

1	INTRODUCTION	5
2	COMPLEX SAMPLING CONCEPTS	8
2.1	Introduction	8
2.2	Indicator variables and t-estimators	9
2.3	Additional weight adjustments	12
2.4	Linear regression	12
2.4.1	Example 1	13
2.4.2	Example 2	13
2.5	Standard error estimation	15
2.6	Heteroscedastic model	17
2.7	Covariance matrix of vector of totals	18
2.7.1	Introduction	18
2.7.2	Notation	19
2.7.3	Total covariances	19
2.8	Approximate covariance matrix of estimators	21
2.9	References	25
3	GENERALIZED LINEAR MODELS	27
3.1	Introduction	27
3.2	Graphical User Interface	29
3.2.1	The SurveyGLIM menu	29
3.2.2	The Title and Options dialog box	29
3.2.3	The Distributions and Links dialog box	31
3.2.4	The Dependent and Independent Variables dialog box	33
3.2.5	The Survey Design dialog box	34
3.3	Syntax	36
3.3.1	The structure of the syntax file	36
3.3.2	CLUSTER command	37
3.3.3	COVARs command	37
3.3.4	DEPVAR command	38
3.3.5	DISPERSION command	38
3.3.6	DISTRIBUTION command	39
3.3.7	FREQ command	40
3.3.8	FPC command	40
3.3.9	GLIMOPTIONS command	41
3.3.10	INTERCEPT command	45
3.3.11	LINK command	46
3.3.12	POPULATIONSIZEs command	47
3.3.13	SAMPLINGRATEs command	47
3.3.14	SCALE command	48
3.3.15	STRATUM command	49
3.3.16	SY command	49

3.3.17	TITLE command	50
3.3.18	WEIGHT command	50
3.4	Examples	52
3.4.1	GLIMs for counts	52
3.4.2	GLIMs for continuous responses	65
3.4.3	GLIMs for binary responses	81
3.4.4	GLIMs for ordinal responses	91
3.4.5	GLIMs for nominal responses	101
3.5	Evaluation studies	110
3.5.1	A Monte Carlo study	110
3.5.2	Numerical comparisons	113
3.6	Statistical theory	118
3.6.1	Introduction	118
3.6.2	The Poisson-log model	120
3.6.3	GLIMs for the Bernoulli sampling distribution	122
3.6.4	The Binomial-logit model	125
3.6.5	The Negative Binomial-log model	125
3.6.6	The Gamma-log model	126
3.6.7	The Inverse Gaussian-log model	126
3.6.8	The Normal-identity model	126
3.6.9	GLIMs for the Multinomial sampling distribution	127
3.6.10	The estimation of scale and dispersion parameters	135
3.7	References	137
4	MULTILEVEL MODELS	138
4.1	Introduction	138
4.2	Graphical User Interface	139
4.2.1	The Multilevel Models menu	139
4.2.2	The Title and Options dialog box	140
4.2.3	The Identification Variables dialog box	141
4.2.4	The Response and Fixed Variables dialog box	142
4.2.5	The Random Variables dialog box	143
4.3	Syntax	144
4.3.1	The structure of the syntax file	144
4.3.2	CONTRAST command	145
4.3.3	COVnPAT command	146
4.3.4	COVnVAL command	149
4.3.5	DUMMY command	151
4.3.6	FIXED command	151
4.3.7	FIXPAT command	154
4.3.8	FIXVAL command	154
4.3.9	IDn command	155
4.3.10	MISSING_DAT command	156
4.3.11	MISSING_DEP command	157
4.3.12	OPTIONS command	158
4.3.13	RANDOMn command	168
4.3.14	RESPONSE command	170
4.3.15	SY command	171
4.3.16	TITLE command	172
4.3.17	WEIGHTn command	172

4.4	Examples	174
4.4.1	Three-level analysis of health expenditure data	174
4.4.2	Three-level analysis of simulated data	190
4.4.3	Three-level saturated model for simulated data	198
4.5	Evaluation	203
4.5.1	Introduction	203
4.5.2	Comparison of results using two-level simulated data	203
4.5.3	Comparison of results using three-level simulated data	205
4.5.4	Comparison of results using a 3-level model for the MEPS data	208
4.5.5	Comparison of results using a 2-level model for the MEPS data	210
4.6	Theory	214
4.6.1	Introduction	214
4.6.2	A general weighting procedure	214
4.6.3	Weights in multilevel models	215
4.6.4	Standard errors and fit statistics	219
References		224
5	STRUCTURAL EQUATION MODELS	225
5.1	Introduction	225
5.2	Graphical User Interface	230
5.2.1	The new PTH window	230
5.2.2	The Setup menu	231
5.2.3	The Title and Comments dialog box	232
5.2.4	The Group Names dialog box	232
5.2.5	The Labels dialog box	233
5.2.6	The Data dialog box	234
5.2.7	The graphic pane of the PTH window	236
5.2.8	The Weight Cases and Survey Design dialog boxes	237
5.3	Syntax	239
5.3.1	The structure of the SIMPLIS syntax file	239
5.3.2	\$CLUSTER command	242
5.3.3	\$PREDICT command	242
5.3.4	ASYMPTOTIC COVARIANCE MATRIX FROM FILE command	243
5.3.5	CASEWEIGHT command	243
5.3.6	CLUSTER command	244
5.3.7	CORRELATION MATRIX paragraph	244
5.3.8	CORRELATION MATRIX FROM FILE command	245
5.3.9	COVARIANCE MATRIX paragraph	245
5.3.10	COVARIANCE MATRIX FROM FILE command	246
5.3.11	END OF PROBLEM command	247
5.3.12	GROUP command	247
5.3.13	LATENT VARIABLES paragraph	247
5.3.14	LATENT VARIABLES FROM FILE command	248
5.3.15	LISREL OUTPUT command	248
5.3.16	MEANS paragraph	260
5.3.17	MEANS FROM FILE command	260
5.3.18	MISSING VALUE CODE command	261
5.3.19	OBSERVED VARIABLES paragraph	261
5.3.20	OBSERVED VARIABLES FROM FILE command	262
5.3.21	OPTIONS command	262
5.3.22	PATH DIAGRAM command	263

5.3.23	PATHS paragraph	263
5.3.24	RAW DATA paragraph	264
5.3.25	RAW DATA FROM FILE command	265
5.3.26	RELATIONSHIPS paragraph	265
5.3.27	SAMPLE SIZE command	266
5.3.28	SET command	266
5.3.29	STANDARD DEVIATIONS paragraph	267
5.3.30	STANDARD DEVIATIONS FROM FILE command	267
5.3.31	STRATUM command	268
5.3.32	SYSTEM FILE FROM FILE command	268
5.3.33	TITLE paragraph	269
5.3.34	WEIGHT command	269
5.4	Examples	271
5.4.1	A structural equation model for the 2001 Monitoring the Future data	271
5.4.2	Implementation of sampling weights in a linear growth curve model	285
5.5	Evaluation	303
5.5.1	Simulation study based on a linear growth curve model	303
5.5.2	Latent curve analysis with main and interaction effects	306
5.5.3	Replicate weights	319
5.6	Theory	331
5.6.1	Introduction	331
5.6.2	Parameter estimation	331
5.7	References	339