

MPLUS Analysis Examples Replication Chapter 9

Mplus includes all input code and output in the *.out file. This document contains selected output from each analysis for Chapter 9. All data preparation and management was done using SAS and then read into Mplus using a text file format produced by SAS. Plots can be produced in MPlus with additional coding but are not included here, see the Mplus documentation for details and examples.

Some options available in Stata or other software presented in Chapter 9 including multi-parameter tests, GOF tests, margins plots prepared via a simple command using model output, and design-adjusted model fit statistics are not available in Mplus. They are, therefore, not included in this document. In addition, in this chapter we omit the test of model parameters and focus on final models instead. See Chapter 8 for examples of full blown testing of groups of model predictors.

INPUT INSTRUCTIONS

TITLE: ASDA2 ANALYSIS EXAMPLE SECTION 9.2.6 MULTINOMIAL FINAL MODEL

DATA:

FILE IS "P:\ASDA 2\Data sets\NCSR\ncsr_sub_5apr2017_mplus.txt";

VARIABLE:

NAMES ARE

AGE CASEID DSM_SO ED4CAT MAR3CAT MDE_OND NCSRWTLG NCSRWTSH OBESE6CA
REGION SECLUSTR SESTRAT SEX
SO_OND WKSTAT3C ag60 ag1829 ag3044 ag4559 ag4cat ald ed011 ed12 ed16
ed1315 married mde nevmar numsecu prevmar racecat sexf sexm;

USEVARIABLES ARE

SESTRAT NUMSECU NCSRWTLG AG3044 AG4559 AG60 SEXM ALD MDE ED12 ED1315 ED16
PREVMAR NEVMAR WKSTAT3C WKST3CR ;

missing are . ;

WEIGHT IS NCSRWTlg ;
stratification is sestrat ;
cluster is numsecu ;
nominal is wkst3cr ;

DEFINE:

if wkstat3c==1 then wkst3cr=3 ;
if wkstat3c==2 then wkst3cr=2 ;
if wkstat3c==3 then wkst3cr=1 ;

ANALYSIS:

type is complex;
estimator is mlr ;

! TEST AGE IN FINAL MODEL

Model:

WKST3CR on
AG3044 (P1)
AG4559 (P2)
AG60 (P3)
SEXM
ALD
MDE
ED12
ED1315
ED16
PREVMAR
NEVMAR ;

MODEL TEST:

O=P1 ;
O=P2 ;
O=P3 ;

*** WARNING in MODEL command

Variable is uncorrelated with all other variables: WKSTAT3C

*** WARNING in MODEL command

At least one variable is uncorrelated with all other variables in the model.
Check that this is what is intended.

*** WARNING

Data set contains cases with missing on all variables except
x-variables. These cases were not included in the analysis.

Number of cases with missing on all variables except x-variables: 2649

3 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA2 ANALYSIS EXAMPLE SECTION 9.2.6 MULTINOMIAL FINAL MODEL, TEST AGE

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	6633
Number of dependent variables	2
Number of independent variables	11
Number of continuous latent variables	0

Observed dependent variables

Continuous
WKSTAT3C

Unordered categorical (nominal)
WKST3CR

Observed independent variables

AG3044	AG4559	AG60	SEXM	ALD	MDE
ED12	ED1315	ED16	PREVMAR	NEVMAR	

Variables with special functions

Stratification	SESTRAT
Cluster variable	NUMSECU
Weight variable	NCSRWTLG

Estimator	MLR
Information matrix	OBSERVED

Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes

Maximum number of iterations	100
Convergence criterion	0.100D-05

Optimization Specifications for the EM Algorithm

Maximum number of iterations	500
Convergence criteria	
Loglikelihood change	0.100D-02
Relative loglikelihood change	0.100D-05
Derivative	0.100D-02

Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables

Number of M step iterations	1
M step convergence criterion	0.100D-02
Basis for M step termination	ITERATION

Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes

Number of M step iterations	1
M step convergence criterion	0.100D-02
Basis for M step termination	ITERATION
Maximum value for logit thresholds	15
Minimum value for logit thresholds	-15
Minimum expected cell size for chi-square	0.100D-01

Maximum number of iterations for H1	2000
Convergence criterion for H1	0.100D-03
Optimization algorithm	EMA

Integration Specifications

Type	STANDARD
Number of integration points	15
Dimensions of numerical integration	0
Adaptive quadrature	ON
Cholesky	OFF

Input data file(s)

P:\ASDA 2\Data sets\NCSR\ncsr_sub_5apr2017_mplus.txt
Input data format FREE

SUMMARY OF DATA

Number of missing data patterns 1
 Number of strata 42
 Number of clusters 84

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT FOR Y

	Covariance Coverage				
	WKSTAT3C	AG3044	AG4559	AG60	SEXM
WKSTAT3C	1.000				
AG3044	1.000	1.000			
AG4559	1.000	1.000	1.000		
AG60	1.000	1.000	1.000	1.000	
SEXM	1.000	1.000	1.000	1.000	1.000
ALD	1.000	1.000	1.000	1.000	1.000
MDE	1.000	1.000	1.000	1.000	1.000
ED12	1.000	1.000	1.000	1.000	1.000
ED1315	1.000	1.000	1.000	1.000	1.000
ED16	1.000	1.000	1.000	1.000	1.000
PREVMAR	1.000	1.000	1.000	1.000	1.000
NEVMAR	1.000	1.000	1.000	1.000	1.000

	Covariance Coverage				
	ALD	MDE	ED12	ED1315	ED16
ALD	1.000				
MDE	1.000	1.000			
ED12	1.000	1.000	1.000		
ED1315	1.000	1.000	1.000	1.000	
ED16	1.000	1.000	1.000	1.000	1.000
PREVMAR	1.000	1.000	1.000	1.000	1.000
NEVMAR	1.000	1.000	1.000	1.000	1.000

	Covariance Coverage	
	PREVMAR	NEVMAR
PREVMAR	1.000	
NEVMAR	1.000	1.000

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

WKST3CR		
Category 1	0.301	1996.620
Category 2	0.051	339.208
Category 3	0.648	4297.172

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 23

Loglikelihood

H0 Value -13097.844
 H0 Scaling Correction Factor 1.9186
 for MLR

Information Criteria

Akaike (AIC) 26241.689
 Bayesian (BIC) 26398.085
 Sample-Size Adjusted BIC 26324.996

$$(n^* = (n + 2) / 24)$$

Wald Test of Parameter Constraints

Value	526.213
Degrees of Freedom	3
P-Value	0.0000

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
WKST3CR#1 ON				
AG3044	-0.383	0.113	-3.382	0.001
AG4559	-0.056	0.160	-0.352	0.725
AG60	2.303	0.162	14.257	0.000
SEXM	-0.640	0.110	-5.790	0.000
ALD	0.332	0.129	2.580	0.010
MDE	0.101	0.090	1.123	0.262
ED12	-0.649	0.141	-4.603	0.000
ED1315	-0.917	0.145	-6.320	0.000
ED16	-1.221	0.160	-7.635	0.000
PREVMAR	-0.049	0.105	-0.463	0.643
NEVMAR	0.499	0.132	3.791	0.000
WKST3CR#2 ON				
AG3044	-0.383	0.113	-3.382	0.001
AG4559	-0.056	0.160	-0.352	0.725
AG60	2.303	0.162	14.257	0.000
SEXM	-1.405	0.207	-6.773	0.000
ALD	-0.131	0.362	-0.362	0.718
MDE	-0.151	0.140	-1.082	0.279
ED12	-0.859	0.236	-3.642	0.000
ED1315	-1.358	0.263	-5.163	0.000
ED16	-1.770	0.307	-5.769	0.000
PREVMAR	-0.615	0.217	-2.839	0.005
NEVMAR	-2.446	0.341	-7.178	0.000
Means				
WKSTAT3C	1.653	0.019	86.686	0.000
Intercepts				
WKST3CR#1	-0.304	0.159	-1.908	0.056
WKST3CR#2	-1.106	0.305	-3.632	0.000
Variances				
WKSTAT3C	0.829	0.013	62.571	0.000

