

Subject index

A

AIC 56–57, 112, 114, 115
 algorithm
 IRLS 44
 gamma 91
 Gaussian 71
 Gaussian (reduced) 71
 geometric 216
 inverse Gaussian 107
 log-geometric 216
 log-negative binomial 209
 negative binomial 208
 nonbinomial 71
 Poisson 186
 ML 44, 76
 log-inverse Gaussian 110
 log-negative binomial .. 210, 211
 log-normal 76
 ancillary 4, 21, 26, 30,
 43, 72, 89, 170, 173, 199, 211,
 213, 215, 331, 354
 Atkinson's R 134
 auto dataset 263

B

Bernoulli
 deviance 124
 log likelihood 124
 model 123–124
 probability function 123
 BHHH 35
 BIC 57–58, 112, 114, 115
 binary data 120
 binomial
 data 61
 deviance 122
 log likelihood 122

binomial, *continued*

 model 120–123
 binsq command 312
 bootstrap 42–43, 49
 Box–Cox transformation 50–51
 brant command 269

C

cancer dataset 97
 canonical link 22
 canonical parameter 13, 48
 censored count response model ... 241–
 247
 censored data 12, 61, 90, 194
 claims dataset 92, 96, 114
 clogit command 324
 cloglog command 353
 cluster data 319–336
 conditional logistic regression models..
 281–284
 confusion matrix 130
 contagion distribution 199
 continuation ratio 273–277
 Cook's distance 49
 count data regression models 183,
 221–224
 criterion measure 56–58
 cutpoint 259

D

data
 binomial 61
 censored 12, 61, 90, 194
 continuous 89
 ordinal 61
 proportional-response 119
 truncated 12

dataset
 auto 263
 cancer 97
 claims 92, 96, 114
 medpar 110, 236
 smoke 213
 warsaw 134, 147, 153
 deviance 48–49
 diagnostics 49–50

E

EIM 75
 ereg command 101
 error sum of squares 72
 estat classification command
 130
 estat command 56
 exploding logit 324
 exponential regression 96, 101, 102
 exposure 187

F

fitstat command 56
 fixed effects 321–324
 conditional 323–324
 unconditional 322

G

GAM 316–317
 gamma 89–103
 density function 90
 deviance 90
 distribution 89
 heterogeneity 203
 model 90–92
 regression 101–103
 Gaussian 67–88
 IRLS derivation 68
 ML derivation 68–70
 probability density function ... 68
 OLS 77–79
 GEE 175, 330–333
 generalized Poisson regression model ..
 239–241
 GENSTAT macro 205

geometric
 distribution 200
 family 215–218
 Gibbs sampling 329–330
 gllamm command 333
 glm command 339–354
 gnbreg command 235, 236
 gologit2 command 257, 269
 goodness of fit 129–132

H

hat diagonals 49
 hazard rate 195
 health ratio 158
 Hessian 34–35
 heterogeneity 203
 heterogeneous negative binomial model
 235–238
 Hosmer–Lemeshow 131
 hurdle model 232–235
 hypergeometric ${}_2F_1()$ function 54

I

ICD code 110
 identity
 regression 77
 identity link 68, 74
 identity-gamma model 100–101
 IIA 284–286
 incidence-rate ratio 197, 219
 individual data 319–320
 interactions 94, 96
 invcloglog() function 255, 256
 inverse Gaussian model 105–112
 IRLS algorithm 107
 log link 110
 invlogit() function 254
 IRLS algorithm 44, 70–72
 IRR 212, 214

J

jackknife 40–42, 49

K

k-system 205

L

Lagrange multiplier 193
 latent variable models 328
 leaf blotch data 308
 leverage 49
lgamma command 98
 likelihood-ratio test 94
 link
 identity 68, 74
 log 74
 power 113–116
 reciprocal 91, 92, 96
 log link 74
 log-gamma model 96–99
logistic command 130
 logistic regression 126–129
 logistic regression models 280–281
logit command 353
 log-normal 74–75
 LOS 110, 183, 189
lrtest command 16
lstand command 134

M

measurement error 333
 medpar dataset 110, 236
 mixed models 333
 mixture distribution 199, 202
mlogit command 324
 model
 censored count response .. 241–247
 conditional logistic regression
 281–284
 count data regression 183,
 221–224
 generalized Poisson regression
 239–241
 heterogeneous negative binomial ..
 235–238
 hurdle 232–235
 logistic regression 280–281
 multinomial logit 280–295
 multinomial probit 295–303
 zero-inflated 227–232

model, *continued*

 zero-inflated negative binomials...
 227–232
 zero-truncated 224–227
 zero-truncated negative binomial..
 224–227
 modified sandwich 36–37
 modified unbiased sandwich 38
mprobit command 301
 MSE 72
 multinomial logit models 280–295
 multinomial probit models 295–303

