

# Subject index

## A

- about this book
  - downloading programs.....4
  - errata.....19
  - example datasets ..... 4, 19
  - GSS dataset.....16–17
  - online resources ..... 19
  - overview.....13–18
  - Read me first.....3
  - user-written programs ..... 4, 5
- academic pricing, Stata ..... 8
- access to Stata source code ..... 11
- added variable plots.....
  - .... see regression diagnostics,
  - added variable plots
- `addplot()` option, `marginsplot` command.....542
- adjacent mean contrasts.....105–110
- adjusted means ..... see ANCOVA, adjusted means
  - technical details .....
    - see ANCOVA, adjusted means,
    - technical details
- adjusted  $R$ -squared ..... see effect size, adjusted  $R$ -squared
- advantages of using Stata ..... see Stata strengths
- analysis of covariance ..... see ANCOVA
- analysis of variance.....see ANOVA
- analyzing subsamples .. 32–34, 511–512
- analyzing summary data ..... see immediate commands
- ANCOVA ..... 135–160
  - adjusted means.....138, 145, 150–151
  - technical details.....152–160
- ANCOVA, *continued*
  - adjusted  $R$ -squared..139–140, 145, 151–152
  - experiment with randomization...
    - .....136–146
  - observational data ..... 146–152
  - power analysis..... see power analysis, ANCOVA
  - randomized pretest design...136–141
  - specifying covariates ..... 138
  - Stata video tutorial ..... 136
  - statistical power .... see statistical power, ANCOVA
  - unadjusted means.....151
  - using `regress` command.....140–141, 145–146
  - with interactions ..... see ANCOVA with interactions
- ANCOVA with interactions.....203–232
  - compared to two-way ANOVA .....
    - .....203–205
  - contrasts of adjusted means..213–219
    - graphing ..... 216–219
    - multiple comparisons...218–219
  - contrasts of slopes ..... 212–213
  - estimating slopes ..... 211–212
  - graphing adjusted means.....211
  - graphing interaction.....211
  - three-level IV ..... 220–231
  - two-level IV .....206–220
- ANOVA
  - analyzing complex surveys ... 265–269
  - heterogeneity of variance..269–273
  - mixed-design ... see mixed-designs

- ANOVA, *continued*
- one-way ..... see one-way ANOVA
  - power analysis.....see power analysis, one-way ANOVA
  - one-way repeated measures .. 314–319
  - statistical power versus ANCOVA .. see statistical power, ANCOVA versus ANOVA
  - supercharging ..... 264–276
  - three-way ... see three-way ANOVA
  - two-way ..... see two-way ANOVA
  - power analysis.....see power analysis, two-way ANOVA
  - using median regression .. 275–276
  - using `qreg` command ..... 275–276
  - using quantile regression .. 275–276
  - using `regress` command .. 260–264
  - using robust regression ... 273–275
  - using robust standard errors.. 269–273
  - using `rreg` command ..... 273–275
  - violating homogeneity of variance ..... 269–273
  - with influential observations.. 273–276
  - with outliers..... 273–276
- `anova` command
- ANCOVA ..... see ANCOVA
  - one-way ANOVA ..... see one-way ANOVA
  - output explained..... 64–65
  - three-way ANOVA ... see three-way ANOVA
  - two-way ANOVA ..... see two-way ANOVA
  - versus `regress` command .... 276–280
- `append` command ..... 574–576
- appending datasets..... 574–576
- as balanced versus as observed contrasts ..... 123–125
- as observed versus as balanced contrasts ..... 123–125
- `asbalanced` option..... 197–198
- `asobserved` option..... 196–197
- `at()` option, `margins` command..... .. 383–386, 392–394, 525–528, 533–534
- average marginal value versus marginal value at the mean.... 152–160
- `avplots` command ..... 469–470
- B**
- Beta* coefficients ..... see regression, *Beta* coefficients; see also regression, interpreting coefficients
- `beta` option, `regress` command .. 397–398, 406, 409–410
- between-subjects ANOVA
- one-way ..... see one-way ANOVA
  - three way ... see three-way ANOVA
  - two way ..... see two-way ANOVA
- between/within designs ..... see mixed-designs
- binomial exact test..... .. see one-sample test of proportions, binomial exact
- `bitest` command ..... 47–48
- `bitesti` command..... 54
- Bonferroni adjustments..... 125–130, 523–524, 533, 550, 553
- books, recommended ..... 19–22
- `by:` prefix command..... 513–514
- `bydimension()` option
- `marginsplot` command ..... 548
- `byopts()` option, `marginsplot` command..... 549
- C**
- `c.` prefix ..... 18
- `caption()` option, `marginsplot` command..... 540
- cases..... see observations
- categorical predictors, using `regress` command ... 260–264, see also ANOVA
- cause and effect..... 18

- cell percentages .. see cross-tabulations, cell percentages
- chi-squared test .. see cross-tabulations, chi-squared test
- chi2 option
  - tabi command ..... 54–56
  - tabulate command ..... 48–50
- cimargins option, pwcompare
  - command ..... 551–552
- ciopts() option, marginsplot
  - command ..... 541
- clear command ..... 26, 557–559
- clear option, use command .. 557–559
- clinical significance ..... 41
- codebook command ..... 565–566
- coefplot command .....
  - ... see user-written programs, coefplot command; see also presenting regression results
- Cohen's *d*
  - effect size .. see effect size, Cohen's *d*
  - power analysis ..... see power analysis, Cohen's *d*
- column percentages .....
  - see cross-tabulations, column percentages
- combining datasets ..... 574–578
- comma-separated files
  - exporting from Stata ..... 562
  - importing into Stata ..... 560
- comparisons among means ..... see contrasts
- complex surveys ..... 265–269
- computing new variables .. 566–568, see also modifying variables
- confidence intervals, interpreting ... 82–84
- confidence levels, setting ..... 516–517
- contrast command .... 89–98, 519–524
  - df() option ..... 336–337
  - effects option ..... 522–523
  - level() option ..... 522, 524
  - mcompare() option ..... 523–524
  - noeffects option ..... 521
- contrast command, *continued*
  - nowald option ..... 521–524
  - pveffects option ..... 523
- contrast operators
  - a ..... 105–110
  - ar ..... 108–110
  - custom ..... 120–123
  - g ..... 102–105
  - gw ..... 123–125
  - h ..... 111–117
  - hw ..... 123–125
  - j ..... 115–117
  - jw ..... 123–125
  - p ..... 117–119, 484–485
  - pw ..... 123–125
  - q ..... 118–119
  - qw ..... 123–125
  - r ..... 99–102
  - table of ..... 98–99
  - weighted ..... 123–125
- contrasts ..... 86–98
  - adjacent mean ..... 105–110
  - computing effect size ..... 75–77, 96–97
  - custom ..... 120–123
  - grand mean ..... 102–105
  - helmert ..... 111–117
  - polynomial ..... 117–119, 484–485
  - reference group ..... 99–102
  - reverse adjacent mean ... 108–110
  - reverse helmert ..... 115–117
  - selecting ..... 100–102, 104–105, 109–110, 116–117
  - selecting reference group .. 101–102
  - testing planned comparisons .. 72–75
  - to previous levels ..... 115–117
  - to subsequent levels ..... 111–117
  - weighted ..... 123–125
- converting datasets .. see Stat/Transfer
- Cook's *D* ... see regression diagnostics, Cook's *D*
- cooksd option, predict command ....
  - ..... 462–466
- correlate command ..... 50–51

