshirsagar, A. M., [MV] **discrim lda**, [MV] **pca**
Kuehl, R. O., [BAYES] **bayes**, [ME] **me**, [R] **icc**, [R] **oneway**
Kuh, E., [R] **regress postestimation**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [U] **18.14 References**
Kulczynski, S., [MV] ***measure_option***
Kumbhakar, S. C., [R] **frontier**, [R] **frontier postestimation**, [XT] **xtfrontier**
Kung, D. S., [R] **qreg**
Künsch, H. R., [U] **20.25 References**
Kunz, C. U., [PSS] **intro**
Kupper, L. L., [R] **epitab**
Kutner, M. H., [PSS] **power oneway**, [R] **pkcross**, [R] **pkequiv**, [R] **pkshape**, [R] **regress postestimation**
Kwiatkowski, D., [XT] **xtunitroot**

## L

Lachenbruch, P. A., [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim lda**, [R] **diagnostic plots**
Lachin, J. M., [PSS] **intro**, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **power onecorrelation**, [PSS] **power cmh**, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**
Lacy, M. G., [R] **permute**
Lafontaine, F., [R] **boxcox**
Lahiri, K., [R] **tobit**, [XT] **xtgls**
Lai, K. S., [TS] **dfgls**
Lai, S., [R] **exlogistic**
Laird, N. M., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [MI] **intro substantive**, [MI] **mi impute mvn**, [R] **expoisson**
Lakatos, E., [PSS] **power exponential**, [PSS] **power logrank**
Lal, R., [FN] **Random-number functions**
Lambert, D., [R] **zip**
Lambert, P. C., [PSS] **intro**, [R] **poisson**, [ST] **stcox**, [ST] **stcrreg**, [ST] **stptime**, [ST] **streg**
LaMotte, L. R., [ME] **me**, [ME] **meglm**, [ME] **mixed**
Lan, K. K. G., [PSS] **power exponential**, [PSS] **power logrank**
Lance, G. N., [MV] **cluster**
Landau, S., [MV] **cluster**, [MV] **cluster stop**
Landesman Ramey, S., [PSS] **power repeated**
Landis, J. R., [R] **kappa**
Lane, M. A., [SVY] **survey**, [SVY] **svy estimation**
Lane, P. W., [R] **margins**, [TE] **teffects intro advanced**

Lane-Claypon, J. E., [R] **epitab**
Langan, D., [R] **meta**
Lange, K., [R] **qreg**
Lange, S. M., [ST] **stcrreg**
Langford, I. H., [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [SEM] **example 39g**
Langholz, B., [ST] **sttocc**
Laplace, P.-S., [R] **regress**
LaRosa, J., [PSS] **intro**, [PSS] **power repeated**
Larrimore, J., [MI] **intro substantive**
Larsen, W. A., [R] **regress postestimation diagnostic plots**
Lash, T. L., [R] **ci**, [R] **epitab**, [R] **poisson**
Latouche, A., [ST] **stcrreg**
Laurent, S., [TS] **mgarch**
Lauritsen, J. M., [D] **labelbook**, [D] **list**
Lauritzen, S. L., [R] **summarize**
LaVange, L. M., [PSS] **power repeated**
Lavori, P. W., [PSS] **power cox**
Lawless, J. F., [PSS] **intro**, [ST] **ltable**
Lawley, D. N., [MV] **canon**, [MV] **factor**, [MV] **factor postestimation**, [MV] **manova**, [MV] **mvtest**, [MV] **mvtest correlations**, [MV] **pca**
Lawlor, D. A., [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mixed**
Layard, R., [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtivreg**
Ledermann, W., [M-5] **schurd( )**
Ledolter, J., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Lee, E. S., [R] **dstdize**
Lee, E. T., [R] **roccomp**, [R] **rocfit**, [R] **roctab**, [ST] **streg**
Lee, J. C., [MV] **mvtest**
Lee, J. W., [ME] **me**
Lee, K. J., [MI] **intro substantive**, [MI] **mi impute**
Lee, K. L., [ST] **stcox postestimation**
Lee, L. F., [XT] **xtreg**
Lee, P., [ST] **streg**
Lee, T.-C., [R] **estat ic**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **logit**, [R] **probit**, [R] **regress postestimation**, [R] **test**, [TS] **arch**, [TS] **prais**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtrc**, [XT] **xtreg**
Lee, W. C., [R] **roctab**
Leese, M., [MV] **cluster**, [MV] **cluster stop**
Legendre, A.-M., [R] **regress**
Lehmann, E. L., [R] **oneway**
Lei-Gomez, Q., [TE] **teffects intro advanced**
Leisenring, W., [ST] **stcrreg**
Lemeshow, S. A., [PSS] **intro**, [PSS] **power mcc**, [PSS] **power cox**, [R] **clogit**, [R] **clogit postestimation**, [R] **estat classification**, [R] **estat gof**, [R] **glm**, [R] **lincom**, [R] **logistic**, [R] **logistic postestimation**, [R] **logit**, [R] **logit postestimation**, [R] **lroc**, [R] **lrtest**, [R] **lsens**, [R] **mlogit**, [R] **predictnl**, [R] **stepwise**,
Lemeshow, S. A., *continued*
[SEM] **example 33g**, [SEM] **example 34g**, [ST] **stcox**, [ST] **streg**, [SVY] **survey**, [SVY] **estat**, [SVY] **poststratification**, [XT] **xtgee**
Lenth, R. V., [PSS] **intro**
Leonard, M., [XT] **xtgee**
Lepkowski, J. M., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute ologit**, [MI] **mi impute poisson**, [MI] **mi impute truncreg**
Leroy, A. M., [R] **qreg**, [R] **regress postestimation**, [R] **rreg**
Lesaffre, E., [ME] **me**, [ME] **meqrlogit postestimation**, [MV] **discrim logistic**
LeSage, G., [ST] **stcrreg**
Leser, C. E. V., [TS] **tsfilter**, [TS] **tsfilter hp**
Leuven, E., [TE] **teffects intro advanced**
Levendis, J., [D] **import**
Levene, H., [R] **sdtest**
Levin, A., [XT] **xtunitroot**
Levin, B., [PSS] **intro**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [R] **dstdize**, [R] **epitab**, [R] **kappa**
Levin, W., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Levinsohn, J. A., [R] **frontier**
Levy, D. E., [R] **sunflower**
Levy, M., [MI] **intro substantive**, [MI] **mi impute**
Levy, P. S., [SVY] **survey**, [SVY] **poststratification**
Lewis, D., [MI] **mi estimate**
Lewis, H. G., [R] **heckman**, [SEM] **example 45g**
Lewis, I. G., [R] **binreg**
Lewis, J. D., [R] **fp**
Lewis, S. M., [BAYES] **intro**, [BAYES] **bayesstats ic**
Lexis, W. H., [ST] **stsplit**
Leyland, A. H., [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**
Li, C., [MI] **intro substantive**, [SEM] **intro 4**
Li, F., [MI] **intro substantive**
Li, G., [R] **rreg**
Li, K.-H., [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi impute mvn**, [MI] **mi test**
Li, N., [MI] **intro substantive**
Li, Q., [XT] **xtivreg**, [XT] **xtreg postestimation**, [XT] **xtregar**
Li, W., [PSS] **power oneway**, [R] **pkcross**, [R] **pkequiv**, [R] **pkshape**
Liang, K.-Y., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtnbreg**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**
Libois, F., [R] **fp**, [XT] **xtreg**
Lichman, M., [BAYES] **bayesmh**
Lieberman, O., [TS] **mgarch**

Ligges, U., [BAYES] **bayesmh**
Likert, R. A., [MV] **alpha**
Lilien, D. M., [TS] **arch**
Lilienfeld, D. E., [R] **epitab**
Lim, G. C., [R] **cnsreg**, [R] **regress**, [R] **regress postestimation**, [TS] **arch**
Lin, C.-F., [XT] **xtunitroot**
Lin, D. Y., [P] **_robust**, [ST] **stcox**, [ST] **stcrreg**, [SVY] **svy estimation**, [TE] **stteffects ipwra**, [U] **20.25 References**
Lin, X., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**
Lincoff, G. H., [MV] **discrim knn**
Linde-Zwirble, W., [FN] **Random-number functions**
Lindelow, M., [SVY] **svy estimation**, [SVY] **svyset**
Lindley, D. V., [R] **ci**
Lindor, K. D., [ST] **stcrreg**
Lindsey, C., [R] **boxcox**, [R] **lowess**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [R] **stepwise**
Lindstrom, M. J., [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xttobit**
Ling, S., [TS] **mgarch**
Lingoes, J. C., [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**
Linhart, J. M., [D] **ds**, [D] **format**, [M-5] **mindouble( )**, [R] **lpoly**, [ST] **sts**, [U] **13.13 References**
Lipset, S. M., [R] **histogram**
Lipsitz, S. R., [MI] **intro substantive**
Littell, R. C., [ME] **me**
Little, R. J. A., [MI] **intro substantive**, [MI] **mi impute mvn**, [MI] **mi impute pmm**
Liu, C. Y., [PSS] **intro**, [PSS] **power oneproportion**, [PSS] **power twoproportions**
Liu, J.-P., [PSS] **intro**, [R] **pk**, [R] **pkcross**, [R] **pkequiv**, [R] **pkexamine**, [R] **pkshape**
Liu, Q., [ME] **me**, [ME] **meqrlogit**, [ME] **meqrpoisson**
Liu, T.-P., [SVY] **svy bootstrap**, [SVY] **variance estimation**
Ljung, G. M., [TS] **wntestq**
Lo, S.-H., [ST] **sts**
Lo Magno, G. L., [M-5] **_docx*( )**
Locke, C. S., [R] **pkequiv**
Lockwood, J. R., [R] **areg**, [XT] **xtreg**
Loftsgaarden, D. O., [MV] **discrim knn**
Lokshin, M., [R] **biprobit**, [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [R] **oprobit**
Long, J. S., [D] **codebook**, [D] **label**, [D] **notes**, [R] **asroprobit**, [R] **clogit**, [R] **cloglog**, [R] **fracreg**, [R] **intreg**, [R] **logistic**, [R] **logit**, [R] **mlogit**, [R] **mprobit**, [R] **nbreg**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **probit**, [R] **regress**, [R] **regress postestimation**, [R] **testnl**, [R] **tnbreg**, [R] **tobit**, [R] **tpoisson**, [R] **zinb**, [R] **zip**, [U] **12.10 References**, [U] **16.5 References**, [U] **20.25 References**
Longest, K. C., [R] **tabulate twoway**, [U] **12.10 References**
Longley, J. D., [R] **kappa**
Longton, G. M., [R] **rocfit**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Loomis, J. B., [R] **cpoisson**
Lopes, H. F., [BAYES] **intro**
López-Feldman, A., [R] **inequality**
López-Maside, A., [TS] **mswitch**
López-Quilez, A., [TS] **mswitch**
López-Vizcaíno, M. E., [R] **epitab**
Lord, F. M., [IRT] **irt**, [IRT] **irt 2pl**
Lorenz, M. O., [R] **inequality**
Louis, T. A., [BAYES] **intro**, [R] **tabulate twoway**
Loutit, I., [R] **qc**
Lovelace, L., [M-2] **intro**
Lovell, C. A. K., [R] **frontier**, [R] **frontier postestimation**, [XT] **xtfrontier**
Lovie, A. D., [R] **spearman**
Lovie, P., [R] **spearman**
Lu, H.-M., [TS] **mswitch**
Lu, J. Y., [TS] **prais**
Lucas, H. L., [R] **pkcross**
Luce, R. D., [R] **rologit**
Luckman, B., [MV] **screeplot**
Ludwig, J., [ST] **stcrreg**
Lukácsy, K., [FN] **Random-number functions**
Lumley, T. S., [MV] **factor**, [MV] **pca**, [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power oneway**, [PSS] **power twoway**, [R] **anova**, [R] **dstdize**, [R] **oneway**
Lund, R., [TS] **arima**
Luniak, M. M., [MV] **biplot**
Lunn, M., [ST] **stcrreg**
Lunt, M., [R] **ologit**, [R] **slogit**, [TE] **teffects multivalued**
Lurie, M. B., [MV] **manova**
Lütkepohl, H., [M-5] **Dmatrix( )**, [M-5] **Kmatrix( )**, [M-5] **Lmatrix( )**, [R] **estat ic**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **logit**, [R] **probit**, [R] **regress postestimation**, [R] **test**, [TS] **time series**, [TS] **arch**, [TS] **dfactor**, [TS] **fcast compute**, [TS] **irf**, [TS] **irf create**, [TS] **mgarch dvech**, [TS] **prais**, [TS] **sspace**, [TS] **sspace postestimation**, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **varbasic**, [TS] **vargranger**, [TS] **varnorm**, [TS] **varsoc**, [TS] **varstable**, [TS] **varwle**, [TS] **vec intro**, [TS] **vecnorm**, [TS] **vecrank**, [TS] **vecstable**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtrc**, [XT] **xtreg**
Lynfield, R., [D] **icd10**

## M

Ma, G., [R] **roccomp**, [R] **rocfit**, [R] **roctab**
Maas, B., [BAYES] **bayesmh**
Macdonald-Wallis, C. M., [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mixed**

Machin, D., [PSS] **intro**, [PSS] **power**, [PSS] **power cox**, [PSS] **power logrank**, [R] **ci**, [R] **kappa**, [R] **tabulate twoway**
Mack, T. M., [R] **symmetry**
MacKinnon, D. P., [SEM] **example 42g**
MacKinnon, J. G., [I] **Glossary**, [P] **_robust**, [R] **boxcox**, [R] **cnsreg**, [R] **gmm**, [R] **intreg**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **mlogit**, [R] **nl**, [R] **nlsur**, [R] **reg3**, [R] **regress**, [R] **regress postestimation time series**, [R] **truncreg**, [TS] **arch**, [TS] **arima**, [TS] **dfuller**, [TS] **pperron**, [TS] **prais**, [TS] **sspace**, [TS] **varlmar**, [TS] **Glossary**, [U] **20.25 References**, [XT] **xtgls**, [XT] **xtpcse**
MacLaren, M. D., [FN] **Random-number functions**
MacMahon, B., [R] **epitab**
MacRae, K. D., [R] **binreg**
MaCurdy, T. E., [XT] **xthtaylor**
Madans, J. H., [SVY] **survey**, [SVY] **svy estimation**
Madansky, A., [R] **runtest**
Maddala, G. S., [R] **nlogit**, [R] **tobit**, [TE] **etregress**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**, [XT] **xtgls**, [XT] **xtunitroot**
Madigan, D., [ST] **sts**
Magnus, J. R., [TS] **var svar**
Magnusson, L. M., [R] **gmm**, [R] **ivprobit**, [R] **ivregress**, [R] **ivtobit**
Maguire, B. A., [BAYES] **bayesmh**
Mahalanobis, P. C., [I] **Glossary**, [MV] **discrim lda**, [MV] **hotelling**, [MV] **Glossary**
Mair, C. S., [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [SEM] **example 39g**
Makles, A., [MV] **cluster kmeans and kmedians**
Malitz, F., [IRT] **irt**
Mallick, B. K., [BAYES] **intro**
Mallows, C. L., [R] **regress postestimation diagnostic plots**
Manca, A., [R] **betareg**
Manchul, L., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Mandelbrot, B. B., [TS] **arch**
Mander, A. P., [R] **anova**, [R] **symmetry**, [ST] **stsplit**
Mangel, M., [TS] **varwle**
Manjón, M., [R] **nbreg postestimation**, [R] **poisson postestimation**, [R] **zinb postestimation**, [R] **zip postestimation**
Manly, B. F. J., [MV] **discrim qda postestimation**
Mann, H. B., [R] **kwallis**, [R] **ranksum**
Manning, W. G., [R] **heckman**
Manski, C. F., [R] **gmm**
Mansuy, R., [ST] **stcox postestimation**
Mantel, H., [SVY] **svy bootstrap**, [SVY] **variance estimation**
Mantel, N., [IRT] **difmh**, [PSS] **power cmh**, [R] **epitab**, [R] **stepwise**, [ST] **strate**, [ST] **sts test**
Maravall, A., [TS] **tsfilter hp**
Marcellino, M., [XT] **xtunitroot**
Marchenko, Y. V., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi impute**, [PSS] **power exponential**, [PSS] **power logrank**, [R] **anova**, [R] **loneway**, [R] **oneway**, [R] **sktest**, [ST] **survival analysis**, [ST] **stcox**, [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **stdescribe**, [ST] **streg**, [ST] **stset**, [ST] **stsplit**, [ST] **stvary**, [TE] **stteffects intro**, [XT] **xtstreg**
Marden, J. I., [R] **rologit**
Mardia, K. V., [MI] **mi impute mvn**, [MV] **discrim**, [MV] **discrim lda**, [MV] **factor**, [MV] **manova**, [MV] **matrix dissimilarity**, [MV] **mds**, [MV] **mds postestimation**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **mvtest**, [MV] **mvtest means**, [MV] **mvtest normality**, [MV] **pca**, [MV] **procrustes**, [P] **matrix dissimilarity**
Maris, G., [IRT] **irt 3pl**
Mark, D. B., [ST] **stcox postestimation**
Markel, H., [R] **epitab**
Markov, A., [BAYES] **intro**
Markowski, C. A., [R] **sdtest**
Markowski, E. P., [R] **sdtest**
Marks, H. M., [ST] **sts**
Marquardt, D. W., [M-5] **moptimize( )**, [M-5] **optimize( )**
Marr, J. W., [ST] **stsplit**
Marsaglia, G., [FN] **Random-number functions**
Marschak, J., [R] **ivregress**
Marsh, H. W., [SEM] **example 19**
Marsh, J., [PSS] **intro**
Martin, M. E., [SVY] **svy: tabulate oneway**
Martin, W., [R] **epitab**, [R] **regress**
Martínez, M. A., [R] **logistic**
Martínez, O., [R] **nbreg postestimation**, [R] **poisson postestimation**, [R] **zinb postestimation**, [R] **zip postestimation**
Martinez-Beneito, M. A., [TS] **mswitch**
Marubini, E., [PSS] **intro**, [PSS] **power logrank**, [ST] **stcrreg**, [ST] **sts test**
Mascher, K., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Massey, F. J., Jr., [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power onevariance**, [PSS] **power twovariances**, [R] **ttest**, [R] **ztest**
Massey, J. T., [R] **boxcox**, [R] **marginsplot**, [SVY] **survey**, [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy**, [SVY] **svy brr**, [SVY] **svy estimation**, [SVY] **svy jackknife**, [SVY] **svy postestimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**, [SVY] **svydescribe**
Master, I. M., [R] **exlogistic**
Masters, G. N., [IRT] **irt pcm**

Mastrucci, M. T., [R] **exlogistic**
Mathew, T., [ME] **mixed**
Mathews, P., [PSS] **power twovariances**
Matsumoto, M., [FN] **Random-number functions**, [R] **set seed**
Matthews, J. N. S., [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power cmh**, [R] **ameans**, [R] **expoisson**, [R] **sdtest**
Mátyás, L., [R] **gmm**
Maurer, K., [R] **boxcox**, [R] **marginsplot**, [SVY] **survey**, [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy**, [SVY] **svy brr**, [SVY] **svy estimation**, [SVY] **svy jackknife**, [SVY] **svy postestimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**, [SVY] **svydescribe**
Maxwell, A. E., [MV] **factor**, [MV] **factor postestimation**, [R] **symmetry**
May, S., [MV] **canon**, [MV] **discrim**, [MV] **factor**, [MV] **pca**, [PSS] **intro**, [PSS] **power cox**, [R] **stepwise**, [ST] **stcox**, [ST] **streg**
Mayer, K. U., [ME] **mestreg**
Mazliak, L., [ST] **stcox postestimation**
Mazýa, V. G., [FN] **Matrix functions**
McAleer, M., [TS] **mgarch**, [U] **20.25 References**
McBride, J. B., [ME] **mixed**
McCabe, S. E., [SVY] **estat**
McCaffrey, D. F., [R] **areg**, [XT] **xtreg**
McCarthy, P. J., [SVY] **survey**, [SVY] **svy bootstrap**, [SVY] **svy brr**, [SVY] **variance estimation**
McCleary, S. J., [R] **regress postestimation diagnostic plots**
McClish, D. K., [R] **rocreg**
McCrary, J., [TE] **stteffects ipwra**, [TE] **teffects overlap**
McCullagh, P., [ME] **meglm postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [R] **binreg**, [R] **binreg postestimation**, [R] **glm**, [R] **glm postestimation**, [R] **ologit**, [R] **rologit**, [XT] ***vce_options***, [XT] **xtgee**, [XT] **xtpoisson**
McCulloch, C. E., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [R] **logistic**, [ST] **stcox**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**
McCullough, B. D., [TS] **corrgram**
McDonald, A., [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [SEM] **example 39g**
McDonald, J. A., [R] **sunflower**
McDonald, J. F., [R] **tobit**, [R] **tobit postestimation**
McDonald, R. P., [IRT] **irt**
McDougal, L. K., [D] **icd10**
McDowell, A., [R] **boxcox**, [R] **marginsplot**, [SVY] **survey**, [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy**, [SVY] **svy brr**, [SVY] **svy estimation**, [SVY] **svy jackknife**, [SVY] **svy postestimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**, [SVY] **svydescribe**
McDowell, A. W., [R] **sureg**, [TS] **arima**
McFadden, D. L., [R] **asclogit**, [R] **asmprobit**, [R] **clogit**, [R] **hausman**, [R] **maximize**, [R] **nlogit**, [R] **suest**, [TE] **etregress**, [TE] **stteffects ipwra**, [TE] **teffects aipw**
McGilchrist, C. A., [ST] **stcox**, [ST] **streg**
McGill, R., [R] **sunflower**
McGinnis, R. E., [R] **symmetry**
McGraw, K. O., [R] **icc**
McGuire, T. J., [R] **dstdize**
McKelvey, R. D., [R] **ologit**
McKenney, A., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
McLachlan, G. J., [ME] **me**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim knn**, [MV] **discrim lda**
McLeod, A. I., [TS] **arima**, [TS] **ucm**
McNeil, B. J., [R] **roccomp**, [R] **rocfit**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **roctab**
McNeil, D., [R] **poisson**, [ST] **stcrreg**
McNemar, Q., [PSS] **intro**, [R] **epitab**
Mead, R., [M-5] **optimize( )**
Mealli, F., [MI] **intro substantive**
Meeusen, W., [R] **frontier**, [XT] **xtfrontier**
Mehta, C. R., [R] **exlogistic**, [R] **exlogistic postestimation**, [R] **expoisson**, [R] **tabulate twoway**
Mehta, P. D., [SEM] **example 30g**
Meier, P., [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **sts**
Meijering, E., [D] **ipolate**
Meiselman, D., [TS] **arima**
Melly, B., [R] **qreg**, [TE] **teffects multivalued**
Mendenhall, W., III, [SVY] **survey**
Meng, X.-L., [BAYES] **intro**, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi impute**, [MI] **mi test**
Mensing, R. W., [R] **anova postestimation**
Mergoupis, T., [TE] **etregress**, [TE] **teffects intro advanced**
Merryman, S., [XT] **xtunitroot**
Metropolis, N., [BAYES] **intro**, [BAYES] **bayesmh**
Metz, C. E., [R] **lroc**
Meulders, M., [MI] **intro substantive**, [MI] **mi impute**
Meyer, B. D., [ST] **discrete**
Miao, W., [R] **sdtest**
Micali, N., [MI] **mi estimate**, [MI] **mi impute**, [XT] **xtgee**
Michel-Pajus, A., [M-5] **cholesky( )**

Michels, K. M., [ME] **mixed**, [PSS] **intro**, [PSS] **power repeated**, [R] **anova**, [R] **contrast**, [R] **loneway**, [R] **oneway**, [R] **pwcompare**
Michener, C. D., [MV] ***measure_option***
Mickey, M. R., [MV] **discrim estat**
Midthune, D., [SVY] **estat**, [SVY] **svy estimation**
Mielke, P. W., Jr., [R] **brier**, [R] **ranksum**
Miettinen, O. S., [R] **epitab**
Mihaly, K., [R] **areg**, [XT] **xtreg**
Miladinovic, B., [R] **meta**
Milan, L., [MV] **ca**, [MV] **factor**, [MV] **mca**, [MV] **pca**
Miller, A. B., [R] **kappa**
Miller, H. W., [SVY] **survey**, [SVY] **svy estimation**
Miller, J. I., [TS] **sspace**
Miller, R. G., Jr., [FN] **Statistical functions**, [R] **diagnostic plots**, [R] **oneway**, [R] **pwcompare**
Milliff, R. F., [BAYES] **intro**
Milligan, G. W., [MV] **cluster**, [MV] **cluster programming subroutines**, [MV] **cluster stop**
Milliken, G. A., [ME] **me**, [MV] **manova**, [R] **anova**, [R] **contrast**, [R] **margins**, [R] **pwcompare**
Milosevic, M., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Min, C.-K., [BAYES] **intro**
Miquel, J., [BAYES] **intro**
Miranda, A., [R] **gllamm**, [R] **heckoprobit**, [R] **heckprobit**, [R] **ivprobit**, [R] **ivtobit**, [R] **logistic**, [R] **logit**, [R] **nbreg**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **probit**
Mitchell, C., [R] **exlogistic**
Mitchell, M. N., [D] **data management**, [D] **by**, [D] **egen**, [D] **reshape**, [G-1] **graph intro**, [R] **anova**, [R] **anova postestimation**, [R] **contrast**, [R] **logistic**, [R] **logistic postestimation**, [R] **logit**, [R] **margins**, [R] **marginsplot**, [R] **pwcompare**, [R] **regress**, [U] **11.7 References**, [U] **12.10 References**, [U] **13.13 References**, [U] **20.25 References**, [U] **22.1 References**
Mitchell, W. C., [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **tsfilter bw**, [TS] **tsfilter cf**, [TS] **tsfilter hp**, [TS] **ucm**
Miura, H., [U] **14.11 Reference**
Modica, S., [MI] **intro substantive**
Moeschberger, M. L., [PSS] **intro**, [PSS] **power cox**, [ST] **stci**, [ST] **stcox**, [ST] **stcox postestimation**, [ST] **stcrreg**, [ST] **streg**, [ST] **sts**, [ST] **sts graph**, [ST] **sts test**
Moffatt, P. G., [R] **churdle**
Moffitt, R. A., [R] **tobit**, [R] **tobit postestimation**
Mogstad, M., [R] **inequality**
Molenaar, I. W., [IRT] **irt**, [SEM] **example 28g**
Molenberghs, G., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **mixed**, [XT] **xtreg postestimation**
Moler, C. B., [P] **matrix symeigen**
Monahan, J. F., [FN] **Random-number functions**
Monfort, A., [R] **hausman**, [R] **suest**, [R] **test**, [TS] **arima**, [TS] **mgarch ccc**, [TS] **mgarch dcc**, [TS] **mgarch vcc**
Monshouwer, K., [MV] **mvtest**
Monson, R. R., [R] **bitest**, [R] **epitab**, [R] **epitab**
Montgomery, D. C., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Montoya, D., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Mood, A. M., [R] **centile**
Moon, H. R., [XT] **xtunitroot**
Mooney, C. Z., [R] **bootstrap**, [R] **jackknife**, [R] **rocreg**, [R] **rocregplot**
Moore, E. H., [M-5] **pinv( )**
Moore, J. B., [TS] **sspace**
Moore, R. J., [FN] **Statistical functions**
Moran, J. L., [R] **dstdize**
Morgenstern, H., [R] **epitab**, [R] **epitab**
Mori, M., [ST] **stcrreg**
Morris, C., [R] **bootstrap**
Morris, J. N., [ST] **stsplit**
Morris, N. F., [R] **binreg**
Morris, T. P., [MI] **mi impute pmm**
Morrison, D. F., [MV] **clustermat**, [MV] **discrim lda**, [MV] **discrim logistic**, [MV] **discrim logistic postestimation**, [MV] **manova**
Morrison, M. A., [D] **icd10**
Morrow, A., [R] **epitab**
Mortimore, P., [MI] **mi estimate**
Mosier, C. I., [MV] **procrustes**
Moskowitz, M., [R] **kappa**
Mosteller, C. F., [R] **jackknife**, [R] **regress**, [R] **regress postestimation diagnostic plots**, [R] **rreg**
Moulines, É., [BAYES] **intro**, [BAYES] **bayesmh**
Moulton, L. H., [R] **permute**
Muellbauer, J., [R] **nlsur**
Mueller, C. W., [MV] **factor**
Mueller, R. O., [MV] **discrim lda**, [SEM] **estat gof**, [SEM] **methods and formulas for sem**
Muirhead, R. J., [MV] **pca**
Mulaik, S. A., [MV] **factor**, [MV] **rotate**
Mullahy, J., [R] **gmm**, [R] **ivpoisson**, [R] **zinb**, [R] **zip**
Müller, H.-G., [R] **lpoly**, [ST] **sts graph**
Muller, K. E., [PSS] **power oneway**, [PSS] **power repeated**
Müller, P., [BAYES] **intro**
Mundlak, Y., [XT] **xtivreg**, [XT] **xtregar**
Munnell, A. H., [ME] **mixed**
Muñoz, J., [R] **exlogistic**
Muraki, E., [IRT] **irt pcm**
Muro, J., [R] **heckoprobit**, [R] **heckprobit**
Murphy, A. H., [R] **brier**
Murphy, J. L., [XT] **xtprobit**
Murphy, R. S., [SVY] **survey**, [SVY] **svy estimation**

Murray, R. M., [ME] **mecloglog**, [ME] **melogit**, [ME] **meprobit**, [ME] **meqrlogit**
Murray-Lyon, I. M., [R] **binreg**
Murrill, W. A., [MV] **discrim knn**
Murtaugh, P. A., [ST] **stcrreg**
Mussolino, M. E., [SVY] **survey**, [SVY] **svy estimation**
Muthén, B., [SEM] **example 9**
Mykland, P., [BAYES] **intro**, [BAYES] **bayesgraph**
Myland, J. C., [FN] **Mathematical functions**, [FN] **Trigonometric functions**

## N

Nachtsheim, C. J., [PSS] **power oneway**, [R] **pkcross**, [R] **pkequiv**, [R] **pkshape**, [R] **regress postestimation**
Nadarajah, S., [R] **nlogit**
Nadaraya, E. A., [R] **lpoly**
Nadle, J., [D] **icd10**
Nagel, R. W., [MV] **discrim lda**
Nagler, J., [R] **scobit**
Naiman, D. Q., [R] **qreg**
Nam, J., [PSS] **power cmh**, [PSS] **power trend**
Nannicini, T., [TE] **etregress**
Nardi, G., [R] **epitab**
Narendranathan, W., [XT] **xtregar**
Narula, S. C., [R] **qreg**
Nash, J. C., [G-2] **graph box**
Nash, J. D., [D] **infile (fixed format)**, [D] **merge**
National Center for Health Statistics, [D] **icd**, [D] **icd9**
Navarro-Lozano, S., [TE] **teffects intro advanced**
Naylor, J. C., [ME] **meqrlogit**, [ME] **meqrpoisson**, [XT] **xtcloglog**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xttobit**
Neal, R. M., [BAYES] **intro**
Neal, T., [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtunitroot**
Neale, M. C., [SEM] **example 30g**
Neath, R., [BAYES] **bayesstats summary**
Nee, J. C. M., [R] **kappa**
Neely, S. T., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Neff, R. K., [R] **epitab**
Neimann, H., [MV] **mdsmat**
Nel, D. G., [MV] **mvtest**, [MV] **mvtest means**
Nelder, J. A., [M-5] **optimize( )**, [ME] **meglm postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [R] **binreg**, [R] **binreg postestimation**, [R] **glm**, [R] **glm postestimation**, [R] **margins**, [R] **ologit**, [TE] **teffects intro advanced**, [XT] ***vce_options***, [XT] **xtgee**, [XT] **xtpoisson**
Nelson, C. R., [R] **ivregress postestimation**, [TS] **mswitch**
Nelson, D. B., [TS] **arch**, [TS] **arima**, [TS] **mgarch**
Nelson, E. C., [MV] **alpha**, [MV] **factor**, [MV] **factor postestimation**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**, [SEM] **example 37g**
Nelson, F. D., [R] **logit**, [R] **probit**
Nelson, W., [ST] **stcrreg postestimation**, [ST] **sts**
Nelson, W. C., [MV] **mvtest correlations**
Neter, J., [PSS] **power oneway**, [R] **pkcross**, [R] **pkequiv**, [R] **pkshape**, [R] **regress postestimation**
Neudecker, H., [TS] **var svar**
Neuhaus, J. M., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [XT] **xtcloglog**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**
Nevels, K., [MV] **procrustes**
Newbold, P., [TS] **arima**, [TS] **vec intro**
Newey, W. K., [R] **glm**, [R] **gmm**, [R] **ivpoisson**, [R] **ivprobit**, [R] **ivregress**, [R] **ivtobit**, [TE] **etregress**, [TE] **stteffects ipwra**, [TE] **teffects aipw**, [TS] **newey**, [TS] **pperron**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtunitroot**
Newman, S. C., [R] **epitab**, [R] **poisson**, [ST] **stcox**, [ST] **sts**
Newson, R. B., [D] **contract**, [D] **generate**, [D] **statsby**, [PSS] **intro**, [R] **centile**, [R] **glm**, [R] **glm postestimation**, [R] **inequality**, [R] **kwallis**, [R] **logistic postestimation**, [R] **logit postestimation**, [R] **margins**, [R] **mkspline**, [R] **ranksum**, [R] **signrank**, [R] **spearman**, [R] **tabulate twoway**, [ST] **stcox postestimation**
Newton, H. J., [R] **kdensity**, [TS] **arima**, [TS] **corrgram**, [TS] **cumsp**, [TS] **dfuller**, [TS] **pergram**, [TS] **wntestb**, [TS] **xcorr**, [U] **3.9 References**, [XT] **xtgee**
Newton, I., [M-5] **optimize( )**
Newton, M. A., [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xttobit**
Neyman, J., [R] **ci**
Ng, E. S.-W., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meqrlogit**, [R] **bootstrap**, [R] **bstat**
Ng, S., [TS] **dfgls**
Nicewander, W. A., [R] **correlate**
Nichols, A., [ME] **meglm**, [ME] **mixed**, [R] **ivregress**, [R] **reg3**, [TE] **etregress**, [TE] **teffects intro advanced**, [XT] **xtrc**, [XT] **xtreg**
Nickell, S. J., [R] **gmm**, [TS] **forecast**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtivreg**, [XT] **xtunitroot**
Nielsen, B., [TS] **varsoc**, [TS] **vec intro**
Nightingale, F, [G-2] **graph pie**
Nishimura, T., [FN] **Random-number functions**, [R] **set seed**

Nolan, D., [R] **diagnostic plots**
Nordlund, D. J., [MV] **discrim lda**
Norton, S. J., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Nunnally, J. C., [MV] **alpha**

## O

O'Brien, R. G., [PSS] **power oneway**
O'Brien, S. M., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**
O'Connell, P. G. J., [XT] **xtunitroot**
O'Connell, R. T., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
O'Donnell, C. J., [XT] **xtfrontier**
O'Donnell, O., [SVY] **svy estimation**, [SVY] **svyset**
O'Fallon, W. M., [R] **logit**
O'Hara, B., [BAYES] **bayesmh**
O'Neill, D., [R] **gmm**, [R] **inequality**
Oakes, D., [PSS] **intro**, [ST] **ltable**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **streg**, [ST] **sts**
Obstfeld, M., [XT] **xtunitroot**
Ochiai, A., [MV] ***measure_option***
Odum, E. P., [MV] **clustermat**
Oehlert, G. W., [R] **nlcom**, [R] **rocreg postestimation**, [R] **rocregplot**
Oh, K.-Y., [XT] **xtunitroot**
Oldham, K. B., [FN] **Mathematical functions**, [FN] **Trigonometric functions**
Oliveira, A. G., [ST] **ltable**, [ST] **sts**
Olivier, D., [R] **expoisson**
Olkin, I., [MV] **hotelling**, [R] **kwallis**, [TS] **wntestb**
Olsen, M. K., [MI] **intro substantive**
Olshansky, S. J., [ST] **streg**
Olson, J. M., [R] **symmetry**
Omar, R. Z., [ME] **me**
Ooms, M., [TS] **arfima**
Oparil, S., [PSS] **intro**, [PSS] **power repeated**
Orcutt, G. H., [TS] **prais**
Ord, J. K., [R] **centile**, [R] **mean**, [R] **proportion**, [R] **qreg**, [R] **ratio**, [R] **summarize**, [R] **total**
Orsini, N., [R] **epitab**, [R] **glm**, [R] **logit**, [R] **mkspline**, [R] **qreg**, [ST] **streg**, [XT] **xtreg**
Osbat, C., [XT] **xtunitroot**
Osterlind, S. J., [IRT] **difmh**
Osterwald-Lenum, M. G., [TS] **vecrank**
Ostle, B., [R] **anova postestimation**
Ott, R. L., [SVY] **survey**
Over, M., [R] **regress**, [XT] **xtivreg**
Owen, A. L., [TS] **forecast**

## P

Pacheco, J. M., [R] **dstdize**
Pagan, A. R., [I] **Glossary**, [MV] **mvreg**, [R] **frontier**, [R] **regress postestimation**, [R] **sureg**, [TS] **Glossary**, [XT] **xtreg postestimation**
Pagano, M., [PSS] **intro**, [R] **dstdize**, [R] **logistic**, [R] **margins**, [R] **tabulate twoway**, [ST] **ltable**, [ST] **sts**
Paik, M. C., [PSS] **intro**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [R] **dstdize**, [R] **epitab**, [R] **kappa**
Palma, W., [TS] **arfima**, [TS] **arfima postestimation**, [TS] **estat acplot**
Palmer, T. M., [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mixed**, [R] **ivregress**
Palta, M., [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xttobit**
Pampel, F. C., [R] **logistic**, [R] **logit**, [R] **probit**
Paneth, N., [R] **epitab**
Panis, C., [R] **mkspline**
Pantazis, N., [ME] **meglm**, [ME] **mixed**
Paolino, P., [R] **betareg**
Papke, L. E., [R] **fracreg**
Parent, E., [BAYES] **intro**
Park, H. J., [P] **_robust**, [R] **regress**, [SVY] **svy: tabulate twoway**
Park, J. Y., [R] **boxcox**, [R] **margins**, [R] **nlcom**, [R] **predictnl**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **testnl**, [TS] **sspace**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**
Parks, W. P., [R] **exlogistic**
Parmar, M. K. B., [PSS] **intro**, [PSS] **power cox**, [ST] **stcox**, [ST] **streg**
Parmigiani, G., [BAYES] **intro**
Parner, E. T., [R] **glm**, [ST] **stcox**
Parzen, E., [R] **estat ic**, [R] **kdensity**
Pasquini, J., [R] **epitab**, [R] **vwls**
Patel, N. R., [R] **exlogistic**, [R] **exlogistic postestimation**, [R] **expoisson**, [R] **tabulate twoway**
Paterson, L., [ME] **meqrlogit**
Patterson, H. D., [R] **pkcross**
Patterson, K., [XT] **xtunitroot**
Pattitoni, P., [R] **betareg**
Paul, C., [R] **logistic**
Paulsen, J., [TS] **varsoc**, [TS] **vec intro**
Pawitan, Y., [TE] **teffects ra**
Pearce, M. S., [R] **epitab**, [R] **logistic**
Pearl, J., [BAYES] **intro**
Pearson, E. S., [BAYES] **bayesmh**, [R] **ci**, [R] **ttest**
Pearson, K., [G-2] **graph twoway histogram**, [MV] **mds**, [MV] ***measure_option***, [MV] **pca**, [R] **correlate**, [R] **esize**, [R] **tabulate twoway**
Pechlivanoglou, P., [R] **betareg**

Pedace, R., [R] **logit**, [R] **probit**, [R] **regress**, [R] **regress postestimation diagnostic plots**, [U] **20.25 References**
Peen, C., [MV] **procrustes**
Pellock, I. M., [BAYES] **bayesmh**
Pendergast, J. F., [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xttobit**
Penfield, R. D., [R] **esize**
Peng, J., [PSS] **intro**, [PSS] **power oneproportion**
Penrose, R., [M-5] **pinv( )**
Pepe, M. S., [R] **roc**, [R] **roccomp**, [R] **rocfit**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **roctab**, [ST] **stcrreg**
Peracchi, F., [MI] **intro substantive**, [R] **regress**, [R] **regress postestimation**
Pérez-Amaral, T., [U] **20.25 References**
Pérez-Hernández, M. A., [R] **kdensity**
Pérez-Hoyos, S., [R] **lrtest**
Pérez-Santiago, M. I., [R] **epitab**
Pericchi, L. R., [BAYES] **intro**
Perkins, A. M., [R] **ranksum**
Perotti, V., [R] **heckoprobit**, [R] **heckprobit**, [R] **oprobit**
Perrin, E., [MV] **alpha**, [MV] **factor**, [MV] **factor postestimation**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**, [SEM] **example 37g**
Perron, P., [I] **Glossary**, [TS] **dfgls**, [TS] **estat sbsingle**, [TS] **mswitch**, [TS] **pperron**, [TS] **Glossary**
Perry, H. M., [PSS] **intro**, [PSS] **power repeated**
Persson, R., [G-1] **graph intro**
Pesaran, M. H., [XT] **xtunitroot**
Pesarin, F., [R] **tabulate twoway**
Peterson, B., [R] **ologit**
Peterson, W. W., [R] **lroc**
Petit, S., [D] **icd10**
Petitclerc, M., [R] **kappa**
Petkova, E., [R] **suest**
Peto, J., [ST] **sts test**
Peto, R., [ST] **stcox**, [ST] **streg**, [ST] **sts test**
Petrin, A. K., [R] **frontier**
Pevehouse, J. C. W., [TS] **time series**, [TS] **arima**, [TS] **forecast**, [TS] **irf**, [TS] **var**, [TS] **vec**
Pfeffer, R. I., [R] **symmetry**
Pfeffermann, D., [ME] **mixed**
Phillips, A., [IRT] **difmh**
Phillips, P. C. B., [I] **Glossary**, [R] **boxcox**, [R] **margins**, [R] **nlcom**, [R] **predictnl**, [R] **regress postestimation time series**, [R] **rocreg postestimation**, [R] **rocregplot**, [R] **testnl**, [TS] **pperron**, [TS] **vargranger**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**, [TS] **Glossary**, [XT] **xtunitroot**
Piantadosi, S., [P] **_robust**, [U] **20.25 References**
Pickles, A., [ME] **me**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [MV] **cluster dendrogram**, [R] **gllamm**, [R] **glm**, [SEM] **Acknowledgments**,
Pickles, A., *continued*
[SEM] **intro 2**, [SEM] **example 29g**, [SEM] **methods and formulas for gsem**, [TE] **teffects multivalued**, [XT] **xtgee**, [XT] **xtreg**
Pickup, M., [TS] **time series**, [TS] **arch**, [TS] **arima**, [TS] **vec**
Pierce, D. A., [ME] **me**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [TS] **wntestq**
Pierson, R. A., [ME] **mixed**
Pike, M. C., [PSS] **intro**, [PSS] **power twoproportions**, [R] **symmetry**, [ST] **ltable**, [ST] **streg**
Pillai, K. C. S., [MV] **canon**, [MV] **manova**
Pindyck, R. S., [R] **biprobit**, [R] **heckprobit**
Pinheiro, J. C., [ME] **me**, [ME] **meglm**, [ME] **meqrlogit**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson**, [ME] **meqrpoisson postestimation**, [ME] **mixed**, [ME] **mixed postestimation**
Pintilie, M., [ST] **stcrreg**, [ST] **stcrreg postestimation**
Pisati, M., [TS] **time series**
Pischke, J.-S., [R] **ivregress**, [R] **ivregress postestimation**, [R] **qreg**, [R] **regress**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [U] **20.25 References**
Pitarakis, J.-Y., [TS] **vecrank**
Pitblado, J. S., [M-5] **deriv( )**, [M-5] **moptimize( )**, [P] **intro**, [P] **_robust**, [R] **frontier**, [R] **gmm**, [R] **lpoly**, [R] **maximize**, [R] **ml**, [ST] **sts**, [SVY] **survey**, [SVY] **ml for svy**, [XT] **xtfrontier**
Plackett, R. L., [R] **ameans**, [R] **regress**, [R] **rologit**, [R] **summarize**, [R] **ttest**
Playfair, W. H., [G-2] **graph bar**, [G-2] **graph pie**
Ploberger, W., [TS] **estat sbsingle**
Plosser, C. I., [TS] **vecrank**
Plummer, W. D., Jr., [R] **epitab**, [R] **sunflower**
Poi, B. P., [M-5] **deriv( )**, [M-5] **moptimize( )**, [P] **intro**, [P] **_robust**, [R] **bootstrap**, [R] **bstat**, [R] **frontier**, [R] **gmm**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **maximize**, [R] **ml**, [R] **nl**, [R] **nlsur**, [R] **reg3**, [SVY] **survey**, [SVY] **ml for svy**, [XT] **xtfrontier**, [XT] **xtrc**
Poirier, D. J., [BAYES] **intro**, [R] **biprobit**
Poisson, S. D., [R] **poisson**
Pole, A., [BAYES] **intro**
Pollard, W. E., [BAYES] **intro**
Pollock, D. S. G., [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **tsfilter bw**, [TS] **tsfilter cf**, [TS] **tsfilter hp**
Pollock, P. H., III, [R] **histogram**, [R] **mean postestimation**
Ponce de Leon, A., [R] **roccomp**, [R] **roctab**
Porter, T. M., [R] **correlate**
Portes, A., [SEM] **example 7**
Posten, H. O., [FN] **Statistical functions**
Postma, M. J., [R] **betareg**

Powell, M. J. D., [M-5] **optimize( )**, [TS] **forecast solve**
Powers, D. A., [R] **logistic postestimation**, [R] **logit**, [R] **logit postestimation**, [R] **probit**
Prais, S. J., [TS] **prais**
Prakash, R., [ME] **mestreg**
Preacher, K. J., [R] **esize**, [R] **regress postestimation**, [SEM] **example 42g**
Preece, D. A., [R] **ttest**
Pregibon, D., [R] **glm**, [R] **linktest**, [R] **logistic**, [R] **logistic postestimation**, [R] **logit**, [R] **logit postestimation**
Prentice, R. L., [ST] **discrete**, [ST] **ltable**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **streg**, [ST] **sts**, [ST] **sts test**, [ST] **stset**, [TE] **stteffects intro**, [TE] **stteffects ra**, [XT] **xtgee**
Prescott, E. C., [TS] **tsfilter**, [TS] **tsfilter hp**
Prescott, R., [ME] **mixed**
Press, W. H., [FN] **Statistical functions**, [G-2] **graph twoway contour**, [M-5] **solvenl( )**, [P] **matrix symeigen**, [R] **dydx**, [R] **vwls**, [TS] **arch**, [TS] **arima**
Pressel, S., [PSS] **intro**, [PSS] **power repeated**
Priestley, M. B., [TS] **psdensity**, [TS] **tsfilter**, [TS] **ucm**
Propp, J. G., [BAYES] **intro**
Proschan, M., [PSS] **intro**, [PSS] **power repeated**
Prosser, R., [ME] **mixed**
Pryor, D. B., [ST] **stcox postestimation**
Punj, G. N., [R] **rologit**
Putter, H., [ST] **stcrreg**, [ST] **stcrreg postestimation**

## Q

Qaqish, B., [XT] **xtgee**
Quandt, R. E., [TS] **estat sbsingle**, [TS] **mswitch**
Quesenberry, C. P., [MV] **discrim knn**
Quintó, L., [M-5] **_docx*( )**, [P] **putexcel**

## R

Rabe-Hesketh, S., [IRT] **irt**, [IRT] **irt grm**, [IRT] **irt rsm**, [IRT] **irt hybrid postestimation**, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **meglm postestimation**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson**, [ME] **meqrpoisson postestimation**, [ME] **mestreg**, [ME] **mixed**, [ME] **mixed postestimation**, [MV] **pca**, [MV] **screeplot**, [R] **gllamm**, [R] **glm**, [R] **heckoprobit**, [R] **heckprobit**, [R] **ivprobit**, [R] **ivtobit**, [R] **logistic**, [R] **logit**, [R] **nbreg**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **probit**, [SEM] **Acknowledgments**, [SEM] **intro 2**, [SEM] **intro 4**, [SEM] **example 28g**, [SEM] **example 29g**, [SEM] **example 30g**, [SEM] **example 39g**, [SEM] **example 40g**, [SEM] **example 41g**, [SEM] **example 45g**,
Rabe-Hesketh, S., *continued* [SEM] **example 46g**, [SEM] **methods and formulas for gsem**, [SEM] **predict after gsem**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtstreg**, [XT] **xttobit**
Rachman, S., [R] **epitab**
Raciborski, R., [MV] **cluster**, [R] **cpoisson**, [R] **poisson**, [R] **tpoisson**
Racine-Poon, A., [BAYES] **intro**, [BAYES] **bayesmh**
Radmacher, R. D., [PSS] **power**
Raftery, A. E., [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [R] **BIC note**, [R] **estat ic**, [R] **glm**, [SEM] **estat gof**
Raghunathan, T. E., [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute ologit**, [MI] **mi impute poisson**, [MI] **mi impute truncreg**, [MI] **mi test**
Ramalheira, C., [R] **ameans**, [ST] **ltable**
Ramey, C. T., [PSS] **power repeated**
Ramsahai, R. R., [R] **ivregress**
Ramsey, J. B., [R] **regress postestimation**
Rao, C. R., [ME] **me**, [ME] **mixed**, [MV] **factor**, [MV] **hotelling**, [MV] **manova**
Rao, D. S. P., [XT] **xtfrontier**
Rao, J. N. K., [SVY] **direct standardization**, [SVY] **poststratification**, [SVY] **svy bootstrap**, [SVY] **svy: tabulate twoway**, [SVY] **variance estimation**
Rao, T. R., [MV] ***measure_option***
Raphson, J., [M-5] **optimize( )**
Rasbash, J., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meqrlogit**, [ME] **mixed**
Rasch, G., [IRT] **irt**, [IRT] **irt 1pl**, [SEM] **example 28g**
Ratcliffe, S. J., [XT] **xtgee**
Ratkovic, M., [TE] **tebalance**, [TE] **tebalance overid**
Ratkowsky, D. A., [R] **nl**, [R] **pk**, [R] **pkcross**
Raudenbush, S. W., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**
Ravn, M. O., [TS] **tsfilter**, [TS] **tsfilter hp**
Ray, S., [D] **icd10**
Raykov, T., [SEM] **estat eqgof**, [SEM] **example 3**, [SEM] **methods and formulas for sem**
Rayner, P. J. W., [BAYES] **intro**
Rebelo, S. T., [TS] **tsfilter**, [TS] **tsfilter hp**
Redelmeier, D. A., [R] **brier**
Reeves, D., [R] **meta**
Reichenheim, M. E., [R] **kappa**, [R] **roccomp**, [R] **roctab**
Reid, C., [M-5] **Hilbert( )**, [R] **ci**
Reid, N. M., [ST] **stcox**
Reilly, M., [R] **epitab**, [R] **logistic**

Reinfurt, K. H., [MV] **mvtest correlations**
Reinsch, C. H., [M-5] **spline3( )**, [P] **matrix symeigen**
Reinsel, G. C., [TS] **arfima**, [TS] **arima**, [TS] **corrgram**, [TS] **cumsp**, [TS] **dfuller**, [TS] **estat acplot**, [TS] **pergram**, [TS] **pperron**, [TS] **psdensity**, [TS] **vec intro**, [TS] **xcorr**
Reise, S. P., [IRT] **irt**, [SEM] **example 28g**, [SEM] **example 29g**
Reiter, J. P., [MI] **intro substantive**, [MI] **intro**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi test**
Relles, D. A., [R] **rreg**
Rencher, A. C., [MV] **biplot**, [MV] **ca**, [MV] **candisc**, [MV] **canon**, [MV] **canon postestimation**, [MV] **cluster**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim knn**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **discrim logistic**, [MV] **discrim qda**, [MV] **discrim qda postestimation**, [MV] **factor**, [MV] **manova**, [MV] **mca**, [MV] **mvtest**, [MV] **mvtest correlations**, [MV] **mvtest covariances**, [MV] **mvtest means**, [MV] **mvtest normality**, [MV] **pca**, [MV] **screeplot**, [R] **anova postestimation**
Research Triangle Institute, [SVY] **svy: tabulate twoway**
Revankar, N. S., [BAYES] **bayesmh**, [R] **frontier**, [XT] **xtfrontier**
Richards, D. S. P., [MV] **mvtest means**
Richardson, W., [R] **ttest**
Richter, J. R., [PSS] **intro**
Ridder, G., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **teffects intro advanced**
Riffenburgh, R. H., [R] **ksmirnov**, [R] **kwallis**
Riley, A. R., [D] **filefilter**, [D] **list**, [R] **net search**
Ringquist, E. J., [R] **meta**
Rios Insua, D., [BAYES] **intro**
Rip, M., [R] **epitab**
Rising, W. R., [FN] **Programming functions**, [U] **12.10 References**
Rivers, D., [R] **ivprobit**
Robbins, N. B., [G-2] **graph dot**
Roberson, P. K., [R] **estat gof**, [R] **lroc**
Robert, C. P., [BAYES] **intro**
Roberts, C., [PSS] **power**
Roberts, G. O., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**
Roberts, S., [PSS] **power**
Robins, J. M., [IRT] **difmh**, [R] **epitab**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**
Robins, R. P., [TS] **arch**
Robinson, A., [M-5] **Toeplitz( )**
Robinson, K. L., [IRT] **irt**
Robyn, D. L., [G-2] **graph bar**, [G-2] **graph pie**, [G-2] **graph twoway histogram**, [R] **cumul**
Rodgers, J. L., [R] **correlate**
Rodríguez, G., [ME] **me**, [R] **nbreg**, [R] **poisson**
Roger, J. H., [I] **Glossary**, [ME] **mixed**, [ME] **Glossary**
Rogers, D. J., [MV] ***measure_option***
Rogers, H. J., [IRT] **irt**
Rogers, W. H., [D] **egen**, [P] **_robust**, [R] **brier**, [R] **glm**, [R] **heckman**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **nbreg**, [R] **poisson**, [R] **predictnl**, [R] **qreg**, [R] **regress**, [R] **rocreg**, [R] **rreg**, [R] **sktest**, [R] **slogit**, [R] **suest**, [R] **swilk**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [U] **20.25 References**
Rogoff, K., [XT] **xtunitroot**
Rohlf, F. J., [MV] **cluster**, [MV] ***measure_option***
Rohwer, G., [ME] **mestreg**
Rojas, P. B., [PSS] **power cmh**
Rolin, J.-M., [IRT] **irt 3pl**
Rombouts, J. V. K., [TS] **mgarch**
Romney, A. K., [MV] **ca**
Ronchetti, E. M., [D] **egen**, [R] **qreg**
Ronning, G., [R] **clogit**
Roodman, D., [D] **collapse**, [XT] **xtdpd**, [XT] **xtdpdsys**
Room, T., [TS] **arima**
Rosati, R. A., [ST] **stcox postestimation**
Rose, D. W., [MV] **discrim knn**
Rose, J. M., [R] **nlogit**
Rosen, H. S., [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
Rosenbaum, P. R., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **tebalance**, [TE] **teffects intro advanced**
Rosenbluth, A. W., [BAYES] **intro**, [BAYES] **bayesmh**
Rosenbluth, M. N., [BAYES] **intro**, [BAYES] **bayesmh**
Rosenthal, J. S., [BAYES] **intro**, [BAYES] **intro**, [BAYES] **bayesmh**
Rosenthal, R., [R] **contrast**
Rosnow, R. L., [R] **contrast**
Ross, G. J. S., [R] **nl**
Rossi, P. E., [R] **sureg**
Rossi, S. S., [ST] **stcrreg**
Rothenberg, T. J., [I] **Glossary**, [TS] **dfgls**, [TS] **sspace**, [TS] **var svar**, [TS] **vec**, [TS] **Glossary**
Rothkopf, E. Z., [MV] **mdslong**
Rothman, K. J., [R] **ci**, [R] **dstdize**, [R] **epitab**, [R] **poisson**
Rothstein, H. R., [R] **meta**
Rothwell, S. T., [SVY] **survey**, [SVY] **svy estimation**
Rotnitzky, A., [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**
Rousseeuw, P. J., [D] **egen**, [MV] **cluster**, [MV] **clustermat**, [MV] **matrix dissimilarity**, [MV] ***measure_option***, [P] **matrix dissimilarity**, [R] **qreg**, [R] **regress postestimation**, [R] **rreg**
Rovine, M. J., [R] **correlate**
Roy, S. N., [MV] **canon**, [MV] **manova**
Royall, R. M., [P] **_robust**, [U] **20.25 References**

Royle, J. A., [BAYES] **intro**
Royston, P., [D] **generate**, [D] **list**, [D] **sort**, [G-2] **graph twoway lowess**, [G-2] **graph twoway scatter**, [MI] **intro substantive**, [MI] **intro**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi export**, [MI] **mi export ice**, [MI] **mi import**, [MI] **mi import ice**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute intreg**, [MI] **mi impute monotone**, [MI] **mi impute nbreg**, [MI] **mi impute pmm**, [MI] **mi predict**, [PSS] **intro**, [PSS] **power cox**, [R] **bootstrap**, [R] **centile**, [R] **cusum**, [R] **diagnostic plots**, [R] **dotplot**, [R] **dydx**, [R] **epitab**, [R] **estat ic**, [R] **fp**, [R] **fp postestimation**, [R] **glm**, [R] **glm**, [R] **kdensity**, [R] **lnskew0**, [R] **lowess**, [R] **marginsplot**, [R] **mfp**, [R] **ml**, [R] **nl**, [R] **regress**, [R] **sktest**, [R] **smooth**, [R] **swilk**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **streg**
Rubin, D. B., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [ME] **me**, [ME] **mixed**, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute logit**, [MI] **mi impute monotone**, [MI] **mi impute mvn**, [MI] **mi impute pmm**, [MI] **mi impute regress**, [MI] **mi predict**, [MI] **mi test**, [R] **contrast**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **tebalance**, [TE] **teffects intro advanced**
Rubin, H., [R] **ivregress postestimation**
Rubinfeld, D. L., [R] **biprobit**, [R] **heckprobit**
Rubinstein, L. V., [PSS] **power exponential**
Rudebusch, G. D., [R] **ivregress postestimation**
Ruggles, S., [R] **mlexp**
Runkle, D. E., [TS] **arch**
Ruppert, D., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **mixed**, [R] **boxcox**, [R] **rreg**
Rush, M., [D] **egen**
Russell, P. F., [MV] ***measure_option***
Rutherford, E., [R] **poisson**
Rutherford, M. J., [R] **poisson**, [ST] **stptime**
Ruud, P. A., [R] **gmm**, [R] **rologit**, [R] **suest**
Ryan, P., [D] **egen**, [D] **pctile**, [U] **11.7 References**
Ryan, T. P., [R] **qc**
Ryzhik, I. M., [TS] **arfima**

## S

Saikkonen, P., [TS] **vec intro**, [TS] **vecrank**
Sajaia, Z., [R] **biprobit**, [R] **heckprobit**
Sakamoto, Y., [R] **BIC note**
Saksman, E., [BAYES] **intro**, [BAYES] **bayesmh**
Salas Pauliac, C. H., [D] **egen**
Salgado-Ugarte, I. H., [R] **kdensity**, [R] **lowess**, [R] **smooth**
Salim, A., [R] **epitab**, [R] **logistic**
Salmond, D. J., [BAYES] **intro**
Salvador, M., [TS] **vecrank**
Samaniego, F. J., [TS] **varwle**
Samejima, F., [IRT] **irt 3pl**, [IRT] **irt grm**, [IRT] **irtgraph iif**
Sammon, J. W., Jr., [I] **Glossary**, [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **Glossary**
Sammons, P., [MI] **mi estimate**
Sampson, A. R., [MV] **hotelling**
Samuels, S. J., [U] **24.8 References**
San Martín, E., [IRT] **irt 3pl**
Sánchez, G., [TS] **arima**
Sanders, F., [R] **brier**
Sándor, L., [TE] **teffects intro advanced**
Santner, T. J., [PSS] **power exponential**
Santos Silva, J. M. C., [R] **gmm**, [R] **ivpoisson**
Sarabia, J. M., [MI] **intro substantive**, [MI] **mi impute chained**
Sarafidis, V., [XT] **xtreg**
Sargan, J. D., [R] **ivregress postestimation**, [TS] **prais**
Sargent, T. J., [TS] **dfactor**
Särndal, C.-E., [SVY] **variance estimation**
Sasieni, P. D., [D] **list**, [D] **memory**, [R] **dotplot**, [R] **glm**, [R] **lowess**, [R] **nptrend**, [R] **poisson**, [R] **smooth**, [ST] **stcox**
Sass, T. R., [R] **areg**, [XT] **xtreg**
Satorra, A., [SEM] **intro 4**, [SEM] **intro 7**, [SEM] **intro 9**, [SEM] **example 1**, [SEM] **methods and formulas for sem**
Satterthwaite, F. E., [I] **Glossary**, [ME] **mixed**, [ME] **Glossary**, [R] **esize**, [R] **ttest**, [SVY] **variance estimation**
Sauerbrei, W., [R] **bootstrap**, [R] **estat ic**, [R] **fp**, [R] **mfp**
Saunders, C. L., [PSS] **intro**
Savage, I. R., [ST] **sts test**
Savin, N. E., [R] **regress postestimation time series**
Saw, S. L. C., [R] **qc**
Sawa, T., [R] **estat ic**
Saxl, I., [R] **correlate**
Schaalje, G. B., [ME] **mixed**, [R] **anova postestimation**
Schabenberger, O., [ME] **me**
Schafer, J. L., [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi impute**, [MI] **mi impute monotone**, [MI] **mi impute mvn**, [MI] **mi impute truncreg**, [TE] **teffects intro advanced**
Schaffer, C. M., [MV] **cluster**
Schaffer, M. E., [R] **ivregress**, [R] **ivregress postestimation**
Schank, T., [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [XT] **xtreg**
Scheaffer, R. L., [SVY] **survey**
Schechter, C. B., [D] **encode**
Scheffé, H., [R] **anova**, [R] **oneway**
Schenker, N., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute pmm**, [MI] **mi impute regress**

Scheys, I., [ME] **meqrlogit postestimation**
Schlesselman, J. J., [R] **boxcox**, [R] **epitab**
Schlossmacher, E. J., [R] **qreg**
Schluchter, M. D., [ME] **mixed**
Schmeiser, B. W., [FN] **Random-number functions**
Schmidt, C. H., [R] **brier**
Schmidt, E., [M-5] **svd( )**
Schmidt, P., [R] **frontier**, [R] **regress postestimation**, [XT] **xtfrontier**, [XT] **xtunitroot**
Schmidt, T. J., [D] **egen**, [TS] **tsfilter**
Schneider, D. C., [D] **import haver**
Schneider, H., [R] **sdtest**
Schneider, W., [TS] **sspace**
Schnell, D., [P] **_robust**, [R] **regress**, [SVY] **svy: tabulate twoway**
Schoenfeld, D. A., [PSS] **intro**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [ST] **stcox**, [ST] **stcox postestimation**, [ST] **streg**
Schonlau, M., [R] **glm**, [R] **logistic**, [R] **logit**, [R] **poisson**, [R] **regress**
Schork, M. A., [PSS] **intro**
Schroeder, M. B., [R] **mlexp**
Schuirmann, D. J., [R] **pkequiv**
Schumacher, M., [ST] **stcrreg**
Schumm, L. P., [D] **sort**
Schunck, R., [ME] **mixed**, [XT] **xtreg**
Schur, I., [M-5] **schurd( )**
Schwartzman, S., [ST] **stcox postestimation**
Schwarz, G., [BAYES] **intro**, [MV] **factor postestimation**, [R] **BIC note**, [R] **estat ic**, [SEM] **estat gof**, [SEM] **methods and formulas for sem**
Schwert, G. W., [TS] **dfgls**
Scorcu, A. E., [R] **betareg**
Scott, A. J., [SVY] **estat**, [SVY] **svy: tabulate twoway**
Scott, C., [SVY] **estat**, [SVY] **subpopulation estimation**, [SVY] **svy bootstrap**, [SVY] **svy estimation**
Scott, D. A., [ST] **stcox**, [ST] **stcrreg**
Scott, D. W., [R] **kdensity**
Scott, E. L., [R] **intro**
Scott, G. B., [R] **exlogistic**
Scotto, M. G., [R] **diagnostic plots**, [ST] **streg**
Searle, S. R., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [R] **contrast**, [R] **margins**, [R] **pwcompare**, [R] **pwmean**
Sears, R. R., [R] **epitab**
Seber, G. A. F., [MV] **biplot**, [MV] **manova**, [MV] **mvtest**, [MV] **mvtest means**, [MV] **mvtest normality**
Seed, P. T., [R] **ci**, [R] **correlate**, [R] **roccomp**, [R] **roctab**, [R] **sdtest**, [R] **spearman**
Seidler, J., [R] **correlate**
Self, S. G., [ME] **me**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**
Selvin, S., [R] **epitab**, [R] **poisson**, [ST] **ltable**, [ST] **stcox**
Sempos, C. T., [PSS] **intro**, [R] **dstdize**, [R] **epitab**, [ST] **ltable**, [ST] **stcox**
Semykina, A., [R] **inequality**, [R] **qreg**
Seneta, E., [R] **correlate**, [U] **1.4 References**
Senn, S. J., [R] **glm**, [R] **ttest**
Sentana, E., [TS] **mgarch**
Serachitopol, D. M., [ST] **sts graph**
Serfling, R. J., [TS] **irf create**
Shafer, G., [ST] **stcox postestimation**
Shah, B. V., [SVY] **direct standardization**, [SVY] **poststratification**, [SVY] **variance estimation**
Shanno, D. F., [M-5] **optimize( )**
Shao, J., [PSS] **intro**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power exponential**, [SVY] **survey**, [SVY] **svy jackknife**, [SVY] **variance estimation**
Shao, Q.-M., [BAYES] **intro**, [BAYES] **bayesstats summary**
Shapiro, S., [R] **epitab**
Shapiro, S. S., [R] **swilk**
Shaposhnikova, T. O., [FN] **Matrix functions**
Shavelson, R. J., [MV] **alpha**
Shea, J. S., [R] **ivregress postestimation**
Sheather, S. J., [R] **boxcox**, [R] **lowess**, [R] **lpoly**, [R] **qreg**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [R] **stepwise**
Sheehan, N. A., [R] **ivregress**
Sheldon, T. A., [R] **meta**
Shepard, R. N., [MV] **mds postestimation plots**
Shephard, N., [BAYES] **intro**
Shewhart, W. A., [R] **qc**
Shiboski, S. C., [R] **logistic**, [ST] **stcox**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**
Shiller, R. J., [R] **tobit**
Shimizu, M., [R] **kdensity**, [R] **lowess**
Shin, Y., [XT] **xtunitroot**
Shrout, P. E., [R] **icc**, [R] **kappa**
Shults, J., [XT] **xtgee**
Shumway, R. H., [TS] **arima**
Sianesi, B., [TE] **stteffects intro**, [TE] **teffects intro advanced**, [TE] **teffects multivalued**
Sibson, R., [MV] **cluster**
Šidák, Z., [R] **correlate**, [R] **oneway**
Siegmund, D., [TS] **estat sbsingle**
Silvennoinen, A., [TS] **mgarch**, [TS] **mgarch ccc**
Silverman, B. W., [R] **kdensity**, [R] **qreg**, [TE] **teffects overlap**
Silvey, S. D., [R] **ologit**, [R] **oprobit**

Simon, R., [BAYES] **bayesmh**, [PSS] **power**
Simonoff, J. S., [R] **kdensity**, [R] **tnbreg**, [R] **tpoisson**
Simor, I. S., [R] **kappa**
Simpson, T., [M-5] **optimize( )**
Sims, C. A., [TS] **dfactor**, [TS] **irf create**, [TS] **var svar**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**
Singleton, K. J., [R] **gmm**
Sinha, B. K., [ME] **mixed**
Sinha, D., [BAYES] **intro**
Sininger, Y., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Sitgreaves, R., [R] **icc**
Sjölander, P. C., [R] **glm**, [R] **logit**
Skinner, C. J., [ME] **mixed**, [SVY] **survey**, [SVY] **estat**, [SVY] **svy estimation**, [SVY] **variance estimation**
Skovlund, E., [PSS] **intro**, [PSS] **power cox**
Skrondal, A., [IRT] **irt**, [IRT] **irt hybrid postestimation**, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **meglm postestimation**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson**, [ME] **meqrpoisson postestimation**, [ME] **mestreg**, [ME] **mixed**, [ME] **mixed postestimation**, [R] **gllamm**, [R] **glm**, [SEM] **Acknowledgments**, [SEM] **intro 2**, [SEM] **intro 4**, [SEM] **example 28g**, [SEM] **example 29g**, [SEM] **example 30g**, [SEM] **example 39g**, [SEM] **example 40g**, [SEM] **example 41g**, [SEM] **example 45g**, [SEM] **example 46g**, [SEM] **methods and formulas for gsem**, [SEM] **predict after gsem**, [U] **1.4 References**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtstreg**, [XT] **xttobit**
Slaymaker, E., [P] **file**
Slone, D., [R] **epitab**
Smans, M., [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [SEM] **example 39g**
Smeeton, N. C., [R] **ranksum**, [R] **signrank**
Smirnov, N. V., [R] **ksmirnov**
Smith, A. F. M., [BAYES] **intro**, [BAYES] **bayesmh**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [MI] **mi impute chained**, [XT] **xtcloglog**, [XT] **xtintreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xttobit**
Smith, B. T., [P] **matrix symeigen**
Smith, C. A. B., [MV] **discrim estat**, [MV] **discrim qda**, [R] **ranksum**
Smith, H., [MV] **manova**, [R] **eivreg**, [R] **oneway**, [R] **regress**, [R] **stepwise**
Smith, J. M., [R] **fp**
Smith, M. L., [R] **esize**
Smith, P. G., [PSS] **intro**, [PSS] **power twoproportions**
Smith, R. J., [R] **ivprobit**
Smith, R. L., [ST] **streg**
Smith, T. M. F., [SVY] **survey**
Smith-Vikos, T., [MV] **discrim knn**
Smithson, M., [R] **betareg**, [R] **esize**, [R] **regress postestimation**
Smullyan, R. M., [MV] **mds**
Smythe, B., [ST] **sts**
Sneath, P. H. A., [MV] ***measure_option***
Snedecor, G. W., [PSS] **intro**, [R] **ameans**, [R] **anova**, [R] **correlate**, [R] **oneway**, [R] **ranksum**, [R] **signrank**
Snell, E. J., [R] **exlogistic**, [R] **expoisson**, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **streg postestimation**
Snow, J., [R] **epitab**
Snowden, C. B., [SVY] **svy bootstrap**, [SVY] **variance estimation**
Sobel, M. E., [SEM] **estat teffects**
Sobol, D. F., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Sokal, R. R., [MV] ***measure_option***
Solenberger, P., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute ologit**, [MI] **mi impute poisson**, [MI] **mi impute truncreg**
Soloaga, I., [R] **inequality**
Song, F., [R] **meta**
Song, S. H., [ME] **mixed**
Soon, T. W., [R] **qc**
Sörbom, D., [MV] **factor postestimation**, [SEM] **estat ginvariant**, [SEM] **estat mindices**, [SEM] **estat residuals**, [SEM] **estat scoretests**
Sorensen, D., [M-1] **LAPACK**, [M-5] **lapack( )**, [P] **matrix eigenvalues**
Sørensen, T. J., [MV] ***measure_option***
Sorrentino, R., [TS] **tsfilter**, [TS] **tsfilter bw**
Sosa-Escudero, W., [XT] **xtreg**, [XT] **xtreg postestimation**, [XT] **xtregar**
Sotoca, S., [TS] **sspace**
Sowell, F., [TS] **arfima**
Spanier, J., [FN] **Mathematical functions**, [FN] **Trigonometric functions**
Sparks, A. T., [SEM] **example 41g**
Späth, H., [MV] **cluster**
Spearman, C. E., [MV] **factor**, [R] **icc**, [R] **spearman**
Speed, F. M., [R] **margins**
Speed, T., [R] **diagnostic plots**
Spence, I., [G-2] **graph pie**
Sperling, R. I., [TS] **arch**, [TS] **arima**, [TS] **dfgls**, [TS] **wntestq**
Spiegel, D. C., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Spiegelhalter, D. J., [BAYES] **bayesstats ic**, [R] **brier**
Spieldman, R. S., [R] **symmetry**
Spiessens, B., [ME] **me**, [ME] **meqrlogit postestimation**
Spitzer, J. J., [R] **boxcox**

Spizzichino, F., [BAYES] **intro**
Sprent, P., [R] **ranksum**, [R] **signrank**
Sribney, W. M., [P] **matrix mkmat**, [PSS] **power trend**, [R] **orthog**, [R] **ranksum**, [R] **signrank**, [R] **stepwise**, [R] **test**, [SVY] **estat**, [SVY] **svy postestimation**, [SVY] **svy: tabulate twoway**, [SVY] **svydescribe**
Staelin, R., [R] **rologit**
Stahel, W. A., [D] **egen**
Stahl, D., [MV] **cluster**, [MV] **cluster stop**
Staiger, D. O., [R] **ivregress postestimation**
Stangl, D. K., [BAYES] **intro**
Starmer, C. F., [R] **vwls**
Startz, R., [R] **ivregress postestimation**, [TS] **mswitch**
Stefanski, L. A., [TE] **teffects aipw**
Stegun, I. A., [FN] **Mathematical functions**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [R] **contrast**, [R] **orthog**
Steichen, T. J., [D] **duplicates**, [R] **kappa**, [R] **kdensity**, [R] **sunflower**
Steiger, J. H., [R] **esize**
Steiger, W., [R] **qreg**
Stein, C., [R] **bootstrap**
Steinberg, L., [IRT] **irt grm**
Stephenson, D. B., [MV] **pca**, [R] **brier**
Stepniewska, K. A., [R] **nptrend**
Stern, H. S., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [MI] **intro substantive**, [MI] **mi impute mvn**, [MI] **mi impute regress**
Sterne, J. A. C., [MI] **intro**, [R] **dstdize**, [R] **meta**, [R] **summarize**, [ST] **stcox**
Stevens, E. H., [MV] **mvtest**
Stevenson, R. E., [R] **frontier**
Stewart, G. W., [M-5] **svd( )**, [P] **matrix svd**
Stewart, J., [ST] **ltable**
Stewart, M. B., [R] **intreg**, [R] **oprobit**, [R] **tobit**, [XT] **xtprobit**
Stigler, S. M., [R] **ameans**, [R] **ci**, [R] **correlate**, [R] **kwallis**, [R] **qreg**, [R] **regress**, [R] **summarize**
Stillman, S., [R] **ivregress**, [R] **ivregress postestimation**
Stine, R., [R] **bootstrap**
Stock, J. H., [I] **Glossary**, [R] **areg postestimation**, [R] **ivregress**, [R] **ivregress postestimation**, [TS] **time series**, [TS] **arch**, [TS] **dfactor**, [TS] **dfgls**, [TS] **irf create**, [TS] **rolling**, [TS] **sspace**, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**, [TS] **Glossary**, [XT] **xtcloglog**, [XT] **xthtaylor**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtstreg**
Stoll, B. J., [R] **epitab**
Stoll, L., [MI] **mi estimate**
Stolley, P. D., [R] **epitab**
Stone, M. H., [IRT] **irt**
Storer, B. E., [ST] **stcrreg**
Stork, D. G., [MV] **cluster**, [MV] **cluster stop**
Stoto, M. A., [R] **lv**
Stover, L., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Støvring, H., [M-2] **pointers**
Straathof, B., [D] **insobs**
Stram, D. O., [ME] **me**
Street, J. O., [R] **rreg**
Stroup, W. W., [ME] **me**
Stryhn, H., [R] **epitab**, [R] **regress**
Stuart, A., [R] **centile**, [R] **mean**, [R] **proportion**, [R] **qreg**, [R] **ratio**, [R] **summarize**, [R] **symmetry**, [R] **total**, [SVY] **survey**
Student, *see* Gosset, W. S.
Stuetzle, W., [R] **sunflower**
Sturdivant, R. X., [PSS] **intro**, [PSS] **power mcc**, [R] **clogit**, [R] **clogit postestimation**, [R] **estat classification**, [R] **estat gof**, [R] **glm**, [R] **lincom**, [R] **logistic**, [R] **logistic postestimation**, [R] **logit**, [R] **logit postestimation**, [R] **lroc**, [R] **lrtest**, [R] **lsens**, [R] **mlogit**, [R] **predictnl**, [R] **stepwise**, [SEM] **example 33g**, [SEM] **example 34g**, [XT] **xtgee**
Sturtz, S., [BAYES] **bayesmh**
Suárez, C., [R] **heckoprobit**, [R] **heckprobit**
Sued, M., [TE] **teffects intro advanced**
Suen, H. K., [R] **icc**
Sullivan, G., [P] **_robust**, [R] **regress**, [SVY] **svy: tabulate twoway**
Summers, G. F., [SEM] **example 9**
Summers, R., [XT] **xtunitroot**
Sun, W., [MI] **intro substantive**
Sussman, S., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Sutton, A. J., [R] **meta**
Svennerholm, A. M., [R] **epitab**
Swagel, P. L., [U] **21.6 Reference**
Swaminathan, H., [IRT] **irt**
Swamy, P. A. V. B., [XT] **xtivreg**, [XT] **xtrc**, [XT] **xtreg**
Swanson, S. A., [MI] **mi estimate**, [MI] **mi impute**, [XT] **xtgee**
Swed, F. S., [R] **runtest**
Sweeting, T. J., [ST] **streg**
Sweetman, O., [R] **gmm**, [R] **inequality**
Swensson, B., [SVY] **variance estimation**
Swets, J. A., [R] **lroc**
Sykes, R. C., [IRT] **irt 3pl**
Sylvester, J. J., [M-5] **svd( )**
Szroeter, J., [R] **regress postestimation**

## T

Tabachnick, B. G., [MV] **discrim**, [MV] **discrim lda**
Taka, M. T., [R] **pkcross**
Tamhane, A. C., [FN] **Statistical functions**, [PSS] **intro**, [PSS] **power onemean**, [R] **oneway**, [R] **ztest**
Tamminen, J., [BAYES] **intro**, [BAYES] **bayesmh**

Tan, S. B., [PSS] intro, [PSS] power logrank
Tan, S. H., [PSS] intro, [PSS] power logrank
Tan, W. Y., [P] _robust, [U] 20.25 References
Tan, Z., [TE] teffects intro advanced, [TE] teffects aipw
Tanimoto, T. T., [MV] *measure_option*
Taniuchi, T., [R] kdensity
Tanner, M. A., [BAYES] intro, [MI] intro substantive, [MI] mi impute mvn
Tanner, W. P., Jr., [R] lroc
Tanur, J. M., [R] kwallis
Tapia, R. A., [R] kdensity
Tarlov, A. R., [MV] alpha, [MV] factor, [MV] factor postestimation, [R] lincom, [R] mlogit, [R] mprobit, [R] mprobit postestimation, [R] predictnl, [R] slogit, [SEM] example 37g
Tarone, R. E., [R] epitab, [ST] sts test
Taub, A. J., [XT] xtreg
Tauchmann, H., [R] frontier, [R] heckman
Taylor, C., [R] gllamm, [R] glm, [XT] xtgee, [XT] xtreg
Taylor, H. M., [TS] mswitch
Taylor, J. M. G., [MI] intro substantive, [MI] mi impute, [MI] mi impute pmm, [MI] mi impute regress
Taylor, W. E., [XT] xthtaylor
Teller, A. H., [BAYES] intro, [BAYES] bayesmh
Teller, E., [BAYES] intro, [BAYES] bayesmh
ten Berge, J. M. F., [MV] procrustes
ter Bogt, T., [MV] mvtest
Teräsvirta, T., [TS] mgarch, [TS] mgarch ccc
Terza, J. V., [R] cpoisson, [TE] etpoisson
Teukolsky, S. A., [FN] Statistical functions, [G-2] graph twoway contour, [M-5] solvenl( ), [P] matrix symeigen, [R] dydx, [R] vwls, [TS] arch, [TS] arima
Thall, P. F., [ME] mepoisson, [ME] meqrpoisson
Thayer, D. T., [IRT] difmh
Theil, H., [R] ivregress, [R] reg3, [TS] prais
Therneau, T. M., [ME] mestreg, [ST] stcox, [ST] stcox PH-assumption tests, [ST] stcox postestimation, [ST] stcrreg
Thiele, T. N., [R] summarize
Thissen, D., [IRT] irt grm
Thomas, A., [BAYES] bayesmh
Thomas, D. C., [ST] sttocc
Thomas, D. G., [R] epitab
Thomas, D. R., [SVY] svy: tabulate twoway
Thompson, B., [MV] canon postestimation, [R] esize, [R] regress postestimation
Thompson, D. J., [TE] teffects intro advanced
Thompson, J., [BAYES] intro, [BAYES] bayes, [BAYES] bayesmh
Thompson, J. C., [R] diagnostic plots
Thompson, J. R., [R] kdensity, [R] poisson, [ST] stptime
Thompson, M. L., [R] rocreg
Thompson, S. G., [ME] me
Thompson, S. K., [BAYES] intro, [SVY] survey
Thompson, W. A., Jr., [ME] me, [ME] mixed
Thoms, J., [BAYES] bayesmh
Thomson, G. H., [I] Glossary, [MV] factor postestimation, [MV] Glossary
Thorndike, F., [R] poisson
Thurstone, L. L., [MV] rotate, [R] rologit
Tibshirani, R. J., [MV] discrim knn, [R] bootstrap, [R] qreg
Tidmarsh, C. E., [R] fp
Tierney, L., [BAYES] intro, [ME] me, [ME] meqrlogit, [ME] meqrpoisson
Tilford, J. M., [R] estat gof, [R] lroc
Tilling, K., [ME] meqrlogit, [ME] meqrpoisson, [ME] mixed, [ST] stcox
Timm, N. H., [MV] manova
Ting Lee, M.-L., [ST] stcox PH-assumption tests
Tippett, L. H. C., [ST] streg
Tobías, A., [MV] alpha, [R] lrtest, [R] poisson, [R] roccomp, [R] roctab, [R] sdtest, [ST] streg
Tobin, J., [R] tobit
Toeplitz, O., [M-5] Toeplitz( )
Toman, R. J., [R] stepwise
Tong, H., [R] estat ic
Toplis, P. J., [R] binreg
Torgerson, W. S., [MV] mds, [MV] mdslong, [MV] mdsmat
Tosetto, A., [R] logistic, [R] logit
Toulopoulou, T., [ME] mecloglog, [ME] melogit, [ME] meprobit, [ME] meqrlogit
Touloumi, G., [ME] meglm, [ME] mixed
Townes, J. M., [D] icd10
Train, G. F., [SVY] survey, [SVY] svy sdr, [SVY] variance estimation
Train, K. E., [R] asmprobit
Tramarin, A., [R] betareg
Trampe, B., [R] mlexp
Trapido, E., [R] exlogistic
Trefethen, L. N., [M-5] svd( )
Treiman, D. J., [R] eivreg, [R] mlogit
Trewn, J., [MV] mds
Trichopoulos, D., [R] epitab
Trimbur, T. M., [TS] psdensity, [TS] tsfilter, [TS] tsfilter hp, [TS] ucm
Trivedi, P. K., [ME] meglm, [ME] mixed, [R] asclogit, [R] asmprobit, [R] betareg, [R] bootstrap, [R] cpoisson, [R] gmm, [R] heckman, [R] heckoprobit, [R] intreg, [R] ivpoisson, [R] ivregress, [R] ivregress postestimation, [R] logit, [R] mprobit, [R] nbreg, [R] ologit, [R] oprobit, [R] poisson, [R] probit, [R] qreg, [R] regress, [R] regress postestimation, [R] simulate, [R] sureg, [R] tnbreg, [R] tobit, [R] tpoisson, [R] zinb postestimation, [R] zip postestimation, [TE] etregress, [TE] stteffects intro, [TE] stteffects ipw, [TE] stteffects ipwra, [TE] stteffects postestimation, [TE] stteffects ra, [TE] stteffects wra, [TE] teffects intro advanced, [TE] teffects aipw, [TE] teffects ra,