LOGISTIC REGRESSION ODDS RATIO RESULTS

WKST3CR#1 ON	
AG3044	0.682
AG4559	0.945
AG60	10.006
SEXM	0.527
ALD	1.394
MDE	1.106
ED12	0.522
ED1315	0.400
ED16	0.295
PREVMAR	0.952
NEVMAR	1.647
WKST3CR#2 ON	
AG3044	0.682
AG4559	0.945
AG60	10.006
SEXM	0.245
ALD	0.877

MDE	0.860
ED12	0.424
ED1315	0.257
ED16	0.170
PREVMAR	0.541
NEVMAR	0.087

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.902E-03
(ratio of smallest to largest eigenvalue)

DIAGRAM INFORMATION

Use View Diagram under the Diagram menu in the Mplus Editor to view the diagram.
If running Mplus from the Mplus Diagrammer, the diagram opens automatically.

Diagram output

p:\asda 2\analysis example replication\mplus\chapter 9\asda 2 section 9.2.6 multinomial model te

Beginning Time: 10:09:16
Ending Time: 10:09:17
Elapsed Time: 00:00:01

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INPUT INSTRUCTIONS

TITLE: ASDA2 ANALYSIS EXAMPLE SECTION 9.3.6 ORDINAL REGRESSION FINAL MODEL

DATA:
FILE IS "P:\ASDA 2\Data sets\ESS6 Russia\c9_russia_1jun2017_mplus.txt";

VARIABLE:
NAMES ARE
AGEA DWEIGHT EISCED GNDR PSPWGHT STFECO STFLIFE TRSTPLC TVTOT VOTE ag60
ag1529 ag3044 ag4559 agecat idno male marcat married nevmar
numstratify prevmar psu stflife2 stflife2r stratify ;
USEVARIABLES ARE
PSPWGHT ag60 ag1529 ag3044 ag4559 male married nevmar prevmar
psu stflife2 numstratify ;

missing are . ;
WEIGHT IS pspwght ;
stratification is numstratify ;
cluster is psu ;
categorical is stflife2 ;

ANALYSIS:
type is complex;
estimator is mlr ;

Model:
stflife2 on
AG3044 AG4559 AG60 male PREVMAR NEVMAR ;

*** WARNING in MODEL command
Variable is uncorrelated with all other variables: AG1529
*** WARNING in MODEL command
Variable is uncorrelated with all other variables: MARRIED
*** WARNING in MODEL command
At least one variable is uncorrelated with all other variables in the model.
Check that this is what is intended.
*** WARNING
Data set contains cases with missing on x-variables.
These cases were not included in the analysis.
Number of cases with missing on x-variables: 45
4 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA2 ANALYSIS EXAMPLE SECTION 9.3.6 ORDINAL REGRESSION FINAL MODEL

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	2439
Number of dependent variables	3
Number of independent variables	6
Number of continuous latent variables	0

Observed dependent variables

Continuous
AG1529 MARRIED

Binary and ordered categorical (ordinal)
STFLIFE2

Observed independent variables

AG60 AG3044 AG4559 MALE NEVMAR PREVMAR

Variables with special functions

Stratification NUMSTRAT
Cluster variable PSU
Weight variable PSPWGHT

Estimator MLR
Information matrix OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes
Maximum number of iterations 100
Convergence criterion 0.100D-05
Optimization Specifications for the EM Algorithm
Maximum number of iterations 500
Convergence criteria
Loglikelihood change 0.100D-02
Relative loglikelihood change 0.100D-05
Derivative 0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Maximum value for logit thresholds 15
Minimum value for logit thresholds -15
Minimum expected cell size for chi-square 0.100D-01
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Optimization algorithm EMA
Integration Specifications
Type STANDARD
Number of integration points 15
Dimensions of numerical integration 0
Adaptive quadrature ON
Link LOGIT
Cholesky OFF

