

Subject index

A

absorbing event 748
accelerated failure-time model 823–
828
accelerated longitudinal design 240
adaptive quadrature 537–543
adjacent-category logit model 618
adjusted means 36
age-period-cohort 239
agreement 82
AIC . . . see Akaike information criterion
Akaike information criterion 323
analysis of covariance 35
analysis of variance 17–19, 262–264
analysis time 744
ANCOVA see analysis of covariance
Anderson–Hsiao estimator 274
ANOVA see analysis of variance
antependence model 272
applications
 adolescent-alcohol-use data . . . 335,
 380
 airline cost data 461
 angina data 832
 anorexia data 61
 antibiotics data 909
 antisocial-behavior data . . 283, 333
 army data 219
 attitudes-to-abortion data 622
 bladder cancer data 864
 blindness data 792, 867
 British election data 680, 911
 brothers' school transition data . .
 792
 buying crackers data 677
 child mortality data . . 773, 791, 866

applications, *continued*

 childhood math proficiency data . .
 626
 children's growth data . . . 343, 377
 cigarette data 793, 910
 cigarette-consumption data . . 336,
 467
 class-attendance data 63
 cognitive-style data 289
 contraceptive method data . . . 681
 crop data 178
 dairy-cow data 426, 568, 908
 dialyzer data 220
 diffusion-of-innovations data . . 378
 divorce data 797, 863
 early childhood math proficiency
 data 794
 electricity supplier data 682
 epileptic-fit data 733
 essay-grading data . . 118, 606, 622
 exam-and-coursework data . . . 427
 faculty salary data 11
 family-birthweight data 220
 fat accretion data 379
 Fife school data 443, 460
 first intercourse data 790
 general-health-questionnaire
 data 116
 Georgian birthweight data . . 119,
 175, 179
 grade-point-average data 173
 growth in math data 376
 Grunfeld investment data 434
 Guatemalan immunization data . .
 873
 head-size data 118

applications, *continued*

headache data 734
 health-care reform data .. 691, 911
 high-school-and-beyond data...60,
 176, 217
 homework data 218
 hours-worked data 287
 housing the homeless data....679
 hybrid car data 678
 infection data 867, 868, 912
 inner-London schools data....181,
 216
 instructional-improvement data...
 420
 item response data 912
 jaw-growth data.....174, 377
 Kenyan nutrition data 399
 labor-participation data..... 505
 lip-cancer data 720, 739
 marriage data.....624
 math-achievement data 419
 multicenter hypertension-trial data
 422
 multiple divorce data..... 863
 neighborhood-effects data 117,
 172, 463
 nitrogen data 464
 Ohio wheeze data 564
 olympic skating data..... 465
 patent data 737
 peak-expiratory-flow data.....74,
 116, 386, 430, 431
 PISA data 571
 police stops data..... 736
 postnatal data 334
 promotions data.....749, 789
 rat-pups data 174
 recovery after surgery data....624
 reimprisonment data..... 862
 respiratory-illness data..... 620
 returns-to-schooling..... 290
 salamander mating data..... 897
 schizophrenia trial data 585
 school retention in Thailand data
 570

applications, *continued*

school-absenteeism data..... 738
 school-effects data.....423
 sex education data.....177
 skin-cancer data.....739, 911
 smoking and birthweight data..61,
 123, 467
 smoking-intervention data 621,
 910
 STAR data.....424, 425, 468
 tax-preparer data 283
 teacher expectancy meta-analysis
 data.....120
 teacher turnover data 790
 toenail infection data....515, 563
 Tower-of-London data.....908
 transport data 633
 twin hayfever data 913
 twin-neuroticism data 117, 429
 unemployment-claims data ... 284,
 286, 381
 union membership data 568
 U.S. production data.... 421, 461
 vaginal-bleeding data.....564
 verbal-aggression data565, 620
 video-ratings data.....462
 wage-panel data 175, 229, 247,
 298
 wheat and moisture data.....218
 wine-tasting data.....572, 625
 yogurt data.....651
 Arellano–Bond estimator 276
 atomistic fallacy 1, 150
 attribute 638
 attrition 278, 692
 autocorrelations 244
 autoregressive-response model 269–
 272
 autoregressive structure .. 308–311, 559

B

balanced data.....233, 295
 banded structure.....313–315
 bar plot 517
 baseline category logit model 632

baseline hazard 758, 805, 810
 Bayesian information criterion 323
 best linear unbiased predictor 111,
 441
 between estimator 143–144
 BIC see Bayesian information
 criterion
 binary response see dichotomous
 response
 binomial distribution 562, 688
 bivariate linear regression model... 339
 bivariate normal distribution 190,
 191, 596, 701
 BLUP see best linear unbiased
 predictor
 Breusch–Pagan test 89