Trivedi, P. K., *continued*
[TS] **forecast estimates**, [XT] **xt**, [XT] **xtnbreg**, [XT] **xtpoisson**
Tsay, R. S., [TS] **varsoc**, [TS] **vec intro**
Tse, Y. K., [TS] **mgarch**, [TS] **mgarch vcc**
Tsiatis, A. A., [R] **exlogistic**, [ST] **stcrreg**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [TE] **teffects aipw**
Tsui, A. K. C., [TS] **mgarch**, [TS] **mgarch vcc**
Tu, D., [SVY] **survey**, [SVY] **svy jackknife**, [SVY] **variance estimation**
Tufte, E. R., [G-2] **graph bar**, [G-2] **graph pie**, [R] **stem**
Tukey, J. W., [D] **egen**, [G-2] **graph box**, [G-2] **graph matrix**, [P] **if**, [R] **jackknife**, [R] **ladder**, [R] **linktest**, [R] **lv**, [R] **pwcompare**, [R] **regress**, [R] **regress postestimation diagnostic plots**, [R] **rreg**, [R] **smooth**, [R] **spikeplot**, [R] **stem**, [SVY] **svy jackknife**
Tukey, P. A., [G-2] **graph box**, [G-2] **graph matrix**, [G-3] ***by_option***, [R] **diagnostic plots**, [R] **lowess**, [U] **1.4 References**
Turner, R. M., [ME] **me**
Tutz, G., [ME] **me**
Twisk, J. W. R., [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtreg**
Tyler, D. E., [MV] **pca**
Tyler, J. H., [R] **regress**
Tzavalis, E., [XT] **xtunitroot**

## U

Uebersax, J. S., [R] **tetrachoric**
Uhlendorff, A., [R] **asmprobit**, [R] **mlogit**, [R] **mprobit**
Uhlig, H., [TS] **tsfilter**, [TS] **tsfilter hp**
Ulam, S., [BAYES] **intro**
Ulene, A. L., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
University Group Diabetes Program, [R] **epitab**
Upton, G. J. G., [U] **1.4 References**
Upward, R., [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [XT] **xtreg**
Ureta, M., [XT] **xtreg**
Uthoff, V. A., [PSS] **power cox**
Utts, J. M., [R] **ci**

## V

Vach, W., [ST] **stcrreg**
Væth, M., [PSS] **intro**, [PSS] **power cox**
Vail, S. C., [ME] **mepoisson**, [ME] **meqrpoisson**
Vallejo, G., [ME] **mixed**
Valliant, R., [SVY] **survey**
Valman, H. B., [R] **fp**
Valsecchi, M. G., [PSS] **intro**, [PSS] **power logrank**, [ST] **stcrreg**, [ST] **sts test**
van Belle, G., [MV] **factor**, [MV] **pca**, [PSS] **intro**, [PSS] **power twomeans**, [PSS] **power oneway**, [PSS] **power twoway**, [R] **anova**, [R] **dstdize**, [R] **oneway**
van Buuren, S., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute ologit**, [MI] **mi impute poisson**
Van de Ven, W. P. M. M., [R] **biprobit**, [R] **heckoprobit**, [R] **heckprobit**
van den Broeck, J., [R] **frontier**, [XT] **xtfrontier**
van der Ende, J., [MV] **mvtest**
Van der Heijden, P. G. M., [MV] **ca postestimation**
van der Laan, M. J., [TE] **teffects intro advanced**
Van Der Linde, A., [BAYES] **bayesstats ic**
van der Linden, W. J., [IRT] **irt**, [SEM] **example 28g**, [SEM] **example 29g**
Van der Merwe, C. A., [MV] **mvtest**, [MV] **mvtest means**
Van der Reyden, D., [R] **ranksum**
van der Vaart, A. W., [TE] **teffects aipw**
van Doorslaer, E., [SVY] **svy estimation**, [SVY] **svyset**
van Dorsselaer, S., [MV] **mvtest**
Van Hoewyk, J., [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute ologit**, [MI] **mi impute poisson**, [MI] **mi impute truncreg**
Van Kerm, P., [MV] **ca**, [P] **postfile**, [R] **inequality**, [R] **kdensity**
Van Loan, C. F., [R] **orthog**, [R] **tetrachoric**, [TS] **arfima**, [TS] **arfima postestimation**
Van Mechelen, I., [MI] **intro substantive**, [MI] **mi impute**
Van Pragg, B. M. S., [R] **biprobit**, [R] **heckoprobit**, [R] **heckprobit**
Vandermonde, A.-T., [M-5] **Vandermonde( )**
Varadharajan-Krishnakumar, J., [XT] **xtivreg**
Vehtari, A., [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [MI] **intro substantive**, [MI] **mi impute mvn**, [MI] **mi impute regress**
Vella, F., [ME] **me**, [TE] **etregress**
Velleman, P. F., [R] **regress postestimation**, [R] **smooth**
Venables, W., [R] **esize**
Verardi, V., [R] **correlate**, [R] **fp**, [R] **ivregress**, [R] **lpoly**, [R] **rreg**, [XT] **xtreg**
Verbeek, M., [ME] **me**, [TE] **etregress**
Verbeke, G., [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **mixed**, [MI] **intro substantive**, [MI] **mi impute**, [XT] **xtreg postestimation**
Verdinelli, I., [BAYES] **intro**

Verdurmen, J., [MV] **mvtest**
Verkuilen, J., [R] **betareg**
Vetterling, W. T., [FN] **Statistical functions**, [G-2] **graph twoway contour**, [M-5] **solvenl( )**, [P] **matrix symeigen**, [R] **dydx**, [R] **vwls**, [TS] **arch**, [TS] **arima**
Vick, R., [R] **mlexp**
Vidakovic, B., [BAYES] **intro**
Vidmar, S., [R] **ameans**, [R] **epitab**
Vigfusson, R. J., [TS] **forecast solve**
Vinten-Johansen, P., [R] **epitab**
Vittinghoff, E., [R] **logistic**, [ST] **stcox**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**
Vohr, B. R., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Vollebergh, W. A. M., [MV] **mvtest**
von Bortkiewicz, L., [R] **poisson**
von Eye, A., [R] **correlate**
von Neumann, J., [BAYES] **intro**
Von Storch, H., [R] **brier**
Vondráček, J., [R] **correlate**
Vuong, Q. H., [R] **ivprobit**, [R] **zinb**, [R] **zip**

## W

Wacholder, S., [R] **binreg**
Wagner, H. M., [R] **qreg**
Wagner, M., [XT] **xtunitroot**
Wagner, T., [MV] **mvtest**
Wagstaff, A., [SVY] **svy estimation**, [SVY] **svyset**
Wagstaff, D. A., [MI] **mi estimate**
Wainer, H., [G-2] **graph pie**, [IRT] **difmh**
Wald, A., [TS] **varwle**
Walker, A. J., [FN] **Random-number functions**, [M-5] **runiform( )**
Walker, A. M., [R] **epitab**
Walker, S., [ST] **sts test**
Wallgren, A., [G-1] **graph intro**
Wallgren, B., [G-1] **graph intro**
Wallis, W. A., [R] **kwallis**
Walstrum, T., [TE] **etregress**
Walters, S. J., [R] **ci**, [R] **kappa**, [R] **tabulate twoway**
Wand, M. P., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **mixed**, [R] **kdensity**
Wang, D., [D] **duplicates**, [R] **ci**, [R] **dstdize**, [R] **prtest**
Wang, H., [PSS] **intro**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power exponential**
Wang, H.-J., [R] **frontier**, [XT] **xtfrontier**
Wang, J.-L., [ST] **sts graph**
Wang, J. W., [ST] **streg**
Wang, Q., [R] **ivregress**, [TS] **arima**, [TS] **newey**
Wang, Y., [R] **asmprobit**
Wang, Z., [R] **epitab**, [R] **logistic postestimation**, [R] **lrtest**, [R] **stepwise**
Ward, J. H., Jr., [MV] **cluster**, [MV] **cluster linkage**
Ware, J. H., [ME] **me**, [ME] **meglm**, [ME] **melogit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [ST] **sts test**
Ware, J. E., Jr., [MV] **alpha**, [MV] **factor**, [MV] **factor postestimation**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**, [SEM] **example 37g**
Warren, K., [R] **epitab**
Waterson, E. J., [R] **binreg**
Watson, G. S., [I] **Glossary**, [R] **lpoly**, [R] **regress postestimation time series**, [TS] **prais**, [TS] **Glossary**
Watson, M. W., [R] **areg postestimation**, [R] **ivregress**, [TS] **time series**, [TS] **arch**, [TS] **dfactor**, [TS] **dfgls**, [TS] **irf create**, [TS] **rolling**, [TS] **sspace**, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **vec intro**, [TS] **vec**, [TS] **vecrank**, [XT] **xtcloglog**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtstreg**
Weber, S., [R] **correlate**
Webster, A. D., [R] **fp**
Wedderburn, R. W. M., [R] **glm**, [XT] **xtgee**
Weeks, D. G., [I] **Glossary**, [SEM] **estat framework**
Weesie, J., [D] **generate**, [D] **joinby**, [D] **label**, [D] **label language**, [D] **labelbook**, [D] **list**, [D] **merge**, [D] **mvencode**, [D] **order**, [D] **recode**, [D] **rename**, [D] **reshape**, [D] **sample**, [MV] **alpha**, [MV] **ca postestimation**, [MV] **pca**, [P] **matrix define**, [R] **constraint**, [R] **hausman**, [R] **ladder**, [R] **reg3**, [R] **regress**, [R] **regress postestimation**, [R] **rologit**, [R] **simulate**, [R] **suest**, [R] **sureg**, [R] **tabstat**, [R] **tabulate twoway**, [R] **test**, [R] **tetrachoric**, [SEM] **Acknowledgments**, [ST] **stsplit**, [U] **20.25 References**
Wei, L., [ME] **mixed**
Wei, L. J., [P] **_robust**, [ST] **stcox**, [ST] **stcrreg**, [SVY] **svy estimation**, [U] **20.25 References**
Wei, W. W. S., [I] **Glossary**, [TS] **psdensity**, [TS] **tsfilter**, [TS] **ucm**, [TS] **Glossary**
Weibull, W., [ST] **streg**
Weisberg, H. F., [R] **summarize**
Weisberg, S., [R] **boxcox**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation**
Weiss, J., [MV] **mdsmat**
Weiss, M., [D] **ds**, [D] **egen**, [G-3] ***by_option***, [R] **estimates table**, [U] **13.13 References**
Weisstein, E. W., [R] **rocreg postestimation**
Welch, B. L., [R] **esize**, [R] **ttest**
Welch, K. B., [ME] **mixed**, [ME] **mixed postestimation**
Welch, P. D., [BAYES] **intro**
Weller, S. C., [MV] **ca**
Wellington, J. F., [R] **qreg**

Wells, K. B., [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**
Welsch, R. E., [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [U] **18.14 References**
Welsh, A. H., [R] **bootstrap**
Welsh, D., [M-5] **halton( )**
Wernow, J. B., [D] **destring**
West, B. T., [ME] **mixed**, [ME] **mixed postestimation**, [SVY] **survey**, [SVY] **estat**, [SVY] **subpopulation estimation**
West, K. D., [R] **glm**, [R] **gmm**, [R] **ivregress**, [TS] **newey**, [TS] **pperron**, [XT] **xtunitroot**
West, M., [BAYES] **intro**
West, S., [R] **epitab**
West, S. G., [R] **pcorr**
Westfall, R. S., [M-5] **optimize( )**
Westlake, W. J., [R] **pkequiv**
Weyl, H. K. H., [M-5] **svd( )**
Wheaton, B., [SEM] **example 9**
Whelton, P. K., [PSS] **intro**, [PSS] **power repeated**
White, H., [U] **20.21.2 Correlated errors: Cluster–robust standard errors**
White, H. L., Jr., [P] **_robust**, [R] **regress**, [R] **regress postestimation**, [R] **rocreg**, [R] **suest**, [TS] **newey**, [TS] **prais**, [U] **20.25 References**, [XT] **xtivreg**
White, I. R., [MI] **intro substantive**, [MI] **intro**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**, [MI] **mi impute pmm**, [MI] **mi predict**, [R] **meta**, [R] **simulate**, [ST] **sts test**
White, K. J., [R] **boxcox**, [R] **regress postestimation time series**
White, P. O., [I] **Glossary**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Whitehead, A., [XT] **xtunitroot**
Whitehouse, E., [R] **inequality**
Whitemore, G. A., [ST] **stcox PH-assumption tests**
Whitfield, J. W., [R] **ranksum**
Whiting, P., [ME] **melogit**, [ME] **meoprobit**, [ME] **meqrlogit**, [R] **roccomp**, [R] **roctab**
Whitney, D. R., [R] **kwallis**, [R] **ranksum**
Whitney-Saltiel, D. A., [ME] **me**, [ME] **meglm**, [ME] **meologit**, [ME] **meoprobit**, [XT] **xtologit**, [XT] **xtoprobit**
Whittaker, J. C., [FN] **Random-number functions**, [MV] **ca**, [MV] **factor**, [MV] **mca**, [MV] **pca**
Wichern, D. W., [MV] **canon**, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **mvtest**, [MV] **mvtest correlations**, [MV] **mvtest covariances**, [MV] **mvtest means**
Wichura, M. J., [FN] **Random-number functions**
Wickramaratne, P. J., [PSS] **intro**
Widen, J. E., [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
Wieand, S., [R] **rocreg**, [R] **rocreg postestimation**
Wiesner, R. H., [ST] **stcrreg**
Wiggins, V. L., [G-3] ***axis_choice_options***, [ME] **mixed**, [R] **regress postestimation**, [R] **regress postestimation time series**, [SEM] **sem**, [TS] **arch**, [TS] **arima**, [TS] **sspace**
Wikle, C. K., [BAYES] **intro**
Wilcox, D. W., [R] **ivregress postestimation**
Wilcox, R. R., [D] **egen**
Wilcoxon, F., [R] **kwallis**, [R] **ranksum**, [R] **signrank**, [ST] **sts test**
Wilde, J., [R] **gmm**
Wilk, M. B., [R] **cumul**, [R] **diagnostic plots**, [R] **swilk**
Wilkinson, J. H., [P] **matrix symeigen**
Wilkinson, L., [ST] **sts**
Wilks, D. S., [R] **brier**
Wilks, S. S., [MV] **canon**, [MV] **hotelling**, [MV] **manova**
Williams, B., [SVY] **survey**
Williams, B. K., [MV] **discrim lda**
Williams, G. W., [PSS] **intro**
Williams, R., [R] **glm**, [R] **margins**, [R] **marginsplot**, [R] **ologit**, [R] **oprobit**, [R] **pcorr**, [R] **stepwise**, [U] **20.25 References**
Williams, T. O., Jr., [SEM] **example 2**
Williams, W. T., [MV] **cluster**
Wilson, D. B., [BAYES] **intro**
Wilson, E. B., [MV] **mvtest normality**, [R] **ci**
Wilson, M., [IRT] **irt**, [IRT] **Control Panel**, [IRT] **difmh**, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt hybrid**, [ME] **me**, [MV] **rotate**
Wilson, S. R., [R] **bootstrap**
Windmeijer, F., [R] **gmm**, [R] **ivpoisson**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
Winer, B. J., [ME] **mixed**, [PSS] **intro**, [PSS] **power repeated**, [R] **anova**, [R] **contrast**, [R] **loneway**, [R] **oneway**, [R] **pwcompare**
Winkelmann, R., [ME] **menbreg**, [R] **cpoisson**
Winsten, C. B., [TS] **prais**
Winter, N. J. G., [G-2] **graph twoway scatter**, [P] **levelsof**, [SVY] **survey**
Winters, P. R., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Wish, M., [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**
Wittes, J., [PSS] **intro**
Wolfe, F., [D] **ds**, [R] **correlate**, [R] **spearman**
Wolfe, R., [R] **ologit**, [R] **oprobit**, [R] **tabulate twoway**
Wolfinger, R. D., [ME] **me**
Wolfowitz, J., [TS] **varwle**
Wolfram, S., [ME] **meglm postestimation**, [ME] **meqrlogit postestimation**, [ST] **streg**
Wolfson, C., [R] **kappa**
Wolk, A., [R] **epitab**
Wolkewitz, M., [D] **icd10**
Wolpert, R. L., [BAYES] **intro**, [BAYES] **intro**

Wolpin, K. I., [R] **asmprobit**
Wolter, K. M., [SVY] **survey**, [SVY] **svy brr**, [SVY] **variance estimation**
Wong, S. P., [R] **icc**
Wong, W. H., [BAYES] **intro**, [MI] **intro substantive**, [MI] **mi impute mvn**
Wood, A. M., [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi predict**
Wood, F. S., [R] **diagnostic plots**
Woodard, D. E., [MV] **manova**, [R] **contrast**
Woodward, M., [R] **epitab**
Wooldridge, J. M., [R] **areg postestimation**, [R] **churdle**, [R] **fracreg**, [R] **gmm**, [R] **heckoprobit**, [R] **intreg**, [R] **ivpoisson**, [R] **ivprobit**, [R] **ivregress**, [R] **ivregress postestimation**, [R] **ivtobit**, [R] **margins**, [R] **margins, contrast**, [R] **qreg**, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation time series**, [R] **tobit**, [SEM] **estat ginvariant**, [SEM] **estat mindices**, [SEM] **estat scoretests**, [SEM] **methods and formulas for sem**, [TE] **eteffects**, [TE] **etregress**, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects postestimation**, [TE] **stteffects ra**, [TE] **stteffects wra**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects multivalued**, [TE] **teffects ra**, [TS] **arch**, [TS] **mgarch**, [TS] **mgarch dvech**, [TS] **prais**, [XT] **xt**, [XT] **xtcloglog**, [XT] **xtivreg**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtstreg**
Woolf, B., [R] **epitab**
Woolson, R. F., [PSS] **power cmh**
Working, H., [R] **roccomp**, [R] **rocfit**, [R] **roctab**
World Health Organization, [D] **icd**, [D] **icd10**
World Health Organization Mortality Data Base (Cause of Death Query online; accessed December 11, 2014), [D] **icd10**
Wretman, J., [SVY] **variance estimation**
Wright, B. D., [IRT] **irt**
Wright, D. B., [SEM] **example 41g**
Wright, J. H., [R] **ivregress**, [R] **ivregress postestimation**, [XT] **xthtaylor**
Wright, J. T., [R] **binreg**
Wright, J. T., Jr, [PSS] **intro**, [PSS] **power repeated**
Wright, P. G., [R] **ivregress**
Wu, A. W., [IRT] **irt**
Wu, C. F. J., [R] **qreg**, [SVY] **svy bootstrap**, [SVY] **variance estimation**
Wu, D.-M., [R] **ivregress postestimation**
Wu, N., [R] **ivregress**, [TS] **arima**, [TS] **newey**
Wu, P. X., [XT] **xtregar**
Wu, S., [XT] **xtunitroot**
Wynn, A. H. A., [BAYES] **bayesmh**

## X

Xiao, T., [ST] **stcox PH-assumption tests**
Xie, Y., [R] **logit**, [R] **probit**
Xu, J., [R] **cloglog**, [R] **fracreg**, [R] **logistic**, [R] **logit**, [R] **mlogit**, [R] **ologit**, [R] **oprobit**, [R] **probit**

## Y

Yang, K., [MV] **mds**
Yang, M., [ME] **me**
Yang, Z., [R] **poisson**
Yar, M., [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**
Yates, F., [P] **levelsof**
Yates, J. F., [R] **brier**
Yee, T. W., [R] **slogit**
Yellott, J. I., Jr., [R] **rologit**
Yen, S., [R] **epitab**
Yen, W. M., [IRT] **irt 3pl**, [MV] **alpha**
Yeo, D., [SVY] **svy bootstrap**, [SVY] **variance estimation**
Yogo, M., [R] **ivregress**, [R] **ivregress postestimation**, [XT] **xthtaylor**
Yoshioka, H., [R] **logistic postestimation**, [R] **logit postestimation**
Young, F. W., [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**
Young, G., [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**
Ypma, T. J., [M-5] **optimize( )**
Yu, B., [BAYES] **intro**, [BAYES] **bayesgraph**
Yu, J., [MV] **mvtest**, [MV] **mvtest means**
Yue, K., [SVY] **svy bootstrap**, [SVY] **variance estimation**
Yule, G. U., [MV] ***measure_option***
Yun, M.-S., [R] **logistic postestimation**, [R] **logit postestimation**
Yung, W., [SVY] **svy bootstrap**, [SVY] **variance estimation**
Yusuf, S., [BAYES] **bayesmh**

## Z

Zabell, S. L., [R] **kwallis**
Zakoian, J. M., [TS] **arch**
Zamora, M., [R] **heckoprobit**, [R] **heckprobit**
Zappasodi, P., [MV] **manova**
Zavoina, W., [R] **ologit**
Zeger, S. L., [BAYES] **bayesmh**, [ME] **me**, [ME] **meglm**, [ME] **mixed**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtnbreg**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**
Zeh, J., [D] **egen**
Zelen, M., [R] **ttest**, [R] **ztest**
Zell, E. R., [D] **icd10**
Zellner, A., [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [R] **frontier**, [R] **nlsur**, [R] **reg3**, [R] **sureg**, [TS] **prais**, [XT] **xtfrontier**

Zelterman, D., [R] **tabulate twoway**
Zeng, D., [TS] **mswitch**
Zhang, Z., [SEM] **example 42g**
Zhao, H., [ME] **mecloglog**, [ME] **melogit**, [ME] **meprobit**
Zhao, L. P., [TE] **stteffects ipwra**, [TE] **teffects intro advanced**, [XT] **xtgee**
Zheng, X., [IRT] **irt**, [IRT] **irt grm**, [IRT] **irt rsm**, [R] **gllamm**
Zimmerman, F., [R] **regress**
Zirkler, B., [MV] **mvtest**, [MV] **mvtest normality**
Zubin, J., [MV] ***measure_option***
Zubkoff, M., [MV] **alpha**, [MV] **factor**, [MV] **factor postestimation**, [R] **lincom**, [R] **mlogit**, [R] **mprobit**, [R] **mprobit postestimation**, [R] **predictnl**, [R] **slogit**, [SEM] **example 37g**
Zucchini, W., [R] **rocreg**
Zwiers, F. W., [R] **brier**
Zyphur, M. J., [SEM] **example 42g**

# Subject index

## Symbols


! (not), *see* logical operators
!= (not equal), *see* relational operators
$\alpha$, [PSS] **Glossary**
$\beta$, [PSS] **Glossary**
$\delta$, [PSS] **Glossary**
& (and), *see* logical operators
* abbreviation character, *see* abbreviations
*, `clear` subcommand, [D] **clear**
* comment indicator, [P] **comments**
- abbreviation character, *see* abbreviations
-> operator, [M-2] **struct**
., class, [P] **class**
/* */ comment delimiter, [M-2] **comments**, [P] **comments**
// comment indicator, [M-2] **comments**, [P] **comments**
/// comment indicator, [P] **comments**
; delimiter, [P] **#delimit**
< (less than), *see* relational operators
<= (less than or equal), *see* relational operators
== (equality), *see* relational operators
> (greater than), *see* relational operators
>= (greater than or equal), *see* relational operators
? abbreviation characters, *see* abbreviations
| (or), *see* logical operators
~ (not), *see* logical operators
~ abbreviation character, *see* abbreviations
~= (not equal), *see* relational operators
100% sample, [SVY] **Glossary**
1:$M$ matched design, [PSS] **power mcc**, [PSS] **Glossary**
1PL, *see* one-parameter logistic model
`1pl`, `irt` subcommand, [IRT] **irt 1pl**, [IRT] **irt 1pl postestimation**
$2\times2\times K$ contingency table, [PSS] **Glossary**
$2\times2$ contingency table, [PSS] **Glossary**
2PL, *see* two-parameter logistic model
`2pl`, `irt` subcommand, [IRT] **irt 2pl**, [IRT] **irt 2pl postestimation**
3PL, *see* three-parameter logistic model
`3pl`, `irt` subcommand, [IRT] **irt 3pl**, [IRT] **irt 3pl postestimation**


## A


`.a`, `.b`, `...`, `.z`, *see* missing values
a posteriori, [BAYES] **Glossary**
a priori, [BAYES] **Glossary**
Aalen–Nelson cumulative hazard, *see* Nelson–Aalen cumulative hazard
Abadie–Imbens robust standard errors, *see* robust, Abadie–Imbens standard errors
`abbrev()` function, [FN] **String functions**, [M-5] **abbrev( )**
abbreviations, [U] **11.1.1 varlist**, [U] **11.2 Abbreviation rules**, [U] **11.4 varlists**
  unabbreviating command names, [P] **unabcmd**
  unabbreviating variable list, [P] **syntax**, [P] **unab**
ability, [IRT] **Glossary**
`abond`, `estat` subcommand, [XT] **xtabond postestimation**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys postestimation**
aborting command execution, [U] **9 The Break key**, [U] **10 Keyboard use**
`about` command, [R] **about**
`abs()` function, [FN] **Mathematical functions**, [M-5] **abs( )**
absolute value
  dissimilarity measure, [MV] ***measure_option***
  function, *see* `abs()` function
absorption in regression, [R] **areg**
`ac` command, [TS] **corrgram**
accelerated failure-time model, [ST] **streg**, [ST] **Glossary**
acceptance
  rate, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
  region, [PSS] **Glossary**
Access, Microsoft, reading data from, [D] **odbc**, [U] **21.4 Transfer programs**
accrual period, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **Glossary**
`accum`, `matrix` subcommand, [P] **matrix accum**
`acos()` function, [FN] **Trigonometric functions**, [M-5] **sin( )**
`acosh()` function, [FN] **Trigonometric functions**, [M-5] **sin( )**
`acplot`, `estat` subcommand, [TS] **estat acplot**
`acprplot` command, [R] **regress postestimation diagnostic plots**
actual
  alpha, [PSS] **Glossary**, *also see* significance level
  power, *see* power
  sample size, *see* sample-size
  significance level, [PSS] **Glossary**, *also see* significance level
actuarial tables, *see* life tables
adaptation, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **Glossary**
  period, [BAYES] **bayesmh**, [BAYES] **Glossary**
adaptive iteration, [BAYES] **bayesmh**, [BAYES] **Glossary**
`adaptopt()` option, *see* `gsem` option `adaptopts()`
`add`,
  `irf` subcommand, [TS] **irf add**
  `mi` subcommand, [MI] **mi add**
  `return` subcommand, [P] **return**
add factor, [TS] **Glossary**
added lines, $y=x$, [G-2] **graph twoway function**
*addedlinestyle*, [G-4] ***addedlinestyle***
added-variable plots, [G-2] **graph other**, [R] **regress postestimation diagnostic plots**

addgroup, ssd subcommand, [SEM] ssd
adding
  fits, see fits, adding
  lines, see lines, adding
  text, see text, adding
addition across
  observations, [D] egen
  variables, [D] egen
addition operator, see arithmetic operators
addplot() option, [G-3] addplot_option
ADF, see asymptotic distribution free
adf, see sem option method()
adjoint matrix, [M-2] op_transpose, [M-5] conj()
adjugate matrix, [M-2] op_transpose, [M-5] conj()
adjust, forecast subcommand, [TS] forecast adjust
adjusted
  Kaplan–Meier survivor function, [ST] sts
  margins, [R] margins, [R] marginsplot
  means, [R] contrast, [R] margins, [R] marginsplot
  partial residual plot, [R] regress postestimation diagnostic plots
administrative censoring, [PSS] power cox, [PSS] power exponential, [PSS] power logrank, [PSS] Glossary
ado
  command, [R] net
  describe command, [R] net
  dir command, [R] net
  uninstall command, [R] net
ado_d, view subcommand, [R] view
.ado file, [U] 11.6 Filenaming conventions
ado,
  clear subcommand, [D] clear
  view subcommand, [R] view
ado-files, [M-1] ado, [P] sysdir, [P] version, [U] 3.4 The Stata Journal, [U] 17 Ado-files, [U] 18.11 Ado-files
  adding comments to, [P] comments
  debugging, [P] trace
  downloading, see files, downloading
  editing, [R] doedit
  installing, [R] net, [R] sj, [R] ssc, [U] 17.6 How do I install an addition?
  location, [U] 17.5 Where does Stata look for ado-files?
  location of, [R] which
  long lines, [P] #delimit, [U] 18.11.2 Comments and long lines in ado-files
  official, [R] update, [U] 28 Using the Internet to keep up to date
  searching for, [R] search, [R] ssc
  updating user-written, [R] adoupdate
adopath
  + command, [P] sysdir
  ++ command, [P] sysdir
  - command, [P] sysdir
  command, [P] sysdir, [U] 17.5 Where does Stata look for ado-files?
ado-path, [M-5] adosubdir()
adosize, set subcommand, [P] sysdir, [R] set, [U] 18.11 Ado-files
adosubdir macro extended function, [P] macro
adosubdir() function, [M-5] adosubdir()
adoupdate command, [R] adoupdate
AFT, see accelerated failure-time model
agglomerative hierarchical clustering methods, [MV] cluster, [MV] clustermat, [MV] cluster linkage, [MV] Glossary
aggregate
  functions, [D] egen
  statistics, dataset of, [D] collapse
agreement, interrater, [R] kappa
AIC, see Akaike information criterion
AIPW, see augmented inverse-probability weighting
aipw, teffects subcommand, [TE] teffects aipw
Akaike information criterion, [BAYES] bayesstats ic, [BAYES] Glossary, [R] BIC note, [R] estat, [R] estat ic, [R] estimates stats, [R] glm, [R] lrtest, [SEM] estat gof, [SEM] example 4, [SEM] methods and formulas for sem, [ST] streg
algebraic expressions, functions, and operators, [P] matrix define, [U] 13 Functions and expressions
alignment of text, [G-3] textbox_options
alignmentstyle, [G-4] alignmentstyle
_all, [U] 11.1.1 varlist
all,
  clear subcommand, [D] clear
  update subcommand, [R] update
all() function, [M-5] all()
all macro extended function, [P] macro
allmissing option, see sem option allmissing
allocation ratio, [PSS] power twomeans, [PSS] power twoproportions, [PSS] power twovariances, [PSS] power twocorrelations, [PSS] power cmh, [PSS] power exponential, [PSS] power logrank, [PSS] unbalanced designs, [PSS] Glossary
allof() function, [M-5] all()
alpha, see α
alpha coefficient, Cronbach's, [MV] alpha
alpha command, [MV] alpha
alphabetizing
  observations, [D] gsort, [D] sort
  variable names, [D] order
  variables, [D] sort
alphanumeric variables, see string variables, parsing, see string variables
alternative
  correlation, [PSS] power, [PSS] power onecorrelation
  hypothesis, [PSS] Glossary, also see null hypothesis and alternative hypothesis
  mean, [PSS] power, [PSS] power onemean, [PSS] unbalanced designs

alternative, *continued*
mean difference, [PSS] **power**, [PSS] **power pairedmeans**
parameter, [PSS] **Glossary**, *also see* alternative value
proportion, [PSS] **power**, [PSS] **power oneproportion**
scenarios, [TS] **forecast**, [TS] **forecast adjust**, [TS] **forecast clear**, [TS] **forecast coefvector**, [TS] **forecast create**, [TS] **forecast describe**, [TS] **forecast drop**, [TS] **forecast estimates**, [TS] **forecast exogenous**, [TS] **forecast identity**, [TS] **forecast list**, [TS] **forecast query**, [TS] **forecast solve**
standard deviation, [PSS] **power**, [PSS] **power onevariance**
value, [PSS] **Glossary**, *also see* postulated value
variance, [PSS] **power**, [PSS] **power onevariance**
`alternatives`, `estat` subcommand, [R] **asclogit postestimation**, [R] **asmprobit postestimation**, [R] **asroprobit postestimation**, [R] **nlogit postestimation**
alternative-specific
conditional logit (McFadden's choice) model, [R] **asclogit**
multinomial probit regression, [R] **asmprobit**
rank-ordered probit regression, [R] **asroprobit**
`ameans` command, [R] **ameans**
American Standard Code for Information Interchange, *see* ASCII
analysis of covariance, [R] **anova**
analysis of variance, [PSS] **power**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **Glossary**, [R] **anova**, [R] **contrast**, [R] **icc**, [R] **loneway**, [R] **oneway**
Kruskal–Wallis, [R] **kwallis**
plots, [R] **marginsplot**
repeated measures, [PSS] **power repeated**, [R] **anova**
analysis step, [MI] **intro substantive**, [MI] **mi estimate**, *also see* estimation
analysis time, [ST] **Glossary**, [TE] **Glossary**
analysis-of-variance test of normality, [R] **swilk**
analytic weight, [U] **11.1.6 weight**, [U] **20.23.2 Analytic weights**
anchoring, *see* constraints, normalization
ANCOVA, *see* analysis of covariance
and operator, [U] **13.2.4 Logical operators**
Anderberg coefficient similarity measure, [MV] ***measure_option***
angle of text, [G-4] ***anglestyle***
*anglestyle*, [G-4] ***anglestyle***
angular similarity measure, [MV] ***measure_option***
ANOVA, *see* analysis of variance
`anova` command, [R] **anova**, [R] **anova postestimation**
ANOVA DDF, *see* denominator degrees of freedom, ANOVA
`anova`, `estat` subcommand, [MV] **discrim lda postestimation**
Anscombe residual, [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mestreg postestimation**
`anti`, `estat` subcommand, [MV] **factor postestimation**, [MV] **pca postestimation**
anti-image
correlation matrix, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **Glossary**
covariance matrix, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **Glossary**
`any()` function, [M-5] **all( )**
`anycount()`, `egen` function, [D] **egen**
`anymatch()`, `egen` function, [D] **egen**
`anyof()` function, [M-5] **all( )**
`anyvalue()`, `egen` function, [D] **egen**
A-PARCH, *see* asymmetric power autoregressive conditional heteroskedasticity
`append` command, [D] **append**, [U] **22 Combining datasets**
`append`, `mi` subcommand, [MI] **mi append**
`_append` variable, [D] **append**
appending data, [D] **append**, [MI] **mi append**, [U] **22 Combining datasets**
appending rows and columns to matrix, [P] **matrix define**
apply recording, [G-2] **graph play**
approximating Euclidean distances, [MV] **mds postestimation**
AR, *see* autoregressive
arbitrary pattern of missing values, [MI] **mi impute chained**, [MI] **mi impute mvn**, [MI] **Glossary**, *also see* pattern of missingness
arccosine, arcsine, and arctangent functions, [FN] **Trigonometric functions**
ARCH, *see* autoregressive conditional heteroskedasticity
`arch` command, [TS] **arch**, [TS] **arch postestimation**
`archlm`, `estat` subcommand, [R] **regress postestimation time series**
`area`, `graph twoway` subcommand, [G-2] **graph twoway area**
area under the curve, [R] **lroc**, *also see* pharmacokinetic data, *also see* receiver operating characteristic analysis
areas, [G-4] ***colorstyle***, *also see* fill, areas, dimming and brightening, *also see* fill, color, setting
*areastyle*, [G-4] ***areastyle***
`areg` command, [R] **areg**, [R] **areg postestimation**
Arellano–Bond, [XT] **xtdpd**, [XT] **xtdpdsys** estimator, [XT] **xtabond**, [XT] **Glossary**
Arellano–Bover estimator, [XT] **xtdpd**, [XT] **xtdpdsys**
ARFIMA, *see* autoregressive fractionally integrated moving-average model
`arfima` command, [TS] **arfima**, [TS] **arfima postestimation**
`arg()` function, [M-5] **sin( )**

args command, [P] **syntax**
args() function, [M-5] **args( )**
arguments,
  program, [M-2] **declarations**, [M-6] **Glossary**
  values returned in, [M-1] **returnedargs**
  varying number, [M-2] **optargs**, [M-5] **args( )**
ARIMA, *see* autoregressive integrated moving-average model
arima command, [TS] **arima**, [TS] **arima postestimation**
arithmetic operators, [M-2] **op_arith**, [M-2] **op_colon**, [P] **matrix define**, [U] **13.2.1 Arithmetic operators**
ARMA, *see* autoregressive moving average
ARMAX, *see* autoregressive moving average with exogenous inputs
aroots, estat subcommand, [TS] **estat aroots**
array, [M-6] **Glossary**
arrays, class, [P] **class**
.Arrdropall built-in class modifier, [P] **class**
.Arrdropel built-in class modifier, [P] **class**
.arrindexof built-in class function, [P] **class**
.arrnels built-in class function, [P] **class**
arrows, [G-2] **graph twoway pcarrow**
.Arrpop built-in class modifier, [P] **class**
.Arrpush built-in class modifier, [P] **class**
as error, display directive, [P] **display**
as input, display directive, [P] **display**
as result, display directive, [P] **display**
as text, display directive, [P] **display**
as txt, display directive, [P] **display**
asarray() function, [M-5] **asarray( )**
asarray_contains() function, [M-5] **asarray( )**
asarray_contents() function, [M-5] **asarray( )**
asarray_create() function, [M-5] **asarray( )**
asarray_elements() function, [M-5] **asarray( )**
asarray_first() function, [M-5] **asarray( )**
asarray_key() function, [M-5] **asarray( )**
asarray_keys() function, [M-5] **asarray( )**
asarray_next() function, [M-5] **asarray( )**
asarray_notfound() function, [M-5] **asarray( )**
asarray_remove() function, [M-5] **asarray( )**
ascategory() option, [G-2] **graph bar**, [G-2] **graph box**, [G-2] **graph dot**
ASCII, [D] **unicode**, [D] **unicode translate**, [I] **Glossary**
  codes, [M-5] **ascii( )**
  encoding conversion, [D] **unicode convertfile**, [D] **unicode translate**
ascii() function, [M-5] **ascii( )**
asclogit command, [R] **asclogit**, [R] **asclogit postestimation**
asin() function, [FN] **Trigonometric functions**, [M-5] **sin( )**
asinh() function, [FN] **Trigonometric functions**, [M-5] **sin( )**
_asis, display directive, [P] **display**
asis print color mapping, [G-2] **set printcolor**
asmprobit command, [R] **asmprobit**, [R] **asmprobit postestimation**
aspect ratio, [G-3] ***aspect_option***
  changing, [G-2] **graph display**
  controlling, [G-2] **graph combine**
asroprobit command, [R] **asroprobit**, [R] **asroprobit postestimation**
assert command, [D] **assert**
assert() function, [M-5] **assert( )**
asserteq() function, [M-5] **assert( )**
assignment, class, [P] **class**
assignment operator, [M-2] **op_assignment**
association test, [R] **correlate**, [R] **epitab**, [R] **spearman**, [R] **tabulate twoway**, [R] **tetrachoric**, [SVY] **svy: tabulate twoway**
association, measures of, [R] **tabulate twoway**
associative arrays, [M-5] **asarray( )**
asymmetric power autoregressive conditional heteroskedasticity, [TS] **arch**
asymmetry, *see* skewness
asymptotic distribution free, [SEM] **intro 4**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
asyvars option, [G-2] **graph bar**, [G-2] **graph box**, [G-2] **graph dot**
at risk, [ST] **Glossary**
atan() function, [FN] **Trigonometric functions**, [M-5] **sin( )**
atan2() function, [FN] **Trigonometric functions**, [M-5] **sin( )**
atanh() function, [FN] **Trigonometric functions**, [M-5] **sin( )**
ATE, *see* average treatment effect
ATET, *see* average treatment effect on treated
at-risk table, [ST] **sts graph**
attributable fraction, [R] **epitab**, [ST] **Glossary**
attributable proportion, [R] **epitab**
AUC, *also see* area under the curve
augmented
  component-plus-residual plot, [R] **regress postestimation diagnostic plots**
  inverse-probability weighting, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **Glossary**
  partial residual plot, [R] **regress postestimation diagnostic plots**
  regression, *see* imputation, perfect prediction
Author Support Program, [U] **3.7.2 For authors**
auto.dta, [U] **1.2.2 Example datasets**
autocode() function, [FN] **Programming functions**, [U] **25.1.2 Converting continuous variables to categorical variables**
autocorrelation, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **bayesstats ess**, [R] **regress postestimation time series**, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **corrgram**, [TS] **dfactor**, [TS] **estat acplot**, [TS] **newey**, [TS] **prais**, [TS] **psdensity**, [TS] **sspace**,

autocorrelation, *continued*
[TS] **ucm**, [TS] **var**, [TS] **varlmar**, [TS] **Glossary**, *also see* HAC variance estimate
dynamic model, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
residual, [XT] **xtgee**, [XT] **xtgls**, [XT] **xtpcse**, [XT] **xtregar**
test, [XT] **xtabond**, [XT] **xtabond postestimation**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys**, [XT] **xtdpdsys postestimation**
autocovariance, [TS] **arfima**, [TS] **arima**, [TS] **corrgram**, [TS] **estat acplot**, [TS] **psdensity**
`automatic` print color mapping, [G-2] **set printcolor**
Automation, [P] **automation**
autoregressive, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **dfactor**, [TS] **sspace**, [TS] **ucm**
conditional heteroskedasticity
effects, [TS] **arch**
effects, testing for, [R] **regress postestimation time series**
model, [TS] **arch**, [TS] **arch postestimation**, [TS] **Glossary**, *also see* multivariate GARCH model
test, [R] **regress postestimation time series**
fractionally integrated moving-average model, [TS] **arfima**, [TS] **arfima postestimation**, [TS] **estat acplot**, [TS] **psdensity**, [TS] **Glossary**
integrated moving-average model, [TS] **arima**, [TS] **arima postestimation**, [TS] **estat acplot**, [TS] **estat aroots**, [TS] **psdensity**, [TS] **Glossary**
model, [TS] **dfactor**, [TS] **estat acplot**, [TS] **mswitch**, [TS] **psdensity**, [TS] **sspace**, [TS] **ucm**
moving average, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **sspace**, [TS] **ucm**, [TS] **Glossary**
moving average with exogenous inputs, [TS] **arfima**, [TS] **arima**, [TS] **dfactor**, [TS] **sspace**, [TS] **ucm**, [TS] **Glossary**
process, [TS] **Glossary**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **Glossary**
`autotabgraphs`, `set` subcommand, [R] **set**
available area, [G-3] ***region_options***
available-case analysis, [MI] **intro substantive**
average
marginal effects, [R] **margins**, [R] **marginsplot**
partial effects (APEs), [R] **margins**, [R] **marginsplot**
predictions, [R] **margins**, [R] **marginsplot**
RVI, [MI] **mi estimate**, [MI] **Glossary**
treatment effect, [TE] **eteffects**, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects multivalued**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**, [TE] **teffects ra**, [TE] **Glossary**
comparing, [TE] **teffects intro advanced**
survival time, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects ra**, [TE] **stteffects wra**
average, *continued*
treatment effect on treated, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects multivalued**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**, [TE] **teffects ra**, [TE] **Glossary**
comparing, [TE] **teffects intro advanced**
survival time, [TE] **stteffects intro**, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects ra**, [TE] **stteffects wra**
`averagelinkage`,
`clustermat` subcommand, [MV] **cluster linkage**
`cluster` subcommand, [MV] **cluster linkage**
average-linkage clustering, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
averages, *see* means
`avplot` and `avplots` commands, [R] **regress postestimation diagnostic plots**
`[aweight=`*exp*`]` modifier, [U] **11.1.6 weight**, [U] **20.23.2 Analytic weights**
axes
multiple scales, [G-3] ***axis_choice_options***
setting offset between and plot region, [G-3] ***region_options***
suppressing, [G-3] ***axis_scale_options***
axis
labeling, [G-3] ***axis_label_options***, [G-3] ***axis_options***
line, look of, [G-3] ***axis_scale_options***, [G-3] ***cat_axis_label_options***, [G-3] ***cat_axis_line_options***
log, [G-3] ***axis_scale_options***
overall look, [G-4] ***axisstyle***
range, [G-3] ***axis_scale_options***
reversed, [G-3] ***axis_scale_options***
scale, [G-3] ***axis_options***, [G-3] ***axis_scale_options***
selection of, [G-3] ***axis_choice_options***
suppressing, [G-3] ***axis_scale_options***
ticking, [G-3] ***axis_label_options***
titling, [G-3] ***axis_options***, [G-3] ***axis_title_options***
suppressing, [G-3] ***axis_title_options***
*axisstyle*, [G-4] ***axisstyle***

## B

`_b[]`, [U] **13.5 Accessing coefficients and standard errors**
`b1title()` option, [G-3] ***title_options***
`b2title()` option, [G-3] ***title_options***
backed up message, [R] **maximize**
background color, [G-4] **schemes intro**
setting, [G-3] ***region_options***
balance
standardized differences, [TE] **tebalance summarize**
variance ratios, [TE] **tebalance summarize**

`balance`, `tebalance` subcommand, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**
balanced
  data, [XT] **Glossary**
  design, [PSS] **power twomeans**, [PSS] **power twoproportions**, [PSS] **power twovariances**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power trend**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
  repeated replication, [SVY] ***brr_options***, [SVY] **svy brr**, [SVY] **variance estimation**, [SVY] **Glossary**
  repeated replication standard errors, [SVY] **svy brr**, [SVY] **variance estimation**
band-pass filters, [TS] **tsfilter bk**, [TS] **tsfilter cf**
band-pass filters, [TS] **Glossary**
`bar`
  `graph` subcommand, [G-2] **graph bar**
  `graph twoway` subcommand, [G-2] **graph twoway bar**
bar charts, [G-2] **graph bar**
`barbsize` option, [G-2] **graph twoway pcarrow**
*barlook* options, [G-3] ***barlook_options***
bars
  labeling, [G-3] ***blabel_option***
  look of, [G-3] ***barlook_options***
Bartlett scoring, [MV] **factor postestimation**
Bartlett's
  bands, [TS] **corrgram**
  periodogram test, [TS] **wntestb**
  test for equal variances, [R] **oneway**
base
  conversion, [M-5] **inbase( )**
  level, [U] **11.4.3 Factor variables**
  plottypes, [G-3] ***advanced_options***
`base`, `fvset` subcommand, [R] **fvset**
`BASE` directory, [P] **sysdir**, [U] **17.5 Where does Stata look for ado-files?**
baseline, [ST] **Glossary**
  comparisons, [SEM] **estat gof**, [SEM] **example 4**
  dataset, [ST] **stbase**
  hazard and survivor functions, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcrreg**
  model, [SEM] **estat gof**, [SEM] **example 4**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
`baseline` suboption, [G-4] ***alignmentstyle***
`baseopts` option, *see* `sem` option `baseopts()`
basis, orthonormal, [P] **matrix svd**
batch means, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**, [BAYES] **Glossary**
Battese–Coelli parameterization, [XT] **xtfrontier**
Baxter–King filter, [TS] **tsfilter**, [TS] **tsfilter bk**
Bayes factor, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **Glossary**
Bayes's rule, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **Glossary**, *see* Bayes's theorem
Bayes's theorem, [MV] **Glossary**
`bayesgraph`
  command, [BAYES] **bayesgraph**
  `matrix` command, [BAYES] **bayesgraph**
Bayesian
  analysis, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesgraph**, [BAYES] **bayesstats**, [BAYES] **bayesstats ess**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [BAYES] **bayestest**, [BAYES] **bayestest interval**, [BAYES] **bayestest model**, [BAYES] **Glossary**, [U] **26.32 Bayesian analysis**
  concepts, [BAYES] **intro**, [BAYES] **bayesmh**, [MI] **intro substantive**
  estimation, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **bayesstats ic**
    feasible initial values, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **Glossary**
    user-written evaluators, [BAYES] **bayesmh evaluators**
  graphical summaries, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesgraph**
  hypothesis testing, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh postestimation**, [BAYES] **bayestest**, [BAYES] **Glossary**
    interval, [BAYES] **intro**, [BAYES] **bayesmh postestimation**, [BAYES] **bayestest interval**
    model, [BAYES] **intro**, [BAYES] **bayesmh postestimation**, [BAYES] **bayestest model**
  information criterion, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **Glossary**, [R] **BIC note**, [R] **estat**, [R] **estat ic**, [R] **estimates stats**, [R] **glm**, [R] **lrtest**, [SEM] **estat gof**, [SEM] **example 4**, [SEM] **methods and formulas for sem**
  model comparison, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesstats**, [BAYES] **bayesstats ic**, [BAYES] **bayestest**, [BAYES] **bayestest model**, [BAYES] **Glossary**
  model parameters, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesstats**, [BAYES] **Glossary**

Bayesian, *continued*
postestimation, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesgraph**, [BAYES] **bayesstats**, [BAYES] **bayesstats ess**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [BAYES] **bayestest**, [BAYES] **bayestest interval**, [BAYES] **bayestest model**
prediction, [BAYES] **intro**
sensitivity analysis, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**
summary statistics, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesstats**, [BAYES] **bayesstats summary**
`bayesmh` command, [BAYES] **bayesmh**
`bayesstats`
command, [BAYES] **bayesstats**
`ess` command, [BAYES] **bayesstats**
`ic` command, [BAYES] **bayesstats**
`summary` command, [BAYES] **bayesstats**
`bayestest`
`interval` command, [BAYES] **bayestest interval**
`model` command, [BAYES] **bayestest model**
`bcal`
`check` command, [D] **bcal**
`create` command, [D] **bcal**
`describe` command, [D] **bcal**
`dir` command, [D] **bcal**
`load` command, [D] **bcal**
BCC, *see* boundary characteristic curve
`bcskew0` command, [R] **lnskew0**
Bentler–Raykov squared multiple-correlation coefficient, [SEM] **estat eqgof**
Bentler–Weeks matrices, [SEM] **intro 7**, [SEM] **estat framework**, [SEM] **example 11**, [SEM] **Glossary**
Bentler's invariant pattern simplicity rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Berndt–Hall–Hall–Hausman algorithm, [M-5] **moptimize( )**, [M-5] **optimize( )**, [R] **ml**
beta, *see* $\beta$
coefficients, [R] **regress**
density,
central, [FN] **Statistical functions**
noncentral, [FN] **Statistical functions**
distribution,
cumulative, [FN] **Statistical functions**
cumulative noncentral, [FN] **Statistical functions**
inverse cumulative, [FN] **Statistical functions**
inverse cumulative noncentral, [FN] **Statistical functions**
inverse reverse cumulative, [FN] **Statistical functions**
reverse cumulative, [FN] **Statistical functions**
function,
complement to incomplete, [FN] **Statistical functions**
beta function, *continued*
incomplete, [FN] **Statistical functions**, [M-5] **normal( )**
regression, [R] **betareg**, [SVY] **svy estimation**, [U] **26.10 Fractional-outcome dependent-variable models**
`betaden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`betareg` command, [R] **betareg**, [R] **betareg postestimation**
between estimators, [XT] **xtivreg**, [XT] **xtreg**, [XT] **Glossary**
between matrix, [MV] **Glossary**
between–within DDF, *see* denominator degrees of freedom, repeated
between-cell means and variances, [XT] **xtdescribe**, [XT] **xtsum**
between-group variance, [PSS] **power oneway**
between-imputation variability, [MI] **mi estimate**, [MI] **mi predict**
between-subjects
design, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **Glossary**
factor, [PSS] **power repeated**, [PSS] **Glossary**
variance, [PSS] **power repeated**
BFGS algorithm, *see* Broyden–Fletcher–Goldfarb–Shanno algorithm
`bgodfrey`, `estat` subcommand, [R] **regress postestimation time series**
BHHH algorithm, *see* Berndt–Hall–Hall–Hausman algorithm
bias corrected and accelerated, [R] **bootstrap postestimation**, [R] **bstat**
BIC, *see* Bayesian information criterion
Bickenböller test statistic, [R] **symmetry**
`bin()` option, [G-2] **graph twoway histogram**
binary
files, writing and reading, [P] **file**
I/O, [M-5] **bufio( )**
item, [IRT] **Glossary**
operator, [M-6] **Glossary**
outcome, [PSS] **power**
outcome model, [SEM] **intro 5**, [SEM] **example 27g**, [SEM] **example 28g**, [SEM] **example 29g**, [SEM] **example 30g**, [SEM] **example 31g**, [SEM] **example 32g**, [SEM] **example 33g**, [SEM] **example 34g**, *see* outcomes, binary
string, [I] **Glossary**
variable imputation, *see* imputation, binary
binary 0, [I] **Glossary**
binomial
distribution,
confidence intervals, [R] **ci**
cumulative, [FN] **Statistical functions**
inverse cumulative, [FN] **Statistical functions**
inverse reverse cumulative, [FN] **Statistical functions**

binomial distribution, *continued*
reverse cumulative, [FN] **Statistical functions**
family regression, [R] **binreg**
probability mass function, [FN] **Statistical functions**
probability test, [R] **bitest**
test, [PSS] **power oneproportion**, [PSS] **Glossary**
`binomial()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`binomialp()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`binomialtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`binormal()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`binreg` command, [R] **binreg**, [R] **binreg postestimation**
bioequivalence test, [BAYES] **bayesmh**, [R] **pk**, [R] **pkequiv**
biopharmaceutical data, *see* pharmacokinetic data
biplot, [MV] **biplot**, [MV] **ca postestimation plots**, [MV] **Glossary**
`biplot` command, [MV] **biplot**
`biprobit` command, [R] **biprobit**, [R] **biprobit postestimation**
biquartimax rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
biquartimin rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
bisection method, *see* iteration, bisection method
`bitest` and `bitesti` commands, [R] **bitest**
bitmap, [G-3] ***png_options***, [G-3] ***tif_options***
bivariate normal function, [FN] **Statistical functions**
bivariate probit regression, [R] **biprobit**, [SVY] **svy estimation**
biweight kernel function, [R] **kdensity**, [R] **lpoly**, [R] **qreg**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **teffects overlap**
biweight regression estimates, [R] **rreg**
`biyearly()` function, [U] **25 Working with categorical data and factor variables**
`bk`, `tsfilter` subcommand, [TS] **tsfilter bk**
blanks, removing from strings, [FN] **String functions**
block
diagonal covariance, [MV] **mvtest covariances**
diagonal matrix, [M-5] **blockdiag( )**
exogeneity, [TS] **vargranger**
`blockdiag()` function, [M-5] **blockdiag( )**
blocking, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
blog, *see* Stata Blog
Blundell–Bond estimator, [XT] **xtdpd**, [XT] **xtdpdsys**
BLUPs, [ME] **me**, [ME] **mixed**, [ME] **mixed postestimation**, [ME] **Glossary**
`bofd()` function, [D] **datetime business calendars**, [FN] **Date and time functions**, [M-5] **date( )**
bold font, [G-4] ***text***
Bonferroni's multiple-comparison adjustment, *see* multiple comparisons, Bonferroni's method
bootstrap, [SEM] **Glossary**
estimation, [SVY] ***bootstrap_options***, [SVY] **svy bootstrap**, [SVY] **variance estimation**, [SVY] **Glossary**
*bootstrap_options*, [SVY] ***bootstrap_options***
sampling and estimation, [P] **postfile**, [R] **bootstrap**, [R] **bsample**, [R] **bstat**, [R] **qreg**, [R] **rocreg**, [R] **simulate**
standard errors, [R] ***vce_option***, [SVY] **svy bootstrap**, [SVY] **variance estimation**, [XT] ***vce_options***
`bootstrap` prefix command, [R] **bootstrap**, [R] **bootstrap postestimation**
`bootstrap`, `estat` subcommand, [R] **bootstrap postestimation**
border around plot region, suppressing, [G-3] ***region_options***
borders
misplacement of, [G-3] ***added_text_options***
suppressing, [G-4] ***linestyle***
suppressing around plot region, [G-3] ***region_options***
Boston College archive, *see* Statistical Software Components archive
`bottom` suboption, [G-4] ***alignmentstyle***
boundary
characteristic curve, [IRT] **irtgraph icc**, [IRT] **Glossary**
kernel, [ST] **Glossary**
solution, [MV] **Glossary**
Box–Cox
power transformations, [R] **lnskew0**
regression, [R] **boxcox**
`box`, `graph` subcommand, [G-2] **graph box**
Box *M* test, [MV] **mvtest covariances**
box plots, [G-2] **graph box**
`boxcox` command, [R] **boxcox**, [R] **boxcox postestimation**
Box's conservative epsilon, [R] **anova**
`break`, [M-2] **break**
`break` command, [P] **break**
*Break* key, [U] **9 The Break key**, [U] **16.1.4 Error handling in do-files**
interception, [P] **break**, [P] **capture**
processing, [M-5] **setbreakintr( )**
`breakkey()` function, [M-5] **setbreakintr( )**
`breakkeyreset()` function, [M-5] **setbreakintr( )**
Breitung test, [XT] **xtunitroot**
`breitung`, `xtunitroot` subcommand, [XT] **xtunitroot**
Breusch–Godfrey test, [R] **regress postestimation time series**
Breusch–Pagan Lagrange multiplier test, [XT] **xtreg postestimation**
Breusch–Pagan test, [MV] **mvreg**, [R] **sureg**
Breusch–Pagan/Cook–Weisberg test for heteroskedasticity, [R] **regress postestimation**
`brier` command, [R] **brier**
Brier score decomposition, [R] **brier**

broad type, [M-6] **Glossary**
`browse` command, [D] **edit**
`browse`, `view` subcommand, [R] **view**
Broyden–Fletcher–Goldfarb–Shanno algorithm, [M-5] **moptimize( )**, [M-5] **optimize( )**, [R] **ml**
Broyden–Powell method, [M-5] **solvenl( )**
BRR, *see* balanced repeated replication
*brr_options*, [SVY] ***brr_options***
`bsample` command, [R] **bsample**
`bsqreg` command, [R] **qreg**, [R] **qreg postestimation**
`bstat` command, [R] **bstat**
`bstyle()` option, [G-3] ***barlook_options***
`bufbfmtisnum()` function, [M-5] **bufio( )**
`bufbfmtlen()` function, [M-5] **bufio( )**
`bufbyteorder()` function, [M-5] **bufio( )**
buffered I/O, [M-5] **bufio( )**
`bufget()` function, [M-5] **bufio( )**
`bufio()` function, [M-5] **bufio( )**
`bufmissingvalue()` function, [M-5] **bufio( )**
`bufput()` function, [M-5] **bufio( )**
`build`, `ssd` subcommand, [SEM] **ssd**
Builder (GUI), [SEM] **Glossary**
building a graph, [G-1] **graph intro**
built-in, class, [P] **class**
built-in variables, [U] **11.3 Naming conventions**, [U] **13.4 System variables (_variables)**
bullet symbol, [G-4] ***text***
burn-between period, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute mvn**, [MI] **Glossary**
burn-in period, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **Glossary**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute mvn**, [MI] **Glossary**
business calendars, [D] **bcal**, [D] **datetime business calendars**, [D] **datetime business calendars creation**, [M-5] **date( )**, [TS] **intro**, [U] **24.7 Business dates and calendars**
business dates, *see* business calendars
Butterworth filter, [TS] **tsfilter**, [TS] **tsfilter bw**
`bw`, `tsfilter` subcommand, [TS] **tsfilter bw**
`_by()` function, [P] **byable**
`by()` option, [G-2] **graph bar**, [G-3] ***by_option***
`by()`, use of legends with, [G-3] ***by_option***, [G-3] ***clegend_option***, [G-3] ***legend_options***
`by` *varlist*`:` prefix, [D] **by**, [P] **byable**, [U] **11.5 by varlist: construct**, [U] **13.7 Explicit subscripting**, [U] **27.2 The by construct**
`byable()`, [P] **byable**
by-graphs, look of, [G-4] ***bystyle***
by-groups, [D] **by**, [D] **statsby**, [P] **byable**, [U] **11.5 by varlist: construct**
`_byindex()` function, [P] **byable**
`_bylastcall()` function, [P] **byable**
`_byn1()` function, [P] **byable**
`_byn2()` function, [P] **byable**
`bysort` *varlist*`:` prefix, [D] **by**
*bystyle*, [G-4] ***bystyle***
byte, [I] **Glossary**
`byte`, [D] **data types**, [U] **12.2.2 Numeric storage types**
`byteorder()` function, [FN] **Programming functions**, [M-5] **byteorder( )**

## C

`C()` function, [M-5] **C( )**
`c()` function, [M-5] **c( )**
`c()` pseudofunction, [FN] **Programming functions**
`c(adopath)` c-class value, [P] **creturn**, [P] **sysdir**
`c(adosize)` c-class value, [P] **creturn**, [P] **sysdir**
`c(ALPHA)` c-class value, [P] **creturn**
`c(alpha)` c-class value, [P] **creturn**
`c(autotabgraphs)` c-class value, [P] **creturn**
`c(bit)` c-class value, [P] **creturn**
`c(born_date)` c-class value, [P] **creturn**
`c(byteorder)` c-class value, [P] **creturn**
`c(cformat)` c-class value, [P] **creturn**, [R] **set cformat**
`c(changed)` c-class value, [P] **creturn**
`c(charlen)` c-class value, [P] **creturn**
C charts, [G-2] **graph other**
`c(checksum)` c-class value, [D] **checksum**, [P] **creturn**
`c(clevel)` c-class value, [P] **creturn**
`c(cmdlen)` c-class value, [P] **creturn**
`c(coeftabresults)` c-class value, [P] **creturn**
`c(console)` c-class value, [P] **creturn**
`c(copycolor)` c-class value, [P] **creturn**
`c(current_date)` c-class value, [P] **creturn**
`c(current_time)` c-class value, [P] **creturn**
`c(dirsep)` c-class value, [P] **creturn**
`c(dockable)` c-class value, [P] **creturn**
`c(dockingguides)` c-class value, [P] **creturn**
`c(doublebuffer)` c-class value, [P] **creturn**
`c(dp)` c-class value, [D] **format**, [P] **creturn**
`c(emptycells)` c-class value, [P] **creturn**
`c(eolchar)` c-class value, [P] **creturn**
`c(epsdouble)` c-class value, [P] **creturn**
`c(epsfloat)` c-class value, [P] **creturn**
`c(eqlen)` c-class value, [P] **creturn**
`c(fastscroll)` c-class value, [P] **creturn**
`c(filedate)` c-class value, [P] **creturn**
`c(filename)` c-class value, [P] **creturn**
`c(flavor)` c-class value, [P] **creturn**
`c(fvlabel)` c-class value, [P] **creturn**
`c(fvwrap)` c-class value, [P] **creturn**
`c(fvwrapon)` c-class value, [P] **creturn**
`c(graphics)` c-class value, [P] **creturn**
`c(haverdir)` c-class value, [P] **creturn**
`c(hostname)` c-class value, [P] **creturn**
`c(httpproxy)` c-class value, [P] **creturn**
`c(httpproxyauth)` c-class value, [P] **creturn**
`c(httpproxyhost)` c-class value, [P] **creturn**
`c(httpproxyport)` c-class value, [P] **creturn**
`c(httpproxypw)` c-class value, [P] **creturn**
`c(httpproxyuser)` c-class value, [P] **creturn**

c(include_bitmap) c-class value, [P] creturn
c(k) c-class value, [P] creturn
c(level) c-class value, [P] creturn
c(linegap) c-class value, [P] creturn
c(linesize) c-class value, [P] creturn
c(locale_functions) c-class value, [P] creturn
c(locale_icudflt) c-class value, [P] creturn
c(locale_ui) c-class value, [P] creturn
c(locksplitters) c-class value, [P] creturn
c(logtype) c-class value, [P] creturn
c(lstretch) c-class value, [P] creturn
c(machine_type) c-class value, [P] creturn
c(macrolen) c-class value, [P] creturn
c(matacache) c-class value, [P] creturn
c(matafavor) c-class value, [P] creturn
c(matalibs) c-class value, [P] creturn
c(matalnum) c-class value, [P] creturn
c(matamofirst) c-class value, [P] creturn
c(mataoptimize) c-class value, [P] creturn
c(matastrict) c-class value, [P] creturn
c(matsize) c-class value, [P] creturn
c(maxbyte) c-class value, [P] creturn
c(max_cmdlen) c-class value, [P] creturn
c(maxdb) c-class value, [P] creturn
c(maxdouble) c-class value, [P] creturn
c(maxfloat) c-class value, [P] creturn
c(maxint) c-class value, [P] creturn
c(maxiter) c-class value, [P] creturn
c(max_k_theory) c-class value, [P] creturn
c(maxlong) c-class value, [P] creturn
c(max_macrolen) c-class value, [P] creturn
c(max_matsize) c-class value, [P] creturn
c(max_memory) c-class value, [D] memory, [P] creturn
c(max_N_theory) c-class value, [P] creturn
c(maxstrlvarlen) c-class value, [P] creturn
c(maxstrvarlen) c-class value, [P] creturn
c(maxvar) c-class value, [D] memory, [P] creturn
c(maxvlabellen) c-class value, [P] creturn
c(max_width_theory) c-class value, [P] creturn
c(memory) c-class value, [P] creturn
c(minbyte) c-class value, [P] creturn
c(mindouble) c-class value, [P] creturn
c(minfloat) c-class value, [P] creturn
c(minint) c-class value, [P] creturn
c(minlong) c-class value, [P] creturn
c(min_matsize) c-class value, [P] creturn
c(min_memory) c-class value, [D] memory, [P] creturn
c(mode) c-class value, [P] creturn
c(Mons) c-class value, [P] creturn
c(Months) c-class value, [P] creturn
c(more) c-class value, [P] creturn, [P] more
c(MP) c-class value, [P] creturn
c(N) c-class value, [P] creturn
c(namelenbye) c-class value, [P] creturn
c(namelenchar) c-class value, [P] creturn
c(niceness) c-class value, [D] memory, [P] creturn
c(noisily) c-class value, [P] creturn
c(notifyuser) c-class value, [P] creturn
c(odbcdriver) c-class value, [P] creturn
c(odbcmgr) c-class value, [P] creturn
c(os) c-class value, [P] creturn
c(osdtl) c-class value, [P] creturn
c(pagesize) c-class value, [P] creturn
c(pformat) c-class value, [P] creturn, [R] set cformat
c(pi) c-class value, [P] creturn
c(pinnable) c-class value, [P] creturn
c(playsnd) c-class value, [P] creturn
c(printcolor) c-class value, [P] creturn
c(processors) c-class value, [P] creturn
c(processors_lic) c-class value, [P] creturn
c(processors_mach) c-class value, [P] creturn
c(processors_max) c-class value, [P] creturn
c(pwd) c-class value, [P] creturn
c(rc) c-class value, [P] capture, [P] creturn
c(reventries) c-class value, [P] creturn
c(revkeyboard) c-class value, [P] creturn
c(rmsg) c-class value, [P] creturn, [P] rmsg
c(rmsg_time) c-class value, [P] creturn
c(rng) c-class value, [P] creturn
c(rng_current) c-class value, [P] creturn
c(rngstate) c-class value, [P] creturn, [R] set seed
c(scheme) c-class value, [P] creturn
c(scrollbufsize) c-class value, [P] creturn
c(SE) c-class value, [P] creturn
c(searchdefault) c-class value, [P] creturn
c(seed) c-class value, [R] set emptycells, [R] set seed
c(segmentsize) c-class value, [D] memory, [P] creturn
c(sformat) c-class value, [P] creturn, [R] set cformat
c(showbaselevels) c-class value, [P] creturn, [R] set showbaselevels
c(showemptycells) c-class value, [P] creturn, [R] set showbaselevels
c(showomitted) c-class value, [P] creturn, [R] set showbaselevels
c(smallestdouble) c-class value, [P] creturn
c(smoothfonts) c-class value, [P] creturn
c(stata_version) c-class value, [P] creturn
c(sysdir_base) c-class value, [P] creturn, [P] sysdir
c(sysdir_oldplace) c-class value, [P] creturn, [P] sysdir
c(sysdir_personal) c-class value, [P] creturn, [P] sysdir
c(sysdir_plus) c-class value, [P] creturn, [P] sysdir
c(sysdir_site) c-class value, [P] creturn, [P] sysdir
c(sysdir_stata) c-class value, [P] creturn, [P] sysdir
c(timeout1) c-class value, [P] creturn
c(timeout2) c-class value, [P] creturn
c(tmpdir) c-class value, [P] creturn
c(trace) c-class value, [P] creturn, [P] trace
c(tracedepth) c-class value, [P] creturn, [P] trace

c(traceexpand) c-class value, [P] creturn, [P] trace
c(tracehilite) c-class value, [P] creturn, [P] trace
c(traceindent) c-class value, [P] creturn, [P] trace
c(tracenumber) c-class value, [P] creturn, [P] trace
c(tracesep) c-class value, [P] creturn, [P] trace
c(type) c-class value, [D] generate, [P] creturn
c(update_interval) c-class value, [P] creturn
c(update_prompt) c-class value, [P] creturn
c(update_query) c-class value, [P] creturn
c(username) c-class value, [P] creturn
c(userversion) c-class value, [P] creturn
c(varabbrev) c-class value, [P] creturn
c(varkeyboard) c-class value, [P] creturn
c(version) c-class value, [P] creturn, [P] version
c(Wdays) c-class value, [P] creturn
c(Weekdays) c-class value, [P] creturn
c(width) c-class value, [P] creturn
CA, *see* correspondence analysis
ca command, [MV] ca, [MV] ca postestimation, [MV] ca postestimation plots
cabiplot command, [MV] ca postestimation plots
calculator, [R] display
calendars, [D] bcal, [D] datetime business calendars, [D] datetime business calendars creation, [TS] intro
calibration, [IRT] Glossary
Caliński and Harabasz index stopping rules, [MV] cluster stop
_caller() pseudofunction, [FN] Programming functions
callersversion() function, [M-5] callersversion()
camat command, [MV] ca, [MV] ca postestimation, [MV] ca postestimation plots
Canberra dissimilarity measure, [MV] *measure_option*
candisc command, [MV] candisc, [MV] discrim estat, [MV] discrim qda postestimation
canon command, [MV] canon, [MV] canon postestimation
canonical
  correlation analysis, [MV] Glossary
  correlations, [MV] canon, [MV] canon postestimation
  discriminant analysis, [MV] candisc, [MV] Glossary
  link, [ME] meglm, [ME] Glossary, [XT] Glossary
  loadings, [MV] canon, [MV] canon postestimation, [MV] Glossary
  variate set, [MV] canon, [MV] canon postestimation, [MV] Glossary
canontest, estat subcommand, [MV] discrim lda postestimation
capped spikes, [G-3] *rcap_options*
caprojection command, [MV] ca postestimation plots
caption() option, [G-3] *title_options*
capture command, [P] capture
carryover effects, [R] pk, [R] pkcross, [R] pkshape
case–cohort data, [ST] sttocc
case–control, [PSS] Glossary
  data, [R] clogit, [R] epitab, [R] logistic, [R] rocreg, [R] symmetry, [ST] sttocc
  study, [PSS] power, [PSS] power mcc, [R] epitab
casement displays, [G-3] *by_option*
casewise deletion, [D] egen, [P] mark, *see* listwise deletion
cat command, [D] type
cat() function, [M-5] cat()
categorical, *also see* factor variables
  axis, look of
    labels, [G-3] *cat_axis_label_options*
    line, [G-3] *cat_axis_line_options*
  contrasts after anova, [R] contrast
  covariates, [R] anova
  data, [D] egen, [D] recode, [MV] ca, [MV] manova, [MV] mca, [R] epitab, [SVY] svy estimation, [SVY] svy: tabulate oneway, [SVY] svy: tabulate twoway
  data, agreement, measures for, [R] kappa
  graphs, [R] grmeanby, [R] spikeplot
  item, [IRT] Glossary
  outcomes, *see* outcomes, binary, *see* outcomes, categorical, *see* outcomes, ordinal, *also see* outcomes, binary, *also see* outcomes, ordinal
  regression, *also see* outcomes subentry
    absorbing one categorical variable, [R] areg
  tabulations, [R] table, [R] tabstat, [R] tabulate oneway, [R] tabulate twoway, [R] tabulate, summarize()
  variable creation, [R] tabulate oneway, [R] xi
  variable imputation, *see* imputation, categorical
  variables, [U] 25.1.2 Converting continuous variables to categorical variables
category
  boundary curve, *see* boundary characteristic curve
  boundary location, [IRT] Glossary
  characteristic curve, [IRT] irtgraph icc, [IRT] Glossary
  response function, [IRT] irtgraph icc, [IRT] Glossary
cause-specific hazard, [ST] Glossary
cc command, [R] epitab
CCC, *see* category characteristic curve
ccc, mgarch subcommand, [TS] mgarch ccc
cchart command, [R] qc
cci command, [R] epitab
c-class command, [P] creturn
c-conformability, [M-2] op_colon, [M-6] Glossary
CCT, *see* controlled clinical trial study
CD, *see* coefficient of determination
cd command, [D] cd
cd, net subcommand, [R] net
Cdhms() function, [D] datetime, [FN] Date and time functions, [M-5] date()
cdir, classutil subcommand, [P] classutil
ceil() function, [FN] Mathematical functions, [M-5] trunc()

ceiling function, [FN] **Mathematical functions**
cell means, [PSS] **Glossary**
cell-means model, [PSS] **Glossary**
censored, [ST] **Glossary**, [TE] **Glossary**
  observations, [MI] **mi impute intreg**, [MI] **mi XXXset**, [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [R] **intreg**, [R] **ivtobit**, [R] **tobit**, [ST] **st**, *also see* truncated observations
  Poisson regression, [R] **cpoisson**, [SVY] **svy estimation**
censored-normal regression, *see* interval regression
censoring, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, *see* imputation, interval-censored data
census, [SVY] **Glossary**
  data, [SVY] **survey**, [SVY] **direct standardization**, [SVY] **variance estimation**
`center` suboption, [G-4] ***justificationstyle***
centered data, [MV] **Glossary**
`centile` command, [R] **centile**
centiles, *see* percentiles, displaying, *see* percentiles
central posterior interval, *see* equal-tailed credible interval
central tendency, measures of, *see* means, *see* medians
`centroidlinkage`,
  `clustermat` subcommand, [MV] **cluster linkage**
  `cluster` subcommand, [MV] **cluster linkage**
centroid-linkage clustering, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
certainty strata, [SVY] **estat**
certainty units, [SVY] **variance estimation**
certifying data, [D] **assert**, [D] **checksum**, [D] **count**, [D] **datasignature**, [D] **inspect**, [P] **_datasignature**, [P] **signestimationsample**
certifying mi data are consistent, [MI] **mi update**
`cf` command, [D] **cf**
`cf`, `tsfilter` subcommand, [TS] **tsfilter cf**
CFA, *see* confirmatory factor analysis
CFI, *see* comparative fit index
`cformat`, `set` subcommand, [R] **set**, [R] **set cformat**
`cgraph`, `irf` subcommand, [TS] **irf cgraph**
chained equations, *see* imputation, multivariate, chained equations
`changeeol` command, [D] **changeeol**
changing
  data, *see* editing data
  directories, [D] **cd**
`_char(#)`, `display` directive, [P] **display**
`char`
  command, [U] **12.8 Characteristics**
  `define` command, [P] **char**
  `list` command, [P] **char**
  macro extended function, [P] **macro**
  `rename` command, [P] **char**
`char()` function, [FN] **String functions**, [M-5] **ascii( )**
character
  data, *see* string variables
character, *continued*
  variables, [D] **infile (free format)**
characteristic roots, [M-5] **eigensystem( )**
characteristics, [P] **char**, [U] **12.8 Characteristics**, [U] **18.3.6 Extended macro functions**, [U] **18.3.13 Referring to characteristics**
characters, [I] **Glossary**
`charset`, `set` subcommand, [P] **smcl**
`chdir` command, [D] **cd**
`_chdir()` function, [M-5] **chdir( )**
`chdir()` function, [M-5] **chdir( )**
`check`,
  `bcal` subcommand, [D] **bcal**
  `icd10` subcommand, [D] **icd10**
  `icd9` subcommand, [D] **icd9**
  `icd9p` subcommand, [D] **icd9**
  `ml` subcommand, [R] **ml**
`checkestimationsample` command, [P] **signestimationsample**
checking data, [D] **assert**
checkpoint, [D] **snapshot**
`checksum`, `set` subcommand, [D] **checksum**, [R] **set**
`checksum` command, [D] **checksum**
checksums of data, [D] **checksum**, [D] **datasignature**, [P] **_datasignature**, [P] **signestimationsample**
`chi2()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`chi2den()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`chi2tail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
chi-squared
  density, [FN] **Statistical functions**
  distribution,
    cumulative, [FN] **Statistical functions**
    cumulative noncentral, [FN] **Statistical functions**
    inverse cumulative, [FN] **Statistical functions**
    inverse cumulative noncentral, [FN] **Statistical functions**
    inverse reverse cumulative, [FN] **Statistical functions**
    inverse reverse cumulative noncentral, [FN] **Statistical functions**
    noncentral, [FN] **Statistical functions**
    reverse cumulative, [FN] **Statistical functions**
    reverse cumulative noncentral, [FN] **Statistical functions**
  hypothesis test, [R] **hausman**, [R] **lrtest**, [R] **sdtest**, [R] **tabulate twoway**, [R] **test**, [R] **testnl**
  noncentrality parameter, [FN] **Statistical functions**
  probability and quantile plots, [G-2] **graph other**
  probability plot, [R] **diagnostic plots**
  quantile plot, [R] **diagnostic plots**
  test, [PSS] **Glossary**, [SEM] **methods and formulas for sem**
  test for marginal homogeneity, [R] **symmetry**
  test of independence, [R] **epitab**, [R] **tabulate twoway**, [SVY] **svy: tabulate twoway**