Input data file(s)

P:\ASDA 2\Data sets\ESS6 Russia\c9_russia_1jun2017_mplus.txt
Input data format FREE

SUMMARY OF DATA

Number of missing data patterns	2
Number of y missing data patterns	1
Number of u missing data patterns	2
Number of strata	8
Number of clusters	184

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

Covariance Coverage					
	STFLIFE2	AG1529	MARRIED	AG60	AG3044
STFLIFE2	0.990				
AG1529	0.990	1.000			
MARRIED	0.990	1.000	1.000		
AG60	0.990	1.000	1.000	1.000	
AG3044	0.990	1.000	1.000	1.000	1.000
AG4559	0.990	1.000	1.000	1.000	1.000
MALE	0.990	1.000	1.000	1.000	1.000
NEVMAR	0.990	1.000	1.000	1.000	1.000
PREVMAR	0.990	1.000	1.000	1.000	1.000

Covariance Coverage				
	AG4559	MALE	NEVMAR	PREVMAR
AG4559	1.000			
MALE	1.000	1.000		
NEVMAR	1.000	1.000	1.000	
PREVMAR	1.000	1.000	1.000	1.000

PROPORTION OF DATA PRESENT FOR U

Covariance Coverage	
	STFLIFE2
STFLIFE2	0.990

PROPORTION OF DATA PRESENT FOR Y

Covariance Coverage					
	AG1529	MARRIED	AG60	AG3044	AG4559
AG1529	1.000				
MARRIED	1.000	1.000			
AG60	1.000	1.000	1.000		
AG3044	1.000	1.000	1.000	1.000	
AG4559	1.000	1.000	1.000	1.000	1.000
MALE	1.000	1.000	1.000	1.000	1.000
NEVMAR	1.000	1.000	1.000	1.000	1.000
PREVMAR	1.000	1.000	1.000	1.000	1.000

Covariance Coverage			
	MALE	NEVMAR	PREVMAR
MALE	1.000		
NEVMAR	1.000	1.000	
PREVMAR	1.000	1.000	1.000

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

STFLIFE2		
Category 1	0.046	110.616
Category 2	0.197	476.146
Category 3	0.208	500.825
Category 4	0.427	1031.108
Category 5	0.122	293.595

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 14

Loglikelihood

HO Value -6619.890
 HO Scaling Correction Factor 1.6860
 for MLR

Information Criteria

Akaike (AIC) 13267.780
 Bayesian (BIC) 13348.971
 Sample-Size Adjusted BIC 13304.490
 (n* = (n + 2) / 24)

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
STFLIFE2 ON				
AG3044	-0.529	0.136	-3.885	0.000
AG4559	-0.746	0.143	-5.201	0.000
AG60	-0.808	0.166	-4.875	0.000
MALE	-0.110	0.095	-1.151	0.250
PREVMAR	-0.209	0.105	-1.981	0.048
NEVMAR	-0.137	0.132	-1.037	0.300
Means				
AG1529	0.274	0.015	18.825	0.000
MARRIED	0.505	0.013	39.152	0.000
Thresholds				
STFLIFE2\$1	-3.711	0.214	-17.303	0.000
STFLIFE2\$2	-1.793	0.167	-10.739	0.000
STFLIFE2\$3	-0.835	0.159	-5.239	0.000
STFLIFE2\$4	1.384	0.154	9.009	0.000
Variances				
AG1529	0.199	0.007	30.201	0.000
MARRIED	0.250	0.000	2069.388	0.000

LOGISTIC REGRESSION ODDS RATIO RESULTS

STFLIFE2 ON	
AG3044	0.589
AG4559	0.474
AG60	0.446
MALE	0.896
PREVMAR	0.811
NEVMAR	0.872

BRANT WALD TEST FOR PROPORTIONAL ODDS

	Chi-Square	Degrees of Freedom	P-Value
STFLIFE2			
Overall test	27.294	18	0.074
AG60	8.340	3	0.039
AG3044	1.504	3	0.681
AG4559	1.759	3	0.624

MALE	9.157	3	0.027
NEVMAR	6.636	3	0.084
PREVMAR	2.319	3	0.509

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.360E-03
(ratio of smallest to largest eigenvalue)

DIAGRAM INFORMATION

Use View Diagram under the Diagram menu in the Mplus Editor to view the diagram.
If running Mplus from the Mplus Diagrammer, the diagram opens automatically.