- correlations ..... 50–51
    - pairwise ..... 50
    - Stata video tutorial ..... 51
  - covariance structures ..... 315–317, 329–333
  - covariates ..... 18
    - by IV interaction ..... *see* ANCOVA with interactions
    - increasing statistical power .....
      - ..... *see* statistical power, increasing using covariates
    - specifying in ANCOVA ..... *see* ANCOVA, specifying covariates
  - covratio option, **predict** command ..
    - ..... 464
  - creating formatted regression tables ...
    - ..... *see* presenting regression results
  - creating new variables ..... 566–568
  - cross-tabulations ..... 28, 34–36, 48–50, 54–56
    - cell percentages ..... 36
    - chi-squared test ..... 48–50
      - Stata video tutorial ..... 49, 55
      - using summary data ..... 54–56
    - column percentages ..... 35–36
    - Fisher’s exact test ... 48–50, 54–56
      - Stata video tutorial ..... 49, 55
      - using summary data ..... 54–56
    - row percentages ..... 36
    - Stata video tutorial ..... 28, 49
    - using summary data ..... 54–56
      - Stata video tutorial ..... 55
    - with summary statistics ..... 36–37
      - Stata video tutorial ..... 37
  - .csv files, importing into Stata .... 560
  - custom contrasts ..... 120–123
- D**
- data conversion software ..... *see* Stat/Transfer
  - Data Editor ..... 24
  - data management ..... 20, 557–582
    - Stata strengths ..... 9–10
  - datasets
    - appending ..... 574–576
    - combining ..... 574–578
    - converting ..... *see* Stat/Transfer
    - describing ..... 23–26
    - documenting ..... 24–25
    - for this book ..... *see* about this book, example datasets
    - GSS dataset .. *see* about this book, GSS dataset
    - merging ..... 576–578
    - reshaping long to wide .... 580–582
    - reshaping wide to long .... 578–580
    - viewing ..... 24
  - dependent groups *t* test ..... *see* paired sample *t* test
  - dependent variable ..... 17–18
  - describe** command ..... 23–24
  - describing datasets ..... 23–26
  - descriptive statistics ..... 22–38
    - Stata video tutorial ..... 38
  - df()** option, **contrast** command .. 336–337
  - DFBETA ..... *see* regression diagnostics, DFBETA
  - dfbeta** command ..... 467–468
  - dfits** option, **predict** command .. 464
  - dfmethod()** option, **mixed** command ..
    - ..... 333–337
  - displaying stored results ..... *see* stored results, displaying
  - documenting datasets ..... 24–25
  - downloading
    - datasets for this book ... *see* about this book, example datasets
    - programs for this book ..... *see* about this book, downloading programs
    - user-written programs .....
      - ... *see* user-written programs, downloading
  - drop** command ..... 570–572
  - drop if** command ..... 572–573
  - dropping observations ..... 572–573
  - dropping variables ..... 570–572

- Duncan adjustments . . . . 125–130, 550, 554–555
- Dunnett adjustments . . . . 125–130, 550, 554–555
- DV . . . . . see dependent variable
- dydx() option, margins command . . . . . 534–538
- E**
- e(sample) stored result . . . . . 411–414, 443–448
- ease of learning, Stata . . . . . 9
- edit command . . . . . 24
- effect size
- adjusted *R*-squared . . . . . 68–69, 139–140, 145, 151–152
  - Cohen's *d* . . . . . 67–68
  - esize twosample command . . 67–68
  - esizei command . . . . 76–77, 96–97
  - estat esize command . . 139–140, 145, 151–152, 398–399
  - eta-squared . . . . . 68–69
  - from contrasts . . . . . 75–77, 96–97
  - omega-squared . . . . . 68–69
  - R*-squared . . . . . 68–69
  - Stata video tutorial . . . . . 69
- effect, of variable . . . . . 18
- effects option
- contrast command . . . . . 522–523
  - pwcompare command . . . . 551–552, 554–555
- egen command . . . . . 568
- ereturn list command . . . . 412–414
- errata . . . . . see about this book, errata
- error covariance structures . . . . 315–317, 329–333
- error messages
- file already exists . . . 561–562
  - no; data in memory would be lost . . . . . 26, 557–559
  - previous command was not margins . . . . . 67, 80–81
- esize twosample command . . . . 67–68
- esizei command . . . . . 76–77, 96–97
- estat esize command . . . . . 68–69, 398–399
- omega option . . . . . 69, 398–399
- estat vif command . . . . . 485–487
- estimates dir command . . . . 415–416
- estimates stats command . . 329–333
- estimates store command . . 329–333, 415–416, 443–448
- estimates table command . . 417–427, 443–453
- estimation commands . . . . . 77–82
- analyzing subsamples . . . . 511–512
  - common features . . . . . 508–517
  - common syntax . . . . . 510–511
  - if specification . . . . . 511–512
  - robust standard errors . . . . . 512
  - setting confidence levels . . 516–517
  - with prefix commands . . . 265–269, 513–516
  - by: . . . . . 513–514
  - mi estimate: . . . . . 516
  - nestreg: . . . . . 448–453, 514
  - stepwise: . . . . . 515
  - svy: . . . . . 265–269, 515–516
- esttab command . . . . .
- . . . . . see user-written programs, esttab command; see also presenting regression results
- eta-squared . . . . . see effect size, eta-squared
- exact option
- tabi command . . . . . 54–56
  - tabulate command . . . . . 48–50
- example datasets . . see about this book, example datasets
- Excel workbooks
- exporting from Stata . . . . . 562
  - exporting results to, Stata video tutorial . . . . . 440
  - exporting tabulations to . . . . . 31
  - importing into Stata . . . . . 559–560