C

caterpillar plot 208
 causal effect 57
 censoring 745–746
 Chamberlain fixed-effects logit model..
 558
 clinical trial 5, 515, 585
 clustered data 73, 385, 873
 cluster-randomized trials ... 4, 171, 177
 coefficient of determination 22,
 134–137
 cohort-sequential design 240
 commands
 anova 19
 dropemptycells option 263
 repeated() option 264
 append 786
 asmprobit 677
 by 471, 761
 sort option 270
 clogit 557
 or option 557
 cloglog 778
 correlate 186, 243
 covariance option 186
 egen 444, 449, 471, 587
 anymatch() function 587
 count() function .. 127, 185, 717
 commands, egen, *continued*
 cut() function 774
 group() function 449
 mean() function... 154, 237, 587
 rank() function 236
 sd() function 426
 tag() function 126, 444
 total() function 444
 encode 387
 eq 596, 915, 918
 estat recovariance 197
 estat wcorrelation ... 561, 716
 estimates save 527
 estimates stats 323
 estimates table 324
 expand 674
 fillin 552, 602, 717, 857
 foreach 154, 646
 generate 75
 gllamm ... 527–529, 677, 915–917,
 921–932
 adapt option 594, 879
 bmatrix() option 925
 cluster() option 623
 copy option 542
 denom() option 562, 688
 eform option 529, 594, 700,
 881
 eqs() option 597, 661, 664,
 700, 878, 888, 916, 924
 family() option .. 528, 724, 916,
 924
 family(binomial) option .. 528
 family(poisson) option ... 700
 from() option 542, 887
 fv() option 924
 gateaux() option 729
 geqs() option 925
 i() option ... 594, 878, 916, 917,
 924
 ip() option 925
 ip(f) option 728
 ip(m) option 543
 lf0() option 729

commands, *gllamm*, *continued*

link() option.... 528, 724, 916,
 924
 link(c11) option..... 782
 link(log) option..... 700
 link(logit) option..... 528
 link(mlogit) option..... 618
 link(oc11) option..... 616
 link(ologit) option..... 594
 link(oprobit) option.... 594,
 607
 link(soprobit) option.... 609
 lv() option..... 924
 nip() option.... 528, 543, 729,
 888
 nrf() option..... 661, 888, 916,
 917, 924
 nrf(2) option..... 597
 offset() option..... 724
 peqs() option..... 918, 925
 pweight() option..... 572
 robust option.... 529, 536, 712
 s() option..... 609, 925
 skip option..... 542, 887
 thresh() option.. 611, 613, 619,
 625, 918, 925
 weight() option.. 543, 565, 570,
 792, 914
 gllapred..... 209, 546,
 599, 603, 672, 675, 892, 895,
 919–920, 933–936
 above() option..... 599, 603
 fsample option... 554, 603, 675
 linpred option..... 919
 ll option..... 535, 785, 787
 marginal option.. 548, 599, 675,
 919
 mu option.... 548, 549, 552, 599,
 603, 675, 725
 nooffset option..... 725
 u option..... 546, 672, 892, 919
 us() option..... 549, 895
 ustd option..... 546, 919
 gllasim..... 717, 937–939
 fac option..... 938

commands, *gllasim*, *continued*

fsample option..... 718
 linpred option..... 938
 mu option..... 938
 u option..... 938
 y option..... 938
 glm..... 509, 584, 710
 eform option..... 510, 693
 family() option..... 509
 family(poisson) option... 693
 link() option..... 509, 693
 link(log) option..... 693
 link(logit) option..... 509
 link(probit) option..... 510
 scale(x2) option..... 710, 711
 gmm..... 559
 graph combine..... 205
 gsort..... 208
 hausman..... 157
 histogram..... 13, 161
 normal option..... 55, 205
 intreg..... 827
 keep..... 231
 lincom... 39, 41, 45, 154, 592, 906
 eform option..... 592
 or option..... 536, 592
 logit..... 505, 506, 584
 offset() option..... 544
 or option..... 506, 761
 lrtest..... 89, 140, 452, 598
 force option..... 701
 ltable..... 750
 hazard option..... 751
 noadjust option..... 750, 751
 manova..... 264
 margins..... 19, 35, 140, 141
 marginsplot..... 141
 matrix score..... 813, 821, 840
 merge..... 185, 472, 545
 metaan..... 121
 fe option..... 121
 ml option..... 121
 misstable..... 366
 mixlcov..... 670, 671
 sd option..... 671