Diagram output

p:\asda 2\analysis example replication\mplus\chapter 9\asda 2 section 9.3.6 ordinal model test a

Beginning Time: 11:52:27
Ending Time: 11:52:28
Elapsed Time: 00:00:01

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Mplus VERSION 7.4
MUTHEN & MUTHEN
08/02/2017 12:53 PM
INPUT INSTRUCTIONS

TITLE: ASDA2 ANALYSIS EXAMPLE SECTION 9.4.7 POISSON REGRESSION FINAL MODEL

DATA:
FILE IS "P:\ASDA 2\Data sets\HRS 2012\HRS2012_mplus.txt";
VARIABLE:
NAMES ARE
GENDER H11ATOTA H11ITOT HHID NAGE NC128 NC129 NC130 NFINR NWGTHH NWGTR PN R11BMI
SECU STRATUM age65p arthritis bmi_c daysdrkperwk
diabetes edcat male marcat nage_c numfalls24 numsecu offset24 racecat ;
USEVARIABLES ARE
NUMSECU NWGTR STRATUM NUMFALLS24 MALE NAGE_C ARTHRITIS DIABETES BMI_C ;
missing are . ;
WEIGHT IS NWGTR ;
stratification is STRATUM ;
cluster is NUMSECU ;
count is NUMFALLS24 ;
subpopulation =(age65p==1) ;

ANALYSIS:
type is complex;
estimator is mlr ;
Model:
numfalls24 on male MALE NAGE_C ARTHRITIS DIABETES BMI_C ;
Output:
cint ;

*** WARNING in VARIABLE command
Note that only the first 8 characters of variable names are used in the output.
Shorten variable names to avoid any confusion.
*** WARNING
Data set contains cases with missing on x-variables.
These cases were not included in the analysis.
Number of cases with missing on x-variables: 349
*** WARNING
Data set contains cases with missing on all variables except
x-variables. These cases were not included in the analysis.
Number of cases with missing on all variables except x-variables: 9749
3 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA2 ANALYSIS EXAMPLE SECTION 9.4.7 POISSON REGRESSION FINAL MODEL

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	10455
Number of dependent variables	1
Number of independent variables	5
Number of continuous latent variables	0

Observed dependent variables

Count	
NUMFALLS	

Observed independent variables

MALE	NAGE_C	ARTHRTI	DIABETES	BMI_C
------	--------	---------	----------	-------

Variables with special functions

Stratification	STRATUM
Cluster variable	NUMSECU
Weight variable	NWGTR

Estimator MLR

Information matrix OBSERVED

Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes

Maximum number of iterations	100
Convergence criterion	0.100D-05

Optimization Specifications for the EM Algorithm

Maximum number of iterations	500
Convergence criteria	
Loglikelihood change	0.100D-02
Relative loglikelihood change	0.100D-05
Derivative	0.100D-02

Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables

Number of M step iterations	1
M step convergence criterion	0.100D-02
Basis for M step termination	ITERATION

Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes

Number of M step iterations	1
M step convergence criterion	0.100D-02
Basis for M step termination	ITERATION
Maximum value for logit thresholds	15
Minimum value for logit thresholds	-15
Minimum expected cell size for chi-square	0.100D-01
Maximum number of iterations for H1	2000
Convergence criterion for H1	0.100D-03
Optimization algorithm	EMA

Integration Specifications

Type	STANDARD
Number of integration points	15
Dimensions of numerical integration	0
Adaptive quadrature	ON
Cholesky	OFF