Excel workbooks, *continued*  
 saving regression tables as .....  
 ..... see presenting regression  
 results, as Excel workbook  
 Stata tutorial on importing ... 559  
 Stata tutorial on pasting from . 560  
**export delimited** command ..... 562  
**export excel** command ..... 562  
 exporting results to Excel, Stata video  
 tutorial ..... 440  
**extremes** command .....  
 ... see user-written programs,  
**extremes** command

**F**

factor variables ..... 17–18, *see also*  
 independent variable  
 Stata video tutorial ..... 63  
 used with **margins** command .....  
 ..... 529–534  
 factorial design  
 three way ... *see* three-way ANOVA  
 two way ..... *see* two-way ANOVA  
 FAQs, Stata ..... 12  
 Fisher's exact test ..... *see* cross-  
 tabulations, Fisher's exact test  
 formatting regression tables ..... *see*  
 presenting regression results  
**forvalues** command ..... 563–565  
**fre** command ..... *see* user-written  
 programs, **fre** command  
 frequency distributions ... *see* one-way  
 tabulations

**G**

**generate** command ..... 566–567  
*Getting Started* manual ..... 19–20  
 grand mean contrasts ..... 102–105  
**graph matrix** command ..... 459  
**groups** option, **pwcompare** command ..  
 . 127–128, 131–132, 552–555  
 GSS dataset .. *see* about this book, GSS  
 dataset

**H**

heterogeneity of variance ..... 269–273  
 heteroscedasticity ..... *see* regression  
 diagnostics, homoscedasticity  
 hierarchical regression .. *see* regression,  
 nested models  
 homogeneity of variance ..... 269–273  
 homoscedasticity ..... *see* regression  
 diagnostics, homoscedasticity

**I**

**i.** prefix ..... 18  
**if** specification ..... 32–34, 511–512  
 immediate commands  
**bitesti** command ..... 54  
**esizei** command .... 76–77, 96–97  
**prtesti** command ..... 53–54  
**tabi** command ..... 54–56  
**ttesti** command ..... 51–53  
**import delimited** command ..... 560  
**import excel** command ..... 559–560  
 importing comma-separated files ... 560  
 importing .csv files ..... 560  
 importing Excel workbooks ... 559–560  
 Stata video tutorial ..... 559  
 independent variable ..... 17–18  
 by covariate interaction ..... *see*  
 ANCOVA with interactions  
 influential observations  
 ANOVA ..... 273–276  
 regression .....  
 ... *see* regression diagnostics,  
 influential observations  
 interaction contrasts  
 three-way ANOVA ... *see* three-way  
 ANOVA, interaction contrasts  
 two-way ANOVA ..... *see* two-way  
 ANOVA, interaction contrasts  
 interactions  
 covariate by IV .. *see* ANCOVA with  
 interactions  
 three-way ... *see* three-way ANOVA  
 two-way ..... *see* two-way ANOVA  
 internal validity ..... 18

interpreting confidence intervals . . . 82–84  
 IV . . . . . see independent variable

**K**

`keep` command . . . . . 570–572  
`keep if` command . . . . . 572–573  
 keeping observations . . . . . 572–573  
 keeping variables . . . . . 570–572

**L**

`label define` command . . . . . 565–566  
`label values` command . . . . . 565–566  
`label variable` command . . . . . 562–565  
 labeling values . . . . . 565–566  
 labeling variables . . . . . 562–565  
 $\LaTeX$  document, saving regression tables as . . . . . see presenting regression results, as  $\LaTeX$  document  
`legend()` option, `marginsplot` command . . . . . 546  
`level()` option . . . . . 516–517  
   `contrast` command . . . . . 522, 524  
   `regress` command . . . . . 410  
 leverage . . . . . see regression diagnostics, leverage  
 leverage option, `predict` command . . . . . 462–466  
 leverage versus residual squared plot . . . . . see regression diagnostics, leverage versus residual squared plot  
`lincom` command . . . . . 395–397, 402–403  
 linear regression . . . . . see regression  
 linearity . . . . . see regression diagnostics, linearity  
 long datasets, reshaping to wide . . . . . 580–582  
 longitudinal designs . . . . . 343–376, *see also* repeated measures designs  
   IV by time interaction . . . . . 350–356  
   IV by time(piecewise) interaction . . . . . 363–376

longitudinal designs, *continued*

  linear effect of time . . . . . 344–350  
   piecewise modeling of time . . . . . 356–363  
 looping . . . . . 563–565, *see also* looping  
`lowess` command . . . . . 474–476  
`lvr2plot` command . . . . . 466

**M**

main effects, interpreting with categorical interactions . . . . . 276–280  
 marginal value at the mean versus average marginal value . . . . . 152–160  
 marginally significant . . . . . see not significant  
`margins` command . . . . . 65–67, 383–386, 392–394, 524–538  
   `asbalanced` option . . . . . 197–198  
   `asobserved` option . . . . . 196–197  
   `at()` option . . . . . 383–386, 392–394, 525–528, 533–534  
   `contrast()` option . . . . . 530–533  
   `dydx()` option . . . . . 534–538  
   `mcompare()` option . . . . . 533  
   `noatlegend` option . . . . . 528  
   `nopvalues` option . . . . . 65  
   use before `marginsplot` command . . . . . 67, 80–81  
   with factor variables . . . . . 529–534  
`marginsplot` command . . . . . 66–67, 386–389, 538–550  
   adding scatterplot to . . . . . 542  
   `addplot()` option . . . . . 542  
   `bydimension()` option . . . . . 548  
   `byopts()` option . . . . . 549  
   `ciopts()` option . . . . . 541  
   customizing by-graphs . . . . . 549  
   customizing the legend . . . . . 546  
   displaying confidence intervals . . . . . 541  
   displaying fit line . . . . . 541  
   error messages  
     previous command was not `margins` . . . . . 67, 80–81