commands, *continued*

mixlogit 669
 corr option 670
 group() option 670
 id() option 670
 nrep() option 670
 rand() option 670
 mixlpred 669
 mkspline 355, 820
 knots() option 820
 mlogit 618, 637, 638, 771
 rrr option 637, 771
 mprobit 677
 nbreg 708
 dispersion(constant)
 option 709
 dispersion(mean) option .. 708
 oglm 616
 ologit 584, 591
 or option 591
 vce() option 591
 oprobit 584
 poisson 693, 711, 839
 irr option 693, 815
 offset() option 815
 vce(cluster subj) option
 839
 predict 26, 202, 203, 395, 507,
 755, 893
 fitted option 203, 351, 415
 pr option 507, 593, 755
 reflects option .. 112, 161, 202,
 395, 413, 441, 546, 893
 reses option 114, 161, 547,
 894
 rstandard option .. 55, 161, 207
 xb option 26, 107, 182, 417
 probit 513, 584
 qnorm 454
 quietly 35
 rcap 209
 recode 387, 585
 regress 23, 84, 166, 176, 182
 beta option 25
 noconstant option 107

commands, *regress, continued*

 vce() option 176
 vce(cluster *clustvar*) option..
 166
 vce(robust) option 29, 56
 reshape 83, 230, 243, 371, 387,
 472, 763
 i() option 83, 231, 387, 625
 j() option 83, 231
 string option 289, 387
 rologit 677
 sem 366
 means() option 369
 method(mlmv) option 368
 noconstant option 368
 set matsize 714
 set seed 279, 718
 slogit 618
 ssc 457, 528
 replace option 528
 statsby 185, 200, 472, 544
 stcox 816
 efron option 817
 exactm option 817
 exactp option 817
 shared() option 842
 strata() option .. 831, 838, 852
 texp() option 831
 tvc() option 831
 vce(cluster subj)
 option 836
 stcurve 818, 826
 addplot() option 868
 at() option 818
 hazard option 818, 826
 outfile() option 818
 unconditional option 850
 stjoin 815, 822
 streg 824
 distribution(lognormal)
 option 824, 849
 frailty(gamma) option 849
 shared() option 849
 time option 823, 824
 tr option 825, 831

commands, *continued*

sts graph 803
 hazard option 804
 stset 744, 829, 856
 enter() option ... 744, 802, 858
 failure() option 829
 id() option 829, 834, 854
 origin() option .. 744, 802, 860
 summarize 186
 supclust 457
 svmat 731
 svyset 95
 table 586, 809
 tabstat 12, 243
 tabulate 42, 446, 754
 generate() option 42
 test 252, 613
 testparm 46, 47, 139, 156
 tobit 827
 ttest 15
 unequal option 16, 29
 twoway
 by() option 174
 connect(ascending) option ...
 174, 187, 238
 connect(stairstep) option ...
 757
 ysize() option 209
 twoway function ... 39, 199, 508
 twoway histogram
 horizontal option 205
 use 75
 clear option 12, 75
 xtcloglog 782–784
 xtdescribe ... 233, 372, 400, 472,
 515, 586, 691
 xtgee 326, 560, 715
 corr(ar 1) option 326
 corr(exchangeable) option ...
 560
 eform option 560, 715
 vce(robust) option ... 326, 560
 xtglsl 329, 338
 igls option 166, 329

commands, *continued*

xthtaylor 253, 256
 amacurdy option 255, 291
 endog() option 256
 xtintreg 850, 851
 xtlogit 523–525
 fe option 557
 intmethod(aghermite)
 option 540
 or option 524
 xtmelogit 527, 542, 903
 binomial() option 562, 688
 from() option 542, 884
 intpoints() option ... 527, 883
 laplace option ... 883, 903, 913
 refineopts() option .. 884, 903
 refineopts(iterate(0))
 option 542
 xtmeipoisson 847
 irr option 699
 xtmixed ... 85, 196, 249, 265, 299,
 307, 316, 393–395, 437
 covariance() option 299
 covariance(exchangeable)
 option 431
 covariance(identity)
 option 431
 covariance(unstructured)
 option 196, 307, 410, 431
 emiterate() option ... 166, 214
 emonly option 166, 214
 estmetric option 112, 350,
 440
 matlog option 198
 matsqrt option 197
 mle option 82, 86, 133, 194,
 265, 299
 noconstant option 86, 299,
 309, 316, 362, 431
 nofetable option 299
 nogroup option 299
 reml option 83, 166, 197
 residuals() option ... 299, 373