Input data file(s)
P:\ASDA 2\Data sets\HRS 2012\HRS2012_mplus.txt
Input data format FREE
SUMMARY OF DATA

Number of strata	55
Number of clusters	108

COUNT PROPORTION OF ZERO, MINIMUM AND MAXIMUM VALUES

NUMFALLS	0.347	0	50
----------	-------	---	----

WARNING: THE VARIANCE CONTRIBUTION FROM A STRATUM WITH A SINGLE CLUSTER (PSU) IS BASED ON THE DIFFERENCE BETWEEN THE SINGLE CLUSTER VALUE AND THE OVERALL CLUSTER MEAN.
THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters	6
Loglikelihood	
HO Value	-22848.147
HO Scaling Correction Factor for MLR	15.3227
Information Criteria	
Akaike (AIC)	45708.294
Bayesian (BIC)	45751.823
Sample-Size Adjusted BIC	45732.756
(n* = (n + 2) / 24)	

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
NUMFALLS24 ON				
MALE	0.257	0.080	3.195	0.001
NAGE_C	0.015	0.004	3.315	0.001
ARTHRITIS	0.736	0.077	9.514	0.000
DIABETES	0.248	0.070	3.526	0.000
BMI_C	0.004	0.008	0.491	0.623

```

Intercepts
  NUMFALLS24      -0.636      0.074      -8.546      0.000
QUALITY OF NUMERICAL RESULTS
  Condition Number for the Information Matrix          0.110E-02
  (ratio of smallest to largest eigenvalue)
CONFIDENCE INTERVALS OF MODEL RESULTS
      Lower .5%  Lower 2.5%  Lower 5%  Estimate  Upper 5%  Upper 2.5%  Upper .5%
NUMFALLS ON
  MALE           0.050      0.099      0.125      0.257      0.390      0.415      0.464
  NAGE_C         0.003      0.006      0.007      0.015      0.022      0.023      0.026
  ARTHRITIS     0.537      0.585      0.609      0.736      0.863      0.888      0.935
  DIABETES      0.067      0.110      0.132      0.248      0.363      0.385      0.428
  BMI_C        -0.018      -0.012     -0.010      0.004      0.018      0.021      0.026
Intercepts
  NUMFALLS24    -0.827      -0.781     -0.758     -0.636     -0.513     -0.490     -0.444

```

DIAGRAM INFORMATION

Use View Diagram under the Diagram menu in the Mplus Editor to view the diagram.
 If running Mplus from the Mplus Diagrammer, the diagram opens automatically.

Diagram output

```

p:\asda 2\analysis example replication\mplus\chapter 9\asda 2 section 9.4.7 poisson model.dgm
Beginning Time: 12:53:03
Ending Time: 12:53:05
Elapsed Time: 00:00:02

```

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INPUT INSTRUCTIONS

TITLE: ASDA2 ANALYSIS EXAMPLE SECTION 9.4.7 NEGATIVE BINOMIAL FINAL MODEL

DATA:

FILE IS "P:\ASDA 2\Data sets\HRS 2012\HRS2012_mplus.txt";

VARIABLE:

NAMES ARE

GENDER H11ATOTA H11ITOT HHID NAGE NC128 NC129 NC130 NFINR NWGTHH NWGTR PN R11BMI
SECU STRATUM age65p arthritis bmi_c daysdrkperwk
diabetes edcat male marcat nage_c numfalls24 numsecu offset24 racecat ;

USEVARIABLES ARE

NUMSECU NWGTR STRATUM NUMFALLS24 MALE NAGE_C ARTHRITIS DIABETES BMI_C ;

missing are . ;

WEIGHT IS NWGTR ;

stratification is STRATUM ;

cluster is NUMSECU ;

count is NUMFALLS24 (NB) ;

subpopulation =(age65p==1) ;

ANALYSIS:

type is complex;

estimator is mlr ;

Model:

numfalls24 on male MALE NAGE_C ARTHRITIS DIABETES BMI_C ;

Output:

cint ;

*** WARNING in VARIABLE command

Note that only the first 8 characters of variable names are used in the output.