Chms() function, [D] datetime, [FN] Date and time functions, [M-5] date( )
choice models, [ME] mecloglog, [ME] meglm, [ME] melogit, [ME] meologit, [ME] meoprobit, [ME] meprobit, [ME] meqrlogit, [R] asclogit, [R] asmprobit, [R] asroprobit, [R] clogit, [R] cloglog, [R] exlogistic, [R] glm, [R] heckoprobit, [R] heckprobit, [R] hetprobit, [R] ivprobit, [R] logistic, [R] logit, [R] mlogit, [R] mprobit, [R] nlogit, [R] ologit, [R] oprobit, [R] probit, [R] rologit, [R] scobit, [R] slogit, [R] suest, [XT] xtgee, [XT] xtlogit, [XT] xtologit, [XT] xtoprobit, [XT] xtprobit, [XT] xtstreg
Cholesky
  decomposition, [M-5] cholesky( ), [P] matrix define
  ordering, [TS] Glossary
_cholesky() function, [M-5] cholesky( )
cholesky() function, [FN] Matrix functions, [M-5] cholesky( ), [P] matrix define
_cholinv() function, [M-5] cholinv( )
cholinv() function, [M-5] cholinv( )
_cholsolve() function, [M-5] cholsolve( )
cholsolve() function, [M-5] cholsolve( )
chop() function, [FN] Programming functions
Chow test, [R] anova, [R] contrast, [R] lrtest, [TS] estat sbknown
Christiano–Fitzgerald filter, [TS] tsfilter, [TS] tsfilter cf
churdle
  command, [R] churdle, [R] churdle postestimation
  exponential command, [R] churdle
  linear command, [R] churdle
CI, *see* confidence interval
  assumption, *see* conditional-independence assumption
ci and cii commands, [R] ci
CIF, *see* cumulative incidence function
class
  definition, [P] class
  instance, [P] class
  programming, [M-6] Glossary, [P] class
  programming utilities, [P] classutil
class, [M-2] class
class exit command, [P] class exit
classes, [M-2] class
classfunctions, estat subcommand, [MV] discrim lda postestimation
classical scaling, [MV] Glossary
classification, *see* cluster analysis, *see* discriminant analysis
  data, *see* receiver operating characteristic analysis
  function, [MV] discrim, [MV] discrim lda, [MV] discrim lda postestimation, [MV] discrim qda, [MV] discrim qda postestimation, [MV] Glossary
  interrater agreement, [R] kappa
classification, *continued*
  table, [MV] candisc, [MV] discrim, [MV] discrim estat, [MV] discrim knn, [MV] discrim knn postestimation, [MV] discrim lda, [MV] discrim lda postestimation, [MV] discrim logistic, [MV] discrim logistic postestimation, [MV] discrim qda, [MV] discrim qda postestimation, [MV] Glossary, [R] estat classification
classification, estat subcommand, [R] estat classification
.classmv built-in class function, [P] class
.classname built-in class function, [P] class
classtable, estat subcommand, [MV] discrim estat, [MV] discrim knn postestimation, [MV] discrim lda postestimation, [MV] discrim logistic postestimation, [MV] discrim qda postestimation
classutil
  cdir command, [P] classutil
  describe command, [P] classutil
  dir command, [P] classutil
  drop command, [P] classutil
  which command, [P] classutil
classwide variable, [P] class
clean,
  icd10 subcommand, [D] icd10
  icd9 subcommand, [D] icd9
  icd9p subcommand, [D] icd9
clear
  * command, [D] clear
  ado command, [D] clear
  all command, [D] clear
  command, [D] clear
  mata command, [D] clear
  matrix command, [D] clear
  option, [U] 11.2 Abbreviation rules
  programs command, [D] clear
  results command, [D] clear
clear,
  datasignature subcommand, [D] datasignature
  ereturn subcommand, [P] ereturn, [P] return
  _estimates subcommand, [P] _estimates
  estimates subcommand, [R] estimates store
  forecast subcommandforecast subcommand, [TS] forecast clear
  fvset subcommand, [R] fvset
  mata subcommand, [M-3] mata clear
  ml subcommand, [R] ml
  postutil subcommand, [P] postfile
  putexcel subcommand, [P] putexcel
  return subcommand, [P] return
  serset subcommand, [P] serset
  sreturn subcommand, [P] program, [P] return
  timer subcommand, [P] timer
clearing estimation results, [P] ereturn, [P] _estimates, [R] estimates store
clearing memory, [D] clear

clegend() option, [G-3] ***clegend_option***, [G-3] ***legend_options***
clevel, set subcommand, [BAYES] **set clevel**, [R] **set**
clinical trial, [BAYES] **bayesmh**, [PSS] **Glossary**
clinically
  meaningful difference, [PSS] **Glossary**, *also see* $\delta$
  meaningful effect, [PSS] **Glossary**, *also see* clinically meaningful difference
  significance difference, *see* clinically meaningful difference
  significant difference, [PSS] **Glossary**
clip() function, [FN] **Programming functions**
Clock() function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
clock() function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
clock position, [G-4] ***clockposstyle***
clock time, [TS] **tsset**
*clockposstyle*, [G-4] ***clockposstyle***
clogit command, [R] **bootstrap**, [R] **clogit**, [R] **clogit postestimation**, [R] **exlogistic**, [R] **rologit**
cloglog command, [R] **cloglog**, [R] **cloglog postestimation**
cloglog() function, [FN] **Mathematical functions**, [M-5] **logit( )**
cloglog option, *see* gsem option cloglog
clonevar command, [D] **clonevar**
close,
  cmdlog subcommand, [R] **log**
  file subcommand, [P] **file**
  close subcommand, [G-2] **graph close**
  log subcommand, [R] **log**
close graphs, [G-2] **graph close**
cls command, [R] **cls**
clstyle() option, [G-3] ***connect_options***
cluster, [SVY] **survey**, [SVY] **svy estimation**, [SVY] **svyset**, [SVY] **variance estimation**, [SVY] **Glossary**
cluster, [MV] **cluster**, *see* gsem option vce(), *see* sem option vce()
  averagelinkage command, [MV] **cluster linkage**
  centroidlinkage command, [MV] **cluster linkage**
  completelinkage command, [MV] **cluster linkage**
  delete command, [MV] **cluster programming utilities**
  dendrogram command, [MV] **cluster dendrogram**
  dir command, [MV] **cluster utility**
  drop command, [MV] **cluster utility**
  generate command, [MV] **cluster generate**
  kmeans command, [MV] **cluster kmeans and kmedians**
  kmedians command, [MV] **cluster kmeans and kmedians**
  list command, [MV] **cluster utility**
  measures command, [MV] **cluster programming utilities**
cluster, *continued*
  medianlinkage command, [MV] **cluster linkage**
  notes command, [MV] **cluster notes**
  parsedistance command, [MV] **cluster programming utilities**
  query command, [MV] **cluster programming utilities**
  rename command, [MV] **cluster utility**
  renamevar command, [MV] **cluster utility**
  set command, [MV] **cluster programming utilities**
  singlelinkage command, [MV] **cluster linkage**
  stop command, [MV] **cluster stop**
  use command, [MV] **cluster utility**
  wardslinkage command, [MV] **cluster linkage**
  waveragelinkage command, [MV] **cluster linkage**
cluster analysis, [MV] **cluster**, [MV] **cluster dendrogram**, [MV] **cluster generate**, [MV] **cluster kmeans and kmedians**, [MV] **cluster linkage**, [MV] **cluster stop**, [MV] **cluster utility**, [MV] **Glossary**, [U] **26.28 Multivariate and cluster analysis**
  dendrograms, [MV] **cluster dendrogram**
  dropping, [MV] **cluster utility**
  hierarchical, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**
  kmeans, [MV] **cluster kmeans and kmedians**
  kmedians, [MV] **cluster kmeans and kmedians**
  listing, [MV] **cluster utility**
  notes, [MV] **cluster notes**
  programming, [MV] **cluster programming subroutines**, [MV] **cluster programming utilities**
  renaming, [MV] **cluster utility**
  stopping rules, [MV] **cluster**, [MV] **cluster stop**
  tree, [MV] **cluster dendrogram**, [MV] **Glossary**
  using, [MV] **cluster utility**
cluster estimator of variance, [P] **_robust**, [R] ***vce_option***, [XT] ***vce_options***
  alternative-specific
    conditional logit model, [R] **asclogit**
    multinomial probit regression, [R] **asmprobit**
    rank-ordered probit regression, [R] **asroprobit**
  beta regression, [R] **betareg**
  censored
    Poisson regression, [R] **cpoisson**
  competing-risks regression, [ST] **stcrreg**
  complementary log-log regression, [R] **cloglog**
  Cox proportional hazards model, [ST] **stcox**
  exponential regression
    hurdle, [R] **churdle**
  fixed-effects models,
    linear, [XT] **xtreg**
    Poisson, [XT] **xtpoisson**
  fractional response regression, [R] **fracreg**
  generalized linear models, [R] **glm**
    for binomial family, [R] **binreg**
  generalized method of moments, [R] **gmm**, [R] **ivpoisson**

cluster estimator of variance, *continued*
heckman selection model, [R] **heckman**
hurdle regression, [R] **churdle**
instrumental-variables regression, [R] **ivregress**
interval regression, [R] **intreg**
linear dynamic panel-data models, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
linear regression, [R] **regress**
constrained, [R] **cnsreg**
hurdle, [R] **churdle**
truncated, [R] **truncreg**
with dummy-variable set, [R] **areg**
logistic regression, [R] **logistic**, [R] **logit**, *also see* logit regression subentry
conditional, [R] **clogit**
multinomial, [R] **mlogit**
ordered, [R] **ologit**
rank-ordered, [R] **rologit**
skewed, [R] **scobit**
stereotype, [R] **slogit**
logit regression, [R] **logit**, *also see* logistic regression subentry
nested, [R] **nlogit**
maximum likelihood estimation, [R] **ml**, [R] **mlexp**
multilevel mixed-effects models, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **mixed**
multinomial
logistic regression, [R] **mlogit**
probit regression, [R] **mprobit**
negative binomial regression
truncated, [R] **nbreg**
zero-inflated, [R] **zinb**
nonlinear
least-squares estimation, [R] **nl**
systems of equations, [R] **nlsur**
parametric survival models, [ST] **streg**
Poisson regression, [R] **poisson**
censored, [R] **cpoisson**
truncated, [R] **tpoisson**
with endogenous covariates, [R] **ivpoisson**
zero-inflated, [R] **zip**
population-averaged models, [XT] **xtgee**
complementary log-log, [XT] **xtcloglog**
logit, [XT] **xtlogit**
negative binomial, [XT] **xtnbreg**
Poisson, [XT] **xtpoisson**
probit, [XT] **xtprobit**
Prais–Winsten and Cochrane–Orcutt regression, [TS] **prais**
probit regression, [R] **probit**
bivariate, [R] **biprobit**
heteroskedastic, [R] **hetprobit**
multinomial, [R] **mprobit**
ordered, [R] **oprobit**
cluster estimator of variance, probit regression, *continued*
ordered heckman selection model, [R] **heckoprobit**
with endogenous covariates, [R] **ivprobit**
with sample selection, [R] **heckprobit**
random-effects models
complementary log-log, [XT] **xtcloglog**
linear, [XT] **xtreg**
logistic, [XT] **xtlogit**, [XT] **xtologit**
parametric survival, [XT] **xtstreg**
Poisson, [XT] **xtpoisson**
probit, [XT] **xtoprobit**, [XT] **xtprobit**
structural equation modeling, [SEM] **intro 8**, [SEM] **sem option method( )**
summary statistics,
mean, [R] **mean**
proportion, [R] **proportion**
ratio, [R] **ratio**
total, [R] **total**
tobit model, [R] **tobit**
with endogenous covariates, [R] **ivtobit**
treatment-effects model, [TE] **eteffects**, [TE] **etpoisson**, [TE] **etregress**
truncated
negative binomial regression, [R] **tnbreg**
Poisson regression, [R] **tpoisson**
regression, [R] **truncreg**
with endogenous covariates,
Poisson regression, [R] **ivpoisson**
probit model, [R] **ivprobit**
tobit model, [R] **ivtobit**
with endogenous regressors,
instrumental-variables regression, [R] **ivregress**
zero-inflated
negative binomial regression, [R] **zinb**
Poisson regression, [R] **zip**
cluster sampling, [P] **_robust**, [ST] **stcox**, [ST] **streg**, [R] **bootstrap**, [R] **bsample**, [R] **jackknife**
clustered, [SEM] **Glossary**
clustering, *see* cluster analysis
`clustermat`, [MV] **clustermat**
`averagelinkage` command, [MV] **cluster linkage**
`centroidlinkage` command, [MV] **cluster linkage**
`completelinkage` command, [MV] **cluster linkage**
`medianlinkage` command, [MV] **cluster linkage**
`singlelinkage` command, [MV] **cluster linkage**
`stop` command, [MV] **cluster stop**
`wardslinkage` command, [MV] **cluster linkage**
`waveragelinkage` command, [MV] **cluster linkage**
clusters, duplicating, [D] **expandcl**
`cmdlog`
`close` command, [R] **log**
command, [R] **log**, [U] **15 Saving and printing output—log files**
`off` command, [R] **log**

cmdlog, *continued*
on command, [R] **log**
using command, [R] **log**
Cmdyhms() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
cmh, power subcommand, [PSS] **power cmh**
CMI assumption, *see* conditional mean independence assumption
cmissing() option, [G-3] ***cline_options***, [G-3] ***connect_options***
cnsreg command, [R] **cnsreg**, [R] **cnsreg postestimation**
Cochran–Armitage test, [PSS] **power**, [PSS] **power trend**, [PSS] **Glossary**
Cochran–Mantel–Haenszel test, [PSS] **power**, [PSS] **power cmh**, *see* Mantel–Haenszel test
Cochrane–Orcutt regression, [TS] **prais**, [TS] **Glossary**
code
pages, [I] **Glossary**
point, [I] **Glossary**
code points, [D] **unicode encoding**
code, timing, [P] **timer**
codebook command, [D] **codebook**
_coef[], [U] **13.5 Accessing coefficients and standard errors**
coefficient alpha, [MV] **alpha**
coefficient of determination, [SEM] **estat eqgof**, [SEM] **estat ggof**, [SEM] **estat gof**, [SEM] **example 4**, [SEM] **example 21**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
coefficient of variation, [R] **tabstat**, [SVY] **estat**
coefficients (from estimation),
accessing, [P] **ereturn**, [P] **matrix get**, [U] **13.5 Accessing coefficients and standard errors**
cataloging, [R] **estimates**
estimated linear combinations, *see* linear combinations of estimators
linear combinations of, *see* linear combinations of estimators
nonlinear combinations of, *see* nonlinear combinations of estimators
testing equality of, [R] **test**, [R] **testnl**
coeflegend option, *see* gsem option coeflegend, *see* sem option coeflegend
coeftabresults, set subcommand, [R] **set**
coefvector, forecast subcommand, [TS] **forecast coefvector**
Cofc() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
cofC() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
Cofd() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
cofd() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
cohort studies, [ST] **ltable**
cohort study, [PSS] **intro**, [PSS] **power**, [PSS] **Glossary**, [R] **epitab**, [ST] **stcox**, [ST] **stptime**, [ST] **strate**, [ST] **sttocc**
cointegration, [TS] **fcast compute**, [TS] **fcast graph**, [TS] **vec intro**, [TS] **vec**, [TS] **veclmar**, [TS] **vecnorm**, [TS] **vecrank**, [TS] **vecstable**, [TS] **Glossary**
coleq macro extended function, [P] **macro**
coleq, matrix subcommand, [P] **matrix rownames**
colfullnames macro extended function, [P] **macro**
collapse command, [D] **collapse**
_collate() function, [M-5] **sort( )**
collatorlocale() function, [FN] **String functions**
collatorversion() function, [FN] **String functions**
collect statistics, [D] **statsby**
collinear option, *see* gsem option collinear
collinear variables, removing, [P] **_rmcoll**
collinearity,
display of omitted variables, [R] **set showbaselevels**
handling by regress, [R] **regress**
retaining collinear variables, [R] **estimation options**, [R] **orthog**
variance inflation factors, [R] **regress postestimation**
colmax() function, [M-5] **minmax( )**
colmaxabs() function, [M-5] **minmax( )**
colmin() function, [M-5] **minmax( )**
colminmax() function, [M-5] **minmax( )**
colmissing() function, [M-5] **missing( )**
colnames macro extended function, [P] **macro**
colnames, matrix subcommand, [P] **matrix rownames**
colnonmissing() function, [M-5] **missing( )**
colnumb() function, [FN] **Matrix functions**, [P] **matrix define**
colon operators, [M-2] **op_colon**, [M-6] **Glossary**
color, [G-2] **palette**, [G-4] ***colorstyle***
background, [G-4] **schemes intro**
dimming and brightening, [G-2] **graph twoway histogram**, [G-2] **graph twoway kdensity**, [G-4] ***colorstyle***
foreground, [G-4] **schemes intro**
intensity adjustment, [G-2] **graph twoway histogram**, [G-2] **graph twoway kdensity**, [G-4] ***colorstyle***
of bars, [G-3] ***barlook_options***
of connecting lines, [G-3] ***connect_options***
of markers, [G-3] ***marker_options***
of pie slices, [G-2] **graph pie**
of text, [G-3] ***textbox_options***
setting background and fill, [G-3] ***region_options***
color() option, [G-2] **graph twoway histogram**, [G-2] **graph twoway kdensity**
color, palette subcommand, [G-2] **palette**
colors, specifying in programs, [P] **display**
*colorstyle*, [G-4] ***colorstyle***
*colorstyle*, [G-4] ***colorstyle***
cols() function, [M-5] **rows( )**
colscalefactors() function, [M-5] **_equilrc( )**

colshape() function, [M-5] rowshape( )
colsof() function, [FN] Matrix functions, [P] matrix define
colsum() function, [M-5] sum( )
_column(#), display directive, [P] display
column of matrix, selecting, [M-5] select( )
column stripes, [M-6] Glossary
column-join operator, [M-2] op_join
column-major order, [M-6] Glossary
columns in graphs, [PSS] Glossary
columns of matrix,
  appending to, [P] matrix define
  names of, [P] ereturn, [P] matrix define, [P] matrix rownames, [U] 14.2 Row and column names
  operators on, [P] matrix define
colvector, [M-2] declarations, [M-6] Glossary
comb() function, [FN] Mathematical functions, [M-5] comb( )
combination step, [MI] intro substantive, [MI] mi estimate, [MI] mi estimate using, [MI] mi predict
combinatorial function, [M-5] comb( )
combinatorials, calculating, [FN] Mathematical functions
combine, graph subcommand, [G-2] graph combine
combining
  data, [MI] mi add, [MI] mi append, [MI] mi merge
  datasets, [D] append, [D] cross, [D] joinby, [D] merge, [U] 22 Combining datasets
  graphs, [G-2] graph combine
command
  arguments, [P] gettoken, [P] syntax, [P] tokenize, [U] 18.4 Program arguments
  language, [SEM] Glossary
  line, launching dialog box from, [R] db
  parsing, [P] gettoken, [P] syntax, [P] tokenize, [U] 18.4 Program arguments
  timings, [U] 8 Error messages and return codes
commands,
  abbreviating, [U] 11.2 Abbreviation rules
  aborting, [P] continue, [U] 9 The Break key, [U] 10 Keyboard use
  editing and repeating, [U] 10 Keyboard use
  immediate, [U] 19 Immediate commands
  repeating automatically, [D] by, [P] byable, [P] continue, [P] foreach, [P] forvalues, [P] while
  reviewing, [R] #review
  unabbreviating names of, [P] unabcmd
commas, reading data separated by, [D] import delimited, [D] infile (fixed format), [D] infile (free format)
comments, [M-2] comments
  adding to programs, [P] comments
  in programs, do-files, etc., [U] 16.1.2 Comments and blank lines in do-files, [U] 18.11.2 Comments and long lines in ado-files
comments, *continued*
  with data, [D] notes
common, estat subcommand, [MV] factor postestimation
common factors, [MV] Glossary
common odds ratio, [PSS] power cmh, [PSS] Glossary
communality, [MV] factor, [MV] factor postestimation, [MV] Glossary
commutation matrix, [M-5] Kmatrix( )
comparative fit index, [SEM] estat gof, [SEM] methods and formulas for sem
comparative scatterplot, [R] dotplot
compare command, [D] compare
compare, estat subcommand, [MV] procrustes postestimation
comparing two
  files, [D] cf, [D] checksum
  variables, [D] compare
comparison
  group, *see* experimental group
  test between nested models, [R] nestreg
  value, *see* alternative value
*compassdirstyle*, [G-4] *compassdirstyle*
compatibility of Stata programs across releases, [P] version
competing risks, [ST] stcrreg, [ST] Glossary
complementary log-log regression, [ME] mecloglog, [R] cloglog, [R] glm, [SEM] Glossary, [SVY] svy estimation, [XT] xtcloglog, [XT] xtgee
complete
  data, [MI] Glossary
  degrees of freedom for coefficients, [MI] mi estimate, [MI] Glossary
  observations, [MI] Glossary
complete-cases analysis, [MI] Glossary
complete-data analysis, [MI] Glossary
completed data, [MI] Glossary
completed-data analysis, [MI] intro substantive, [MI] mi estimate, [MI] Glossary
completelinkage,
  clustermat subcommand, [MV] cluster linkage
  cluster subcommand, [MV] cluster linkage
complete-linkage clustering, [MV] cluster, [MV] clustermat, [MV] cluster linkage, [MV] Glossary
completely determined outcomes, [R] logit
complex, [M-2] declarations, [M-6] Glossary
component
  analysis, [MV] factor, [MV] pca, [MV] rotate, [MV] rotatemat
  loading plot, [MV] scoreplot
  plot, [MV] scoreplot
  scores, [MV] Glossary
component-plus-residual plot, [G-2] graph other, [R] regress postestimation diagnostic plots

components of PSS analysis
clinically meaningful difference, *see* clinically meaningful difference
effect size, *see* $\delta$
power, *see* power
sample size, *see* sample-size
significance level, *see* significance level
statistical method, *see* test
compound double quotes, [P] **macro**
compound symmetric
correlation matrix, [MV] **mvtest correlations**
covariance matrix, [MV] **mvtest covariances**
compound symmetry, [PSS] **Glossary**
`compress` command, [D] **compress**
compress files, [D] **zipfile**
`compute`, `fcast` subcommand, [TS] **fcast compute**
Comrey's tandem 1 and 2 rotations, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
`concat()`, `egen` function, [D] **egen**
concatenating strings, [U] **13.2.2 String operators**
`concordance`, `estat` subcommand, [ST] **stcox postestimation**
concordance measures, [ST] **stcox postestimation**
concordant pairs, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **Glossary**
`cond()` function, [FN] **Programming functions**, [M-5] **cond( )**
condition number, [M-5] **cond( )**, [M-6] **Glossary**
condition statement, [P] **if**
conditional
conjugacy, *see* semiconjugate prior
fixed-effects model, [XT] **Glossary**
(fixed-effects) logistic regression, [SVY] **svy estimation**
hazard function, [ME] **Glossary**, [XT] **Glossary**
hazard ratio, [ME] **Glossary**, [XT] **Glossary**
imputation, *see* imputation, conditional
independence, [IRT] **Glossary**
logistic regression, [R] **asclogit**, [R] **clogit**, [R] **rologit**, [R] **slogit**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtstreg**
marginal effects, [R] **margins**, [R] **marginsplot**
margins, [R] **margins**, [R] **marginsplot**
mean, [TE] **Glossary**
mean independence assumption, [TE] **teffects intro advanced**
normality, *see* normality, conditional
operator, [M-2] **op_conditional**
overdispersion, [ME] **menbreg**, [ME] **Glossary**
variance, [TS] **arch**, [TS] **Glossary**
conditional-independence assumption, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **Glossary**
confidence interval, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [SEM] **Glossary**, [SVY] **variance estimation**, [U] **20.7 Specifying the width of confidence intervals**
for bioequivalence, [R] **pkequiv**
confidence interval, *continued*
for bootstrap statistics, [R] **bootstrap postestimation**, [R] **rocreg**, [R] **rocreg postestimation**
for combinations of coefficients,
linear, [R] **lincom**
nonlinear, [R] **nlcom**
for contrasts, [R] **contrast**
for counts, [R] **ci**
for cumulative hazard function, [ST] **sts list**
for false-positive rates, [R] **rocregplot**
for hazard ratios, [ST] **stcox**, [ST] **streg**
for incidence-rate ratios, [R] **cpoisson**, [R] **expoisson**, [R] **glm**, [R] **nbreg**, [R] **poisson**, [R] **tnbreg**, [R] **tpoisson**, [R] **zinb**, [R] **zip**, [ST] **stir**, [TE] **etpoisson**, [XT] **xtgee**, [XT] **xtnbreg**, [XT] **xtpoisson**
for intragroup correlations, [R] **loneway**
for linear combinations, [SVY] **svy postestimation**
for margins, [R] **margins**
for means, [R] **ci**, [R] **ameans**, [R] **esize**, [R] **mean**, [R] **ttest**, [R] **ztest**
for means and percentiles of survival time, [ST] **stci**
for medians and percentiles, [R] **centile**
for odds and risk ratios, [R] **epitab**
for odds ratios, [R] **exlogistic**, [R] **glm**, [R] **logistic**, [R] **logit**, [R] **ologit**, [R] **scobit**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtstreg**
for proportions, [R] **ci**, [R] **proportion**
for ratios, [R] **ratio**
for relative-risk ratios, [R] **mlogit**
for ROC area, [R] **roccomp**, [R] **rocfit**, [R] **rocreg**, [R] **roctab**
for ROC values, [R] **rocregplot**
for standardized mortality ratios, [R] **dstdize**, [ST] **stptime**, [ST] **strate**
for subhazard ratios, [ST] **stcrreg**
for survival rates, [ST] **ltable**
for survivor function, [ST] **sts list**
for tabulated proportions, [SVY] **svy: tabulate twoway**
for totals, [R] **total**
confidence interval, set default, [R] **level**
confidence levels, [R] **level**
`config`, `estat` subcommand, [MV] **mds postestimation**
configuration, [MV] **Glossary**
configuration plot, [MV] **mds postestimation plots**, [MV] **Glossary**
`confirm`
`existence` command, [P] **confirm**
`file` command, [P] **confirm**
`format` command, [P] **confirm**
`matrix` command, [P] **confirm**
`names` command, [P] **confirm**
`number` command, [P] **confirm**
`scalar` command, [P] **confirm**

confirm, *continued*
variable command, [P] **confirm**
confirm, datasignature subcommand, [D] **datasignature**
confirmatory factor analysis, [MV] **intro**, [SEM] **intro 5**, [SEM] **example 15**, [SEM] **example 30g**, [SEM] **Glossary**
conformability, [M-2] **void**, [M-6] **Glossary**, *also see* c-conformability, *also see* p-conformability, *also see* r-conformability
confounding, [R] **epitab**, [ST] **Glossary**
confusion matrix, [MV] **Glossary**
_conj() function, [M-5] **conj( )**
conj() function, [M-5] **conj( )**
conjoint analysis, [R] **rologit**
conjugate, [M-5] **conj( )**, [M-6] **Glossary**
prior, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **Glossary**
transpose, [M-2] **op_transpose**, [M-5] **conj( )**, [M-6] **Glossary**
connect() option, [G-3] ***cline_options***, [G-3] ***connect_options***, [G-4] ***connectstyle***
connected, graph twoway subcommand, [G-2] **graph twoway connected**
*connectstyle*, [G-4] ***connectstyle***
conren, set subcommand, [R] **set**
console,
controlling scrolling of output, [P] **more**, [R] **more**
obtaining input from, [P] **display**
constant conditional-correlation model, [TS] **mgarch**, [TS] **mgarch ccc**
constrained estimation, [R] **constraint**, [R] **estimation options**
alternative-specific
conditional logistic model, [R] **asclogit**
multinomial probit regression, [R] **asmprobit**
rank-ordered probit regression, [R] **asroprobit**
ARCH, [TS] **arch**
ARFIMA, [TS] **arfima**
ARIMA and ARMAX, [TS] **arima**
beta regression, [R] **betareg**
censored
Poisson regression, [R] **cpoisson**
competing risks, [ST] **stcrreg**
complementary log-log regression, [R] **cloglog**
dynamic factor model, [TS] **dfactor**
exponential regression
hurdle, [R] **churdle**
fixed-effects models
logit, [XT] **xtlogit**
negative binomial, [XT] **xtnbreg**
Poisson, [XT] **xtpoisson**
fractional response regression, [R] **fracreg**
GARCH model, [TS] **mgarch ccc**, [TS] **mgarch dcc**, [TS] **mgarch dvech**, [TS] **mgarch vcc**
generalized linear models, [R] **glm**
for binomial family, [R] **binreg**
constrained estimation, *continued*
generalized negative binomial regression, [R] **nbreg**
heckman selection model, [R] **heckman**, [R] **heckoprobit**
hurdle
regression, [R] **churdle**
interval regression, [R] **intreg**
linear regression, [R] **cnsreg**
hurdle, [R] **churdle**
seemingly unrelated, [R] **sureg**
stochastic frontier, [R] **frontier**
three-stage least squares, [R] **reg3**
truncated, [R] **truncreg**
logistic regression, [R] **logistic**, [R] **logit**, *also see* logit regression subentry
conditional, [R] **clogit**
multinomial, [R] **mlogit**
ordered, [R] **ologit**
skewed, [R] **scobit**
stereotype, [R] **slogit**
logit regression, [R] **logit**, *also see* logistic regression subentry
nested, [R] **nlogit**
Markov-switching model, [TS] **mswitch**
maximum likelihood estimation, [R] **ml**
multilevel mixed-effects, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**
multinomial
logistic regression, [R] **mlogit**
probit regression, [R] **mprobit**
negative binomial regression, [R] **nbreg**
truncated, [R] **tnbreg**
zero-inflated, [R] **zinb**
parametric survival models, [ST] **streg**
Poisson regression, [R] **poisson**
censored, [R] **cpoisson**
truncated, [R] **tpoisson**
zero-inflated, [R] **zip**
probit regression, [R] **probit**
bivariate, [R] **biprobit**
heteroskedastic, [R] **hetprobit**
multinomial, [R] **mprobit**
ordered, [R] **oprobit**
with endogenous covariates, [R] **ivprobit**
with sample selection, [R] **heckprobit**
programming, [P] **makecns**
random-effects models
complementary log-log, [XT] **xtcloglog**
interval-data regression, [XT] **xtintreg**
logit, [XT] **xtlogit**, [XT] **xtologit**
negative binomial, [XT] **xtnbreg**
parametric survival, [XT] **xtstreg**
Poisson, [XT] **xtpoisson**
probit, [XT] **xtoprobit**, [XT] **xtprobit**
tobit, [XT] **xttobit**

constrained estimation, *continued*
state-space model, [TS] **sspace**
stochastic frontier models for panel data, [XT] **xtfrontier**
structural vector autoregressive models, [TS] **var svar**
tobit model with endogenous covariates, [R] **ivtobit**
treatment-effects model, [TE] **etpoisson**, [TE] **etregress**
truncated
negative binomial regression, [R] **tnbreg**
Poisson regression, [R] **tpoisson**
regression, [R] **truncreg**
unobserved-components model, [TS] **ucm**
vector autoregressive models, [TS] **var**
vector error-correction models, [TS] **vec**
with endogenous covariates
probit regression, [R] **ivprobit**
tobit model, [R] **ivtobit**
zero-inflated
negative binomial regression, [R] **zinb**
Poisson regression, [R] **zip**
constrained linear regression, [SVY] **svy estimation**
`constraint`
command, [R] **constraint**
`define` command, [R] **constraint**
`dir` command, [R] **constraint**
`drop` command, [R] **constraint**
`free` command, [R] **constraint**
`get` command, [R] **constraint**
`list` command, [R] **constraint**
macro extended function, [P] **macro**
constraint matrix, creating and displaying, [P] **makecns**
constraints, [SEM] **sem and gsem option constraints( )**, [SEM] **Glossary**
across groups, [SEM] **intro 6**
normalization, [SEM] **intro 4**, [SEM] **gsem**, [SEM] **sem**, [SEM] **Glossary**
relaxing, [SEM] **intro 6**, [SEM] **sem and gsem path notation**, [SEM] **sem path notation extensions**
specifying, [SEM] **intro 4**, [SEM] **intro 6**, [SEM] **sem and gsem option constraints( )**, [SEM] **sem and gsem option covstructure( )**, [SEM] **sem and gsem path notation**, [SEM] **sem path notation extensions**
`constraints()` option, *see* `gsem` option `constraints()`, *see* `sem` option `constraints()`
constructor, [M-2] **class**
containers, [M-5] **asarray( )**
containment DDF, *see* denominator degrees of freedom, ANOVA
contents of data, [D] **codebook**, [D] **describe**, [D] **ds**, [D] **labelbook**
context, class, [P] **class**
contingency table, [MV] **ca**, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**, [R] **epitab**, [R] **roctab**, [R] **symmetry**, [R] **table**, [R] **tabulate twoway**, [SVY] **svy: tabulate twoway**
`_continue`, `display` directive, [P] **display**
`continue` command, [P] **continue**
continuity correction, [PSS] **power cmh**, [PSS] **power trend**
continuous
outcomes, *see* outcomes, continuous
parameters, [BAYES] **bayestest interval**, [BAYES] **Glossary**
variable imputation, *see* imputation, continuous
`contour`, `graph twoway` subcommand, [G-2] **graph twoway contour**
contour plot, [G-2] **graph twoway contour**, [G-3] ***clegend_option***
contour-line plot, [G-2] **graph twoway contourline**
`contourline`, `graph twoway` subcommand, [G-2] **graph twoway contourline**
`contract` command, [D] **contract**
`contrast` command, [R] **anova postestimation**, [R] **contrast**, [R] **contrast postestimation**, [R] **margins, contrast**, [SEM] **intro 7**, [SVY] **svy postestimation**, [U] **20.18 Obtaining contrasts, tests of interactions, and main effects**
contrasts, [MV] **intro**, [MV] **manova postestimation**, [MV] **Glossary**, [PSS] **Glossary**, [R] **contrast**, [R] **margins, contrast**, [R] **marginsplot**, [U] **20.18 Obtaining contrasts, tests of interactions, and main effects**
graphing, [U] **20.19 Graphing margins, marginal effects, and contrasts**
control charts, [R] **qc**
control group, [PSS] **Glossary**
correlation, *see* correlation, control-group
mean, *see* means, control-group
proportion, *see* proportions, control-group
sample size, *see* sample-size
standard deviation, *see* standard deviations, control-group
variance, *see* variances, control-group
controlled clinical trial study, [PSS] **power**, [PSS] **Glossary**
convergence, [SEM] **intro 12**, [SEM] **sem**, [SEM] **sem and gsem option from( )**
criteria, [R] **maximize**
of MCMC, *see* Markov chain Monte Carlo, convergence
conversion, file, [D] **changeeol**, [D] **filefilter**
`convert`, `mi` subcommand, [MI] **mi convert**
converting between styles, [MI] **mi convert**
`convolve()` function, [M-5] **fft( )**
Cook–Weisberg test for heteroskedasticity, [R] **regress postestimation**
Cook's $D$, [R] **glm postestimation**, [R] **regress postestimation**

coordinates, estat subcommand, [MV] ca postestimation, [MV] mca postestimation
copy,
  graph subcommand, [G-2] graph copy
  label subcommand, [D] label
  mi subcommand, [MI] mi copy, [MI] styles
  ssc subcommand, [R] ssc
copy and paste, [D] edit
.copy built-in class function, [P] class
copy command, [D] copy
copy graph, [G-2] graph copy
copy macro extended function, [P] macro
copycolor, set subcommand, [G-2] set printcolor, [R] set
copying variables, [D] clonevar, [D] edit
copyright
  Apache, [R] copyright apache
  boost, [R] copyright boost
  icd10, [R] copyright icd10
  icu, [R] copyright icu
  lapack, [R] copyright lapack
  libharu, [R] copyright libharu
  libpng, [R] copyright libpng
  Mersenne Twister, [R] copyright mersennetwister
  MiG Layout, [R] copyright miglayout
  scintilla, [R] copyright scintilla
  symbol, [G-4] *text*
  ttf2pt1, [R] copyright ttf2pt1
  zlib, [R] copyright zlib
copyright command, [R] copyright
Cornfield confidence intervals, [R] epitab
Corr() function, [M-5] fft()
_corr() function, [M-5] corr()
corr() function, [FN] Matrix functions, [M-5] corr(), [P] matrix define
corr2data command, [D] corr2data
correcting data, *see* editing data
correlate command, [R] correlate
correlated errors, *see* robust, Huber/White/sandwich estimator of variance, *also see* autocorrelation
correlated uniqueness model, [SEM] intro 5, [SEM] example 17, [SEM] Glossary
correlation, [M-5] corr(), [M-5] fft(), [M-5] mean(), [PSS] power, [R] correlate
  between paired observations, [PSS] power onemean, [PSS] power pairedmeans, [PSS] power pairedproportions
  binary variables, [R] tetrachoric
  canonical, [MV] canon
  coefficient of exposure, [PSS] power mcc
  compound symmetric, [MV] mvtest correlations
  continuous variables, [R] correlate
  control-group, [PSS] power twocorrelations
  data generation, [D] corr2data, [D] drawnorm
  experimental-group, [PSS] power twocorrelations
  factoring of, [MV] factor
  independent, *see* correlation, two-sample
correlation, *continued*
  interitem, [MV] alpha
  intraclass, *see* intraclass correlation
  intracluster, [R] loneway
  Kendall's rank, [R] spearman
  matrices, [MV] mvtest correlations, [P] matrix define, [R] correlate, [R] estat, [R] estat vce
  matrix, anti-image, [MV] factor postestimation, [MV] pca postestimation
  model, [SEM] intro 5, [SEM] Glossary
  one-sample, [PSS] power onecorrelation
  pairwise, [R] correlate
  partial and semipartial, [R] pcorr
  principal components of, [MV] pca
  serial, [R] runtest
  similarity measure, [MV] *measure_option*
  Spearman's rank, [R] spearman
  structure, [R] asmprobit, [R] asroprobit, [R] reg3, [XT] xtcloglog, [XT] xtgee, [XT] xtgls, [XT] xtlogit, [XT] xtnbreg, [XT] xtpcse, [XT] xtpoisson, [XT] xtprobit, [XT] xtreg, [XT] xtstreg, [XT] Glossary
  testing equality, [MV] mvtest correlations
  tests of, [SEM] estat stdize, [SEM] example 16
  tetrachoric, [R] tetrachoric
  two-sample, [PSS] power twocorrelations
correlation, estat subcommand, [R] asmprobit postestimation, [R] asroprobit postestimation
correlation() function, [M-5] mean()
correlations,
  estat subcommand, [MV] canon postestimation, [MV] discrim lda postestimation, [MV] discrim qda postestimation, [MV] mds postestimation
  mvtest subcommand, [MV] mvtest correlations
correlogram, [G-2] graph other, [TS] corrgram, [TS] Glossary
correspondence analysis, [MV] ca, [MV] mca, [MV] Glossary
correspondence analysis projection, [MV] ca postestimation plots, [MV] Glossary
corrgram command, [TS] corrgram
cos() function, [FN] Trigonometric functions, [M-5] sin()
cosh() function, [FN] Trigonometric functions, [M-5] sin()
cosine function, [FN] Trigonometric functions
cosine kernel function, [R] kdensity, [R] lpoly, [R] qreg, [TE] tebalance density, [TE] tebalance overid, [TE] teffects overlap
cost frontier model, [R] frontier, [XT] xtfrontier
costs, [MV] Glossary
count command, [D] count
count data,
  confidence intervals for counts, [R] ci
  estimation, [R] cpoisson, [R] expoisson, [R] glm, [R] gmm, [R] ivpoisson, [R] nbreg, [R] poisson, [R] tnbreg, [R] tpoisson, [R] zinb, [R] zip, [U] 26.13 Count dependent-variable models

count data, *continued*
graphs, [R] **histogram**, [R] **kdensity**, [R] **spikeplot**
imputation, *see* imputation, count data
interrater agreement, [R] **kappa**
summary statistics of, [R] **table**, [R] **tabstat**, [R] **tabulate oneway**, [R] **tabulate twoway**, [R] **tabulate, summarize()**
symmetry and marginal homogeneity tests, [R] **symmetry**
`count()`, `egen` function, [D] **egen**
count model, [SEM] **intro 5**, [SEM] **example 34g**, [SEM] **example 39g**
count outcome model, *see* outcomes, count
`count`, `ml` subcommand, [R] **ml**
counterfactual, [TE] **Glossary**, *also see* potential outcome
counts, making dataset of, [D] **collapse**
count-time data, [ST] **ct**, [ST] **ctset**, [ST] **cttost**, [ST] **sttoct**, [ST] **Glossary**, [SVY] **svy estimation**
courses about Stata, [U] **3.6.2 NetCourses**
covariance, [SEM] **intro 4**, [SEM] **Glossary**
analysis of, [R] **anova**
assumptions, [SEM] **gsem**, [SEM] **sem**
matrix of estimators, [P] **ereturn**, [P] **matrix get**, [R] **estat**, [R] **estat vce**, [R] **estimates store**
matrix,
anti-image, [MV] **factor postestimation**, [MV] **pca postestimation**
block diagonal, [MV] **mvtest covariances**
spherical, [MV] **mvtest covariances**
testing equality, [MV] **mvtest covariances**
of variables or coefficients, [R] **correlate**
principal components of, [MV] **pca**
stationarity, [TS] **Glossary**
structure, [ME] **me**, [ME] **Glossary**
`covariance`, `estat` subcommand, [MV] **discrim lda postestimation**, [MV] **discrim qda postestimation**, [R] **asmprobit postestimation**, [R] **asroprobit postestimation**
`covariance()` option, *see* `gsem` option `covariance()`, *see* `sem` option `covariance()`
`covariances`, `mvtest` subcommand, [MV] **mvtest covariances**
covariances, creating dataset from, *see* summary statistics data
covariate
balance, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**
class, [D] **duplicates**
patterns, [R] **logistic postestimation**, [R] **logit postestimation**, [R] **probit postestimation**
covariates, [ST] **Glossary**
covarimin rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
COVRATIO, [R] **regress postestimation**
`covstructure()` option, *see* `gsem` option `covstructure()`, *see* `sem` option `covstructure()`
`cox`, `power` subcommand, [PSS] **power cox**
Cox proportional hazards model, [PSS] **power cox**, [ST] **stcox**, [SVY] **svy estimation**
test of assumption, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **stsplit**
Cox–Snell residual, [ST] **stcox postestimation**, [ST] **streg postestimation**
`cpoisson` command, [R] **cpoisson**, [R] **cpoisson postestimation**
`cprplot` command, [R] **regress postestimation diagnostic plots**
Cragg hurdle regression, [R] **churdle**
Cramér's $V$, [R] **tabulate twoway**
Crawford–Ferguson rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
`create`,
bcal subcommand `bcal` subcommand, [D] **bcal**
`forecast` subcommand, [TS] **forecast create**
`irf` subcommand, [TS] **irf create**
`serset` subcommand, [P] **serset**
`create_cspline`, `serset` subcommand, [P] **serset**
`create_xmedians`, `serset` subcommand, [P] **serset**
credible interval, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesstats summary**, [BAYES] **Glossary**
set default, [BAYES] **set clevel**
credible level, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**, [BAYES] **set clevel**, [BAYES] **Glossary**
`creturn list` command, [P] **creturn**
`crexternal()` function, [M-5] **findexternal()**
critical
region, *see* rejection region
value, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power onevariance**, [PSS] **Glossary**
Cronbach's alpha, [MV] **alpha**
`cross` command, [D] **cross**
`cross()` function, [M-5] **cross()**
cross product, [M-5] **cross()**, [M-5] **crossdev()**, [M-5] **quadcross()**
cross-product matrices, [P] **matrix accum**
cross-correlation function, [TS] **xcorr**, [TS] **Glossary**
cross-correlogram, [G-2] **graph other**, [TS] **xcorr**
`crossdev()` function, [M-5] **crossdev()**
crossed variables, [MV] **Glossary**
crossed-effects model, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [ME] **Glossary**, [SEM] **example 40g**, [SEM] **Glossary**
crossing variables, [MV] **Glossary**

crossover designs, [R] **pk**, [R] **pkcross**, [R] **pkshape**
cross-sectional
  data, [XT] **Glossary**
  study, [PSS] **power**, [PSS] **Glossary**, [R] **epitab**
  time-series data, [XT] **Glossary**
cross-tabulations, *see* tables
crude estimate, [R] **epitab**, [ST] **Glossary**
`cs` command, [R] **epitab**
`csi` command, [R] **epitab**
`.csv` filename suffix, [D] **import delimited**
`ct` command, [ST] **ctset**
ct data, [ST] **Glossary**, *also see* count-time data
`ctable`, `irf` subcommand, [TS] **irf ctable**
`ctset` command, [ST] **ctset**
`cttost` command, [ST] **cttost**
cubic natural splines, [M-5] **spline3( )**
`cumsp` command, [TS] **cumsp**
`cumul` command, [R] **cumul**
cumulative
  distribution functions, [FN] **Statistical functions**
  distribution, empirical, [R] **cumul**
  hazard function, [ST] **stcurve**, [ST] **sts**, [ST] **sts generate**, [ST] **sts graph**, [ST] **sts list**, [ST] **Glossary**, [TE] **Glossary**
  hazard ratio, *see* hazard ratio
  incidence
    data, [R] **epitab**
    estimator, [ST] **stcrreg**, [ST] **Glossary**
    function, [ST] **stcrreg**, [ST] **stcurve**, [ST] **Glossary**
  incidence data, [R] **poisson**
  spectral distribution, empirical, [TS] **cumsp**, [TS] **psdensity**
  subhazard function, [ST] **stcrreg**, [ST] **stcurve**, [ST] **Glossary**
current data, [P] **creturn**
curse of dimensionality, [MV] **Glossary**
curved path, [SEM] **Glossary**
custom prediction equations, [MI] **mi impute chained**, [MI] **mi impute monotone**
cusum
  plot, [BAYES] **intro**, [BAYES] **bayesgraph**, [BAYES] **Glossary**, [G-2] **graph other**
  test, [R] **cusum**
`cusum` command, [R] **cusum**
CUSUM plot, *see* cusum plot
`cut()`, `egen` function, [D] **egen**
`cutil`, *see* `classutil`
`cv`, `estat` subcommand, [SVY] **estat**
`cvpermute()` function, [M-5] **cvpermute( )**
`cvpermutesetup()` function, [M-5] **cvpermute( )**
cyclical component, [TS] **tsfilter**, [TS] **ucm**, [TS] **Glossary**

## D

DA, *see* data augmentation
`daily()` function, [FN] **Date and time functions**
dashed lines, [G-4] ***linepatternstyle***
data
  augmentation, [MI] **mi impute**, [MI] **mi impute mvn**, [MI] **Glossary**
  entry, *see* importing data, *see* inputting data interactively, *see* reading data from disk
  management, [MI] **mi add**, [MI] **mi append**, [MI] **mi expand**, [MI] **mi extract**, [MI] **mi merge**, [MI] **mi rename**, [MI] **mi replace0**, [MI] **mi reset**, [MI] **mi reshape**
  manipulation, [R] **fvrevar**, [R] **fvset**, [TS] **tsappend**, [TS] **tsfill**, [TS] **tsreport**, [TS] **tsrevar**, [TS] **tsset**, [XT] **xtset**
  matrix, [M-5] **st_data( )**, [M-5] **st_view( )**, [M-6] **Glossary**
  reduction, [MV] **ca**, [MV] **canon**, [MV] **factor**, [MV] **mds**, [MV] **pca**
  signature, [D] **datasignature**, [P] **_datasignature**, [P] **signestimationsample**
  transfer, *see* exporting data, *see* importing data
  types, [D] **data types**, [U] **12 Data**
data,
  appending, *see* appending data
  autocorrelated, *see* autocorrelation
  case–cohort, *see* case–cohort data
  case–control, *see* case–control data
  categorical, *see* categorical data, agreement, measures for, *see* categorical data
  certifying, *see* certifying data
  characteristics of, *see* characteristics
  checksums of, *see* checksums of data
  combining, *see* combining datasets
  contents of, *see* contents of data
  count-time, *see* count-time data
  cumulative incidence data, *see* cumulative incidence data
  current, *see* current data
  discrete survival, *see* discrete survival data
  displaying, *see* displaying data
  documenting, *see* documenting data
  editing, *see* editing data
  entering, *see* importing data, *see* inputting data interactively
  experimental, *see* experimental data
  exporting, *see* exporting data
  extended missing values, *see* missing values
  flong, *see* flong
  flongsep, *see* flongsep
  generating, *see* generating data
  importing, *see* importing data
  inputting, *see* importing data, *see* inputting data interactively, *see* reading data from disk
  labeling, *see* labeling data
  large, dealing with, *see* memory
  listing, *see* listing data
  loading, *see* importing data, *see* inputting data interactively, *see* using data
  matched case–control, *see* matched case–control data

data, *continued*
missing values, *see* missing values
mlong, *see* mlong
multiple-failure st, *see* multiple-failure st data
multiple-record st, *see* multiple-record st data
nested case–control, *see* nested case–control data
observational, *see* observational data
preserving, *see* preserving data
range of, *see* range of data
ranking, *see* ranking data
reading, *see* importing data, *see* loading data, *see* reading data from disk
recoding, *see* recoding data
rectangularizing, *see* rectangularize dataset
reordering, *see* reordering data
reorganizing, *see* reorganizing data
restoring, *see* restoring data
sampling, *see* sampling
saving, *see* exporting data, *see* saving data
single-failure st, *see* survival analysis
single-record st, *see* survival analysis
stacking, *see* stacking data
strings, *see* string variables
summarizing, *see* summarizing data
survey, *see* survey data
survival-time, *see* survival analysis
time-series, *see* time-series analysis
time-span, *see* time-span data
transposing, *see* transposing data
verifying, *see* certifying data
wide, *see* wide
Data Browser, *see* Data Editor
Data Editor, [D] **edit**
copy and paste, [D] **edit**
`data label` macro extended function, [P] **macro**
`data, label` subcommand, [D] **label**
data-have-changed flag, [M-5] **st_updata( )**
database, reading data from, [D] **odbc**
other software, [U] **21.4 Transfer programs**
dataset,
adding notes to, [D] **notes**
comparing, [D] **cf**, [D] **checksum**
creating, [D] **corr2data**, [D] **drawnorm**
example, [U] **1.2.2 Example datasets**
loading, *see* importing data, *see* inputting data interactively, *see* using data
rectangularize, [D] **fillin**
saving, *see* exporting data, *see* saving data
dataset labels, [D] **label**, [D] **label language**, [D] **notes**
determining, [D] **codebook**, [D] **describe**
managing, [D] **varmanage**
`datasignature`
`clear` command, [D] **datasignature**
command, [D] **datasignature**, [SEM] **example 25**, [SEM] **ssd**
`confirm` command, [D] **datasignature**
`report` command, [D] **datasignature**
`datasignature`, *continued*
`set` command, [D] **datasignature**
`_datasignature` command, [P] **_datasignature**
date
and time stamp, [D] **describe**
functions, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
`date()` function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
date,
displaying, [U] **12.5.3 Date and time formats**, [U] **24.3 Displaying dates and times**
formats, [U] **12.5.3 Date and time formats**, [U] **24.3 Displaying dates and times**
functions, [U] **24.5 Extracting components of dates and times**
inputting, [U] **24.2 Inputting dates and times**
variables, [U] **24 Working with dates and times**
datelist, [U] **11.1.9 datelist**
dates and times, [D] **datetime**, [D] **datetime business calendars**, [D] **datetime business calendars creation**, [D] **datetime display formats**, [D] **datetime translation**, [M-5] **c( )**, [M-5] **date( )**, [P] **creturn**
dates,
business, *see* business calendars
Excel, [D] **datetime**
OpenOffice, [D] **datetime**
R, [D] **datetime**
SAS, [D] **datetime**
SPSS, [D] **datetime**
datetime, [D] **datetime**, [D] **datetime business calendars**, [D] **datetime business calendars creation**, [D] **datetime display formats**, [D] **datetime translation**
Davidon–Fletcher–Powell algorithm, [M-5] **moptimize( )**, [M-5] **optimize( )**, [R] **ml**
`day()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**, [U] **24.5 Extracting components of dates and times**
`db` command, [R] **db**
dBASE, reading data from, [U] **21.4 Transfer programs**
`dcc, mgarch` subcommand, [TS] **mgarch dcc**
`.dct` file, [U] **11.6 Filenaming conventions**
`.dct` filename suffix, [D] **import**, [D] **infile (fixed format)**, [D] **infix (fixed format)**, [D] **outfile**
DDF, *see* denominator degrees of freedom
debugging, [P] **discard**, [P] **pause**, [P] **trace**
decimal symbol, setting, [D] **format**
declarations, [M-2] **declarations**, [M-6] **Glossary**
`.Declare` built-in class modifier, [P] **class**
declare, class, [P] **class**
`decode` command, [D] **encode**
decomposition, [M-5] **cholesky( )**, [M-5] **fullsvd( )**, [M-5] **ghessenbergd( )**, [M-5] **gschurd( )**, [M-5] **hessenbergd( )**, [M-5] **lud( )**, [M-5] **qrd( )**, [M-5] **schurd( )**, [M-5] **svd( )**

deconvolve() function, [M-5] fft( )
decrement operator, [M-2] op_increment
default settings of system parameters, [P] set locale_functions, [P] set locale_ui, [R] query, [R] set_defaults
defective matrix, [M-6] Glossary
DEFF, *see* design effects
define,
  char subcommand, [P] char
  constraint subcommand, [R] constraint
  label subcommand, [D] label
  matrix subcommand, [P] matrix define
  program subcommand, [P] program, [P] program properties
  scalar subcommand, [P] scalar
  transmap subcommand, [R] translate
DEFT, *see* design effects
degree-to-radian conversion, [FN] Mathematical functions
degree-of-freedom adjustment, [SEM] Glossary
degrees of freedom, [MI] mi estimate, [MI] mi predict
  for coefficients, complete, *see* complete degrees of freedom for coefficients, *also see* estimation, degrees of freedom for coefficients
delete, [M-5] unlink( )
delete, cluster subcommand, [MV] cluster programming utilities
deleting
  casewise, [D] egen
  files, [D] erase
  variables or observations, [D] drop
#delimit command, [M-2] semicolons, [P] #delimit
delimited,
  export subcommand, [D] import delimited
  import subcommand, [D] import delimited
delimiter
  for comments, [P] comments
  for lines, [P] #delimit
delta, *see* $\delta$
  beta influence statistic, [R] clogit postestimation, [R] logistic postestimation, [R] logit postestimation
  chi-squared influence statistic, [R] clogit postestimation, [R] logistic postestimation, [R] logit postestimation
  deviance influence statistic, [R] clogit postestimation, [R] logistic postestimation, [R] logit postestimation
  method, [R] margins, [R] nlcom, [R] predictnl, [R] testnl, [SEM] estat residuals, [SEM] estat teffects, [SVY] variance estimation, [SVY] Glossary
dendrogram, [G-2] graph other, [MV] cluster, [MV] cluster dendrogram, [MV] Glossary
dendrogram, cluster subcommand, [MV] cluster dendrogram
denominator degrees of freedom
  ANOVA, [ME] mixed, [ME] Glossary
  Kenward–Roger, [ME] mixed, [ME] Glossary
  repeated, [ME] mixed, [ME] Glossary
  residual, [ME] mixed, [ME] Glossary
  Satterthwaite, [ME] mixed, [ME] Glossary
density
  estimation, kernel, [R] kdensity
  functions, [M-5] normal( )
  smoothing, [G-2] graph other
density option, [G-2] graph twoway histogram
density-distribution sunflower plot, [R] sunflower
dereference, [M-6] Glossary
dereferencing, [M-2] ftof, [M-2] pointers
_deriv() function, [M-5] deriv( )
deriv() function, [M-5] deriv( )
derivative of incomplete gamma function, [FN] Mathematical functions, [FN] Statistical functions
derivatives, [M-5] deriv( )
derivatives, numeric, [R] dydx, [R] testnl
derived plottypes, [G-3] *advanced_options*
deriv_init() functions, [M-5] deriv( )
deriv_init_*() functions, [M-5] deriv( )
deriv_query() function, [M-5] deriv( )
deriv_result_*() functions, [M-5] deriv( )
describe,
  ado subcommand, [R] net
  bcal subcommand, [D] bcal
  classutil subcommand, [P] classutil
  estimates subcommand, [R] estimates describe
  forecast subcommand, [TS] forecast describe
  graph subcommand, [G-2] graph describe
  irf subcommand, [TS] irf describe
  mata subcommand, [M-3] mata describe
  mi subcommand, [MI] mi describe
  net subcommand, [R] net
  putexcel subcommand, [P] putexcel
  ssc subcommand, [R] ssc
  ssd subcommand, [SEM] ssd
describe command, [D] describe, [U] 12.6 Dataset, variable, and value labels
describing graph, [G-2] graph describe
describing mi data, [MI] mi describe
descriptive statistics,
  CIs for means, proportions, and counts, [R] ci
  correlations, [R] correlate, [R] pcorr, [R] tetrachoric
  creating dataset containing, [D] collapse
  creating variables containing, [D] egen
  displaying, [D] codebook, [D] pctile, [R] grmeanby, [R] lv, [R] summarize, [XT] xtsum, [XT] xttab
  estimation, [R] mean, [R] proportion, [R] ratio, [R] total
  means, [R] ameans, [R] summarize
  percentiles, [R] centile

descriptive statistics, *continued*
pharmacokinetic data,
make dataset of, [R] **pkcollapse**
summarize, [R] **pksumm**
reporting, [SEM] **estat summarize**
tables, [R] **table**, [R] **tabstat**, [R] **tabulate oneway**, [R] **tabulate twoway**, [R] **tabulate, summarize()**
`design`, `fvset` subcommand, [R] **fvset**
design effects, [R] **loneway**, [SVY] **estat**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**, [SVY] **Glossary**
design matrix, [M-5] **designmatrix( )**, [M-5] **I( )**
`designmatrix()` function, [M-5] **designmatrix( )**
`destring` command, [D] **destring**
`destroy()` function, [M-2] **class**
destructor, [M-2] **class**
destructors, class, [P] **class**
`det()` function, [FN] **Matrix functions**, [M-5] **det( )**, [P] **matrix define**
determinant of matrix, [M-5] **det( )**, [P] **matrix define**
deterministic trend, [TS] **Glossary**
`dettriangular()` function, [M-5] **det( )**
deviance information criterion, [BAYES] **bayes**, [BAYES] **bayesstats ic**, [BAYES] **Glossary**
deviance residual, [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mestreg postestimation**, [R] **binreg postestimation**, [R] **fp postestimation**, [R] **glm postestimation**, [R] **logistic postestimation**, [R] **logit postestimation**, [R] **probit postestimation**, [ST] **stcox postestimation**, [ST] **streg postestimation**
deviation cross product, [M-5] **crossdev( )**, [M-5] **quadcross( )**
`dexponential`, `tssmooth` subcommand, [TS] **tssmooth dexponential**
`df`, `estat` subcommand, [ME] **mixed postestimation**
`dfactor` command, [TS] **dfactor**, [TS] **dfactor postestimation**
DFBETA, [R] **regress postestimation**, [ST] **stcox postestimation**, [ST] **stcrreg postestimation**, [ST] **Glossary**
`dfbeta` command, [R] **regress postestimation**
`dfgls` command, [TS] **dfgls**
DFITS, [R] **regress postestimation**
DFP algorithm, [R] **ml**
`dfuller` command, [TS] **dfuller**
`dgammapda()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`dgammapdada()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`dgammapdadx()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`dgammapdx()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`dgammapdxdx()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`dhms()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`_diag()` function, [M-5] **_diag( )**
`diag()` function, [FN] **Matrix functions**, [M-5] **diag( )**, [P] **matrix define**
`diag0cnt()` function, [FN] **Matrix functions**, [M-5] **diag0cnt( )**, [P] **matrix define**
diagnostic codes, [D] **icd**, [D] **icd9**, [D] **icd10**
diagnostic plots, [G-2] **graph other**, [R] **diagnostic plots**, [R] **logistic postestimation**, [R] **regress postestimation diagnostic plots**
diagnostics, regression, *see* regression diagnostics
diagonal, [M-5] **diagonal( )**, [M-6] **Glossary**
matrix, [M-5] **_diag( )**, [M-5] **diag( )**, [M-5] **diagonal( )**, [M-5] **isdiagonal( )**, [M-6] **Glossary**
vech model, [TS] **mgarch**, [TS] **mgarch dvech**
`diagonal()` function, [M-5] **diagonal( )**
diagonals of matrices, [P] **matrix define**
dialog
box, [P] **dialog programming**, [P] **window programming**, [P] **window fopen**, [P] **window manage**, [P] **window menu**, [P] **window push**, [P] **window stopbox**, [R] **db**
programming, [P] **dialog programming**, [P] **window programming**, [P] **window fopen**, [P] **window manage**, [P] **window menu**, [P] **window push**, [P] **window stopbox**
DIC, *see* deviance information criterion
Dice coefficient similarity measure, [MV] ***measure_option***
dichotomous item, [IRT] **Glossary**
dichotomous outcome model, *see* outcomes, binary
Dickey–Fuller test, [TS] **dfgls**, [TS] **dfuller**
dictionaries, [D] **export**, [D] **import**, [D] **infile (fixed format)**, [D] **infix (fixed format)**, [D] **outfile**, [M-5] **asarray( )**
DIF, *see* differential item functioning
`diff()`, `egen` function, [D] **egen**
difference of estimated coefficients, *see* linear combinations of estimators
difference operator, [TS] **Glossary**, [U] **11.4.4 Time-series varlists**
differences of two means test, [SVY] **svy postestimation**
differential item functioning, [IRT] **difmh**, [IRT] **Glossary**
differentiation, [M-5] **deriv( )**
`difficult` option, [R] **maximize**
difficulty, [IRT] **Glossary**
`difmh` command, [IRT] **difmh**
`digamma()` function, [FN] **Mathematical functions**, [M-5] **factorial( )**
digitally signing data, *see* `datasignature` command
digits, controlling the number displayed, [D] **format**, [U] **12.5 Formats: Controlling how data are displayed**

dilation, [MV] **procrustes**, [MV] **Glossary**
dimension, [MV] **Glossary**
diminishing adaptation, [BAYES] **bayesmh**, [BAYES] **Glossary**
`dir`,
  `ado` subcommand, [R] **net**
  `bcal` subcommand, [D] **bcal**
  `classutil` subcommand, [P] **classutil**
  `cluster` subcommand, [MV] **cluster utility**
  `constraint` subcommand, [R] **constraint**
  `_estimates` subcommand, [P] **_estimates**
  `estimates` subcommand, [R] **estimates store**
  `graph` subcommand, [G-2] **graph dir**
  `label` subcommand, [D] **label**
  `macro` subcommand, [P] **macro**
  `matrix` subcommand, [P] **matrix utility**
  `postutil` subcommand, [P] **postfile**
  `program` subcommand, [P] **program**
  `_return` subcommand, [P] **_return**
  `scalar` subcommand, [P] **scalar**
  `serset` subcommand, [P] **serset**
  `sysuse` subcommand, [D] **sysuse**
`dir` command, [D] **dir**
`dir()` function, [M-5] **dir( )**
`dir` macro extended function, [P] **macro**
direct standardization, [R] **dstdize**, [R] **mean**, [R] **proportion**, [R] **ratio**, [SVY] **direct standardization**, [SVY] **Glossary**
direction of an effect, [PSS] **power**
directional test, *see* one-sided test
directories, [M-5] **chdir( )**, [M-5] **dir( )**, [M-5] **direxists( )**, [P] **creturn**, [U] **11.6 Filenaming conventions**, [U] **18.3.11 Constructing Windows filenames by using macros**
  changing, [D] **cd**
  creating, [D] **mkdir**
  listing, [D] **dir**
  location of ado-files, [U] **17.5 Where does Stata look for ado-files?**
  removing, [D] **rmdir**
directory, class, [P] **classutil**
`direxists()` function, [M-5] **direxists( )**
`direxternal()` function, [M-5] **direxternal( )**
`discard`
  command, [P] **discard**, [U] **18.11.3 Debugging ado-files**
`discard`, relationship to `graph drop`, [G-2] **graph drop**
discordant
  pairs, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **Glossary**
  proportion, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **Glossary**
  sets, [PSS] **power mcc**, [PSS] **Glossary**
`discrete` option, [G-2] **graph twoway histogram**
discrete parameters, [BAYES] **bayestest interval**, [BAYES] **Glossary**
discrete survival data, [ST] **discrete**
discrete-response regression, [SVY] **svy estimation**
`discrim`
  `knn` command, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim knn**, [MV] **discrim knn postestimation**
  `lda` command, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim lda**, [MV] **discrim lda postestimation**
  `logistic` command, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim logistic**, [MV] **discrim logistic postestimation**
  `qda` command, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim qda**, [MV] **discrim qda postestimation**
discriminant analysis, [MV] **candisc**, [MV] **discrim**, [MV] **discrim knn**, [MV] **discrim lda**, [MV] **discrim logistic**, [MV] **discrim qda**, [MV] **Glossary**
  loading plot, [MV] **scoreplot**
  score plot, [MV] **scoreplot**
discriminant function, [MV] **discrim**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **Glossary**
discriminating variables, [MV] **Glossary**
discrimination, [IRT] **Glossary**
disparity, [MV] **Glossary**
dispersion, measures of, [D] **pctile**, [XT] **xtsum**, *see* percentiles, displaying, *see* standard deviations, displaying, *see* variance, displaying, *see* range of data
display
  as error, [M-5] **displayas( )**, [M-5] **errprintf( )**
  as text, as result, etc., [M-5] **displayas( )**
  column, [I] **Glossary**
  formats, [D] **describe**, [D] **format**, [P] **macro**, [U] **12.5 Formats: Controlling how data are displayed**, [U] **24.3 Displaying dates and times**
  graph, [G-2] **graph display**
  settings, [R] **set showbaselevels**
  width and length, [R] **log**
`display`,
  `ereturn` subcommand, [P] **ereturn**
  `graph` subcommand, [G-2] **graph display**
  `ml` subcommand, [R] **ml**
`display` command, [P] **display**, [P] **macro**, [U] **19.1.2 A list of the immediate commands**
  as a calculator, [R] **display**
`display()` function, [M-5] **display( )**
`display` macro extended function, [P] **display**
`displayas()` function, [M-5] **displayas( )**
`displayflush()` function, [M-5] **displayflush( )**
displaying, *also see* printing, logs (output)
  contents, [D] **describe**
  data, [D] **edit**, [D] **list**
  files, [D] **type**
  long strings, *see* string variables, long
  macros, [P] **macro**

displaying, *continued*
matrix, [P] **matrix utility**
named graphs, [G-2] **graph display**, [G-2] **graph use**
output, [P] **display**, [P] **quietly**, [P] **smcl**, [P] **tabdisp**
previously typed lines, [R] **#review**
scalar expressions, [P] **display**, [P] **scalar**
stored results, [R] **stored results**
dissimilarity, [MV] **Glossary**
matrix, [MV] **matrix dissimilarity**, [MV] **Glossary**, [P] **matrix dissimilarity**
measures, [MV] **cluster**, [MV] **cluster programming utilities**, [MV] **matrix dissimilarity**, [MV] **mds**, [MV] ***measure_option***, [P] **matrix dissimilarity**
absolute value, [MV] ***measure_option***
Bray and Curtis, [MV] **clustermat**
Canberra, [MV] ***measure_option***
Euclidean, [MV] ***measure_option***
Gower, [MV] ***measure_option***
maximum value, [MV] ***measure_option***
Minkowski, [MV] ***measure_option***
`dissimilarity`, `matrix` subcommand, [MV] **matrix dissimilarity**, [P] **matrix dissimilarity**
distance matrices, [MV] **matrix dissimilarity**, [P] **matrix dissimilarity**
distances, *see* dissimilarity measures
`distances`, `estat` subcommand, [MV] **ca postestimation**
distribution functions, [M-5] **normal( )**
distributional diagnostic plots, [G-2] **graph other**
distributions,
examining, [D] **pctile**, [R] **ameans**, [R] **centile**, [R] **kdensity**, [R] **mean**, [R] **pksumm**, [R] **summarize**, [R] **total**
income, [R] **inequality**
plots, [R] **cumul**, [R] **cusum**, [R] **diagnostic plots**, [R] **dotplot**, [R] **histogram**, [R] **kdensity**, [R] **ladder**, [R] **lv**, [R] **spikeplot**, [R] **stem**
standard population, [R] **dstdize**
testing equality of, [R] **ksmirnov**, [R] **kwallis**, [R] **ranksum**, [R] **signrank**
testing for normality, [MV] **mvtest normality**, [R] **sktest**, [R] **swilk**
transformations
to achieve normality, [R] **boxcox**, [R] **ladder**
to achieve zero skewness, [R] **lnskew0**
disturbance term, [XT] **Glossary**
division operator, *see* arithmetic operators
divisive hierarchical clustering methods, [MV] **cluster**, [MV] **Glossary**
DLL, [P] **plugin**
`Dmatrix()` function, [M-5] **Dmatrix( )**
`do` command, [R] **do**, [U] **16 Do-files**
`.do` file, [U] **11.6 Filenaming conventions**
`do ... while`, [M-2] **do**, [M-2] **continue**, [M-2] **break**
`dockable`, `set` subcommand, [R] **set**
`dockingguides`, `set` subcommand, [R] **set**
documentation, [U] **1 Read this—it will help**
keyword search on, [R] **search**, [U] **4 Stata's help and search facilities**
documenting data, [D] **codebook**, [D] **labelbook**, [D] **notes**
`_docx*()` functions, [M-5] **_docx*( )**
`doedit` command, [R] **doedit**
`dofb()` function, [D] **datetime business calendars**, [FN] **Date and time functions**, [M-5] **date( )**
`dofC()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`dofc()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`dofh()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
do-files, [P] **break**, [P] **include**, [P] **version**, [R] **do**, [U] **16 Do-files**, [U] **18.2 Relationship between a program and a do-file**
adding comments to, [P] **comments**
editing, [R] **doedit**
long lines, [P] **#delimit**, [U] **18.11.2 Comments and long lines in ado-files**
`dofm()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`dofq()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`dofw()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`dofy()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
domain sampling, [MV] **alpha**
Doornik–Hansen normality test, [MV] **mvtest normality**
dose–response models, [R] **binreg**, [R] **glm**, [R] **logistic**
dose–response trend, [PSS] **power**, [PSS] **power trend**
`dot`,
`graph` subcommand, [G-2] **graph dot**
`graph twoway` subcommand, [G-2] **graph twoway dot**
dot plots, [G-2] **graph dot**, [G-2] **graph twoway dot**, [G-3] ***area_options***, [G-3] ***line_options***
`dotplot` command, [R] **dotplot**
dotted lines, [G-4] ***linepatternstyle***
`double`, [D] **data types**, [U] **12.2.2 Numeric storage types**
double-exponential smoothing, [TS] **tssmooth dexponential**
double-precision floating point number, [U] **12.2.2 Numeric storage types**
double quotes, [P] **macro**
`doublebuffer`, `set` subcommand, [R] **set**
doubly robust estimator, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipwra**, [TE] **Glossary**
`dow()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**, [U] **24.5 Extracting components of dates and times**

doy() function, [D] datetime, [FN] Date and time functions, [M-5] date( )
dp, set subcommand, [D] format, [R] set
drawnorm command, [D] drawnorm
drift, [TS] Glossary
drop,
duplicates subcommand, [D] duplicates
label subcommand, [D] label
classutil subcommand, [P] classutil
cluster subcommand, [MV] cluster utility
constraint subcommand, [R] constraint
_estimates subcommand, [P] _estimates
estimates subcommand, [R] estimates store
forecast subcommand, [TS] forecast drop
graph subcommand, [G-2] graph drop
irf subcommand, [TS] irf drop
macro subcommand, [P] macro
mata subcommand, [M-3] mata drop
matrix subcommand, [P] matrix utility
notes subcommand, [D] notes
program subcommand, [P] program
_return subcommand, [P] _return
scalar subcommand, [P] scalar
serset subcommand, [P] serset
drop command, [D] drop
dropline, graph twoway subcommand, [G-2] graph twoway dropline
dropout, [PSS] Glossary
dropping
graphs, [G-2] graph drop
programs, [P] discard
variables and observations, [D] drop
ds command, [D] ds
dsign() function, [M-5] dsign( ), [M-5] sign( )
dstdize command, [R] dstdize
.dta file, [U] 11.6 Filenaming conventions
.dta file extension, technical description, [P] file formats .dta
.dtasig file, [U] 11.6 Filenaming conventions
dual scaling, [MV] ca
Duda and Hart index stopping rules, [MV] cluster stop
dummy variables, *see* indicator variables, *see* indicators
Duncan's multiple-comparison adjustment, *see* multiple comparisons, Duncan's method
dunnettprob() function, [FN] Statistical functions, [M-5] normal( )
Dunnett's multiple comparison adjustment, *see* multiple comparisons, Dunnett's method
Dunnett's multiple range distribution,
cumulative, [FN] Statistical functions
inverse cumulative, [FN] Statistical functions
_dup(#), display directive, [P] display
duplicate observations,
dropping, [D] duplicates
identifying, [D] duplicates
duplicates
drop command, [D] duplicates
duplicates, *continued*
examples command, [D] duplicates
list command, [D] duplicates
report command, [D] duplicates
tag command, [D] duplicates
duplicating
clustered observations, [D] expandcl
observations, [D] expand
duplication matrix, [M-5] Dmatrix( )
duration analysis, *see* survival analysis
Durbin–Watson statistic, [R] regress postestimation time series, [TS] prais
durbinalt, estat subcommand, [R] regress postestimation time series
Durbin's alternative test, [R] regress postestimation time series
dvech, mgarch subcommand, [TS] mgarch dvech
dwatson, estat subcommand, [R] regress postestimation time series
dyadic operator, [M-2] syntax, [M-6] Glossary
dydx command, [R] dydx
dynamic
conditional-correlation model, [TS] mgarch, [TS] mgarch dcc
factor model, [TS] dfactor, [TS] dfactor postestimation, *also see* state-space model
forecast, [TS] arch, [TS] arfima, [TS] fcast compute, [TS] fcast graph, [TS] forecast, [TS] forecast adjust, [TS] forecast clear, [TS] forecast coefvector, [TS] forecast create, [TS] forecast describe, [TS] forecast drop, [TS] forecast estimates, [TS] forecast exogenous, [TS] forecast identity, [TS] forecast list, [TS] forecast query, [TS] forecast solve, [TS] mgarch, [TS] Glossary, [U] 20.20 Dynamic forecasts and simulations
model, [XT] Glossary
panel-data regression, [XT] xtabond, [XT] xtdpd, [XT] xtdpdsys
regression model, [TS] arfima, [TS] arima, [TS] var
structural simultaneous equations, [TS] var svar
dynamic-multiplier function, [TS] irf, [TS] irf cgraph, [TS] irf create, [TS] irf ctable, [TS] irf ograph, [TS] irf table, [TS] var intro, [TS] Glossary
.dynamicmv built-in class function, [P] class

## E

e()
function, [FN] Programming functions, [M-5] e( )
stored results, [P] ereturn, [P] _estimates, [P] return, [R] stored results, [U] 18.8 Accessing results calculated by other programs, [U] 18.9 Accessing results calculated by estimation commands, [U] 18.10.2 Storing results in e()
e(functions) macro extended function, [P] macro
e(macros) macro extended function, [P] macro

e(matrices) macro extended function, [P] **macro**
e(sample) function, [FN] **Programming functions**, [P] **ereturn**, [P] **return**
e(sample), resetting, [R] **estimates save**
e(scalars) macro extended function, [P] **macro**
EB, *see* empirical Bayes
EBCDIC files, [D] **filefilter**, [D] **infile (fixed format)**, [U] **21.2.9 If you have EBCDIC data**
e-class command, [P] **program**, [P] **return**, [R] **stored results**, [U] **18.8 Accessing results calculated by other programs**
economist scheme, [G-3] ***axis_options***, [G-4] **scheme economist**
edit command, [D] **edit**
editing
  ado-files and do-files, [R] **doedit**
  commands, [U] **10 Keyboard use**
  data, [D] **edit**, [D] **generate**, [D] **merge**, [D] **recode**
  files while in Stata, [R] **doedit**
  graphs, [G-1] **graph editor**
  output, [U] **15 Saving and printing output—log files**
_editmissing() function, [M-5] **editmissing( )**
editmissing() function, [M-5] **editmissing( )**
_edittoint() function, [M-5] **edittoint( )**
edittoint() function, [M-5] **edittoint( )**
_edittointtol() function, [M-5] **edittoint( )**
edittointtol() function, [M-5] **edittoint( )**
_edittozero() function, [M-5] **edittozero( )**
edittozero() function, [M-5] **edittozero( )**
_edittozerotol() function, [M-5] **edittozero( )**
edittozerotol() function, [M-5] **edittozero( )**
_editvalue() function, [M-5] **editvalue( )**
editvalue() function, [M-5] **editvalue( )**
EE estimator, *see* estimating-equation estimator
effect
  detection of, *see* minimum detectable effect size
  minimum detectable, *see* minimum detectable effect size
  size, [PSS] **Glossary**, [ST] **Glossary**, *also see* $\delta$
  treatment, *see* treatment effects
effective sample size, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats ess**, [BAYES] **Glossary**
effects, estat subcommand, [SVY] **estat**
effects,
  direct, [SEM] **estat teffects**, [SEM] **example 7**, [SEM] **example 42g**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
  indirect, [SEM] **estat teffects**, [SEM] **example 7**, [SEM] **example 42g**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
  total, [SEM] **estat teffects**, [SEM] **example 7**, [SEM] **example 42g**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
effect-size
  curve, [PSS] **Glossary**
effect-size, *continued*
  determination, [PSS] **intro**, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
efficiency of Markov chain Monte Carlo, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **bayesstats ess**
efficiency of MCMC, [BAYES] **Glossary**
efficiency, query subcommand, [R] **query**
eform, estat subcommand, [SEM] **estat eform**
*eform_option*, [R] ***eform_option***
EGARCH, *see* exponential generalized autoregressive conditional heteroskedasticity
egen command, [D] **egen**, [MI] **mi passive**, [MI] **mi xeq**
EGLS, *see* estimated generalized least squares
_eigen_la() function, [M-5] **eigensystem( )**
_eigensystem() function, [M-5] **eigensystem( )**
eigensystem() function, [M-5] **eigensystem( )**
_eigensystemselect*() functions, [M-5] **eigensystemselect( )**
eigensystemselect*() functions, [M-5] **eigensystemselect( )**
eigenvalue stability condition, [TS] **estat aroots**, [TS] **varstable**, [TS] **vecstable**
eigenvalue stability index, [SEM] **estat stable**
eigenvalues, [M-5] **eigensystem( )**, [M-6] **Glossary**, [MV] **factor**, [MV] **factor postestimation**, [MV] **pca**, [MV] **rotate**, [MV] **rotatemat**, [MV] **screeplot**, [MV] **Glossary**, [P] **matrix eigenvalues**, [P] **matrix svd**, [P] **matrix symeigen**
_eigenvalues() function, [M-5] **eigensystem( )**
eigenvalues() function, [M-5] **eigensystem( )**
eigenvalues, matrix subcommand, [P] **matrix eigenvalues**
eigenvectors, [M-5] **eigensystem( )**, [M-6] **Glossary**, [MV] **factor**, [MV] **factor postestimation**, [MV] **pca**, [MV] **rotate**, [MV] **rotatemat**, [MV] **scoreplot**, [MV] **Glossary**, [P] **matrix svd**, [P] **matrix symeigen**
EIM, *see* expected information matrix
eim, *see* sem option vce()
eivreg command, [R] **eivreg**, [R] **eivreg postestimation**
el() function, [FN] **Matrix functions**, [P] **matrix define**
elimination matrix, [M-5] **Lmatrix( )**
ellipsis, [G-4] ***text***

else command, [P] if
*eltype*, [M-2] declarations, [M-6] Glossary
eltype() function, [M-5] eltype( )
EM, *see* expectation-maximization algorithm
empirical Bayes, [IRT] irt 1pl postestimation, [IRT] irt 2pl postestimation, [IRT] irt 3pl postestimation, [IRT] irt grm postestimation, [IRT] irt nrm postestimation, [IRT] irt pcm postestimation, [IRT] irt rsm postestimation, [IRT] irt hybrid postestimation, [IRT] Glossary, [ME] mecloglog postestimation, [ME] meglm, [ME] meglm postestimation, [ME] melogit postestimation, [ME] menbreg postestimation, [ME] meologit postestimation, [ME] meoprobit postestimation, [ME] mepoisson postestimation, [ME] meprobit postestimation, [ME] mestreg postestimation, [ME] Glossary
  means, *see* posterior mean
  modes, *see* posterior mode
  predictions, [SEM] intro 7, [SEM] methods and formulas for gsem, [SEM] predict after gsem
empirical cumulative distribution function, [R] cumul
emptycells, set subcommand, [R] set, [R] set emptycells
Encapsulated PostScript, [G-2] graph export, [G-3] *eps_options*, [G-4] *text*
encode command, [D] encode, [U] 23.2 Categorical string variables
encodings, [D] unicode, [D] unicode encoding, [I] Glossary
end command, [M-3] end
end-of-line characters, [D] changeeol
ending a Stata session, [P] exit, [R] exit
endless loop, *see* loop, endless
endogeneity test, [R] ivregress postestimation
endogenous
  covariates, [R] gmm, [R] ivpoisson, [R] ivprobit, [R] ivregress, [R] ivtobit, [R] reg3, [XT] xtdpd, [XT] xtdpdsys, [XT] xthtaylor, [XT] xtivreg
  treatment, [TE] eteffects, [TE] etpoisson, [TE] etregress
  treatment-effects model, [SEM] example 46g
  variable, [SEM] intro 4, [SEM] Glossary, [SVY] svy estimation, [TS] Glossary, [XT] Glossary
endogenous, estat subcommand, [R] ivregress postestimation
ends(), egen function, [D] egen
Engle's LM test, [R] regress postestimation time series
Enhanced Metafile, [G-2] graph export
ensuring mi data are consistent, [MI] mi update
entering data, *see* importing data, *see* inputting data interactively, *see* reading data from disk
environment macro extended function, [P] macro
environment variables (Unix), [P] macro
eolchar, set subcommand, [R] set
Epanechnikov kernel function, [G-2] graph twoway kdensity, [G-2] graph twoway lpoly, [R] kdensity, [R] lpoly, [R] qreg, [TE] tebalance density, [TE] tebalance overid, [TE] teffects overlap
epidemiological tables, [R] epitab
epidemiology, [R] epitab, [ST] strate
epidemiology and related,
  Brier score decomposition, [R] brier
  interrater agreement, [R] kappa
  meta-analysis, [R] meta
  pharmacokinetic data, *see* pharmacokinetic data
  ROC analysis, *see* receiver operating characteristic analysis
  standardization, [R] dstdize
  symmetry and marginal homogeneity tests, [R] symmetry
  tables, [R] tabulate twoway
epsdouble() function, [FN] Programming functions
epsfloat() function, [FN] Programming functions
epsilon() function, [M-5] epsilon( ), [M-6] Glossary
eqgof, estat subcommand, [SEM] estat eqgof
eqtest, estat subcommand, [SEM] estat eqtest
equal FMI test, [MI] mi estimate, [MI] mi test, [MI] Glossary
equal-allocation design, *see* balanced design
equality of means tests, [MV] hotelling, [MV] manova, [MV] mvtest means
equality operator, [U] 13.2.3 Relational operators
equality test of
  binomial proportions, [R] bitest
  coefficients, [R] pwcompare, [R] sureg, [R] test, [R] testnl, [SVY] svy postestimation
  distributions, [R] ksmirnov, [R] kwallis, [R] ranksum, [R] signrank
  margins, [R] margins, [R] pwcompare
  means, [R] contrast, [R] esize, [R] pwmean, [R] ttest, [R] ztest, [SVY] svy postestimation
  medians, [R] ranksum
  proportions, [R] bitest, [R] prtest
  ROC areas, [R] roccomp, [R] rocreg
  survivor functions, [ST] sts test
  variances, [R] sdtest
equal-tailed credible interval, [BAYES] intro, [BAYES] bayes, [BAYES] bayesmh, [BAYES] bayesstats summary, [BAYES] Glossary
equamax rotation, [MV] rotate, [MV] rotatemat, [MV] Glossary
equation names of matrix, [P] ereturn, [P] matrix define, [P] matrix rownames, [U] 14.2 Row and column names
_equilc() function, [M-5] _equilrc( )
equilibration, [M-5] _equilrc( )
_equilr() function, [M-5] _equilrc( )
_equilrc() function, [M-5] _equilrc( )
equivalence test, [R] pk, [R] pkequiv
erase, [M-5] unlink( )

erase, mi subcommand, [MI] mi erase, [MI] styles
erase, snapshot subcommand, [D] snapshot
erase command, [D] erase
erasing files, [D] erase
erasing graph files, [G-2] graph drop
ereturn
  clear command, [P] ereturn, [P] return
  display command, [P] ereturn
  list command, [P] ereturn, [P] return, [R] stored results
  local command, [P] ereturn, [P] return
  matrix command, [P] ereturn, [P] return
  post command, [P] ereturn, [P] makecns, [P] return
  repost command, [P] ereturn, [P] return
  scalar command, [P] ereturn, [P] return
error, [SEM] Glossary
  checking, [D] assert
  codes, [M-2] errors
  handling, [P] capture, [P] confirm, [P] error, [U] 16.1.4 Error handling in do-files
  messages and return codes, [P] error, [P] rmsg, [R] error messages, [U] 4.8.5 Return codes, [U] 8 Error messages and return codes, *also see* error handling
  searching, [R] search
  variable, [SEM] intro 4, [SEM] Glossary
error command, [P] error
_error() function, [M-5] error( )
error() function, [M-5] error( )
error, reshape subcommand, [D] reshape
error-bar charts, [R] serrbar
error-components model, [XT] xthtaylor, [XT] Glossary
errorrate, estat subcommand, [MV] discrim estat, [MV] discrim knn postestimation, [MV] discrim lda postestimation, [MV] discrim logistic postestimation, [MV] discrim qda postestimation
errors-in-variables regression, [R] eivreg
errprintf() function, [M-5] errprintf( )
esample, estimates subcommand, [R] estimates save
esize and esizei commands, [R] esize
esize, estat subcommand, [R] regress postestimation
ESS, *see* effective sample size
ess, bayesstats subcommand, [BAYES] bayesstats
estat, [P] estat programming
  abond command, [XT] xtabond postestimation, [XT] xtdpd postestimation, [XT] xtdpdsys postestimation
  acplot command, [TS] estat acplot
  alternatives command, [R] asclogit postestimation, [R] asmprobit postestimation, [R] asroprobit postestimation, [R] nlogit postestimation
  anova command, [MV] discrim lda postestimation

estat, *continued*
  anti command, [MV] factor postestimation, [MV] pca postestimation
  archlm command, [R] regress postestimation time series
  aroots command, [TS] estat aroots
  bgodfrey command, [R] regress postestimation time series
  bootstrap command, [R] bootstrap postestimation
  canontest command, [MV] discrim lda postestimation
  classfunctions command, [MV] discrim lda postestimation
  classification command, [R] estat classification
  classtable command, [MV] discrim estat, [MV] discrim knn postestimation, [MV] discrim lda postestimation, [MV] discrim logistic postestimation, [MV] discrim qda postestimation
  common command, [MV] factor postestimation
  compare command, [MV] procrustes postestimation
  concordance command, [ST] stcox postestimation
  config command, [MV] mds postestimation
  coordinates command, [MV] ca postestimation, [MV] mca postestimation
  correlation command, [R] asmprobit postestimation, [R] asroprobit postestimation
  correlations command, [MV] canon postestimation, [MV] discrim lda postestimation, [MV] discrim qda postestimation, [MV] mds postestimation
  covariance command, [MV] discrim lda postestimation, [MV] discrim qda postestimation, [R] asmprobit postestimation, [R] asroprobit postestimation
  cv command, [SVY] estat
  df command, [ME] mixed postestimation
  distances command, [MV] ca postestimation
  durbinalt command, [R] regress postestimation time series
  dwatson command, [R] regress postestimation time series
  effects command, [SVY] estat
  eform command, [SEM] intro 7, [SEM] estat eform, [SEM] example 33g, [SEM] example 34g
  endogenous command, [R] ivregress postestimation
  eqgof command, [SEM] intro 7, [SEM] estat eqgof, [SEM] example 3
  eqtest command, [SEM] intro 7, [SEM] estat eqtest, [SEM] example 13
  errorrate command, [MV] discrim estat, [MV] discrim knn postestimation, [MV] discrim lda postestimation, [MV] discrim logistic postestimation, [MV] discrim qda postestimation
  esize command, [R] regress postestimation
  factors command, [MV] factor postestimation

estat, *continued*
facweights command, [R] **asmprobit postestimation**, [R] **asroprobit postestimation**
firststage command, [R] **ivregress postestimation**
framework command, [SEM] **intro 7**, [SEM] **estat framework**, [SEM] **example 11**
ggof command, [SEM] **intro 7**, [SEM] **estat ggof**, [SEM] **example 21**
ginvariant command, [SEM] **intro 7**, [SEM] **estat ginvariant**, [SEM] **example 22**
gof command, [R] **estat gof**, [R] **poisson postestimation**, [SEM] **estat gof**, [SEM] **example 4**, [SVY] **estat**
grdistances command, [MV] **discrim lda postestimation**, [MV] **discrim qda postestimation**
grmeans command, [MV] **discrim lda postestimation**
group command, [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **meologit postestimation**, [ME] **meoprobit postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mestreg postestimation**, [ME] **mixed postestimation**
grsummarize command, [MV] **discrim estat**, [MV] **discrim knn postestimation**, [MV] **discrim lda postestimation**, [MV] **discrim logistic postestimation**, [MV] **discrim qda postestimation**
hettest command, [R] **regress postestimation**
ic command, [R] **estat**, [R] **estat ic**
icc command, [ME] **melogit postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **mixed postestimation**
imtest command, [R] **regress postestimation**
inertia command, [MV] **ca postestimation**
kmo command, [MV] **factor postestimation**, [MV] **pca postestimation**
lceffects command, [SVY] **estat**
list command, [MV] **discrim estat**, [MV] **discrim knn postestimation**, [MV] **discrim lda postestimation**, [MV] **discrim logistic postestimation**, [MV] **discrim qda postestimation**
loadings command, [MV] **ca postestimation**, [MV] **canon postestimation**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **pca postestimation**
manova command, [MV] **discrim lda postestimation**
mfx command, [R] **asclogit postestimation**, [R] **asmprobit postestimation**, [R] **asroprobit postestimation**
mindices command, [SEM] **intro 7**, [SEM] **estat mindices**, [SEM] **example 5**, [SEM] **example 9**
mvreg command, [MV] **procrustes postestimation**

estat, *continued*
nproc command, [R] **rocreg postestimation**
overid command, [R] **gmm postestimation**, [R] **ivpoisson postestimation**, [R] **ivregress postestimation**
ovtest command, [R] **regress postestimation**
pairwise command, [MV] **mds postestimation**
period command, [TS] **ucm postestimation**
phtest command, [ST] **stcox PH-assumption tests**
predict command, [R] **exlogistic postestimation**
profiles command, [MV] **ca postestimation**
quantiles command, [MV] **mds postestimation**
recovariance command, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mixed postestimation**
report command, [IRT] **estat report**
residuals command, [MV] **factor postestimation**, [MV] **pca postestimation**, [SEM] **intro 7**, [SEM] **estat residuals**, [SEM] **example 10**
rotate command, [MV] **canon postestimation**
rotatecompare command, [MV] **canon postestimation**, [MV] **factor postestimation**, [MV] **pca postestimation**
sargan command, [XT] **xtabond postestimation**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys postestimation**
sbknown command, [TS] **estat sbknown**
sbsingle command, [TS] **estat sbsingle**
scoretests command, [SEM] **intro 7**, [SEM] **estat scoretests**, [SEM] **example 8**
sd command, [SVY] **estat**
se command, [R] **exlogistic postestimation**, [R] **expoisson postestimation**
size command, [SVY] **estat**
smc command, [MV] **factor postestimation**, [MV] **pca postestimation**
stable command, [SEM] **intro 7**, [SEM] **estat stable**, [SEM] **example 7**
stdize: prefix command, [SEM] **estat stdize**, [SEM] **example 16**
strata command, [SVY] **estat**
stress command, [MV] **mds postestimation**
structure command, [MV] **discrim lda postestimation**, [MV] **factor postestimation**
subinertia command, [MV] **mca postestimation**
summarize command, [MV] **ca postestimation**, [MV] **discrim estat**, [MV] **discrim knn postestimation**, [MV] **discrim lda postestimation**, [MV] **discrim logistic postestimation**, [MV] **discrim qda postestimation**, [MV] **factor postestimation**, [MV] **mca postestimation**, [MV] **mds postestimation**, [MV] **pca postestimation**, [MV] **procrustes postestimation**, [R] **estat**, [R] **estat summarize**, [SEM] **estat summarize**
svyset command, [SVY] **estat**
szroeter command, [R] **regress postestimation**
table command, [MV] **ca postestimation**

estat, *continued*
teffects command, [SEM] **estat teffects**, [SEM] **example 7**, [SEM] **example 42g**
vce command, [R] **estat**, [R] **estat vce**, [SVY] **estat**
vif command, [R] **regress postestimation**
wcorrelation command, [ME] **mixed postestimation**, [XT] **xtgee postestimation**
estimate linear combinations of coefficients, *see* linear combinations of estimators
estimate, mi subcommand, [MI] **mi estimate**, [MI] **mi estimate using**
estimated generalized least squares, [XT] **xtgls**, [XT] **xtivreg**, [XT] **xtreg**
_estimates
clear command, [P] **_estimates**
dir command, [P] **_estimates**
drop command, [P] **_estimates**
hold command, [P] **_estimates**
unhold command, [P] **_estimates**
estimates
clear command, [R] **estimates store**
command, [R] **suest**, [SVY] **svy postestimation**
introduction, [R] **estimates**
describe command, [R] **estimates describe**
dir command, [R] **estimates store**
drop command, [R] **estimates store**
esample command, [R] **estimates save**
for command, [R] **estimates for**
notes command, [R] **estimates notes**
query command, [R] **estimates store**
replay command, [R] **estimates replay**
restore command, [R] **estimates store**
save command, [R] **estimates save**
stats command, [R] **estimates stats**
store command, [R] **estimates store**
table command, [R] **estimates table**
title command, [R] **estimates title**
use command, [R] **estimates save**
estimates, forecast subcommand, [TS] **forecast estimates**
estimating-equation estimator, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects ra**, [TE] **Glossary**
estimation
allowed estimation commands, [MI] **estimation**
Bayesian, *see* Bayesian, estimation
commands, [P] **ereturn**, [P] **_estimates**, [U] **18.9 Accessing results calculated by estimation commands**, [U] **26 Overview of Stata estimation commands**
allowing constraints in, [P] **makecns**
eliminating stored information from, [P] **discard**
obtaining predictions after, [P] **_predict**
obtaining robust estimates, [P] **_robust**
saving results from, [P] **_estimates**
degrees of freedom for coefficients, [MI] **mi estimate**
method, [SEM] **Glossary**
estimation, *continued*
options, [R] **estimation options**, [SEM] **gsem estimation options**, [SEM] **sem estimation options**
postestimation dialog boxes, [R] **postest**
posting VCE, [MI] **mi estimate**
predictions after, *see* predictions, obtaining after estimation
results,
clearing, [P] **ereturn**, [P] **_estimates**, [R] **estimates store**
listing, [P] **ereturn**, [P] **_estimates**
saving, [P] **_estimates**
storing, [P] **ereturn**
storing and restoring, [R] **estimates store**
tables of, [R] **estimates table**
sample, summarizing, [R] **estat**, [R] **estat summarize**
test after, [MI] **mi estimate**, [MI] **mi test**, [SVY] **svy postestimation**
estimators,
covariance matrix of, [P] **ereturn**, [P] **matrix get**, [R] **correlate**, [R] **estat**, [R] **estat vce**, [U] **20.9 Obtaining the variance–covariance matrix**
linear combinations, [U] **20.13 Obtaining linear combinations of coefficients**
linear combinations of, [R] **lincom**
nonlinear combinations of, [R] **nlcom**
eteffects command, [TE] **eteffects**, [TE] **eteffects postestimation**
etiologic fraction, [R] **epitab**
etpoisson command, [TE] **etpoisson**, [TE] **etpoisson postestimation**
etregress command, [TE] **etregress**, [TE] **etregress postestimation**
Euclidean dissimilarity measure, [MV] ***measure_option***
Euclidean distance, [MV] **Glossary**
event, [ST] **Glossary**
history analysis, *see* survival analysis
of interest, [ST] **Glossary**
probability, *see* failure probability
_Ex, [SEM] **sem and gsem option covstructure( )**
exact binomial test, *see* binomial test
exact DDF, *see* denominator degrees of freedom
exact statistics, [U] **26.14 Exact estimators**
binary confidence intervals, [R] **ci**, [R] **exlogistic**, [R] **roctab**
centiles, [R] **centile**
indirect standardization, [R] **dstdize**
one-way anova, [R] **loneway**
regression, [R] **exlogistic**, [R] **expoisson**
test,
binomial probability, [R] **bitest**
equality of distributions, [R] **ksmirnov**
equality of medians, [R] **ranksum**
Fisher's, [R] **tabulate twoway**

exact statistics test, *continued*
symmetry and marginal homogeneity, [R] **symmetry**
tetrachoric correlations, [R] **tetrachoric**
exact test, [PSS] **Glossary**
example datasets, [U] **1.2.2 Example datasets**
`examples`, `duplicates` subcommand, [D] **duplicates**
Excel, [U] **21 Entering and importing data**
dates, [D] **datetime**
Microsoft, *see* Microsoft Excel
Microsoft, reading data from, [D] **import excel**, [D] **odbc**, [D] **xmlsave**, *also see* spreadsheets, transferring
Microsoft, write results to, [P] **putexcel**
`excel`,
`export` subcommand, [D] **import excel**
`import` subcommand, [D] **import excel**
excess fraction, [R] **epitab**
`exec()`, `odbc` subcommand, [D] **odbc**
`existence`, `confirm` subcommand, [P] **confirm**
exit class program, [P] **class exit**
`exit`, `class` subcommand, [P] **class exit**
`exit` command, [P] **capture**, [P] **exit**, [R] **exit**, [U] **16.1.4 Error handling in do-files**
`exit()` function, [M-5] **exit( )**
exit Mata, [M-3] **end**
exiting Stata, *see* `exit` command
`exlogistic` command, [R] **exlogistic**, [R] **exlogistic postestimation**
exogeneity test, *see* endogeneity test
`exogenous`, `forecast` subcommand, [TS] **forecast exogenous**
exogenous variable, [SEM] **intro 4**, [SEM] **Glossary**, [TS] **Glossary**, [XT] **Glossary**
*exp*, [M-2] **exp**, [M-6] **Glossary**
*=exp*, [U] **11 Language syntax**
`exp()` function, [FN] **Mathematical functions**, [M-5] **exp( )**
*exp_list*, [SVY] **svy bootstrap**, [SVY] **svy brr**, [SVY] **svy jackknife**, [SVY] **svy sdr**, [TS] **rolling**
`expand`
command, [D] **expand**
for mi data, [MI] **mi expand**
expand factor varlists, [P] **fvexpand**
`expand`, `mi` subcommand, [MI] **mi expand**
`expandcl` command, [D] **expandcl**
expectation-maximization algorithm, [MI] **mi impute mvn**, [MI] **Glossary**
parameter trace files, [MI] **mi ptrace**
expected information matrix, [SEM] **Glossary**
experimental data, [MV] **manova**, [R] **anova**, [R] **contrast**, [R] **correlate**, [R] **epitab**, [R] **kwallis**, [R] **logit**, [R] **mean**, [R] **regress**, [R] **summarize**, [R] **tabulate oneway**, [R] **tabulate twoway**, [R] **ttest**, [R] **ztest**,
experimental data, *continued*
[U] **12 Data**, [U] **20 Estimation and postestimation commands**, [U] **26.4 Structural equation modeling (SEM)**, [U] **26.21 Multilevel mixed-effects models**, [U] **26.22 Survival-time (failure-time) models**
experimental group, [PSS] **Glossary**
correlation, *see* correlation, experimental-group
mean, *see* means, experimental-group
proportion, *see* proportions, experimental-group
sample size, *see* sample-size
standard deviation, *see* standard deviations, experimental-group
variance, *see* variances, experimental-group
experimental study, [PSS] **power**, [PSS] **Glossary**
exploded logit model, [R] **rologit**
`expoisson` command, [R] **expoisson**, [R] **expoisson postestimation**
exponential
density, [FN] **Statistical functions**, [M-5] **normal( )**
distribution, [FN] **Statistical functions**, [M-5] **normal( )**, [ST] **streg**
function, [FN] **Mathematical functions**
generalized autoregressive conditional heteroskedasticity, [TS] **arch**
notation, [U] **12.2 Numbers**
smoothing, [TS] **tssmooth**, [TS] **tssmooth exponential**, [TS] **Glossary**
survival
regression, [ST] **streg**
test, [PSS] **power exponential**, [PSS] **Glossary**
`exponential`,
`churdle` subcommand, [R] **churdle**
`power` subcommand, [PSS] **power exponential**
`tssmooth` subcommand, [TS] **tssmooth exponential**
`exponential()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`exponentialden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`exponentialtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
exponentiated coefficients, [R] ***eform_option***, [SEM] **estat eform**
exponentiation, [M-5] **exp( )**, [M-5] **matexpsym( )**
`export`
`delimited` command, [D] **import delimited**
`excel` command, [D] **import excel**
`sasxport` command, [D] **import sasxport**
`export`, `graph` subcommand, [G-2] **graph export**
`export`, `mi` subcommand, [MI] **mi export**, [MI] **mi export ice**, [MI] **mi export nhanes1**
exporting data, [D] **export**, [D] **import delimited**, [D] **import excel**, [D] **import sasxport**, [D] **odbc**, [D] **outfile**, [D] **xmlsave**, [M-5] **_docx*( )**, [M-5] **xl( )**, [MI] **mi export**, [MI] **mi export ice**, [MI] **mi export nhanes1**, [U] **21.4 Transfer programs**

exporting graphs, [G-2] **graph export**, [G-2] **graph set**, [G-3] ***eps_options***, [G-3] ***png_options***, [G-3] ***ps_options***, [G-3] ***tif_options***, [G-4] ***text***
exporting results, [P] **putexcel**
exposure
odds ratio, [PSS] **power mcc**, [PSS] **Glossary**
variable, [ST] **Glossary**
`exposure()` option, *see* `gsem` option `exposure()`
Expression Builder, [U] **13.8 Using the Expression Builder**
expressions, [M-2] **exp**, [P] **matrix define**, [U] **13 Functions and expressions**
extended
ASCII, [D] **unicode**, [D] **unicode translate**, [I] **Glossary**
encoding conversion, [D] **unicode convertfile**, [D] **unicode translate**
encodings, [D] **unicode encoding**
macro functions, [P] **char**, [P] **display**, [P] **macro**, [P] **macro lists**, [P] **serset**
`external`, [M-2] **declarations**
externals, [M-2] **declarations**, [M-5] **direxternal( )**, [M-5] **findexternal( )**, [M-5] **valofexternal( )**, [M-6] **Glossary**
extract diagonal, [M-5] **diagonal( )**, [M-5] **diag( )**
`extract`, `mi` subcommand, [MI] **mi extract**, [MI] **mi replace0**
extracting $m$=# data from mi data, [MI] **mi extract**, [MI] **mi select**
extracting original data from mi data, [MI] **mi extract**
extrapolation, [D] **ipolate**