- commands, *xtmixed*, *continued*
 residuals(ar 1, t())
 option 309, 316
 residuals(ar(1), t())
 by() option 321
 residuals(banded 1, t())
 option 313
 residuals(exchangeable)
 option 304
 residuals(exponential,
 t()) option 311
 residuals(independent,
 by() option ... 317, 319, 360,
 373
 residuals(ma 1, t())
 option 312
 residuals(toeplitz 2,
 t()) option 315
 residuals(unstructured,
 t()) option 299
 technique() option 166
 variance option 86, 93, 196,
 301, 394
 vce(robust) option 88, 134,
 163, 197, 251, 252, 325, 327
 xtnbreg 711
 xtpcse 330, 337
 correlation(ar1) option .. 331,
 337
 correlation(independent) op-
 tion 337
 independent option 337
 nmk option 337
 xtpoisson 845
 fe option 713, 714, 820
 irr option 820, 846
 normal option 697, 845
 offset() option 820
 re option 845
 xtreg 84, 143, 259
 be option 143
 fe option 92, 104, 146, 259,
 288
 mle option 82, 84, 104
 noconstant option 280
- commands, *xtreg*, *continued*
 pa option 327
 re option .. 83, 89, 148, 166, 261
 vce(robust) option 88, 327
 xtrho 534
 detail option 534
 xtrhoi 534
 xtset 84, 232, 286, 586
 xtsum 125, 401, 472, 515
 xttab 127, 235, 515
 xttest0 90
 comparative standard error ... 114, 546
 competing risks 767–772, 861
 complementary log-log link 616
 complementary log-log model .. 777–778
 complex level-1 variation 360
 compositional effect 151, 171
 compound symmetric structure 304
 compound symmetry 264, 304
 conditional
 independence 79
 logistic regression 557–559
 logit model 638–648
 negative binomial regression ... 715
 Poisson regression 713–715
 confidence interval .. 16, 87–93, 140–142
 confounder 30
 consistent estimator 100
 contextual effect 151, 171
 continuation-ratio logit 760
 continuation-ratio logit model 616
 continuous-time survival .. 747, 797–869
 contrast 140
 counting process 858–859
 counts 687–740
 covariance structure 100, 293–322,
 437
 covariate 35
 Cox regression 815–822
 cross-classification 433, 443, 873
 cross-level interaction 211, 359, 890
 cross-over trial 6
 cross-sectional time-series data 227
 crossed random effects 433–470,
 900–907

crossover trial 734
 cumulative hazard function 800
 cumulative model 575–584
 current status data 746

D

datasets *see* applications
 delayed entry 744, 746, 772, 799
 diagnostic standard error 114
 diagnostics 160–163, 453–455
 dichotomous response 501–574
 difference-in-difference estimator ... 286
 directed acyclic graph 78
 discrete choice 629–683
 discrete-time
 hazard 749–752
 survival 747, 749–795
 discrimination parameter 611
 disease mapping 720
 double differencing 268
 dropout 278, 692
 dummy variable 27–29, 42–48
 dynamic model 228, 269–272

E

EB *see* empirical Bayes
 ecological fallacy 1, 150
 effect modifier *see* interaction
 efficiency 100
 elasticity 338, 738
 EM algorithm 165
 empirical Bayes 109–113, 159–
 161, 201–204, 351, 371, 394–
 395, 413, 441, 453, 545–546,
 725
 borrowing strength 111
 modal 546
 standard errors 113–115
 endogeneity 129, 149–158, 250–258,
 274
 error components 79–80
 estimated best linear unbiased predictor
 111
 examples *see* applications
 exchangeable 96

exchangeable structure 304, 559
 exogeneity 57, 129
 exponential family 916
 exponential structure 308–311
 exposure 689

F

factor 35, 95
 loading 611
 factor variables .. 35, 40, 45, 50, 51, 53,
 99, 107, 211, 519, 536, 592
 family study 5
 feasible generalized least squares .. 148,
 164
 FGLS *see* feasible generalized least
 squares
 fixed effects 95–97, 158–160
 fixed-effects estimator 145–147,
 557–559, 713–715
 fixed-effects model ... 146, 228, 257–262
 fixed part 916
 frailty 696, 841, 850
 functions
 `invnormal()` 512
 `rnormal()` 279
 `runiform()` 279