Shorten variable names to avoid any confusion.

*** WARNING

Data set contains cases with missing on x-variables.

These cases were not included in the analysis.

Number of cases with missing on x-variables: 349

*** WARNING

Data set contains cases with missing on all variables except

x-variables. These cases were not included in the analysis.

Number of cases with missing on all variables except x-variables: 9749

3 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA2 ANALYSIS EXAMPLE SECTION 9.4.7 NEGATIVE BINOMIAL FINAL MODEL

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	10455
Number of dependent variables	1
Number of independent variables	5
Number of continuous latent variables	0

Observed dependent variables

Count

MODEL FIT INFORMATION

Number of Free Parameters 7

Loglikelihood

HO Value -13622.212
 HO Scaling Correction Factor 2.7709
 for MLR

Information Criteria

Akaike (AIC) 27258.425
 Bayesian (BIC) 27309.209
 Sample-Size Adjusted BIC 27286.964
 (n* = (n + 2) / 24)

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
NUMFALLS24 ON				
MALE	0.237	0.081	2.906	0.004
NAGE_C	0.016	0.004	3.888	0.000
ARTHRITIS	0.742	0.079	9.406	0.000
DIABETES	0.260	0.069	3.801	0.000
BMI_C	0.001	0.007	0.202	0.840
Intercepts				
NUMFALLS24	-0.634	0.079	-8.071	0.000
Dispersion				
NUMFALLS24	3.824	0.168	22.722	0.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.777E-03
 (ratio of smallest to largest eigenvalue)

CONFIDENCE INTERVALS OF MODEL RESULTS

	Lower .5%	Lower 2.5%	Lower 5%	Estimate	Upper 5%	Upper 2.5%	Upper .5%
NUMFALLS ON							
MALE	0.027	0.077	0.103	0.237	0.371	0.396	0.447
NAGE_C	0.005	0.008	0.009	0.016	0.023	0.024	0.027
ARTHRITIS	0.539	0.587	0.612	0.742	0.872	0.896	0.945
DIABETES	0.084	0.126	0.148	0.260	0.373	0.395	0.437
BMI_C	-0.016	-0.012	-0.010	0.001	0.012	0.014	0.018
Intercepts							
NUMFALLS24	-0.837	-0.788	-0.764	-0.634	-0.505	-0.480	-0.432
Dispersion							
NUMFALLS24	3.390	3.494	3.547	3.824	4.101	4.154	4.257

DIAGRAM INFORMATION

Use View Diagram under the Diagram menu in the Mplus Editor to view the diagram.
 If running Mplus from the Mplus Diagrammer, the diagram opens automatically.

Diagram output

p:\asda 2\analysis example replication\mplus\chapter 9\asda 2 section 9.4.7 nb model.dgm

Beginning Time: 12:59:03

Ending Time: 12:59:04

Elapsed Time: 00:00:01

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INPUT INSTRUCTIONS

TITLE: ASDA2 ANALYSIS EXAMPLE SECTION 9.4.7 ZERO INFLATED NEGATIVE BINOMIAL FINAL MODEL

DATA:

FILE IS "P:\ASDA 2\Data sets\HRS 2012\HRS2012_mplus.txt";

VARIABLE:

NAMES ARE

GENDER H11ATOTA H11ITOT HHID NAGE NC128 NC129 NC130 NFINR NWGTHH NWGTR PN R11BMI
SECU STRATUM age65p arthritis bmi_c daysdrkperwk
diabetes edcat male marcat nage_c numfalls24 numsecu offset24 racecat ;

USEVARIABLES ARE

NUMSECU NWGTR STRATUM NUMFALLS24 MALE NAGE_C ARTHRITIS DIABETES BMI_C ;

missing are . ;
WEIGHT IS NWGTR ;
stratification is STRATUM ;
cluster is NUMSECU ;
count is NUMFALLS24 (NBI) ;
subpopulation =(age65p==1) ;

ANALYSIS:

type is complex;
estimator is mlr ;

Model:

numfalls24 on MALE NAGE_C ARTHRITIS DIABETES BMI_C ;
numfalls24#1 on male nage_c arthritis ;

Output:

cint ;

*** WARNING in VARIABLE command

Note that only the first 8 characters of variable names are used in the output.
Shorten variable names to avoid any confusion.