## F

*F*
density,
central, [FN] **Statistical functions**
noncentral, [FN] **Statistical functions**
distribution,
cumulative, [FN] **Statistical functions**
cumulative noncentral, [FN] **Statistical functions**
inverse cumulative, [FN] **Statistical functions**
inverse reverse cumulative, [FN] **Statistical functions**
inverse reverse cumulative noncentral, [FN] **Statistical functions**
reverse cumulative, [FN] **Statistical functions**
reverse cumulative noncentral, [FN] **Statistical functions**
noncentrality parameter, [FN] **Statistical functions**
test, [PSS] **Glossary**
`F()` function, [FN] **Statistical functions**, [M-5] **normal( )**
Facebook, *see* Stata on Facebook
factor, [MV] **Glossary**, [PSS] **Glossary**
analysis, [MV] **alpha**, [MV] **canon**, [MV] **factor**, [MV] **factor postestimation**, [MV] **Glossary**, *see* confirmatory factor analysis
loading plot, [MV] **scoreplot**, [MV] **Glossary**
factor, *continued*
loadings, [MV] **Glossary**
model, [TS] **dfactor**
parsimony rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
score plot, [MV] **scoreplot**
scores, [MV] **factor postestimation**, [MV] **Glossary**, [SEM] **intro 7**, [SEM] **example 14**, [SEM] **methods and formulas for sem**, [SEM] **predict after sem**
variables, [P] **fvexpand**, [P] **matrix rownames**, [P] **_rmcoll**, [P] **syntax**, [P] **unab**, [PSS] **Glossary**, [R] **fvrevar**, [R] **fvset**, [U] **11.4.3 Factor variables**, [U] **13.9 Indicator values for levels of factor variables**, [U] **14.2.2 Two-part names**, [U] **20.11 Accessing estimated coefficients**, [U] **25 Working with categorical data and factor variables**
`factor` command, [MV] **factor**, [MV] **factor postestimation**
factorial, [U] **11.4.3 Factor variables**
design, [MV] **manova**, [R] **anova**
function, [FN] **Mathematical functions**
`factorial()` function, [M-5] **factorial( )**
`factormat` command, [MV] **factor**, [MV] **factor postestimation**
`factors`, `estat` subcommand, [MV] **factor postestimation**
factor-variable
notation, [SEM] **intro 3**
settings, [R] **fvset**
`facweights`, `estat` subcommand, [R] **asmprobit postestimation**, [R] **asroprobit postestimation**
failure
event, [ST] **Glossary**, [TE] **Glossary**
probability, [PSS] **power exponential**, [PSS] **power logrank**
tables, [ST] **ltable**
time, *see* survival analysis
failure–success proportion, [PSS] **power pairedproportions**
failure-time model, *see* survival analysis
false-negative result, *see* type II error
false-positive rate, [R] **estat classification**, [R] **roc**, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
false-positive result, *see* type I error
family
Bernoulli, [SEM] **methods and formulas for gsem**
beta, [SEM] **methods and formulas for gsem**
binomial, [SEM] **methods and formulas for gsem**
distribution, [SEM] **Glossary**
exponential, [SEM] **methods and formulas for gsem**
gamma, [SEM] **methods and formulas for gsem**
Gaussian, [SEM] **methods and formulas for gsem**
loglogistic, [SEM] **methods and formulas for gsem**
lognormal, [SEM] **methods and formulas for gsem**

family, *continued*
multinomial, [SEM] **methods and formulas for gsem**
negative binomial, [SEM] **methods and formulas for gsem**
ordinal, [SEM] **methods and formulas for gsem**
Poisson, [SEM] **methods and formulas for gsem**
Weibull, [SEM] **methods and formulas for gsem**
`family()` option, *see* `gsem` option `family()`
FAQs, [U] **3.2.1 The Stata website (www.stata.com)**
search, [R] **search**, [U] **4.8.4 FAQ searches**
`fastscroll`, `set` subcommand, [R] **set**
`favorspeed()` function, [M-5] **favorspeed( )**
`fbufget()` function, [M-5] **bufio( )**
`fbufput()` function, [M-5] **bufio( )**
`fcast compute` command, [TS] **fcast compute**
`fcast graph` command, [TS] **fcast graph**
`_fclose()` function, [M-5] **fopen( )**
`fclose()` function, [M-5] **fopen( )**
FCS, *see* fully conditional specification
`Fden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
feasible generalized least squares, [R] **reg3**, [R] **sureg**, [SEM] **intro 4**, [TS] **dfgls**, [TS] **prais**, [TS] **var**, [XT] **xtgls**, [XT] **xtivreg**, [XT] **xtreg**
feasible generalized nonlinear least squares, [R] **nlsur**
feedback loops, [SEM] **estat stable**, [SEM] **estat teffects**
fences, [R] **lv**
`ferrortext()` function, [M-5] **ferrortext( )**
FEVD, *see* forecast-error variance decomposition
`_fft()` function, [M-5] **fft( )**
`fft()` function, [M-5] **fft( )**
`_fget()` function, [M-5] **fopen( )**
`fget()` function, [M-5] **fopen( )**
`_fgetmatrix()` function, [M-5] **fopen( )**
`fgetmatrix()` function, [M-5] **fopen( )**
`_fgetnl()` function, [M-5] **fopen( )**
`fgetnl()` function, [M-5] **fopen( )**
FGLS, *see* feasible generalized least squares
FGNLS, *see* feasible generalized nonlinear least squares
fictional data, [SEM] **Glossary**
file
conversion, [D] **changeeol**, [D] **filefilter**
format, Stata, [P] **file formats .dta**
modification, [D] **changeeol**, [D] **filefilter**
processing, [M-4] **io**, [M-5] **bufio( )**, [M-5] **cat( )**, [M-5] **_docx*( )**, [M-5] **ferrortext( )**, [M-5] **fileexists( )**, [M-5] **findfile( )**, [M-5] **fopen( )**, [M-5] **unlink( )**, [M-5] **xl( )**
translation, [D] **changeeol**, [D] **filefilter**
`file`
`close` command, [P] **file**
`open` command, [P] **file**
`query` command, [P] **file**
`read` command, [P] **file**
`seek` command, [P] **file**
`file`, *continued*
`sersetread` command, [P] **serset**
`sersetwrite` command, [P] **serset**
`set` command, [P] **file**
`write` command, [P] **file**
`file`, `confirm` subcommand, [P] **confirm**
file, find in path, [P] **findfile**
`fileexists()` function, [FN] **Programming functions**, [M-5] **fileexists( )**
`filefilter` command, [D] **filefilter**
filename manipulation, [M-5] **adosubdir( )**, [M-5] **pathjoin( )**
filenames, displaying, [D] **dir**
`fileread()` function, [FN] **Programming functions**
`filereaderror()` function, [FN] **Programming functions**
files,
checksum of, [D] **checksum**
comparison, [D] **cf**
compressing, [D] **zipfile**
copying and appending, [D] **copy**
display contents of, [D] **type**
downloading, [D] **checksum**, [D] **copy**, [R] **adoupdate**, [R] **net**, [R] **sj**, [R] **ssc**, [R] **update**, [U] **28 Using the Internet to keep up to date**
erasing, [D] **erase**
exporting, *see* exporting data
extensions, [U] **11.6 Filenaming conventions**
importing, *see* importing data
loading, [D] **use**
names, [U] **11.6 Filenaming conventions**, [U] **18.3.11 Constructing Windows filenames by using macros**
opening, [P] **window programming**, [P] **window fopen**
reading text or binary, [P] **file**
saving, [D] **save**, [P] **window programming**, [P] **window fopen**
temporary, [P] **macro**, [P] **preserve**, [P] **scalar**
uncompressing, [D] **zipfile**
writing text or binary, [P] **file**
`filewrite()` function, [FN] **Programming functions**
fill
areas, dimming and brightening, [G-2] **graph twoway histogram**, [G-2] **graph twoway kdensity**, [G-4] ***colorstyle***
color, setting, [G-3] ***region_options***
`fill()`, `egen` function, [D] **egen**
`fillin` command, [D] **fillin**
filling in values, [ST] **stfill**
`_fillmissing()` function, [M-5] **_fillmissing( )**
filters, [TS] **tsfilter**, *also see* smoothers
Baxter–King, [TS] **tsfilter bk**
Butterworth, [TS] **tsfilter bw**
Christiano–Fitzgerald, [TS] **tsfilter cf**
Hodrick–Prescott, [TS] **tsfilter hp**
`final`, [M-2] **class**

findexternal() function, [M-5] findexternal( )
findfile command, [P] findfile
findfile() function, [M-5] findfile( )
finding file in path, [P] findfile
finding variables, [D] lookfor
finite population correction, [PSS] power, [PSS] power onemean, [PSS] power pairedmeans, [PSS] Glossary, [SVY] survey, [SVY] svy estimation, [SVY] svyset, [SVY] variance estimation, [SVY] Glossary
first-differenced estimator, [XT] xtabond, [XT] xtdpd, [XT] xtdpdsys, [XT] xtivreg
first-order latent variables, [SEM] Glossary
firststage, estat subcommand, [R] ivregress postestimation
Fisher–Irwin's exact test, [PSS] power twoproportions, [PSS] Glossary
fisher, xtunitroot subcommand, [XT] xtunitroot
Fisher's
  exact test, [PSS] power twoproportions, [PSS] Glossary, [R] epitab, [R] tabulate twoway
  $z$ test, [PSS] power onecorrelation, [PSS] power twocorrelations, [PSS] Glossary
  $z$ transformation, [PSS] power onecorrelation, [PSS] power twocorrelations, [PSS] Glossary
Fisher-type test, [XT] xtunitroot
fits, adding, [G-2] graph twoway fpfit, [G-2] graph twoway fpfitci, [G-2] graph twoway lfit, [G-2] graph twoway lfitci, [G-2] graph twoway qfit, [G-2] graph twoway qfitci
fixed effects, [PSS] Glossary
fixed-effects model, [ME] Glossary, [R] anova, [R] areg, [R] asclogit, [R] clogit, [XT] xtabond, [XT] xtdpd, [XT] xtdpdsys, [XT] xtivreg, [XT] xtlogit, [XT] xtnbreg, [XT] xtoprobit, [XT] xtpoisson, [XT] xtreg, [XT] xtregar, [XT] xtstreg, [XT] Glossary
  multilevel mixed-effects models, [ME] mecloglog, [ME] meglm, [ME] melogit, [ME] menbreg, [ME] meologit, [ME] meoprobit, [ME] mepoisson, [ME] meprobit, [ME] meqrlogit, [ME] meqrpoisson, [ME] mestreg, [ME] mixed
*F*-keys, [U] 10 Keyboard use
flat prior, *see* noninformative prior
flat, prior() suboption, [BAYES] bayesmh evaluators
flexible functional form, [R] boxcox, [R] fp, [R] mfp
flist command, [D] list
float, [D] data types, [U] 12.2.2 Numeric storage types, [U] 13.12 Precision and problems therein
float() function, [FN] Programming functions, [M-5] floatround( ), [U] 13.12 Precision and problems therein
floatround() function, [M-5] floatround( )
floatwindows, set subcommand, [R] set
flong
  data style, [MI] styles, [MI] Glossary
  technical description, [MI] technical
flongsep
  data style, [MI] mi xeq, [MI] styles, [MI] Glossary
  estimating memory requirements, [MI] mi convert
  style, [MI] mi copy, [MI] mi erase
  technical description, [MI] technical
floor() function, [FN] Mathematical functions, [M-5] trunc( )
_flopin() function, [M-5] lapack( )
_flopout() function, [M-5] lapack( )
FMI, *see* fraction missing information
%fmts, [D] format, [U] 12.5 Formats: Controlling how data are displayed
fmtwidth() function, [FN] Programming functions, [M-5] fmtwidth( )
folders, *see* directories
follow-up, [PSS] Glossary
  period, [PSS] power exponential, [PSS] power logrank, [PSS] Glossary
  studies, *see* incidence studies
  study, *see* cohort study
fonts, in graphs, [G-4] *text*
footnote, ml subcommand, [R] ml
_fopen() function, [M-5] fopen( )
fopen() function, [M-5] fopen( )
fopen, window subcommand, [P] window programming, [P] window fopen
for, [M-2] for, [M-2] continue, [M-2] break, [M-2] semicolons
for, estimates subcommand, [R] estimates for
forcecorrelations option, *see* sem option forcecorrelations
forcenoanchor option, *see* gsem option forcenoanchor, *see* sem option forcenoanchor
forcexconditional option, *see* sem option forcexconditional
foreach command, [P] foreach
forecast, [G-2] graph other
forecast, [TS] forecast
  adjust command, [TS] forecast adjust
  clear command, [TS] forecast clear
  coefvector command, [TS] forecast coefvector
  create command, [TS] forecast create
  describe command, [TS] forecast describe
  drop command, [TS] forecast drop
  estimates command, [TS] forecast estimates
  exogenous command, [TS] forecast exogenous
  identity command, [TS] forecast identity
  list command, [TS] forecast list
  query command, [TS] forecast query
  solve command, [TS] forecast solve
forecast,
  ARCH model, [TS] arch postestimation
  ARFIMA model, [TS] arfima postestimation
  ARIMA model, [TS] arima postestimation
  dynamic-factor model, [TS] dfactor postestimation

forecast, *continued*
econometric model, [TS] **forecast**, [TS] **forecast adjust**, [TS] **forecast clear**, [TS] **forecast coefvector**, [TS] **forecast create**, [TS] **forecast describe**, [TS] **forecast drop**, [TS] **forecast estimates**, [TS] **forecast exogenous**, [TS] **forecast identity**, [TS] **forecast list**, [TS] **forecast query**, [TS] **forecast solve**, [U] **20.20 Dynamic forecasts and simulations**
Markov-switching model, [TS] **mswitch postestimation**
MGARCH model, *see* multivariate GARCH postestimation
standard error of, [R] **regress postestimation**
state-space model, [TS] **sspace postestimation**
structural vector autoregressive model, [TS] **var svar postestimation**
unobserved-components model, [TS] **ucm postestimation**
vector autoregressive model, [TS] **var postestimation**
vector error-correction model, [TS] **vec postestimation**
forecast-error variance decomposition, [G-2] **graph other**, [TS] **irf**, [TS] **irf create**, [TS] **irf ograph**, [TS] **irf table**, [TS] **var intro**, [TS] **varbasic**, [TS] **vec intro**, [TS] **Glossary**
forecasting, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **fcast compute**, [TS] **fcast graph**, [TS] **irf create**, [TS] **mgarch**, [TS] **tsappend**, [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth ma**, [TS] **tssmooth shwinters**, [TS] **ucm**, [TS] **var intro**, [TS] **var**, [TS] **vec intro**, [TS] **vec**
foreground color, [G-4] **schemes intro**
`format` command, [D] **format**
`format`, `confirm` subcommand, [P] **confirm**
`format` macro extended function, [P] **macro**
format settings, [R] **set cformat**
format width, [M-5] **fmtwidth( )**
formats, [D] **datetime**, [D] **describe**, [D] **format**, [D] **varmanage**, [U] **12.5 Formats: Controlling how data are displayed**, [U] **20.8 Formatting the coefficient table**, [U] **24.3 Displaying dates and times**
formatted data, reading, *see* importing data
formatting contents of macros, [P] **macro**
formatting statistical output, [D] **format**
FORTRAN, [M-2] **goto**, [M-5] **dsign( )**
forum, [U] **3.2.4 The Stata forum**
`forvalues` command, [P] **forvalues**
forward operator, [TS] **Glossary**
fourfold tables, [R] **epitab**
Fourier transform, [M-5] **fft( )**
FoxPro, reading data from, [U] **21.4 Transfer programs**
`fp`
`generate` command, [R] **fp**
`plot` command, [R] **fp postestimation**
`fp`, *continued*
`predict` command, [R] **fp postestimation**
prefix command, [R] **fp**, [R] **fp postestimation**
FPC, *see* finite population correction
`fpfit`, `graph twoway` subcommand, [G-2] **graph twoway fpfit**
`fpfitci`, `graph twoway` subcommand, [G-2] **graph twoway fpfitci**
`_fput()` function, [M-5] **fopen( )**
`fput()` function, [M-5] **fopen( )**
`_fputmatrix()` function, [M-5] **fopen( )**
`fputmatrix()` function, [M-5] **fopen( )**
`fracplot` command, [R] **mfp postestimation**
`fracpred` command, [R] **mfp postestimation**
`fracreg` command, [R] **fracreg**, [R] **fracreg postestimation**
fraction defective, [R] **qc**
fraction missing information, [MI] **mi estimate**, [MI] **mi predict**, [MI] **mi test**, [MI] **Glossary**
`fraction` option, [G-2] **graph twoway histogram**
fractional polynomial regression, [R] **fp**
multivariable, [R] **mfp**
fractional response regression, [R] **fracreg**, [SVY] **svy estimation**, [U] **26.10 Fractional-outcome dependent-variable models**
fractional sample size, *see* sample-size
fractionally integrated autoregressive moving-average model, [TS] **estat acplot**, [TS] **psdensity**
frailty, *see* shared frailty
frailty model, [ST] **stcox**, [ST] **stcurve**, [ST] **streg**
`framework`, `estat` subcommand, [SEM] **estat framework**
`_fread()` function, [M-5] **fopen( )**
`fread()` function, [M-5] **fopen( )**
`freduse` command, [TS] **arfima postestimation**
`free`, `constraint` subcommand, [R] **constraint**
frequencies,
creating dataset of, [D] **collapse**, [D] **contract**
graphical representation, [R] **histogram**, [R] **kdensity**
table of, [R] **table**, [R] **tabstat**, [R] **tabulate oneway**, [R] **tabulate twoway**, [R] **tabulate, summarize()**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
`frequency` option, [G-2] **graph twoway histogram**
frequency table, [XT] **xttab**
frequency weight, [U] **11.1.6 weight**, [U] **20.23.1 Frequency weights**
`[frequency=`*exp*`]` modifier, [U] **11.1.6 weight**, [U] **20.23.1 Frequency weights**
frequency-domain analysis, [TS] **cumsp**, [TS] **pergram**, [TS] **psdensity**, [TS] **Glossary**
frequentist analysis, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
frequentist concepts, [MI] **intro substantive**
`freturncode()` function, [M-5] **ferrortext( )**
`from`, `net` subcommand, [R] **net**
`from`, `update` subcommand, [R] **update**

from() option, [R] maximize, see gsem option from(), see sem option from()
frombase() function, [M-5] inbase( )
frontier command, [R] frontier, [R] frontier postestimation
frontier model, see stochastic frontier model
fsave, window subcommand, [P] window programming
_fseek() function, [M-5] fopen( )
fseek() function, [M-5] fopen( )
fstatus() function, [M-5] fopen( )
Ftail() function, [FN] Statistical functions, [M-5] normal( )
_ftell() function, [M-5] fopen( )
ftell() function, [M-5] fopen( )
ftfreqs() function, [M-5] fft( )
ftpad() function, [M-5] fft( )
ftperiodogram() function, [M-5] fft( )
ftretime() function, [M-5] fft( )
_ftruncate() function, [M-5] fopen( )
ftruncate() function, [M-5] fopen( )
ftunwrap() function, [M-5] fft( )
ftwrap() function, [M-5] fft( )
full
  conditionals, [BAYES] intro, [BAYES] bayesmh, [BAYES] Glossary
  factorial, [U] 11.4.3 Factor variables
  Gibbs sampling, see Gibbs sampling
fullsdiag() function, [M-5] fullsvd( )
_fullsvd() function, [M-5] fullsvd( )
fullsvd() function, [M-5] fullsvd( )
fully conditional specification, [MI] mi impute, [MI] mi impute chained, [MI] Glossary
function, graph twoway subcommand, [G-2] graph twoway function
functions, [FN] Date and time functions, [FN] Mathematical functions, [FN] Matrix functions, [FN] Programming functions, [FN] Random-number functions, [FN] Statistical functions, [FN] String functions, [FN] Trigonometric functions, [M-2] declarations, [M-4] intro, [M-5] intro, [M-6] Glossary, [U] 13.3 Functions
  cluster generate, adding, [MV] cluster programming subroutines
  aggregate, [D] egen
  arguments, [M-1] returnedargs, also see arguments
  combinations of estimators, [R] lincom, [R] nlcom
  combinatorial, [FN] Mathematical functions
  creating dataset of, [D] collapse, [D] obs
  cumulative distribution, [R] cumul
  date, [U] 24.5 Extracting components of dates and times
  date and time, [FN] Date and time functions
  derivatives and integrals of, [R] dydx
  estimable, [R] margins
  evaluator program, [R] gmm, [R] nl, [R] nlsur
functions, *continued*
  extended macro, [P] char, [P] display, [P] macro, [P] macro lists, [P] serset
  fractional polynomial, [R] fp, [R] mfp
  graphing, [D] range, [G-2] graph twoway function
  index, [R] logistic postestimation, [R] logit postestimation, [R] probit postestimation
  kernel, [R] kdensity, [R] lpoly
  link, [R] betareg, [R] glm
  mathematical, [FN] Mathematical functions
  matrix, [FN] Matrix functions, [P] matrix define, [U] 14.8 Matrix functions
  maximizing likelihood, [R] maximize, [R] ml
  naming convention, [M-1] naming
  obtaining help for, [R] help
  orthogonalization, [R] orthog
  parameters, [R] nlcom
  passing to functions, [M-2] ftof
  piecewise cubic and piecewise linear, [R] mkspline
  prediction, [R] predict, [R] predictnl
  production and cost, [R] frontier
  programming, [FN] Programming functions
  random-number, [D] generate, [FN] Random-number functions, [R] set rng, [R] set seed
  statistical, [FN] Statistical functions
  string, [FN] String functions
  time-series, [FN] Selecting time-span functions
  trigonometric, [FN] Trigonometric functions
  underscore, [M-6] Glossary
  variance, [R] glm
future history, [ST] stset, [ST] Glossary
fvexpand command, [P] fvexpand
fvlabel, set subcommand, [R] set, [R] set showbaselevels
fvrevar command, [R] fvrevar
fvset
  base command, [R] fvset
  clear command, [R] fvset
  design command, [R] fvset
  report command, [R] fvset
  command for mi data, [MI] mi XXXset
  mi subcommand, [MI] mi XXXset
fvstandard option, see gsem option fvstandard
fvunab command, [P] unab
fvwrap() option, see sem option fvwrap()
fvwrap, set subcommand, [R] set, [R] set showbaselevels
fvwrapon() option, see sem option fvwrapon()
fvwrapon, set subcommand, [R] set, [R] set showbaselevels
[fweight=exp] modifier, [U] 11.1.6 weight, [U] 20.23.1 Frequency weights
_fwrite() function, [M-5] fopen( )
fwrite() function, [M-5] fopen( )
fxsize() option, [G-2] graph combine
fysize() option, [G-2] graph combine

## G


*g*-prior, *see* Zellner's *g*-prior
g2 inverse of matrix, [P] **matrix define**, [P] **matrix svd**
gain, [TS] **tsfilter**, [TS] **tsfilter bk**, [TS] **tsfilter bw**, [TS] **tsfilter cf**, [TS] **tsfilter hp**, [TS] **Glossary**
gamma
  density function, [FN] **Statistical functions**
    incomplete, [FN] **Statistical functions**
  distribution
    cumulative, [FN] **Statistical functions**
    inverse cumulative, [FN] **Statistical functions**
    inverse reverse cumulative, [FN] **Statistical functions**
    reverse cumulative, [FN] **Statistical functions**
  regression, [SEM] **intro 5**, [SEM] **Glossary**
`gamma()` function, [M-5] **factorial( )**
`gamma` option, *see* `gsem` option `gamma`
`gammaden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`gammap()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`gammaptail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`gap()` option, [G-2] **graph twoway histogram**
gaps, [ST] **stbase**, [ST] **stdescribe**, [ST] **stgen**, [ST] **stset**, [ST] **Glossary**
GARCH, *see* generalized autoregressive conditional heteroskedasticity
Gauss, reading data from, [U] **21.4 Transfer programs**
Gauss–Hermite quadrature, [IRT] **Glossary**, *see* quadrature, Gauss–Hermite
Gauss–Seidel method, [M-5] **solvenl( )**
Gaussian kernel function, [G-2] **graph twoway kdensity**, [G-2] **graph twoway lpoly**, [R] **kdensity**, [R] **lpoly**, [R] **qreg**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **teffects overlap**
Gaussian regression, [SEM] **Glossary**
GEE, *see* generalized estimating equations
`_geigen_la()` function, [M-5] **geigensystem( )**
`_geigenselect*_la()` functions, [M-5] **geigensystem( )**
`geigensystem()` function, [M-5] **geigensystem( )**
`_geigensystem_la()` function, [M-5] **geigensystem( )**
`geigensystemselect*()` functions, [M-5] **geigensystem( )**
generalized
  autoregressive conditional heteroskedasticity, [TS] **arch**, [TS] **Glossary**
  eigensystem, [M-5] **geigensystem( )**
  eigenvalues, [M-6] **Glossary**
  estimating equations, [XT] **xtgee**, [XT] **Glossary**
  gamma survival regression, [ST] **streg**
  Hessenberg decomposition, [M-5] **ghessenbergd( )**
  inverse, [M-5] **invsym( )**, [M-5] **pinv( )**, [M-5] **qrinv( )**
  inverse of matrix, [P] **matrix define**, [P] **matrix svd**
generalized, *continued*
  least squares,
    estimated, *see* estimated generalized least squares
    feasible, *see* feasible generalized least squares
  least-squares estimator, [TS] **prais**, [TS] **Glossary**
  linear latent and mixed models, [R] **gllamm**
  linear mixed model, [ME] **me**, [ME] **Glossary**
  linear mixed-effects model, [ME] **me**, [ME] **meglm**, [ME] **Glossary**
  linear models, [R] **binreg**, [R] **fracreg**, [R] **glm**, [SVY] **svy estimation**, [U] **26.6 Generalized linear models**, [U] **26.20.3 Generalized linear models with panel data**, [XT] **xtgee**, [XT] **Glossary**
  linear response functions, [SEM] **Glossary**
  method of moments, [P] **matrix accum**, [SEM] **Glossary**, [U] **26.24 Generalized method of moments (GMM)**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, *see* `gmm` command
  negative binomial regression, [R] **nbreg**, [SVY] **svy estimation**
  partial credit model, [IRT] **Glossary**
  response variables, [SEM] **intro 2**, [SEM] **intro 5**, [SEM] **gsem family-and-link options**
  responses, combined, [SEM] **example 34g**
  Schur decomposition, [M-5] **gschurd( )**
  SEM, [SEM] **Glossary**
`generate`,
  `cluster` subcommand, [MV] **cluster generate**
  `icd10` subcommand, [D] **icd10**
  `icd9` subcommand, [D] **icd9**
  `icd9p` subcommand, [D] **icd9**
  `sts` subcommand, [ST] **sts generate**
`generate` command, [D] **generate**, [MI] **mi passive**, [MI] **mi xeq**
`generate` functions, adding, [MV] **cluster programming subroutines**
generating data, [D] **egen**, [D] **generate**
generating variables, [ST] **stgen**, [ST] **sts generate**
`get`,
  `constraint` subcommand, [R] **constraint**
  `net` subcommand, [R] **net**
`get()` function, [FN] **Matrix functions**, [P] **matrix define**, [P] **matrix get**
`getmata` command, [D] **putmata**
getting started, [U] **1 Read this—it will help**
*Getting Started with Stata* manuals, [U] **1.1 Getting Started with Stata**
  keyword search of, [U] **4 Stata's help and search facilities**
`gettoken` command, [P] **gettoken**
Geweke–Hajivassiliou–Keane multivariate normal simulator, [M-5] **ghk( )**, [M-5] **ghkfast( )**
`ggof`, `estat` subcommand, [SEM] **estat ggof**
`ghalton()` function, [M-5] **halton( )**
`_ghessenbergd()` function, [M-5] **ghessenbergd( )**
`ghessenbergd()` function, [M-5] **ghessenbergd( )**
`_ghessenbergd_la()` function, [M-5] **ghessenbergd( )**

ghk() function, [M-5] ghk()
ghkfast() function, [M-5] ghkfast()
ghkfast_i() function, [M-5] ghkfast()
ghkfast_init() function, [M-5] ghkfast()
ghkfast_init_*() function, [M-5] ghkfast()
ghkfast_query_*() function, [M-5] ghkfast()
ghk_init() function, [M-5] ghk()
ghk_init_*() function, [M-5] ghk()
ghk_query_npts() function, [M-5] ghk()
GHQ, *see* quadrature, Gauss–Hermite, *see* Gauss–Hermite quadrature
Gibbs sampler, *see* Gibbs sampling
Gibbs sampling, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **Glossary**
ginvariant, estat subcommand, [SEM] **estat ginvariant**
ginvariant() option, *see* sem option ginvariant()
GJR, *see* threshold autoregressive conditional heteroskedasticity
gladder command, [R] **ladder**
GLLAMM, *see* generalized linear latent and mixed models
gllamm command, [R] **gllamm**
GLM, *see* generalized linear models
glm command, [R] **glm**, [R] **glm postestimation**
GLME, *see* generalized linear mixed-effects model
GLMM, *see* generalized linear mixed model
Global, class prefix operator, [P] **class**
global command, [P] **macro**, [U] **18.3.2 Global macros**, [U] **18.3.10 Advanced global macro manipulation**
global variable, [M-2] **declarations**, [M-5] **direxternal()**, [M-5] **findexternal()**, [M-5] **valofexternal()**, [M-6] **Glossary**
glsaccum, matrix subcommand, [P] **matrix accum**
GMM, *see* generalized method of moments
gmm command, [R] **gmm**, [R] **gmm postestimation**
gnbreg command, [R] **nbreg**, [R] **nbreg postestimation**
gof, estat subcommand, [R] **estat gof**, [R] **poisson postestimation**, [SEM] **estat gof**, [SVY] **estat**
Gompertz survival regression, [ST] **streg**
Gönen and Heller's $K$, [ST] **stcox postestimation**
Goodman and Kruskal's gamma, [R] **tabulate twoway**
goodness of fit, [R] **brier**, [R] **diagnostic plots**, [R] **estat gof**, [R] **ksmirnov**, [R] **linktest**, [R] **logistic postestimation**, [R] **lrtest**, [R] **poisson postestimation**, [R] **regress postestimation**, [SEM] **intro 7**, [SEM] **estat eqgof**, [SEM] **estat ggof**, [SEM] **estat gof**, [SEM] **example 3**, [SEM] **example 4**, [SEM] **Glossary**, [SVY] **estat**, *also see* deviance residual, *also see* normal distribution and normality, test for
goto, [M-2] **goto**
Gower coefficient similarity measure, [MV] ***measure_option***
GPCM, *see* generalized partial credit model
gpcm, irt subcommand, [IRT] **irt pcm**
.gph file, [U] **11.6 Filenaming conventions**
gph files, [G-2] **graph manipulation**, [G-4] **concept: gph files**
  describing contents, [G-2] **graph describe**
graded response model, [IRT] **Glossary**
gradient option, [R] **maximize**
grammar, [M-2] **syntax**
Granger causality, [TS] **vargranger**, [TS] **Glossary**
graph
  bar command, [G-2] **graph bar**
  box command, [G-2] **graph box**
  close command, [G-2] **graph close**
  combine command, [G-2] **graph combine**
  command, [G-2] **graph**
  copy command, [G-2] **graph copy**
  describe command, [G-2] **graph describe**
  dir command, [G-2] **graph dir**
  display command, [G-2] **graph display**
  dot command, [G-2] **graph dot**, [G-3] ***area_options***, [G-3] ***line_options***
  drop command, [G-2] **graph drop**
  export command, [G-2] **graph export**
  hbar command, [G-2] **graph bar**
  hbox command, [G-2] **graph box**
  matrix command, [G-2] **graph matrix**
  pie command, [G-2] **graph pie**
  play command, [G-2] **graph play**
  print command, [G-2] **graph print**, [G-3] ***pr_options***
  query command, [G-2] **graph query**
  rename command, [G-2] **graph rename**
  replay command, [G-2] **graph replay**
  save command, [G-2] **graph save**
  set command, [G-2] **graph set**
  set print command, [G-2] **graph set**
  twoway area command, [G-2] **graph twoway area**
  twoway bar command, [G-2] **graph twoway bar**
  twoway command, [G-2] **graph twoway**
  twoway connected command, [G-2] **graph twoway connected**
  twoway contour command, [G-2] **graph twoway contour**
  twoway contourline command, [G-2] **graph twoway contourline**
  twoway dot command, [G-2] **graph twoway dot**
  twoway dropline command, [G-2] **graph twoway dropline**
  twoway fpfit command, [G-2] **graph twoway fpfit**
  twoway fpfitci command, [G-2] **graph twoway fpfitci**
  twoway function command, [G-2] **graph twoway function**
  twoway histogram command, [G-2] **graph twoway histogram**
  twoway kdensity command, [G-2] **graph twoway kdensity**
  twoway lfit command, [G-2] **graph twoway lfit**

graph, *continued*
twoway lfitci command, [G-2] **graph twoway lfitci**
twoway line command, [G-2] **graph twoway line**
twoway lowess command, [G-2] **graph twoway lowess**
twoway lpoly command, [G-2] **graph twoway lpoly**
twoway lpolyci command, [G-2] **graph twoway lpolyci**
twoway mband command, [G-2] **graph twoway mband**
twoway mspline command, [G-2] **graph twoway mspline**
twoway pcarrow command, [G-2] **graph twoway pcarrow**
twoway pcarrowi command, [G-2] **graph twoway pcarrowi**
twoway pcbarrow command, [G-2] **graph twoway pcarrow**
twoway pccapsym command, [G-2] **graph twoway pccapsym**
twoway pci command, [G-2] **graph twoway pci**
twoway pcscatter command, [G-2] **graph twoway pcscatter**
twoway pcspike command, [G-2] **graph twoway pcspike**
twoway qfit command, [G-2] **graph twoway qfit**
twoway qfitci command, [G-2] **graph twoway qfitci**
twoway rarea command, [G-2] **graph twoway rarea**
twoway rbar command, [G-2] **graph twoway rbar**
twoway rcap command, [G-2] **graph twoway rcap**
twoway rcapsym command, [G-2] **graph twoway rcapsym**
twoway rconnected command, [G-2] **graph twoway rconnected**
twoway rline command, [G-2] **graph twoway rline**
twoway rscatter command, [G-2] **graph twoway rscatter**
twoway rspike command, [G-2] **graph twoway rspike**
twoway scatter command, [G-2] **graph twoway scatter**
twoway scatteri command, [G-2] **graph twoway scatteri**
twoway spike command, [G-2] **graph twoway spike**
twoway tsline command, [G-2] **graph twoway tsline**
twoway tsrline command, [G-2] **graph twoway tsline**
use command, [G-2] **graph use**
graph,
fcast subcommand, [TS] **fcast graph**
irf subcommand, [TS] **irf graph**
ml subcommand, [R] **ml**
graph, *continued*
sts subcommand, [ST] **sts graph**
Graph Editor, [G-1] **graph editor**
graph region, [G-3] ***region_options***
graph text, [G-4] ***text***
graph,
adjusted Kaplan–Meier survivor curves, [ST] **sts**
baseline hazard and survivor, [ST] **stcox**, [ST] **sts**
cumulative hazard function, [ST] **stcurve**, [ST] **sts graph**
hazard function, [ST] **ltable**, [ST] **stcurve**, [ST] **sts graph**
Kaplan–Meier survivor curves, [ST] **stcox PH-assumption tests**, [ST] **sts**, [ST] **sts graph**
log-log curve, [ST] **stcox PH-assumption tests**
survivor function, [ST] **stcurve**, [ST] **sts graph**
graphical user interface, [IRT] **Control Panel**, [P] **dialog programming**, [PSS] **GUI**, [PSS] **power**, [SEM] **Builder**, [SEM] **Builder, generalized**, [SEM] **Glossary**
examples of, [U] **2 A brief description of Stata**
graphics,
query subcommand, [G-2] **set graphics**, [G-2] **set printcolor**, [G-2] **set scheme**, [R] **query**
set subcommand, [G-2] **set graphics**, [R] **set**
graphregion() option, [G-3] ***region_options***
graphs,
added-variable plot, [R] **regress postestimation diagnostic plots**
adjusted partial residual plot, [R] **regress postestimation diagnostic plots**
augmented component-plus-residual plot, [R] **regress postestimation diagnostic plots**
augmented partial residual plot, [R] **regress postestimation diagnostic plots**
autocorrelations, [TS] **corrgram**
Bayesian, [BAYES] **bayesgraph**
binary variable cumulative sum, [R] **cusum**
biplot, [MV] **biplot**, [MV] **ca postestimation plots**
box, [TE] **tebalance box**
CA dimension projection, [MV] **ca postestimation plots**
cluster tree, *see* graphs, dendrogram
component-plus-residual, [R] **regress postestimation diagnostic plots**
contrasts, *see* subentry margins
correlogram, [TS] **corrgram**
cross-correlogram, [TS] **xcorr**
cross-sectional time-series data, [XT] **xtdata**, [XT] **xtline**
cumulative distribution, [R] **cumul**
cumulative spectral density, [TS] **cumsp**
dendrogram, [MV] **clustermat**, [MV] **cluster dendrogram**, [MV] **cluster generate**, [MV] **cluster linkage**, [MV] **cluster stop**
density, [R] **kdensity**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **teffects overlap**
density-distribution sunflower, [R] **sunflower**

graphs, *continued*
derivatives, [R] **dydx**, [R] **testnl**
describing contents, [G-2] **graph describe**
diagnostic, [R] **diagnostic plots**
dotplot, [R] **dotplot**
eigenvalue
after `discrim lda`, [MV] **discrim lda postestimation**, [MV] **screeplot**
after `factor`, [MV] **factor postestimation**, [MV] **screeplot**
after `manova`, [MV] **screeplot**
after `mca`, [MV] **screeplot**
after `mds`, [MV] **screeplot**
after `pca`, [MV] **pca postestimation**, [MV] **screeplot**
error-bar charts, [R] **serrbar**
forecasts, [TS] **fcast graph**
fractional polynomial, [R] **fp postestimation**
functions, [D] **obs**, [D] **range**
histograms, [R] **histogram**, [R] **kdensity**
impulse–response functions, [TS] **irf**, [TS] **irf cgraph**, [TS] **irf graph**, [TS] **irf ograph**
integrals, [R] **dydx**
interaction plots, [R] **marginsplot**
item response theory, [IRT] **irtgraph icc**, [IRT] **irtgraph tcc**, [IRT] **irtgraph iif**, [IRT] **irtgraph tif**, [MV] **biplot**
ladder-of-power histograms, [R] **ladder**
letter-value display, [R] **lv**
leverage-versus-(squared)-residual, [R] **regress postestimation diagnostic plots**
loading
after `candisc`, [MV] **candisc**, [MV] **scoreplot**
after `discrim lda`, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **scoreplot**
after `factor`, [MV] **factor postestimation**, [MV] **scoreplot**
after `pca`, [MV] **pca postestimation**, [MV] **scoreplot**
logistic diagnostic, [R] **logistic postestimation**, [R] **lsens**
lowess smoothing, [R] **lowess**
margins, [U] **20.19 Graphing margins, marginal effects, and contrasts**
margins plots, [R] **marginsplot**
MDS configuration, [MV] **mds postestimation plots**
means and medians, [R] **grmeanby**
normal probability, [R] **diagnostic plots**
overall look of, [G-4] **schemes intro**
parameterized curves, [D] **range**
parametric autocorrelation, [TS] **estat acplot**
parametric autocovariance, [TS] **estat acplot**
partial correlogram, [TS] **corrgram**
partial residual, [R] **regress postestimation diagnostic plots**
partial-regression leverage, [R] **regress postestimation diagnostic plots**
graphs, *continued*
periodogram, [TS] **pergram**
power and sample size, [PSS] **power, graph**
procrustes overlay, [MV] **procrustes postestimation**
profile plots, [R] **marginsplot**
quality control, [R] **qc**
quantile, [R] **diagnostic plots**
quantile–normal, [R] **diagnostic plots**
quantile–quantile, [R] **diagnostic plots**
regression diagnostic, [R] **regress postestimation diagnostic plots**
residual versus fitted, [R] **regress postestimation diagnostic plots**
residual versus predictor, [R] **regress postestimation diagnostic plots**
ROC curve, [R] **lroc**, [R] **roccomp**, [R] **rocfit postestimation**, [R] **rocregplot**, [R] **roctab**
rootograms, [R] **spikeplot**
saving, [G-3] ***saving_option***
score
after `candisc`, [MV] **candisc**, [MV] **scoreplot**
after `discrim lda`, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **scoreplot**
after `factor`, [MV] **factor postestimation**, [MV] **scoreplot**
after `pca`, [MV] **scoreplot**
scree
after `canon`, [MV] **screeplot**
after `ca`, [MV] **screeplot**
after `discrim lda`, [MV] **discrim lda postestimation**, [MV] **screeplot**
after `factor`, [MV] **factor postestimation**, [MV] **screeplot**
after `manova`, [MV] **screeplot**
after `mca`, [MV] **screeplot**
after `mds`, [MV] **screeplot**
after `pca`, [MV] **pca postestimation**, [MV] **screeplot**
Shepard diagram, [MV] **mds postestimation plots**
smoothing, [R] **kdensity**, [R] **lowess**, [R] **lpoly**
spike plot, [R] **spikeplot**
stem-and-leaf, [R] **stem**
sunflower, [R] **sunflower**
suppressing, [G-3] ***nodraw_option***
symmetry, [R] **diagnostic plots**
time-versus-concentration curve, [R] **pk**, [R] **pkexamine**
treatment-effects balance, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**
treatment-effects overlap, [TE] **teffects overlap**
white-noise test, [TS] **wntestb**
`grdistances`, `estat` subcommand, [MV] **discrim lda postestimation**, [MV] **discrim qda postestimation**
greater than (or equal) operator, [U] **13.2.3 Relational operators**
`.grec` file, [U] **11.6 Filenaming conventions**

Greek letters, [G-4] ***text***
Greenhouse–Geisser epsilon, [R] **anova**
Greenhouse–Geisser correction, *see* nonsphericity correction
Greenwood confidence intervals, [ST] **sts**
grid
  definition, [G-4] ***gridstyle***
  lines, [G-3] ***axis_label_options***
  without ticks, [G-4] ***tickstyle***
*gridstyle*, [G-4] ***gridstyle***
GRM, *see* graded response model
`grm`, `irt` subcommand, [IRT] **irt grm**, [IRT] **irt grm postestimation**
`grmeanby` command, [R] **grmeanby**
`grmeans`, `estat` subcommand, [MV] **discrim lda postestimation**
`group()`, `egen` function, [D] **egen**
`group`, `estat` subcommand, [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **meologit postestimation**, [ME] **meoprobit postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mestreg postestimation**, [ME] **mixed postestimation**
group invariance test, [SEM] **methods and formulas for sem**
`group()` option, *see* `sem` option `group()`
group weights, [PSS] **power trend**
group-data regression, [R] **intreg**
grouping variables, generating, [MV] **cluster generate**
groups, graphs by, [G-3] ***by_option***
*groupvar*, [U] **11.4 varlists**
`grsummarize`, `estat` subcommand, [MV] **discrim estat**, [MV] **discrim knn postestimation**, [MV] **discrim lda postestimation**, [MV] **discrim logistic postestimation**, [MV] **discrim qda postestimation**
`gs1` print color mapping, [G-2] **set printcolor**
`gs2` print color mapping, [G-2] **set printcolor**
`gs3` print color mapping, [G-2] **set printcolor**
`_gschurd()` function, [M-5] **gschurd()**
`gschurd()` function, [M-5] **gschurd()**
`_gschurdgroupby()` function, [M-5] **gschurd()**
`gschurdgroupby()` function, [M-5] **gschurd()**
`_gschurdgroupby_la()` function, [M-5] **gschurd()**
`_gschurd_la()` function, [M-5] **gschurd()**
`gsem` command, [SEM] **Builder, generalized**, [SEM] **example 1**, [SEM] **example 27g**, [SEM] **example 28g**, [SEM] **example 29g**, [SEM] **example 30g**, [SEM] **example 31g**, [SEM] **example 32g**, [SEM] **example 33g**, [SEM] **example 34g**, [SEM] **example 35g**, [SEM] **example 36g**, [SEM] **example 37g**, [SEM] **example 38g**, [SEM] **example 39g**, [SEM] **example 40g**, [SEM] **example 41g**, [SEM] **example 42g**, [SEM] **example 43g**,
`gsem` command, *continued*
[SEM] **example 44g**, [SEM] **example 45g**, [SEM] **example 46g**, [SEM] **gsem**, [SEM] **gsem family-and-link options**, [SEM] **gsem model description options**, [SEM] **gsem path notation extensions**, [SEM] **gsem postestimation**, [SEM] **methods and formulas for gsem**, [SEM] **sem and gsem path notation**
`gsem` option
`adaptopts()`, [SEM] **gsem estimation options**
`cloglog`, [SEM] **gsem family-and-link options**
`coeflegend`, [SEM] **example 29g**, [SEM] **gsem reporting options**
`collinear`, [SEM] **gsem model description options**
`constraints()`, [SEM] **gsem model description options**, [SEM] **sem and gsem option constraints()**
`covariance()`, [SEM] **gsem model description options**, [SEM] **sem and gsem path notation**
`covstructure()`, [SEM] **gsem model description options**, [SEM] **sem and gsem option covstructure()**
`dnumerical`, [SEM] **gsem estimation options**
`exponential`, [SEM] **gsem family-and-link options**
`exposure()`, [SEM] **gsem family-and-link options**
`family()`, [SEM] **gsem family-and-link options**, [SEM] **gsem model description options**, [SEM] **gsem path notation extensions**
`forcenoanchor`, [SEM] **gsem model description options**
`from()`, [SEM] **intro 12**, [SEM] **gsem estimation options**, [SEM] **gsem model description options**, [SEM] **sem and gsem option from()**
`fvstandard`, [SEM] **intro 3**, [SEM] **gsem model description options**
`fweights()`, [SEM] **gsem estimation options**
`gamma`, [SEM] **gsem family-and-link options**
`intmethod()`, [SEM] **intro 12**, [SEM] **gsem estimation options**
`intpoints()`, [SEM] **gsem estimation options**
`iweights()`, [SEM] **gsem estimation options**
`latent()`, [SEM] **sem and gsem syntax options**
`level()`, [SEM] **gsem reporting options**
`link()`, [SEM] **gsem family-and-link options**, [SEM] **gsem model description options**, [SEM] **gsem path notation extensions**
`listwise`, [SEM] **gsem estimation options**
`llogistic`, [SEM] **gsem family-and-link options**
`lnormal`, [SEM] **gsem family-and-link options**
`logit`, [SEM] **gsem family-and-link options**
`loglogistic`, [SEM] **gsem family-and-link options**
`lognormal`, [SEM] **gsem family-and-link options**
*maximize_options*, [SEM] **intro 12**, [SEM] **gsem estimation options**
`means()`, [SEM] **gsem model description options**, [SEM] **sem and gsem path notation**

gsem option, *continued*
method(), [SEM] **intro 8**, [SEM] **intro 9**, [SEM] **gsem estimation options**
mlogit, [SEM] **gsem family-and-link options**
nbreg, [SEM] **gsem family-and-link options**
noanchor, [SEM] **gsem model description options**
noasis, [SEM] **gsem model description options**
nocapslatent, [SEM] **sem and gsem syntax options**
nocnsreport, [SEM] **gsem reporting options**
noconstant, [SEM] **gsem model description options**
nodvheader, [SEM] **gsem reporting options**
noestimate, [SEM] **gsem estimation options**
noheader, [SEM] **gsem reporting options**
notable, [SEM] **gsem reporting options**
ocloglog, [SEM] **gsem family-and-link options**
offset(), [SEM] **gsem family-and-link options**
ologit, [SEM] **gsem family-and-link options**
oprobit, [SEM] **gsem family-and-link options**
poisson, [SEM] **gsem family-and-link options**
probit, [SEM] **gsem family-and-link options**
pweights(), [SEM] **gsem estimation options**
regress, [SEM] **gsem family-and-link options**
reliability(), [SEM] **intro 12**, [SEM] **gsem model description options**, [SEM] **sem and gsem option reliability( )**
startgrid(), [SEM] **intro 12**, [SEM] **gsem estimation options**
startvalues(), [SEM] **intro 12**, [SEM] **gsem estimation options**
variance(), [SEM] **gsem model description options**, [SEM] **sem and gsem path notation**
vce(), [SEM] **intro 8**, [SEM] **intro 9**, [SEM] **gsem estimation options**
weibull, [SEM] **gsem family-and-link options**
gsem postestimation commands, [SEM] **intro 7**
gsort command, [D] **gsort**
guessing, [IRT] **Glossary**
guessing parameter, [IRT] **irt 3pl**
GUI, *see* graphical user interface

## H

HAC variance estimate, [R] **binreg**, [R] **glm**, [R] **gmm**, [R] **ivregress**, [R] **nl**, [XT] **xtgls**
hadamard() function, [FN] **Matrix functions**, [P] **matrix define**
Hadamard matrix, [SVY] **svy brr**, [SVY] **Glossary**
Hadri Lagrange multiplier stationarity test, [XT] **xtunitroot**
hadri, xtunitroot subcommand, [XT] **xtunitroot**
half option, [G-2] **graph matrix**
halfyear() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
halfyearly() function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
_halton() function, [M-5] **halton( )**
halton() function, [M-5] **halton( )**
Halton set, [M-5] **halton( )**
Hamann coefficient similarity measure, [MV] ***measure_option***
Hammersley set, [M-5] **halton( )**
Hansen's $J$ statistic, [R] **gmm**, [R] **gmm postestimation**, [R] **ivpoisson**, [R] **ivpoisson postestimation**, [R] **ivregress**
hard missing value, [MI] **mi impute**, [MI] **Glossary**
harmonic mean, [R] **ameans**
Harrell's $C$, [ST] **stcox postestimation**
Harris–Tzavalis test, [XT] **xtunitroot**
has_eprop() function, [FN] **Programming functions**
hash functions, [M-5] **hash1( )**, [M-6] **Glossary**
hash tables, [M-5] **asarray( )**, [M-6] **Glossary**
hash1() function, [M-5] **hash1( )**
hashing, [M-6] **Glossary**
hasmissing() function, [M-5] **missing( )**
hat matrix, *see* projection matrix, diagonal elements of
hausman command, [R] **hausman**
Hausman specification test, [R] **hausman**, [XT] **xtreg postestimation**
Hausman–Taylor estimator, [XT] **xthtaylor**
Haver Analytics databases, reading data from, [D] **import haver**
haver import subcommand, [D] **import haver**
haverdir, set subcommand, [D] **import haver**, [R] **set**
hazard, [TE] **etregress**
contributions, [ST] **Glossary**
function, [G-2] **graph other**, [ST] **sts**, [ST] **sts generate**, [ST] **sts list**, [ST] **Glossary**
graph of, [ST] **ltable**, [ST] **stcurve**, [ST] **sts graph**
rate, [PSS] **power exponential**, [PSS] **power logrank**
ratio, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [R] ***eform_option***, [R] **lincom**, [ST] **Glossary**, [TE] **Glossary**
tables, [ST] **ltable**
hazard-rate difference, [PSS] **power exponential**
hazards,
control-group, [PSS] **power exponential**, [PSS] **power logrank**
experimental-group, [PSS] **power exponential**, [PSS] **power logrank**
two-sample, [PSS] **power exponential**, [PSS] **power logrank**
hbar, graph subcommand, [G-2] **graph bar**
hbox, graph subcommand, [G-2] **graph box**
headlabel option, [G-2] **graph twoway pccapsym**, [G-2] **graph twoway pcscatter**
health ratio, [R] **binreg**
heckman command, [R] **heckman**, [R] **heckman postestimation**
Heckman selection model, [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [SEM] **example 45g**, [SVY] **svy estimation**

heckoprobit command, [R] **heckoprobit**, [R] **heckoprobit postestimation**
heckprobit command, [R] **heckprobit**, [R] **heckprobit postestimation**
height() textbox option, [G-3] ***added_text_options***
Helmert contrasts, [R] **contrast**
help, [M-1] **help**
  mata subcommand, [M-3] **mata help**
  view subcommand, [R] **view**
help command, [M-3] **mata help**, [R] **help**, [U] **4 Stata's help and search facilities**, [U] **7 – more– conditions**
  writing your own, [U] **18.11.6 Writing system help**
help_d, view subcommand, [R] **view**
help — I don't know what to do, [U] **3 Resources for learning and using Stata**
Henze–Zirkler normality test, [MV] **mvtest normality**
Hermitian
  adjoin, [M-2] **op_transpose**, [M-5] **conj( )**
  matrices, [M-5] **issymmetric( )**, [M-5] **makesymmetric( )**, [M-6] **Glossary**
  transpose, [M-2] **op_transpose**, [M-5] **conj( )**
Hessenberg
  decomposition, [M-5] **hessenbergd( )**, [M-6] **Glossary**
  form, [M-6] **Glossary**
_hessenbergd() function, [M-5] **hessenbergd( )**
hessenbergd() function, [M-5] **hessenbergd( )**
_hessenbergd_la() function, [M-5] **hessenbergd( )**
hessian option, [R] **maximize**
heterogeneity test, [R] **epitab**
heteroskedastic errors, *see* linear regression with heteroskedastic errors
heteroskedastic probit regression, [R] **hetprobit**, [SVY] **svy estimation**
heteroskedasticity, *also see* HAC variance estimate
  ARCH model, *see* autoregressive conditional heteroskedasticity model
  conditional, [R] **regress postestimation time series**
  GARCH model, *see* generalized autoregressive conditional heteroskedasticity
  Newey–West estimator, *see* Newey–West regression
  robust variances, *see* robust, Huber/White/sandwich estimator of variance
  test, [R] **hetprobit**, [R] **regress postestimation**, [R] **regress postestimation time series**, [R] **sdtest**
hetprobit command, [R] **hetprobit**, [R] **hetprobit postestimation**
hettest, estat subcommand, [R] **regress postestimation**
hexadecimal report, [D] **hexdump**
hexdump command, [D] **hexdump**
Heywood
  case, [MV] **Glossary**
  solution, [MV] **Glossary**
hh() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
hhC() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
hidden stored results, [M-5] **st_global( )**, [M-5] **st_matrix( )**, [M-5] **st_numscalar( )**
hierarchical
  cluster analysis, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**
  clustering, [MV] **Glossary**
  model, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [ME] **Glossary**, [U] **26.21 Multilevel mixed-effects models**
  regression, [R] **nestreg**, [R] **stepwise**
  samples, [R] **anova**, [R] **gllamm**, [R] **loneway**, [R] **areg**
higher ASCII, *see* extended ASCII
higher-order models, *see* confirmatory factor analysis
highest posterior density
  credible interval, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**, [BAYES] **Glossary**
  region, [BAYES] **intro**, [BAYES] **Glossary**
high-low charts, [G-2] **graph twoway rbar**, [G-2] **graph twoway rcap**, [G-2] **graph twoway rspike**
high-pass filter, [TS] **tsfilter bw**, [TS] **tsfilter hp**, [TS] **Glossary**
Hilbert() function, [M-5] **Hilbert( )**
Hildreth–Lu regression, [TS] **prais**
HILO, [M-5] **byteorder( )**
histogram command, [R] **histogram**
histogram, graph twoway subcommand, [G-2] **graph twoway histogram**
histograms, [G-2] **graph twoway histogram**, [R] **histogram**
  dotplots, [R] **dotplot**
  kernel density estimator, [R] **kdensity**
  ladder-of-powers, [R] **ladder**
  of categorical variables, [R] **histogram**
  rootograms, [R] **spikeplot**
  stem-and-leaf, [R] **stem**
historical stored results, [M-5] **st_global( )**, [M-5] **st_matrix( )**, [M-5] **st_numscalar( )**
histories, [G-2] **graph bar**, [G-2] **graph box**, [G-2] **graph matrix**, [G-2] **graph pie**, [G-2] **graph twoway histogram**, [G-3] ***by_option***
hms() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
Hodrick–Prescott filter, [TS] **tsfilter**, [TS] **tsfilter hp**
hofd() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
hold,
  _estimates subcommand, [P] **_estimates**
  _return subcommand, [P] **_return**

Holm's multiple-comparison adjustment, *see* multiple comparisons, Holm's method
Holt–Winters smoothing, [TS] **tssmooth**, [TS] **tssmooth dexponential**, [TS] **tssmooth exponential**, [TS] **tssmooth hwinters**, [TS] **tssmooth shwinters**, [TS] **Glossary**
homogeneity of variances, [R] **oneway**, [R] **sdtest**
homogeneity test, [R] **epitab**
homoskedasticity tests, [R] **regress postestimation**
Horst normalization, *see* Kaiser normalization
Hosmer–Lemeshow
  delta chi-squared influence statistic, *see* delta chi-squared influence statistic
  delta deviance influence statistic, *see* delta deviance influence statistic
  goodness-of-fit test, [R] **estat gof**, [SVY] **estat**
`hot`, `ssc` subcommand, [R] **ssc**
`hotelling` command, [MV] **hotelling**
Hotelling's
  generalized $T$-squared statistic, [MV] **manova**
  $T$-squared, [MV] **hotelling**, [MV] **mvtest means**, [MV] **Glossary**
`hours()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`hp`, `tsfilter` subcommand, [TS] **tsfilter hp**
HPD
  credible interval, *see* highest posterior density credible interval
  region, *see* highest posterior density region
`_hqrd()` function, [M-5] **qrd( )**
`hqrd()` function, [M-5] **qrd( )**
`hqrdmultq()` function, [M-5] **qrd( )**
`hqrdmultq1t()` function, [M-5] **qrd( )**
`_hqrdp()` function, [M-5] **qrd( )**
`hqrdp()` function, [M-5] **qrd( )**
`_hqrdp_la()` function, [M-5] **qrd( )**
`hqrdq()` function, [M-5] **qrd( )**
`hqrdq1()` function, [M-5] **qrd( )**
`hqrdr()` function, [M-5] **qrd( )**
`hqrdr1()` function, [M-5] **qrd( )**
HRF, *see* human readable form
`ht`, `xtunitroot` subcommand, [XT] **xtunitroot**
http://www.stata.com, [U] **3.2.1 The Stata website (www.stata.com)**
`httpproxy`, `set` subcommand, [R] **netio**, [R] **set**
`httpproxyauth`, `set` subcommand, [R] **netio**, [R] **set**
`httpproxyhost`, `set` subcommand, [R] **netio**, [R] **set**
`httpproxyport`, `set` subcommand, [R] **netio**, [R] **set**
`httpproxypw`, `set` subcommand, [R] **netio**, [R] **set**
`httpproxyuser`, `set` subcommand, [R] **netio**, [R] **set**
Huber weighting, [R] **rreg**
Huber/White/sandwich estimator of variance, *see* robust, Huber/White/sandwich estimator of variance
human readable form, [D] **datetime**, [D] **datetime display formats**, [D] **datetime translation**
hurdle regression, [R] **churdle**
Huynh–Feldt epsilon, [R] **anova**
`hwinters`, `tssmooth` subcommand, [TS] **tssmooth hwinters**
hybrid
  MH sampler, *see* hybrid MH sampling
  MH sampling, [BAYES] **intro**
  model, [IRT] **Glossary**
`hybrid`, `irt` subcommand, [IRT] **irt hybrid**, [IRT] **irt hybrid postestimation**
hyperbolic functions, [FN] **Statistical functions**, [M-5] **sin( )**
`hypergeometric()` function, [FN] **Statistical functions**, [M-5] **normal( )**
hypergeometric,
  cumulative distribution, [FN] **Statistical functions**
  probability mass function, [FN] **Statistical functions**
`hypergeometricp()` function, [FN] **Statistical functions**, [M-5] **normal( )**
hyperparameters, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **bayesgraph**, [BAYES] **Glossary**
hyperprior, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **bayesgraph**, [BAYES] **Glossary**
hypertext help, [R] **help**, [U] **4 Stata's help and search facilities**, [U] **18.11.6 Writing system help**
hypothesis, [PSS] **Glossary**, *also see* null hypothesis and alternative hypothesis
  test, [PSS] **Glossary**, [SEM] **test**, [SEM] **testnl**, *also see* null hypothesis and alternative hypothesis
  testing, Bayesian, *see* Bayesian, hypothesis testing
hypothesized value, *see* null value

## I

`I()` function, [FN] **Matrix functions**, [M-5] **I( )**, [P] **matrix define**
i.i.d. assumption, *see* independent and identically distributed sampling assumption
`ibeta()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`ibetatail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`ic`, `bayesstats` subcommand, [BAYES] **bayesstats**
`ic`, `estat` subcommand, [R] **estat**, [R] **estat ic**
ICC, *see* item characteristic curve
`icc` command, [R] **icc**
`icc`, `estat` subcommand, [ME] **melogit postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **mixed postestimation**
`icc`, `irtgraph` subcommand, [IRT] **irtgraph icc**
`icd10`
  `check` command, [D] **icd10**
  `clean` command, [D] **icd10**
  command, [D] **icd**
  `generate` command, [D] **icd10**

icd10, *continued*
lookup command, [D] **icd10**
query command, [D] **icd10**
icd9
check command, [D] **icd9**
clean command, [D] **icd9**
command, [D] **icd**
generate command, [D] **icd9**
lookup command, [D] **icd9**
query command, [D] **icd9**
search command, [D] **icd9**
icd9p
check command, [D] **icd9**
clean command, [D] **icd9**
command, [D] **icd**
generate command, [D] **icd9**
lookup command, [D] **icd9**
query command, [D] **icd9**
search command, [D] **icd9**
ICE, *see* imputation, multivariate, chained equations
ice command, [MI] **mi export ice**, [MI] **mi import ice**
iconv, [D] **unicode convertfile**
ICU, *see* International Components for Unicode
ID variable, [ST] **Glossary**
identification, *see* model identification
identifier, class, [P] **class**
identifier, unique, [D] **isid**
identity, forecast subcommand, [TS] **forecast identity**
identity matrix, [M-5] **I( )**, [P] **matrix define**
idiosyncratic error term, [XT] **Glossary**
if, [M-2] **if**
if *exp* qualifier, [P] **syntax**, [U] **11 Language syntax**
if programming command, [P] **if**
ignorable missing-data mechanism, [MI] **intro substantive**, [MI] **Glossary**
IIA, *see* independence of irrelevant alternatives
IIF, *see* item information function
iif, irtgraph subcommand, [IRT] **irtgraph iif**
Im() function, [M-5] **Re( )**
Im–Pesaran–Shin test, [XT] **xtunitroot**
imaginary part, [M-5] **Re( )**
immediate commands, [P] **display**, [R] **bitest**, [R] **ci**, [R] **esize**, [R] **prtest**, [R] **sdtest**, [R] **symmetry**, [R] **tabulate twoway**, [R] **ttest**, [R] **ztest**, [U] **18.4.5 Parsing immediate commands**, [U] **19 Immediate commands**
implied context, class, [P] **class**
import
delimited command, [D] **import delimited**
excel command, [D] **import excel**
haver command, [D] **import haver**
sasxport command, [D] **import sasxport**
import, mi subcommand, [MI] **mi import**, [MI] **mi import flong**, [MI] **mi import flongsep**, [MI] **mi import ice**, [MI] **mi import nhanes1**, [MI] **mi import wide**
importance weight, [U] **11.1.6 weight**, [U] **20.23.4 Importance weights**
importing data, [D] **import**, [D] **import delimited**, [D] **import excel**, [D] **import haver**, [D] **import sasxport**, [D] **infile (fixed format)**, [D] **infile (free format)**, [D] **infix (fixed format)**, [D] **odbc**, [D] **xmlsave**, [MI] **mi import**, [MI] **mi import flong**, [MI] **mi import flongsep**, [MI] **mi import ice**, [MI] **mi import nhanes1**, [MI] **mi import wide**, [U] **21 Entering and importing data**, [U] **21.4 Transfer programs**, *also see* combining datasets, *also see* inputting data interactively
improper prior, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **Glossary**
impulse–response functions, [G-2] **graph other**, [TS] **irf**, [TS] **irf add**, [TS] **irf cgraph**, [TS] **irf create**, [TS] **irf ctable**, [TS] **irf describe**, [TS] **irf drop**, [TS] **irf graph**, [TS] **irf ograph**, [TS] **irf rename**, [TS] **irf set**, [TS] **irf table**, [TS] **var intro**, [TS] **varbasic**, [TS] **vec intro**, [TS] **Glossary**
imputation diagnostics, *see* imputation, diagnostics
imputation method, [MI] **mi impute**
iterative, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute mvn**
monotone, [MI] **mi impute monotone**
multivariate, [MI] **mi impute chained**, [MI] **mi impute monotone**, [MI] **mi impute mvn**
proper, [MI] **intro substantive**
univariate, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**
imputation,
binary, [MI] **mi impute logit**
by groups, [MI] **mi impute**
categorical, [MI] **mi impute mlogit**, [MI] **mi impute ologit**
chained equations, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**
conditional, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**, [MI] **Glossary**
continuous, [MI] **mi impute pmm**, [MI] **mi impute regress**
with a limited range, [MI] **mi impute intreg**, [MI] **mi impute truncreg**
count data, [MI] **mi impute nbreg**, [MI] **mi impute poisson**
diagnostics, [MI] **mi impute**
interval regression, [MI] **mi impute intreg**

imputation, *continued*
interval-censored data, [MI] **mi impute intreg**
linear regression, [MI] **mi impute regress**
logistic regression, [MI] **mi impute logit**
modeling, [MI] **mi impute**
monotone, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**
multinomial logistic regression, [MI] **mi impute mlogit**
multiple, [MI] **intro substantive**
multivariate,
chained equations, [MI] **mi impute**, [MI] **mi impute chained**
monotone, [MI] **mi impute**, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**
normal, [MI] **mi impute**, [MI] **mi impute mvn**
negative binomial regression, [MI] **mi impute nbreg**
on subsamples, [MI] **mi impute**
ordered logistic regression, [MI] **mi impute ologit**
overdispersed count data, [MI] **mi impute nbreg**
passive, [MI] **mi impute**, [MI] **mi impute chained**
passive variables, [MI] **mi impute regress**
perfect prediction, [MI] **mi impute**
Poisson regression, [MI] **mi impute poisson**
predictive mean matching, [MI] **mi impute**, [MI] **mi impute pmm**
regression, [MI] **mi impute**, [MI] **mi impute regress**
semiparametric, [MI] **mi impute pmm**
step, [MI] **intro substantive**, [MI] **mi estimate**
transformations, [MI] **mi impute**
truncated data, [MI] **mi impute truncreg**
truncated regression, [MI] **mi impute truncreg**
univariate, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**
imputations, recommended number of, [MI] **intro substantive**, [MI] **mi estimate**
`impute`, `mi` subcommand, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute mvn**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**
imputed data, [MI] **Glossary**
imputed variables, *see* variables, imputed
`imtest`, `estat` subcommand, [R] **regress postestimation**
`in` *range* qualifier, [P] **syntax**, [U] **11 Language syntax**
`in smcl`, `display` directive, [P] **display**
`inbase()` function, [M-5] **inbase( )**
incidence, [ST] **Glossary**
incidence rate, [ST] **Glossary**
incidence studies, [R] **epitab**, [ST] **stcurve**, [ST] **stir**, [ST] **stptime**, [ST] **strate**, [ST] **stsum**
incidence-rate ratio, [ME] **meglm**, [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [ME] **mestreg**, [R] ***eform_option***, [R] **epitab**, [ST] **stir**, [ST] **stptime**, [ST] **stsum**, [XT] **xtgee**, [XT] **xtnbreg**, [XT] **xtpoisson**
estimation,
negative binomial regression, [R] **nbreg**, [R] **tnbreg**, [R] **zinb**
Poisson regression, [R] **cpoisson**, [R] **expoisson**, [R] **ivpoisson**, [R] **poisson**, [R] **tpoisson**, [R] **zip**, [TE] **etpoisson**
postestimation, [R] **contrast**, [R] **expoisson postestimation**, [R] **lincom**
postestimation,
negative binomial regression, [R] **nbreg postestimation**, [R] **tnbreg postestimation**, [R] **zinb postestimation**
Poisson regression, [R] **poisson postestimation**, [R] **tpoisson postestimation**, [R] **zip postestimation**
`include_bitmap`, `set` subcommand, [R] **set**
`include` command, [P] **include**
income distributions, [R] **inequality**
income tax rate function, [D] **egen**
incomplete
beta function, [FN] **Statistical functions**, [M-5] **normal( )**
gamma function, [FN] **Statistical functions**, [M-5] **normal( )**
observations, [MI] **Glossary**, *see* dropout
increment operator, [M-2] **op_increment**
independence of irrelevant alternatives,
assumption, [R] **clogit**, [R] **mlogit**
relaxing assumption, [R] **asclogit**, [R] **asmprobit**, [R] **asroprobit**, [R] **nlogit**
test for, [R] **hausman**, [R] **nlogit**, [R] **suest**
independence test, [R] **correlate**, [R] **epitab**, [R] **spearman**, [R] **tabulate twoway**, [SVY] **svy: tabulate twoway**
independent and identically distributed, [TS] **Glossary**
independent and identically distributed sampling assumption, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **Glossary**
index of probit and logit, [R] **logit postestimation**, [R] **predict**, [R] **probit postestimation**
index search, [R] **search**, [U] **4 Stata's help and search facilities**
index,
mathematical functions, [M-4] **statistical**
matrix functions, [M-4] **utility**
statistical functions, [M-4] **statistical**
stopping rules, *see* stopping rules
utility functions, [M-4] **utility**
`indexnot()` function, [FN] **String functions**, [M-5] **indexnot( )**

indicator variables, [R] **tabulate oneway**, [R] **xi**, [SEM] **Glossary**, *also see* factor variables
indicators, [U] **11.4.3 Factor variables**
indirect standardization, [R] **dstdize**
individual-level treatment effect, [TE] **Glossary**
ineligible missing values, [MI] **mi impute**, [MI] **Glossary**
inequality measures, [R] **inequality**
inertia, [MV] **Glossary**, *also see* total inertia
`inertia`, `estat` subcommand, [MV] **ca postestimation**
`infile` command, [D] **infile (fixed format)**, [D] **infile (free format)**
`infix` command, [D] **infix (fixed format)**
influence statistics, *see* delta beta influence statistic, *see* delta chi-squared influence statistic, *see* delta deviance influence statistic, *see* DFBETA, *see* LMAX value
*%infmt*, [D] **infile (fixed format)**
information, [IRT] **Glossary**
  criteria, *see* Akaike information criterion, *see* Bayesian information criterion
  matrix, [P] **matrix get**, [R] **correlate**, [R] **maximize**
  matrix test, [R] **regress postestimation**
informative prior, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **Glossary**
Informix, reading data from, [U] **21.4 Transfer programs**
inheritance, [M-2] **class**, [P] **class**
`init`, `ml` subcommand, [R] **ml**
`init`, `ssd` subcommand, [SEM] **ssd**
initial values, [SEM] **Glossary**, *see* starting values
initialization, class, [P] **class**
`inlist()` function, [FN] **Programming functions**
inner fence, [R] **lv**
innovation accounting, [TS] **irf**
`input` command, [D] **input**
`input`, `matrix` subcommand, [P] **matrix define**
input, obtaining from console in programs, *see* console, obtaining input from
input/output functions, [M-4] **io**
inputting data
  from a file, *see* importing data, *see* reading data from disk
  interactively, [D] **edit**, [D] **input**, *also see* editing data, *also see* importing data
`inrange()` function, [FN] **Programming functions**
`insert`, `odbc` subcommand, [D] **odbc**
`insobs` command, [D] **insobs**
`inspect` command, [D] **inspect**
`install`,
  `net` subcommand, [R] **net**
  `ssc` subcommand, [R] **ssc**
installation
  of official updates, [R] **update**, [U] **28 Using the Internet to keep up to date**
installation, *continued*
  of SJ and STB, [R] **net**, [R] **sj**, [U] **3.5 Updating and adding features from the web**, [U] **17.6 How do I install an addition?**
  of user-written commands (updating), [R] **adoupdate**
instance, [M-6] **Glossary**
instance, class, [P] **class**
`.instancemv` built-in class function, [P] **class**
instance-specific variable, [P] **class**
instrument, [IRT] **Glossary**
instrumental-variables, [XT] **Glossary**
  estimator, [XT] **Glossary**
  regression, [R] **gmm**, [R] **ivpoisson**, [R] **ivprobit**, [R] **ivregress**, [R] **ivtobit**, [R] **reg3**, [SVY] **svy estimation**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xthtaylor**, [XT] **xtivreg**, [XT] **xtivreg postestimation**
`int`, [D] **data types**, [U] **12.2.2 Numeric storage types**
`int()` function, [FN] **Mathematical functions**
`integ` command, [R] **dydx**
integer truncation function, [FN] **Mathematical functions**
integers, [M-5] **trunc( )**
integrals, numeric, [R] **dydx**
integrated autoregressive moving-average model, [TS] **estat acplot**, [TS] **psdensity**
integrated process, [TS] **Glossary**
intensity, color, adjustment, [G-2] **graph twoway histogram**, [G-2] **graph twoway kdensity**, [G-4] ***colorstyle***
*intensitystyle*, [G-4] ***intensitystyle***
interaction, [R] **anova**, [R] **contrast**, [R] **fvrevar**, [R] **margins**, [R] **margins, contrast**, [R] **margins, pwcompare**, [R] **marginsplot**, [R] **pwcompare**, [R] **set emptycells**, [R] **xi**, [U] **11.4.3 Factor variables**, [U] **13.5.3 Factor variables and time-series operators**, [U] **20.18 Obtaining contrasts, tests of interactions, and main effects**, [U] **25.2 Estimation with factor variables**
  effects, [PSS] **Glossary**
  expansion, [R] **xi**
  plots, [R] **marginsplot**
intercept, [SEM] **intro 4**, [SEM] **Glossary**, *also see* constraints, specifying
`interface`, `query` subcommand, [R] **query**
internal consistency test, [MV] **alpha**
International Components for Unicode, [D] **unicode**
Internet,
  commands to control connections to, [R] **netio**
  installation of updates from, [R] **adoupdate**, [R] **net**, [R] **sj**, [R] **update**, [U] **28 Using the Internet to keep up to date**
  search, [R] **net search**
  Stata, [U] **3.2.1 The Stata website (www.stata.com)**
  Stata Journal, [U] **3.4 The Stata Journal**
  Stata Press, [U] **3.3 Stata Press**
interpolation, [D] **ipolate**
interquantile range, [R] **qreg**

interquartile range, [R] **lv**, [R] **table**, [R] **tabstat**
generating variable containing, [D] **egen**
making dataset of, [D] **collapse**
summarizing, [D] **pctile**
interrater agreement, [R] **kappa**
interrupting command execution, [U] **10 Keyboard use**
interval
censoring, *see* imputation, interval-censored data
data, [XT] **xtintreg**, [XT] **Glossary**
hypothesis test, [BAYES] **Glossary**
hypothesis testing, *see* Bayesian, hypothesis testing, interval
regression, [R] **intreg**, [SVY] **svy estimation**
regression model, [SEM] **example 44g**
interval regression, random-effects, [XT] **xtintreg**
test, [BAYES] **Glossary**, *see* Bayesian, hypothesis testing, interval
`intmethod()` option, *see* `gsem` option `intmethod()`
`intpoints()` option, *see* `gsem` option `intpoints()`
intraclass correlation, [ME] **Glossary**, [R] **icc**, *also see* `estat icc` command
intracluster correlation, *see* correlation, intracluster
`intreg` command, [R] **intreg**, [R] **intreg postestimation**
`inv()` function, [FN] **Matrix functions**, [P] **matrix define**
invariance, [IRT] **Glossary**
`invbinomial()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invbinomialtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invchi2()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invchi2tail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invcloglog()` function, [FN] **Mathematical functions**, [M-5] **logit( )**
`invdunnettprob()` function, [FN] **Statistical functions**, [M-5] **normal( )**
inverse
cumulative
beta distribution, [FN] **Statistical functions**
binomial function, [FN] **Statistical functions**
chi-squared distribution function, [FN] **Statistical functions**
exponential distribution, [FN] **Statistical functions**
$F$ distribution function, [FN] **Statistical functions**
incomplete gamma function, [FN] **Statistical functions**
Weibull distribution, [FN] **Statistical functions**
hyperbolic tangent transformation, *see* Fisher's $z$ transformation
matrix, [M-4] **solvers**, [M-5] **invsym( )**, [M-5] **cholinv( )**, [M-5] **luinv( )**, [M-5] **qrinv( )**, [M-5] **pinv( )**, [M-5] **solve_tol( )**
inverse, *continued*
noncentral
beta distribution, [FN] **Statistical functions**
chi-squared distribution function, [FN] **Statistical functions**
$F$ distribution, [FN] **Statistical functions**
normal distribution function, [FN] **Statistical functions**
of matrix, [P] **matrix define**, [P] **matrix svd**
reverse cumulative
beta distribution, [FN] **Statistical functions**
binomial function, [FN] **Statistical functions**
chi-squared distribution function, [FN] **Statistical functions**
exponential distribution, [FN] **Statistical functions**
$F$ distribution function, [FN] **Statistical functions**
incomplete gamma function, [FN] **Statistical functions**
noncentral chi-squared distribution function, [FN] **Statistical functions**
$t$ distribution function, [FN] **Statistical functions**
Weibull distribution, [FN] **Statistical functions**
inverse-probability weighting, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects ipw**, [TE] **Glossary**
inverse-probability-weighted regression adjustment, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects ipwra**, [TE] **Glossary**
`invexponential()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invexponentialtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invF()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`_invfft()` function, [M-5] **fft( )**
`invfft()` function, [M-5] **fft( )**
`invFtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invgammap()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invgammaptail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invHilbert()` function, [M-5] **Hilbert( )**
`invibeta()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invibetatail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invlogistic()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invlogistictail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invlogit()` function, [FN] **Mathematical functions**, [M-5] **logit( )**
`invnbinomial()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`invnbinomialtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**

invnchi2() function, [FN] **Statistical functions**, [M-5] **normal()**
invnchi2tail() function, [FN] **Statistical functions**, [M-5] **normal()**
invnF() function, [FN] **Statistical functions**, [M-5] **normal()**
invnFtail() function, [FN] **Statistical functions**, [M-5] **normal()**
invnibeta() function, [FN] **Statistical functions**, [M-5] **normal()**
invnormal() function, [FN] **Statistical functions**, [M-5] **normal()**
invnt() function, [FN] **Statistical functions**, [M-5] **normal()**
invnttail() function, [FN] **Statistical functions**, [M-5] **normal()**
invorder() function, [M-5] **invorder()**
invpoisson() function, [FN] **Statistical functions**, [M-5] **normal()**
invpoissontail() function, [FN] **Statistical functions**, [M-5] **normal()**
_invsym() function, [M-5] **invsym()**
invsym() function, [FN] **Matrix functions**, [M-5] **invsym()**, [P] **matrix define**
invt() function, [FN] **Statistical functions**, [M-5] **normal()**
invtokens() function, [M-5] **invtokens()**
invttail() function, [FN] **Statistical functions**, [M-5] **normal()**
invtukeyprob() function, [FN] **Statistical functions**, [M-5] **normal()**
invvech() function, [M-5] **vec()**
invweibull() function, [FN] **Statistical functions**, [M-5] **normal()**
invweibullph() function, [FN] **Statistical functions**, [M-5] **normal()**
invweibullphtail() function, [FN] **Statistical functions**, [M-5] **normal()**
invweibulltail() function, [FN] **Statistical functions**, [M-5] **normal()**
I/O functions, [M-4] **io**
ipolate command, [D] **ipolate**
ips, xtunitroot subcommand, [XT] **xtunitroot**
IPW, *see* inverse-probability weighting
ipw, stteffects subcommand, [TE] **stteffects ipw**
ipw, teffects subcommand, [TE] **teffects ipw**
IPWRA, *see* inverse-probability-weighted regression adjustment
ipwra, stteffects subcommand, [TE] **stteffects ipwra**
ipwra, teffects subcommand, [TE] **teffects ipwra**
IQR, *see* interquartile range
iqr(), egen function, [D] **egen**
iqreg command, [R] **qreg**, [R] **qreg postestimation**
ir command, [R] **epitab**
irecode() function, [FN] **Programming functions**
IRF, *see* impulse–response functions
irf, [TS] **irf**
  add command, [TS] **irf add**
  cgraph command, [TS] **irf cgraph**
  create command, [TS] **irf create**
  ctable command, [TS] **irf ctable**
  describe command, [TS] **irf describe**
  drop command, [TS] **irf drop**
  graph command, [TS] **irf graph**
  ograph command, [TS] **irf ograph**
  rename command, [TS] **irf rename**
  set command, [TS] **irf set**
  table command, [TS] **irf table**
.irf file, [U] **11.6 Filenaming conventions**
iri command, [R] **epitab**
IRLS, *see* iterated, reweighted least squares
IRR, *see* incidence-rate ratio
IRT, *see* item response theory
irt
  1pl command, [IRT] **irt 1pl**, [IRT] **irt 1pl postestimation**
  2pl command, [IRT] **irt 2pl**, [IRT] **irt 2pl postestimation**
  3pl command, [IRT] **irt 3pl**, [IRT] **irt 3pl postestimation**
  command, [IRT] **irt**, [IRT] **Control Panel**
  gpcm command, [IRT] **irt pcm**
  grm command, [IRT] **irt grm**, [IRT] **irt grm postestimation**
  hybrid command, [IRT] **irt hybrid**, [IRT] **irt hybrid postestimation**
  nrm command, [IRT] **irt nrm**, [IRT] **irt nrm postestimation**
  pcm command, [IRT] **irt pcm**, [IRT] **irt pcm postestimation**
  rsm command, [IRT] **irt rsm**, [IRT] **irt rsm postestimation**
IRT Control Panel, [IRT] **Control Panel**
irtgraph
  icc command, [IRT] **irtgraph icc**
  iif command, [IRT] **irtgraph iif**
  tcc command, [IRT] **irtgraph tcc**
  tif command, [IRT] **irtgraph tif**
.isa built-in class function, [P] **class**
iscale() option, [G-2] **graph matrix**
iscomplex() function, [M-5] **isreal()**
isdiagonal() function, [M-5] **isdiagonal()**
isfleeting() function, [M-5] **isfleeting()**
isid command, [D] **isid**
.isofclass built-in class function, [P] **class**
isolines, [G-2] **graph twoway contourline**
ispointer() function, [M-5] **isreal()**
isreal() function, [M-5] **isreal()**
isrealvalues() function, [M-5] **isrealvalues()**
isstring() function, [M-5] **isreal()**
issymmetric() function, [FN] **Matrix functions**, [M-5] **issymmetric()**, [P] **matrix define**
issymmetriconly() function, [M-5] **issymmetric()**
istdize command, [R] **dstdize**