- marginsplot** command, *continued*
- labeling the plot dimension .. 544–546
  - labeling the  $x$  dimension ..... 547
  - legend() option ..... 546
  - line thickness ..... 541
  - marker size ..... 541
  - marker symbol ..... 541
  - noci() option ..... 542
  - omitting confidence interval... 542
  - plotdimension() option.....544–546
  - plotopts() option..... 541
  - recast() option ..... 541
  - recastci() option..... 541
  - scheme() option ..... 542
  - selecting a scheme..... 542
  - selecting dimension for  $x$  axis.. 543
  - selecting the by dimension .... 548
  - selecting the plot dimension... 544
  - subtitle() option ..... 540
  - title() option ..... 540
  - use with **margins** command ... 67, 80–81
  - xdimension() option ..... 543
  - xlabel() option ..... 540, 547
  - xscale() option ..... 540
  - xtitle() option ..... 540
  - ylabel() option ..... 540
  - yscale() option ..... 540
  - caption() option ..... 540
  - note() option ..... 540
  - ytitle() option ..... 540
- matched pairs  $t$  test.....see paired sample  $t$  test
- mcompare()** option
- contrast command ..... 523–524
  - margins command ..... 533
  - pwcompare command .... 125–132, 550, 554–555
- median regression ..... 275–276
- merge** command ..... 576–578
- merging datasets.....576–578
- mi estimate**: prefix command.... 516
- missing** option, **tabulate** command.. ..... 27–30
- mixed** command
- dfmethod() option ..... 333–337
  - residuals() option ..... 315–316, 329–333
  - small-sample methods .... 333–337
- mixed-designs..... 319–329
- ANCOVA as alternative analysis... ..... 337–341
  - residual covariance structures..... ..... 329–333
- modifying variables ..... 567–570
- multicollinearity ..... see regression diagnostics, multicollinearity
- multiple regression ..... see regression, multiple regression
- multiple-comparison adjustments..... ..... 125–132, 523–524, 533, 550–555
- Bonferroni adjustments .. 125–130, 523–524, 533, 550, 553
  - Duncan adjustments ..... 125–130, 550
  - Dunnett adjustments .... 125–130, 550
  - Scheffé adjustments ..... 125–130, 523–524, 533, 550, 553
  - Šidák adjustments ..... 125–130, 523–524, 533, 550, 553
  - Student–Newman–Keuls’s adjustments..... 125–130, 550
  - Tukey adjustments.. 125–130, 550, 553
- multiprocessing, Stata ..... 8–9
- N**
- nested regression models ..... see regression, nested models
- nestreg**: prefix command.... 448–453, 514
- noatlegend** option, **margins** command ..... 528
- noci()** option, **marginsplot** command ..... 542

- noeffects** option, **contrast** command  
 ..... 521
- nonparametric statistics ..... 56
- nopvalues** option, **margins** command  
 ..... 65
- normality of residuals .....  
 .... see regression diagnostics,  
 normality of residuals
- not significant .....  
 see reanalyzing your data until  
 you find a significant result
- note()** option, **marginsplot** command  
 ..... 540
- notes** command ..... 24–25
- nowald** option, **contrast** command ...  
 ..... 521–524
- O**
- observational data, ANCOVA ..... see  
 ANCOVA, observational data
- observations  
   dropping ..... 572–573  
   keeping ..... 572–573
- OLS regression ..... see regression
- omega** option, **estat esize** command  
 ..... 398–399
- omega-squared** ..... see effect size,  
*omega-squared*
- one-sample *t* test ..... 42–43  
   Stata video tutorial ..... 43  
   using summary data ..... 52–53  
   Stata video tutorial ..... 53
- one-sample test of proportions ... 46–47  
   binomial exact ..... 47–48  
   using summary data ..... 54  
   using summary data ..... 53–54
- one-tailed tests ..... 74
- one-way ANOVA, contrasts ..... 86–133
- one-way repeated measures designs ...  
 ..... 314–319
- one-way tabulations ..... 28–33
- one-way tabulations ..... 26–31  
   exporting to Excel ..... 31  
   Stata video tutorial ..... 28  
   with missing data ..... 27–30  
   with multiple variables ..... 30
- one-way ANOVA ..... 63–77  
   means of DV by IV ..... 65–67  
   confidence intervals ..... 65–67  
   graphing ..... 66–67  
   power analysis ..... see power  
   analysis, one-way ANOVA
- online resources, for this book .....  
   ... see about this book, online  
   resources
- online resources, Stata ..... 11–12
- outliers  
   ANOVA ..... 273–276  
   regression ..... see regression  
   diagnostics, outliers
- output explained  
   **anova** command ..... 64–65  
   **regression** command ... 382–383  
   **ttest** command ..... 62–63
- outreg** command .....  
   ..... see user-written pro-  
   grams, **outreg** command; see  
   also presenting regression re-  
   sults
- outreg2** command ... see user-written  
 programs, **outreg2** command;  
 see also presenting regression  
 results
- overview, this book ..... see about this  
 book, overview
- P**
- paired sample *t* test ..... 41–42  
   Stata video tutorial ..... 42
- pairwise comparisons ..... 125–132
- pairwise correlations ..... 50
- partial correlation ..... 398–399