G

gap time 859–860
 Gâteaux derivative 729
 Gaussian quadrature *see* adaptive
 quadrature
 GEE *see* generalized estimating
 equations
 generalizability
 coefficient 463
 theory 463
 generalized
 estimating equations 519,
 559–561, 715–716
 least squares 164
 linear mixed model 521
 linear model 502–504, 575–576
 method of moments 559
`gllamm` *see* commands

GLM see generalized linear model
 GLMM see generalized linear mixed
 model
 GLS see generalized least squares
 grouped-time survival data 746
 growth-curve model 343–382

H

Halton draws 669
 Hausman–Taylor estimator 253–257
 Hausman test 157, 253–257, 291
 hazard function 799
 hazard ratio 805
 Hessian 165
 heteroskedasticity 20, 191, 317–321,
 360–363, 609
 hierarchical data 385
 hierarchical model 93
 higher-level model 385–431, 873–914
 higher-order polynomials 54
 homoskedasticity 20, 609
 hypothesis test 12–17,
 87–93, 138–140, 142, 197, 322,
 396, 451–453

I

identification 214–215, 582–584
 incidence rate 799
 incidence-rate ratio 690, 805
 independence of irrelevant
 alternatives 648–649
 independence structure 297, 559
 independent censoring 745
 independent-samples *t* test 12–17
 index function 510
 indicator variable see dummy variable
 information matrix 165
 initial-conditions problem 273
 instrumental variable 156, 253, 254,
 274
 integrated hazard function 800
 intensity 689
 intensity function 799
 interaction 36–42, 48–51
 intercept 20

intermittent missingness 516
 interval-censoring 746, 776–777
 intervening variable 48
 intraclass correlation 80, 130, 192,
 392–393, 436, 448–449
 inverse link function 502
 IRR see incidence-rate ratio
 item response theory 543
 iterative generalized least squares . . 165

K

Kaplan–Meier estimator 803

L

lagged-response model 269–272
 Laplace approximation 527
 latent response 510–513, 576–580
 latent response model 876
 latent trajectory model see
 growth-curve model
 latent variable 364
 left-censoring 746
 left-truncated data 772–773
 left-truncation 746, 772
 level-1 weights 570, 572
 level-2 weights 565, 572
 likelihood-ratio test 88–89, 140, 848
 linear mixed (effects) model 128
 linear predictor 502, 916
 linear projection 56
 linear random-intercept model with co-
 variates 128
 link function 502, 916
 log-linear model 689
 log link 690
 log-normal model 824–828
 log odds see logit link
 logistic regression 505–510, 512
 logit link 502
 long form 83, 230–232
 long panel 327–331
 longitudinal correlations 244
 longitudinal data 227, 247–291,
 343–382
 longitudinal model 1–7