*istmt*, [M-1] **how**, [M-6] **Glossary**
`isview()` function, [M-5] **isview( )**
italics, [G-4] ***text***
item, [IRT] **Glossary**
  characteristic curve, [IRT] **irtgraph icc**, [IRT] **Glossary**
  information function, [IRT] **irtgraph iif**, [IRT] **Glossary**
  location, [IRT] **Glossary**
  response function, [IRT] **irt**, [IRT] **Glossary**
  response theory, [IRT] **irt**, [IRT] **Glossary**, [SEM] **intro 5**, [SEM] **example 28g**, [SEM] **example 29g**
`iterate()` option, [R] **maximize**, *see* `gsem` option *maximize_options*, *see* `sem` option *maximize_options*
iterated principal-factor method, [MV] **factor**, [MV] **Glossary**
iterated, reweighted least squares, [R] **binreg**, [R] **glm**, [R] **reg3**, [R] **sureg**
iteration,
  bisection method, [PSS] **power**, [PSS] **Glossary**
  Newton's method, power, [PSS] **power**
iterations, controlling the maximum number, [R] **maximize**
`ivpoisson` command, [R] **ivpoisson**, [R] **ivpoisson postestimation**
`ivprobit` command, [R] **ivprobit**, [R] **ivprobit postestimation**
`ivregress` command, [R] **ivregress**, [R] **ivregress postestimation**
`ivtobit` command, [R] **ivtobit**, [R] **ivtobit postestimation**
`[iweight=`*exp*`]` modifier, [U] **11.1.6 weight**, [U] **20.23.4 Importance weights**

## J

*J*×2 contingency table, [PSS] **power trend**, [PSS] **Glossary**
`J()` function, [M-5] **J( )**, [M-2] **void**, [M-6] **Glossary**, [FN] **Matrix functions**, [P] **matrix define**
Jaccard coefficient similarity measure, [MV] ***measure_option***
jackknife, [SEM] **Glossary**
  estimation, [R] **jackknife**, [SVY] ***jackknife_options***, [SVY] **svy jackknife**, [SVY] **variance estimation**, [SVY] **Glossary**
  standard errors, [R] ***vce_option***, [SVY] **svy jackknife**, [SVY] **variance estimation**, [XT] ***vce_options***
*jackknife_options*, [SVY] ***jackknife_options***
`jackknife` prefix command, [R] **jackknife**, [R] **jackknife postestimation**
jackknifed residuals, [R] **regress postestimation**
jackknifed standard error, *see* Monte Carlo error
Jarque–Bera statistic, [TS] **varnorm**, [TS] **vecnorm**
Java, [P] **java**, [P] **javacall**
JCA, *see* joint correspondence analysis
Jeffreys noninformative prior, [MI] **mi impute mvn**
Jeffreys prior, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
`jeffreys`, `prior()` suboption, [BAYES] **bayesmh evaluators**
`jitter()` option, [G-2] **graph matrix**, [G-2] **graph twoway scatter**
`jitterseed()` option, [G-2] **graph matrix**, [G-2] **graph twoway scatter**
join operator, [M-2] **op_join**
`joinby` command, [D] **joinby**, [U] **22 Combining datasets**
joining datasets, *see* combining datasets
joining time-span records, [ST] **stsplit**
joint correspondence analysis, [MV] **mca**, [MV] **mca postestimation**, [MV] **Glossary**
joint normality, *see* normality, joint
joint posterior distribution, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **Glossary**
`_jumble()` function, [M-5] **sort( )**
`jumble()` function, [M-5] **sort( )**
justification of text, [G-3] ***textbox_options***
*justificationstyle*, [G-4] ***justificationstyle***

## K

Kaiser–Meyer–Olkin sampling adequacy, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **Glossary**
Kaiser normalization, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **rotate**, [MV] **rotatemat**
Kalman
  filter, [TS] **arima**, [TS] **dfactor**, [TS] **dfactor postestimation**, [TS] **sspace**, [TS] **sspace postestimation**, [TS] **ucm**, [TS] **ucm postestimation**, [TS] **Glossary**
  forecast, [TS] **dfactor postestimation**, [TS] **sspace postestimation**, [TS] **ucm postestimation**
  smoothing, [TS] **dfactor postestimation**, [TS] **sspace postestimation**, [TS] **ucm postestimation**
`kap` command, [R] **kappa**
Kaplan–Meier
  product-limit estimate, [ST] **sts**, [ST] **sts generate**, [ST] **sts graph**, [ST] **sts list**, [ST] **sts test**, [ST] **Glossary**
  survivor function, [ST] **ltable**, [ST] **stcox PH-assumption tests**, [ST] **sts**
`kappa` command, [R] **kappa**
`kapwgt` command, [R] **kappa**
`kdensity` command, [R] **kdensity**
`kdensity`, `graph twoway` subcommand, [G-2] **graph twoway kdensity**
`keep` command, [D] **drop**
keeping variables or observations, [D] **drop**
Kendall's tau, [R] **spearman**, [R] **tabulate twoway**
Kenward–Roger DDF, *see* denominator degrees of freedom, Kenward–Roger

kernel density estimator, [R] **kdensity**
kernel density smoothing, [G-2] **graph other**
kernel-weighted local polynomial estimator, [R] **lpoly**
keyboard
  entry, [U] **10 Keyboard use**
  search, [U] **4 Stata's help and search facilities**
keys, [G-3] ***clegend_option***, [G-3] ***legend_options***
Kish design effects, [R] **loneway**, [SVY] **estat**
`kiss32`, *see* random-number generator
`Kmatrix()` function, [M-5] **Kmatrix( )**
kmeans, [MV] **Glossary**
`kmeans`, `cluster` subcommand, [MV] **cluster kmeans and kmedians**
kmeans clustering, [MV] **cluster**, [MV] **cluster kmeans and kmedians**
kmedians, [MV] **Glossary**
`kmedians`, `cluster` subcommand, [MV] **cluster kmeans and kmedians**
kmedians clustering, [MV] **cluster**, [MV] **cluster kmeans and kmedians**
KMO, *see* Kaiser–Meyer–Olkin sampling adequacy
`kmo`, `estat` subcommand, [MV] **factor postestimation**, [MV] **pca postestimation**
KNN, *see* *k*th-nearest neighbor
`knn`, `discrim` subcommand, [MV] **discrim knn**
Kolmogorov–Smirnov test, [R] **ksmirnov**
KR-20, [MV] **alpha**
Kronecker direct product, [D] **cross**, [M-2] **op_kronecker**, [P] **matrix define**
Kruskal stress, [MV] **mds postestimation**, [MV] **Glossary**
Kruskal–Wallis test, [R] **kwallis**
`ksmirnov` command, [R] **ksmirnov**
`ktau` command, [R] **spearman**
*k*th-nearest neighbor, [MV] **discrim knn**, [MV] **Glossary**
Kuder–Richardson Formula 20, [MV] **alpha**
Kulczynski coefficient similarity measure, [MV] ***measure_option***
`kurt()`, `egen` function, [D] **egen**
kurtosis, [MV] **mvtest normality**, [R] **lv**, [R] **pksumm**, [R] **regress postestimation**, [R] **sktest**, [R] **summarize**, [R] **tabstat**, [TS] **varnorm**, [TS] **vecnorm**
`kwallis` command, [R] **kwallis**

## L

L1-norm models, [R] **qreg**
`l1title()` option, [G-3] ***title_options***
`l2title()` option, [G-3] ***title_options***
`label`
  `copy` command, [D] **label**
  `data` command, [D] **label**, [U] **12.6 Dataset, variable, and value labels**
  `define` command, [D] **label**, [U] **12.6 Dataset, variable, and value labels**
`label`, *continued*
  `dir` command, [D] **label**
  `drop` command, [D] **label**
  `language` command, [D] **label language**, [U] **12.6 Dataset, variable, and value labels**
  `list` command, [D] **label**, [U] **12.6 Dataset, variable, and value labels**
  `save` command, [D] **label**
  `values` command, [D] **label**, [U] **12.6 Dataset, variable, and value labels**
  `variable` command, [D] **label**, [U] **12.6 Dataset, variable, and value labels**
  macro extended function, [P] **macro**
`label`, `snapshot` subcommand, [D] **snapshot**
label values, [P] **macro**, [U] **12.6 Dataset, variable, and value labels**, [U] **13.11 Label values**
`labelbook` command, [D] **labelbook**
labeling data, [D] **describe**, [D] **edit**, [D] **label**, [D] **label language**, [D] **notes**, [D] **varmanage**, [U] **12.6 Dataset, variable, and value labels**
labeling data in other languages, [U] **12.6.4 Labels in other languages**
labels,
  axis, [G-3] ***axis_label_options***
  creating, [D] **edit**, [D] **varmanage**
  editing, [D] **edit**, [D] **varmanage**
  marker, [G-3] ***marker_label_options***
LAD regression, [R] **qreg**
`ladder` command, [R] **ladder**
ladder of powers, [G-2] **graph other**, [R] **ladder**
lag operator, [TS] **Glossary**, [U] **11.4.4 Time-series varlists**
lag-exclusion statistics, [TS] **varwle**
lagged values, [U] **11.4.4 Time-series varlists**, [U] **13 Functions and expressions**, [U] **13.7 Explicit subscripting**, [U] **13.10.1 Generating lags, leads, and differences**
lag-order selection statistics, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **varsoc**, [TS] **vec intro**
Lagrange multiplier test, [PSS] **Glossary**, [R] **regress postestimation time series**, [SEM] **estat ginvariant**, [SEM] **estat mindices**, [SEM] **estat scoretests**, [SEM] **Glossary**, [TS] **varlmar**, [TS] **veclmar**, *also see* score test
Lance and Williams's formula, [MV] **cluster**
language, [D] **unicode locale**
  syntax, [P] **syntax**, [U] **11 Language syntax**
`language`, `label` subcommand, [D] **label language**
languages, multiple, [D] **label language**
LAPACK, [M-1] **LAPACK**, [M-5] **cholesky( )**, [M-5] **cholinv( )**, [M-5] **cholsolve( )**, [M-5] **eigensystem( )**, [M-5] **eigensystemselect( )**, [M-5] **fullsvd( )**, [M-5] **ghessenbergd( )**, [M-5] **lapack( )**, [M-5] **lud( )**, [M-5] **luinv( )**, [M-5] **lusolve( )**, [M-5] **qrd( )**, [M-5] **qrinv( )**, [M-5] **qrsolve( )**, [M-5] **svd( )**, [M-5] **svsolve( )**, [M-6] **Glossary**

Laplacian approximation, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **Glossary**, [SEM] **methods and formulas for gsem**
latent
  growth model, [SEM] **intro 5**, [SEM] **example 18**, [SEM] **Glossary**
  roots, [M-5] **eigensystem( )**
  space, [IRT] **Glossary**
  trait, [IRT] **Glossary**
  variable, [SEM] **intro 4**, [SEM] **Glossary**
`latent()` option, *see* `gsem` option `latent()`, *see* `sem` option `latent()`
Latin-square designs, [MV] **manova**, [R] **anova**, [R] **pkshape**
LAV regression, [R] **qreg**
Lawley–Hotelling trace statistic, [MV] **canon**, [MV] **manova**, [MV] **mvtest means**, [MV] **Glossary**
`lceffects`, `estat` subcommand, [SVY] **estat**
`lcolor()` option, [G-3] ***connect_options***, [G-3] ***rspike_options***
LDA, *see* linear discriminant analysis
`lda`, `discrim` subcommand, [MV] **discrim lda**
lead
  operator, [U] **11.4.4 Time-series varlists**
  values, *see* lagged values
leap seconds, [TS] **tsset**
least absolute
  deviations, [R] **qreg**
  residuals, [R] **qreg**
  value regression, [R] **qreg**
least squared deviations, *see* linear regression
least squares, *see* linear regression
  generalized, *see* feasible generalized least squares
least-squares means, [R] **margins**, [R] **marginsplot**, [U] **20.15.1 Obtaining estimated marginal means**
leave one out, [MV] **discrim**, [MV] **discrim estat**, [MV] **discrim knn**, [MV] **discrim knn postestimation**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **discrim qda**, [MV] **discrim qda postestimation**, [MV] **Glossary**
left eigenvectors, [M-5] **eigensystem( )**, [M-6] **Glossary**
`left` suboption, [G-4] ***justificationstyle***
left-censoring, [ST] **Glossary**, [TE] **Glossary**, *see* imputation, interval-censored data
left-truncation, [TE] **Glossary**, *see* imputation, truncated data, *see* truncation
`_lefteigensystem()` function, [M-5] **eigensystem( )**
`lefteigensystem()` function, [M-5] **eigensystem( )**
`lefteigensystemselect*()` functions, [M-5] **eigensystemselect( )**
`leftgeigensystem()` function, [M-5] **geigensystem( )**
`leftgeigensystemselect*()` function, [M-5] **geigensystem( )**
`legend()` option, [G-3] ***legend_options***
legends, [G-3] ***clegend_option***, [G-3] ***legend_options***
  problems, [G-3] ***legend_options***
  use with `by()`, [G-3] ***by_option***, [G-3] ***clegend_option***, [G-3] ***legend_options***
*legendstyle*, [G-4] ***legendstyle***
length, [M-5] **abs( )**, [M-5] **rows( )**, [M-5] **strlen( )**, [M-5] **ustrlen( )**, [M-5] **udstrlen( )**
`length()` function, [M-5] **rows( )**
length of string function, [FN] **String functions**
less than (or equal) operator, [U] **13.2.3 Relational operators**
letter values, [R] **lv**
`level` command and value, [P] **macro**
`level()` option, *see* `gsem` option `level()`, *see* `sem` option `level()`
`level`, `set` subcommand, [R] **level**, [R] **set**
levels, [U] **11.4.3 Factor variables**
`levelsof` command, [P] **levelsof**
Levene's robust test statistic, [R] **sdtest**
leverage, [R] **logistic postestimation**, [R] **regress postestimation diagnostic plots**
leverage plots, [G-2] **graph other**
leverage-versus-(squared)-residual plot, [R] **regress postestimation diagnostic plots**
Levin–Lin–Chu test, [XT] **xtunitroot**
`_LEx`, [SEM] **sem and gsem option covstructure( )**
`lexis` command, [ST] **stsplit**
lexis diagram, [ST] **stsplit**
`lfit`, `graph twoway` subcommand, [G-2] **graph twoway lfit**
`lfitci`, `graph twoway` subcommand, [G-2] **graph twoway lfitci**
libraries, [M-1] **how**, [M-3] **mata mlib**, [M-3] **mata which**
license, [R] **about**
life tables, [ST] **ltable**, [ST] **sts**, [ST] **Glossary**
likelihood, *see* maximum likelihood estimation
likelihood displacement value, [ST] **stcox postestimation**, [ST] **Glossary**
likelihood-ratio
  chi-squared of association, [R] **tabulate twoway**
  test, [PSS] **power twoproportions**, [PSS] **Glossary**, [R] **lrtest**, [SEM] **lrtest**, [SEM] **methods and formulas for sem**, [U] **20.12.3 Likelihood-ratio tests**
Likert summative scales, [MV] **alpha**
limited dependent variables, [IRT] **Control Panel**, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt grm**, [IRT] **irt nrm**, [IRT] **irt pcm**, [IRT] **irt rsm**, [IRT] **irt hybrid**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [R] **asclogit**, [R] **asmprobit**, [R] **asroprobit**, [R] **betareg**, [R] **binreg**, [R] **biprobit**, [R] **brier**, [R] **clogit**, [R] **cloglog**, [R] **cpoisson**, [R] **cusum**, [R] **exlogistic**,

limited dependent variables, *continued*
[R] **expoisson**, [R] **glm**, [R] **heckoprobit**, [R] **heckprobit**, [R] **hetprobit**, [R] **ivpoisson**, [R] **ivprobit**, [R] **logistic**, [R] **logit**, [R] **mlogit**, [R] **mprobit**, [R] **nbreg**, [R] **nlogit**, [R] **ologit**, [R] **oprobit**, [R] **poisson**, [R] **probit**, [R] **rocfit**, [R] **rocreg**, [R] **rologit**, [R] **scobit**, [R] **slogit**, [R] **tnbreg**, [R] **tpoisson**, [R] **zinb**, [R] **zip**, [TE] **etpoisson**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtnbreg**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtstreg**
limits, [D] **describe**, [D] **memory**, [M-1] **limits**, [R] **limits**, [R] **matsize**, [U] **6 Managing memory**
numerical and string, [P] **creturn**
system, [P] **creturn**
`lincom` command, [R] **lincom**, [SEM] **intro 7**, [SEM] **estat stdize**, [SEM] **lincom**, [SVY] **svy postestimation**
line, definition, [G-4] ***linestyle***
`line`, `graph twoway` subcommand, [G-2] **graph twoway line**
linear
combinations, [SVY] **estat**, [SVY] **svy postestimation**
combinations of estimators, [R] **lincom**, [U] **20.13 Obtaining linear combinations of coefficients**
combinations, forming, [P] **matrix score**
discriminant analysis, [MV] **candisc**, [MV] **discrim lda**, [MV] **Glossary**
filter, [TS] **tsfilter**, [TS] **tsfilter cf**, [TS] **tssmooth ma**, [TS] **Glossary**
hypothesis test after estimation, [R] **contrast**, [R] **lrtest**, [R] **margins**, [R] **margins, contrast**, [R] **margins, pwcompare**, [R] **pwcompare**, [R] **test**
interpolation and extrapolation, [D] **ipolate**
logit model, [PSS] **power trend**
mixed-effects model, [ME] **me**, [ME] **mixed**, [ME] **Glossary**
prediction, *see* multiple imputation, prediction
regression, [MV] **mvreg**, [R] **anova**, [R] **areg**, [R] **binreg**, [R] **cnsreg**, [R] **eivreg**, [R] **frontier**, [R] **glm**, [R] **gmm**, [R] **heckman**, [R] **intreg**, [R] **ivregress**, [R] **ivtobit**, [R] **qreg**, [R] **reg3**, [R] **regress**, [R] **rreg**, [R] **sureg**, [R] **tobit**, [R] **vwls**, [SEM] **intro 5**, [SEM] **example 6**, [SEM] **Glossary**, [SVY] **svy estimation**, [TE] **etregress**, [TE] **teffects ra**, [TS] **newey**, [TS] **prais**, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtfrontier**, [XT] **xtgee**, [XT] **xtgls**, [XT] **xthtaylor**, [XT] **xtintreg**, [XT] **xtivreg**, [XT] **xtpcse**, [XT] **xtrc**, [XT] **xtreg**, [XT] **xtregar**, [XT] **xttobit**, *also see* generalized linear models, *also see* panel data, *also see* random-coefficients model
conditional, [U] **26.9 Conditional logistic regression**
linear regression, *continued*
with heteroskedastic errors, [U] **26.15 Linear regression with heteroskedastic errors**
with simple error structures, [U] **26.3 Linear regression with simple error structures**
regression imputation, *see* imputation, regression
splines, [R] **mkspline**
test, *see* estimation, test after
trend, [PSS] **power trend**
`linear`, `churdle` subcommand, [R] **churdle**
linearization, *see* linearized variance estimator
linearized variance estimator, [SVY] **variance estimation**, [SVY] **Glossary**
`linegap`, `set` subcommand, [R] **set**
`linepalette`, `palette` subcommand, [G-2] **palette**
*linepatternstyle*, [G-4] ***linepatternstyle***
lines, [G-4] **concept: lines**
adding, [G-2] **graph twoway lfit**, [G-3] ***added_line_options***, *also see* fits, adding
connecting points, [G-3] ***connect_options***, [G-4] ***connectstyle***
dashed, [G-4] ***linepatternstyle***
dotted, [G-4] ***linepatternstyle***
grid, [G-3] ***axis_label_options***, [G-4] ***linestyle***
look of, [G-3] ***fcline_options***, [G-3] ***line_options***, [G-4] ***linestyle***
patterns, [G-4] ***linepatternstyle***
suppressing, [G-4] ***linestyle***
thickness, [G-4] ***linewidthstyle***
lines, long, in do-files and ado-files, [P] **#delimit**, [U] **18.11.2 Comments and long lines in ado-files**
`linesize`, `set` subcommand, [R] **log**, [R] **set**
*linestyle*, [G-4] ***linestyle***
added, [G-4] ***addedlinestyle***
*linewidthstyle*, [G-4] ***linewidthstyle***
link
complementary log-log, [SEM] **methods and formulas for gsem**
function, [ME] **meglm**, [ME] **Glossary**, [R] **betareg**, [R] **glm**, [SEM] **Glossary**, [XT] **xtgee**, [XT] **Glossary**
identity, [SEM] **methods and formulas for gsem**
log, [SEM] **methods and formulas for gsem**
logit, [SEM] **methods and formulas for gsem**
probit, [SEM] **methods and formulas for gsem**
`link`, `net` subcommand, [R] **net**
`link()` option, *see* `gsem` option `link()`
linkage, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
`linktest` command, [R] **linktest**
`list`,
`cluster` subcommand, [MV] **cluster utility**
`estat` subcommand, [MV] **discrim estat**, [MV] **discrim knn postestimation**, [MV] **discrim lda postestimation**, [MV] **discrim logistic postestimation**, [MV] **discrim qda postestimation**

list, *continued*
char subcommand, [P] **char**
constraint subcommand, [R] **constraint**
creturn subcommand, [P] **creturn**
duplicates subcommand, [D] **duplicates**
ereturn subcommand, [P] **ereturn**, [P] **return**, [R] **stored results**
forecast subcommand, [TS] **forecast list**
label subcommand, [D] **label**
macro subcommand, [P] **macro**
matrix subcommand, [P] **matrix utility**
notes subcommand, [D] **notes**
odbc subcommand, [D] **odbc**
program subcommand, [P] **program**
return subcommand, [P] **return**, [R] **stored results**
scalar subcommand, [P] **scalar**
snapshot subcommand, [D] **snapshot**
sreturn subcommand, [P] **return**, [R] **stored results**
ssd subcommand, [SEM] **ssd**
sts subcommand, [ST] **sts list**
sysdir subcommand, [P] **sysdir**
timer subcommand, [P] **timer**
list command, [D] **list**
list macro extended function, [P] **macro lists**
list manipulation, [P] **macro lists**
list subscripts, *see* subscripts
listing
data, [D] **edit**, [D] **list**
estimation results, [P] **ereturn**, [P] **_estimates**
macro expanded functions, [P] **macro lists**
strings, [U] **12.4.13 How to see the full contents of a strL or a str# variable**
values of a variable, [P] **levelsof**
liststruct() function, [M-5] **liststruct()**
listwise deletion, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **Glossary**
listwise option, *see* gsem option listwise
llc, xtunitroot subcommand, [XT] **xtunitroot**
Lmatrix() function, [M-5] **Lmatrix()**
LMAX value, [ST] **stcox postestimation**, [ST] **Glossary**
LME, *see* linear mixed-effects model
ln() function, [FN] **Mathematical functions**, [M-5] **exp()**
lnfactorial() function, [FN] **Mathematical functions**, [M-5] **factorial()**
lngamma() function, [FN] **Mathematical functions**, [M-5] **factorial()**
lnigammaden() function, [FN] **Statistical functions**
lniwishartden() function, [FN] **Statistical functions**, [M-5] **normal()**
lnmvnormalden() function, [FN] **Statistical functions**, [M-5] **normal()**
lnnormal() function, [FN] **Statistical functions**, [M-5] **normal()**
lnnormalden() function, [FN] **Statistical functions**, [M-5] **normal()**
lnskew0 command, [R] **lnskew0**
lnwishartden() function, [FN] **Statistical functions**, [M-5] **normal()**
load,
bcal subcommand, [D] **bcal**
odbc subcommand, [D] **odbc**
loading, [MV] **Glossary**
loading data, *see* importing data, *see* inputting data interactively, *see* reading data from disk, *see* using data
loading plot, [MV] **scoreplot**, [MV] **Glossary**
loadingplot command, [MV] **discrim lda postestimation**, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **scoreplot**
loadings, estat subcommand, [MV] **ca postestimation**, [MV] **canon postestimation**, [MV] **discrim lda**, [MV] **discrim lda postestimation**, [MV] **pca postestimation**
local
independence, [IRT] **Glossary**
linear, [R] **lpoly**
polynomial, [R] **lpoly**
polynomial smoothing, [G-2] **graph other**, [G-2] **graph twoway lpoly**, [G-2] **graph twoway lpolyci**
local
++ command, [P] **macro**
-- command, [P] **macro**
command, [P] **macro**, [U] **18.3.1 Local macros**
local,
ereturn subcommand, [P] **ereturn**, [P] **return**
return subcommand, [P] **return**
sreturn subcommand, [P] **return**
Local, class prefix operator, [P] **class**
local command, [U] **18.3.9 Advanced local macro manipulation**
locale, [D] **unicode**, [D] **unicode locale**, [I] **Glossary**
collation, [D] **unicode collator**
locale_functions, set subcommand, [P] **set locale_functions**, [R] **set**
locale_ui, set subcommand, [P] **set locale_ui**, [R] **set**
localization, [D] **unicode locale**
locally weighted smoothing, [R] **lowess**
location, measures of, [R] **lv**, [R] **summarize**, [R] **table**
location, specifying, [G-4] ***clockposstyle***, [G-4] ***compassdirstyle***, [G-4] ***ringposstyle***
locksplitters, set subcommand, [R] **set**
log
close command, [R] **log**
command, [R] **log**, [R] **view**, [U] **15 Saving and printing output—log files**, [U] **16.1.2 Comments and blank lines in do-files**
off command, [R] **log**
on command, [R] **log**
query command, [R] **log**
using command, [R] **log**
.log file, [U] **11.6 Filenaming conventions**

log files, *see* log command
  printing, [R] **translate**
log() function, [FN] **Mathematical functions**, [M-5] **exp( )**
log hazard-ratio, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**
  one-sample, [PSS] **power cox**
log hazard-rate, [PSS] **power exponential**, [PSS] **power logrank**
log hazards
  control-group, [PSS] **power exponential**, [PSS] **power logrank**
  experimental-group, [PSS] **power exponential**, [PSS] **power logrank**
  two-sample, [PSS] **power exponential**, [PSS] **power logrank**
log likelihood, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [SEM] **methods and formulas for gsem**, [SEM] **methods and formulas for sem**
log or nolog option, [R] **maximize**
log scales, [G-3] ***axis_scale_options***
log transformations, [R] **boxcox**, [R] **lnskew0**
log10() function, [FN] **Mathematical functions**, [M-5] **exp( )**
logarithms, [M-5] **exp( )**, [M-5] **matexpsym( )**
logical operators, [M-2] **op_logical**, [U] **13.2.4 Logical operators**
logistic
  density,
    mean $\mu$, scale $s$, [FN] **Statistical functions**
    standard, [FN] **Statistical functions**
  discriminant analysis, [MV] **discrim logistic**
  distribution,
    cumulative, [FN] **Statistical functions**
    inverse cumulative, [FN] **Statistical functions**
  regression imputation, *see* imputation, logistic regression
logistic and logit regression, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt hybrid**, [R] **logistic**, [R] **logit**, [SEM] **intro 5**, [SEM] **example 33g**, [SEM] **example 34g**, [SEM] **Glossary**, [SVY] **svy estimation**
  complementary log-log, [R] **cloglog**
  conditional, [R] **asclogit**, [R] **clogit**, [R] **rologit**
  exact, [R] **exlogistic**
  fixed-effects, [R] **asclogit**, [R] **clogit**
  fixed-effects, [XT] **xtlogit**, [XT] **xtstreg**
  fractional polynomial, [R] **fp**
  generalized estimating equations, [XT] **xtgee**
  generalized linear model, [R] **glm**
  mixed-effects, [ME] **melogit**, [ME] **meqrlogit**, *also see* ordered logistic regression
  multinomial, [IRT] **irt nrm**, [IRT] **irt hybrid**, [R] **asclogit**, [R] **clogit**, [R] **mlogit**
  nested, [R] **nlogit**
  ordered, [IRT] **irt grm**, [IRT] **irt pcm**, [IRT] **irt rsm**, [IRT] **irt hybrid**, [R] **ologit**
logistic and logit regression, *continued*
  polytomous, [IRT] **irt nrm**, [IRT] **irt hybrid**, [R] **mlogit**
  population-averaged, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtstreg**
  random-effects, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtstreg**
  rank-ordered, [R] **rologit**
  skewed, [R] **scobit**
  stereotype, [R] **slogit**
logistic command, [R] **logistic**, [R] **logistic postestimation**
logistic, discrim subcommand, [MV] **discrim logistic**
logistic discriminant analysis, [MV] **Glossary**
logistic() function, [FN] **Statistical functions**, [M-5] **normal( )**
logisticden() function, [FN] **Statistical functions**, [M-5] **normal( )**
logistictail() function, [FN] **Statistical functions**, [M-5] **normal( )**
logit command, [R] **logit**, [R] **logit postestimation**
logit() function, [M-5] **logit( )**
logit function, [FN] **Mathematical functions**
logit option, *see* gsem option logit
logit regression, *see* logistic and logit regression
log-linear model, [R] **cpoisson**, [R] **expoisson**, [R] **glm**, [R] **ivpoisson**, [R] **poisson**, [R] **tpoisson**, [R] **zip**, [SVY] **svy estimation**, [TE] **etpoisson**
log-log plot, [ST] **stcox PH-assumption tests**
loglogistic survival regression, [ST] **streg**
lognormal survival regression, [ST] **streg**
logrank, power subcommand, [PSS] **power logrank**
log-rank test, [PSS] **power logrank**, [ST] **sts test**
logtype, set subcommand, [R] **log**, [R] **set**
LOHI, [M-5] **byteorder( )**
loneway command, [R] **loneway**
long, [D] **data types**, [U] **12.2.2 Numeric storage types**
long lines in ado-files and do-files, [P] **#delimit**, [U] **18.11.2 Comments and long lines in ado-files**
long, reshape subcommand, [D] **reshape**
long strings, *see* string variables, long
longitudinal
  data, [MI] **mi estimate**, [XT] **Glossary**, *also see* panel data
  studies, *see* incidence studies
  survey data, [SVY] **svy estimation**
long-memory process, [TS] **arfima**, [TS] **Glossary**
LOO, *see* leave one out
look of areas, [G-3] ***area_options***, [G-3] ***fitarea_options***
lookfor command, [D] **lookfor**
lookup,
  icd10 subcommand, [D] **icd10**
  icd9 subcommand, [D] **icd9**
  icd9p subcommand, [D] **icd9**

loop, [M-2] **do**, [M-2] **for**, [M-2] **while**
  continuing, [M-2] **continue**
  endless, *see* endless loop
  exiting, [M-2] **break**
  use of semicolons in, [M-2] **semicolons**
looping, [P] **continue**, [P] **foreach**, [P] **forvalues**, [P] **while**
Lorenz curve, [R] **inequality**
loss, [MV] **Glossary**
loss to follow-up, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **Glossary**
Lotus 1-2-3, reading data from, *see* spreadsheets
lower
  asymptote, [IRT] **Glossary**
  one-sided test, [PSS] **Glossary**, *also see* one-sided test
  one-tailed test, [PSS] **Glossary**, *also see* one-sided test
lower ASCII, *see* plain ASCII
lowercase, [M-5] **strupper( )**, [M-5] **ustrupper( )**
lowercase-string function, [FN] **String functions**
`_lowertriangle()` function, [M-5] **lowertriangle( )**
`lowertriangle()` function, [M-5] **lowertriangle( )**
lower-triangular matrix, *see* triangular matrix
lowess, *see* locally weighted smoothing
`lowess` command, [R] **lowess**
`lowess`, `graph twoway` subcommand, [G-2] **graph twoway lowess**
lowess smoothing, [G-2] **graph other**
`lpattern()` option, [G-3] ***connect_options***, [G-3] ***rspike_options***
`lpoly` command, [R] **lpoly**
`lpoly`, `graph twoway` subcommand, [G-2] **graph twoway lpoly**
`lpolyci`, `graph twoway` subcommand, [G-2] **graph twoway lpolyci**
L-R plots, [G-2] **graph other**, [R] **regress postestimation diagnostic plots**
LRECLs, [D] **infile (fixed format)**
`lroc` command, [R] **lroc**
`lrtest` command, [R] **lrtest**, [SEM] **example 10**, [SEM] **example 39g**, [SEM] **lrtest**
`ls` command, [D] **dir**
`lsens` command, [R] **lsens**
`lstat` command, *see* `estat classification` command
`lstretch`, `set` subcommand, [R] **set**
`lstyle()` option, [G-3] ***rspike_options***
`ltable` command, [ST] **ltable**
`ltolerance()` option, [R] **maximize**
LU decomposition, [M-5] **lud( )**
`_lud()` function, [M-5] **lud( )**
`lud()` function, [M-5] **lud( )**
`_lud_la()` function, [M-5] **lud( )**
`_luinv()` function, [M-5] **luinv( )**
`luinv()` function, [M-5] **luinv( )**
`_luinv_la()` function, [M-5] **luinv( )**
`_lusolve()` function, [M-5] **lusolve( )**
`lusolve()` function, [M-5] **lusolve( )**
`_lusolve_la()` function, [M-5] **lusolve( )**
`lv` command, [R] **lv**
*lval*, [M-2] **op_assignment**, [M-6] **Glossary**
*lvalue*, class, [P] **class**
`lvr2plot` command, [R] **regress postestimation diagnostic plots**
`lwidth()` option, [G-3] ***connect_options***, [G-3] ***rspike_options***

## M

$M$, [MI] **mi impute**, [MI] **Glossary**
  size recommendations, [MI] **intro substantive**, [MI] **mi estimate**
$m$, [MI] **Glossary**
MA, *see* moving average model
`ma`, `tssmooth` subcommand, [TS] **tssmooth ma**
Mac,
  keyboard use, [U] **10 Keyboard use**
  pause, [P] **sleep**
  specifying filenames, [U] **11.6 Filenaming conventions**
machine precision, [M-5] **epsilon( )**, [M-6] **Glossary**
`macro`
  `dir` command, [P] **macro**
  `drop` command, [P] **macro**
  `list` command, [P] **macro**
  `shift` command, [P] **macro**
macro substitution, [P] **macro**
  class, [P] **class**
macros, [P] **creturn**, [P] **macro**, [P] **scalar**, [P] **syntax**, [U] **18.3 Macros**, *also see* `e()` stored results
`macval()` macro expansion function, [P] **macro**
`mad()`, `egen` function, [D] **egen**
MAD regression, [R] **qreg**
Mahalanobis
  distance, [MV] **Glossary**
  transformation, [MV] **Glossary**
main effects, [MV] **manova**, [PSS] **Glossary**, [R] **anova**
`makecns` command, [P] **makecns**
`_makesymmetric()` function, [M-5] **makesymmetric( )**
`makesymmetric()` function, [M-5] **makesymmetric( )**
`man` command, [R] **help**
`manage`, `window` subcommand, [P] **window programming**, [P] **window manage**
MANCOVA, *see* multivariate analysis of covariance
`mangle` option, [G-2] **graph twoway pcarrow**
manifest variables, [SEM] **Glossary**
manipulation commands, [G-2] **graph manipulation**
Mann–Whitney two-sample statistics, [R] **ranksum**
MANOVA, *see* multivariate analysis of variance
`manova` command, [MV] **manova**, [MV] **manova postestimation**
`manova`, `estat` subcommand, [MV] **discrim lda postestimation**
`manovatest` command, [MV] **manova postestimation**
Mantel–Cox method, [ST] **strate**

Mantel–Haenszel
method, [ST] **strate**
test, [PSS] **Glossary**, [R] **epitab**, [ST] **stir**
mapping strings to numbers, [D] **destring**, [D] **encode**, [D] **label**, *also see* `real()` function
maps, [M-5] **asarray( )**
MAR, *see* missing at random, *see* missing values
marginal
distribution, Bayesian, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **Glossary**
effects, [R] **margins**, [R] **marginsplot**, [U] **20.15 Obtaining marginal means, adjusted predictions, and predictive margins**, [U] **20.19 Graphing margins, marginal effects, and contrasts**
homogeneity, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **power mcc**, [PSS] **Glossary**
homogeneity, test of, [R] **symmetry**
likelihood, Bayesian, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **bayestest model**, [BAYES] **Glossary**
means, [R] **contrast**, [R] **margins**, [R] **margins, contrast**, [R] **margins, pwcompare**, [R] **marginsplot**, [R] **pwcompare**, [U] **20.15 Obtaining marginal means, adjusted predictions, and predictive margins**
posterior distribution, Bayesian, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **bayesstats ess**, [BAYES] **bayesstats summary**, [BAYES] **bayestest interval**, [BAYES] **Glossary**
proportion, *see* proportions, marginal
tax rate `egen` function, [D] **egen**
`margins` command, [R] **margins**, [R] **margins postestimation**, [R] **margins, contrast**, [R] **margins, pwcompare**, [R] **marginsplot**, [SEM] **intro 7**, [SVY] **svy postestimation**, [U] **20.15 Obtaining marginal means, adjusted predictions, and predictive margins**
margins, size of, [G-4] ***marginstyle***
margins test, [R] **margins**, [R] **pwcompare**
`marginsplot` command, [R] **marginsplot**, [U] **20.19 Graphing margins, marginal effects, and contrasts**
*marginstyle*, [G-3] ***region_options***, [G-3] ***textbox_options***, [G-4] ***marginstyle***
`mark` command, [P] **mark**
marker labels, [G-3] ***marker_label_options***, [G-4] ***markerlabelstyle***
*markerlabelstyle*, [G-4] ***markerlabelstyle***
markers, [G-3] ***marker_options***, *also see* marker labels
color, [G-4] ***colorstyle***
resizing, [G-3] ***scale_option***
shape of, [G-4] ***symbolstyle***
size of, [G-4] ***markersizestyle***
*markersizestyle*, [G-4] ***markersizestyle***
*markerstyle*, [G-4] ***markerstyle***
`markin` command, [P] **mark**
marking observations, [P] **mark**
`markout` command, [P] **mark**
Markov chain, [TS] **mswitch**
Markov chain Monte Carlo, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **Glossary**, [MI] **mi impute**, [MI] **mi impute mvn**, [MI] **Glossary**
convergence, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute mvn**
convergence of, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesgraph**, [BAYES] **bayesstats ess**
mixing of, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesgraph**, [BAYES] **bayesstats ess**, [BAYES] **Glossary**
parameter trace files, [MI] **mi ptrace**
sample, [BAYES] **Glossary**
sample size of, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
sampling, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **bayesmh postestimation**, [BAYES] **bayesgraph**, [BAYES] **bayesstats summary**, [BAYES] **Glossary**
standard error, *see* Monte Carlo standard error
Markov-switching model, [TS] **mswitch**
`marksample` command, [P] **mark**
Marquardt algorithm, [M-5] **moptimize( )**, [M-5] **optimize( )**
martingale residual, [ST] **stcox postestimation**, [ST] **streg postestimation**
mass, [MV] **Glossary**
Mata, [D] **putmata**
commands, [M-3] **intro**
error messages, [M-5] **error( )**, *also see* traceback log
`mata`
`clear` command, [M-3] **mata clear**
`describe` command, [M-3] **mata describe**
`drop` command, [M-3] **mata drop**
`help` command, [M-3] **mata help**
invocation command, [M-3] **mata**
`matdescribe` command, [M-3] **mata matsave**
`matsave` command, [M-3] **mata matsave**
`matuse` command, [M-3] **mata matsave**
`memory` command, [M-3] **mata memory**
`mlib add` command, [M-3] **mata mlib**
`mlib create` command, [M-3] **mata mlib**
`mlib index` command, [M-3] **mata mlib**
`mlib query` command, [M-3] **mata mlib**
`mosave` command, [M-3] **mata mosave**
`query` command, [M-3] **mata set**, [R] **set**
`rename` command, [M-3] **mata rename**
`set matacache` command, [M-3] **mata set**, [R] **set**

mata, *continued*
set matafavor command, [M-3] **mata set**, [M-5] **favorspeed( )**, [R] **set**
set matalibs command, [M-3] **mata set**, [R] **set**
set matalnum command, [M-3] **mata set**, [R] **set**
set matamofirst command, [M-3] **mata set**, [R] **set**
set mataoptimize command, [M-3] **mata set**, [R] **set**
set matastrict command, [M-1] **ado**, [M-2] **declarations**, [M-3] **mata set**, [R] **set**
stata command, [M-3] **mata stata**
which command, [M-3] **mata which**
mata, clear subcommand, [D] **clear**
mata, query subcommand, [R] **query**
.mata source code file, [M-1] **source**, [M-3] **mata mlib**, [M-6] **Glossary**, [U] **11.6 Filenaming conventions**
matched
2x2 tables, [PSS] **power mcc**
case–control data, [R] **asclogit**, [R] **clogit**, [R] **epitab**, [R] **symmetry**, [ST] **sttocc**
case–control study, [PSS] **power**, [PSS] **power mcc**
study, [PSS] **power**, [PSS] **power mcc**, [PSS] **Glossary**
matched-pairs tests, [R] **signrank**, [R] **ttest**, [R] **ztest**
matching
1:$M$, [PSS] **power**
coefficient, [MV] **Glossary**
coefficient similarity measure, [MV] ***measure_option***
configuration, [MV] **Glossary**
estimator, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**, [TE] **Glossary**
matcproc command, [P] **makecns**
matdescribe, mata subcommand, [M-3] **mata matsave**
_matexpsym() function, [M-5] **matexpsym( )**
matexpsym() function, [M-5] **matexpsym( )**
math symbols, [G-4] ***text***
mathematical functions, [M-4] **mathematical**, [M-4] **matrix**, [M-4] **scalar**, [M-4] **solvers**, [M-4] **standard**
mathematical functions and expressions, [FN] **Mathematical functions**, [P] **matrix define**, [U] **13.3 Functions**
Matlab, reading data from, [U] **21.4 Transfer programs**
matlist command, [P] **matlist**
_matlogsym() function, [M-5] **matexpsym( )**
matlogsym() function, [M-5] **matexpsym( )**
matmissing() function, [FN] **Mathematical functions**, [P] **matrix define**
matname command, [P] **matrix mkmat**
_matpowersym() function, [M-5] **matpowersym( )**
matpowersym() function, [M-5] **matpowersym( )**
mat_put_rr command, [P] **matrix get**
matrices, [M-4] **intro**, [M-6] **Glossary**, [P] **matrix**, [U] **14 Matrix expressions**
accessing internal, [P] **matrix get**
accumulating, [P] **matrix accum**
appending rows and columns, [P] **matrix define**
Cholesky decomposition, [P] **matrix define**
coefficient matrices, [P] **ereturn**
column names, *see* matrices, row and column names
constrained estimation, [P] **makecns**
copying, [P] **matrix define**, [P] **matrix get**, [P] **matrix mkmat**
correlation, [MV] **pca**, [P] **matrix define**
covariance, [MV] **pca**
covariance matrix of estimators, [P] **ereturn**, [P] **matrix get**
cross-product, [P] **matrix accum**
determinant, [P] **matrix define**
diagonals, [P] **matrix define**
displaying, [P] **matlist**, [P] **matrix utility**
dissimilarity, [MV] **matrix dissimilarity**, [MV] **Glossary**, [P] **matrix dissimilarity**
distances, [MV] **matrix dissimilarity**, [P] **matrix dissimilarity**
dropping, [P] **matrix utility**
eigenvalues, [P] **matrix eigenvalues**, [P] **matrix symeigen**
eigenvectors, [P] **matrix symeigen**
elements, [P] **matrix define**
equation names, *see* matrices, row and column names
estimation results, [P] **ereturn**, [P] **_estimates**
functions, [FN] **Matrix functions**, [M-4] **manipulation**, [M-4] **matrix**, [M-4] **solvers**, [M-4] **standard**, [P] **matrix define**
identity, [P] **matrix define**
input, [P] **matrix define**, [U] **14.4 Inputting matrices by hand**
inversion, [P] **matrix define**, [P] **matrix svd**
Kronecker product, [P] **matrix define**
labeling rows and columns, *see* matrices, row and column names
linear combinations with data, [P] **matrix score**
listing, [P] **matlist**, [P] **matrix utility**
namespace and conflicts, [P] **matrix**, [P] **matrix define**
norm, [M-5] **norm( )**
number of rows and columns, [P] **matrix define**
operators such as addition, [P] **matrix define**, [U] **14.7 Matrix operators**
orthonormal basis, [P] **matrix svd**
partitioned, [P] **matrix define**
performing constrained estimation, [P] **makecns**
posting estimation results, [P] **ereturn**, [P] **_estimates**
renaming, [P] **matrix utility**
row and column names, [P] **ereturn**, [P] **matrix define**, [P] **matrix mkmat**, [P] **matrix rownames**, [U] **14.2 Row and column names**

matrices, *continued*
rows and columns, [P] **matrix define**
saving matrix, [P] **matrix mkmat**
scoring, [P] **matrix score**
similarity, [MV] **matrix dissimilarity**, [P] **matrix dissimilarity**
store variables as matrix, [P] **matrix mkmat**
submatrix extraction, [P] **matrix define**
submatrix substitution, [P] **matrix define**
subscripting, [P] **matrix define**, [U] **14.9 Subscripting**
sweep operator, [P] **matrix define**
temporary names, [P] **matrix**
trace, [P] **matrix define**
transposing, [P] **matrix define**
variables, make into matrix, [P] **matrix mkmat**
zero, [P] **matrix define**
`matrix`, [M-2] **declarations**
`matrix`
`accum` command, [P] **matrix accum**
`coleq` command, [P] **matrix rownames**
`colnames` command, [P] **matrix rownames**
commands, introduction, [P] **matrix**
`define` command, [P] **matrix define**
`dir` command, [P] **matrix utility**
`dissimilarity` command, [MV] **matrix dissimilarity**, [P] **matrix dissimilarity**
`drop` command, [P] **matrix utility**
`eigenvalues` command, [P] **matrix eigenvalues**
`glsaccum` command, [P] **matrix accum**
`input` command, [P] **matrix define**
`list` command, [P] **matrix utility**
`opaccum` command, [P] **matrix accum**
`rename` command, [P] **matrix utility**
`roweq` command, [P] **matrix rownames**
`rownames` command, [P] **matrix rownames**
`score` command, [P] **matrix score**
`svd` command, [P] **matrix svd**
`symeigen` command, [P] **matrix symeigen**
`vecaccum` command, [P] **matrix accum**
`matrix`,
`clear` subcommand, [D] **clear**
`confirm` subcommand, [P] **confirm**
`ereturn` subcommand, [P] **ereturn**, [P] **return**
`graph` subcommand, [G-2] **graph matrix**
`return` subcommand, [P] **return**
matrix graphs, [G-2] **graph matrix**
matrix model parameter, [BAYES] **Glossary**, *see* Bayesian, model parameters
`matrix()` function, [FN] **Programming functions**, [P] **matrix define**
`matsave`, `mata` subcommand, [M-3] **mata matsave**
`matsize`, [M-1] **limits**, [P] **creturn**, [P] **macro**
`matsize` command, [U] **14 Matrix expressions**
`matsize`, `set` subcommand, [R] **matsize**, [R] **set**
`matuniform()` function, [FN] **Matrix functions**, [P] **matrix define**
`matuse`, `mata` subcommand, [M-3] **mata matsave**
`max()`,
built-in function, [FN] **Mathematical functions**
`egen` function, [D] **egen**
`max()` function, [M-5] **minmax( )**
`max_memory`, `set` subcommand, [R] **set**
`maxbyte()` function, [FN] **Programming functions**
`maxdb`, `set` subcommand, [R] **db**, [R] **set**
`maxdouble()` function, [FN] **Programming functions**, [M-5] **mindouble( )**
`maxes()` option, [G-2] **graph matrix**
`maxfloat()` function, [FN] **Programming functions**
maximization, [M-5] **moptimize( )**, [M-5] **optimize( )**
maximization technique explained, [R] **maximize**, [R] **ml**
`maximize`, `ml` subcommand, [R] **ml**
*maximize_options*, *see* `gsem` option *maximize_options*, *see* `sem` option *maximize_options*
maximum
function, [D] **egen**, [FN] **Programming functions**
length of string, [M-1] **limits**
likelihood, [SEM] **intro 4**, [SEM] **methods and formulas for gsem**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
with missing values, [SEM] **example 26**, [SEM] **Glossary**
likelihood estimation, [MV] **factor**, [R] **maximize**, [R] **ml**, [R] **mlexp**
likelihood factor method, [MV] **Glossary**
limits, [R] **limits**
number of observations, [D] **memory**
number of variables, [D] **describe**, [D] **memory**
number of variables and observations, [U] **6 Managing memory**
number of variables in a model, [R] **matsize**
pseudolikelihood estimation, [SVY] **ml for svy**, [SVY] **variance estimation**
restricted likelihood, [ME] **mixed**
size of dataset, [U] **6 Managing memory**
size of matrix, [M-1] **limits**
value dissimilarity measure, [MV] ***measure_option***
maximums and minimums, [M-5] **mindex( )**
creating dataset of, [D] **collapse**
functions, [D] **egen**, [FN] **Mathematical functions**, [FN] **Programming functions**
reporting, [R] **lv**, [R] **summarize**, [R] **table**
`maxindex()` function, [M-5] **mindex( )**
`maxint()` function, [FN] **Programming functions**
`maxiter`, `set` subcommand, [R] **maximize**, [R] **set**
`maxlong()` function, [FN] **Programming functions**
`max_memory`, `set` subcommand, [D] **memory**
`maxvar`, `set` subcommand, [D] **memory**, [R] **set**
`mband`, `graph twoway` subcommand, [G-2] **graph twoway mband**
MCA, *see* multiple correspondence analysis
`mca` command, [MV] **mca**, [MV] **mca postestimation**, [MV] **mca postestimation plots**

MCAGH, *see* quadrature, mode-curvature adaptive Gauss–Hermite
MCAGHQ, *see* mode-curvature adaptive Gauss–Hermite quadrature
`mcaplot` command, [MV] **mca postestimation**, [MV] **mca postestimation plots**
`mcaprojection` command, [MV] **mca postestimation**, [MV] **mca postestimation plots**
MCAR, *see* missing completely at random
`mcc` command, [R] **epitab**
`mcc`, `power` subcommand, [PSS] **power mcc**
`mcci` command, [R] **epitab**
MCE, *see* Monte Carlo error
McFadden's choice model, [R] **asclogit**
MCMC, *see* Markov chain Monte Carlo
McNemar's chi-squared test, [R] **clogit**, [R] **epitab**
McNemar's test, [PSS] **Glossary**
`mcolor()` option, [G-3] ***marker_options***
MCSE, *see* Monte Carlo standard error
`md` command, [D] **mkdir**
MDES, *see* minimum detectable effect size
`mdev()`, `egen` function, [D] **egen**
MDS, *see* multidimensional scaling
`mds` command, [MV] **mds**, [MV] **mds postestimation**, [MV] **mds postestimation plots**
`mdsconfig` command, [MV] **mds**, [MV] **mds postestimation plots**
`mdslong` command, [MV] **mds postestimation**, [MV] **mds postestimation plots**, [MV] **mdslong**
`mdsmat` command, [MV] **mds postestimation**, [MV] **mds postestimation plots**, [MV] **mdsmat**
`mdsshepard` command, [MV] **mds postestimation plots**
`mdy()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`mdyhms()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`mean` command, [R] **mean**, [R] **mean postestimation**
mean contrasts, *see* contrasts
`mean()`, `egen` function, [D] **egen**
`mean()` function, [M-5] **mean( )**
mean–variance adaptive Gauss–Hermite quadrature, [IRT] **Glossary**, *see* quadrature, mean–variance adaptive Gauss–Hermite
means, [PSS] **power**, [PSS] **power oneway**, [PSS] **power repeated**, [PSS] **unbalanced designs**
  across variables, not observations, [D] **egen**
  arithmetic, geometric, and harmonic, [R] **ameans**
  confidence interval and standard error, [R] **ci**
  control-group, [PSS] **power twomeans**, [PSS] **unbalanced designs**
  correlated, *see* means, paired
  creating
    dataset of, [D] **collapse**
    variable containing, [D] **egen**
means, *continued*
  displaying, [R] **ameans**, [R] **summarize**, [R] **table**, [R] **tabstat**, [R] **tabulate, summarize()**, [XT] **xtsum**
  estimating, [R] **mean**
  experimental-group, [PSS] **power twomeans**, [PSS] **unbalanced designs**
  graphing, [R] **grmeanby**
  independent, *see* means, two-sample
  marginal, [R] **margins**
  multiple-sample, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**
  one-sample, [PSS] **power onemean**, [PSS] **unbalanced designs**
  paired, [PSS] **power pairedmeans**
  pairwise comparisons of, [R] **pwmean**
  pharmacokinetic data, [R] **pksumm**
  posttreatment, [PSS] **power pairedmeans**
  pretreatment, [PSS] **power pairedmeans**
  robust, [R] **rreg**
  survey data, [SVY] **svy estimation**
  testing equality, [MV] **hotelling**, [MV] **manova**, [MV] **mvtest means**
  testing equality of, *see* equality test of means
  two-sample, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **unbalanced designs**
`means`, `mvtest` subcommand, [MV] **mvtest means**
`means()` option, *see* `gsem` option `means()`, *see* `sem` option `means()`
`meanvariance()` function, [M-5] **mean( )**
measure, [MV] **Glossary**
measurement
  component, [SEM] **Glossary**
  error, [MV] **alpha**, [R] **vwls**, [SEM] **intro 5**, [SEM] **example 1**, [SEM] **example 27g**
  model, [SEM] **intro 5**, [SEM] **example 1**, [SEM] **example 3**, [SEM] **example 20**, [SEM] **example 27g**, [SEM] **example 30g**, [SEM] **example 31g**, [SEM] **Glossary**
  variables, [SEM] **Glossary**
`measures`, `cluster` subcommand, [MV] **cluster programming utilities**
measures of
  association, [R] **tabulate twoway**
  central tendency, *see* means, *see* medians
  dispersion, *see* percentiles, displaying, *see* standard deviations, displaying, *see* variance, displaying, *see* range of data
  inequality, [R] **inequality**
  location, [R] **lv**, [R] **summarize**
`mecloglog` command, [ME] **mecloglog**
`median` command, [R] **ranksum**
`median()`, `egen` function, [D] **egen**
median regression, [R] **qreg**
median test, [R] **ranksum**
`medianlinkage`,
  `clustermat` subcommand, [MV] **cluster linkage**
  `cluster` subcommand, [MV] **cluster linkage**

median-linkage clustering, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
medians,
creating
dataset of, [D] **collapse**
variable containing, [D] **egen**
displaying, [D] **pctile**, [R] **centile**, [R] **lv**, [R] **summarize**, [R] **table**, [R] **tabstat**
graphing, [R] **grmeanby**
testing equality of, *see* equality test of medians
mediation model, [SEM] **intro 5**, [SEM] **example 42g**
MEFF, *see* misspecification effects
MEFT, *see* misspecification effects
`meglm` command, [ME] **meglm**
`melogit` command, [ME] **melogit**
member
function, [M-2] **class**
program, [P] **class**
variable, [M-2] **class**, [P] **class**
memory
graphs, describing contents, [G-2] **graph describe**
matsize, *see* `matsize, set` subcommand
requirements, estimating for flongsep, [MI] **mi convert**
settings, [P] **creturn**
utilization, [M-1] **limits**, [M-3] **mata memory**
`memory`,
`mata` subcommand, [M-3] **mata memory**
`query` subcommand, [D] **memory**, [R] **query**
memory,
clearing, [D] **clear**
determining and resetting limits, [D] **describe**, [D] **memory**
managing, [U] **6 Managing memory**
reducing utilization, [D] **compress**, [D] **encode**, [D] **recast**, [P] **discard**
`memory` command, [D] **memory**, [U] **6 Managing memory**
`menbreg` command, [ME] **menbreg**
`menu`, `window` subcommand, [P] **window programming**, [P] **window menu**
menus, programming, [P] **dialog programming**, [P] **window programming**, [P] **window fopen**, [P] **window manage**, [P] **window menu**, [P] **window push**, [P] **window stopbox**
`meologit` command, [ME] **meologit**
`meoprobit` command, [ME] **meoprobit**
`mepoisson` command, [ME] **mepoisson**
`meprobit` command, [ME] **meprobit**
`meqrlogit` command, [ME] **meqrlogit**
`meqrpoisson` command, [ME] **meqrpoisson**
`merge` command, [D] **merge**, [U] **22 Combining datasets**
`merge`, `mi` subcommand, [MI] **mi merge**
`_merge` variable, [D] **merge**
*merged-explicit* options, [G-4] **concept: repeated options**
*merged-implicit* options, [G-4] **concept: repeated options**
merging data, [MI] **mi merge**, *see* combining datasets
Mersenne Twister, *see* random-number generator
messages and return codes, *see* error messages and return codes
`mestreg` command, [ME] **mestreg**
meta-analysis, [R] **meta**
method, [M-2] **class**, [SEM] **Glossary**
`method()` option, *see* `gsem` option `method()`, *see* `sem` option `method()`
metric scaling, [MV] **Glossary**
Metropolis–Hastings
algorithm, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **Glossary**
sampler, *see* Metropolis–Hastings sampling
sampling, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [BAYES] **Glossary**
`mfcolor()` option, [G-3] ***marker_options***
`mfp` prefix command, [R] **mfp**, [R] **mfp postestimation**
`mfx`, `estat` subcommand, [R] **asclogit postestimation**, [R] **asmprobit postestimation**, [R] **asroprobit postestimation**
MGARCH, *see* multivariate GARCH model
`mgarch`
`ccc` command, [TS] **mgarch ccc**, [TS] **mgarch ccc postestimation**
`dcc` command, [TS] **mgarch dcc**, [TS] **mgarch dcc postestimation**
`dvech` command, [TS] **mgarch dvech**, [TS] **mgarch dvech postestimation**
`vcc` command, [TS] **mgarch vcc**, [TS] **mgarch vcc postestimation**
MH
algorithm, *see* Metropolis–Hastings algorithm
sampler, *see* Metropolis–Hastings sampling
sampling, *see* Metropolis–Hastings sampling
`mhodds` command, [R] **epitab**
`mi`
`add` command, [MI] **mi add**
`append` command, [MI] **mi append**
command, [MI] **intro**, [MI] **styles**, [MI] **workflow**
`convert` command, [MI] **mi convert**
`copy` command, [MI] **mi copy**, [MI] **styles**
`describe` command, [MI] **mi describe**
`erase` command, [MI] **mi erase**, [MI] **styles**
`estimate` command, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi estimate postestimation**, [MI] **mi test**
`estimate` postestimation, [MI] **mi estimate postestimation**, [MI] **mi predict**, [MI] **mi test**
`expand` command, [MI] **mi expand**
`export` command, [MI] **mi export**, [MI] **mi export ice**, [MI] **mi export nhanes1**
`extract` command, [MI] **mi extract**, [MI] **mi replace0**

mi, *continued*
fvset command, [MI] **mi XXXset**
import command, [MI] **mi import**, [MI] **mi import flong**, [MI] **mi import flongsep**, [MI] **mi import ice**, [MI] **mi import nhanes1**, [MI] **mi import wide**
impute command, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute intreg**, [MI] **mi impute logit**, [MI] **mi impute mlogit**, [MI] **mi impute monotone**, [MI] **mi impute mvn**, [MI] **mi impute nbreg**, [MI] **mi impute ologit**, [MI] **mi impute pmm**, [MI] **mi impute poisson**, [MI] **mi impute regress**, [MI] **mi impute truncreg**
merge command, [MI] **mi merge**
misstable command, [MI] **mi misstable**
passive command, [MI] **mi passive**
predict command, [MI] **mi estimate postestimation**, [MI] **mi predict**
predictnl command, [MI] **mi estimate postestimation**, [MI] **mi predict**
ptrace command, [MI] **mi ptrace**
query command, [MI] **mi describe**
register command, [MI] **mi set**
rename command, [MI] **mi rename**
replace0 command, [MI] **mi replace0**
reset command, [MI] **mi reset**
reshape command, [MI] **mi reshape**
select command, [MI] **mi select**, *also see* mi extract command
set command, [MI] **mi set**
st command, [MI] **mi XXXset**
stjoin command, [MI] **mi stsplit**
streset command, [MI] **mi XXXset**
stset command, [MI] **mi XXXset**
stsplit command, [MI] **mi stsplit**
svyset command, [MI] **mi XXXset**
test command, [MI] **mi estimate postestimation**, [MI] **mi test**
testtransform command, [MI] **mi estimate postestimation**, [MI] **mi test**
tsset command, [MI] **mi XXXset**
unregister command, [MI] **mi set**
unset command, [MI] **mi set**
update command, [MI] **mi update**, [MI] **noupdate option**
varying command, [MI] **mi varying**
xeq command, [MI] **mi xeq**
xtset command, [MI] **mi XXXset**
mi data, [MI] **Glossary**
mi() function, [FN] **Programming functions**
MICE, *see* multivariate imputation, chained equations
Microsoft
Access, reading data from, [D] **odbc**, [U] **21.4 Transfer programs**
Excel, [M-5] **xl()**
Excel, reading data from, [D] **import excel**, [D] **odbc**
Excel, write results to, [P] **putexcel**
Microsoft, *continued*
Office, [M-5] **_docx*()**, [M-5] **xl()**
SpreadsheetML, [D] **xmlsave**
Windows, *see* Windows
Word, [M-5] **_docx*()**
middle suboption, [G-4] ***alignmentstyle***
midsummaries, [R] **lv**
mild outliers, [R] **lv**
Mills's ratio, [R] **heckman**, [R] **heckman postestimation**
MIMIC models, *see* multiple indicators and multiple causes model
min(), egen function, [D] **egen**
min() function, [FN] **Mathematical functions**, [M-5] **minmax()**
min_memory, set subcommand, [R] **set**
minbyte() function, [FN] **Programming functions**
mindices, estat subcommand, [SEM] **estat mindices**
mindouble() function, [FN] **Programming functions**, [M-5] **mindouble()**
minfloat() function, [FN] **Programming functions**
minimization, [M-5] **moptimize()**, [M-5] **optimize()**
minimum
absolute deviations, [R] **qreg**
detectable effect size, [PSS] **power**, [PSS] **Glossary**
detectable value, [PSS] **Glossary**
entropy rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
squared deviations, [R] **areg**, [R] **cnsreg**, [R] **nl**, [R] **regress**, [R] **regress postestimation**
minimums and maximums, *see* maximums and minimums, reporting, *see* maximums and minimums
minindex() function, [M-5] **minindex()**
minint() function, [FN] **Programming functions**
Minkowski dissimilarity measure, [MV] ***measure_option***
minlong() function, [FN] **Programming functions**
minmax() function, [M-5] **minmax()**
min_memory, set subcommand, [D] **memory**
minutes() function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date()**
misclassification rate, [MV] **Glossary**
missing at random, [MI] **intro substantive**, [MI] **mi impute**, [MI] **Glossary**
missing completely at random, [MI] **intro substantive**, [MI] **Glossary**
missing data, [MI] **intro substantive**
arbitrary pattern, [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute mvn**, [MI] **Glossary**
monotone pattern, [MI] **intro substantive**, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**, [MI] **mi impute mvn**, [MI] **Glossary**
missing() function, [FN] **Programming functions**, [M-5] **missing()**

missing not at random, [MI] **intro substantive**, [MI] **Glossary**
missing observations, *see* dropout
missing values, [M-5] **missing( )**, [M-5] **missingof( )**, [M-5] **editmissing( )**, [M-5] **_fillmissing( )**, [D] **missing values**, [R] **misstable**, [SEM] **example 26**, [U] **12.2.1 Missing values**, [U] **13 Functions and expressions**
  counting, [D] **codebook**, [D] **inspect**
  encoding and decoding, [D] **mvencode**
  extended, [D] **mvencode**
  hard and soft, [MI] **Glossary**
  ineligible, [MI] **Glossary**
  pattern of, [MI] **mi misstable**
  replacing, [D] **merge**
missingness, pattern, *see* pattern of missingness
`missingof()` function, [M-5] **missingof( )**
misspecification effects, [SVY] **estat**, [SVY] **Glossary**
`misstable`
  for mi data, [MI] **mi misstable**
  `nested` command, [R] **misstable**
  `patterns` command, [R] **misstable**
  `summarize` command, [R] **misstable**
  `tree` command, [R] **misstable**
`misstable`, `mi` subcommand, [MI] **mi misstable**
mixed
  design, [MV] **manova**, [PSS] **Glossary**, [R] **anova**
  model, [ME] **mecloglog**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [ME] **Glossary**, [U] **26.21 Multilevel mixed-effects models**
`mixed` command, [ME] **mixed**
mixed-effects model, *see* multilevel model
`mkdir` command, [D] **mkdir**
`_mkdir()` function, [M-5] **chdir( )**
`mkdir()` function, [M-5] **chdir( )**
`mkmat` command, [P] **matrix mkmat**
`mkspline` command, [R] **mkspline**
ML, *see* maximum likelihood
`ml`, *see* `gsem` option `method()`, *see* `sem` option `method()`
  `check` command, [R] **ml**
  `clear` command, [R] **ml**
  command, [SVY] **ml for svy**
  `count` command, [R] **ml**
  `display` command, [R] **ml**
  `footnote` command, [R] **ml**
  `graph` command, [R] **ml**
  `init` command, [R] **ml**
  `maximize` command, [R] **ml**
  `model` command, [R] **ml**
  `plot` command, [R] **ml**
  `query` command, [R] **ml**
  `report` command, [R] **ml**
  `score` command, [R] **ml**
`ml`, *continued*
  `search` command, [R] **ml**
  `trace` command, [R] **ml**
`mlabangle()` option, [G-3] ***marker_label_options***
`mlabcolor()` option, [G-3] ***marker_label_options***
`mlabel()` option, [G-3] ***marker_label_options***
`mlabgap()` option, [G-3] ***marker_label_options***
`mlabposition()` option, [G-3] ***marker_label_options***
`mlabsize()` option, [G-3] ***marker_label_options***
`mlabstyle()` option, [G-3] ***marker_label_options***
`mlabtextstyle()` option, [G-3] ***marker_label_options***
`mlabvposition()` option, [G-3] ***marker_label_options***
`mlcolor()` option, [G-3] ***marker_options***
`mleval` command, [R] **ml**
`mlexp` command, [R] **mlexp**, [R] **mlexp postestimation**
`mlib`
  `add`, `mata` subcommand, [M-3] **mata mlib**
  `create`, `mata` subcommand, [M-3] **mata mlib**
  `index`, `mata` subcommand, [M-3] **mata mlib**
  `query`, `mata` subcommand, [M-3] **mata mlib**
`.mlib` library file, [M-1] **how**, [M-3] **mata describe**, [M-3] **mata mlib**, [M-3] **mata set**, [M-3] **mata which**, [M-6] **Glossary**, [U] **11.6 Filenaming conventions**
`mlmatbysum` command, [R] **ml**
`mlmatsum` command, [R] **ml**
MLMV, *see* maximum likelihood with missing values
`mlmv`, *see* `sem` option `method()`
`mlogit` command, [R] **mlogit**, [R] **mlogit postestimation**
`mlogit` option, *see* `gsem` option `mlogit`
mlong
  data style, [MI] **styles**, [MI] **Glossary**
  technical description, [MI] **technical**
`mlpattern()` option, [G-3] ***marker_options***
`mlstyle()` option, [G-3] ***marker_options***
`mlsum` command, [R] **ml**
`mlvecsum` command, [R] **ml**
`mlwidth()` option, [G-3] ***marker_options***
`mm()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`.mmat` matrix file, [M-3] **mata matsave**, [U] **11.6 Filenaming conventions**
`mmC()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
MNAR, *see* missing not at random
MNP, *see* outcomes, multinomial
`.mo` object code file, [M-1] **how**, [M-3] **mata mosave**, [M-3] **mata which**, [M-6] **Glossary**, [U] **11.6 Filenaming conventions**
`mod()` function, [FN] **Mathematical functions**, [M-5] **mod( )**
`mode()`, `egen` function, [D] **egen**
mode-curvature adaptive Gauss–Hermite quadrature, [IRT] **Glossary**, *see* quadrature, mode-curvature adaptive Gauss–Hermite

model
coefficients test, [R] **lrtest**, [R] **test**, [R] **testnl**, [SVY] **svy postestimation**
comparison, Bayesian, *see* Bayesian, model comparison
hypothesis testing, *see* Bayesian, hypothesis testing
identification, [SEM] **intro 4**, [SEM] **intro 12**, [SEM] **Glossary**
posterior probability, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayestest model**, [BAYES] **Glossary**
simplification test, [SEM] **example 8**, [SEM] **example 10**
specification test, *see* specification test
`model`, `ml` subcommand, [R] **ml**
model-implied covariances and correlations, [SEM] **example 11**
modeling
fractions, [R] **betareg**
proportions, [R] **betareg**
rates, [R] **betareg**
models, maximum number of variables in, [R] **matsize**
modern scaling, [MV] **Glossary**
modification, file, [D] **filefilter**
modification indices, [SEM] **estat mindices**, [SEM] **example 5**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
modifying data, [D] **generate**, *also see* editing data
modulus function, [FN] **Mathematical functions**
modulus transformations, [R] **boxcox**
`mofd()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
moments (of a distribution), [SEM] **Glossary**
monadic operator, [M-2] **syntax**, [M-6] **Glossary**
monotone imputation, *see* imputation, monotone
monotone-missing pattern, [MI] **mi impute monotone**, [MI] **Glossary**, [R] **misstable**
monotonicity, *see* pattern of missingness
Monte Carlo
error, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **Glossary**
simulations, [P] **postfile**, [R] **permute**, [R] **simulate**
standard error, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**, [BAYES] **Glossary**
`month()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**, [U] **24.5 Extracting components of dates and times**
`monthly()` function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
Moore–Penrose inverse, [M-5] **pinv( )**
`_moptimize()` function, [M-5] **moptimize( )**
`moptimize()` function, [M-5] **moptimize( )**
`moptimize_ado_cleanup()` function, [M-5] **moptimize( )**
`_moptimize_evaluate()` function, [M-5] **moptimize( )**
`moptimize_evaluate()` function, [M-5] **moptimize( )**
`moptimize_init()` function, [M-5] **moptimize( )**
`moptimize_init_*()` functions, [M-5] **moptimize( )**
`moptimize_query()` function, [M-5] **moptimize( )**
`moptimize_result_*()` functions, [M-5] **moptimize( )**
`moptimize_util_*()` functions, [M-5] **moptimize( )**
`more` command and parameter, [P] **macro**, [P] **more**, [R] **more**, [U] **7 –more– conditions**, [U] **16.1.6 Preventing –more– conditions**
`more()` function, [M-5] **more( )**
`more`, `set` subcommand, [R] **more**, [R] **set**
mortality table, *see* life tables
`mosave`, `mata` subcommand, [M-3] **mata mosave**
moving average
model, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **sspace**, [TS] **ucm**
process, [TS] **Glossary**
smoother, [TS] **tssmooth**, [TS] **tssmooth ma**
`mprobit` command, [R] **mprobit**, [R] **mprobit postestimation**
`mreldif()` function, [FN] **Matrix functions**, [M-5] **reldif( )**, [P] **matrix define**
`mreldifre()` function, [M-5] **reldif( )**
`mreldifsym()` function, [M-5] **reldif( )**
`msize()` option, [G-3] ***marker_options***, [G-3] ***rcap_options***
`msofhours()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`msofminutes()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`msofseconds()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`mspline`, `graph twoway` subcommand, [G-2] **graph twoway mspline**
`mstyle()` option, [G-3] ***marker_options***
`mswitch` command, [TS] **mswitch**, [TS] **mswitch postestimation**
`msymbol()` option, [G-3] ***marker_options***
`mt64`, *see* random-number generator
MTMM, *see* multitrait–multimethod data and matrices
`mtr()`, `egen` function, [D] **egen**
multiarm trial, [ST] **Glossary**
multidimensional scaling, [MV] **mds**, [MV] **mds postestimation plots**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **Glossary**
configuration plot, [MV] **Glossary**
multilevel data, [MI] **mi estimate**
multilevel latent variable, [SEM] **intro 2**, [SEM] **gsem path notation extensions**
multilevel mixed-effects model, *see* multilevel model
multilevel model, [BAYES] **bayesmh**, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [R] **gllamm**, [SEM] **intro 5**, [SEM] **example 30g**, [SEM] **example 38g**,

multilevel model, *continued*
[SEM] **example 39g**, [SEM] **example 40g**, [SEM] **example 41g**, [SEM] **example 42g**, [SEM] **Glossary**, [U] **26.21 Multilevel mixed-effects models**
multinomial
logistic regression, [SEM] **intro 2**, [SEM] **intro 5**, [SEM] **example 37g**, [SEM] **example 41g**, [SEM] **Glossary**, [SVY] **svy estimation**
logistic regression imputation, *see* imputation, multinomial logistic regression
outcome model, *see* outcomes, multinomial
probit regression, [SVY] **svy estimation**
multiple comparisons, [R] **contrast**, [R] **margins**, [R] **pwcompare**, [R] **pwmean**, [MV] **mvreg**, [R] **anova postestimation**, [R] **correlate**, [R] **oneway**, [R] **regress postestimation**, [R] **roccomp**, [R] **spearman**, [R] **test**, [R] **testnl**, [R] **tetrachoric**
Bonferroni's method, [R] **contrast**, [R] **margins**, [R] **pwcompare**, [R] **pwmean**, [R] **anova postestimation**, [R] **correlate**, [R] **oneway**, [R] **regress postestimation**, [R] **roccomp**, [R] **spearman**, [R] **test**, [R] **testnl**, [R] **tetrachoric**
Duncan's method, [R] **pwcompare**, [R] **pwmean**
Dunnett's method, [R] **pwcompare**, [R] **pwmean**
Holm's method, [R] **anova postestimation**, [R] **regress postestimation**, [R] **test**, [R] **testnl**
multiple-range method, *see* Dunnett's method subentry
Scheffé's method, [R] **contrast**, [R] **margins**, [R] **pwcompare**, [R] **pwmean**, [R] **oneway**
Šidák's method, [R] **contrast**, [R] **margins**, [R] **pwcompare**, [R] **pwmean**, [R] **anova postestimation**, [R] **correlate**, [R] **oneway**, [R] **regress postestimation**, [R] **roccomp**, [R] **spearman**, [R] **test**, [R] **testnl**, [R] **tetrachoric**
Studentized-range method, *see* Tukey's method subentry
Student–Newman–Keuls's method, [R] **pwcompare**, [R] **pwmean**
Tukey's method, [R] **pwcompare**, [R] **pwmean**
multiple correlation, [SEM] **Glossary**
multiple correspondence analysis, [MV] **Glossary**
multiple imputation, [MI] **intro substantive**, [MI] **intro**, [MI] **styles**, [MI] **workflow**, [U] **26.27 Multiple imputation**
analysis step, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi estimate postestimation**, [MI] **mi test**
estimation, [MI] **estimation**
imputation step, [MI] **intro substantive**, [MI] **mi impute**
inference, [MI] **intro substantive**
pooling step, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi estimate using**
prediction, [MI] **mi predict**
theory, [MI] **intro substantive**
multiple indicators and multiple causes model, [SEM] **intro 5**, [SEM] **example 10**, [SEM] **Glossary**
multiple indicators multiple causes model, [SEM] **example 36g**
multiple languages, [D] **label language**
multiple regression, *see* linear regression
multiple-range multiple-comparison adjustment, *see* multiple comparisons, Dunnett's method
multiple-failure st data, [ST] **stbase**, [ST] **stci**, [ST] **stcox**, [ST] **stcox postestimation**, [ST] **stcurve**, [ST] **stdescribe**, [ST] **stfill**, [ST] **stgen**, [ST] **stir**, [ST] **stptime**, [ST] **strate**, [ST] **streg**, [ST] **streg postestimation**, [ST] **sts**, [ST] **sts generate**, [ST] **sts graph**, [ST] **sts list**, [ST] **sts test**, [ST] **stset**, [ST] **stsplit**, [ST] **stsum**
multiple-record st data, [ST] **stbase**, [ST] **stci**, [ST] **stcox**, [ST] **stcox postestimation**, [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **stcurve**, [ST] **stdescribe**, [ST] **stfill**, [ST] **stgen**, [ST] **stir**, [ST] **stptime**, [ST] **strate**, [ST] **streg**, [ST] **streg postestimation**, [ST] **sts**, [ST] **sts generate**, [ST] **sts graph**, [ST] **sts list**, [ST] **sts test**, [ST] **stset**, [ST] **stsplit**, [ST] **stsum**, [ST] **stvary**, [ST] **Glossary**, [TE] **Glossary**
multiple-sample
means, *see* means, multiple-sample
study, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**
test, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**
independent samples, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**
means, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**
multiplication operator, *see* arithmetic operators
multiplicative heteroskedasticity, [TS] **arch**
multistage clustered sampling, [SVY] **survey**, [SVY] **svydescribe**, [SVY] **svyset**
multitrait–multimethod data and matrices, [SEM] **intro 5**, [SEM] **example 17**
multivalued treatment effect, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects multivalued**, [TE] **teffects ra**, [TE] **Glossary**
multivariable fractional polynomial regression, [R] **mfp**
multivariate
analysis, [MV] **canon**, [MV] **hotelling**, [MV] **mvtest**, [U] **26.28 Multivariate and cluster analysis**
analysis of covariance, [MV] **manova**, [MV] **Glossary**
analysis of variance, [MV] **manova**, [MV] **Glossary**
analysis,
bivariate probit, [R] **biprobit**
three-stage least squares, [R] **reg3**
Zellner's seemingly unrelated, [R] **nlsur**, [R] **sureg**
Behrens–Fisher problem, [MV] **mvtest means**

multivariate, *continued*
GARCH model, [TS] **mgarch**, [TS] **Glossary**
constant conditional correlation, [TS] **mgarch ccc**
diagonal vech, [TS] **mgarch dvech**
dynamic conditional correlation, [TS] **mgarch dcc**
varying conditional correlation, [TS] **mgarch vcc**
GARCH postestimation
constant conditional correlation, [TS] **mgarch ccc postestimation**
diagonal vech, [TS] **mgarch dvech postestimation**
dynamic conditional correlation, [TS] **mgarch dcc postestimation**
varying conditional correlation, [TS] **mgarch vcc postestimation**
imputation, *see* imputation, multivariate
imputation using chained equations, *see* imputation, multivariate, chained equations
kurtosis, [MV] **mvtest normality**
logistic variable imputation, *see* imputation, multivariate
normal, [MV] **mvtest normality**
normal imputation, *see* imputation, multivariate normal
normal simulator, [M-5] **ghk( )**, [M-5] **ghkfast( )**
regressian, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**
regression, [MV] **mvreg**, [MV] **Glossary**, [SEM] **example 12**, [SEM] **Glossary**, *also see* seemingly unrelated regression
regression imputation, *see* imputation, multivariate
skewness, [MV] **mvtest normality**
test, [MV] **mvtest**
time-series estimators,
structural vector autoregressive models, [TS] **var svar**
time-series estimators,
dynamic-factor models, [TS] **dfactor**
MGARCH models, *see* multivariate GARCH model
state-space models, [TS] **sspace**
vector autoregressive models, [TS] **var**, [TS] **varbasic**
vector error-correction models, [TS] **vec**
MVAGH, *see* quadrature, mean–variance adaptive Gauss–Hermite
MVAGHQ, *see* mean–variance adaptive Gauss–Hermite quadrature
`mvdecode` command, [D] **mvencode**
`mvencode` command, [D] **mvencode**
MVN imputation, *see* imputation, multivariate normal
`mvreg` command, [MV] **mvreg**, [MV] **mvreg postestimation**
`mvreg`, `estat` subcommand, [MV] **procrustes postestimation**
`mvtest`, [MV] **mvtest**
`correlations` command, [MV] **mvtest correlations**
`covariances` command, [MV] **mvtest covariances**
`means` command, [MV] **mvtest means**
`normality` command, [MV] **mvtest normality**