- partial interactions
  - three-way ANOVA ... see three-way ANOVA, partial interactions
  - two-way ANOVA ..... see two-way ANOVA, partial interactions
- pasting Excel workbooks to Stata
  - Stata video tutorial ..... 560
- PDF documentation in Stata, Stata
  - video tutorial ..... 21
- Pearson's correlation ..... 50–51
  - Stata video tutorial ..... 51
- piecewise modeling of time ..... see longitudinal designs, piecewise modeling of time
- planned comparisons ..... see contrasts
- plotdimension() option, marginsplot command ..... 544–546
- plotopts() option, marginsplot command ..... 541
- point and click interface ..... 11
- polynomial contrasts ..... 117–119, 484–485
- postestimation commands .. 77–82, 517
  - contrast ..... see contrast command
  - marginsplot .... see marginsplot command
  - margins ... see margins command
  - pwcompare ..... see pwcompare command
  - listing of ..... 82
- power
  - ability to reject a false null hypothesis ..... see statistical power
  - sample size estimation .. see power analysis
- power analysis... 281–310, 491–505, see also statistical power
  - ANCOVA ..... 301–306
  - ANOVA
    - one-way ..... 293–301
    - two-way ..... 306–309
- power analysis, *continued*
  - Cohen's  $d$  ..... 284–292
    - guidelines ..... 286–287
    - related to  $R$ -squared ..... 286
  - nested regression ..... 500–504
  - one-way ANOVA ..... 293–301
  - regression ..... 493–505
  - standardized effect ..... 284–292
    - guidelines ..... 286–287
    - Stata video tutorial ..... 306
  - two-sample  $t$  test ..... 282–292
    - unequal group sizes .... 291–292
  - two-way ANOVA ..... 306–309
- power multreg command ..... see user-written programs, power multreg command
- power nestreg command ..... see user-written programs, power nestreg command
- practical significance ..... 41
- predict command ..... 460–466
  - cooks $d$  option ..... 462–466
  - covratio option ..... 464
  - dfits option ..... 464
  - leverage option ..... 462–466
  - rstandard option ... 460–462, 490
  - rstudent option ..... 462–466
  - welsch option ..... 464
- prefix commands ..... 456, 513–516
  - by: ..... 513–514
  - mi estimate: ..... 516
  - nestreg: ..... 448–453, 514
  - stepwise: ..... 453–456, 515
  - svy: ..... 265–269, 515–516
- presentation quality regression tables..
  - ..... see presenting regression results
- presenting regression results... 418–441
  - as Excel workbook ..... 438–439
  - as L<sup>A</sup>T<sub>E</sub>X document ..... 436–438
  - as .rtf file ..... 429–436
  - as .tex file ..... 436–438
  - as Word document ..... 429–436
  - as .xml file ..... 438–439
  - formatting coefficients .... 432–434

- presenting regression results, *continued*
    - including confidence intervals . . . . . 432–434
    - labeling variables . . . . . 433–434
    - multiple models . . . . . 423–427, 434–438
    - one model . . . . . 419–423, 427–434
    - using `coefplot` command . . . . . 439–440
    - using `estimates table` command . . . . . 419–427
    - using `esttab` command . . . . . 427–438
    - using `outreg` command . . . . . 438
    - using `outreg2` command . . . . . 438
    - using `xml tab` command . . . . . 438–439
  - previous levels, contrast to . . . . . 115–117
  - pricing, Stata . . . . . 8
  - programs
    - for this book . . . . . see about this book, downloading programs
    - user-written . . . . . see user-written programs
    - video tutorial on downloading . . . . . 10
  - proportions
    - one-sample test . . . . . see one-sample test of proportions
    - binomial exact . . . . . see one-sample test of proportions, binomial exact
    - two-sample test . . . . . see two-sample test of proportions
  - `prtesti` command . . . . . 53–54
  - `pveffects` option
    - `pwcompare` command . . . . . 126–127, 131–132
  - `pveffects` option, `contrast` command . . . . . 523
  - `pwcompare` command . . . . . 125–132, 550–555
    - `cimargins` option . . . . . 551–552
    - `effects` option . . . . . 551–552, 554–555
    - `groups` option . . . . . 127–128, 131–132, 552–555
  - `pwcompare` command, *continued*
    - `mcompare()` option . . . . . 125–132, 550, 554–555
    - `pveffects` option . . . . . 126–127, 131–132
    - `sort` option . . . . . 131–132, 554–555
  - `pwcorr` command . . . . . 50
  - `pwmean` command . . . . . 132
- Q**
- `qreg` command . . . . . 275–276
  - quantile regression . . . . . 275–276
- R**
- R*-squared . . . . . see effect size, *R*-squared
  - randomized prepost design
    - ANCOVA . . . . . see ANCOVA, randomized prepost design
  - Read me first . . . . . 3, see also about this book, Read me first
  - reading data into Stata
    - comma-separated files . . . . . 560
    - `.csv` files . . . . . 560
    - Excel workbooks . . . . . 559–560
    - Stata datasets . . . . . 557–559
  - reanalyzing your data until you find a significant result . . . . . see multiple comparison adjustments
  - `recast()` option, `marginsplot` command . . . . . 541
  - `recastci()` option, `marginsplot` command . . . . . 541
  - `recode` command . . . . . 569–570
  - recoding variables . . . . . 569–570
  - recommended books . . . . . 19–22
  - recommended resources . . . . . 19–22
  - reference group contrasts . . . . . 99–102
  - `regress` command
    - `beta` option . . . . . 397–398, 406, 409–410
    - `cformat()` option . . . . . 407–408
    - computing summary statistics for estimation sample . . . . . 411–412
    - details about . . . . . 403–418
    - displaying stored results . . . . . 417–418