N

NB-1 201–208
 NB-2 203
nbreg command 201, 203, 208, 353
 negative binomial 199–219
 canonical link 207–208
 zero truncated 215
newey command 353
 Newton–Raphson
 algorithm 44
 normal 67–88
normal() function 255
normalden() function 255

O

ocloglog command 257
ocratio command 273
 odds ratios 128–129, 132–134, 156
 offset 16
oglm command 259
 OIM 75–76, 91
ologit command 257, 259
 OLS 77–79
 OPG 35
oprobit command 257
 ordered response 251–277
 cauchit 256–257
 clog-log 255–256
 generalized ordered logit .. 257–258
 log-log 256
 ordered logit 254–255
 ordered probit 255

ordinal data 61
 overdispersion 49–50, 188, 192
 constant 201–203
 test 50, 192
 variable 203–208

P

panel data 319–336
 parallel lines assumption 255
 parameter
 ancillary 72
 canonical 13, 48
 partial correlation 134
 Plackett–Luce 324
 Poisson 183–197
 zero-truncated 188
 poisson command 186, 353
 pooled estimator 320–321
 power link 113–116
 relationships 114
 predict command 93, 345–347
 probit command 301, 353
 proportional-odds assumption 254,
 257, 261
 proportional-response data 119
 prvalue command 303

Q

quasideviance 115, 311
 quasilikelihood 307–308
 qvf command 333

R

R^2 58–63
 McFadden’s measure 262
 percent variance explained 58
 pseudo
 adjusted count measure 62
 Ben-Akiva and Lerman’s measure
 60
 Cameron and Windmeijer’s mea-
 sure 62–63

R^2 , pseudo, *continued* 58–63
 count measure 62
 Cragg and Uhler’s measure... 61
 Efron’s measure 60
 McFadden’s measure 60
 McKelvey and Zavoina’s measure
 61
 transformation of likelihood ra-
 tio 61
 Veall and Zimmermann’s measure
 62
 ratio of variances 58
 squared correlation 59
 transformation of F -test 59
 transformation of likelihood ratio..
 59
 random effects 175, 325
 random utility 295
 rcal command 333
 reciprocal link 91, 92
 example 92
 regress command 353
 regression calibration 333
 relative-risk ratio 287
 residual 52–55
 adjusted 53
 adjusted deviance 55
 Anscombe 51, 53–54, 94, 147,
 153, 212, 347, 364
 deviance 51, 53, 55
 likelihood 55
 modified 52
 name 52
 partial 54
 Pearson 53–55, 310
 response 53
 score 55
 standardized 52
 studentized 52
 working 53
 risk difference 156
 risk ratio 158
 rndivgx command 108
 rologit command 324
 RSS 72

S

sandwich.....35–36
 saturated model.....69
 scaling.....192
simex command.....333
 simulation extrapolation.....333
 smoke dataset.....213
 SPost.....257
streg command.....101, 353

T

test
 likelihood-ratio.....94
 Wald.....94
 trials, Bernoulli.....119, 203, 206, 353,
 354
 truncated data.....12

U

unbiased sandwich.....37–38
 underdispersion.....238
 unordered response.....279–303

V

variance
 bootstrap.....42, 175
 grouped bootstrap.....43, 321
 Hessian.....34–35
 jackknife.....40, 175
 modified sandwich.....36–37, 321
 modified unbiased sandwich....38
 Newey–West.....175
 one-step jackknife.....41
 OPG.....35
 sandwich.....35–36, 175
 unbiased sandwich.....37–38
 usual bootstrap.....42
 usual jackknife.....40–41
 variable jackknife.....41–42, 321
 weighted jackknife.....41
 weighted sandwich.....38–40

W

Wald test.....94
 warsaw dataset.....134, 147, 153
 weighted sandwich.....38–40
 Anderson.....39
 Gallant.....39
 Newey–West.....39
 Tukey–Hanning.....39
 WZ.....228

X

xtmixed command.....333

Z

zero-inflated models.....227–232
 zero-inflated negative binomial models
 227–232
 zero-truncated models.....224–227
 zero-truncated negative binomial mod-
 els.....224–227
ztnb command.....215
ztp command.....215