## N

`_n` and `_N` built-in variables, [U] **13.4 System variables (_variables)**, [U] **13.7 Explicit subscripting**
`name()` option, [G-3] ***name_option***
`nameexternal()` function, [M-5] **findexternal( )**
*namelists*, [M-3] **namelists**
names, [U] **11.3 Naming conventions**
conflicts, [P] **matrix**, [P] **matrix define**, [P] **scalar**
matrix row and columns, [P] **ereturn**, [P] **matrix define**, [P] **matrix rownames**
`names`, `confirm` subcommand, [P] **confirm**
namespace and conflicts, matrices and scalars, [P] **matrix**, [P] **matrix define**
naming
convention, [M-1] **naming**
groups of variables, [D] **rename group**
variables, [D] **rename**
NaN, [M-6] **Glossary**
NARCH, *see* nonlinear autoregressive conditional heteroskedasticity
NARCHK, *see* nonlinear autoregressive conditional heteroskedasticity with a shift
natural log function, [FN] **Mathematical functions**, [FN] **Statistical functions**
natural splines, [R] **mkspline**
`nbetaden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nbinomial()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nbinomialp()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nbinomialtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nbreg` command, [R] **nbreg**, [R] **nbreg postestimation**
`nbreg` option, *see* `gsem` option `nbreg`
`nchi2()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nchi2den()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nchi2tail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
n-class command, [P] **program**, [P] **return**
`ndots()` option, [G-2] **graph twoway dot**
nearest neighbor, [MI] **mi impute pmm**, [MV] **discrim knn**, [MV] **Glossary**
nearest-neighbor matching, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects nnmatch**, [TE] **Glossary**
needle plot, [R] **spikeplot**
`_negate()` function, [M-5] **_negate( )**
negation matrix, [M-5] **_negate( )**

negation operator, *see* arithmetic operators
negative binomial, [SEM] **example 39g**
  distribution,
    cumulative, [FN] **Statistical functions**
    inverse cumulative, [FN] **Statistical functions**
    inverse reverse cumulative, [FN] **Statistical functions**
    reverse cumulative, [FN] **Statistical functions**
  probability mass function, [FN] **Statistical functions**
  regression, [R] **nbreg**, [SEM] **Glossary**, [SVY] **svy estimation**, [XT] **Glossary**
    fixed-effects, [XT] **xtnbreg**
    generalized linear models, [R] **glm**
    mixed-effects, [ME] **menbreg**
    population-averaged, [XT] **xtgee**, [XT] **xtnbreg**
    random-effects, [XT] **xtnbreg**
    truncated, [R] **tnbreg**
    zero-inflated, [R] **zinb**
negative effect size, [PSS] **power**, [PSS] **Glossary**
Nelder–Mead algorithm, [M-5] **moptimize( )**, [M-5] **optimize( )**
Nelson–Aalen cumulative hazard, [ST] **sts**, [ST] **sts generate**, [ST] **sts graph**, [ST] **sts list**
nested
  case–control data, [ST] **sttocc**
  designs, [MV] **manova**, [R] **anova**
  effects, [MV] **manova**, [R] **anova**
  logit, [R] **nlogit**
  model statistics, [R] **nestreg**
  number list, [PSS] **power**
  random effects, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**, [ME] **Glossary**
  regression, [R] **nestreg**
`nested`, `misstable` subcommand, [R] **misstable**
nested-effects model, [SEM] **Glossary**
`nestreg` prefix command, [R] **nestreg**
`net`
  `cd` command, [R] **net**
  `describe` command, [R] **net**
  `from` command, [R] **net**
  `get` command, [R] **net**
  `install` command, [R] **net**
  `link` command, [R] **net**
  `query` command, [R] **net**
  `search` command, [R] **net search**
  `set ado` command, [R] **net**
  `set other` command, [R] **net**
  `sj` command, [R] **net**
  `stb` command, [R] **net**
`net_d`, `view` subcommand, [R] **view**
`net`, `view` subcommand, [R] **view**
NetCourseNow, [U] **3.6.2 NetCourses**
NetCourses, [U] **3.6.2 NetCourses**
`network`, `query` subcommand, [R] **query**
`.new` built-in class function, [P] **class**
`new()` function, [M-2] **class**
new lines, data without, [D] **infile (fixed format)**
`new`, `ssc` subcommand, [R] **ssc**
`newey` command, [TS] **newey**, [TS] **newey postestimation**
Newey–West
  covariance matrix, [TS] **Glossary**
  postestimation, [TS] **newey postestimation**
  regression, [TS] **newey**
  standard errors, [P] **matrix accum**, [R] **glm**
`_newline(#)`, `display` directive, [P] **display**
`news` command, [R] **news**
`news`, `view` subcommand, [R] **view**
newsletter, [U] **3 Resources for learning and using Stata**
Newton–Raphson algorithm, [M-5] **moptimize( )**, [M-5] **optimize( )**, [R] **ml**
Newton–Raphson method, [M-5] **solvenl( )**
Newton's method, *see* iteration, Newton's method
Neyman allocation, [SVY] **estat**
`nF()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nFden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nFtail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nibeta()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`niceness`, `set` subcommand, [D] **memory**, [R] **set**
`nl` command, [R] **nl**, [R] **nl postestimation**
`nl`, `tssmooth` subcommand, [TS] **tssmooth nl**
`nlcom` command, [R] **nlcom**, [SEM] **intro 7**, [SEM] **estat stdize**, [SEM] **example 42g**, [SEM] **nlcom**, [SVY] **svy postestimation**
`nlogit` command, [R] **nlogit**, [R] **nlogit postestimation**
`nlogitgen` command, [R] **nlogit**
`nlogittree` command, [R] **nlogit**
`nlsur` command, [R] **nlsur**, [R] **nlsur postestimation**
`nm1` option, *see* `sem` option `nm1`
`nnmatch`, `teffects` subcommand, [TE] **teffects nnmatch**
`noanchor` option, *see* `gsem` option `noanchor`, *see* `sem` option `noanchor`
`noasis` option, *see* `gsem` option `noasis`
`nobreak` command, [P] **break**
`nocapslatent` option, *see* `gsem` option `nocapslatent`, *see* `sem` option `nocapslatent`
`nocnsreport` option, *see* `gsem` option `nocnsreport`, *see* `sem` option `nocnsreport`
`noconstant` option, *see* `gsem` option `noconstant`, *see* `sem` option `noconstant`
`nodescribe` option, *see* `sem` option `nodescribe`
`nodraw` option, [G-3] ***nodraw_option***
`noestimate` option, *see* `gsem` option `noestimate`, *see* `sem` option `noestimate`
`nofootnote` option, *see* `sem` option `nofootnote`

nofvlabel option, *see* sem option nofvlabel
noheader option, *see* gsem option noheader, *see* sem option noheader
noisily prefix, [P] **quietly**
noivstart option, *see* sem option noivstart
nolog or log option, [R] **maximize**
nomeans option, *see* sem option nomeans
nominal
  alpha, [PSS] **Glossary**, *also see* significance level
  item, [IRT] **Glossary**
  power, *see* power
  response model, [IRT] **Glossary**
  sample size, *see* sample-size
  significance level, [PSS] **Glossary**, *see* significance level
nonadaptive Gauss–Hermite quadrature, *see* quadrature, Gauss–Hermite
noncentral
  beta density, [FN] **Statistical functions**
  beta distribution, [FN] **Statistical functions**
  chi-squared distribution, [FN] **Statistical functions**
  $F$ density, [FN] **Statistical functions**
  $F$ distribution, [FN] **Statistical functions**
  Student's $t$ density, [FN] **Statistical functions**
  Student's $t$ distribution, [FN] **Statistical functions**
noncentrality parameter, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **Glossary**
nonconformities, quality control, [R] **qc**
nonconstant variance, *see* robust, Huber/White/sandwich estimator of variance
noncursive model, *see* nonrecursive model
nondirectional test, *see* two-sided test
noninformative prior, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats ic**, [BAYES] **Glossary**
nonlinear
  autoregressive conditional heteroskedasticity, [TS] **arch**
  autoregressive conditional heteroskedasticity with a shift, [TS] **arch**
  Bayesian regression, [BAYES] **bayesmh**
  combinations of estimators, [R] **nlcom**
  combinations, predictions, and tests, [SVY] **svy postestimation**
  equations, [M-5] **solvenl( )**
  estimation, [TS] **arch**
  hypothesis test after estimation, [R] **lrtest**, [R] **margins**, [R] **margins, contrast**, [R] **margins, pwcompare**, [R] **nlcom**, [R] **predictnl**, [R] **testnl**
  least squares, [R] **nl**, [SVY] **svy estimation**
  power autoregressive conditional heteroskedasticity, [TS] **arch**
  prediction, *see* multiple imputation, prediction
nonlinear, *continued*
  regression, [R] **boxcox**, [R] **nl**, [R] **nlsur**, [TE] **teffects ra**
  smoothing, [TS] **tssmooth nl**
  test, *see* estimation, test after
  time-series model, [TS] **mswitch**
nonmetric scaling, [MV] **mds**, [MV] **mdslong**, [MV] **mdsmat**, [MV] **Glossary**
nonmissing() function, [M-5] **missing( )**
nonmonotonic power, *see* saw-toothed power function
nonnormed fit index, *see* Tucker–Lewis index
nonparametric analysis,
  hypothesis tests,
    agreement, [R] **kappa**
    association, [R] **spearman**, [R] **tabulate twoway**
    cusum, [R] **cusum**
    equality of distributions, [R] **ksmirnov**, [R] **kwallis**, [R] **ranksum**, [R] **signrank**
    medians, [R] **ranksum**
    proportions, [R] **bitest**, [R] **prtest**
    random order, [R] **runtest**
    trend, [R] **nptrend**
  percentiles, [R] **centile**
  quantile regression, [R] **qreg**
  ROC analysis, [R] **roc**
    estimation, [R] **rocreg**
    graphs, [R] **rocregplot**
    test equality of areas, [R] **roccomp**
    without covariates, [R] **roctab**
  smoothing, [R] **kdensity**, [R] **lowess**, [R] **lpoly**, [R] **smooth**
  survival analysis,
    Kaplan–Meier curves, [ST] **sts graph**
    log rank and other tests of equality, [ST] **sts test**
    Nelson–Aalen curves, [ST] **sts graph**
  treatment effect, [TE] **teffects nnmatch**, [TE] **teffects psmatch**
nonparametric methods, [MV] **discrim knn**, [MV] **Glossary**
nonrecursive model, [SEM] **Glossary**
  stability of, [SEM] **estat stable**, [SEM] **example 7**
nonrtolerance option, [R] **maximize**
nonselection hazard, [R] **heckman**, [R] **heckman postestimation**
nonsphericity correction, [PSS] **power repeated**, [PSS] **Glossary**
nonstationary time series, [TS] **dfgls**, [TS] **dfuller**, [TS] **pperron**, [TS] **vec intro**, [TS] **vec**
nonzero null, [PSS] **power onemean**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power onevariance**, [PSS] **power onecorrelation**
nopreserve option, [P] **nopreserve option**
norm, [M-6] **Glossary**
norm() function, [M-5] **norm( )**

normal distribution and normality,
examining distributions for, [R] **diagnostic plots**, [R] **lv**
generating multivariate data, [D] **drawnorm**
probability and quantile plots, [R] **diagnostic plots**
test for, [R] **sktest**, [R] **swilk**
transformations to achieve, [R] **boxcox**, [R] **ladder**, [R] **lnskew0**
normal probability plots, [G-2] **graph other**
`normal()` function, [FN] **Statistical functions**, [M-5] **normal( )**
normal,
density,
mean $\mu$, std. dev. $\sigma$, [FN] **Statistical functions**
natural log of mean $\mu$, std. dev. $\sigma$, [FN] **Statistical functions**
natural log of standard normal, [FN] **Statistical functions**
standard normal, [FN] **Statistical functions**
distribution,
cumulative, [FN] **Statistical functions**
generating multivariate data with, [D] **corr2data**
inverse cumulative, [FN] **Statistical functions**
joint cumulative of bivariate, [FN] **Statistical functions**
natural log of cumulative, [FN] **Statistical functions**
sample from multivariate, [FN] **Statistical functions**
`normalden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`normality`, `mvtest` subcommand, [MV] **mvtest normality**
normality test, [MV] **mvtest normality**
after VAR or SVAR, [TS] **varnorm**
after VEC, [TS] **vecnorm**
normality,
conditional, [SEM] **intro 4**, [SEM] **Glossary**
joint, [SEM] **intro 4**, [SEM] **Glossary**
normalization, [MV] **ca**, [MV] **mca**, [MV] **mds**, [MV] **rotate**, [MV] **Glossary**
normalization constraints, *see* constraints, normalization
normalized residuals, [SEM] **estat residuals**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
normally distributed random numbers, [FN] **Random-number functions**, [R] **set rng**, [R] **set seed**
not concave message, [R] **maximize**
Not Elsewhere Classified, *see* Stata Blog
not equal operator, [U] **13.2.3 Relational operators**
not operator, [U] **13.2.4 Logical operators**
`notable` option, *see* `gsem` option `notable`, *see* `sem` option `notable`
`note()` option, [G-3] ***title_options***
`notes`
command, [D] **notes**
`drop` command, [D] **notes**
`list` command, [D] **notes**
`notes`, *continued*
`renumber` command, [D] **notes**
`replace` command, [D] **notes**
`search` command, [D] **notes**
`notes`, `cluster` subcommand, [MV] **cluster notes**
notes on estimation results, [R] **estimates notes**
notes,
cluster analysis, [MV] **cluster notes**
creating, [D] **notes**, [D] **varmanage**
editing, [D] **notes**, [D] **varmanage**
`notes`, `estimates` subcommand, [R] **estimates notes**
`notifyuser`, `set` subcommand, [R] **set**
`noupdate` option, [MI] **noupdate option**
`novarabbrev` command, [P] **varabbrev**
`noxconditional` option, *see* `sem` option `noxconditional`
NPARCH, *see* nonlinear power autoregressive conditional heteroskedasticity
`npnchi2()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`npnF()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`npnt()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nproc`, `estat` subcommand, [R] **rocreg postestimation**
`nptrend` command, [R] **nptrend**
NR algorithm, [R] **ml**
NRM, *see* nominal response model
`nrm`, `irt` subcommand, [IRT] **irt nrm**, [IRT] **irt nrm postestimation**
`nrtolerance()` option, [R] **maximize**
`nt()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`ntden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`nttail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`NULL`, [M-2] **pointers**, [M-6] **Glossary**
null
correlation, [PSS] **power**
hypothesis and alternative hypothesis, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
mean, [PSS] **power**, [PSS] **power onemean**, [PSS] **power oneproportion**, [PSS] **power onecorrelation**, [PSS] **unbalanced designs**
mean difference, [PSS] **power**, [PSS] **power pairedmeans**
parameter, [PSS] **Glossary**, *see* null value

null, *continued*
proportion, [PSS] **power**
standard deviation, [PSS] **power**, [PSS] **power onevariance**
value, [PSS] **power**, [PSS] **Glossary**
variance, [PSS] **power**, [PSS] **power onevariance**
`nullmat()` function, [FN] **Matrix functions**, [P] **matrix define**
number
of events, *see* number of failures
of failures, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**
to string conversion, *see* string functions
`number`, `confirm` subcommand, [P] **confirm**
number to string conversion, *see* string functions
numbered
styles, [G-4] ***linestyle***, [G-4] ***markerlabelstyle***, [G-4] ***markerstyle***, [G-4] ***pstyle***
numbers, [U] **12.2 Numbers**
formatting, [D] **format**
mapping to strings, [D] **encode**, [D] **label**
`numeric`, [M-2] **declarations**, [M-6] **Glossary**
numeric list, [P] **numlist**, [P] **syntax**, [U] **11.1.8 numlist**
numeric value labels, [D] **labelbook**
numerical precision, [U] **13.12 Precision and problems therein**
`numlabel` command, [D] **labelbook**
`numlist` command, [P] **numlist**, [U] **11.1.8 numlist**
*N*-way analysis of variance, [R] **anova**
*N*-way multivariate analysis of variance, [MV] **manova**

## O

object, [P] **class**
object code, [M-1] **how**, [M-6] **Glossary**
objective prior, *see* noninformative prior
object-oriented programming, [M-2] **class**, [M-6] **Glossary**, [P] **class**
objects, size of, [G-4] ***relativesize***
`.objkey` built-in class function, [P] **class**
`.objtype` built-in class function, [P] **class**
oblimax rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
oblimin rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
oblique rotation, [MV] **factor postestimation**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
oblique transformation, *see* oblique rotation
`obs` parameter, [D] **describe**, [D] **obs**
`obs`, `set` subcommand, [D] **obs**, [R] **set**
observational data, [R] **correlate**, [R] **heckman**, [R] **ivregress**, [R] **logit**, [R] **mean**, [R] **regress**, [R] **summarize**, [R] **tabulate oneway**, [R] **tabulate twoway**, [R] **ttest**, [R] **ztest**, [TE] **intro**, [TE] **treatment effects**,
observational data, *continued*
[TE] **eteffects**, [TE] **etpoisson**, [TE] **etpoisson postestimation**, [TE] **etregress**, [TE] **etregress postestimation**, [TE] **stteffects**, [TE] **stteffects postestimation**, [TE] **tebalance**, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**, [TE] **teffects**, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects nnmatch**, [TE] **teffects overlap**, [TE] **teffects postestimation**, [TE] **teffects psmatch**, [TE] **teffects ra**, [TE] **Glossary**, [U] **12 Data**, [U] **20 Estimation and postestimation commands**, [U] **26.4 Structural equation modeling (SEM)**, [U] **26.19 Models with time-series data**, [U] **26.20 Panel-data models**, [U] **26.21 Multilevel mixed-effects models**, [U] **26.22 Survival-time (failure-time) models**, [U] **26.23 Treatment-effect models**, [U] **26.26 Survey data**, [U] **26.28 Multivariate and cluster analysis**
observational study, [PSS] **power**, [PSS] **Glossary**
observations,
adding, [D] **insobs**
built-in counter variable, [U] **11.3 Naming conventions**
complete and incomplete, [MI] **Glossary**
creating dataset of, [D] **collapse**
dropping, [D] **drop**
dropping duplicate, [D] **duplicates**
duplicating, [D] **expand**
duplicating, clustered, [D] **expandcl**
identifying duplicate, [D] **duplicates**
increasing number of, [D] **obs**
inserting, [D] **insobs**
marking, [P] **mark**
maximum number of, [D] **memory**, [U] **6 Managing memory**
ordering, [D] **gsort**, [D] **sort**
transposing with variables, [D] **xpose**
observed information matrix, [R] **ml**, [R] ***vce_option***, [SEM] **Glossary**, [XT] ***vce_options***
observed level of significance, *see* $p$-value
observed variables, [SEM] **intro 4**, [SEM] **Glossary**
Ochiai coefficient similarity measure, [MV] ***measure_option***
`ocloglog` option, *see* `gsem` option `ocloglog`
`odbc`
`describe` command, [D] **odbc**
`exec()` command, [D] **odbc**
`insert` command, [D] **odbc**
`list` command, [D] **odbc**
`load` command, [D] **odbc**
`query` command, [D] **odbc**
`sqlfile()` command, [D] **odbc**
ODBC data source, reading data from, [D] **odbc**, [U] **21.4 Transfer programs**, [U] **21.5 ODBC sources**

odbcdriver, set subcommand, [D] odbc, [R] set
odbcmgr, set subcommand, [D] odbc, [R] set
odds, [PSS] Glossary, [ST] Glossary
odds ratio, [ME] meglm, [ME] melogit, [ME] meologit, [ME] meqrlogit, [PSS] power, [PSS] power twoproportions, [PSS] power pairedproportions, [PSS] power cmh, [PSS] power mcc, [PSS] Glossary, [R] *eform_option*, [R] epitab, [ST] Glossary, [SVY] svy estimation, [XT] xtcloglog, [XT] xtgee, [XT] xtlogit, [XT] xtologit, [XT] xtstreg
  differences, [SVY] svy postestimation
  estimation, [R] asclogit, [R] binreg, [R] clogit, [R] cloglog, [R] exlogistic, [R] glm, [R] logistic, [R] logit, [R] mlogit, [R] scobit
  postestimation, [R] contrast, [R] exlogistic postestimation, [R] lincom
_OEx, [SEM] sem and gsem option covstructure( )
off,
  cmdlog subcommand, [R] log
  log subcommand, [R] log
  timer subcommand, [P] timer
Office Open XML, [M-5] _docx*( )
Office, Microsoft, *see* Microsoft Office
offset between axes and data, setting, [G-3] *region_options*
offset() option, *see* gsem option offset()
offset variable, [ST] Glossary
ograph, irf subcommand, [TS] irf ograph
OIM, *see* observed information matrix
oim, *see* gsem option vce(), *see* sem option vce()
OLDPLACE directory, [P] sysdir, [U] 17.5 Where does Stata look for ado-files?
OLE Automation, [P] automation
ologit command, [R] ologit, [R] ologit postestimation
ologit option, *see* gsem option ologit
ologit regression, mixed-effects, [ME] meologit
OLS regression, *see* linear regression
omitted variables test, [R] regress postestimation, *also see* specification test
on,
  cmdlog subcommand, [R] log
  log subcommand, [R] log
  timer subcommand, [P] timer
one-level model, [ME] me, [ME] Glossary
one-parameter logistic model, [IRT] irt 1pl, [IRT] Glossary
one-at-a-time Markov chain Monte Carlo sampling, [BAYES] intro, [BAYES] bayesmh, [BAYES] Glossary
onecorrelation, power subcommand, [PSS] power onecorrelation
onemean, power subcommand, [PSS] power onemean
oneproportion, power subcommand, [PSS] power oneproportion
one-sample
  correlation, *see* correlation, one-sample
one-sample, *continued*
  mean, *see* means, one-sample
  proportion, *see* proportions, one-sample
  standard deviation, *see* standard deviations, one-sample
  study, [PSS] power, [PSS] unbalanced designs
  test, [PSS] intro, [PSS] power, [PSS] Glossary
    correlation, [PSS] power onecorrelation
    Cox proportional hazards model, [PSS] power cox
    hazard function, [PSS] power cox
    hazard ratio, [PSS] power cox
    linear logit model, [PSS] power trend
    log hazard-ratio, [PSS] power cox
    mean, [PSS] power onemean, [PSS] unbalanced designs
    proportion, [PSS] power oneproportion
    regression coefficient, [PSS] power trend, [PSS] power cox
    survivor function, [PSS] power cox
    variance, [PSS] power onevariance
  variance, *see* variances, one-sample
one-sided test, [PSS] power, [PSS] power onemean, [PSS] power twomeans, [PSS] power pairedmeans, [PSS] power oneproportion, [PSS] power twoproportions, [PSS] power pairedproportions, [PSS] power onevariance, [PSS] power twovariances, [PSS] power onecorrelation, [PSS] power twocorrelations, [PSS] power oneway, [PSS] power cmh, [PSS] power mcc, [PSS] power trend, [PSS] power cox, [PSS] power exponential, [PSS] power logrank, [PSS] Glossary
one-step-ahead forecast, *see* static forecast
one-tailed test, [PSS] Glossary, *also see* one-sided test
onevariance, power subcommand, [PSS] power onevariance
one-way analysis of variance, [PSS] power, [PSS] power oneway, [PSS] Glossary, [R] kwallis, [R] loneway, [R] oneway
oneway command, [R] oneway
one-way repeated-measures ANOVA, [PSS] power repeated, [PSS] Glossary
oneway, power subcommand, [PSS] power oneway
online help, [U] 7 –more– conditions
opaccum, matrix subcommand, [P] matrix accum
open, file subcommand, [P] file
OpenOffice dates, [D] datetime
operating characteristic curve, [IRT] Glossary
operating system command, [D] cd, [D] copy, [D] dir, [D] erase, [D] mkdir, [D] rmdir, [D] shell, [D] type
operator, [M-2] op_arith, [M-2] op_assignment, [M-2] op_colon, [M-2] op_conditional, [M-2] op_increment, [M-2] op_join, [M-2] op_kronecker, [M-2] op_logical, [M-2] op_range, [M-2] op_transpose, [M-6] Glossary, [P] matrix define, [U] 13.2 Operators

operator, *continued*
difference, [U] **11.4.4 Time-series varlists**
lag, [U] **11.4.4 Time-series varlists**
lead, [U] **11.4.4 Time-series varlists**
order of evaluation, [U] **13.2.5 Order of evaluation, all operators**
seasonal lag, [U] **11.4.4 Time-series varlists**
OPG, *see* outer product of the gradient
`oprobit` command, [R] **oprobit**, [R] **oprobit postestimation**
`oprobit` option, *see* `gsem` option `oprobit`
oprobit regression, mixed-effects, [ME] **meoprobit**
optimization, [M-3] **mata set**, [M-5] **moptimize( )**, [M-5] **optimize( )**, [M-6] **Glossary**
`_optimize()` function, [M-5] **optimize( )**
`optimize()` function, [M-5] **optimize( )**
`_optimize_evaluate()` function, [M-5] **optimize( )**
`optimize_evaluate()` function, [M-5] **optimize( )**
`optimize_init()` function, [M-5] **optimize( )**
`optimize_init_*()` functions, [M-5] **optimize( )**
`optimize_query()` function, [M-5] **optimize( )**
`optimize_result_*()` functions, [M-5] **optimize( )**
options, [U] **11 Language syntax**
in a programming context, [P] **syntax**, [P] **unab**
repeated, [G-4] **concept: repeated options**
or operator, [U] **13.2.4 Logical operators**
Oracle, reading data from, [D] **odbc**, [U] **21.4 Transfer programs**
`order` command, [D] **order**
`order()` function, [M-5] **sort( )**
order statistics, [D] **egen**, [R] **lv**
ordered
complementary log-log regression, [SEM] **Glossary**
logistic regression, [BAYES] **bayesmh**, [ME] **meologit**, [SEM] **Glossary**, [SVY] **svy estimation**
logistic regression imputation, *see* imputation, ordered logistic regression
logit, [R] **ologit**, [SEM] **example 35g**
probit, [R] **heckoprobit**, [R] **oprobit**, [SEM] **example 35g**, [SEM] **example 36g**
probit regression, [BAYES] **bayesmh**, [ME] **meoprobit**, [SEM] **Glossary**, [SVY] **svy estimation**
probit with sample selection, [SVY] **svy estimation**
ordering
observations, [D] **gsort**, [D] **sort**
variables, [D] **order**, [D] **sort**
ordinal
exposure, [PSS] **power trend**
item, [IRT] **Glossary**
model, [SEM] **intro 5**, [SEM] **example 31g**, [SEM] **example 32g**, [SEM] **example 35g**, [SEM] **example 36g**
outcome, *see* outcomes, ordinal
outcome model, *see* outcomes, ordinal
ordinary least squares, *see* linear regression
ordination, [MV] **mds**, [MV] **Glossary**
*orgtype*, [M-2] **declarations**, [M-6] **Glossary**
`orgtype()` function, [M-5] **eltype( )**
*orientationstyle*, [G-4] ***orientationstyle***
original data, [MI] **Glossary**
`orthog` command, [R] **orthog**
orthogonal
matrix, [M-6] **Glossary**
polynomial, [R] **contrast**, [R] **margins, contrast**, [R] **orthog**
rotation, [MV] **factor postestimation**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
transformation, *see* orthogonal rotation
orthogonalized impulse–response function, [TS] **irf**, [TS] **var intro**, [TS] **vec intro**, [TS] **vec**, [TS] **Glossary**
orthonormal basis, [P] **matrix svd**
`orthpoly` command, [R] **orthog**
other graph commands, [G-2] **graph other**
`other`, `query` subcommand, [R] **query**
outcome model, [TE] **eteffects**, [TE] **etpoisson**, [TE] **etregress**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipwra**, [TE] **teffects ra**, [TE] **Glossary**
outcomes,
binary,
complementary log-log, [R] **cloglog**, [XT] **xtcloglog**
generalized estimating equations, [XT] **xtgee**
glm for binomial family, [BAYES] **bayesmh**, [R] **binreg**, [R] **glm**
logistic, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt hybrid**, [R] **exlogistic**, [R] **logistic**, [R] **logit**, [R] **scobit**, [XT] **xtlogit**, [XT] **xtstreg**
multilevel mixed-effects, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **meprobit**, [ME] **meqrlogit**
power and sample size, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**
probit, [BAYES] **bayesmh**, [R] **biprobit**, [R] **heckprobit**, [R] **hetprobit**, [R] **ivprobit**, [R] **probit**, [XT] **xtprobit**
ROC analysis, [R] **rocfit**, [R] **rocreg**
treatment effects, [TE] **eteffects**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**, [TE] **teffects ra**
categorical,
logistic, [BAYES] **bayesmh**, [IRT] **irt nrm**, [IRT] **irt hybrid**, [R] **asclogit**, [R] **clogit**, [R] **mlogit**, [R] **nlogit**, [R] **slogit**
probit, [BAYES] **bayesmh**, [R] **asmprobit**, [R] **mprobit**

outcomes, *continued*
continuous, power and sample size, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**
count,
generalized estimating equations, [XT] **xtgee**
multilevel mixed-effects, [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [ME] **mestreg**
negative binomial, [R] **nbreg**, [R] **tnbreg**, [R] **zinb**, [XT] **xtnbreg**
Poisson, [BAYES] **bayesmh**, [R] **cpoisson**, [R] **expoisson**, [R] **ivpoisson**, [R] **poisson**, [R] **tpoisson**, [R] **zip**, [TE] **etpoisson**, [XT] **xtpoisson**
treatment effects, [TE] **eteffects**, [TE] **etpoisson**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**, [TE] **teffects ra**
fractional,
beta, [R] **betareg**
fractional response, [R] **fracreg**
treatment effects, [TE] **eteffects**, [TE] **teffects ipw**, [TE] **teffects nnmatch**, [TE] **teffects psmatch**
multinomial, *see* categorical subentry, *see* ordinal subentry, *see* rank subentry
ordinal,
logistic, [BAYES] **bayesmh**, [IRT] **irt grm**, [IRT] **irt pcm**, [IRT] **irt rsm**, [IRT] **irt hybrid**, [R] **ologit**, [R] **slogit**, [XT] **xtologit**
multilevel mixed-effects, [ME] **meologit**, [ME] **meoprobit**
probit, [BAYES] **bayesmh**, [R] **heckoprobit**, [R] **oprobit**, [XT] **xtoprobit**
treatment effect, [TE] **teffects multivalued**
polytomous, *see* categorical subentry, *see* ordinal subentry, *see* rank subentry
rank,
logistic, [R] **rologit**
probit, [R] **asroprobit**
survival,
competing risks, [ST] **stcrreg**
Cox, [ST] **stcox**
parametric, [ST] **streg**
power and sample size, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**
treatment effects, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects ra**, [TE] **stteffects wra**
outer
fence, [R] **lv**
product, [D] **cross**
outer, *continued*
product of the gradient, [R] **ml**, [R] ***vce_option***, [SEM] **Glossary**, [XT] ***vce_options***
`outfile` command, [D] **outfile**
outliers, [R] **lv**, [R] **qreg**, [R] **regress postestimation**, [R] **rreg**
outlines, suppressing, [G-4] ***linestyle***
outlining regions, [G-3] ***region_options***
out-of-sample predictions, [R] **predict**, [R] **predictnl**, [U] **20.10.3 Making out-of-sample predictions**
`output`,
`query` subcommand, [R] **query**
`set` subcommand, [P] **quietly**, [R] **set**
output settings, [P] **creturn**
output,
coefficient table,
automatically widen, [R] **set**
display settings, [R] **set showbaselevels**
format settings, [R] **set cformat**
controlling the scrolling of, [R] **more**
displaying, [P] **display**, [P] **smcl**
formatting numbers, [D] **format**
printing, [R] **translate**, [U] **15 Saving and printing output—log files**
recording, [R] **log**
suppressing, [P] **quietly**
outside values, [R] **lv**
`over()` option, [G-2] **graph bar**, [G-2] **graph box**, [G-2] **graph dot**
overdispersion, [ME] **menbreg**, [ME] **mepoisson**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **Glossary**, *see* imputation, overdispersed count data
`overid`, `estat` subcommand, [R] **gmm postestimation**, [R] **ivpoisson postestimation**, [R] **ivregress postestimation**
overidentifying restrictions, [XT] **Glossary**
tests of, [R] **gmm postestimation**, [R] **ivpoisson postestimation**, [R] **ivregress postestimation**, [XT] **xtabond**, [XT] **xtabond postestimation**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtdpdsys postestimation**
overlap assumption, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects overlap**, [TE] **Glossary**
`overlap`, `teffects` subcommand, [TE] **teffects overlap**
overloading, class program names, [P] **class**
`ovtest`, `estat` subcommand, [R] **regress postestimation**

## P

P charts, [G-2] **graph other**
P–P plot, [R] **diagnostic plots**
*p*-value, [SEM] **Glossary**
`pac` command, [TS] **corrgram**

pagesize, set subcommand, [R] more, [R] set
paging of screen output, controlling, [P] more, [R] more
paired
  data, [PSS] Glossary
  means, see means, paired
  observations, see paired data
  proportions, see proportions, paired
  study, [PSS] power, [PSS] power mcc
  test, [PSS] Glossary
paired-coordinate plots, [G-2] graph twoway pcarrow, [G-2] graph twoway pccapsym, [G-2] graph twoway pcscatter, [G-2] graph twoway pcspike
pairedmeans, power subcommand, [PSS] power pairedmeans
pairedproportions, power subcommand, [PSS] power pairedproportions
paired-sample test, [PSS] intro, [PSS] power, [PSS] power pairedmeans, [PSS] power pairedproportions
  means, [PSS] power pairedmeans
  proportions, [PSS] power pairedproportions
pairwise
  combinations, [D] cross, [D] joinby
  comparisons, [MV] intro, [R] margins, pwcompare, [R] marginsplot, [R] pwcompare, [R] pwmean, [U] 20.17 Obtaining pairwise comparisons
  correlation, [R] correlate
pairwise, estat subcommand, [MV] mds postestimation
palette command, [G-2] palette
panel data, [BAYES] bayesmh, [M-5] panelsetup( ), [MI] mi estimate, [U] 26.20 Panel-data models, [XT] Glossary
panel-corrected standard error, [XT] xtpcse, [XT] Glossary
panels, variable identifying, [XT] xtset
panelsetup() function, [M-5] panelsetup( )
panelstats() function, [M-5] panelsetup( )
panelsubmatrix() function, [M-5] panelsetup( )
panelsubview() function, [M-5] panelsetup( )
Paradox, reading data from, [U] 21.4 Transfer programs
parallel number list, [PSS] power
parameter
  constraints, [SEM] estat ginvariant, [SEM] Glossary
  trace files, [MI] mi impute mvn, [MI] mi ptrace
  values, obtaining symbolic names, see gsem option coeflegend, see sem option coeflegend
parameterized curves, [D] range
parameters, [SEM] Glossary
  combinations of, [SEM] lincom, [SEM] nlcom
  system, see system parameters
parametric
  methods, [MV] Glossary
  spectral density estimation, [TS] psdensity
  survival models, [ST] streg, [SVY] svy estimation
PARCH, see power autoregressive conditional heteroskedasticity
parsedistance, cluster subcommand, [MV] cluster programming utilities
parsimax rotation, [MV] rotate, [MV] rotatemat, [MV] Glossary
parsing, [M-5] tokenget( ), [M-5] tokens( ), [P] gettoken, [P] numlist, [P] syntax, [P] tokenize, [U] 18.4 Program arguments
partial
  autocorrelation function, [TS] corrgram, [TS] Glossary
  correlation, [R] pcorr
  credit model, [IRT] Glossary
  DFBETA, [ST] stcox postestimation, [ST] stcrreg postestimation, [ST] Glossary
  effects, [R] margins, [R] marginsplot
  likelihood displacement value, [ST] Glossary
  LMAX value, [ST] Glossary
  regression leverage plot, [R] regress postestimation diagnostic plots
  regression plot, [R] regress postestimation diagnostic plots
  residual plot, [R] regress postestimation diagnostic plots
partially specified target rotation, [MV] rotate, [MV] rotatemat, [MV] Glossary
partition cluster-analysis methods, [MV] cluster kmeans and kmedians, [MV] Glossary
partition clustering, see partition cluster-analysis methods
partitioned matrices, [P] matrix define
partitioning memory, [U] 6 Managing memory
Parzen kernel function, [G-2] graph twoway kdensity, [G-2] graph twoway lpoly, [R] kdensity, [R] lpoly, [R] qreg, [TE] tebalance density, [TE] tebalance overid, [TE] teffects overlap
passive imputation, see imputation, passive
passive, mi subcommand, [MI] mi passive
passive variables, see variables, passive
past history, [ST] stset, [ST] Glossary
path, [SEM] Glossary
  adding, [SEM] intro 6
  coefficients, [SEM] Glossary
    constraining, [SEM] intro 4
  diagrams, [SEM] intro 2, [SEM] intro 3, [SEM] Glossary
  model, [SEM] intro 5
  notation, [SEM] intro 2, [SEM] intro 3, [SEM] gsem path notation extensions, [SEM] sem and gsem path notation, [SEM] sem path notation extensions, [SEM] Glossary
pathasciisuffix() function, [M-5] pathjoin( )
pathbasename() function, [M-5] pathjoin( )
pathisabs() function, [M-5] pathjoin( )
pathisurl() function, [M-5] pathjoin( )
pathjoin() function, [M-5] pathjoin( )
pathlist() function, [M-5] pathjoin( )

pathrmsuffix() function, [M-5] pathjoin( )
paths, [P] creturn, [U] 11.6 Filenaming conventions
pathsearchlist() function, [M-5] pathjoin( )
pathsplit() function, [M-5] pathjoin( )
pathstatasuffix() function, [M-5] pathjoin( )
pathsubsysdir() function, [M-5] pathjoin( )
pathsuffix() function, [M-5] pathjoin( )
pattern
  matching, [M-5] strmatch( )
  of missing values, [R] misstable
  of missingness, [MI] intro substantive, [MI] mi impute, [MI] mi misstable, [MI] Glossary
patterns, misstable subcommand, [R] misstable
patterns of data, [D] egen
pause command, [P] pause
pausing until key is pressed, [P] more, [R] more
pc(), egen function, [D] egen
PCA, *see* principal component analysis
pca command, [MV] pca, [MV] pca postestimation
pcamat command, [MV] pca, [MV] pca postestimation
pcarrow, graph twoway subcommand, [G-2] graph twoway pcarrow
pcarrowi, graph twoway subcommand, [G-2] graph twoway pcarrowi
pcbarrow, graph twoway subcommand, [G-2] graph twoway pcarrow
pccapsym, graph twoway subcommand, [G-2] graph twoway pccapsym
pchart command, [R] qc
pchi command, [R] diagnostic plots
pci, graph twoway subcommand, [G-2] graph twoway pci
pclose, [SEM] example 4
PCM, *see* partial credit model
pcm, irt subcommand, [IRT] irt pcm, [IRT] irt pcm postestimation
p-conformability, [M-6] Glossary
pcorr command, [R] pcorr
pcscatter, graph twoway subcommand, [G-2] graph twoway pcscatter
PCSE, *see* panel-corrected standard error
pcspike, graph twoway subcommand, [G-2] graph twoway pcspike
pctile(), egen function, [D] egen
_pctile command, [D] pctile
pctile command, [D] pctile
PDF, [G-2] graph export, [R] translate
  create, [M-5] Pdf*( )
Pdf*() functions, [M-5] Pdf*( )
Pearson
  coefficient similarity measure, [MV] *measure_option*
  goodness-of-fit test, [R] estat gof, [R] logistic postestimation, [R] poisson postestimation
  product-moment correlation coefficient, [R] correlate
Pearson, *continued*
  residual, [ME] mecloglog postestimation, [ME] meglm postestimation, [ME] melogit postestimation, [ME] menbreg postestimation, [ME] mepoisson postestimation, [ME] meprobit postestimation, [ME] meqrlogit postestimation, [ME] meqrpoisson postestimation, [ME] mestreg postestimation, [R] binreg postestimation, [R] estat gof, [R] glm postestimation, [R] logistic postestimation, [R] logit postestimation
Pearson's correlation, [PSS] power onecorrelation, [PSS] power twocorrelations, [PSS] Glossary
penalized log-likelihood function, [ST] stcox, [ST] Glossary
percentiles,
  create
    dataset of, [D] collapse
    variable containing, [D] codebook, [D] egen, [D] pctile
  displaying, [R] centile, [R] lv, [R] summarize, [R] table, [R] tabstat
perfect prediction, *see* imputation, perfect prediction
pergram command, [TS] pergram
_perhapsequilc() function, [M-5] _equilrc( )
_perhapsequilr() function, [M-5] _equilrc( )
_perhapsequilrc() function, [M-5] _equilrc( )
period, estat subcommand, [TS] ucm postestimation
periodogram, [G-2] graph other, [TS] pergram, [TS] psdensity, [TS] Glossary
permname macro extended function, [P] macro
permutation matrix and vector, [M-1] permutation, [M-5] invorder( ), [M-6] Glossary
permutation test, [R] permute
permutations, [M-5] cvpermute( )
permute prefix command, [R] permute
person location, [IRT] Glossary
personal command, [P] sysdir
PERSONAL directory, [P] sysdir, [U] 17.5 Where does Stata look for ado-files?
person-time, [ST] stptime
pformat, set subcommand, [R] set, [R] set cformat
pharmaceutical statistics, [R] pk, [R] pksumm
pharmacokinetic data, [R] pk, [R] pkcollapse, [R] pkcross, [R] pkequiv, [R] pkexamine, [R] pkshape, [R] pksumm, [U] 26.29 Pharmacokinetic data
pharmacokinetic plots, [G-2] graph other
phase function, [TS] Glossary
Phillips–Perron test, [TS] pperron
phtest, estat subcommand, [ST] stcox PH-assumption tests
_pi built-in variable, [U] 11.3 Naming conventions
pi() function, [M-5] sin( )
pi, value of, [U] 11.3 Naming conventions, [U] 13.4 System variables (_variables)
pie charts, [G-2] graph pie
pie, graph subcommand, [G-2] graph pie
piece macro extended function, [P] macro

piecewise
  cubic functions, [R] **mkspline**
  linear functions, [R] **mkspline**
Pillai's trace statistic, [MV] **canon**, [MV] **manova**, [MV] **mvtest means**, [MV] **Glossary**
`pinnable`, `set` subcommand, [R] **set**
`_pinv()` function, [M-5] **pinv( )**
`pinv()` function, [M-5] **pinv( )**
pk, *see* pharmacokinetic data
`pkcollapse` command, [R] **pkcollapse**
`pkcross` command, [R] **pkcross**
`pkequiv` command, [R] **pkequiv**
`pkexamine` command, [R] **pkexamine**
`.pkg` filename suffix, [R] **net**
`pkshape` command, [R] **pkshape**
`pksumm` command, [R] **pksumm**
Plackett–Luce model, [R] **rologit**
plain ASCII, [I] **Glossary**
platforms for which Stata is available, [U] **5.1 Platforms**
`play`, `graph` subcommand, [G-2] **graph play**
`play()` option, [G-3] ***play_option***
`playsnd`, `set` subcommand, [R] **set**
`plegend()` option, [G-3] ***legend_options***
plot, definition, [G-4] ***pstyle***
`plot`, `ml` subcommand, [R] **ml**
plot region, [G-3] ***region_options***
  suppressing border around, [G-3] ***region_options***
`plotregion()` option, [G-3] ***region_options***
*plotregionstyle*, [G-4] ***plotregionstyle***
plottypes
  base, [G-3] ***advanced_options***
  derived, [G-3] ***advanced_options***
`plugin` option, [P] **plugin**, [P] **program**
plugin,
  Java, [P] **java**, [P] **javacall**
  loading, [P] **plugin**
`plural()` function, [FN] **String functions**
`PLUS` directory, [P] **sysdir**, [U] **17.5 Where does Stata look for ado-files?**
PMM imputation, *see* imputation, predictive mean matching
PNG, [G-3] ***png_options***
`pnorm` command, [R] **diagnostic plots**
point estimate, [SVY] **Glossary**
point-and-click analysis, *see* graphical user interface
pointers, [M-2] **pointers**, [M-2] **ftof**, [M-5] **findexternal( )**, [M-6] **Glossary**
points, connecting, [G-3] ***connect_options***, [G-4] ***connectstyle***
`poisson()` function, [FN] **Statistical functions**
Poisson
  distribution,
    confidence intervals, [R] **ci**
    cumulative, [FN] **Statistical functions**
    inverse cumulative, [FN] **Statistical functions**
Poisson distribution, *continued*
    inverse reverse cumulative, [FN] **Statistical functions**
    regression, *see* Poisson regression
    reverse cumulative, [FN] **Statistical functions**
  probability mass function, [FN] **Statistical functions**
  regression, [R] **nbreg**, [R] **poisson**, [SEM] **example 34g**, [SEM] **example 39g**, [SEM] **Glossary**, [ST] **stcox**, [SVY] **svy estimation**
    Bayesian, [BAYES] **bayesmh**
    censored, [R] **cpoisson**
    fixed-effects, [XT] **xtpoisson**
    generalized linear model, [R] **glm**
    mixed-effects, [ME] **mepoisson**, [ME] **meqrpoisson**
    model, [XT] **Glossary**
    population-averaged, [XT] **xtgee**, [XT] **xtpoisson**
    random-effects, [XT] **xtpoisson**
    truncated, [R] **tpoisson**
    zero-inflated, [R] **zip**
`poisson` command, [R] **nbreg**, [R] **poisson**, [R] **poisson postestimation**
`poisson()` function, [M-5] **normal( )**
`poisson` option, *see* `gsem` option `poisson`
`poissonp()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`poissontail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
polar coordinates, [D] **range**
`polyadd()` function, [M-5] **polyeval( )**
`polyderiv()` function, [M-5] **polyeval( )**
`polydiv()` function, [M-5] **polyeval( )**
`polyeval()` function, [M-5] **polyeval( )**
`polyinteg()` function, [M-5] **polyeval( )**
polymorphism, [P] **class**
`polymult()` function, [M-5] **polyeval( )**
polynomial smoothing, *see* local polynomial smoothing
polynomials, [M-5] **polyeval( )**
  fractional, [R] **fp**, [R] **mfp**
  orthogonal, [R] **orthog**
  smoothing, *see* local polynomial
`polyroots()` function, [M-5] **polyeval( )**
`polysolve()` function, [M-5] **polyeval( )**
polytomous, [IRT] **Glossary**
polytomous logistic regression, [SVY] **svy estimation**
polytomous outcome model, *see* outcomes, polytomous
`polytrim()` function, [M-5] **polyeval( )**
POMs, *see* potential-outcome means
pooled estimates, [R] **epitab**
pooled estimator, [XT] **Glossary**
pooling step, [MI] **intro substantive**, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi predict**
population attributable risk, [R] **epitab**
population error, [SEM] **estat gof**, [SEM] **example 4**

population parameter, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **unbalanced designs**, *see* target, parameter
population pyramid, [G-2] **graph twoway bar**
population size, [PSS] **power**, [PSS] **power onemean**, [PSS] **power pairedmeans**
population standard deviation, *see* subpopulation, standard deviations of
population-averaged model, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtnbreg**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtstreg**, [XT] **Glossary**
populations,
  diagnostic plots, [R] **diagnostic plots**
  examining, [R] **histogram**, [R] **lv**, [R] **spikeplot**, [R] **stem**, [R] **summarize**, [R] **table**
  standard, [R] **dstdize**
  testing equality of, *see* distributions, testing equality of
  testing for normality, [R] **sktest**, [R] **swilk**
portmanteau statistic, [TS] **corrgram**, [TS] **wntestq**, [TS] **Glossary**
positive effect size, [PSS] **power**, [PSS] **Glossary**
`post` command, [P] **postfile**
`post`, `ereturn` subcommand, [P] **ereturn**, [P] **makecns**, [P] **return**
`postclose` command, [P] **postfile**
posterior
  distribution, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
  interval, *see* credible interval
  mean, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**, [IRT] **irt 1pl postestimation**, [IRT] **irt 2pl postestimation**, [IRT] **irt 3pl postestimation**, [IRT] **irt grm postestimation**, [IRT] **irt nrm postestimation**, [IRT] **irt pcm postestimation**, [IRT] **irt rsm postestimation**, [IRT] **irt hybrid postestimation**, [IRT] **Glossary**, [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **meologit postestimation**, [ME] **meoprobit postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **mestreg postestimation**, [ME] **Glossary**
  mode, [BAYES] **intro**, [IRT] **irt 1pl postestimation**, [IRT] **irt 2pl postestimation**, [IRT] **irt 3pl postestimation**, [IRT] **irt grm postestimation**, [IRT] **irt nrm postestimation**, [IRT] **irt pcm postestimation**, [IRT] **irt rsm postestimation**, [IRT] **irt hybrid postestimation**, [IRT] **Glossary**,
posterior mode, *continued*
  [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **meologit postestimation**, [ME] **meoprobit postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **mestreg postestimation**, [ME] **Glossary**
  odds, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesstats ic**, [BAYES] **bayestest model**, [BAYES] **Glossary**
  predictive distribution, [BAYES] **intro**, [BAYES] **Glossary**
  probabilities, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayestest interval**, [BAYES] **bayestest model**, [MV] **Glossary**
`postest` command, [R] **postest**
postestimation
  command, [BAYES] **bayesgraph**, [BAYES] **bayesstats ess**, [BAYES] **bayesstats ic**, [BAYES] **bayesstats summary**, [BAYES] **bayestest interval**, [BAYES] **bayestest model**, [MI] **mi estimate postestimation**, [P] **estat programming**, [R] **contrast**, [R] **estat**, [R] **estat ic**, [R] **estat summarize**, [R] **estat vce**, [R] **estimates**, [R] **hausman**, [R] **lincom**, [R] **linktest**, [R] **lrtest**, [R] **margins**, [R] **margins, contrast**, [R] **margins, pwcompare**, [R] **marginsplot**, [R] **nlcom**, [R] **postest**, [R] **predict**, [R] **predictnl**, [R] **pwcompare**, [R] **suest**, [R] **test**, [R] **testnl**, [SEM] **intro 7**, [SEM] **gsem postestimation**, [SEM] **sem postestimation**, [ST] **stcurve**, [SVY] **estat**, [SVY] **svy postestimation**, [TE] **stteffects postestimation**, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**, [TE] **teffects overlap**, [TE] **teffects postestimation**, [TS] **estat acplot**, [TS] **estat aroots**, [TS] **estat sbknown**, [TS] **estat sbsingle**, [TS] **fcast compute**, [TS] **fcast graph**, [TS] **irf**, [TS] **psdensity**, [TS] **vargranger**, [TS] **varlmar**, [TS] **varnorm**, [TS] **varsoc**, [TS] **varstable**, [TS] **varwle**, [TS] **veclmar**, [TS] **vecnorm**, [TS] **vecstable**
  interface, [R] **postest**
Postestimation Selector, [R] **postest**
postestimation, predicted values, [SEM] **intro 7**, [SEM] **example 14**, [SEM] **example 28g**, [SEM] **predict after gsem**, [SEM] **predict after sem**
`postfile` command, [P] **postfile**
PostScript, [G-2] **graph export**, [G-3] ***eps_options***, [G-3] ***ps_options***, [G-4] ***text***
poststratification, [SVY] **poststratification**, [SVY] **Glossary**
posttreatment mean, *see* means, posttreatment
postulated value, [PSS] **power**, [PSS] **Glossary**
`postutil`
  `clear` command, [P] **postfile**
  `dir` command, [P] **postfile**

potential outcome, [TE] **eteffects**, [TE] **etpoisson**, [TE] **etpoisson postestimation**, [TE] **etregress**, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects nnmatch**, [TE] **teffects overlap**, [TE] **teffects postestimation**, [TE] **teffects psmatch**, [TE] **teffects ra**, [TE] **Glossary**
potential-outcome means, [TE] **eteffects**, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects multivalued**, [TE] **teffects ra**, [TE] **Glossary**
survival time, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects ra**, [TE] **stteffects wra**
poverty indices, [R] **inequality**
power, [M-2] **op_arith**, [M-2] **op_colon**, [M-5] **matpowersym( )**, [PSS] **Glossary**, [ST] **Glossary**, [U] **19.3 The power command**, [U] **26.31 Power and sample-size analysis**
analysis, *see* power and sample-size analysis
and sample-size analysis, [PSS] **GUI**, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
goals of, [PSS] **intro**
prospective, [PSS] **intro**
retrospective, [PSS] **intro**
autoregressive conditional heteroskedasticity, [TS] **arch**
curve, [PSS] **power**, [PSS] **power, graph**, [PSS] **Glossary**
determination, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
function, [PSS] **Glossary**
graph, *see* power curve
graphical output, [PSS] **power, graph**
power, *continued*
tabular output, [PSS] **power, table**
transformations, [R] **boxcox**, [R] **lnskew0**
`power`
`cmh` command, [PSS] **power cmh**
command, [PSS] **intro**, [PSS] **GUI**, [PSS] **power**, [PSS] **power, graph**, [PSS] **power, table**
`cox` command, [PSS] **power cox**
`exponential` command, [PSS] **power exponential**
`logrank` command, [PSS] **power logrank**
`mcc` command, [PSS] **power mcc**
`onecorrelation` command, [PSS] **power onecorrelation**
`onemean` command, [PSS] **power onemean**
`oneproportion` command, [PSS] **power oneproportion**
`onevariance` command, [PSS] **power onevariance**
`oneway` command, [PSS] **power oneway**
`pairedmeans` command, [PSS] **power pairedmeans**
`pairedproportions` command, [PSS] **power pairedproportions**
`repeated` command, [PSS] **power repeated**
`trend` command, [PSS] **power trend**
`twocorrelations` command, [PSS] **power twocorrelations**
`twomeans` command, [PSS] **power twomeans**
`twoproportions` command, [PSS] **power twoproportions**
`twovariances` command, [PSS] **power twovariances**
`twoway` command, [PSS] **power twoway**
power, raise to, function, *see* arithmetic operators
`pperron` command, [TS] **pperron**
pragma, [M-2] **pragma**, [M-6] **Glossary**
`pragma unset`, [M-2] **pragma**
`pragma unused`, [M-2] **pragma**
`prais` command, [TS] **prais**, [TS] **prais postestimation**
Prais–Winsten regression, [TS] **prais**, [TS] **prais postestimation**, [TS] **Glossary**, [XT] **xtpcse**
precision, [U] **13.12 Precision and problems therein**
predetermined variable, [XT] **Glossary**
`_predict` command, [P] **_predict**
`predict` command, [P] **ereturn**, [P] **_estimates**, [R] **predict**, [R] **regress postestimation**, [SEM] **intro 7**, [SEM] **example 14**, [SEM] **example 28g**, [SEM] **predict after gsem**, [SEM] **predict after sem**, [SVY] **svy postestimation**, [TE] **stteffects postestimation**, [TE] **teffects postestimation**, [U] **20.10 Obtaining predicted values**
`predict`, `estat` subcommand, [R] **exlogistic postestimation**
`predict`, `mi` subcommand, [MI] **mi predict**
predicted values, *see* postestimation, predicted values
predictions, [R] **predict**, [R] **predictnl**, [SVY] **svy postestimation**, *see* multiple imputation, prediction
Bayesian, *see* Bayesian, prediction

predictions, *continued*
obtaining after estimation, [MI] **mi predict**, [P] **_predict**
standard error of, [R] **glm**, [R] **predict**, [R] **regress postestimation**
predictive margins, [SVY] **Glossary**, [U] **20.15 Obtaining marginal means, adjusted predictions, and predictive margins**
predictive mean matching imputation, *see* imputation, predictive mean matching
`predictnl` command, [R] **predictnl**, [SVY] **svy postestimation**
`predictnl`, `mi` subcommand, [MI] **mi predict**
prefix command, [R] **bootstrap**, [R] **fp**, [R] **jackknife**, [R] **mfp**, [R] **nestreg**, [R] **permute**, [R] **simulate**, [R] **stepwise**, [R] **xi**, [U] **11.1.10 Prefix commands**
Pregibon delta beta influence statistic, *see* delta beta influence statistic
preprocessor commands, [R] **#review**
`preserve` command, [P] **preserve**
preserving data, [P] **preserve**
preserving user's data, [P] **preserve**
pretreatment mean, *see* means, pretreatment
prevalence studies, *see* case–control data
prevented fraction, [R] **epitab**
prewhiten, [XT] **Glossary**
primary sampling unit, [SVY] **svydescribe**, [SVY] **svyset**, [SVY] **Glossary**
priming values, [TS] **Glossary**
principal
component analysis, [MV] **pca**, [MV] **Glossary**
factors analysis, [MV] **factor**
`print`,
`graph` subcommand, [G-2] **graph print**
`print` command, [R] **translate**
`printcolor`, `set` subcommand, [G-2] **set printcolor**, [R] **set**
`printf()` function, [M-5] **printf( )**
printing graphs, [G-2] **graph print**, [G-3] ***pr_options***
exporting options, [G-2] **graph set**
settings, [G-2] **graph set**
printing, logs (output), [R] **translate**, [U] **15 Saving and printing output—log files**
prior distribution, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
prior odds, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesstats ic**, [BAYES] **bayestest model**, [BAYES] **Glossary**
prior probabilities, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayestest model**, [MV] **Glossary**
`private`, [M-2] **class**
probability
of a type I error, [PSS] **power**, [PSS] **Glossary**
of a type II error, [PSS] **power**, [PSS] **Glossary**
probability weight, *see* sampling weight
`probit` command, [R] **probit**, [R] **probit postestimation**
`probit` option, *see* `gsem` option `probit`
probit regression, [R] **probit**, [SEM] **Glossary**, [SVY] **svy estimation**
alternative-specific multinomial probit, [R] **asmprobit**
alternative-specific rank-ordered, [R] **asroprobit**
Bayesian, [BAYES] **bayesmh**
bivariate, [R] **biprobit**
generalized estimating equations, [XT] **xtgee**
generalized linear model, [R] **glm**
heteroskedastic, [R] **hetprobit**
mixed-effects, [ME] **meprobit**, *also see* ordered probit regression
multinomial, [R] **mprobit**
ordered, [R] **heckoprobit**, [R] **oprobit**
population-averaged, [XT] **xtgee**, [XT] **xtprobit**
random-effects, [XT] **xtoprobit**, [XT] **xtprobit**
two-equation, [R] **biprobit**
with endogenous covariates, [R] **ivprobit**, [SVY] **svy estimation**
with sample selection, [R] **heckprobit**, [SVY] **svy estimation**
procedure codes, [D] **icd**, [D] **icd9**
`processors`, `set` subcommand, [R] **set**
`procoverlay` command, [MV] **procrustes postestimation**
`procrustes` command, [MV] **procrustes**, [MV] **procrustes postestimation**
Procrustes rotation, [MV] **procrustes**, [MV] **Glossary**
Procrustes transformation, *see* Procrustes rotation
product, [M-2] **op_arith**, [M-2] **op_colon**, [M-2] **op_kronecker**, [M-5] **cross( )**, [M-5] **crossdev( )**, [M-5] **quadcross( )**
production
frontier model, [R] **frontier**, [XT] **xtfrontier**
function, [XT] **Glossary**
product-moment correlation, [R] **correlate**
between ranks, [R] **spearman**
profile plots, [R] **marginsplot**
`profiles`, `estat` subcommand, [MV] **ca postestimation**
`program`
`define` command, [P] **plugin**, [P] **program**, [P] **program properties**
`dir` command, [P] **program**
`drop` command, [P] **program**
`list` command, [P] **program**
program properties, [P] **program properties**
programmer's commands and utilities, [MI] **mi select**, [MI] **styles**, [MI] **technical**
programming, [P] **syntax**
cluster analysis, [MV] **cluster programming utilities**
cluster subcommands, [MV] **cluster programming subroutines**

programming, *continued*
cluster utilities, [MV] **cluster programming subroutines**
dialog, [P] **dialog programming**
estat, [P] **estat programming**
functions, [M-4] **programming**
limits, [R] **limits**
Mac, [P] **window programming**, [P] **window fopen**, [P] **window manage**, [P] **window menu**, [P] **window push**, [P] **window stopbox**
menus, [P] **window programming**, [P] **window menu**
rotations, [MV] **rotate**
use, [M-1] **ado**
Windows, [P] **window programming**, [P] **window fopen**, [P] **window manage**, [P] **window menu**, [P] **window push**, [P] **window stopbox**
`programs`, `clear` subcommand, [D] **clear**
programs,
adding comments to, [P] **comments**
debugging, [P] **trace**
dropping, [P] **discard**
looping, [P] **continue**
user-written, *see* ado-files
Project Manager, [P] **Project Manager**
projection matrix, diagonal elements of, [R] **binreg postestimation**, [R] **clogit postestimation**, [R] **glm postestimation**, [R] **logistic postestimation**, [R] **logit postestimation**, [R] **regress postestimation**, [R] **rreg postestimation**
projection plot, [G-2] **graph twoway contour**, [G-2] **graph twoway contourline**
`projmanager` command, [P] **Project Manager**
promax power rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
promax rotation, [MV] **rotate**
propensity score, [TE] **stteffects postestimation**, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects postestimation**, [TE] **teffects psmatch**, [TE] **Glossary**
propensity-score matching, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects psmatch**, [TE] **Glossary**
proper imputation method, [MI] **intro substantive**
proper values, [M-5] **eigensystem( )**
properties, [P] **program properties**
`properties` macro extended function, [P] **macro**
`proportion` command, [R] **proportion**, [R] **proportion postestimation**
proportional
hazards model, [ST] **Glossary**, [SVY] **svy estimation**, *also see* Cox proportional hazards model
hazards models, *see* survival analysis
odds assumption, [R] **ologit**
relaxed, [R] **slogit**
odds model, [R] **ologit**
sampling, [D] **sample**, [R] **bootstrap**
proportions, [PSS] **power**
confidence intervals for, [R] **ci**
control-group, [PSS] **power twoproportions**, [PSS] **power cmh**
correlated, *see* proportions, paired
discordant, [PSS] **power pairedproportions**
estimating, [R] **proportion**
experimental-group, [PSS] **power twoproportions**, [PSS] **power cmh**
independent, *see* proportions, two-sample
marginal, [PSS] **power pairedproportions**, [PSS] **Glossary**
of exposed cases, [PSS] **power mcc**
of exposed controls, [PSS] **power mcc**
one-sample, [PSS] **power oneproportion**
paired, [PSS] **power pairedproportions**
stratified test, [PSS] **power cmh**
survey data, [SVY] **svy estimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
test of marginal homogeneity, [PSS] **power mcc**
testing equality of, [R] **bitest**, [R] **prtest**
two-sample, [PSS] **power twoproportions**, [PSS] **power pairedproportions**
proposal distribution, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **Glossary**
prospective study, [PSS] **power**, [PSS] **Glossary**, [R] **epitab**, *also see* incidence studies
`protected`, [M-2] **class**
proximity, [MV] **Glossary**
`prtest` command, [R] **prtest**
`prtesti` command, [R] **prtest**
`psdensity` command, [TS] **psdensity**
pseudo $R$-squared, [R] **maximize**
pseudoconvergence, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **Glossary**
pseudofunctions, [D] **datetime**, [FN] **Programming functions**, [FN] **Random-number functions**
pseudoguessing parameter, [IRT] **irt 3pl**
pseudoinverse, [M-5] **pinv( )**
pseudolikelihood, [SVY] **Glossary**
pseudosigmas, [R] **lv**
`psi` function, [FN] **Mathematical functions**
`psmatch`, `teffects` subcommand, [TE] **teffects psmatch**
PSS analysis, *see* power and sample-size analysis
PSS Control Panel, [PSS] **GUI**, [PSS] **Glossary**
*pstyle*, [G-4] ***pstyle***
`pstyle()` option, [G-2] **graph twoway scatter**, [G-3] ***rspike_options***, [G-4] ***pstyle***
PSU, *see* primary sampling unit
`.ptrace` file, [MI] **mi impute mvn**, [MI] **mi ptrace**
`ptrace`, `mi` subcommand, [MI] **mi ptrace**
`public`, [M-2] **class**
`push`, `window` subcommand, [P] **window programming**, [P] **window push**

putexcel
clear command, [P] putexcel
command, [P] putexcel
describe command, [P] putexcel
set command, [P] putexcel
putmata command, [D] putmata
*p*-value, [PSS] Glossary
pwcompare command, [R] pwcompare, [R] pwcompare postestimation, [SEM] intro 7, [SVY] svy postestimation, [U] 20.17 Obtaining pairwise comparisons
pwcorr command, [R] correlate
pwd command, [D] cd
pwd() function, [M-5] chdir( )
pweight, *see* sampling weight
[pweight=*exp*] modifier, [U] 11.1.6 weight, [U] 20.23.3 Sampling weights
pwmean command, [R] pwmean, [R] pwmean postestimation
pyramid, population, [G-2] graph twoway bar

## Q

Q–Q plot, [R] diagnostic plots
Q statistic, *see* portmanteau statistic
qc charts, *see* quality control charts
qchi command, [R] diagnostic plots
QDA, *see* quadratic discriminant analysis
qda, discrim subcommand, [MV] discrim qda
qfit, graph twoway subcommand, [G-2] graph twoway qfit
qfitci, graph twoway subcommand, [G-2] graph twoway qfitci
qladder command, [R] ladder
QML, *see* quasimaximum likelihood
qnorm command, [R] diagnostic plots
qofd() function, [D] datetime, [FN] Date and time functions, [M-5] date( )
qqplot command, [R] diagnostic plots
QR decomposition, [M-5] qrd( ), [ME] meqrlogit, [ME] meqrpoisson, [ME] Glossary
qrd() function, [M-5] qrd( )
qrdp() function, [M-5] qrd( )
qreg command, [R] qreg, [R] qreg postestimation
_qrinv() function, [M-5] qrinv( )
qrinv() function, [M-5] qrinv( )
_qrsolve() function, [M-5] qrsolve( )
qrsolve() function, [M-5] qrsolve( )
qtolerance() option, [R] maximize
quad precision, [M-5] mean( ), [M-5] quadcross( ), [M-5] runningsum( ), [M-5] sum( )
quadchk command, [XT] quadchk
quadcolsum() function, [M-5] sum( )
quadcorrelation() function, [M-5] mean( )
quadcross() function, [M-5] quadcross( )
quadcrossdev() function, [M-5] quadcross( )
quadmeanvariance() function, [M-5] mean( )
quadrant() function, [M-5] sign( )
quadratic discriminant analysis, [MV] discrim qda, [MV] Glossary
quadratic terms, [SVY] svy postestimation
quadrature, [SEM] Glossary, [XT] Glossary
Gauss–Hermite, [IRT] irt 1pl, [IRT] irt 2pl, [IRT] irt 3pl, [IRT] irt grm, [IRT] irt nrm, [IRT] irt pcm, [IRT] irt rsm, [IRT] irt hybrid, [IRT] Glossary, [ME] me, [ME] mecloglog, [ME] meglm, [ME] melogit, [ME] menbreg, [ME] meologit, [ME] meoprobit, [ME] mepoisson, [ME] meprobit, [ME] meqrlogit, [ME] meqrpoisson, [ME] mestreg, [ME] mixed, [ME] Glossary, [SEM] methods and formulas for gsem, [XT] quadchk
mean–variance adaptive Gauss–Hermite, [IRT] irt 1pl, [IRT] irt 2pl, [IRT] irt 3pl, [IRT] irt grm, [IRT] irt nrm, [IRT] irt pcm, [IRT] irt rsm, [IRT] irt hybrid, [IRT] Glossary, [ME] me, [ME] mecloglog, [ME] meglm, [ME] melogit, [ME] menbreg, [ME] meologit, [ME] meoprobit, [ME] mepoisson, [ME] meprobit, [ME] meqrlogit, [ME] meqrpoisson, [ME] mestreg, [ME] mixed, [ME] Glossary, [SEM] methods and formulas for gsem
mode-curvature adaptive Gauss–Hermite, [IRT] irt 1pl, [IRT] irt 2pl, [IRT] irt 3pl, [IRT] irt grm, [IRT] irt nrm, [IRT] irt pcm, [IRT] irt rsm, [IRT] irt hybrid, [IRT] Glossary, [ME] me, [ME] mecloglog, [ME] meglm, [ME] melogit, [ME] menbreg, [ME] meologit, [ME] meoprobit, [ME] mepoisson, [ME] meprobit, [ME] meqrlogit, [ME] meqrpoisson, [ME] mestreg, [ME] mixed, [ME] Glossary, [SEM] methods and formulas for gsem
nonadaptive Gauss–Hermite, *see* quadrature, Gauss–Hermite
quadrowsum() function, [M-5] sum( )
_quadrunningsum() function, [M-5] runningsum( )
quadrunningsum() function, [M-5] runningsum( )
quadsum() function, [M-5] sum( )
quadvariance() function, [M-5] mean( )
qualitative dependent variables, [BAYES] bayesmh, [IRT] irt 1pl, [IRT] irt 2pl, [IRT] irt 3pl, [IRT] irt grm, [IRT] irt nrm, [IRT] irt pcm, [IRT] irt rsm, [IRT] irt hybrid, [ME] mecloglog, [ME] meglm, [ME] melogit, [ME] meologit, [ME] meoprobit, [ME] meprobit, [ME] meqrlogit, [R] asclogit, [R] asmprobit, [R] asroprobit, [R] binreg, [R] biprobit, [R] brier, [R] clogit, [R] cloglog, [R] cusum, [R] exlogistic, [R] glm, [R] heckoprobit, [R] heckprobit, [R] hetprobit, [R] ivprobit, [R] logistic, [R] logit, [R] mlogit, [R] mprobit, [R] nlogit, [R] ologit, [R] oprobit, [R] probit, [R] rocfit, [R] rocreg, [R] rologit, [R] scobit, [R] slogit, [SVY] svy estimation,

qualitative dependent variables, *continued*
[U] **26.7 Binary-outcome qualitative dependent-variable models**, [U] **26.11 Multiple-outcome qualitative dependent-variable models**, [U] **26.20.4 Qualitative dependent-variable models with panel data**, [XT] **xtcloglog**, [XT] **xtgee**, [XT] **xtlogit**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtprobit**, [XT] **xtstreg**
quality control charts, [G-2] **graph other**, [R] **qc**, [R] **serrbar**
`quantile` command, [R] **diagnostic plots**
quantile–normal plots, [R] **diagnostic plots**
quantile plots, [G-2] **graph other**, [R] **diagnostic plots**
quantile–quantile plots, [G-2] **graph other**, [R] **diagnostic plots**
quantile regression, [R] **qreg**
quantiles, *see* percentiles, displaying, *see* percentiles
`quantiles`, `estat` subcommand, [MV] **mds postestimation**
`quarter()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`quarterly()` function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
quartimax rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
quartimin rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
quasimaximum likelihood, [SEM] **Glossary**
Quattro Pro, reading data from, [U] **21.4 Transfer programs**
`query`
command, [R] **query**
`efficiency` command, [R] **query**
`graphics` command, [G-2] **set graphics**, [G-2] **set printcolor**, [G-2] **set scheme**, [R] **query**
`interface` command, [R] **query**
`mata` command, [R] **query**
`memory` command, [D] **memory**, [R] **query**
`network` command, [R] **query**
`other` command, [R] **query**
`output` command, [R] **query**
`trace` command, [R] **query**
`unicode` command, [R] **query**
`update` command, [R] **query**
`query`,
`cluster` subcommand, [MV] **cluster programming utilities**
`estimates` subcommand, [R] **estimates store**
`file` subcommand, [P] **file**
`forecast` subcommand, [TS] **forecast query**
`graph` subcommand, [G-2] **graph query**
`icd10` subcommand, [D] **icd10**
`icd9` subcommand, [D] **icd9**
`icd9p` subcommand, [D] **icd9**
`log` subcommand, [R] **log**
`mi` subcommand, [MI] **mi describe**
`ml` subcommand, [R] **ml**
`query`, *continued*
`net` subcommand, [R] **net**
`odbc` subcommand, [D] **odbc**
`translator` subcommand, [R] **translate**
`transmap` subcommand, [R] **translate**
`update` subcommand, [R] **update**
`webuse` subcommand, [D] **webuse**
`querybreakintr()` function, [M-5] **setbreakintr( )**
quick reference, [D] **data types**, [D] **missing values**
`quietly` prefix, [P] **quietly**
quit Mata, [M-3] **end**
quitting Stata, *see* `exit` command
quotes
to delimit strings, [U] **18.3.5 Double quotes**
to expand macros, [P] **macro**, [U] **18.3.1 Local macros**