**regress** command, *continued*

- for performing ANOVA . . . . . 260–264
- formatting *p*-values . . . . . 407–408
- formatting coefficients . . . . . 407–408
- formatting standard errors . . . . . 407–408
- identifying estimation sample . . . . . 411–412
- level()** option . . . . . 410
- multiple regression . . . . . 391–392
- nestreg:** prefix command . . . . . 448–453
- noheader** option . . . . . 406–408
- notable** option . . . . . 406–407
- options explained . . . . . 405–408
- pformat()** option . . . . . 407–408
- redisplaying results . . . . . 408–410
- setting confidence level . . . . . 410
- sformat()** option . . . . . 407–408
- simple regression . . . . . 381–383
- Stata video tutorial . . . . . 380
- stepwise:** prefix command . . . . . 453–456
- stored results . . . . . 412–414
  - e(sample)** . . . . . 412–414
- storing results . . . . . 415–416
- versus **anova** command . . . . . 276–280
- regression . . . . . 378–403
  - Beta* coefficients . . . . . 397–398, 406, 409–410
  - computing adjusted means . . . . . 392–394
  - computing predicted means . . . . . 383–386
  - computing summary statistics for estimation sample . . . . . 411–412
  - diagnostics . . . . . see regression diagnostics
  - fitting multiple models on the same sample . . . . . 443–448
  - graphing predicted means . . . . . 386–389
  - homoscedasticity . . . . . see regression diagnostics, homoscedasticity

regression, *continued*

- interpreting coefficients . . . . . 394–399
  - Beta* coefficients . . . . . 397–398
  - multiple-unit change . . . . . 395–397
  - one-unit change . . . . . 395
  - standardized coefficients . . . . . 397–398
- linearity . . . . . see regression diagnostics, linearity
- multicollinearity . . . . . see regression diagnostics, multicollinearity
- multiple regression . . . . . 389–399
- nested models . . . . . 448–453
- nonlinearity . . . . . see regression diagnostics, linearity
- outliers . . . . . see regression diagnostics, outliers
- output explained . . . . . 382–383
- partial correlation . . . . . 398–399
- power analysis . . . . . see power analysis, regression
- presenting results . . . . . see presenting regression results
- robust standard errors . . . . . 489
- semipartial correlation . . . . . 398–399
- simple regression . . . . . 379–389
- standardized coefficients . . . . . 397–398, 406, 409–410
- standardized residuals . . . . . . . . . . see regression diagnostics, standardized residuals
- Stata video tutorial . . . . . 380
- stepwise models . . . . . 453–456
- studentized residuals . . . . . . . . . . see regression diagnostics, studentized residuals
- testing multiple coefficients . . . . . 399–403
  - equal to zero . . . . . 400–401
  - equality of coefficients . . . . . 401–402
  - linear combinations . . . . . 402–403

- regression, *continued*
  - variance inflation factor .....
    - .... see regression diagnostics, variance inflation factor
  - VIF ..... see regression diagnostics, VIF
- regression diagnostics ..... 456–491
  - added variable plots ..... 467–471
  - Cook's *D* ..... 462–467
  - COVRATIO ..... 464
  - DFBETA ..... 467–471
  - DFITS ..... 464
  - excluding suspect observations....
    - ..... 471–472
  - homoskedasticity ..... 487–489
  - influential observations ... 458–472
  - leverage ..... 462–467
  - leverage versus residual squared
    - plot ..... 466–467
  - linearity ..... 472–485
    - assessing analytically ... 479–485
    - assessing graphically ... 472–479
    - assessing using **contrast**
      - command ..... 484–485
    - assessing via factor variables ...
      - ..... 481–485
    - assessing via graphing means ...
      - ..... 476–479
    - assessing via lowess ..... 474–476
    - assessing via polynomials .. 480–481
    - assessing via residuals ..... 474
    - assessing via scatterplots... 472–473
  - multicollinearity ..... 485–487
  - normality of residuals ..... 489–491
  - outliers ..... 458–472
  - scatterplot matrix ..... 459
  - standardized residuals .... 460–462
  - studentized residuals ..... 462–467
  - variance inflation factor... 485–487
  - VIF ..... 485–487
  - Welsch distance ..... 464
- repeated measures designs .... 313–341,
  - see also longitudinal designs
  - analyzing using ANCOVA .. 337–341
  - mixed-designs... see mixed-designs
  - one-way ..... 314–319
  - residual covariance structures .....
    - ..... 315–317, 329–333
- repeating commands with loops .. 563–565
- replace** command ..... 567–568
- replace** option, **save** command .. 561–562
- reproducing results ..... 20–21
- required sample size ..... see power analysis
- reshape long** command ..... 578–580
- reshape wide** command ..... 580–582
- reshaping datasets
  - long to wide ..... 580–582
  - wide to long ..... 578–580
- residual covariance structures ..... 315–317, 329–333
- residuals
  - normality .....
    - .... see regression diagnostics, normality of residuals
  - standardized .....
    - .... see regression diagnostics, standardized residuals
  - studentized .....
    - .... see regression diagnostics, studentized residuals
- residuals()** option, **mixed** command
  - ..... 315–316, 329–333
- robust regression ..... 273–275
- robust standard errors
  - ANOVA ..... 269–273
  - estimation commands ..... 512
  - regression ..... 489
- row percentages .. see cross-tabulations, row percentags
- rreg** command ..... 273–275
- rstandard** option, **predict** command
  - ..... 460–462, 490

- rstudent** option, **predict** command ..  
 .....462–466  
**.rtf** file, saving regression tables as ...  
 ..... see presenting regression  
 results, as **.rtf** file  
**rvfplot** command ..... 474, 487–488
- S**  
 sample size estimation ..... see power  
 analysis  
**save** command ..... 561–562  
   **replace** option ..... 561–562  
 saving Stata datasets ..... 561–562  
 Scheffé adjustments ..... 125–130,  
 523–524, 533, 550, 553  
**scheme()** option, **marginsplot**  
 command ..... 542  
**search** command ..... 10–11  
 selecting contrasts ... 100–102, 104–105,  
 109–110, 116–117  
 selecting reference group ..... 101–102  
 semipartial correlation ..... 398–399  
**showcoding** command .....  
 ... see user-written programs,  
   **showcoding** command  
 Šidák adjustments .. 125–130, 523–524,  
 533, 550, 553  
 significance ..... 41  
 simple contrasts  
   three-way ANOVA ... see three-way  
   ANOVA, simple contrasts  
   two-way ANOVA ..... see two-way  
   ANOVA, simple contrasts  
 simple effects  
   three-way ANOVA ... see three-way  
   ANOVA, simple effects  
   two-way ANOVA ..... see two-way  
   ANOVA, simple effects  
 simple interactions, three-way ANOVA ..  
   . see three-way ANOVA, simple  
   interactions  
 simple partial interactions, three-way  
   ANOVA .....  
   . see three-way ANOVA, simple  
   partial interactions  
 simple regression ..... see regression,  
   simple regression  
**sort** option, **pwcompare** command ....  
   ..... 131–132, 554–555  
 source code, Stata ..... 11  
 speed, of Stata ..... 8–9  
 split plot designs ... see mixed-designs  
 SPSS commands, Stata equivalents ...  
   . see Stata equivalents of SPSS  
   commands  
 SSC archive ..... 10–11  
**ssc** command ..... 10–11  
 standardized coefficients ... see regres-  
   sion, standardized coefficients;  
   see also regression, interpreting  
   coefficients  
 standardized effect  
   Cohen's *d* .. see effect size, Cohen's  
   *d*  
   power analysis ..... see power  
   analysis, standardized effect  
 standardized residuals .....  
   ... see regression diagnostics,  
   standardized residuals  
 Stat/Transfer ..... 8, 560–561  
*Stata Blog* ..... 12  
 Stata equivalents of SPSS commands  
   **ADD FILES** ..... 584  
   **AGGREGATE** ..... 586  
   **ANOVA** ..... 588  
   **AUTORECODE** ..... 589  
   **CASESTOVARS** ..... 591  
   **COMPUTE** ..... 593  
   **CROSSTABS** ..... 594  
   **DELETE VARIABLES** ..... 597  
   **DESCRIPTIVES** ..... 599  
   **DISPLAY** ..... 600  
   **DOCUMENT** ..... 601  
   **FACTOR** ..... 602  
   **FILTER** ..... 602  
   **FORMATS** ..... 603  
   **FREQUENCIES** ..... 603  
   **GET FILE** ..... 605  
   **GET TRANSLATE** ..... 605  
   **LOGISTIC REGRESSION** ..... 606