longitudinal study 5–6

M

MANOVA . . . see multivariate analysis of variance

MAR see missing at random

marginal

effect 504, 529, 592

likelihood 101

model 229, 293–342

probability 517, 529, 599

variance 532

maximum likelihood 101, 165, 537–543

MCAR see missing completely at random

mean squared error of prediction . . . 114

mean structure 293

measurement error 78

measurement model 78, 607

measurement study . . 6, 74–75, 386–387

median hazard ratio 846

median incidence-rate ratio 846

median odds ratio 596

mediator see intervening variable

meta-analysis 4–5

missing

at random 278

completely at random 717

data 233–234, 278–282, 516, 716–720

mixed logit model 669

mixed model 128

mixed-effects model 85

ML see maximum likelihood

model-based estimator 29

model sum of squares 17

moderator see interaction

monotone missingness 516

moving-average structure 311–312

multilevel model 1–7

multinomial logit model 630–638

multiple absorbing events 767–772

multiple linear regression 30–36

multiple membership model . . . 460, 470

multisite studies 171

multistage survey 3–4, 622, 626

multivariate

analysis of variance 264

multilevel model 427

regression model 303

response 364

N

negative binomial model 707–709

nested random effects 385–431, 873–914

Newton–Raphson algorithm 165

NMAR see not missing at random

nominal response 629–683

nonparametric maximum likelihood 727–732, 925

nonresponse 692

normal assumption 129

normality assumption 14, 101, 190, 248, 298

not missing at random 279

NPML see nonparametric maximum likelihood

O

odds 502

odds ratio 503

offset 544, 690, 724, 735

OLS see ordinary least squares

one-way ANOVA 17–19

ordinal

logit model 576

probit model 576

response 575–628

ordinary least squares 17, 167

overdispersion 690, 696, 706–711

overparameterized 20

P

panel data see longitudinal data

parallel-regressions assumption . . . 576, 613

partial effect 504

partial likelihood 816–817

- partial log likelihood 816
 path diagram . . . 78, 254, 308, 311, 366,
 391, 430
 person–period data 754
 piecewise exponential model . . . 807–815
 piecewise linear model 353–358
 Poisson
 distribution 687
 model 689–690
 regression 692–694, 723
 polynomial 52–54, 345–346
 pooled OLS 164, 241–242
 population averaged *see* marginal
 probability
 posterior
 distribution 109
 variance 113
 power 168–171
 predicted probabilities 549–557
 prediction *see* empirical Bayes
 predictive margin 36
 preference heterogeneity 659–663
 prior distribution 109
 probit
 link 502
 regression 512–514
 product-limit estimator 803
 profile likelihood 817
 proportional
 hazards 776–777
 hazards model 805–822
 odds model 580–582, 590–594,
 760
 pseudolikelihood 572
- Q**
 quadrature *see* adaptive quadrature
 quasilikelihood 709–711
- R**
 random
 coefficient 916
 effects 95–97, 158–163, 916
 interaction 452
 intercept 78, 916
 random, *continued*
 slope 916
 random-coefficient
 logistic regression 886–893
 model 188–194
 Poisson regression 701–705
 proportional odds model . . 596–598
 random-effects model 228
 random-intercept
 logistic regression 520–529,
 875–886
 model 127–131
 ordinal probit model 606–616
 Poisson regression 696–701,
 723–726
 proportional odds model . . 594–596
 rankins 677
 Rasch model 567, 912
 recurrent-event data 748, 853–860
 reduced form 210, 358
 reference group 28
 regression coefficient 20
 regression sum of squares *see* model
 sum of squares
 reliability 80
 REML *see* restricted maximum
 likelihood
 repeated measures *see* longitudinal
 data, 227
 residual sum of squares *see* sum of
 squared errors
 residuals 54–56, 160–163, 204–207,
 413–417, 453–455
 response heterogeneity 663–676
 restricted maximum likelihood . . . 102,
 166
 right-censoring 745
 right-truncation 746
 risk set 751
 robust standard error 29,
 56, 88, 100, 104–105, 134, 138,
 163, 168, 197, 242, 244, 251,
 262, 326, 536
 R-squared *see* coefficient of
 determination

S

sample-size determination 168–171
 sampling the inflow 772
 sandwich estimator . . . 29, 88, 104, 242,
 326, 560, 623
 scalars 350
 scaled probit link 609
 scatterplot 182
 score test 89
 seemingly unrelated regression 303,
 339
 SEM *see* structural equation model
 serial correlations 244
 short panel 327–331
 shrinkage 111, 202, 726
 simple linear regression 19–27
 simulated maximum likelihood 669
 simulation 279–282, 717–720
 slope 20
 small-area estimation 178, 720
 spaghetti plot 187
 speed 540
 spherical quadrature 543
 sphericity 264
 spline 353
 split-plot design 264
 SSC 457
 standardized mortality ratio 721
 standardized regression coefficient . . 25
 state dependence 273
 stereotype model 618
 stock sample 772
 string variable 387
 structural equation model 364–366
 subject-specific effect 529
 subject-specific probability 599
 sum of squared errors 17
 survey weights 572
 survival function 751, 799

T

three-level model 389–417, 875–893
 three-stage formulation 405–406
 three-way interaction 42
 ties 816–817

time scales 239–241
 time-series operators 274
 time-series–cross-sectional data . . . 327–
 331
 time-varying covariates . . 234–235, 747,
 762–767, 829–832
 Toeplitz structure 313–315
 total sum of squares 17
 total time 854–858
 trellis graph 183, 352
 truncation 745–746
t test . . . *see* independent-samples *t* test
 twin study 5
 two-level model 78
 two-stage formulation 210, 358, 522
 two-way error-components model . . 433,
 435–442
 two-way interactions 42

U

unconditional model 136
 underdispersion 690
 unstructured covariance matrix . . . 298–
 303
 utility 510
 utility maximization 649–650

V

variance components 79–82
 variance function 503, 559, 690, 709

W

Wald test 138–139, 156
 wide form 83, 230–232
 within estimator 145–147

X

xtmelogit *see* commands
xtmepoisson *see* commands
xtmixed *see* commands
xtreg *see* commands