## R

`r()` function, [FN] **Programming functions**
`r()` stored results, [P] **discard**, [P] **return**, [R] **stored results**, [U] **18.8 Accessing results calculated by other programs**, [U] **18.10.1 Storing results in r()**
`r(functions)` macro extended function, [P] **macro**
`r(macros)` macro extended function, [P] **macro**
`r(matrices)` macro extended function, [P] **macro**
`r(scalars)` macro extended function, [P] **macro**
R charts, [G-2] **graph other**
R dates, [D] **datetime**
R, reading data from, [U] **21.4 Transfer programs**
`r1title()` option, [G-3] ***title_options***
$R^2$, [SEM] **estat eqgof**
`r2title()` option, [G-3] ***title_options***
`ra`, `stteffects` subcommand, [TE] **stteffects ra**
`ra`, `teffects` subcommand, [TE] **teffects ra**
radians, [FN] **Mathematical functions**
raise to a power function, [U] **13.2.1 Arithmetic operators**
Ramsey test, [R] **regress postestimation**
random
coefficient, [BAYES] **bayesmh**, [ME] **Glossary**
effects, [PSS] **Glossary**
intercept, [BAYES] **bayesmh**, [ME] **Glossary**, [SEM] **example 38g**
model parameter, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**
numbers, normally distributed, [FN] **Random-number functions**, [M-5] **runiform( )**, [R] **set rng**, [R] **set seed**, [D] **generate**
order, test for, [R] **runtest**
sample, [D] **sample**, [R] **bootstrap**, [U] **21.3 If you run out of memory**
slope, [SEM] **example 38g**
variates, [FN] **Random-number functions**, [R] **set rng**, [R] **set seed**, [M-5] **runiform( )**
walk, [TS] **Glossary**

random-coefficients
  linear regression, [XT] **xtrc**
  model, [BAYES] **bayesmh**, [U] **26.20.7 Random-coefficients model with panel data**, [XT] **Glossary**
random-effects model, [BAYES] **bayesmh**, [ME] **Glossary**, [R] **anova**, [R] **loneway**, [SEM] **example 38g**, [SEM] **Glossary**, [XT] **xtabond**, [XT] **xtcloglog**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xtgee**, [XT] **xthtaylor**, [XT] **xtintreg**, [XT] **xtivreg**, [XT] **xtlogit**, [XT] **xtnbreg**, [XT] **xtologit**, [XT] **xtoprobit**, [XT] **xtpoisson**, [XT] **xtprobit**, [XT] **xtreg**, [XT] **xtregar**, [XT] **xtstreg**, [XT] **xttobit**, [XT] **Glossary**
  multilevel mixed-effects models, [ME] **me**, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **meqrlogit**, [ME] **meqrpoisson**, [ME] **mestreg**, [ME] **mixed**
randomized controlled trial study, [PSS] **power**, [PSS] **Glossary**
random-number
  function, [FN] **Random-number functions**, [M-5] **runiform( )**, [R] **set rng**, [R] **set seed**, [D] **generate**
  generator, [FN] **Random-number functions**, [M-5] **runiform( )**, [R] **set seed**
  generator setting, [R] **set rng**
  seed, [BAYES] **bayesmh**, [MI] **mi impute**, [R] **set seed**
random-order test, [R] **runtest**
range
  chart, [R] **qc**
  of data, [D] **codebook**, [D] **inspect**, [R] **lv**, [R] **stem**, [R] **summarize**, [R] **table**, [R] **tabstat**, [XT] **xtsum**
  operators, [M-2] **op_range**
  plots, [G-3] ***rcap_options***
  spikes, [G-3] ***rspike_options***
  subscripts, *see* subscripts
  vector, [M-5] **range( )**
`range` command, [D] **range**
`range()` function, [M-5] **range( )**
`rangen()` function, [M-5] **range( )**
rank, [M-5] **rank( )**, [M-6] **Glossary**
rank correlation, [R] **spearman**
`rank()`, `egen` function, [D] **egen**
`rank()` function, [M-5] **rank( )**
ranking data, [R] **rologit**
rank-order statistics, [D] **egen**, [R] **signrank**, [R] **spearman**
rank-ordered logistic regression, *see* outcomes, rank
ranks of observations, [D] **egen**
`ranksum` command, [R] **ranksum**
Rao's canonical-factor method, [MV] **factor**
`rarea`, `graph twoway` subcommand, [G-2] **graph twoway rarea**
Rasch models, *see* item response theory
rate ratio, [R] **epitab**, [ST] **stir**, [ST] **stptime**, [ST] **stsum**, *see* incidence-rate ratio
rating scale model, [IRT] **Glossary**
`ratio` command, [R] **ratio**, [R] **ratio postestimation**
ratio of sample sizes, *see* allocation ratio
ratios, estimating, [R] **ratio**
ratios, survey data, [SVY] **svy estimation**, [SVY] **svy: tabulate twoway**
RATS, reading data from, [U] **21.4 Transfer programs**
raw data, [U] **12 Data**
`.raw` file, [U] **11.6 Filenaming conventions**
raw residuals, [SEM] **methods and formulas for sem**
`rbar`, `graph twoway` subcommand, [G-2] **graph twoway rbar**
`rbeta()` function, [FN] **Random-number functions**, [M-5] **runiform( )**
`rbinomial()` function, [FN] **Random-number functions**, [M-5] **runiform( )**
rc (return codes), *see* error messages and return codes
`_rc` built-in variable, [P] **capture**, [U] **13.4 System variables (_variables)**
`rcap`, `graph twoway` subcommand, [G-2] **graph twoway rcap**
`rcapsym`, `graph twoway` subcommand, [G-2] **graph twoway rcapsym**
`rchart` command, [R] **qc**
`rchi2()` function, [FN] **Random-number functions**, [M-5] **runiform( )**
r-class command, [P] **program**, [P] **return**, [U] **18.8 Accessing results calculated by other programs**
r-conformability, [M-5] **normal( )**, [M-6] **Glossary**
`rconnected`, `graph twoway` subcommand, [G-2] **graph twoway rconnected**
RCT, *see* randomized controlled trial study
`rdiscrete()` function, [M-5] **runiform( )**
`Re()` function, [M-5] **Re( )**
`read`, `file` subcommand, [P] **file**
reading
  console input in programs, *see* console, obtaining input from
  data, [M-5] **_docx*( )**, [M-5] **xl( )**
  data from disk, [U] **21 Entering and importing data**, [U] **21.4 Transfer programs**, *see* importing data
`real`, [M-2] **declarations**, [M-6] **Glossary**
`real()` function, [FN] **String functions**
real number to string conversion, [D] **destring**, [D] **encode**, [FN] **String functions**
real part, [M-5] **Re( )**
realization, [M-6] **Glossary**
`recast` command, [D] **recast**
`recast()` option, [G-3] ***advanced_options***, [G-3] ***rcap_options***, [G-3] ***rspike_options***
receiver operating characteristic analysis, [G-2] **graph other**, [R] **roc**, [U] **26.8 ROC analysis**
  area under ROC curve, [R] **lroc**

receiver operating characteristic analysis, *continued*
nonparametric analysis without covariates, [R] **roctab**
parametric analysis without covariates, [R] **rocfit**
regression models, [R] **rocreg**
ROC curves after `rocfit`, [R] **rocfit postestimation**
ROC curves after `rocreg`, [R] **rocregplot**
test equality of ROC areas, *see* equality test of ROC areas
reciprocal averaging, [MV] **ca**
`recode` command, [D] **recode**
`recode()` function, [FN] **Programming functions**, [U] **25.1.2 Converting continuous variables to categorical variables**
recoding data, [D] **recode**
recoding data `autocode()` function, [FN] **Programming functions**
reconstructed correlations, [MV] **factor postestimation**
record I/O versus stream I/O, [U] **21 Entering and importing data**
recording sessions, [U] **15 Saving and printing output—log files**
`recovariance`, `estat` subcommand, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mixed postestimation**
recruitment period, [PSS] **Glossary**, *also see* accrual period
rectangle kernel function, [R] **kdensity**, [R] **lpoly**, [R] **qreg**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **teffects overlap**
rectangularize dataset, [D] **fillin**
recursive
estimation, [TS] **rolling**
model, [SEM] **Glossary**
regression analysis, [TS] **Glossary**
redisplay graph, [G-2] **graph display**
reexpression, [R] **boxcox**, [R] **ladder**, [R] **lnskew0**
`.ref` built-in class function, [P] **class**
reference
group, *see* control group
prior, *see* noninformative prior
value, *see* null value
references, class, [P] **class**
reflection, [MV] **procrustes**, [MV] **Glossary**
`.ref_n` built-in class function, [P] **class**
`reg3` command, [R] **reg3**, [R] **reg3 postestimation**
`regexm()` function, [FN] **String functions**
`regexr()` function, [FN] **String functions**
`regexs()` function, [FN] **String functions**
regime-switching model, [TS] **mswitch**
regions
look of, [G-4] ***areastyle***
outlining, [G-3] ***region_options***
shading, [G-3] ***region_options***
`register`, `mi` subcommand, [MI] **mi set**
registered variables, *see* variables, registered
`regress` command, [R] **regress**, [R] **regress postestimation**, [R] **regress postestimation diagnostic plots**, [R] **regress postestimation time series**
`regress` option, *see* `gsem` option `regress`
regression, [SEM] **Glossary**
Bayesian, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**
competing risks, [ST] **stcrreg**
constrained, [R] **cnsreg**
creating orthogonal polynomials for, [R] **orthog**
diagnostic plots, [G-2] **graph other**
diagnostics, [ME] **mecloglog postestimation**, [ME] **meglm postestimation**, [ME] **melogit postestimation**, [ME] **menbreg postestimation**, [ME] **mepoisson postestimation**, [ME] **meprobit postestimation**, [ME] **meqrlogit postestimation**, [ME] **meqrpoisson postestimation**, [ME] **mestreg postestimation**, [ME] **mixed postestimation**, [R] **estat classification**, [R] **estat gof**, [R] **logistic postestimation**, [R] **lroc**, [R] **lsens**, [R] **poisson postestimation**, [R] **predict**, [R] **predictnl**, [R] **regress postestimation diagnostic plots**, [R] **regress postestimation time series**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **stcrreg postestimation**, [ST] **streg postestimation**, [SVY] **estat**, [SVY] **svy postestimation**
dummy variables, with, [R] **anova**, [R] **areg**, [R] **xi**
fixed-effects, [R] **areg**
fractional polynomial, [R] **fp**, [R] **mfp**
function, estimating, [R] **lpoly**
graphing, [R] **logistic**, [R] **regress postestimation diagnostic plots**
grouped data, [R] **intreg**
hurdle, [R] **churdle**
increasing number of variables allowed, [R] **matsize**
instrumental variables, [R] **gmm**, [R] **ivpoisson**, [R] **ivprobit**, [R] **ivregress**, [R] **ivtobit**
linear, *see* linear regression
lines, *see* fits, adding
system, [MV] **mvreg**, [R] **gmm**, [R] **ivpoisson**, [R] **ivregress**, [R] **nlsur**, [R] **reg3**, [R] **sureg**
truncated, [R] **truncreg**
regression (in generic sense), *also see* estimation commands
accessing coefficients and standard errors, [P] **matrix get**, [U] **13.5 Accessing coefficients and standard errors**
dummy variables, with, [XT] **xtreg**
fixed-effects, [XT] **xtreg**
instrumental variables, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**, [XT] **xthtaylor**, [XT] **xtivreg**
random-effects, [XT] **xtgee**, [XT] **xtreg**
regression adjustment, [TE] **teffects intro**, [TE] **teffects intro advanced**, [TE] **teffects ra**, [TE] **Glossary**

regression coefficient, [PSS] **power trend**, [PSS] **power cox**
one-sample, [PSS] **power trend**, [PSS] **power cox**
regression scoring, [MV] **factor postestimation**
regular expressions, [FN] **String functions**
regular variables, *see* variables, regular
rejection region, [PSS] **Glossary**
relational operators, [U] **13.2.3 Relational operators**
relative
difference function, [FN] **Mathematical functions**
efficiency, [MI] **mi estimate**, [MI] **mi predict**, [MI] **Glossary**
risk, [PSS] **power**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **Glossary**, [R] **epitab**
variance increase, [MI] **mi estimate**, [MI] **mi predict**, [MI] **Glossary**
relative-risk ratio, [R] ***eform_option***, [R] **lincom**, [R] **mlogit**
*relativesize*, [G-4] ***relativesize***
`reldif()` function, [FN] **Mathematical functions**, [M-5] **reldif( )**
release marker, [P] **version**
releases, compatibility of Stata programs across, [P] **version**
reliability, [MV] **alpha**, [MV] **factor**, [R] **brier**, [R] **eivreg**, [R] **icc**, [R] **intreg**, [R] **loneway**, [R] **poisson**, [SEM] **intro 5**, [SEM] **intro 12**, [SEM] **example 24**, [SEM] **gsem model description options**, [SEM] **sem and gsem option reliability( )**, [SEM] **sem model description options**, [SEM] **Glossary**, [ST] **survival analysis**, [ST] **discrete**, [ST] **ltable**, [ST] **st**, [ST] **stcox**, [ST] **stcrreg**, [ST] **streg**
`reliability` option, *see* `gsem` option `reliability()`, *see* `sem` option `reliability()`
reliability theory, *see* survival analysis
remainder function, [FN] **Mathematical functions**
REML, *see* restricted maximum likelihood
removing
directories, [D] **rmdir**
files, [D] **erase**
`r._En`, [SEM] **sem and gsem option covstructure( )**
`rename`,
`char` subcommand, [P] **char**
`cluster` subcommand, [MV] **cluster utility**
`graph` subcommand, [G-2] **graph rename**
`irf` subcommand, [TS] **irf rename**
`mata` subcommand, [M-3] **mata rename**
`matrix` subcommand, [P] **matrix utility**
`mi` subcommand, [MI] **mi rename**
`rename` command, [D] **rename**, [D] **rename group**
`rename` for mi data, [MI] **mi rename**
rename graph, [G-2] **graph rename**
`renamevar`, `cluster` subcommand, [MV] **cluster utility**
renaming variables, [D] **rename**, [D] **rename group**, [MI] **mi rename**
`renumber`, `notes` subcommand, [D] **notes**
reordering data, [D] **gsort**, [D] **order**, [D] **sort**
reorganizing data, [D] **reshape**, [D] **xpose**
`repair`, `ssd` subcommand, [SEM] **ssd**
repeated DDF, *see* denominator degrees of freedom, repeated
repeated measures, [MV] **Glossary**, [PSS] **power pairedmeans**, [PSS] **power pairedproportions**
repeated options, [G-4] **concept: repeated options**
`repeated`, `power` subcommand, [PSS] **power repeated**
repeated-measures ANOVA, [PSS] **power**, [PSS] **power repeated**, [R] **anova**
repeated-measures MANOVA, [MV] **manova**
repeating and editing commands, [R] **#review**, [U] **10 Keyboard use**
repeating commands, [D] **by**, [P] **continue**, [P] **foreach**, [P] **forvalues**
`replace` command, [D] **generate**, [MI] **mi passive**, [MI] **mi xeq**
`replace`, `notes` subcommand, [D] **notes**
`replace` option, [U] **11.2 Abbreviation rules**
`replace0`, `mi` subcommand, [MI] **mi replace0**
`replay`,
`estimates` subcommand, [R] **estimates replay**
`replay` subcommand, [G-2] **graph replay**
`replay()` function, [FN] **Programming functions**, [P] **ereturn**, [P] **_estimates**
replay graphs, [G-2] **graph replay**
replaying models, [SEM] **intro 7**
replicate-weight variable, [SVY] **survey**, [SVY] **svy bootstrap**, [SVY] **svy brr**, [SVY] **svy jackknife**, [SVY] **svy sdr**, [SVY] **svyset**, [SVY] **Glossary**
replicating
clustered observations, [D] **expandcl**
observations, [D] **expand**
replication method, [SVY] **svy bootstrap**, [SVY] **svy brr**, [SVY] **svy jackknife**, [SVY] **svy sdr**, [SVY] **svyset**, [SVY] **variance estimation**
`report`,
`datasignature` subcommand, [D] **datasignature**
`duplicates` subcommand, [D] **duplicates**
`estat` subcommand, [IRT] **estat report**
`fvset` subcommand, [R] **fvset**
ml subcommand `ml` subcommand, [R] **ml**
reporting options, [SEM] **gsem reporting options**, [SEM] **sem reporting options**
`repost`, `ereturn` subcommand, [P] **ereturn**, [P] **return**
`_request(`*macname*`)`, `display` directive, [P] **display**
resampling, [SVY] **Glossary**
reserved names, [U] **11.3 Naming conventions**
reserved words, [M-2] **reswords**
`reset`, `mi` subcommand, [MI] **mi reset**
RESET test, [R] **regress postestimation**
`reset`, `translator` subcommand, [R] **translate**
`reset_id`, `serset` subcommand, [P] **serset**

reshape
  command, [D] reshape
  error command, [D] reshape
  for mi data, [MI] mi reshape
  long command, [D] reshape
  wide command, [D] reshape
reshape, mi subcommand, [MI] mi reshape
residual DDF, see denominator degrees of freedom, residual
residuals, [R] logistic, [R] predict, [R] regress postestimation diagnostic plots, [R] rreg postestimation, [SEM] estat gof, [SEM] estat residuals, [SEM] example 4, [SEM] Glossary, [ST] stcox postestimation, [ST] stcrreg postestimation, [ST] streg postestimation
residuals, estat subcommand, [MV] factor postestimation, [MV] pca postestimation, [SEM] estat residuals
residual-versus-fitted plot, [G-2] graph other, [R] regress postestimation diagnostic plots
residual-versus-predictor plot, [G-2] graph other, [R] regress postestimation diagnostic plots
resistant smoothers, [R] smooth
restore,
  estimates subcommand, [R] estimates store
  _return subcommand, [P] _return
  snapshot subcommand, [D] snapshot
restore command, [P] preserve
restoring data, [D] snapshot
restricted cubic splines, [R] mkspline
restricted maximum likelihood, [ME] mixed, [ME] Glossary
results, clear subcommand, [D] clear
Results window, clearing, [R] cls
results,
  clearing, [P] ereturn, [P] _estimates, [P] _return
  listing, [P] ereturn, [P] _estimates, [P] _return
  returning, [P] _return, [P] return
  saving, [P] _estimates, [P] putexcel, [P] _return, [R] estimates save
  stored, [R] stored results
  storing, [P] ereturn, [P] postfile, [P] return
retrospective study, [PSS] power, [PSS] Glossary
_return
  dir command, [P] _return
  drop command, [P] _return
  hold command, [P] _return
  restore command, [P] _return
return, [M-2] return
  add command, [P] return
  clear command, [P] return
  list command, [P] return, [R] stored results
  local command, [P] return
  matrix command, [P] return
  scalar command, [P] return
return codes, [P] rmsg, see error messages and return codes
return() function, [FN] Programming functions
return value, [P] class
returning results, [P] return
  class programs, [P] class
reventries, set subcommand, [R] set
reversed scales, [G-3] axis_scale_options
#review command, [R] #review, [U] 10 Keyboard use, [U] 15 Saving and printing output—log files
revkeyboard, set subcommand, [R] set
revorder() function, [M-5] invorder()
rexponential() function, [FN] Random-number functions, [M-5] runiform()
rgamma() function, [FN] Random-number functions, [M-5] runiform()
rhypergeometric() function, [FN] Random-number functions, [M-5] runiform()
ridge prior, [MI] mi impute mvn
right eigenvectors, [M-5] eigensystem()
right suboption, [G-4] justificationstyle
right-censoring, [ST] Glossary, [TE] Glossary, see imputation, interval-censored data
right-truncation, [ST] Glossary, [TE] Glossary, see imputation, truncated data
rightmost options, [G-4] concept: repeated options
ringposstyle, [G-4] ringposstyle
risk
  difference, [PSS] power, [PSS] power twoproportions, [PSS] power pairedproportions, [PSS] Glossary, [R] epitab
  factor, [PSS] Glossary, [R] epitab, [ST] Glossary
  pool, [ST] stcox, [ST] stcrreg, [ST] stset, [ST] Glossary
  ratio, [PSS] Glossary, [R] binreg, [R] epitab, also see relative risk
rline, graph twoway subcommand, [G-2] graph twoway rline
rlogistic() function, [FN] Random-number functions, [M-5] runiform()
rm command, [D] erase
_rmcoll command, [P] _rmcoll
_rmdcoll command, [P] _rmcoll
rmdir command, [D] rmdir
_rmdir() function, [M-5] chdir()
rmdir() function, [M-5] chdir()
rmexternal() function, [M-5] findexternal()
RMSEA, see root mean squared error of approximation
rmsg, [P] creturn, [P] error, [U] 8 Error messages and return codes
rmsg, set subcommand, [P] rmsg, [R] set
rnbinomial() function, [FN] Random-number functions, [M-5] runiform()
rng, set subcommand, [R] set, [R] set rng
rngstate() function, [M-5] runiform()
rngstate, set subcommand, [R] set, [R] set seed
rnormal() function, [FN] Random-number functions, [M-5] runiform()

robust, [SEM] **Glossary**
regression, [R] **betareg**, [R] **regress**, [R] **rreg**, *also see* robust, Huber/White/sandwich estimator of variance
standard errors, [XT] **Glossary**
test for equality of variance, [R] **sdtest**
`robust`, *see* `gsem` option `vce()`, *see* `sem` option `vce()`
robust, Abadie–Imbens standard errors, [TE] **teffects nnmatch**, [TE] **teffects psmatch**
robust, Huber/White/sandwich estimator of variance, [P] **_robust**, [R] ***vce_option***, [SVY] **variance estimation**, [XT] ***vce_options***
alternative-specific
conditional logit model, [R] **asclogit**
multinomial probit regression, [R] **asmprobit**
rank-ordered probit regression, [R] **asroprobit**
ARCH, [TS] **arch**
ARFIMA, [TS] **arfima**
ARIMA and ARMAX, [TS] **arima**
beta regression, [R] **betareg**
censored Poisson regression, [R] **cpoisson**
competing-risks regression, [ST] **stcrreg**
complementary log-log regression, [R] **cloglog**
Cox proportional hazards model, [ST] **stcox**
dynamic-factor model, [TS] **dfactor**
exponential regression hurdle, [R] **churdle**
fixed-effects models,
linear, [XT] **xtreg**
Poisson, [XT] **xtpoisson**
fractional response regression, [R] **fracreg**
GARCH, [TS] **arch**
generalized linear models, [R] **glm**
for binomial family, [R] **binreg**
generalized method of moments, [R] **gmm**, [R] **ivpoisson**
heckman selection model, [R] **heckman**
hurdle regression, [R] **churdle**
instrumental-variables regression, [R] **ivregress**
interval regression, [R] **intreg**
linear dynamic panel-data estimation, [XT] **xtabond**, [XT] **xtdpd**, [XT] **xtdpdsys**
linear regression, [R] **regress**
constrained, [R] **cnsreg**
hurdle, [R] **churdle**
truncated, [R] **truncreg**
with dummy-variable set, [R] **areg**
logistic regression, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt hybrid**, [R] **logistic**, [R] **logit**, *also see* logit regression subentry
conditional, [R] **clogit**
multinomial, [IRT] **irt nrm**, [IRT] **irt hybrid**, [R] **mlogit**
ordered, [IRT] **irt grm**, [IRT] **irt pcm**, [IRT] **irt rsm**, [IRT] **irt hybrid**, [R] **ologit**
rank-ordered, [R] **rologit**
skewed, [R] **scobit**
stereotype, [R] **slogit**
robust, *continued*
logit regression, [IRT] **irt 1pl**, [IRT] **irt 2pl**, [IRT] **irt 3pl**, [IRT] **irt hybrid**, [R] **logistic**, [R] **logit**, *also see* logistic regression subentry
nested, [R] **nlogit**
Markov-switching model, [TS] **mswitch**
maximum likelihood estimation, [R] **ml**, [R] **mlexp**
multilevel mixed-effects model, [ME] **mecloglog**, [ME] **meglm**, [ME] **melogit**, [ME] **menbreg**, [ME] **meologit**, [ME] **meoprobit**, [ME] **mepoisson**, [ME] **meprobit**, [ME] **mestreg**, [ME] **mixed**
multinomial
logistic regression, [IRT] **irt nrm**, [IRT] **irt hybrid**, [R] **mlogit**
probit regression, [R] **mprobit**
negative binomial regression, [R] **nbreg**
truncated, [R] **tnbreg**
zero-inflated, [R] **zinb**
Newey–West regression, [TS] **newey**
nonlinear
least-squares estimation, [R] **nl**
systems of equations, [R] **nlsur**
parametric survival models, [ST] **streg**
Poisson regression, [R] **poisson**
censored, [R] **cpoisson**
truncated, [R] **tpoisson**
with endogenous covariates, [R] **ivpoisson**
zero-inflated, [R] **zip**
Poisson regression, treatment effect, [TE] **etpoisson**
population-averaged models, [XT] **xtgee**
complementary log-log, [XT] **xtcloglog**
logit, [XT] **xtlogit**
negative binomial, [XT] **xtnbreg**
Poisson, [XT] **xtpoisson**
probit, [XT] **xtprobit**
Prais–Winsten and Cochrane–Orcutt regression, [TS] **prais**
probit regression, [R] **probit**
bivariate, [R] **biprobit**
heteroskedastic, [R] **hetprobit**
multinomial, [R] **mprobit**
ordered, [R] **heckoprobit**, [R] **oprobit**
with endogenous covariates, [R] **ivprobit**
with sample selection, [R] **heckprobit**
quantile regression, [R] **qreg**
random-effects model
complementary log-log, [XT] **xtcloglog**
linear, [XT] **xtreg**
logistic, [XT] **xtlogit**, [XT] **xtologit**
parametric survival, [XT] **xtstreg**
Poisson, [XT] **xtpoisson**
probit, [XT] **xtoprobit**, [XT] **xtprobit**
state-space model, [TS] **sspace**
structural equation modeling, [SEM] **intro 8**, [SEM] **sem option method( )**

robust, *continued*
summary statistics,
mean, [R] **mean**
proportion, [R] **proportion**
ratio, [R] **ratio**
total, [R] **total**
tobit model, [R] **tobit**
with endogenous covariates, [R] **ivtobit**
treatment effect, [TE] **eteffects**, [TE] **etpoisson**, [TE] **etregress**, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects ra**
truncated
negative binomial regression, [R] **tnbreg**
Poisson regression, [R] **tpoisson**
regression, [R] **truncreg**
unobserved-components model, [TS] **ucm**
with endogenous covariates,
Poisson regression, [R] **ivpoisson**
probit regression, [R] **ivprobit**
tobit regression, [R] **ivtobit**
with endogenous regressors,
instrumental-variables regression, [R] **ivregress**
zero-inflated
negative binomial regression, [R] **zinb**
Poisson regression, [R] **zip**
robust, other methods of, [R] **rreg**, [R] **smooth**
`_robust` command, [P] **_robust**
`robvar` command, [R] **sdtest**
ROC, *see* receiver operating characteristic analysis
`roccomp` command, [R] **roc**, [R] **roccomp**
`rocfit` command, [R] **rocfit**, [R] **rocfit postestimation**
`rocgold` command, [R] **roc**, [R] **roccomp**
`rocplot` command, [R] **rocfit postestimation**
`rocreg` command, [R] **rocreg**, [R] **rocreg postestimation**, [R] **rocregplot**
`rocregplot` command, [R] **rocregplot**
`roctab` command, [R] **roc**, [R] **roctab**
Rogers and Tanimoto similarity measure, [MV] ***measure_option***
roh, [R] **loneway**
`rolling` command, [TS] **rolling**
rolling regression, [TS] **rolling**, [TS] **Glossary**
`rologit` command, [R] **rologit**, [R] **rologit postestimation**
root mean squared error of approximation, [SEM] **estat gof**, [SEM] **example 4**, [SEM] **methods and formulas for sem**
rootograms, [G-2] **graph other**, [R] **spikeplot**
roots of polynomials, [M-5] **polyeval( )**
`rotate` command, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **rotate**
`rotate`, `estat` subcommand, [MV] **canon postestimation**
`rotatecompare`, `estat` subcommand, [MV] **canon postestimation**, [MV] **factor postestimation**, [MV] **pca postestimation**
rotated
factor loadings, [MV] **factor postestimation**
principal components, [MV] **pca postestimation**
`rotatemat` command, [MV] **rotatemat**
rotation, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
Bentler's invariant pattern simplicity, *see* Bentler's invariant pattern simplicity rotation
biquartimax, *see* biquartimax rotation
biquartimin, *see* biquartimin rotation
Comrey's tandem 1, *see* Comrey's tandem 1 and 2 rotations
Comrey's tandem 2, *see* Comrey's tandem 1 and 2 rotations
covarimin, *see* covarimin rotation
Crawford–Ferguson, *see* Crawford–Ferguson rotation
equamax, *see* equamax rotation
factor parsimony, *see* factor parsimony rotation
minimum entropy, *see* minimum entropy rotation
oblimax, *see* oblimax rotation
oblimin, *see* oblimin rotation
oblique, *see* oblique rotation
orthogonal, *see* orthogonal rotation
parsimax, *see* parsimax rotation
partially specified target, *see* partially specified target rotation
Procrustes, *see* Procrustes rotation
promax, *see* promax rotation
quartimax, *see* quartimax rotation
quartimin, *see* quartimin rotation
toward a target, *see* toward a target rotation
varimax, *see* varimax rotation
`round()` function, [FN] **Mathematical functions**, [M-5] **trunc( )**
roundoff error, [M-5] **epsilon( )**, [M-5] **edittozero( )**, [M-5] **edittoint( )**, [U] **13.12 Precision and problems therein**
row
of matrix, selecting, [M-5] **select( )**
operators for data, [D] **egen**
stripes, [M-6] **Glossary**
`roweq` macro extended function, [P] **macro**
`roweq`, `matrix` subcommand, [P] **matrix rownames**
`rowfirst()`, `egen` function, [D] **egen**
`rowfullnames` macro extended function, [P] **macro**
row-join operator, [M-2] **op_join**
`rowlast()`, `egen` function, [D] **egen**
row-major order, [M-6] **Glossary**
`rowmax()`, `egen` function, [D] **egen**
`rowmax()` function, [M-5] **minmax( )**
`rowmaxabs()` function, [M-5] **minmax( )**
`rowmean()`, `egen` function, [D] **egen**
`rowmedian()`, `egen` function, [D] **egen**
`rowmin()`, `egen` function, [D] **egen**
`rowmin()` function, [M-5] **minmax( )**
`rowminmax()` function, [M-5] **minmax( )**
`rowmiss()`, `egen` function, [D] **egen**

rowmissing() function, [M-5] missing( )
rownames macro extended function, [P] macro
rownames, matrix subcommand, [P] matrix rownames
rownonmiss(), egen function, [D] egen
rownonmissing() function, [M-5] missing( )
rownumb() function, [FN] Matrix functions, [P] matrix define
rowpctile(), egen function, [D] egen
rows() function, [M-5] rows( )
rows of matrix
  appending to, [P] matrix define
  names, [P] ereturn, [P] matrix define, [P] matrix rownames
  operators, [P] matrix define
rowscalefactors() function, [M-5] _equilrc( )
rowsd(), egen function, [D] egen
rowshape() function, [M-5] rowshape( )
rowsof() function, [FN] Matrix functions, [P] matrix define
rowsum() function, [M-5] sum( )
rowtotal(), egen function, [D] egen
rowvector, [M-2] declarations, [M-6] Glossary
Roy's
  largest root test, [MV] canon, [MV] manova, [MV] mvtest means, [MV] Glossary
  union-intersection test, [MV] canon, [MV] mvtest means
  union-intersection test, [MV] manova
rpoisson() function, [FN] Random-number functions, [M-5] runiform( )
rreg command, [R] rreg, [R] rreg postestimation
rscatter, graph twoway subcommand, [G-2] graph twoway rscatter
rseed() function, [M-5] runiform( )
RSM, see rating scale model
rsm, irt subcommand, [IRT] irt rsm, [IRT] irt rsm postestimation
rspike, graph twoway subcommand, [G-2] graph twoway rspike
rt() function, [FN] Random-number functions, [M-5] runiform( )
Rubin's combination rules, [MI] mi estimate, [MI] mi estimate using, [MI] mi predict
run command, [R] do, [U] 16 Do-files
runiform() function, [FN] Random-number functions, [M-5] runiform( ), [R] set seed
runiformint() function, [FN] Random-number functions, [M-5] runiform( )
_runningsum() function, [M-5] runningsum( )
runningsum() function, [M-5] runningsum( )
runtest command, [R] runtest
Russell and Rao coefficient similarity measure, [MV] measure_option
rvalue, class, [P] class
rvfplot command, [R] regress postestimation diagnostic plots
RVI, see relative variance increase
rvpplot command, [R] regress postestimation diagnostic plots
rweibull() function, [FN] Random-number functions, [M-5] runiform( )
rweibullph() function, [FN] Random-number functions, [M-5] runiform( )


## S


s() function, [FN] Programming functions
s() stored results, [FN] Programming functions, [P] return, [R] stored results, [U] 18.8 Accessing results calculated by other programs, [U] 18.10.3 Storing results in s()
s(macros) macro extended function, [P] macro
s1color scheme, [G-4] scheme s1
s1manual scheme, [G-4] scheme s1
s1mono scheme, [G-4] scheme s1
s1rcolor scheme, [G-4] scheme s1
s2color scheme, [G-4] scheme s2
s2gcolor scheme, [G-4] scheme s2
s2gmanual scheme, [G-4] scheme s2
s2manual scheme, [G-4] scheme s2
s2mono scheme, [G-4] scheme s2
SAARCH, see simple asymmetric autoregressive conditional heteroskedasticity
Sammon mapping criterion, [MV] Glossary
sample, [SVY] Glossary
sample command, [D] sample
sample, random, see random sample
sample-size, [PSS] Glossary, [U] 26.31 Power and sample-size analysis
  analysis, see power and sample-size analysis
  curve, [PSS] power, [PSS] Glossary
  determination, [PSS] intro, [PSS] power, [PSS] power onemean, [PSS] power twomeans, [PSS] power pairedmeans, [PSS] power oneproportion, [PSS] power twoproportions, [PSS] power pairedproportions, [PSS] power onevariance, [PSS] power twovariances, [PSS] power onecorrelation, [PSS] power twocorrelations, [PSS] power oneway, [PSS] power twoway, [PSS] power repeated, [PSS] power cmh, [PSS] power mcc, [PSS] power trend, [PSS] power cox, [PSS] power exponential, [PSS] power logrank, [PSS] unbalanced designs, [PSS] Glossary
  rounding rules for, [PSS] unbalanced designs
sampling, [D] sample, [R] bootstrap, [R] bsample, [SVY] survey, [SVY] svydescribe, [SVY] svyset, [SVY] Glossary, also see cluster sampling
  rate, [PSS] power, [PSS] power onemean, [PSS] power pairedmeans
  stage, [SVY] estat, [SVY] Glossary
  unit, [SVY] survey, [SVY] Glossary, also see primary sampling unit

sampling, *continued*
weight, [SVY] **survey**, [SVY] **poststratification**, [SVY] **Glossary**, [U] **11.1.6 weight**, [U] **20.23.3 Sampling weights**, *also see* survey data
with and without replacement, [SVY] **Glossary**
sandwich/Huber/White estimator of variance, *see* robust, Huber/White/sandwich estimator of variance
`sargan`, `estat` subcommand, [XT] **xtabond postestimation**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys postestimation**
Sargan test, [XT] **xtabond postestimation**, [XT] **xtdpd postestimation**, [XT] **xtdpdsys postestimation**
SAS dates, [D] **datetime**
SAS, reading data from, [U] **21.4 Transfer programs**
SAS XPORT format, [D] **import sasxport**
`sasxport`,
`export` subcommand, [D] **import sasxport**
`import` subcommand, [D] **import sasxport**
`satopts()` option, *see* `sem` option `satopts()`
Satterthwaite DDF, *see* denominator degrees of freedom, Satterthwaite
Satterthwaite's $t$ test, [PSS] **power**, [PSS] **power twomeans**, [PSS] **Glossary**
saturated model, [SEM] **estat gof**, [SEM] **example 4**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
`save`,
`label` subcommand, [D] **label**
`estimates` subcommand, [R] **estimates save**
`graph` subcommand, [G-2] **graph save**
`snapshot` subcommand, [D] **snapshot**
save estimation results, [P] **_estimates**
`save` command, [D] **save**
saved results, *see* stored results
`saveold` command, [D] **save**
saving data, [D] **import delimited**, [D] **outfile**, [D] **save**, [D] **snapshot**, *also see* exporting data
`saving()` option, [G-3] ***saving_option***
saving results, [P] **_estimates**, [P] **_return**, [R] **estimates save**
saw-toothed power function, [PSS] **power oneproportion**, [PSS] **power twoproportions**
`sbknown`, `estat` subcommand, [TS] **estat sbknown**
`sbsingle`, `estat` subcommand, [TS] **estat sbsingle**
`scalar`, [M-2] **declarations**, [M-6] **Glossary**, [P] **scalar**
`confirm` subcommand, [P] **confirm**
`define` command, [P] **scalar**
`dir` command, [P] **scalar**
`drop` command, [P] **scalar**
`ereturn` subcommand, [P] **ereturn**, [P] **return**
`list` command, [P] **scalar**
`return` subcommand, [P] **return**
scalar functions, [M-4] **scalar**
scalar model parameter, [BAYES] **Glossary**, *see* Bayesian, model parameters
`scalar()` function, [FN] **Programming functions**
`scalar()` pseudofunction, [P] **scalar**
scalars, [P] **scalar**
namespace and conflicts, [P] **matrix**, [P] **matrix define**
scale,
log, [G-3] ***axis_scale_options***
range of, [G-3] ***axis_scale_options***
reversed, [G-3] ***axis_scale_options***
`scale()` option, [G-3] ***scale_option***
scaling, [MV] **mds**, [MV] **mds postestimation plots**, [MV] **mdslong**, [MV] **mdsmat**
`scatter`, `graph twoway` subcommand, [G-2] **graph twoway scatter**
`scatteri`, `graph twoway` subcommand, [G-2] **graph twoway scatteri**
scatterplot matrices, [G-2] **graph matrix**
scenarios, [TS] **forecast**, [TS] **forecast adjust**, [TS] **forecast clear**, [TS] **forecast coefvector**, [TS] **forecast create**, [TS] **forecast describe**, [TS] **forecast drop**, [TS] **forecast estimates**, [TS] **forecast exogenous**, [TS] **forecast identity**, [TS] **forecast list**, [TS] **forecast query**, [TS] **forecast solve**
Scheffé's multiple-comparison adjustment, *see* multiple comparisons, Scheffé's method
`scheme()` option, [G-3] ***scheme_option***
`scheme`, `set` subcommand, [G-2] **set scheme**, [R] **set**
schemes, [G-2] **set scheme**, [G-3] ***play_option***, [G-3] ***scheme_option***, [G-4] **schemes intro**, [G-4] **scheme economist**, [G-4] **scheme s1**, [G-4] **scheme s2**, [G-4] **scheme sj**
changing, [G-2] **graph display**
creating your own, [G-4] **schemes intro**
default, [G-2] **set scheme**
Schoenfeld residual, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **stcrreg postestimation**
Schur
decomposition, [M-5] **schurd( )**, [M-6] **Glossary**
form, [M-6] **Glossary**
`_schurd()` function, [M-5] **schurd( )**
`schurd()` function, [M-5] **schurd( )**
`_schurdgroupby()` function, [M-5] **schurd( )**
`schurdgroupby()` function, [M-5] **schurd( )**
`_schurdgroupby_la()` function, [M-5] **schurd( )**
`_schurd_la()` function, [M-5] **schurd( )**
Schwarz information criterion, *see* Bayesian information criterion
scientific notation, [U] **12.2 Numbers**
s-class command, [P] **program**, [P] **return**, [R] **stored results**, [U] **18.8 Accessing results calculated by other programs**
`scobit` command, [R] **scobit**, [R] **scobit postestimation**
scope, class, [P] **class**
score, [MV] **Glossary**
`score`, `matrix` subcommand, [P] **matrix score**
`score`, `ml` subcommand, [R] **ml**

score plot, [MV] **scoreplot**, [MV] **Glossary**
score test, [PSS] **power oneproportion**, [PSS] **Glossary**, [SEM] **intro 7**, [SEM] **estat ginvariant**, [SEM] **estat mindices**, [SEM] **estat scoretests**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
`scoreplot` command, [MV] **discrim lda postestimation**, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **scoreplot**
scores, [R] **predict**, [SEM] **Glossary**
scores, obtaining, [U] **20.22 Obtaining scores**
`scoretests`, `estat` subcommand, [SEM] **estat scoretests**
scoring, [MV] **factor postestimation**, [MV] **pca postestimation**, [P] **matrix score**
scree plot, [MV] **screeplot**, [MV] **Glossary**
`screeplot` command, [MV] **discrim lda postestimation**, [MV] **factor postestimation**, [MV] **pca postestimation**, [MV] **screeplot**
`scrollbufsize`, `set` subcommand, [R] **set**
scrolling of output, controlling, [P] **more**, [R] **more**
`sd()`, `egen` function, [D] **egen**
`sd`, `estat` subcommand, [SVY] **estat**
SDR, *see* successive difference replication
*sdr_options*, [SVY] ***sdr_options***
`sdtest` command, [R] **sdtest**
`sdtesti` command, [R] **sdtest**
`se`, `estat` subcommand, [R] **exlogistic postestimation**, [R] **expoisson postestimation**
`_se[]`, [U] **13.5 Accessing coefficients and standard errors**
`search`,
  `icd9` subcommand, [D] **icd9**
  `icd9p` subcommand, [D] **icd9**
  `ml` subcommand, [R] **ml**
  `net` subcommand, [R] **net**
  `notes` subcommand, [D] **notes**
  `view` subcommand, [R] **view**
`search` command, [R] **search**, [U] **4 Stata's help and search facilities**
`search_d`, `view` subcommand, [R] **view**
search Internet, [R] **net search**
`searchdefault`, `set` subcommand, [R] **search**, [R] **set**
seasonal
  ARIMA, [TS] **arima**
  difference operator, [TS] **Glossary**
  lag operator, [U] **11.4.4 Time-series varlists**
  smoothing, [TS] **tssmooth**, [TS] **tssmooth shwinters**
secondary sampling unit, [SVY] **Glossary**
second-order latent variables, [SEM] **Glossary**
`seconds()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`seed`, `set` subcommand, [R] **set**, [R] **set seed**
`seek`, `file` subcommand, [P] **file**
seemingly unrelated
  estimation, [R] **suest**
  regression, [R] **nlsur**, [R] **reg3**, [R] **sureg**, [SEM] **intro 5**, [SEM] **example 12**, [SEM] **Glossary**, [TS] **dfactor**
`segmentsize`, `set` subcommand, [D] **memory**, [R] **set**
`select()` function, [M-5] **select( )**
`select()` option, *see* `sem` option `select()`
`select`, `mi` subcommand, [MI] **mi select**
`selectindex()` function, [M-5] **select( )**
selection models, [R] **heckman**, [R] **heckoprobit**, [R] **heckprobit**, [SVY] **svy estimation**
selection-order statistics, [TS] **varsoc**
selection-on-observables, *see* conditional-independence assumption
SEM, *see* structural equation modeling
`sem` command, [SEM] **Builder**, [SEM] **example 1**, [SEM] **example 3**, [SEM] **example 6**, [SEM] **example 7**, [SEM] **example 8**, [SEM] **example 9**, [SEM] **example 10**, [SEM] **example 12**, [SEM] **example 15**, [SEM] **example 16**, [SEM] **example 17**, [SEM] **example 18**, [SEM] **example 20**, [SEM] **example 23**, [SEM] **example 24**, [SEM] **example 26**, [SEM] **example 42g**, [SEM] **methods and formulas for sem**, [SEM] **sem**, [SEM] **sem and gsem path notation**, [SEM] **sem model description options**, [SEM] **sem path notation extensions**, [SEM] **sem postestimation**, [SEM] **Glossary**
  missing values, [SEM] **example 26**
  with constraints, [SEM] **example 8**
`sem` option
  `allmissing`, [SEM] **sem estimation options**
  `baseopts()`, [SEM] **sem estimation options**
  `coeflegend`, [SEM] **example 8**, [SEM] **example 16**, [SEM] **sem reporting options**
  `constraints()`, [SEM] **sem and gsem option constraints( )**, [SEM] **sem model description options**
  `covariance()`, [SEM] **sem and gsem path notation**, [SEM] **sem model description options**, [SEM] **sem path notation extensions**
  `covstructure()`, [SEM] **intro 5**, [SEM] **example 17**, [SEM] **sem and gsem option covstructure( )**, [SEM] **sem model description options**
  `forcecorrelations`, [SEM] **sem ssd options**
  `forcenoanchor`, [SEM] **sem model description options**
  `forcexconditional`, [SEM] **sem option noxconditional**
  `from()`, [SEM] **intro 12**, [SEM] **sem and gsem option from( )**, [SEM] **sem model description options**

sem option, *continued*
fvwrap(), [SEM] **sem reporting options**
fvwrapon(), [SEM] **sem reporting options**
ginvariant(), [SEM] **intro 6**, [SEM] **example 23**, [SEM] **sem group options**
group(), [SEM] **intro 6**, [SEM] **example 20**, [SEM] **example 23**, [SEM] **sem group options**, [SEM] **sem option select( )**, [SEM] **sem path notation extensions**
latent(), [SEM] **sem and gsem syntax options**
level(), [SEM] **sem reporting options**
*maximize_options*, [SEM] **intro 12**, [SEM] **sem estimation options**
means(), [SEM] **intro 5**, [SEM] **example 18**, [SEM] **sem and gsem path notation**, [SEM] **sem model description options**, [SEM] **sem path notation extensions**
method(), [SEM] **intro 4**, [SEM] **intro 8**, [SEM] **intro 9**, [SEM] **example 26**, [SEM] **sem estimation options**, [SEM] **sem option method( )**, [SEM] **Glossary**
nm1, [SEM] **sem estimation options**
noanchor, [SEM] **sem model description options**
nocapslatent, [SEM] **sem and gsem syntax options**
nocnsreport, [SEM] **sem reporting options**
noconstant, [SEM] **sem model description options**
nodescribe, [SEM] **sem reporting options**
noestimate, [SEM] **sem estimation options**
nofootnote, [SEM] **sem reporting options**
nofvlabel, [SEM] **sem reporting options**
noheader, [SEM] **sem reporting options**
noivstart, [SEM] **sem estimation options**
nomeans, [SEM] **sem model description options**
notable, [SEM] **sem reporting options**
noxconditional, [SEM] **sem estimation options**, [SEM] **sem option noxconditional**
reliability(), [SEM] **intro 12**, [SEM] **example 24**, [SEM] **sem and gsem option reliability( )**, [SEM] **sem model description options**
satopts(), [SEM] **sem estimation options**
select(), [SEM] **sem option select( )**, [SEM] **sem ssd options**
showginvariant, [SEM] **sem reporting options**
standardized, [SEM] **sem reporting options**
variance(), [SEM] **sem and gsem path notation**, [SEM] **sem model description options**, [SEM] **sem path notation extensions**
vce(), [SEM] **intro 4**, [SEM] **intro 8**, [SEM] **intro 9**, [SEM] **sem estimation options**, [SEM] **sem option method( )**, [SEM] **Glossary**
sem postestimation commands, [SEM] **intro 7**
semicolons, [M-2] **semicolons**
semiconjugacy, *see* semiconjugate prior
semiconjugate prior, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **Glossary**
semiparametric imputation method, *see* imputation, predictive mean matching
semiparametric model, [ST] **stcox**, [ST] **stcrreg**, [ST] **Glossary**
semirobust standard errors, [XT] **Glossary**
sensitivity, [R] **estat classification**, [R] **lroc**, [R] **lsens**, *also see* receiver operating characteristic analysis, *see* receiver operating characteristic analysis
analysis, [PSS] **power**, [PSS] **power, graph**, [PSS] **power, table**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **Glossary**, *also see* Bayesian, sensitivity analysis
model, [R] **regress postestimation**, [R] **rreg**
separate command, [D] **separate**
separating string variables into parts, [D] **split**
seq(), egen function, [D] **egen**
sequential imputation, [MI] **mi impute**, [MI] **mi impute chained**, [MI] **mi impute monotone**
sequential limit theory, [XT] **Glossary**
sequential regression multivariate imputation, *see* imputation, multivariate, chained equations
serial correlation, *see* autocorrelation
test, [TS] **Glossary**
serial independence test, [R] **runtest**
serrbar command, [R] **serrbar**
serset, [P] **serset**
clear command, [P] **serset**
create command, [P] **serset**
create_cspline command, [P] **serset**
create_xmedians command, [P] **serset**
dir command, [P] **serset**
drop command, [P] **serset**
reset_id command, [P] **serset**
set command, [P] **serset**
sort command, [P] **serset**
summarize command, [P] **serset**
use command, [P] **serset**
sersetread, file subcommand, [P] **serset**
sersetwrite, file subcommand, [P] **serset**
session, recording, [R] **log**, [U] **15 Saving and printing output—log files**
set
adosize command, [P] **sysdir**, [R] **set**, [U] **18.11 Ado-files**
autotabgraphs command, [R] **set**
cformat command, [R] **set**, [R] **set cformat**
charset command, [P] **smcl**
checksum command, [D] **checksum**, [R] **set**
clevel command, [BAYES] **set clevel**, [R] **set**

set, *continued*
coeftabresults command, [R] **set**
command, [R] **query**, [R] **set**
conren command, [R] **set**
copycolor command, [G-2] **set printcolor**, [R] **set**
dockable command, [R] **set**
dockingguides command, [R] **set**
doublebuffer command, [R] **set**
dp command, [D] **format**, [R] **set**
emptycells command, [R] **set**, [R] **set emptycells**
eolchar command, [R] **set**
fastscroll command, [R] **set**
floatwindows command, [R] **set**
fvlabel command, [R] **set**, [R] **set showbaselevels**
fvwrap command, [R] **set**, [R] **set showbaselevels**
fvwrapon command, [R] **set**, [R] **set showbaselevels**
graphics command, [G-2] **set graphics**, [R] **set**
haverdir command, [D] **import haver**
haverdir command, [R] **set**
httpproxy command, [R] **netio**, [R] **set**
httpproxyauth command, [R] **netio**, [R] **set**
httpproxyhost command, [R] **netio**, [R] **set**
httpproxyport command, [R] **netio**, [R] **set**
httpproxypw command, [R] **netio**, [R] **set**
httpproxyuser command, [R] **netio**, [R] **set**
include_bitmap command, [R] **set**
level command, [R] **level**, [R] **set**
linegap command, [R] **set**
linesize command, [R] **log**, [R] **set**
locale_functions command, [P] **set locale_functions**, [R] **set**
locale_ui command, [P] **set locale_ui**, [R] **set**
locksplitters command, [R] **set**
logtype command, [R] **log**, [R] **set**
lstretch command, [R] **set**
matsize command, [R] **matsize**, [R] **set**
maxdb command, [R] **db**, [R] **set**
maxiter command, [R] **maximize**, [R] **set**
max_memory command, [D] **memory**, [R] **set**
maxvar command, [D] **memory**, [R] **set**
min_memory command, [D] **memory**, [R] **set**
more command, [P] **more**, [R] **more**, [R] **set**
niceness command, [D] **memory**, [R] **set**
notifyuser command, [R] **set**
obs command, [D] **obs**, [R] **set**
odbcdriver command, [D] **odbc**, [R] **set**
odbcmgr command, [D] **odbc**, [R] **set**
output command, [P] **quietly**, [R] **set**
pagesize command, [R] **more**, [R] **set**
pformat command, [R] **set**, [R] **set cformat**
pinnable command, [R] **set**
playsnd command, [R] **set**
print, graph subcommand, [G-2] **graph set**
printcolor command, [G-2] **set printcolor**, [R] **set**
processors command, [R] **set**
reventries command, [R] **set**

set, *continued*
revkeyboard command, [R] **set**
rmsg command, [P] **rmsg**, [R] **set**
rng command, [R] **set**, [R] **set rng**
rngstate command, [R] **set**, [R] **set seed**
scheme command, [G-2] **set scheme**, [G-4] **schemes intro**, [R] **set**
scrollbufsize command, [R] **set**
searchdefault command, [R] **search**, [R] **set**
seed command, [R] **set**, [R] **set seed**
segmentsize command, [D] **memory**, [R] **set**
sformat command, [R] **set**, [R] **set cformat**
showbaselevels command, [R] **set**, [R] **set showbaselevels**
showemptycells command, [R] **set**, [R] **set showbaselevels**
showomitted command, [R] **set**, [R] **set showbaselevels**
smoothfonts command, [R] **set**
timeout1 command, [R] **netio**, [R] **set**
timeout2 command, [R] **netio**, [R] **set**
trace command, [P] **trace**, [R] **set**
tracedepth command, [P] **trace**, [R] **set**
traceexpand command, [P] **trace**, [R] **set**
tracehilite command, [P] **trace**, [R] **set**
traceindent command, [P] **trace**, [R] **set**
tracenumber command, [P] **trace**, [R] **set**
tracesep command, [P] **trace**, [R] **set**
type command, [D] **generate**, [R] **set**
update_interval command, [R] **set**, [R] **update**
update_prompt command, [R] **set**, [R] **update**
update_query command, [R] **set**, [R] **update**
varabbrev command, [R] **set**
varkeyboard command, [R] **set**

set,
cluster subcommand, [MV] **cluster programming utilities**
datasignature subcommand, [D] **datasignature**
file subcommand, [P] **file**
graph subcommand, [G-2] **graph set**
irf subcommand, [TS] **irf set**
mi subcommand, [MI] **mi set**
putexcel subcommand, [P] **putexcel**
serset subcommand, [P] **serset**
ssd subcommand, [SEM] **ssd**
sysdir subcommand, [P] **sysdir**
translator subcommand, [R] **translate**
webuse subcommand, [D] **webuse**

set ado, net subcommand, [R] **net**
set matacache, mata subcommand, [M-3] **mata set**, [R] **set**
set matafavor, mata subcommand, [M-3] **mata set**, [M-5] **favorspeed( )**, [R] **set**
set matalibs, mata subcommand, [M-3] **mata set**, [R] **set**
set matalnum, mata subcommand, [M-3] **mata set**, [R] **set**

set matamofirst, mata subcommand, [M-3] mata set, [R] set
set mataoptimize, mata subcommand, [M-3] mata set, [R] set
set matastrict, mata subcommand, [M-1] ado, [M-2] declarations, [M-3] mata set, [R] set
set other, net subcommand, [R] net
setbreakintr() function, [M-5] setbreakintr()
set_defaults command, [R] set_defaults
setmore() function, [M-5] more()
setmoreonexit() function, [M-5] more()
setting $M$, [MI] mi add, [MI] mi set
setting mi data, [MI] mi set
settings,
  display, [R] set showbaselevels
  efficiency, [P] creturn
  format, [R] set cformat
  graphics, [P] creturn
  interface, [P] creturn
  memory, [P] creturn
  network, [P] creturn
  output, [P] creturn
  program debugging, [P] creturn
  random-number generator, [R] set rng
  trace, [P] creturn
sformat, set subcommand, [R] set, [R] set cformat
sfrancia command, [R] swilk
*shadestyle*, [G-4] *shadestyle*
shading region, [G-3] *region_options*
shape parameter, [ST] streg, [ST] Glossary, [TE] Glossary
Shapiro–Francia test for normality, [R] swilk
Shapiro–Wilk test for normality, [R] swilk
shared frailty, [ST] stcox, [ST] stcox postestimation, [ST] stcurve, [ST] streg, [ST] streg postestimation, [ST] Glossary
shared object, [P] class, [P] plugin
shell command, [D] shell
Shepard
  diagram, [MV] mds postestimation plots, [MV] Glossary
  plot, [MV] mds postestimation plots
shewhart command, [R] qc
shift, macro subcommand, [P] macro
showbaselevels, set subcommand, [R] set, [R] set showbaselevels
showemptycells, set subcommand, [R] set, [R] set showbaselevels
showginvariant option, *see* sem option showginvariant
shownrtolerance option, [R] maximize
showomitted, set subcommand, [R] set, [R] set showbaselevels
showstep option, [R] maximize
showtolerance option, [R] maximize
SHR, *see* subhazard ratio
shwinters, tssmooth subcommand, [TS] tssmooth shwinters
Šidák's multiple-comparison adjustment, *see* multiple comparisons, Šidák's method
sign() function, [FN] Mathematical functions, [M-5] sign()
sign test, [PSS] power oneproportion, [PSS] Glossary
signature of data, [D] checksum, [D] datasignature, [P] _datasignature, [P] signestimationsample
signestimationsample command, [P] signestimationsample
significance level, [PSS] power, [PSS] power onemean, [PSS] power twomeans, [PSS] power pairedmeans, [PSS] power oneproportion, [PSS] power twoproportions, [PSS] power pairedproportions, [PSS] power onevariance, [PSS] power twovariances, [PSS] power onecorrelation, [PSS] power twocorrelations, [PSS] power oneway, [PSS] power twoway, [PSS] power repeated, [PSS] power cmh, [PSS] power mcc, [PSS] power trend, [PSS] power cox, [PSS] power exponential, [PSS] power logrank, [PSS] unbalanced designs, [PSS] Glossary, [U] 20.7 Specifying the width of confidence intervals
  observed, *see* $p$-value
signing digitally data, *see* datasignature command
signrank command, [R] signrank
signtest command, [R] signrank
signum function, [FN] Mathematical functions, [FN] Trigonometric functions
similarity, [MV] Glossary
  matrices, [MV] matrix dissimilarity, [P] matrix dissimilarity
  measures, [MV] cluster, [MV] cluster programming utilities, [MV] matrix dissimilarity, [MV] *measure_option*, [P] matrix dissimilarity
    Anderberg coefficient, [MV] *measure_option*
    angular, [MV] *measure_option*
    correlation, [MV] *measure_option*
    Dice coefficient, [MV] *measure_option*
    Gower coefficient, [MV] *measure_option*
    Hamann coefficient, [MV] *measure_option*
    Jaccard coefficient, [MV] *measure_option*
    Kulczynski coefficient, [MV] *measure_option*
    matching coefficient, [MV] *measure_option*
    Ochiai coefficient, [MV] *measure_option*
    Pearson coefficient, [MV] *measure_option*
    Rogers and Tanimoto coefficient, [MV] *measure_option*
    Russell and Rao coefficient, [MV] *measure_option*
    Sneath and Sokal coefficient, [MV] *measure_option*
    Yule coefficient, [MV] *measure_option*
simple asymmetric autoregressive conditional heteroskedasticity, [TS] arch
simple random sample, [SVY] Glossary
Simpson's rule, [PSS] power logrank
simulate prefix command, [R] simulate

simulation, [TS] **forecast**, [TS] **forecast adjust**, [TS] **forecast clear**, [TS] **forecast coefvector**, [TS] **forecast create**, [TS] **forecast describe**, [TS] **forecast drop**, [TS] **forecast estimates**, [TS] **forecast exogenous**, [TS] **forecast identity**, [TS] **forecast list**, [TS] **forecast query**, [TS] **forecast solve**, [U] **20.20 Dynamic forecasts and simulations**
  Markov chain Monte Carlo, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**
  Monte Carlo, [P] **postfile**, [R] **permute**, [R] **simulate**
simultaneous
  quantile regression, [R] **qreg**
  systems, [R] **reg3**
`sin()` function, [FN] **Trigonometric functions**, [M-5] **sin( )**
sine function, [FN] **Trigonometric functions**
single-failure st data, *see* survival analysis
single-imputation methods, [MI] **intro substantive**
`singlelinkage`,
  `clustermat` subcommand, [MV] **cluster linkage**
  `cluster` subcommand, [MV] **cluster linkage**
single-linkage clustering, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
single-precision floating point number, [U] **12.2.2 Numeric storage types**
single-record st data, *see* survival analysis
singleton strata, [SVY] **estat**, [SVY] **variance estimation**
singleton-group data, [ST] **stcox**, [ST] **Glossary**
singular value decomposition, [M-5] **svd( )**, [M-5] **fullsvd( )**, [MV] **Glossary**, [P] **matrix svd**
`sinh()` function, [FN] **Trigonometric functions**, [M-5] **sin( )**
SIR, *see* standardized incidence ratio
`SITE` directory, [P] **sysdir**, [U] **17.5 Where does Stata look for ado-files?**
`size`, `estat` subcommand, [SVY] **estat**
size of
  all text and markers, [G-3] ***scale_option***
  graph, [G-3] ***region_options***
    changing, [G-2] **graph display**
  markers, [G-3] ***marker_options***
  objects, [G-4] ***relativesize***
  test, [PSS] **Glossary**
  text, [G-3] ***textbox_options***
`sizeof()` function, [M-5] **sizeof( )**
SJ, *see* *Stata Journal* and *Stata Technical Bulletin*
`sj`, `net` subcommand, [R] **net**
`sj` scheme, [G-4] **scheme sj**
`skew()`, `egen` function, [D] **egen**
skewed logistic regression, [R] **scobit**, [SVY] **svy estimation**
skewness, [MV] **mvtest normality**, [R] **ladder**, [R] **regress postestimation**, [R] **summarize**, [TS] **varnorm**, [R] **lnskew0**, [R] **lv**, [R] **pksumm**, [R] **sktest**, [R] **tabstat**
`_skip(#)`, `display` directive, [P] **display**
`sktest` command, [R] **sktest**
`sleep` command, [P] **sleep**
`slogit` command, [R] **slogit**, [R] **slogit postestimation**
slope, [IRT] **Glossary**
`S_` macros, [P] **creturn**, [P] **macro**
Small Stata, [R] **limits**, [U] **5 Flavors of Stata**
`smallestdouble()` function, [FN] **Programming functions**, [M-5] **mindouble( )**
`smc`, `estat` subcommand, [MV] **factor postestimation**, [MV] **pca postestimation**
SMCL, *see* Stata Markup and Control Language
`.smcl` file, [U] **11.6 Filenaming conventions**
`smooth` command, [R] **smooth**
smooth treatment-effects matching, [TE] **teffects aipw**, [TE] **teffects ipw**, [TE] **teffects ipwra**, [TE] **teffects ra**, [TE] **Glossary**
smoothers, [TS] **tssmooth**, [TS] **Glossary**
  double exponential, [TS] **tssmooth dexponential**
  exponential, [TS] **tssmooth exponential**
  Holt–Winters,
    nonseasonal, [TS] **tssmooth hwinters**
    seasonal, [TS] **tssmooth shwinters**
  moving average, [TS] **tssmooth ma**
  nonlinear, [TS] **tssmooth nl**
`smoothfonts`, `set` subcommand, [R] **set**
smoothing, [G-2] **graph twoway lpoly**, [R] **lpoly**, [R] **smooth**
  graphs, [R] **kdensity**, [R] **lowess**
smoothing graphs, [G-2] **graph other**
SMR, *see* standardized mortality ratio
snapshot, [D] **snapshot**
`snapshot`
  `erase` command, [D] **snapshot**
  `label` command, [D] **snapshot**
  `list` command, [D] **snapshot**
  `restore` command, [D] **snapshot**
  `save` command, [D] **snapshot**
snapshot data, [ST] **snapspan**, [ST] **stset**, [ST] **Glossary**
`snapspan` command, [ST] **snapspan**
Sneath and Sokel coefficient similarity measure, [MV] ***measure_option***
soft missing value, [MI] **mi impute**, [MI] **Glossary**
solve AX=B, [M-4] **solvers**, [M-5] **cholsolve( )**, [M-5] **lusolve( )**, [M-5] **qrsolve( )**, [M-5] **solve_tol( )**, [M-5] **solvelower( )**, [M-5] **svsolve( )**
`solve`, `forecast` subcommand, [TS] **forecast solve**
`_solvelower()` function, [M-5] **solvelower( )**
`solvelower()` function, [M-5] **solvelower( )**
`solvenl_dump()` function, [M-5] **solvenl( )**
`solvenl_init()` function, [M-5] **solvenl( )**
`solvenl_init_*()` functions, [M-5] **solvenl( )**

solvenl_result_*() functions, [M-5] solvenl()
_solvenl_solve() function, [M-5] solvenl()
solvenl_solve() function, [M-5] solvenl()
solve_tol() function, [M-5] solve_tol()
_solvetolerance, [M-5] solve_tol()
_solveupper() function, [M-5] solvelower()
solveupper() function, [M-5] solvelower()
sort command, [D] sort
_sort() function, [M-5] sort()
sort() function, [M-5] sort()
sort option, [G-3] *connect_options*
sort order, [D] describe, [P] byable, [P] macro, [P] sortpreserve
sort order for strings, [D] unicode collator, [FN] String functions, [M-5] ustrcompare(), [U] 12.4.2.5 Sorting strings containing Unicode characters
sort, serset subcommand, [P] serset
sortedby macro extended function, [P] macro
sorting, Unicode strings, [D] unicode collator
sortpreserve option, [P] sortpreserve
soundex() function, [FN] String functions, [M-5] soundex()
soundex_nara() function, [FN] String functions, [M-5] soundex()
source code, [M-1] how, [M-1] source, [M-6] Glossary
source code, view, [P] viewsource
Spearman–Brown prophecy formula, [MV] alpha
spearman command, [R] spearman
Spearman's rho, [R] spearman
specialized graphs, [G-2] graph other
specification test, [R] gmm postestimation, [R] hausman, [R] ivpoisson postestimation, [R] ivregress postestimation, [R] linktest, [R] lnskew0, [R] regress postestimation, [R] suest, [ST] stcox, [ST] stcox PH-assumption tests, [ST] stcox postestimation, [ST] stsplit, [XT] xtreg postestimation
specificity, [MV] factor, [R] estat classification, [R] lroc, [R] lsens, *also see* receiver operating characteristic analysis, *see* receiver operating characteristic analysis
spectral
  analysis, [TS] Glossary
  density, [TS] psdensity, [TS] Glossary
  distribution, [TS] cumsp, [TS] pergram, [TS] psdensity, [TS] Glossary
  plots, cumulative, [G-2] graph other
spectrum, [TS] psdensity, [TS] Glossary
spell data, [ST] Glossary
spherical covariance, [MV] mvtest covariances
sphericity, [MV] Glossary
  assumption, [PSS] power repeated, [PSS] Glossary
Spiegelhalter's $Z$ statistic, [R] brier
spike, graph twoway subcommand, [G-2] graph twoway spike
spike plot, [R] spikeplot
spikeplot command, [R] spikeplot
spline3() function, [M-5] spline3()
spline3eval() function, [M-5] spline3()
splines
  linear, [R] mkspline
  restricted cubic, [R] mkspline
split command, [D] split
split-plot designs, [MV] manova, [R] anova
splitting time-span records, [ST] stsplit
S-Plus, reading data from, [U] 21.4 Transfer programs
spread, [R] lv
spreadsheets, transferring
  from Stata, [D] edit, [D] export, [D] import delimited, [D] import excel, [D] import haver, [D] odbc, [D] outfile, [D] xmlsave, [U] 21.4 Transfer programs
  into Stata, [D] edit, [D] import, [D] import delimited, [D] import excel, [D] import haver, [D] infile (fixed format), [D] infile (free format), [D] odbc, [D] xmlsave, [U] 21 Entering and importing data, [U] 21.4 Transfer programs
sprintf() function, [M-5] printf()
SPSS dates, [D] datetime
SPSS, reading data from, [U] 21.4 Transfer programs
SQL, [D] odbc
sqlfile(), odbc subcommand, [D] odbc
sqreg command, [R] qreg, [R] qreg postestimation
sqrt() function, [FN] Mathematical functions, [M-5] sqrt()
square
  matrix, [M-6] Glossary
  root, [M-5] sqrt(), [M-5] cholesky()
  root function, [FN] Mathematical functions
squared multiple correlation, [SEM] methods and formulas for sem
squared multiple correlations, [MV] factor postestimation
sreturn
  clear command, [P] return
  list command, [P] return, [R] stored results
  local command, [P] return
SRMI, *see* imputation, multivariate, chained equations
SRMR, *see* standardized, root mean squared residual
SRS, *see* simple random sample
ss() function, [D] datetime, [FN] Date and time functions, [M-5] date()
ssc
  copy command, [R] ssc
  describe command, [R] ssc
  hot command, [R] ssc
  install command, [R] ssc
  new command, [R] ssc
  type command, [R] ssc
  uninstall command, [R] ssc
SSC archive, *see* Statistical Software Components archive
ssC() function, [D] datetime, [FN] Date and time functions, [M-5] date()
SSCP matrix, [MV] Glossary

SSD, *see* summary statistics data
ssd
  addgroup command, [SEM] **ssd**
  build command, [SEM] **ssd**
  describe command, [SEM] **ssd**
  init command, [SEM] **ssd**
  list command, [SEM] **ssd**
  repair command, [SEM] **ssd**
  set command, [SEM] **ssd**
  status command, [SEM] **ssd**
  unaddgroup command, [SEM] **ssd**
sspace command, [TS] **sspace**, [TS] **sspace postestimation**
SSU, *see* secondary sampling unit
_st_addobs() function, [M-5] **st_addobs()**
st_addobs() function, [M-5] **st_addobs()**
_st_addvar() function, [M-5] **st_addvar()**
st_addvar() function, [M-5] **st_addvar()**
st command, [ST] **stset**
st commands for mi data, [MI] **mi stsplit**, [MI] **mi XXXset**
st_ct, [ST] **st_is**
st data, [ST] **st**, [ST] **Glossary**
_st_data() function, [M-5] **st_data()**
st_data() function, [M-5] **st_data()**
st_dir() function, [M-5] **st_dir()**
st_dropobsif() function, [M-5] **st_dropvar()**
st_dropobsin() function, [M-5] **st_dropvar()**
st_dropvar() function, [M-5] **st_dropvar()**
st_eclear() function, [M-5] **st_rclear()**
st_global() function, [M-5] **st_global()**
st_global_hcat() function, [M-5] **st_global()**
st_is 2, [ST] **st_is**
st_isfmt() function, [M-5] **st_isfmt()**
st_islmname() function, [M-5] **st_isname()**
st_isname() function, [M-5] **st_isname()**
st_isnumfmt() function, [M-5] **st_isfmt()**
st_isnumvar() function, [M-5] **st_vartype()**
st_isstrfmt() function, [M-5] **st_isfmt()**
st_isstrvar() function, [M-5] **st_vartype()**
st_keepobsif() function, [M-5] **st_dropvar()**
st_keepobsin() function, [M-5] **st_dropvar()**
st_keepvar() function, [M-5] **st_dropvar()**
st_local() function, [M-5] **st_local()**
_st_macroexpand() function, [M-5] **st_macroexpand()**
st_macroexpand() function, [M-5] **st_macroexpand()**
st_matrix() function, [M-5] **st_matrix()**
st_matrix_hcat() function, [M-5] **st_matrix()**
st_matrixcolstripe() function, [M-5] **st_matrix()**
st_matrixrowstripe() function, [M-5] **st_matrix()**
st, mi subcommand, [MI] **mi XXXset**
st_nobs() function, [M-5] **st_nvar()**
st_numscalar() function, [M-5] **st_numscalar()**
st_numscalar_hcat() function, [M-5] **st_numscalar()**
st_nvar() function, [M-5] **st_nvar()**
st_rclear() function, [M-5] **st_rclear()**
st_replacematrix() function, [M-5] **st_matrix()**
st_sclear() function, [M-5] **st_rclear()**
_st_sdata() function, [M-5] **st_data()**
st_sdata() function, [M-5] **st_data()**
st_select() function, [M-5] **select()**
st_show, [ST] **st_is**
_st_sstore() function, [M-5] **st_store()**
st_sstore() function, [M-5] **st_store()**
_st_store() function, [M-5] **st_store()**
st_store() function, [M-5] **st_store()**
st_strscalar() function, [M-5] **st_numscalar()**
st_subview() function, [M-5] **st_subview()**
st_sview() function, [M-5] **st_view()**
st_tempfilename() function, [M-5] **st_tempname()**
st_tempname() function, [M-5] **st_tempname()**
_st_tsrevar() function, [M-5] **st_tsrevar()**
st_tsrevar() function, [M-5] **st_tsrevar()**
st_updata() function, [M-5] **st_updata()**
st_varformat() function, [M-5] **st_varformat()**
_st_varindex() function, [M-5] **st_varindex()**
st_varindex() function, [M-5] **st_varindex()**
st_varlabel() function, [M-5] **st_varformat()**
st_varname() function, [M-5] **st_varname()**
st_varrename() function, [M-5] **st_varrename()**
st_vartype() function, [M-5] **st_vartype()**
st_varvaluelabel() function, [M-5] **st_varformat()**
st_view() function, [M-5] **st_view()**
st_viewobs() function, [M-5] **st_viewvars()**
st_viewvars() function, [M-5] **st_viewvars()**
st_vldrop() function, [M-5] **st_vlexists()**
st_vlexists() function, [M-5] **st_vlexists()**
st_vlload() function, [M-5] **st_vlexists()**
st_vlmap() function, [M-5] **st_vlexists()**
st_vlmodify() function, [M-5] **st_vlexists()**
st_vlsearch() function, [M-5] **st_vlexists()**
stability, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **vecstable**
  after ARIMA, [TS] **estat aroots**
  after VAR or SVAR, [TS] **varstable**
  after VEC, [TS] **vec intro**, [TS] **vec**
  of nonrecursive models, *see* nonrecursive model, stability of
stable, estat subcommand, [SEM] **estat stable**
stable unit treatment value assumption, [TE] **teffects intro advanced**
stack command, [D] **stack**
stacked variables, [MV] **Glossary**
stacking data, [D] **stack**
stacking variables, [MV] **Glossary**
stairstep, connecting points with, [G-4] ***connectstyle***
standard deviations, [PSS] **power**, [PSS] **power onevariance**
  control-group, [PSS] **power twovariances**

standard deviations, *continued*
creating
dataset of, [D] **collapse**
variable containing, [D] **egen**
displaying, [R] **lv**, [R] **summarize**, [R] **table**, [R] **tabstat**, [R] **tabulate, summarize()**, [XT] **xtsum**
experimental-group, [PSS] **power twovariances**
independent, *see* standard deviations, two-sample
one-sample, [PSS] **power onevariance**
subpopulations, *see* subpopulation, standard deviations of
testing equality of, [R] **sdtest**
two-sample, [PSS] **power twovariances**
standard error
robust, *see* robust, Huber/White/sandwich estimator of variance
standard error bar charts, [G-2] **graph other**
standard errors, *see* `gsem` option `vce()`, *see* `sem` option `vce()`
accessing, [P] **matrix get**, [U] **13.5 Accessing coefficients and standard errors**
balanced repeated replication, *see* balanced repeated replication standard errors
bootstrap, *see* bootstrap standard errors
for general predictions, [R] **predictnl**
forecast, [R] **predict**, [R] **regress postestimation**
jackknife, *see* jackknife standard errors
MCMC, *see* MCSE
mean, [R] **ci**, [R] **mean**
panel-corrected, *see* panel-corrected standard error
prediction, [R] **glm**, [R] **predict**, [R] **regress postestimation**
residuals, [R] **predict**, [R] **regress postestimation**
robust, *see* robust, Abadie–Imbens standard errors, *see* robust, Huber/White/sandwich estimator of variance
semirobust, *see* semirobust standard errors
successive difference replication, *see* successive difference replication
standard linear SEM, [SEM] **Glossary**
standard strata, *see* direct standardization
standard weights, *see* direct standardization
standardized
coefficients, [SEM] **example 3**, [SEM] **example 6**, [SEM] **Glossary**, *also see* standardized parameters
covariance, [SEM] **Glossary**
covariance residual, [SEM] **methods and formulas for sem**
data, [MV] **Glossary**
difference, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**
incidence ratio, [R] **dstdize**
margins, [R] **margins**
mean residual, [SEM] **methods and formulas for sem**
standardized, *continued*
means, [R] **mean**
mortality ratio, [R] **dstdize**, [R] **epitab**, [ST] **stptime**, [ST] **Glossary**
option, [SEM] **example 11**
parameters, [SEM] **estat stdize**, [SEM] **methods and formulas for sem**
proportions, [R] **proportion**
rates, [R] **dstdize**, [R] **epitab**
ratios, [R] **ratio**
residuals, [R] **binreg postestimation**, [R] **glm postestimation**, [R] **logistic postestimation**, [R] **logit postestimation**, [R] **predict**, [R] **regress postestimation**, [SEM] **estat residuals**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
root mean squared residual, [SEM] **estat ggof**, [SEM] **estat gof**, [SEM] **example 4**, [SEM] **example 21**, [SEM] **methods and formulas for sem**
`standardized` option, *see* `sem` option `standardized`
standardized, variables, [D] **egen**
`start()` option, [G-2] **graph twoway histogram**
`startgrid()` option, *see* `gsem` option `startgrid()`
starting values, [SEM] **intro 12**, [SEM] **sem and gsem option from( )**, [SEM] **sem and gsem path notation**, [SEM] **sem path notation extensions**, [SEM] **Glossary**
`startvalues()` option, *see* `gsem` option `startvalues()`
Stat/Transfer, [U] **21.4 Transfer programs**
Stata
Blog, [U] **3.2.3 The Stata Blog—Not Elsewhere Classified**
c-class results, [M-5] **st_global( )**
characteristic, [M-5] **st_global( )**, [M-5] **st_dir( )**
conference, [U] **3.6.1 Conferences and users group meetings**
description, [U] **2 A brief description of Stata**
documentation, [U] **1 Read this—it will help**
e-class results, [M-5] **st_global( )**, [M-5] **st_dir( )**, [M-5] **st_rclear( )**
error message, [M-5] **error( )**
example datasets, [U] **1.2.2 Example datasets**
execute command, [M-3] **mata stata**, [M-5] **stata( )**
exiting, *see* `exit` command
for Mac, *see* Mac
for Unix, *see* Unix
for Windows, *see* Windows
forum, [U] **3.2.4 The Stata forum**
internal form, [D] **datetime**, [D] **datetime display formats**, [D] **datetime translation**
limits, [R] **limits**, [U] **5 Flavors of Stata**
logo, [G-2] **graph print**, [G-3] ***pr_options***
macro, [M-5] **st_global( )**, [M-5] **st_local( )**, [M-5] **st_dir( )**
Markup and Control Language, [M-5] **display( )**, [M-5] **printf( )**, [M-5] **errprintf( )**, [G-4] ***text***, [P] **smcl**

Stata, *continued*
matrix, [M-5] **st_matrix( )**, [M-5] **st_dir( )**, [M-6] **Glossary**
NetCourseNow, [U] **3.6.2 NetCourses**
NetCourses, [U] **3.6.2 NetCourses**
on Facebook, [U] **3.2.5 Stata on social media**
on Google+, [U] **3.2.5 Stata on social media**
on LinkedIn, [U] **3.2.5 Stata on social media**
on Twitter, [U] **3.2.5 Stata on social media**
*op.varname*, *see* Stata, time-series–operated variable
platforms, [U] **5.1 Platforms**
Press, [U] **3.3 Stata Press**
r-class results, [M-5] **st_global( )**, [M-5] **st_dir( )**, [M-5] **st_rclear( )**
scalar, [M-5] **st_numscalar( )**, [M-5] **st_dir( )**
s-class results, [M-5] **st_global( )**, [M-5] **st_dir( )**, [M-5] **st_rclear( )**
Small, *see* Small Stata
Stata/IC, *see* Stata/IC
Stata/MP, *see* Stata/MP
Stata/SE, *see* Stata/SE
supplementary material, [U] **3 Resources for learning and using Stata**
support, [U] **3 Resources for learning and using Stata**
temporary
filenames, [M-5] **st_tempname( )**
names, [M-5] **st_tempname( )**
time-series–operated variable, [M-5] **st_tsrevar( )**, [M-6] **Glossary**
training, [U] **3.6 Conferences and training**
updates, *see* updates to Stata
users group meeting, [U] **3.6.1 Conferences and users group meetings**
value labels, [M-5] **st_varformat( )**, [M-5] **st_vlexists( )**
variable
formats, [M-5] **st_varformat( )**
labels, [M-5] **st_varformat( )**
website, [U] **3.2.1 The Stata website (www.stata.com)**
YouTube Channel, [U] **3.2.2 The Stata YouTube Channel**
Stata,
data file format, technical description, [P] **file formats .dta**
exiting, *see* `exit` command
pause, [P] **sleep**
`STATA` directory, [P] **sysdir**
`_stata()` function, [M-5] **stata( )**
`stata()` function, [M-5] **stata( )**
*Stata Journal*, [G-4] **scheme sj**
*Stata Journal* and *Stata Technical Bulletin*, [U] **3.4 The Stata Journal**
installation of, [R] **net**, [R] **sj**, [U] **17.6 How do I install an addition?**
keyword search of, [R] **search**, [U] **4 Stata's help and search facilities**
`stata`, `mata` subcommand, [M-3] **mata stata**
*Stata News*, [U] **3 Resources for learning and using Stata**
*Stata Technical Bulletin Reprints*, [U] **3.4 The Stata Journal**
Stata/IC, [R] **limits**, [U] **5 Flavors of Stata**
Stata/MP, [R] **limits**, [U] **5 Flavors of Stata**
Stata/SE, [R] **limits**, [U] **5 Flavors of Stata**
`stata.key` file, [R] **search**
Statalist, [U] **3.2.4 The Stata forum**
`statasetversion()` function, [M-5] **stataversion( )**
`stataversion()` function, [M-5] **stataversion( )**
state-space model, [TS] **sspace**, [TS] **sspace postestimation**, [TS] **Glossary**, *also see* autoregressive integrated moving-average model, *also see* dynamic factor model
`static`, [M-2] **class**
static forecast, [TS] **forecast**, [TS] **forecast adjust**, [TS] **forecast clear**, [TS] **forecast coefvector**, [TS] **forecast create**, [TS] **forecast describe**, [TS] **forecast drop**, [TS] **forecast estimates**, [TS] **forecast exogenous**, [TS] **forecast identity**, [TS] **forecast list**, [TS] **forecast query**, [TS] **forecast solve**, [TS] **Glossary**
stationary distribution, [BAYES] **intro**, [BAYES] **bayesmh**, [BAYES] **bayesgraph**, [BAYES] **Glossary**
stationary time series, [TS] **dfgls**, [TS] **dfuller**, [TS] **pperron**, [TS] **var intro**, [TS] **var**, [TS] **vec intro**, [TS] **vec**
statistical
density functions, [M-5] **normal( )**
distribution functions, [M-5] **normal( )**
inference, hypothesis testing, *see* hypothesis test
Statistical Software Components archive, [R] **ssc**
`stats`, `estimates` subcommand, [R] **estimates stats**
`statsby` prefix command, [D] **statsby**
`status`, `ssd` subcommand, [SEM] **ssd**
STB, *see* *Stata Journal* and *Stata Technical Bulletin*
`stb`, `net` subcommand, [R] **net**
`stbase` command, [ST] **stbase**
`.stbcal` file, [D] **bcal**, [D] **datetime business calendars**, [D] **datetime business calendars creation**, [U] **11.6 Filenaming conventions**
`stci` command, [ST] **stci**
`stcox` command, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**, [ST] **stcurve**
`stcox`, fractional polynomials, [R] **fp**, [R] **mfp**
`stcoxkm` command, [ST] **stcox PH-assumption tests**
`stcrreg` command, [ST] **stcrreg**, [ST] **stcrreg postestimation**, [ST] **stcurve**
`stcurve` command, [ST] **stcurve**
`std()`, `egen` function, [D] **egen**
`stdescribe` command, [ST] **stdescribe**
`stdize`, `estat` subcommand, [SEM] **estat stdize**
steady-state equilibrium, [TS] **Glossary**
steepest descent (ascent), [M-5] **moptimize( )**, [M-5] **optimize( )**

stem command, [R] stem
stem-and-leaf displays, [R] stem
stepwise estimation, [R] stepwise
stepwise prefix command, [R] stepwise
.ster file, [MI] mi estimate, [MI] mi estimate using, [MI] mi predict, [U] 11.6 Filenaming conventions
stereotype logistic regression, [R] slogit, [SVY] svy estimation
stfill command, [ST] stfill
stgen command, [ST] stgen
.sthlp file, [U] 4 Stata's help and search facilities, [U] 11.6 Filenaming conventions, [U] 18.11.6 Writing system help
stir command, [ST] stir
stjoin command, [ST] stsplit
stjoin for mi data, [MI] mi stsplit
stjoin, mi subcommand, [MI] mi stsplit
stmc command, [ST] strate
stmh command, [ST] strate
stochastic
  equation, [TS] Glossary
  frontier model, [R] frontier, [U] 26.16 Stochastic frontier models, [XT] xtfrontier
  trend, [TS] tsfilter, [TS] ucm, [TS] Glossary
stop,
  clustermat subcommand, [MV] cluster stop
  cluster subcommand, [MV] cluster stop
stopbox, window subcommand, [P] window programming, [P] window stopbox
stopping command execution, [U] 10 Keyboard use
stopping rules, [MV] Glossary
  adding, [MV] cluster programming subroutines
  Caliński and Harabasz index, [MV] cluster, [MV] cluster stop
  Duda and Hart index, [MV] cluster, [MV] cluster stop
  stepsize, [MV] cluster programming subroutines
storage types, [D] codebook, [D] compress, [D] describe, [D] encode, [D] format, [D] generate, [D] recast, [D] varmanage, [U] 11.4 varlists, [U] 12.2.2 Numeric storage types, [U] 12.4 Strings
store, estimates subcommand, [R] estimates store
store estimation results, [P] ereturn
stored results, [P] _return, [P] return, [R] stored results, [SEM] intro 7, [U] 18.8 Accessing results calculated by other programs, [U] 18.9 Accessing results calculated by estimation commands, [U] 18.10 Storing results
  clearing, [M-5] st_rclear( )
  hidden or historical, [M-5] st_global( ), [M-5] st_matrix( ), [M-5] st_numscalar( )
storing and restoring estimation results, [R] estimates store
storing results, [P] ereturn, [P] postfile, [P] return
stphplot command, [ST] stcox PH-assumption tests
.stpr file, [U] 11.6 Filenaming conventions
stptime command, [ST] stptime
.stptrace file, [U] 11.6 Filenaming conventions
str#, [D] data types, [U] 12.4 Strings
strata, estat subcommand, [SVY] estat
strata with one sampling unit, [SVY] variance estimation
strate command, [ST] strate
stratification, [R] epitab, [ST] stcox, [ST] stcox PH-assumption tests, [ST] stir, [ST] strate, [ST] streg, [ST] sts, [ST] sts generate, [ST] sts graph, [ST] sts list, [ST] sts test, [ST] stsplit, *see* stratified sampling
stratified
  2×2 table, [PSS] power, [PSS] power cmh, [PSS] Glossary
  analysis, [PSS] power, [PSS] power cmh
  graphs, [R] dotplot
  model, [ST] stcox, [ST] streg, [ST] Glossary
  models, [R] asclogit, [R] asmprobit, [R] asroprobit, [R] clogit, [R] exlogistic, [R] expoisson, [R] rocreg, [R] rologit
  resampling, [R] bootstrap, [R] bsample, [R] bstat, [R] permute
  sampling, [SVY] survey, [SVY] svydescribe, [SVY] svyset, [SVY] Glossary
  standardization, [R] dstdize
  summary statistics, [R] mean, [R] proportion, [R] ratio, [R] total
  tables, [R] epitab
  test, [R] epitab, [ST] stcox PH-assumption tests, [ST] sts test, [ST] Glossary
stratum collapse, [SVY] svydescribe
strcat( ) function, [FN] String functions
strdup( ) function, [M-5] strdup( )
strdup( ) function, [FN] String functions
stream I/O versus record I/O, [U] 21 Entering and importing data
streg command, [ST] stcurve, [ST] streg, [ST] streg postestimation
streset command, [ST] stset
streset command for mi data, [MI] mi XXXset
streset, mi subcommand, [MI] mi XXXset
stress, [MV] mds postestimation, [MV] Glossary
stress, estat subcommand, [MV] mds postestimation
strict stationarity, [TS] Glossary
string, *also see* Unicode strings
  concatenation, [M-5] invtokens( )
  duplication, [M-5] strdup( )
  functions, [FN] String functions, [M-4] string, [U] 12.4 Strings, [U] 12.4.2.1 Unicode string functions, [U] 23 Working with strings
  pattern matching, [M-5] strmatch( )
  to real, convert, [M-5] strtoreal( )
  variables, [D] data types, [D] infile (free format), [U] 12.4 Strings, [U] 23 Working with strings
    converting to numbers, [FN] String functions
    encoding, [D] encode

string variables, *continued*
exporting, [D] **export**
formatting, [D] **format**
importing, [D] **import**
inputting, [D] **edit**, [D] **input**, [U] **21 Entering and importing data**
long, [U] **12.4.13 How to see the full contents of a strL or a str# variable**, *also see* `strL`
making from value labels, [D] **encode**
mapping to numbers, [D] **destring**, [D] **encode**, [D] **label**, *also see* `real()` function
parsing, [P] **gettoken**, [P] **tokenize**
sort order, [U] **13.2.3 Relational operators**
splitting into parts, [D] **split**
`string`, [M-2] **declarations**, [M-6] **Glossary**
`string()` function, [FN] **String functions**
strings, [D] **unicode**
`stritrim()` function, [FN] **String functions**, [M-5] **strtrim( )**
`strL`, [D] **data types**, [U] **12.4 Strings**
displaying, [U] **12.4.13 How to see the full contents of a strL or a str# variable**
`strlen` macro extended function, [P] **macro**
`strlen()` function, [FN] **String functions**, [M-5] **strlen( )**
`strlower()` function, [FN] **String functions**, [M-5] **strupper( )**
`strltrim()` function, [FN] **String functions**, [M-5] **strtrim( )**
`strmatch()` function, [FN] **String functions**, [M-5] **strmatch( )**
`strofreal()` function, [FN] **String functions**, [M-5] **strofreal( )**
strongly balanced, [XT] **Glossary**
`strpos()` function, [FN] **String functions**, [M-5] **strpos( )**
`strproper()` function, [FN] **String functions**, [M-5] **strupper( )**
`strreverse()` function, [FN] **String functions**, [M-5] **strreverse( )**
`strrpos()` function, [FN] **String functions**
`strrtrim()` function, [FN] **String functions**, [M-5] **strtrim( )**
`strtoname()` function, [FN] **String functions**, [M-5] **strtoname( )**
`_strtoreal()` function, [M-5] **strtoreal( )**
`strtoreal()` function, [M-5] **strtoreal( )**
`strtrim()` function, [FN] **String functions**, [M-5] **strtrim( )**
`struct`, [M-2] **struct**
structural break,
known break date, [TS] **estat sbknown**
unknown break date, [TS] **estat sbsingle**
structural equation modeling, [MV] **intro**, [SEM] **methods and formulas for gsem**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**, [SVY] **svy estimation**, [U] **26.4 Structural equation modeling (SEM)**
structural model, [SEM] **intro 5**, [SEM] **example 7**, [SEM] **example 9**, [SEM] **example 32g**, [SEM] **Glossary**, [TS] **Glossary**
structural time-series model, [TS] **psdensity**, [TS] **sspace**, [TS] **ucm**, [TS] **Glossary**
structural vector autoregressive
model, [TS] **var intro**, [TS] **var svar**, [TS] **Glossary**
postestimation, [R] **regress postestimation time series**, [TS] **fcast compute**, [TS] **fcast graph**, [TS] **irf**, [TS] **irf create**, [TS] **var svar postestimation**, [TS] **vargranger**, [TS] **varlmar**, [TS] **varnorm**, [TS] **varsoc**, [TS] **varstable**, [TS] **varwle**
structure, [MV] **Glossary**
`structure`, `estat` subcommand, [MV] **discrim lda postestimation**, [MV] **factor postestimation**
structured, [SEM] **Glossary**
structured (correlation or covariance), [SEM] **Glossary**
structures, [M-2] **struct**, [M-5] **liststruct( )**, [M-6] **Glossary**
`strupper()` function, [FN] **String functions**, [M-5] **strupper( )**
`sts` command, [ST] **sts**, [ST] **sts generate**, [ST] **sts graph**, [ST] **sts list**, [ST] **sts test**
`sts generate` command, [ST] **sts**, [ST] **sts generate**
`sts graph` command, [ST] **sts**, [ST] **sts graph**
`sts list` command, [ST] **sts**, [ST] **sts list**
`sts test` command, [ST] **sts**, [ST] **sts test**
`.stsem` file, [U] **11.6 Filenaming conventions**
`stset` command, [ST] **stset**
`stset` command for mi data, [MI] **mi XXXset**
`stset`, `mi` subcommand, [MI] **mi XXXset**
`stsplit` command, [ST] **stsplit**
`stsplit` for mi data, [MI] **mi stsplit**
`stsplit`, `mi` subcommand, [MI] **mi stsplit**
`stsum` command, [ST] **stsum**
`stteffects`, [TE] **stteffects**, [TE] **stteffects postestimation**
command, [TE] **tebalance**
`ipw` command, [TE] **stteffects ipw**
`ipwra` command, [TE] **stteffects ipwra**
`ra` command, [TE] **stteffects ra**
`wra` command, [TE] **stteffects wra**
`sttocc` command, [ST] **sttocc**
`sttoct` command, [ST] **sttoct**
Stuart–Maxwell test statistic, [R] **symmetry**
Studentized residuals, [R] **predict**, [R] **regress postestimation**
Studentized-range multiple-comparison adjustment, *see* multiple comparisons, Tukey's method
Student–Newman–Keuls's multiple-comparison adjustment, *see* multiple comparisons, Student–Newman–Keuls's method
Student's $t$
density,
central, [FN] **Statistical functions**
noncentral, [FN] **Statistical functions**