- Stata equivalents of SPSS commands,  
*continued*
- MATCH FILES..... 606
  - MEANS..... 608
  - MISSING VALUES..... 608
  - MIXED..... 610
  - MULTIPLE IMPUTATION..... 611
  - NOMREG..... 611
  - PLUM..... 612
  - PROBIT..... 613
  - RECODE..... 614
  - RELIABILITY..... 615
  - RENAME VARIABLES..... 615
  - SAVE..... 617
  - SAVE TRANSLATE..... 618
  - SELECT IF..... 618
  - SORT CASES..... 618
  - SORT VARIABLES..... 619
  - SUMMARIZE..... 619
  - T-TEST..... 619
  - VALUE LABELS..... 620
  - VARIABLE LABELS..... 621
  - VARSTOCASES..... 622
- Stata estimation commands..... *see*  
estimation commands
- Stata interface, Stata video tutorial.. 20
- Stata Journal*..... 12–13
- Stata manuals, Stata video tutorial.. 21
- Stata Press* books..... 21–22
- Stata pricing..... 8
- Stata source code..... 11
- Stata strengths..... 5–13
- access to source code..... 11
  - ANOVA..... 5–7
  - ANOVA technology..... 8
  - data management..... 9–10
  - ease of learning..... 9
  - economical..... 8
  - FAQs..... 12
  - multiprocessing..... 8–9
  - online resources..... 11–12
  - point and click interface..... 11
  - powerful and simple..... 11
  - pricing..... 8
- Stata strengths, *continued*
- speed..... 8–9
  - Stata Blog*..... 12
  - Stata Journal*..... 12–13
  - Stata Technical Bulletin*..... 13
  - Stata/MP..... 8–9
  - Statalist*..... 12
  - statistical powerhouse..... 8–9
  - user-written programs.. 10–11, *see*  
also user-written programs
  - video tutorials on Stata..... 12
  - Stata Technical Bulletin*..... 13
- Stata video tutorials..... *see* video  
tutorials on Stata
- Stata web forum..... 12
- Stata website..... 11–12
- Stata YouTube channel..... *see* video  
tutorials on Stata
- Stata/MP..... 8–9
- Statalist*..... 12
- statistical power.... 136–146, 301–306,  
*see also* power analysis
- ANCOVA versus ANOVA... 136–146
  - ANCOVA..... 301–306
  - ANCOVA versus ANOVA... 301–306
  - ANCOVA versus repeated measures  
ANOVA..... 303
  - increasing using covariates... 301–  
306
- statistical significance..... 41
- stepwise regression models..... *see*  
regression, stepwise models
- stepwise:** prefix command.. 453–456,  
515
- stored results
- displaying..... 417–418
  - e(sample)**..... 412–414
  - regress** command..... 412–414
- storing results..... 415–416, 443–448
- structure of residual covariance... 315–  
317, 329–333
- student pricing, Stata..... 8
- Student–Newman–Keuls’s  
adjustments.... 125–130, 550,  
554–555

- studentized residuals .....
    - .... see regression diagnostics, studentized residuals
  - subsamples, analyzing..32–34, 511–512
  - subsequent levels, contrast to..111–117
  - `subtitle()` option, `marginsplot` command.....540
  - `summarize` command.....31–34
    - with `if` specification.....32–34
  - summary data, analyzing.....see immediate commands
  - summary statistics ..... 31–34
    - by one variable ..... 32–34
    - by two variables ..... 36–37
    - for subgroups ..... 32–34
  - `svy`: prefix command ..... 265–269, 515–516
- T**
- t* test
    - one-sample .. see one-sample *t* test
    - paired sample...see paired sample *t* test
    - two-sample .. see two-sample *t* test
  - `tab1` command ..... 30
  - `tabi` command ..... 54–56
    - `chi2` option.....54–56
    - `exact` option ..... 54–56
  - `tabulate` command
    - `chi2` option.....48–50
    - `exact` option ..... 48–50
    - `missing` option.....27–30
    - one-way .. see one-way tabulations
    - Stata video tutorial ..... 49
    - two-way ..... see cross-tabulations with `summarize()` option...33–34
  - tabulations
    - one-way .. see one-way tabulations
    - two-way ..... see cross-tabulations
  - `test` command.....400–401
  - `testparm` command.....401–402
  - `.tex` file, saving regression tables as...
    - .... see presenting regression results, as `.tex` file
  - three-way ANOVA ..... 233–257
    - interaction contrasts.....248–252
    - partial interactions.....244–246, 248–252
    - simple contrasts.....244, 256
    - simple effects.....239, 256
    - simple interactions..236–239, 242, 252–256
    - simple partial interactions....242–244
    - three-by-three-by-three design ....
      - .....246–256
      - interaction contrasts ... 248–252
      - partial interactions .... 248–252
      - simple contrasts ..... 256
      - simple effects ..... 256
      - simple interactions .... 252–256
    - two-by-two-by-three design...240–246
      - partial interactions ..... 244–246
      - simple contrasts ..... 244
      - simple interactions.....242
      - simple partial interactions..242–244
    - two-by-two-by-two design .... 234–239
      - simple effects ..... 239
      - simple interactions .... 236–239
  - time
    - as a continuous predictor ..... see longitudinal designs
    - piecewise modeling of.....see longitudinal designs, piecewise modeling of time
  - `title()` option, `marginsplot` command.....540
  - treatment effect.....18
  - `ttesti` command ..... 51–53
  - Tukey adjustments ..... 125–132, 550, 553–555
  - two-sample *t* test ..... 40–41, 51–52, 59–63, 67–68
    - Cohen’s *d*.....67–68
    - output explained.....62–63