*** WARNING

Data set contains cases with missing on x-variables.
These cases were not included in the analysis.
Number of cases with missing on x-variables: 349

*** WARNING

Data set contains cases with missing on all variables except
x-variables. These cases were not included in the analysis.
Number of cases with missing on all variables except x-variables: 9749
3 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA2 ANALYSIS EXAMPLE SECTION 9.4.7 ZERO INFLATED NEGATIVE BINOMIAL FINAL MODEL

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	10455
Number of dependent variables	1
Number of independent variables	5
Number of continuous latent variables	0

Observed dependent variables

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 11

Loglikelihood

HO Value -13566.609
HO Scaling Correction Factor 2.2525
for MLR

Information Criteria

Akaike (AIC) 27155.218
Bayesian (BIC) 27235.021
Sample-Size Adjusted BIC 27200.065
(n* = (n + 2) / 24)

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
NUMFALLS24 ON				
MALE	0.457	0.095	4.827	0.000
NAGE_C	0.005	0.005	0.939	0.348
ARTHRITIS	0.557	0.106	5.245	0.000
DIABETES	0.270	0.072	3.764	0.000
BMI_C	0.000	0.006	0.055	0.956
NUMFALLS24 ON				
MALE	1.511	0.496	3.043	0.002
NAGE_C	-0.095	0.013	-7.225	0.000
ARTHRITIS	-0.912	0.234	-3.897	0.000
Intercepts				
NUMFALLS24	-2.127	0.617	-3.445	0.001
NUMFALLS24	-0.414	0.128	-3.232	0.001
Dispersion				
NUMFALLS24	2.995	0.201	14.881	0.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.225E-04
(ratio of smallest to largest eigenvalue)

CONFIDENCE INTERVALS OF MODEL RESULTS

	Lower .5%	Lower 2.5%	Lower 5%	Estimate	Upper 5%	Upper 2.5%	Upper .5%
NUMFALLS ON							
MALE	0.213	0.271	0.301	0.457	0.613	0.642	0.701
NAGE_C	-0.008	-0.005	-0.003	0.005	0.013	0.014	0.017
ARTHRITIS	0.284	0.349	0.382	0.557	0.732	0.765	0.831
DIABETES	0.085	0.129	0.152	0.270	0.387	0.410	0.454
BMI_C	-0.015	-0.012	-0.010	0.000	0.010	0.012	0.016
NUMFALLS ON							
MALE	0.232	0.538	0.694	1.511	2.328	2.484	2.790
NAGE_C	-0.129	-0.121	-0.117	-0.095	-0.074	-0.070	-0.061
ARTHRITIS	-1.515	-1.371	-1.298	-0.912	-0.527	-0.454	-0.309

Intercepts							
NUMFALLS24	-3.718	-3.337	-3.143	-2.127	-1.111	-0.917	-0.537
NUMFALLS24	-0.744	-0.665	-0.625	-0.414	-0.203	-0.163	-0.084
Dispersion							
NUMFALLS24	2.477	2.601	2.664	2.995	3.326	3.390	3.514

DIAGRAM INFORMATION

Use View Diagram under the Diagram menu in the Mplus Editor to view the diagram.
 If running Mplus from the Mplus Diagrammer, the diagram opens automatically.

Diagram output

p:\asda 2\analysis example replication\mplus\chapter 9\asda 2 section 9.4.7 zero inflated nb mod

Beginning Time: 13:13:32
 Ending Time: 13:13:34
 Elapsed Time: 00:00:02

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