Student's $t$, *continued*
distribution, *also see* $t$ distribution
cumulative, [FN] **Statistical functions**
cumulative noncentral, [FN] **Statistical functions**
inverse cumulative, [FN] **Statistical functions**
inverse cumulative noncentral, [FN] **Statistical functions**
inverse reverse cumulative, [FN] **Statistical functions**
reverse cumulative, [FN] **Statistical functions**
study,
case–control, *see* case–control study
cohort, *see* cohort study
controlled clinical trial, *see* controlled clinical trial study
cross-sectional, *see* cross-sectional study
experimental, *see* experimental study
follow-up, *see* cohort study
matched, *see* matched study
multiple-sample, *see* multiple-sample study
observational, *see* observational study
one-sample, *see* one-sample study
paired, *see* paired study
prospective, *see* prospective study
randomized controlled trial, *see* randomized controlled trial study
retrospective, *see* retrospective study
two-sample, *see* two-sample study
`stvary` command, [ST] **stvary**
style
added line, [G-4] ***addedlinestyle***
area, [G-4] ***areastyle***
axis, [G-4] ***tickstyle***
by-graphs, [G-4] ***bystyle***
clock position, [G-4] ***clockposstyle***
color, [G-4] ***colorstyle***
compass direction, [G-4] ***compassdirstyle***
connect points, [G-4] ***connectstyle***
grid lines, [G-4] ***gridstyle***
legends, [G-4] ***legendstyle***
lines, [G-4] ***linepatternstyle***, [G-4] ***linestyle***, [G-4] ***linewidthstyle***
lists, [G-4] ***stylelists***
margins, [G-4] ***marginstyle***
marker labels, [G-4] ***markerlabelstyle***, [G-4] ***markersizestyle***, [G-4] ***markerstyle***
markers, [G-4] ***symbolstyle***
plot, [G-4] ***pstyle***
text, [G-4] ***textsizestyle***, [G-4] ***textstyle***
text display angle, [G-4] ***anglestyle***
text justification, [G-4] ***justificationstyle***
textboxes, [G-4] ***orientationstyle***, [G-4] ***textboxstyle***
vertical alignment of text, [G-4] ***alignmentstyle***
*style*, [MI] **mi convert**, [MI] **styles**, [MI] **Glossary**
style,
flong, *see* flong
flongsep, *see* flongsep
mlong, *see* mlong
wide, *see* wide
*stylelist*, [G-4] ***stylelists***
subclass, [M-2] **class**
subdirectories, [U] **11.6 Filenaming conventions**
subhazard ratio, [R] ***eform_option***, [R] **lincom**, [ST] **Glossary**, *also see* cumulative subhazard function
`subinertia`, `estat` subcommand, [MV] **mca postestimation**
`subinstr` macro extended function, [P] **macro**
`subinstr()` function, [FN] **String functions**, [M-5] **subinstr( )**
`subinword()` function, [FN] **String functions**, [M-5] **subinstr( )**
subjective prior, *see* informative prior
`_sublowertriangle()` function, [M-5] **sublowertriangle( )**
`sublowertriangle()` function, [M-5] **sublowertriangle( )**
subpopulation
differences, [SVY] **survey**, [SVY] **svy postestimation**
estimation, [SVY] **subpopulation estimation**, [SVY] **svy estimation**, [SVY] **Glossary**
means, [SVY] **svy estimation**
proportions, [SVY] **svy estimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
ratios, [SVY] **svy estimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
standard deviations of, [SVY] **estat**
totals, [SVY] **svy estimation**, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
subroutines, adding, [MV] **cluster programming utilities**
subsampling the chain, *see* thinning
subscripting matrices, [P] **matrix define**
subscripts, [G-4] ***text***, [M-2] **subscripts**, [M-6] **Glossary**
subscripts in expressions, [U] **13.7 Explicit subscripting**
substantive constraints, *see* constraints
`_substr()` function, [M-5] **_substr( )**
`substr()` function, [FN] **String functions**, [M-5] **substr( )**
substring function, [FN] **String functions**
`subtitle()` option, [G-3] ***title_options***
subtraction operator, *see* arithmetic operators
success–failure proportion, [PSS] **power pairedproportions**
successive difference replication, [SVY] ***sdr_options***, [SVY] **svy sdr**, [SVY] **variance estimation**, [SVY] **Glossary**

suest command, [R] **suest**, [SVY] **svy postestimation**
.sum file, [U] **11.6 Filenaming conventions**
sum() function, [FN] **Mathematical functions**, [M-5] **sum()**
sum of vector, [M-5] **runningsum()**
summarize,
  estat subcommand, [R] **estat**, [R] **estat summarize**
  misstable subcommand, [R] **misstable**
  estat subcommand, [MV] **ca postestimation**, [MV] **discrim estat**, [MV] **discrim knn postestimation**, [MV] **discrim lda postestimation**, [MV] **discrim logistic postestimation**, [MV] **discrim qda postestimation**, [MV] **factor postestimation**, [MV] **mca postestimation**, [MV] **mds postestimation**, [MV] **pca postestimation**, [MV] **procrustes postestimation**, [SEM] **estat summarize**
  serset subcommand, [P] **serset**
summarize command, [D] **format**, [R] **summarize**, [R] **tabulate, summarize()**
summarizing data, [D] **codebook**, [D] **inspect**, [R] **summarize**, [R] **tabstat**, [SVY] **svy: tabulate twoway**, [XT] **xtsum**, [R] **lv**, [R] **table**, [R] **tabulate oneway**, [R] **tabulate twoway**, [R] **tabulate, summarize()**
summary, bayesstats subcommand, [BAYES] **bayesstats**
summary statistics, *see* Bayesian, summary statistics, *see* descriptive statistics
summary statistics data, [SEM] **intro 11**, [SEM] **example 2**, [SEM] **example 19**, [SEM] **example 25**, [SEM] **sem option select()**, [SEM] **sem ssd options**, [SEM] **ssd**, [SEM] **Glossary**
summary variables, generating, [MV] **cluster generate**
summative (Likert) scales, [MV] **alpha**
sums,
  creating dataset containing, [D] **collapse**
  over observations, [D] **egen**, [FN] **Mathematical functions**, [R] **summarize**
  over variables, [D] **egen**
sunflower command, [R] **sunflower**
sunflower plots, [R] **sunflower**
Super, class prefix operator, [P] **class**
super-varying variables, [MI] **mi varying**, [MI] **Glossary**
.superclass built-in class function, [P] **class**
superscripts, [G-4] ***text***
supplementary rows or columns, [MV] **ca**, [MV] **Glossary**
supplementary variables, [MV] **mca**, [MV] **Glossary**
support of Stata, [U] **3 Resources for learning and using Stata**
suppressing graphs, [G-3] ***nodraw_option***
suppressing terminal output, [P] **quietly**
SUR, *see* seemingly unrelated regression
sureg command, [R] **sureg**, [R] **sureg postestimation**, [SEM] **intro 5**, [SEM] **example 12**
survey
  concepts, [SVY] **direct standardization**, [SVY] **poststratification**, [SVY] **subpopulation estimation**, [SVY] **variance estimation**
  data, [MI] **intro substantive**, [MI] **mi estimate**, [SEM] **intro 10**, [SVY] **survey**, [SVY] **svydescribe**, [SVY] **svyset**, [SVY] **Glossary**, [U] **26.26 Survey data**
  design, [SVY] **svydescribe**, [SVY] **svyset**, [SVY] **Glossary**
  estimation, [SVY] ***bootstrap_options***, [SVY] ***brr_options***, [SVY] ***jackknife_options***, [SVY] ***sdr_options***, [SVY] **svy**, [SVY] **svy bootstrap**, [SVY] **svy brr**, [SVY] **svy estimation**, [SVY] **svy jackknife**, [SVY] **svy sdr**
  postestimation, [SVY] **estat**, [SVY] **svy postestimation**
  prefix command, [SVY] **svy**
  programmers tools, [SVY] **ml for svy**, [SVY] **svymarkout**
  sampling, [SVY] **survey**, [SVY] **svydescribe**, [SVY] **svyset**, *see* cluster sampling
  tables, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
survival analysis, [ST] **survival analysis**, [ST] **discrete**, [ST] **ltable**, [ST] **snapspan**, [ST] **st**, [ST] **st_is**, [ST] **stcurve**, [ST] **stdescribe**, [ST] **stfill**, [ST] **stgen**, [ST] **stir**, [ST] **stptime**, [ST] **strate**, [ST] **sts**, [ST] **sts generate**, [ST] **sts list**, [ST] **sts test**, [ST] **stset**, [ST] **stsplit**, [ST] **stsum**, [ST] **sttocc**, [ST] **sttoct**, [ST] **stvary**, [SVY] **svy estimation**, [U] **26.22 Survival-time (failure-time) models**
  competing-risks regression, [ST] **stcrreg**, [ST] **stcrreg postestimation**
  count-time data, [ST] **ct**, [ST] **ctset**, [ST] **cttost**, [ST] **sts graph**
  Cox proportional hazards model, [ST] **stcox**, [ST] **stcox PH-assumption tests**, [ST] **stcox postestimation**
  graphs, [ST] **sts graph**
  interval regression, [R] **intreg**
  logistic regression, [R] **logistic**
  mixed-effects parametric model, [ME] **mestreg**
  parametric survival model, [ST] **streg**, [ST] **streg postestimation**
  Poisson regression, [R] **poisson**
  power and sample size, [PSS] **power**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**
  random-effects parametric model, [XT] **xtstreg**
  treatment effects, [TE] **stteffects ipw**, [TE] **stteffects ipwra**, [TE] **stteffects ra**, [TE] **stteffects wra**
survival data, [MI] **mi estimate**, [MI] **mi predict**, [TE] **stteffects**
survival model, *see* survival analysis
survival outcomes, *see* outcomes, survival
survival-time data, *see* survival analysis

survivor function, [G-2] **graph other**, [ST] **sts**, [ST] **sts generate**, [ST] **sts list**, [ST] **sts test**, [ST] **Glossary**, [TE] **Glossary**
graph of, [ST] **stcurve**, [ST] **sts graph**
SUTVA, *see* stable unit treatment value assumption
SVAR, *see* structural vector autoregressive
`svar` command, [TS] **var svar**, [TS] **var svar postestimation**
SVD, *see* singular value decomposition
`_svd()` function, [M-5] **svd( )**
`svd()` function, [M-5] **svd( )**
`svd`, `matrix` subcommand, [P] **matrix svd**
`_svd_la()` function, [M-5] **svd( )**, [M-5] **fullsvd( )**
`_svdsv()` function, [M-5] **svd( )**
`svdsv()` function, [M-5] **svd( )**
`svmat` command, [P] **matrix mkmat**
`_svsolve()` function, [M-5] **svsolve( )**
`svsolve()` function, [M-5] **svsolve( )**
`svy: biprobit` command, [SVY] **svy estimation**
`svy: clogit` command, [SVY] **svy estimation**
`svy: cloglog` command, [SVY] **svy estimation**
`svy: cnsreg` command, [SVY] **svy estimation**
`svy: cpoisson` command, [SVY] **svy estimation**
`svy: etpoisson` command, [SVY] **svy estimation**
`svy: etregress` command, [SVY] **svy estimation**
`svy: glm` command, [SVY] **svy estimation**
`svy: gnbreg` command, [SVY] **svy estimation**
`svy: gsem` command, [SVY] **svy estimation**
`svy: heckman` command, [SVY] **svy estimation**
`svy: heckoprobit` command, [SVY] **svy estimation**
`svy: heckprobit` command, [SVY] **svy estimation**
`svy: hetprobit` command, [SVY] **svy estimation**
`svy: intreg` command, [SVY] **svy estimation**
`svy: ivprobit` command, [SVY] **svy estimation**
`svy: ivregress` command, [SVY] **svy estimation**
`svy: ivtobit` command, [SVY] **svy estimation**
`svy: logistic` command, [SVY] **svy estimation**, [SVY] **svy postestimation**
`svy: logit` command, [SVY] **svy estimation**
`svy: mean` command, [SVY] **survey**, [SVY] **estat**, [SVY] **poststratification**, [SVY] **subpopulation estimation**, [SVY] **svy**, [SVY] **svy estimation**, [SVY] **svy postestimation**, [SVY] **svydescribe**, [SVY] **svyset**
`svy: mecloglog` command, [SVY] **svy estimation**
`svy: meglm` command, [SVY] **svy estimation**
`svy: melogit` command, [SVY] **svy estimation**
`svy: menbreg` command, [SVY] **svy estimation**
`svy: meologit` command, [SVY] **svy estimation**
`svy: meoprobit` command, [SVY] **svy estimation**
`svy: mepoisson` command, [SVY] **svy estimation**
`svy: meprobit` command, [SVY] **svy estimation**
`svy: mestreg` command, [SVY] **svy estimation**
`svy: mlogit` command, [SVY] **svy estimation**
`svy: mprobit` command, [SVY] **svy estimation**
`svy: nbreg` command, [SVY] **svy estimation**
`svy: nl` command, [SVY] **svy estimation**
`svy: ologit` command, [SVY] **svy estimation**, [SVY] **svy postestimation**
`svy: oprobit` command, [SVY] **svy estimation**
`svy: poisson` command, [SVY] **svy estimation**
`svy: probit` command, [SVY] **svy estimation**
`svy: proportion` command, [SVY] **svy estimation**
`svy: ratio` command, [SVY] **direct standardization**, [SVY] **svy brr**, [SVY] **svy estimation**, [SVY] **svy: tabulate twoway**
`svy: regress` command, [SVY] **survey**, [SVY] **svy**, [SVY] **svy estimation**, [SVY] **svy jackknife**, [SVY] **svy postestimation**
`svy: scobit` command, [SVY] **svy estimation**
`svy: sem` command, [SVY] **svy estimation**
`svy: slogit` command, [SVY] **svy estimation**
`svy: stcox` command, [SVY] **svy estimation**
`svy: streg` command, [SVY] **svy estimation**
`svy: tabulate` command, [SVY] **svy: tabulate oneway**, [SVY] **svy: tabulate twoway**
`svy: tnbreg` command, [SVY] **svy estimation**
`svy: tobit` command, [SVY] **svy estimation**
`svy: total` command, [SVY] **svy brr**, [SVY] **svy estimation**
`svy: tpoisson` command, [SVY] **svy estimation**
`svy: truncreg` command, [SVY] **svy estimation**
`svy: zinb` command, [SVY] **svy estimation**
`svy: zip` command, [SVY] **svy estimation**
`svy bootstrap` prefix command, [SVY] **svy bootstrap**
`svy brr` prefix command, [SVY] **svy brr**
`svy jackknife` prefix command, [SVY] **svy jackknife**
`svy` prefix command, [SVY] **svy**
`svy sdr` prefix command, [SVY] **svy sdr**
`svydescribe` command, [SVY] **survey**, [SVY] **svydescribe**
`svymarkout` command, [P] **mark**, [SVY] **svymarkout**
`svyset` command, [SVY] **survey**, [SVY] **svyset**
`svyset` command for mi data, [MI] **mi XXXset**
`svyset`, `estat` subcommand, [SVY] **estat**
`svyset`, `mi` subcommand, [MI] **mi XXXset**
`swap()` function, [M-5] **swap( )**
`sweep()` function, [FN] **Matrix functions**, [P] **matrix define**
`swilk` command, [R] **swilk**
switching styles, [MI] **mi convert**
Sybase, reading data from, [U] **21.4 Transfer programs**
symbolic forms, [R] **anova**
`symbolpalette`, `palette` subcommand, [G-2] **palette**
symbols, [G-4] ***text***, *also see* markers
*symbolstyle*, [G-4] ***symbolstyle***
`symeigen`, `matrix` subcommand, [P] **matrix symeigen**
`_symeigen_la()` function, [M-5] **eigensystem( )**
`_symeigensystem()` function, [M-5] **eigensystem( )**
`symeigensystem()` function, [M-5] **eigensystem( )**
`_symeigensystemselect*()` functions, [M-5] **eigensystemselect( )**
`symeigensystemselect*()` functions, [M-5] **eigensystemselect( )**
`_symeigenvalues()` function, [M-5] **eigensystem( )**

symeigenvalues() function, [M-5] eigensystem()
symmetric matrices, [M-5] issymmetric(), [M-5] makesymmetric(), [M-6] Glossary
symmetriconly, [M-6] Glossary
symmetry, [PSS] power, [PSS] power pairedproportions, [PSS] power mcc, [PSS] Glossary
  plots, [G-2] graph other, [R] diagnostic plots
  test, [R] symmetry
symmetry command, [R] symmetry
symmi command, [R] symmetry
symplot command, [R] diagnostic plots
syntax, [M-2] syntax
  diagrams explained, [R] intro
  syntax of Stata's language, [P] syntax, [U] 11 Language syntax
syntax command, [P] syntax
sysdir
  command, [U] 17.5 Where does Stata look for ado-files?
  list command, [P] sysdir
  macro extended function, [P] macro
  set command, [P] sysdir
sysmiss, *see* missing values
Systat, reading data from, [U] 21.4 Transfer programs
system
  estimators, [R] gmm, [R] ivpoisson, [R] ivregress, [R] nlsur, [R] reg3, [R] sureg, [U] 26.17 Regression with systems of equations, *also see* generalized method of moments
  limits, [P] creturn
  of equations, [M-5] solvenl()
  parameters, [P] creturn, [P] set locale_functions, [P] set locale_ui, [R] query, [R] set, [R] set_defaults
  values, [P] creturn
  variables, [U] 13.4 System variables (_variables)
sysuse
  command, [D] sysuse
  dir command, [D] sysuse
szroeter, estat subcommand, [R] regress postestimation
Szroeter's test for heteroskedasticity, [R] regress postestimation


## T


*t* distribution,
  cdf, [FN] Statistical functions
  confidence interval for mean, [R] ci, [R] mean
  testing equality of means, [R] esize, [R] ttest
%t formats, [D] format
t() function, [FN] Statistical functions, [M-5] normal()
*t* test, [PSS] Glossary
%t values and formats, [D] datetime
t1title() option, [G-3] *title_options*
t2title() option, [G-3] *title_options*
tab characters, show, [D] type
tab expansion of variable names, [U] 10.6 Tab expansion of variable names
tab1 command, [R] tabulate oneway
tab2 command, [R] tabulate twoway
tabdisp command, [P] tabdisp
tabi command, [R] tabulate twoway
table,
  estat subcommand, [MV] ca postestimation
  estimates subcommand, [R] estimates table
  irf subcommand, [TS] irf table
table command, [R] table
table, frequency, *see* frequency table
table output, [PSS] power, table, [PSS] power cox, [PSS] power exponential
tables, [TS] irf ctable, [TS] irf table
  *N*-way, [P] tabdisp
  actuarial, *see* life tables
  coefficient,
    display in exponentiated form, [R] *eform_option*
    display settings, [R] estimation options, [R] set showbaselevels
    format settings, [R] set cformat
    maximum likelihood display options, [R] ml
    system parameter settings, [R] set
  contingency, [R] table, [R] tabulate twoway, [SVY] svy: tabulate twoway
  epidemiological, *see* epidemiological tables
  estimation results, [R] estimates table
  failure, *see* failure tables
  formatting numbers in, [D] format
  fourfold, *see* fourfold tables
  frequency, [R] tabulate oneway, [R] tabulate twoway, [SVY] svy: tabulate oneway, [SVY] svy: tabulate twoway, [R] table, [R] tabstat, [R] tabulate, summarize()
  hazard, *see* hazard tables
  life, *see* life tables
  missing values, [R] misstable
  of statistics, [P] tabdisp
  printing, [U] 15 Saving and printing output—log files
  summary statistics, [R] table, [R] tabstat, [R] tabulate, summarize()
tabodds command, [R] epitab
tabstat command, [R] tabstat
tabulate
  one-way, [SVY] svy: tabulate oneway
  two-way, [SVY] svy: tabulate twoway
tabulate command, [R] tabulate oneway, [R] tabulate twoway
  summarize(), [R] tabulate, summarize()
tag, duplicates subcommand, [D] duplicates
tag(), egen function, [D] egen
tan() function, [FN] Trigonometric functions, [M-5] sin()
tangent function, [FN] Trigonometric functions

tanh() function, [FN] **Trigonometric functions**, [M-5] **sin()**
TARCH, *see* threshold autoregressive conditional heteroskedasticity
target
  between-group variance, [PSS] **power oneway**
  correlation, [PSS] **power**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**
  discordant proportions, [PSS] **power**, [PSS] **power pairedproportions**
  effect variance, [PSS] **power twoway**, [PSS] **power repeated**
  hazard difference, [PSS] **power exponential**
  hazard ratio, [PSS] **power exponential**, [PSS] **power logrank**
  log hazard-ratio, [PSS] **power exponential**, [PSS] **power logrank**
  mean, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **unbalanced designs**
  mean difference, [PSS] **power**, [PSS] **power pairedmeans**
  odds ratio, [PSS] **power cmh**, [PSS] **power mcc**
  parameter, [PSS] **Glossary**
  proportion, [PSS] **power**, [PSS] **power oneproportion**, [PSS] **power twoproportions**
  regression coefficient, [PSS] **power cox**
  rotation, [MV] **procrustes**, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
  standard deviation, [PSS] **power**, [PSS] **power onevariance**, [PSS] **power twovariances**
  variance, [PSS] **power**, [PSS] **power onevariance**, [PSS] **power twovariances**
tau, [R] **spearman**
taxonomy, [MV] **Glossary**
Taylor linearization, *see* linearized variance estimator
tC() pseudofunction, [D] **datetime**, [FN] **Date and time functions**
tc() pseudofunction, [D] **datetime**, [FN] **Date and time functions**
TCC, *see* test characteristic curve
tcc, irtgraph subcommand, [IRT] **irtgraph tcc**
td() pseudofunction, [D] **datetime**, [FN] **Date and time functions**
tden() function, [FN] **Statistical functions**, [M-5] **normal()**
TDT test, *see* transmission-disequilibrium test
tebalance
  balance command, [TE] **tebalance box**, [TE] **tebalance density**, [TE] **tebalance overid**, [TE] **tebalance summarize**
  command, [TE] **tebalance**
technical support, [U] **3.8 Technical support**
technique, [SEM] **Glossary**
technique() option, [R] **maximize**
teffects
  aipw command, [TE] **teffects aipw**
  command, [TE] **tebalance**, [TE] **teffects**, [TE] **teffects postestimation**
teffects, *continued*
  ipw command, [TE] **teffects ipw**
  ipwra command, [TE] **teffects ipwra**
  nnmatch command, [TE] **teffects nnmatch**
  overlap command, [TE] **teffects overlap**
  psmatch command, [TE] **teffects psmatch**
  ra command, [TE] **teffects ra**
teffects, estat subcommand, [SEM] **estat teffects**
tempfile command, [P] **macro**
tempfile macro extended function, [P] **macro**
tempname, class, [P] **class**
tempname command, [P] **macro**, [P] **matrix**, [P] **scalar**
tempname macro extended function, [P] **macro**
temporary
  files, [P] **macro**, [P] **preserve**, [P] **scalar**
  names, [P] **macro**, [P] **matrix**, [P] **scalar**, [U] **18.7.2 Temporary scalars and matrices**
  variables, [P] **macro**, [U] **18.7.1 Temporary variables**
tempvar command, [P] **macro**
tempvar macro extended function, [P] **macro**
termcap(5), [U] **10 Keyboard use**
terminal
  obtaining input from, [P] **display**
  suppressing output, [P] **quietly**
terminfo(4), [U] **10 Keyboard use**
test
  after estimation, *see* estimation, test after
  characteristic curve, [IRT] **irtgraph tcc**, [IRT] **Glossary**
  information function, [IRT] **irtgraph tif**, [IRT] **Glossary**
  of symmetry, [PSS] **power**, [PSS] **power pairedproportions**, [PSS] **power mcc**
  statistic, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**, [PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **Glossary**
test,
  ARCH, *see* autoregressive conditional heteroskedasticity test
  association, *see* association test
  autocorrelation, *see* autocorrelation test
  autoregressive conditional heteroskedasticity, *see* autoregressive conditional heteroskedasticity test
  binomial, *see* binomial test
  binomial probability, *see* binomial probability test
  bioequivalence, *see* bioequivalence test
  Breitung, *see* Breitung test
  Breusch–Godfrey, *see* Breusch–Godfrey test
  Breusch–Pagan, *see* Breusch–Pagan test
  Breusch–Pagan Lagrange multiplier, *see* Breusch–Pagan Lagrange multiplier test

test, *continued*
chi-squared, *see* chi-squared test
chi-squared hypothesis, *see* chi-squared hypothesis test
chi-squared, *see* chi-squared test
Chow, *see* Chow test
comparison (between nested models), *see* comparison test between nested models
covariate balance, *see* treatment effects, covariate balance
Cox proportional hazards model, assumption, *see* Cox proportional hazards model, test of assumption
cusum, *see* cusum test
Dickey–Fuller, *see* Dickey–Fuller test
differences of two means, *see* differences of two means test
Durbin's alternative, *see* Durbin's alternative test
endogeneity, *see* endogeneity test
Engle's LM, *see* Engle's LM test
equality of
binomial proportions, *see* equality test of binomial proportions
coefficients, *see* equality test of coefficients
distributions, *see* distributions, testing equality of
margins, *see* equality test of margins
means, *see* equality test of means
medians, *see* equality test of medians
proportions, *see* equality test of proportions
ROC areas, *see* equality test of ROC areas
survivor functions, *see* equality test, survivor functions
variances, *see* equality test of variances
equivalence, *see* equivalence test
exact, *see* exact test
exogeneity, *see* endogeneity test
$F$, *see* $F$ test
Fisher–Irwin's exact, *see* Fisher–Irwin's exact test
Fisher-type, *see* Fisher-type test
Fisher's exact, *see* Fisher's exact test
Fisher's $z$, *see* Fisher's $z$ test
goodness-of-fit, *see* goodness of fit
Granger causality, *see* Granger causality
group invariance, *see* group invariance test
Hadri Lagrange multiplier, *see* Hadri Lagrange multiplier stationarity test
Harris–Tzavalis, *see* Harris–Tzavalis test
Hausman specification, *see* Hausman specification test
heterogeneity, *see* heterogeneity test
heteroskedasticity, *see* heteroskedasticity test
homogeneity, *see* homogeneity test
hypothesis, *see* hypothesis test
Im–Pesaran–Shin, *see* Im–Pesaran–Shin test
independence, *also see* Breusch–Pagan test, *see* independence test
independence of irrelevant alternatives, *see* independence of irrelevant alternatives
test, *continued*
information matrix, *see* information matrix test
internal consistency, *see* internal consistency test
interrater agreement, *see* interrater agreement
Kolmogorov–Smirnov, *see* Kolmogorov–Smirnov test
Kruskal–Wallis, *see* Kruskal–Wallis test
kurtosis, *see* kurtosis
Lagrange multiplier, *see* Lagrange multiplier test
Levin–Lin–Chu, *see* Levin–Lin–Chu test
likelihood-ratio, *see* likelihood-ratio test
linear hypotheses after estimation, *see* linear hypothesis test after estimation
log-rank, *see* log-rank test
Mantel–Haenszel, *see* Mantel–Haenszel test
marginal homogeneity, [PSS] **power mcc**, *see* marginal homogeneity, test of
margins, *see* margins test
McNemar's, *see* McNemar's test
McNemar's chi-squared test, *see* McNemar's chi-squared test
model
coefficients, *see* model coefficients test
simplification, *see* model simplification test
specification, *see* specification test
modification indices, *see* modification indices
multiple-sample, *see* multiple-sample test
multivariate, *see* multivariate test
nonlinear, *see* nonlinear test
nonlinear hypotheses after estimation, *see* nonlinear hypothesis test after estimation
normality, *see* normal distribution and normality, *see* normality test
omitted variables, *see* omitted variables test
one-sample, *see* one-sample test
one-sided, *see* one-sided test
overidentifying restrictions, *see* overidentifying restrictions, tests of
overlap assumption, *see* overlap assumption
paired-sample, *see* paired-sample test
permutation, *see* permutation test
quadrature, *see* quadrature
Ramsey, *see* Ramsey test
random-order, *see* random-order test
RESET, *see* RESET test
score, *see* score test
serial correlation, *see* autocorrelation
serial independence, *see* serial independence test
Shapiro–Francia, *see* Shapiro–Francia test for normality
Shapiro–Wilk, *see* Shapiro–Wilk test for normality
skewness, *see* skewness
structural break, *see* structural break
symmetry, *see* symmetry test
Szroeter's, *see* Szroeter's test for heteroskedasticity
$t$, *see* $t$ test
TDT, *see* transmission-disequilibrium test

test, *continued*
transmission-disequilibrium test, *see* transmission-disequilibrium test
trend, *see* trend, test for
two-sample, *see* two-sample test
two-sided, *see* two-sided test
unit-root, *see* unit-root test
variance-comparison, *see* variance-comparison test
Vuong, *see* Vuong test
Wald, *see* Wald test
weak instrument, *see* weak instrument test
*z*, *see* *z* test
`test` command, [R] **anova postestimation**, [R] **test**, [SEM] **estat stdize**, [SEM] **example 8**, [SEM] **example 9**, [SEM] **example 16**, [SEM] **test**, [SVY] **survey**, [SVY] **svy postestimation**, [U] **20.12 Performing hypothesis tests on the coefficients**
`test`, `mi` subcommand, [MI] **mi test**
`test`, `sts` subcommand, [ST] **sts test**
test-based confidence intervals, [R] **epitab**
`testnl` command, [R] **testnl**, [SEM] **estat stdize**, [SEM] **testnl**, [SVY] **svy postestimation**
`testparm` command, [R] **test**, [SEM] **test**, [SVY] **svy postestimation**
`testtransform`, `mi` subcommand, [MI] **mi test**
`tetrachoric` command, [R] **tetrachoric**
tetrachoric correlation, [MV] **Glossary**
text files, writing and reading, [P] **file**
`text()` option, [G-3] ***added_text_options***, [G-3] ***aspect_option***
text,
adding, [G-3] ***added_text_options***
angle of, [G-4] ***anglestyle***
captions, [G-3] ***title_options***
exporting, *see* exporting data
in graphs, [G-4] ***text***
look of, [G-4] ***textboxstyle***, [G-4] ***textstyle***
note, [G-3] ***title_options***
reading data in, *see* importing data
resizing, [G-3] ***scale_option***
running outside of borders, [G-3] ***added_text_options***
saving data in, *see* exporting data
size of, [G-3] ***textbox_options***
subtitle, [G-3] ***title_options***
title, [G-3] ***title_options***
vertical alignment, [G-4] ***alignmentstyle***
text and textboxes, relationship between, [G-4] ***textstyle***
textboxes, [G-3] ***textbox_options***
orientation of, [G-4] ***orientationstyle***
*textboxstyle*, [G-4] ***textboxstyle***
*textsizestyle*, [G-4] ***textsizestyle***
*textstyle*, [G-4] ***textstyle***
`th()` pseudofunction, [D] **datetime**, [FN] **Date and time functions**
thickness of lines, [G-4] ***linewidthstyle***
thinning, [BAYES] **bayesmh**, [BAYES] **Glossary**
Thomson scoring, [MV] **factor postestimation**
thrashing, [ST] **Glossary**
three-dimensional graph, [G-2] **graph twoway contour**, [G-2] **graph twoway contourline**
three-parameter logistic model, [IRT] **irt 3pl**, [IRT] **Glossary**
three-stage least squares, [R] **reg3**
threshold autoregressive conditional heteroskedasticity, [TS] **arch**
tick,
definition, [G-4] ***tickstyle***
suppressing, [G-4] ***tickstyle***
*ticksetstyle*, [G-4] ***ticksetstyle***
*tickstyle*, [G-4] ***tickstyle***
ties, [MV] **Glossary**
TIF, *see* test information function
`tif`, `irtgraph` subcommand, [IRT] **irtgraph tif**
TIFF, [G-3] ***tif_options***
time of day, [P] **creturn**
time-series–operated variable, [M-5] **st_data( )**, [M-5] **st_tsrevar( )**, [M-6] **Glossary**
time stamp, [D] **describe**
time variables and values, [D] **datetime**
time-domain analysis, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **Glossary**
`timeout1`, `set` subcommand, [R] **netio**, [R] **set**
`timeout2`, `set` subcommand, [R] **netio**, [R] **set**
`timer`
`clear` command, [P] **timer**
`list` command, [P] **timer**
`off` command, [P] **timer**
`on` command, [P] **timer**
times and dates, [M-5] **c( )**, [M-5] **date( )**
time-series
analysis, [D] **egen**, [P] **matrix accum**, [R] **regress postestimation time series**
estimation, [U] **26.19 Models with time-series data**
filter, [TS] **psdensity**, [TS] **ucm**
formats, [D] **format**
functions, [FN] **Selecting time-span functions**
operators, [TS] **tsset**, [U] **13.10 Time-series operators**
plots, [G-2] **graph other**, [G-2] **graph twoway tsline**
unabbreviating varlists, [P] **unab**
varlists, [U] **11.4.4 Time-series varlists**
time-span data, [ST] **snapspan**
time-varying covariates, [ST] **Glossary**
time-varying variance, [TS] **arch**
time-versus-concentration curve, [R] **pk**
timing code, [P] **timer**
`tin()` function, [FN] **Selecting time-span functions**
`title`, `estimates` subcommand, [R] **estimates title**
`title()` option, [G-3] ***title_options***
titlecase, [I] **Glossary**, [M-6] **Glossary**
title-cased string, [I] **Glossary**

titles, [G-3] *title_options*
of axis, [G-3] *axis_title_options*
tlabel() option, [G-3] *axis_label_options*
TLI, *see* Tucker–Lewis index
tm() pseudofunction, [D] **datetime**, [FN] **Date and time functions**
tmlabel() option, [G-3] *axis_label_options*
TMPDIR Unix environment variable, [P] **macro**
tmtick() option, [G-3] *axis_label_options*
tnbreg command, [R] **tnbreg**, [R] **tnbreg postestimation**
tobit command, [R] **tobit**, [R] **tobit postestimation**
tobit regression, [R] **ivtobit**, [R] **tobit**, [SEM] **example 43g**, [SVY] **svy estimation**, *also see* intreg command, *also see* truncreg command
random-effects, [XT] **xttobit**
with endogenous covariates, [SVY] **svy estimation**
tobytes() function, [FN] **String functions**
.toc filename suffix, [R] **net**
Toeplitz() function, [M-5] **Toeplitz()**
tokenallowhex() function, [M-5] **tokenget()**
tokenallownum() function, [M-5] **tokenget()**
tokenget() function, [M-5] **tokenget()**
tokengetall() function, [M-5] **tokenget()**
tokeninit() function, [M-5] **tokenget()**
tokeninitstata() function, [M-5] **tokenget()**
tokenize command, [P] **tokenize**
tokenoffset() function, [M-5] **tokenget()**
tokenpchars() function, [M-5] **tokenget()**
tokenpeek() function, [M-5] **tokenget()**
tokenqchars() function, [M-5] **tokenget()**
tokenrest() function, [M-5] **tokenget()**
tokens() function, [M-5] **tokens()**
tokenset() function, [M-5] **tokenget()**
tokenwchars() function, [M-5] **tokenget()**
tolerance() option, [R] **maximize**
tolerances, [M-1] **tolerance**, [M-5] **solve_tol()**
top() suboption, [G-4] *alignmentstyle*
tostring command, [D] **destring**
total
characteristic curve, *see* test characteristic curve
inertia, [MV] **ca**, [MV] **ca postestimation**, [MV] **mca**, [MV] **mca postestimation**, [MV] **Glossary**
information function, *see* test information function
principal inertia, [MV] **ca**, [MV] **mca**, [MV] **Glossary**
sample size, *see* sample-size
total command, [R] **total**, [R] **total postestimation**
total(), egen function, [D] **egen**
totals, estimation, [R] **total**
totals, survey data, [SVY] **svy estimation**
toward a target rotation, [MV] **procrustes**, [MV] **rotate**, [MV] **rotatemat**
tpoisson command, [R] **tpoisson**, [R] **tpoisson postestimation**
tq() pseudofunction, [D] **datetime**, [FN] **Date and time functions**
trace,
ml subcommand, [R] **ml**
query subcommand, [R] **query**
set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
trace() function, [FN] **Matrix functions**, [M-5] **trace()**, [P] **matrix define**
trace of matrix, [M-5] **trace()**, [P] **matrix define**
trace option, [R] **maximize**
traceback log, [M-2] **errors**, [M-5] **error()**, [M-6] **Glossary**
tracedepth, set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
traceexpand, set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
tracehilite, set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
traceindent, set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
tracenumber, set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
tracesep, set subcommand, [P] **creturn**, [P] **trace**, [R] **set**
tracing iterative maximization process, [R] **maximize**
trademark symbol, [G-4] *text*
training, [U] **3.6 Conferences and training**
transferring data
copying and pasting, [D] **edit**
from Stata, [D] **export**, [U] **21.4 Transfer programs**
into Stata, [D] **import**, [U] **21 Entering and importing data**, [U] **21.4 Transfer programs**
transformations, [MV] **procrustes**
log, [R] **lnskew0**
modulus, [R] **boxcox**
power, [R] **boxcox**, [R] **lnskew0**
to achieve normality, [R] **boxcox**, [R] **ladder**
to achieve zero skewness, [R] **lnskew0**
transformed coefficients, [MI] **mi estimate**, [MI] **mi estimate using**, [MI] **mi test**
translate
files with Unicode, [D] **unicode translate**
logs, [R] **translate**
translate command, [R] **translate**
translation, file, [D] **changeeol**, [D] **filefilter**
translator
query command, [R] **translate**
reset command, [R] **translate**
set command, [R] **translate**
transmap
define command, [R] **translate**
query command, [R] **translate**
transmission-disequilibrium test, [R] **symmetry**
transmorphic, [M-2] **declarations**, [M-6] **Glossary**
transpose, [M-6] **Glossary**, *also see* conjugate transpose
in place, [M-5] **_transpose()**
operator, [M-2] **op_transpose**
without conjugation, [M-5] **transposeonly()**

_transpose() function, [M-5] _transpose( )
_transposeonly() function, [M-5] transposeonly( )
transposeonly() function, [M-5] transposeonly( )
transposing data, [D] xpose
transposing matrices, [P] matrix define
transposition, [M-2] op_transpose, [M-5] _transpose( ), [M-5] transposeonly( )
treatment effects,
  covariate balance, [TE] tebalance, [TE] tebalance box, [TE] tebalance density, [TE] tebalance overid, [TE] tebalance summarize
  doubly robust estimators, [TE] teffects aipw, [TE] teffects ipwra
  endogenous, [SEM] example 46g, [TE] eteffects, [TE] eteffects postestimation, [TE] etpoisson, [TE] etpoisson postestimation, [TE] etregress, [TE] etregress postestimation
  glossary, [TE] Glossary
  inverse-probability weighting, [TE] stteffects ipw, [TE] teffects ipw
  matching estimators, [TE] teffects nnmatch, [TE] teffects psmatch
  overlap plots, [TE] teffects overlap
  overview, [TE] intro, [TE] treatment effects, [TE] stteffects intro, [TE] teffects, [TE] teffects intro, [TE] teffects intro advanced, [TE] teffects multivalued, [U] 26.23 Treatment-effect models
  postestimation, [TE] teffects postestimation
  power, [PSS] power, [PSS] power twomeans, [PSS] power pairedmeans, [PSS] power oneproportion, [PSS] power twoproportions, [PSS] power pairedproportions, [PSS] power oneway, [PSS] power twoway, [PSS] power repeated, [PSS] power exponential, [PSS] power logrank
  regression adjustment, [TE] stteffects ra, [TE] teffects ra
  survey data, [SVY] svy estimation
  survival-time data, [TE] stteffects, [TE] stteffects intro, [TE] stteffects ipw, [TE] stteffects ipwra, [TE] stteffects postestimation, [TE] stteffects ra, [TE] stteffects wra
tree, misstable subcommand, [R] misstable
trees, [MV] cluster, [MV] cluster dendrogram
trend, [TS] Glossary
trend, power subcommand, [PSS] power trend
trend test, [PSS] power, [PSS] power trend, [R] epitab, [ST] strate, [ST] sts test
trend, test for, [R] nptrend, [R] symmetry
triangle kernel function, [R] kdensity, [R] lpoly, [R] qreg, [TE] tebalance density, [TE] tebalance overid, [TE] teffects overlap
triangular matrix, [M-5] solvelower( ), [M-6] Glossary
trigamma() function, [FN] Mathematical functions, [M-5] factorial( )
trigonometric functions, [FN] Trigonometric functions, [M-5] sin( )
trunc() function, [FN] Mathematical functions, [M-5] trunc( )
truncated
  negative binomial regression, [R] tnbreg, [SVY] svy estimation
  observations, [R] truncreg, *also see* censored observations
  Poisson regression, [R] tpoisson, [SVY] svy estimation
  regression, [R] truncreg, [SVY] svy estimation
truncating
  real numbers, [FN] Mathematical functions
  strings, [FN] String functions
truncation, [ST] stset, [ST] Glossary, [TE] Glossary, *also see* imputation, truncated data
truncreg command, [R] truncreg, [R] truncreg postestimation
tsappend command, [TS] tsappend
tscale, graph twoway subcommand, [G-2] graph twoway tsline
tscale() option, [G-3] *axis_scale_options*
tsfill command, [TS] tsfill
tsfilter, [TS] tsfilter
  bk command, [TS] tsfilter bk
  bw command, [TS] tsfilter bw
  cf command, [TS] tsfilter cf
  hp command, [TS] tsfilter hp
tsline command, [TS] tsline
tsline, graph twoway subcommand, [G-2] graph twoway tsline
tsnorm macro extended function, [P] macro
tsreport command, [TS] tsreport
tsrevar command, [TS] tsrevar
tsrline command, [TS] tsline
tsrline, graph twoway subcommand, [G-2] graph twoway tsline
tsset command, [TS] tsset
tsset command for mi data, [MI] mi XXXset
tsset, mi subcommand, [MI] mi XXXset
tssmooth, [TS] tssmooth
  dexponential command, [TS] tssmooth dexponential
  exponential command, [TS] tssmooth exponential
  hwinters command, [TS] tssmooth hwinters
  ma command, [TS] tssmooth ma
  nl command, [TS] tssmooth nl
  shwinters command, [TS] tssmooth shwinters
tsunab command, [P] unab
ttail() function, [FN] Statistical functions, [M-5] normal( )
ttest and ttesti commands, [R] ttest
ttest command, [MV] hotelling
ttick() option, [G-3] *axis_label_options*
ttitle() option, [G-3] *axis_title_options*
Tucker–Lewis index, [SEM] estat gof, [SEM] methods and formulas for sem
tukeyprob() function, [FN] Statistical functions, [M-5] normal( )

Tukey's
multiple-comparison adjustment, *see* multiple comparisons, Tukey's method
Studentized range distribution,
cumulative, [FN] **Statistical functions**
inverse cumulative, [FN] **Statistical functions**
tuning constant, [R] **rreg**
tutorials, [U] **1.2.2 Example datasets**
`tw()` pseudofunction, [D] **datetime**, [FN] **Date and time functions**
`twithin()` function, [FN] **Selecting time-span functions**
Twitter, *see* Stata on Twitter
two-level model, [ME] **me**, [ME] **Glossary**
two-parameter logistic model, [IRT] **irt 2pl**, [IRT] **Glossary**
`twocorrelations`, `power` subcommand, [PSS] **power twocorrelations**
two-independent-samples test, [PSS] **Glossary**
`twomeans`, `power` subcommand, [PSS] **power twomeans**
`twoproportions`, `power` subcommand, [PSS] **power twoproportions**
two-sample
correlations, *see* correlation, two-sample
means, *see* means, two-sample
paired test, *see* paired-sample test
proportions, *see* proportions, two-sample
standard deviations, *see* standard deviations, two-sample
study, [PSS] **power**, [PSS] **unbalanced designs**
test, [PSS] **intro**, [PSS] **power**, [PSS] **Glossary**
correlations, [PSS] **power twocorrelations**
dependent samples, [PSS] **power mcc**
hazard functions, [PSS] **power exponential**, [PSS] **power logrank**
independent samples, [PSS] **power twomeans**, [PSS] **power twoproportions**, [PSS] **power twovariances**, [PSS] **power twocorrelations**, [PSS] **power cmh**, [PSS] **power exponential**, [PSS] **power logrank**
log hazards, [PSS] **power exponential**, [PSS] **power logrank**
log-rank, [PSS] **power exponential**, [PSS] **power logrank**
means, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **unbalanced designs**
proportions, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power cmh**, [PSS] **power mcc**
survivor functions, [PSS] **power exponential**, [PSS] **power logrank**
variances, [PSS] **power twovariances**
variances, *see* variances, two-sample
two-sided test, [PSS] **power**, [PSS] **power onemean**, [PSS] **power twomeans**, [PSS] **power pairedmeans**, [PSS] **power oneproportion**, [PSS] **power twoproportions**, [PSS] **power pairedproportions**, [PSS] **power onevariance**,
two-sided test, *continued*
[PSS] **power twovariances**, [PSS] **power onecorrelation**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power mcc**, [PSS] **power trend**, [PSS] **power cox**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
two-stage least squares, [R] **ivregress**, [SVY] **svy estimation**, [XT] **xthtaylor**, [XT] **xtivreg**
two-tailed test, [PSS] **Glossary**, *also see* two-sided test
`twovariances`, `power` subcommand, [PSS] **power twovariances**
two-way
analysis of variance, [PSS] **power**, [PSS] **power twoway**, [PSS] **Glossary**, [R] **anova**
multivariate analysis of variance, [MV] **manova**
repeated-measures ANOVA, [PSS] **power repeated**, [PSS] **Glossary**
scatterplots, [R] **lowess**
`twoway`, `power` subcommand, [PSS] **power twoway**
*type*, [M-2] **declarations**, [M-6] **Glossary**
`type`
command, [D] **type**
macro extended function, [P] **macro**
parameter, [D] **generate**
`type`,
`set` subcommand, [D] **generate**, [R] **set**
`ssc` subcommand, [R] **ssc**
type, broad, [M-6] **Glossary**
type I error, [PSS] **Glossary**, [ST] **Glossary**
type I error probability, *see* probability of a type I error
type I study, [PSS] **Glossary**
type II error, [PSS] **Glossary**, [ST] **Glossary**
type II error probability, *see* probability of a type II error
type II study, [PSS] **Glossary**

## U

*U* statistic, [R] **ranksum**
UCA, *see* Unicode collation algorithm
`uchar()` function, [FN] **String functions**, [M-5] **uchar( )**
UCM, *see* unobserved-components model
`ucm` command, [TS] **ucm**, [TS] **ucm postestimation**
`uconv`, [D] **unicode convertfile**
`udstrlen` macro extended function, [P] **macro**
`udstrlen()` function, [FN] **String functions**, [M-5] **udstrlen( )**
`udsubstr()` function, [FN] **String functions**, [M-5] **udsubstr( )**
`uisdigit()` function, [FN] **String functions**
`uisletter()` function, [FN] **String functions**
`unab` command, [P] **unab**
unabbreviate
command names, [P] **unabcmd**
variable list, [P] **syntax**, [P] **unab**

unabcmd command, [P] **unabcmd**
unaddgroup, ssd subcommand, [SEM] **ssd**
.uname built-in class function, [P] **class**
unary operator, [M-6] **Glossary**
unbalanced
  data, [XT] **Glossary**
  design, [PSS] **power twomeans**, [PSS] **power twoproportions**, [PSS] **power twovariances**, [PSS] **power twocorrelations**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [PSS] **power cmh**, [PSS] **power trend**, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **unbalanced designs**, [PSS] **Glossary**
uncompress files, [D] **zipfile**
unconfoundedness, *see* conditional-independence assumption
under observation, [ST] **cttost**, [ST] **st**, [ST] **stset**, [ST] **Glossary**
underlining in syntax diagram, [U] **11 Language syntax**
underscore functions, [M-1] **naming**, [M-6] **Glossary**
underscore variables, [U] **13.4 System variables (_variables)**
unequal-allocation design, *see* unbalanced design
unhold, _estimates subcommand, [P] **_estimates**
Unicode, [D] **unicode**, [I] **Glossary**
  character, [I] **Glossary**
  collation, [FN] **String functions**, [M-5] **ustrcompare( )**, [U] **12.4.2.5 Sorting strings containing Unicode characters**
  collation algorithm, [D] **unicode collator**
  collators, [D] **unicode collator**
  concept, [M-6] **Glossary**
  encoding conversion, [D] **unicode convertfile**, [D] **unicode translate**
  encodings, [D] **unicode encoding**, [U] **12.4.2.3 Encodings**
  locales, [D] **unicode locale**, [P] **set locale_functions**, [P] **set locale_ui**, [U] **12.4.2.4 Locales in Unicode**
  normalization, [I] **Glossary**
  strings, [FN] **String functions**, [M-4] **string**, [U] **12.4.2 Handling Unicode strings**
  title-cased string, [I] **Glossary**
unicode
  analyze command, [D] **unicode translate**
  collator list command, [D] **unicode collator**
  command, [D] **unicode**
  convertfile command, [D] **unicode convertfile**
  encoding alias command, [D] **unicode encoding**
  encoding list command, [D] **unicode encoding**
  encoding set command, [D] **unicode encoding**, [D] **unicode translate**
  erasebackups command, [D] **unicode translate**
  locale list command, [D] **unicode locale**
  restore command, [D] **unicode translate**
  retranslate command, [D] **unicode translate**
  translate command, [D] **unicode translate**
  uipackage list command, [D] **unicode locale**
unicode, query subcommand, [R] **query**
unidimensionality, [IRT] **Glossary**
uniform accrual, [PSS] **power exponential**, [PSS] **power logrank**
uniform prior, [BAYES] **bayes**, [BAYES] **bayesmh**, [MI] **mi impute mvn**
uniformly distributed
  random numbers, [M-5] **runiform( )**
  random variates, [M-5] **runiform( )**
  random-number function, [FN] **Random-number functions**, [R] **set seed**
uninstall,
  net subcommand, [R] **net**
  ssc subcommand, [R] **ssc**
uniqrows() function, [M-5] **uniqrows( )**
*unique* options, [G-4] **concept: repeated options**
unique value labels, [D] **labelbook**
unique values,
  counting, [D] **codebook**, [R] **table**, [R] **tabulate oneway**
  determining, [D] **inspect**, [D] **labelbook**
uniqueness, [MV] **factor**, [MV] **factor postestimation**, [MV] **rotate**, [MV] **Glossary**
unit loading, [SEM] **intro 4**
unit vectors, [M-5] **e( )**
unitary matrix, [M-6] **Glossary**
unitcircle() function, [M-5] **unitcircle( )**
unit-root
  models, [TS] **vec intro**, [TS] **vec**
  process, [TS] **Glossary**
  test, [TS] **dfgls**, [TS] **dfuller**, [TS] **pperron**, [TS] **Glossary**, [XT] **xtunitroot**
univariate
  distributions, displaying, [R] **cumul**, [R] **diagnostic plots**, [R] **histogram**, [R] **ladder**, [R] **lv**, [R] **stem**
  imputation, *see* imputation, univariate
  kernel density estimation, [R] **kdensity**
  time series, [TS] **arch**, [TS] **arfima**, [TS] **arima**, [TS] **newey**, [TS] **prais**, [TS] **ucm**
Unix,
  keyboard use, [U] **10 Keyboard use**
  pause, [P] **sleep**
  specifying filenames, [U] **11.6 Filenaming conventions**
_unlink() function, [M-5] **unlink( )**
unlink() function, [M-5] **unlink( )**
unobserved-components model, [TS] **psdensity**
  model, [TS] **ucm**
  postestimation, [TS] **ucm postestimation**
unorder() function, [M-5] **sort( )**
unregister, mi subcommand, [MI] **mi set**
unregistered variables, *see* variables, unregistered
unrestricted FMI test, [MI] **mi estimate**, [MI] **mi test**, [MI] **Glossary**
unrestricted transformation, [MV] **procrustes postestimation**, [MV] **Glossary**
unstandardized coefficient, [SEM] **Glossary**

unstructured, [SEM] **Glossary**
`unzipfile` command, [D] **zipfile**
`update`
  `all` command, [R] **update**
  command, [R] **update**
  `from` command, [R] **update**
  `query` command, [R] **update**
`update`,
  `mi` subcommand, [MI] **mi update**, [MI] **noupdate option**
  `query` subcommand, [R] **query**
  `view` subcommand, [R] **view**
`update_d`, `view` subcommand, [R] **view**
`update_interval`, `set` subcommand, [R] **set**, [R] **update**
`update_prompt`, `set` subcommand, [R] **set**, [R] **update**
`update_query`, `set` subcommand, [R] **set**, [R] **update**
updates to Stata, [R] **adoupdate**, [R] **net**, [R] **sj**, [R] **update**, [U] **3.5 Updating and adding features from the web**, [U] **17.6 How do I install an addition?**, [U] **28 Using the Internet to keep up to date**
upper
  one-sided test, [PSS] **Glossary**
  one-tailed test, [PSS] **Glossary**
uppercase, [M-5] **strupper( )**, [M-5] **ustrupper( )**
uppercase-string function, [FN] **String functions**
`_uppertriangle()` function, [M-5] **lowertriangle( )**
`uppertriangle()` function, [M-5] **lowertriangle( )**
upper-triangular matrix, *see* triangular matrix
`use`,
  `cluster` subcommand, [MV] **cluster utility**
  `estimates` subcommand, [R] **estimates save**
  `graph` subcommand, [G-2] **graph use**
  `serset` subcommand, [P] **serset**
`use` command, [D] **use**
`uselabel` command, [D] **labelbook**
user interface, [P] **dialog programming**
  language, [D] **unicode locale**
  localization package, [D] **unicode locale**
user-written additions,
  installing, [R] **net**, [R] **ssc**
  searching for, [R] **net search**, [R] **ssc**
`using`,
  `cmdlog` subcommand, [R] **log**
  `log` subcommand, [R] **log**
using data, [D] **sysuse**, [D] **use**, [D] **webuse**, [P] **syntax**, *also see* importing data
using graphs, [G-2] **graph use**
`ustrcompare()` function, [FN] **String functions**, [M-5] **ustrcompare( )**
`ustrcompareex()` function, [FN] **String functions**, [M-5] **ustrcompare( )**
`ustrfix()` function, [FN] **String functions**, [M-5] **ustrfix( )**
`ustrfrom()` function, [FN] **String functions**, [M-5] **ustrto( )**
`ustrinvalidcnt()` function, [FN] **String functions**, [M-5] **ustrlen( )**
`ustrleft()` function, [FN] **String functions**
`ustrlen` macro extended function, [P] **macro**
`ustrlen()` function, [FN] **String functions**, [M-5] **ustrlen( )**
`ustrlower()` function, [FN] **String functions**, [M-5] **ustrupper( )**
`ustrltrim()` function, [FN] **String functions**, [M-5] **ustrtrim( )**
`ustrnormalize()` function, [FN] **String functions**, [M-5] **ustrnormalize( )**
`ustrpos()` function, [FN] **String functions**, [M-5] **ustrpos( )**
`ustrregexm()` function, [FN] **String functions**
`ustrregexra()` function, [FN] **String functions**
`ustrregexrf()` function, [FN] **String functions**
`ustrregexs()` function, [FN] **String functions**
`ustrreverse()` function, [FN] **String functions**, [M-5] **ustrreverse( )**
`ustrright()` function, [FN] **String functions**
`ustrrpos()` function, [FN] **String functions**, [M-5] **ustrpos( )**
`ustrrtrim()` function, [FN] **String functions**, [M-5] **ustrtrim( )**
`ustrsortkey()` function, [FN] **String functions**, [M-5] **ustrcompare( )**
`ustrsortkeyex()` function, [FN] **String functions**, [M-5] **ustrcompare( )**
`ustrtitle()` function, [FN] **String functions**, [M-5] **ustrupper( )**
`ustrto()` function, [FN] **String functions**, [M-5] **ustrto( )**
`ustrtohex()` function, [FN] **String functions**
`ustrtoname()` function, [FN] **String functions**, [M-5] **ustrtoname( )**
`ustrtrim()` function, [FN] **String functions**, [M-5] **ustrtrim( )**
`ustrunescape()` function, [FN] **String functions**, [M-5] **ustrunescape( )**
`ustrupper()` function, [FN] **String functions**, [M-5] **ustrupper( )**
`ustrword()` function, [FN] **String functions**, [M-5] **ustrword( )**
`ustrwordcount()` function, [FN] **String functions**, [M-5] **ustrword( )**
`usubinstr()` function, [FN] **String functions**, [M-5] **usubinstr( )**
`_usubstr()` function, [M-5] **_usubstr( )**
`usubstr()` function, [FN] **String functions**, [M-5] **usubstr( )**
UTF-8, [D] **unicode**, [D] **unicode encoding**, [D] **unicode translate**, [I] **Glossary**, [M-6] **Glossary**
  encoding conversion, [D] **unicode convertfile**, [D] **unicode translate**
utilities, programming, [MV] **cluster utility**
utility routines, [MI] **technical**

## V


vague prior, *see* noninformative prior
`valofexternal()` function, [M-5] **valofexternal( )**
`value label` macro extended function, [P] **macro**
value labels, [D] **codebook**, [D] **describe**, [D] **edit**, [D] **encode**, [D] **inspect**, [D] **label**, [D] **label language**, [D] **labelbook**, [D] **varmanage**, [P] **macro**, [U] **12.6.3 Value labels**, [U] **13.11 Label values**
  potential problems in, [D] **labelbook**
`values`, `label` subcommand, [D] **label**
`Vandermonde()` function, [M-5] **Vandermonde( )**
vanishing adaptation, *see* diminishing adaptation
VAR, *see* vector autoregressive model, *see* vector autoregressive
`var` command, [TS] **var**, [TS] **var postestimation**
`varabbrev` command, [P] **varabbrev**
`varabbrev`, `set` subcommand, [R] **set**
`varbasic` command, [TS] **varbasic**, [TS] **varbasic postestimation**
`vargranger` command, [TS] **vargranger**
variable
  abbreviation, [P] **varabbrev**
  declarations, [M-2] **declarations**
  description, [D] **describe**
  identifying panels, [XT] **xtset**
  labels, [D] **codebook**, [D] **describe**, [D] **edit**, [D] **label**, [D] **label language**, [D] **notes**, [D] **varmanage**, [P] **macro**, [U] **11.4 varlists**, [U] **12.6.2 Variable labels**
  lists, *see varlist*
  types, [D] **codebook**, [D] **data types**, [D] **describe**, [M-2] **declarations**, [P] **macro**, [U] **11.4 varlists**, [U] **12.2.2 Numeric storage types**, [U] **12.4 Strings**
  class, [P] **class**
`variable label` macro extended function, [P] **macro**
variable types, [SEM] **intro 4**
`variable`, `confirm` subcommand, [P] **confirm**
`variable`, `label` subcommand, [D] **label**
variable-naming convention, [M-1] **naming**
*_variables*, [U] **11.3 Naming conventions**, [U] **13.4 System variables (_variables)**
variables,
  alphabetizing, [D] **order**
  categorical, *see* categorical data, agreement, measures for, *see* categorical data
  changing storage types of, [D] **recast**
  characteristics of, [M-6] **Glossary**, [P] **char**, [P] **macro**, [U] **12.8 Characteristics**
  comparing, [D] **compare**
  copying, [D] **clonevar**
  creating, [D] **varmanage**
  creating new, [D] **separate**
  describing, [D] **codebook**, [D] **notes**
  determining storage types of, [D] **describe**
  displaying contents of, [D] **edit**, [D] **list**
variables, *continued*
  documenting, [D] **codebook**, [D] **labelbook**, [D] **notes**
  dropping, [D] **drop**
  dummy, *see* indicator variables, *see* indicators
  factor, *see* factor variables
  filtering, [D] **varmanage**
  finding, [D] **lookfor**
  generating, [MV] **cluster generate**, [ST] **stgen**
  imputed, [MI] **mi rename**, [MI] **mi reset**, [MI] **mi set**, [MI] **Glossary**
  in dataset, maximum number of, [D] **memory**, [U] **6 Managing memory**
  in model, maximum number, [R] **matsize**
  list values of, [P] **levelsof**
  listing, [D] **codebook**, [D] **describe**, [D] **edit**, [D] **labelbook**, [D] **list**, [M-5] **st_data( )**
  mapping numeric to string, [D] **destring**
  naming, [D] **rename**, [U] **11.2 Abbreviation rules**, [U] **11.3 Naming conventions**
  naming groups of, [D] **rename group**
  ordering, [D] **sort**
  orthogonalize, [R] **orthog**
  passive, [MI] **mi impute**, [MI] **mi passive**, [MI] **mi rename**, [MI] **mi reset**, [MI] **mi set**, [MI] **mi xeq**, [MI] **Glossary**
  registered, [MI] **mi rename**, [MI] **mi set**, [MI] **Glossary**
  regular, [MI] **mi rename**, [MI] **mi set**, [MI] **Glossary**
  renaming, *see* renaming variables
  reordering, [D] **order**
  setting properties of, [D] **varmanage**
  sorting, [D] **gsort**, [D] **sort**, [D] **varmanage**
  standardizing, [D] **egen**
  storage types, *see* storage types
  string, *see* string variables
  system, *see* system variables
  tab expansion of, [U] **10.6 Tab expansion of variable names**
  temporary, [P] **macro**
  transposing with observations, [D] **xpose**
  unabbreviating, [P] **syntax**, [P] **unab**
  unique values, [D] **codebook**, [D] **duplicates**, [D] **inspect**
  unregistered, [MI] **mi rename**, [MI] **mi set**, [MI] **Glossary**
  varying and super varying, [MI] **mi passive**, [MI] **mi predict**, [MI] **mi set**, [MI] **mi varying**, [MI] **Glossary**
Variables Manager, [D] **varmanage**
variance
  analysis, [MV] **manova**
  components, [ME] **Glossary**, *also see* mixed model
  decompositions, *see* forecast-error variance decomposition
  estimation, [SVY] **variance estimation**, [SVY] **Glossary**

variance, *continued*
posterior, [BAYES] **intro**, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **bayesstats summary**
variance,
analysis of, [PSS] **power**, [PSS] **power oneway**, [PSS] **power twoway**, [PSS] **power repeated**, [R] **anova**, [R] **loneway**, [R] **oneway**, [SEM] **intro 4**
creating dataset of, [D] **collapse**
creating variable containing, [D] **egen**
displaying, [R] **summarize**, [R] **tabstat**, [XT] **xtsum**
estimators, [R] ***vce_option***, [XT] ***vce_options***
Huber/White/sandwich estimator, *see* robust, Huber/White/sandwich estimator of variance
inflation factors, [R] **regress postestimation**
linearized, [SVY] **variance estimation**
nonconstant, [SVY] **variance estimation**, *see* robust, *see* robust, Huber/White/sandwich estimator of variance
stabilizing transformations, [R] **boxcox**
testing equality of, [R] **sdtest**
variance–covariance matrix of estimators, [P] **ereturn**, [P] **matrix get**, [R] **correlate**, [R] **estat**, [R] **estat vce**, [SEM] **Glossary**, [U] **20.9 Obtaining the variance–covariance matrix**, *also see* `gsem` option `vce()`, *also see* `sem` option `vce()`
`variance()` function, [M-5] **mean( )**
`variance()` option, *see* `gsem` option `variance()`, *see* `sem` option `variance()`
variance-comparison test, [MV] **mvtest covariances**, [R] **sdtest**
variances, [PSS] **power**, [PSS] **power onevariance**
control-group, [PSS] **power twovariances**
experimental-group, [PSS] **power twovariances**
independent, *see* variances, two-sample
one-sample, [PSS] **power onevariance**
two-sample, [PSS] **power twovariances**
variance-weighted least squares, [R] **vwls**
varimax rotation, [MV] **rotate**, [MV] **rotatemat**, [MV] **Glossary**
`varkeyboard`, `set` subcommand, [R] **set**
*varlist*, [P] **syntax**, [U] **11 Language syntax**, [U] **11.4 varlists**
existing, [U] **11.4.1 Lists of existing variables**
new, [U] **11.4.2 Lists of new variables**
time series, [U] **11.4.4 Time-series varlists**
`varlmar` command, [TS] **varlmar**
`varmanage` command, [D] **varmanage**
`varnorm` command, [TS] **varnorm**
`varsoc` command, [TS] **varsoc**
`varstable` command, [TS] **varstable**
`varwle` command, [TS] **varwle**
varying
conditional-correlation model, [TS] **mgarch**, [TS] **mgarch vcc**
estimation sample, [MI] **mi estimate**
varying, *continued*
variables, [ST] **stvary**, *see* variables, varying and super varying
`varying`, `mi` subcommand, [MI] **mi varying**
`vcc`, `mgarch` subcommand, [TS] **mgarch vcc**
VCE, *see* variance–covariance matrix of estimators
`vce`, `estat` subcommand, [R] **estat**, [R] **estat vce**, [SVY] **estat**
`vce()` option, [R] ***vce_option***, [XT] ***vce_options***, *see* `gsem` option `vce()`, *see* `sem` option `vce()`
VEC, *see* vector error-correction model
`vec` command, [TS] **vec**, [TS] **vec postestimation**
`vec()` function, [FN] **Matrix functions**, [M-5] **vec( )**, [P] **matrix define**
`vecaccum`, `matrix` subcommand, [P] **matrix accum**
`vecdiag()` function, [FN] **Matrix functions**, [P] **matrix define**
`vech()` function, [M-5] **vec( )**
`veclmar` command, [TS] **veclmar**
VECM, *see* vector error-correction model
`vecnorm` command, [TS] **vecnorm**
`vecrank` command, [TS] **vecrank**
`vecstable` command, [TS] **vecstable**
`vector`, [M-2] **declarations**, [M-6] **Glossary**
vector autoregressive
forecast, [TS] **fcast compute**, [TS] **fcast graph**
model, [G-2] **graph other**, [TS] **dfactor**, [TS] **sspace**, [TS] **ucm**, [TS] **var intro**, [TS] **var**, [TS] **var svar**, [TS] **varbasic**, [TS] **Glossary**
moving-average model, [TS] **dfactor**, [TS] **sspace**, [TS] **ucm**
postestimation, [TS] **fcast compute**, [TS] **fcast graph**, [TS] **irf**, [TS] **irf create**, [TS] **var postestimation**, [TS] **vargranger**, [TS] **varlmar**, [TS] **varnorm**, [TS] **varsoc**, [TS] **varstable**, [TS] **varwle**
vector error-correction
model, [TS] **vec intro**, [TS] **vec**, [TS] **Glossary**, *also see* multivariate GARCH model
postestimation, [TS] **fcast compute**, [TS] **fcast graph**, [TS] **irf**, [TS] **irf create**, [TS] **varsoc**, [TS] **vec postestimation**, [TS] **veclmar**, [TS] **vecnorm**, [TS] **vecrank**, [TS] **vecstable**
vector norm, [M-5] **norm( )**
vectors, *see* matrices
verifying data, [D] **assert**, [D] **count**, [D] **datasignature**, [D] **inspect**, *also see* certifying data
verifying mi data are consistent, [MI] **mi update**
version
control, [M-2] **version**, [M-5] **callersversion( )**, *also see* `version` command
version of ado-file, [R] **which**
of Stata, [M-5] **stataversion( )**, [R] **about**
`version`, [M-2] **version**
`version` command, [P] **version**, [U] **16.1.1 Version**, [U] **18.11.1 Version**
class programming, [P] **class**

vertical alignment of text, [G-4] ***alignmentstyle***
videos, *see* Stata YouTube Channel
`view`
  `ado` command, [R] **view**
  `ado_d` command, [R] **view**
  `browse` command, [R] **view**
  command, [R] **view**
  `help` command, [R] **view**
  `help_d` command, [R] **view**
  `net` command, [R] **view**
  `net_d` command, [R] **view**
  `news` command, [R] **view**
  `search` command, [R] **view**
  `search_d` command, [R] **view**
  `update` command, [R] **view**
  `update_d` command, [R] **view**
  `view_d` command, [R] **view**
`view_d`, `view` subcommand, [R] **view**
view matrix, [M-5] **isview( )**, [M-5] **st_subview( )**, [M-5] **st_view( )**, [M-5] **st_viewvars( )**, [M-6] **Glossary**
view source code, [P] **viewsource**
viewing previously typed lines, [R] **#review**
`viewsource`, [M-1] **source**
`viewsource` command, [P] **viewsource**
`vif`, `estat` subcommand, [R] **regress postestimation**
vignette, [U] **1.2.7 Vignette**
`virtual`, [M-2] **class**
virtual memory, [D] **memory**
void
  function, [M-2] **declarations**, [M-6] **Glossary**
  matrix, [M-2] **void**, [M-6] **Glossary**
Vuong test, [R] **zinb**, [R] **zip**
`vwls` command, [R] **vwls**, [R] **vwls postestimation**

## W

Wald test, [PSS] **Glossary**, [R] **contrast**, [R] **predictnl**, [R] **test**, [R] **testnl**, [SEM] **intro 7**, [SEM] **estat eqtest**, [SEM] **estat ginvariant**, [SEM] **example 13**, [SEM] **example 22**, [SEM] **methods and formulas for sem**, [SEM] **test**, [SEM] **testnl**, [SEM] **Glossary**, [SVY] **svy postestimation**, [TS] **vargranger**, [TS] **varwle**, [U] **20.12 Performing hypothesis tests on the coefficients**, [U] **20.12.4 Nonlinear Wald tests**
`wardslinkage`,
  `clustermat` subcommand, [MV] **cluster linkage**
  `cluster` subcommand, [MV] **cluster linkage**
Ward's linkage clustering, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
Ward's method clustering, [MV] **cluster**, [MV] **clustermat**
warning messages, [M-2] **pragma**
`waveragelinkage`,
  `clustermat` subcommand, [MV] **cluster linkage**
  `cluster` subcommand, [MV] **cluster linkage**
`wcorrelation`, `estat` subcommand, [ME] **mixed postestimation**, [XT] **xtgee postestimation**
weak instrument test, [R] **ivregress postestimation**
weakly balanced, [XT] **Glossary**
website,
  stata.com, [U] **3.2.1 The Stata website (www.stata.com)**
  stata-press.com, [U] **3.3 Stata Press**
`webuse`
  command, [D] **webuse**
  `query` command, [D] **webuse**
  `set` command, [D] **webuse**
`week()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`weekly()` function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
Weibull
  density,
    generalized, [FN] **Statistical functions**
    standard, [FN] **Statistical functions**
  distribution, [ST] **streg**
  distribution,
    cumulative, generalized, [FN] **Statistical functions**
    cumulative, standard, [FN] **Statistical functions**
    inverse cumulative, generalized, [FN] **Statistical functions**
    inverse cumulative, standard, [FN] **Statistical functions**
  survival regression, [ST] **streg**
`weibull()` function, [FN] **Statistical functions**, [M-5] **normal( )**
Weibull proportional hazards
  density,
    generalized, [FN] **Statistical functions**
    standard, [FN] **Statistical functions**
  distribution,
    cumulative, generalized, [FN] **Statistical functions**
    cumulative, standard, [FN] **Statistical functions**
    inverse cumulative, generalized, [FN] **Statistical functions**
    inverse cumulative, standard, [FN] **Statistical functions**
`weibullden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`weibullph()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`weibullphden()` function, [FN] **Statistical functions**, [M-5] **normal( )**
`weibullphtail()` function, [M-5] **normal( )**
`weibulltail()` function, [FN] **Statistical functions**, [M-5] **normal( )**
*weight*, [P] **syntax**

[weight=*exp*] modifier, [U] **11.1.6 weight**, [U] **20.23 Weighted estimation**
weighted data, [U] **11.1.6 weight**, [U] **20.23 Weighted estimation**, *also see* survey data
weighted least squares, [R] **regress**, [SEM] **methods and formulas for sem**, [SEM] **Glossary**
  generalized linear models, [R] **glm**
  generalized method of moments estimation, [R] **gmm**, [R] **ivpoisson**
  instrumental-variables regression, [R] **gmm**, [R] **ivregress**
  nonlinear least-squares estimation, [R] **nl**
  nonlinear systems of equations, [R] **nlsur**
  variance, [R] **vwls**
weighted moving average, [TS] **tssmooth**, [TS] **tssmooth ma**
weighted-average linkage clustering, [MV] **cluster**, [MV] **clustermat**, [MV] **cluster linkage**, [MV] **Glossary**
weighted-regression-adjustment estimator, [TE] **Glossary**
weights, [G-2] **graph twoway scatter**
  probability, [SVY] **survey**, [SVY] **svydescribe**, [SVY] **svyset**
  sampling, [SVY] **survey**, [SVY] **svydescribe**, [SVY] **svyset**
Welsch distance, [R] **regress postestimation**
which, class, [P] **classutil**
`which`, `classutil` subcommand, [P] **classutil**
`which` command, [R] **which**, [U] **17.3 How can I tell if a command is built in or an ado-file?**
`which`, `mata` subcommand, [M-3] **mata which**
`while`, [M-2] **while**, [M-2] **continue**, [M-2] **break**, [M-2] **semicolons**
`while` command, [P] **while**
white noise, [TS] **wntestb**, [TS] **wntestq**, [TS] **Glossary**, [XT] **Glossary**
White/Huber/sandwich estimator of variance, *see* robust, Huber/White/sandwich estimator of variance
White's test for heteroskedasticity, [R] **regress postestimation**
wide
  data style, [MI] **styles**, [MI] **Glossary**
  technical description, [MI] **technical**
`wide`, `reshape` subcommand, [D] **reshape**
width of %*fmt*, [M-5] **fmtwidth()**
`width()` option, [G-2] **graph twoway histogram**
Wilcoxon
  rank-sum test, [R] **ranksum**
  signed-ranks test, [R] **signrank**
  test (Wilcoxon–Breslow, Wilcoxon–Gehan, Wilcoxon–Mann–Whitney), [ST] **sts test**
wildcard, *see* `regexm()` function, *see* `regexr()` function, *see* `regexs()` function, *see* `strmatch()` function
Wilks's
  lambda, [MV] **canon**, [MV] **manova**, [MV] **mvtest means**, [MV] **Glossary**
Wilks's, *continued*
  likelihood-ratio test, [MV] **canon**, [MV] **manova**, [MV] **mvtest means**
`window`
  `fopen` command, [P] **window programming**, [P] **window fopen**
  `fsave` command, [P] **window programming**
  `manage` command, [P] **window programming**, [P] **window manage**
  `menu` command, [P] **window programming**, [P] **window menu**
  `push` command, [P] **window programming**, [P] **window push**
  `stopbox` command, [P] **window programming**, [P] **window stopbox**
Windows
  Metafile, [G-2] **graph export**
  metafiles programming, [P] **automation**
  programming, [P] **automation**
Windows,
  filenames, [U] **18.3.11 Constructing Windows filenames by using macros**
  keyboard use, [U] **10 Keyboard use**
  pause, [P] **sleep**
  specifying filenames, [U] **11.6 Filenaming conventions**
`winexec` command, [D] **shell**
Wishart distribution, [MV] **Glossary**
  density, [FN] **Statistical functions**
  prior, [BAYES] **bayesmh**, [BAYES] **bayesmh evaluators**
withdrawal, [PSS] **power exponential**, [PSS] **power logrank**, [PSS] **Glossary**
within estimators, [XT] **xthtaylor**, [XT] **xtivreg**, [XT] **xtreg**, [XT] **xtregar**, [XT] **Glossary**
within matrix, [MV] **Glossary**
within-cell
  means and variances, [XT] **xtsum**
  variance, [PSS] **power twoway**
within-group variance, [PSS] **power oneway**
within-imputation variability, [MI] **mi estimate**, [MI] **mi predict**
within-subject
  design, [PSS] **power repeated**, [PSS] **Glossary**
  factor, [PSS] **power repeated**, [PSS] **Glossary**
  variance, [PSS] **power repeated**
WLF, *see* worst linear function
WLS, *see* weighted least squares
`wntestb` command, [TS] **wntestb**
`wntestq` command, [TS] **wntestq**
`wofd()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date()**
Woolf confidence intervals, [R] **epitab**
`word` macro extended function, [P] **macro**
`word()` function, [FN] **String functions**
Word, Microsoft, *see* Microsoft Word
`wordbreaklocale()` function, [FN] **String functions**
`wordcount()` function, [FN] **String functions**

workflow, [MI] **workflow**
worst linear function, [MI] **mi impute mvn**, [MI] **Glossary**
`wra`, `stteffects` subcommand, [TE] **stteffects wra**
`write`, `file` subcommand, [P] **file**
writing and reading text and binary files, [P] **file**
writing data, *see* exporting data, *see* saving data
www.stata.com website, [U] **3.2.1 The Stata website (www.stata.com)**
www.stata-press.com website, [U] **3.3 Stata Press**

## X

`xaxis()` suboption, [G-3] ***axis_choice_options***
X-bar charts, [G-2] **graph other**
`xchart` command, [R] **qc**
`xcommon` option, [G-2] **graph combine**
`xcorr` command, [TS] **xcorr**
`xeq`, `mi` subcommand, [MI] **mi xeq**
`xi` prefix command, [R] **xi**
`xl()` function, [M-5] **xl( )**
`xlabel()` option, [G-3] ***axis_label_options***
`xline()` option, [G-3] ***added_line_options***
XML, [D] **xmlsave**
`xmlabel()` option, [G-3] ***axis_label_options***
`xmlsave` command, [D] **xmlsave**
`xmluse` command, [D] **xmlsave**
`xmtick()` option, [G-3] ***axis_label_options***
`xpose` command, [D] **xpose**
`xscale()` option, [G-3] ***axis_scale_options***
`xshell` command, [D] **shell**
`xsize()` option, [G-2] **graph display**, [G-3] ***region_options***
`xtabond` command, [XT] **xtabond**, [XT] **xtabond postestimation**
`xtcloglog` command, [XT] **quadchk**, [XT] **xtcloglog**, [XT] **xtcloglog postestimation**
`xtdata` command, [XT] **xtdata**
`xtdescribe` command, [XT] **xtdescribe**
`xtdpd` command, [XT] **xtdpd**, [XT] **xtdpd postestimation**
`xtdpdsys` command, [XT] **xtdpdsys**, [XT] **xtdpdsys postestimation**
`xtfrontier` command, [XT] **xtfrontier**, [XT] **xtfrontier postestimation**
`xtgee` command, [XT] **xtgee**, [XT] **xtgee postestimation**
`xtgls` command, [XT] **xtgls**, [XT] **xtgls postestimation**
`xthtaylor` command, [XT] **xthtaylor**, [XT] **xthtaylor postestimation**
`xtick()` option, [G-3] ***axis_label_options***
`xtile` command, [D] **pctile**
`xtintreg` command, [XT] **quadchk**, [XT] **xtintreg**, [XT] **xtintreg postestimation**
`xtitle()` option, [G-3] ***axis_title_options***
`xtivreg` command, [XT] **xtivreg**, [XT] **xtivreg postestimation**
`xtline` command, [XT] **xtline**
`xtlogit` command, [XT] **quadchk**, [XT] **xtlogit**, [XT] **xtlogit postestimation**
`xtnbreg` command, [XT] **xtnbreg**, [XT] **xtnbreg postestimation**
`xtologit` command, [XT] **quadchk**, [XT] **xtologit**, [XT] **xtologit postestimation**
`xtoprobit` command, [XT] **quadchk**, [XT] **xtoprobit**, [XT] **xtoprobit postestimation**
`xtpcse` command, [XT] **xtpcse**, [XT] **xtpcse postestimation**
`xtpoisson` command, [XT] **quadchk**, [XT] **xtpoisson**, [XT] **xtpoisson postestimation**
`xtprobit` command, [XT] **quadchk**, [XT] **xtprobit**, [XT] **xtprobit postestimation**
`xtrc` command, [XT] **xtrc**, [XT] **xtrc postestimation**
`xtreg` command, [XT] **xtreg**, [XT] **xtreg postestimation**
`xtregar` command, [XT] **xtregar**, [XT] **xtregar postestimation**
`xtset` command, [XT] **xtset**
`xtset` command for mi data, [MI] **mi XXXset**
`xtset`, `mi` subcommand, [MI] **mi XXXset**
`xtstreg` command, [XT] **quadchk**, [XT] **xtstreg**, [XT] **xtstreg postestimation**
`xtsum` command, [XT] **xtsum**
`xttab` command, [XT] **xttab**
`xttest0` command, [XT] **xtreg postestimation**
`xttobit` command, [XT] **quadchk**, [XT] **xttobit**, [XT] **xttobit postestimation**
`xttrans` command, [XT] **xttab**
`xtunitroot`
  `breitung` command, [XT] **xtunitroot**
  `fisher` command, [XT] **xtunitroot**
  `hadri` command, [XT] **xtunitroot**
  `ht` command, [XT] **xtunitroot**
  `ips` command, [XT] **xtunitroot**
  `llc` command, [XT] **xtunitroot**
`xvarformat()` option, [G-3] ***advanced_options***
`xvarlabel()` option, [G-3] ***advanced_options***
xxxset, programming, [MI] **technical**

## Y

`yaxis()` suboption, [G-3] ***axis_choice_options***
`ycommon` option, [G-2] **graph combine**
`year()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**, [U] **24.5 Extracting components of dates and times**
`yearly()` function, [D] **datetime**, [D] **datetime translation**, [FN] **Date and time functions**, [M-5] **date( )**
`yh()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`ylabel()` option, [G-3] ***axis_label_options***
`yline()` option, [G-3] ***added_line_options***
`ym()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`ymlabel()` option, [G-3] ***axis_label_options***
`ymtick()` option, [G-3] ***axis_label_options***

`yofd()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
YouTube Channel, *see* Stata YouTube Channel
`yq()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**
`yscale()` option, [G-3] ***axis_scale_options***
`ysize()` option, [G-2] **graph display**, [G-3] ***region_options***
`ytick()` option, [G-3] ***axis_label_options***
`ytitle()` option, [G-3] ***axis_title_options***
Yule coefficient similarity measure, [MV] ***measure_option***
Yule–Walker equations, [TS] **corrgram**, [TS] **Glossary**
`yvarformat()` option, [G-3] ***advanced_options***
`yvarlabel()` option, [G-3] ***advanced_options***
`yw()` function, [D] **datetime**, [FN] **Date and time functions**, [M-5] **date( )**

## Z

$z$ test, [PSS] **Glossary**
Zellner's
    $g$-prior, [BAYES] **bayes**, [BAYES] **bayesmh**, [BAYES] **Glossary**
    seemingly unrelated regression, [R] **sureg**, [R] **reg3**, [R] **suest**
zero matrix, [P] **matrix define**
zero-altered, *see* zero-inflated
zero-inflated
    negative binomial regression, [R] **zinb**, [SVY] **svy estimation**
    Poisson regression, [R] **zip**, [SVY] **svy estimation**
zero-skewness transform, [R] **lnskew0**
`zinb` command, [R] **zinb**, [R] **zinb postestimation**
`zip` command, [R] **zip**, [R] **zip postestimation**
`zipfile` command, [D] **zipfile**
`zlabel()` option, [G-3] ***axis_label_options***
`zmlabel()` option, [G-3] ***axis_label_options***
`zmtick()` option, [G-3] ***axis_label_options***
`zscale()` option, [G-3] ***axis_scale_options***
`ztest` and `ztesti` commands, [R] **ztest**
`ztick()` option, [G-3] ***axis_label_options***
`ztitle()` option, [G-3] ***axis_title_options***