two-sample *t* test, *continued*  
 power analysis ..... see power analysis, two-sample *t* test  
 Stata video tutorial ..... 40  
 using summary data ..... 51–52  
 Stata video tutorial ..... 52  
 two-sample test of proportions ... 43–46  
 using summary data ..... 53  
 two-way ANOVA ..... 161–201  
 CIs, interpreting ..... 198–200  
 interaction contrasts ..... 191–193  
 interpreting CIs ..... 198–200  
 partial interactions ..... 177–180, 183–185, 190–191  
 power analysis ..... see power analysis, two-way ANOVA  
 simple contrasts ..... 176–177, 188–190  
 simple effects ... 168–172, 175–176, 182–183, 188  
 Stata video tutorial ..... 172  
 three-by-three design ..... 185–193  
 interaction contrasts ... 191–193  
 partial interactions ..... 190–191  
 simple contrasts ..... 188–190  
 simple effects ..... 188  
 two-by-three design ..... 173–185  
 partial interactions ... 177–180, 183–185  
 simple contrasts ..... 176–177  
 simple effects ..... 175–176, 182–183  
 two-by-two design ..... 163–173  
 simple effects ..... 168–172  
 unbalanced designs ..... 193–198  
 two-way tabulations ..... see cross-tabulations

## U

UCLA IDRE website ..... 12  
 unadjusted means, ANCOVA ..... see ANCOVA, unadjusted means  
 use command ..... 26, 557–559  
 clear option ..... 557–559

user-written programs ..... 10–11  
 coefplot command ..... 439–440  
 downloading ..... 10–11  
 Stata video tutorial ..... 10  
 esttab command ..... 4–5, 427–438  
 extremes command ..... 5  
 for this book ..... see about this book, downloading programs  
 fre command ..... 4, 28–30  
 outreg command ..... 438  
 outreg2 command ..... 438  
 power multreg command ..... 4, 493–500  
 power nestreg command ..... 4, 500–504  
 showcoding command ..... 4  
 xml.tab command ..... 438–439

## V

value labels ..... 565–566  
 variable labels ..... 562–565  
 variables  
 creating new ..... 566–568  
 dropping ..... 570–572  
 keeping ..... 570–572  
 modifying ..... 567–568  
 recoding ..... 569–570  
 variance inflation factor .. see regression diagnostics, variance inflation factor  
 vce(robust) option ..... 269–273, 489, 512  
 video tutorials on Stata  
 exporting results to Excel ..... 440  
 video tutorials on Stata  
 ANCOVA ..... 136  
 with interactions ..... 231  
 chi-squared test ..... 49  
 using summary data ..... 54  
 converting datasets ..... 561  
 correlation ..... 51  
 cross-tabulations ..... 28, 49  
 using summary data ..... 54  
 cross-tabulations and summary statistics ..... 37

video tutorials on Stata, *continued*

- descriptive statistics ..... 38
- downloading user-written programs ..... 10
- effect sizes ..... 69
- Excel workbooks
  - importing ..... 559
  - pasting data into ..... 560
- factor variables ..... 63
- factorial ANOVA with interactions ..  
..... 200
- Fisher's exact test ..... 49
  - using summary data ..... 54
- getting help in Stata ..... 20
- importing Excel workbooks to Stata ..... 559
- interactions, factorial ANOVA .. 200
- linear regression ..... 380
- one-sample *t* test, using summary data ..... 53
- one-way tabulations ..... 28
- paste Excel workbooks to Stata ...  
..... 560
- PDF documentation in Stata ... 21
- power analysis ..... 306
- regress** command ..... 380
- Stat/Transfer ..... 561
- Stata interface ..... 20
- Stata manuals ..... 21
- t* test
  - one-sample ..... 43
  - paired sample ..... 42
  - two-sample ..... 40
- tabulate** command ..... 49
- two-sample *t* test, using summary data ..... 52
- two-way ANOVA ..... 172
- user-written programs, downloading ..... 10
- viewing datasets ..... 24
- viewsource** command ..... 11
- VIF ..... see regression diagnostics, VIF

**W**

- web resources, Stata ..... 11–12
- web site for this book ... see about this book, online resources
- weighted contrasts ..... 123–125
- welsch** option, **predict** command .. 464
- Why use Stata ..... see Stata strengths
- wide datasets, reshaping to long .. 578–580
- within subjects designs ..... 314–319
- within/between designs ..... see mixed-designs
- Word document, saving regression tables as ..... see presenting regression results, as Word document

**X**

- xdimension()** option, **marginsplot** command ..... 543
- xlabel()** option, **marginsplot** command ..... 540, 547
- .xml file, saving regression tables as ...  
..... see presenting regression results, as .xml file
- xml\_tab** command ... see user-written programs, **xml\_tab** command; see also presenting regression results
- xscale()** option, **marginsplot** command ..... 540
- xtitle()** option, **marginsplot** command ..... 540

**Y**

- ylabel()** option, **marginsplot** command ..... 540
- YouTube channel, Stata ..... see video tutorials on Stata
- yscale()** option, **marginsplot** command ..... 540
- ytitle()** option, **marginsplot** command ..... 540