

## **MPLUS Analysis Examples Replication Chapter 12**

Mplus includes all input code and output in the \*.out file. This document contains all code and selected output from each model analysis for Chapter 12, where possible in Mplus 7.4. All data preparation and management was done using SAS and then read into Mplus v7.4 using a text file format produced by SAS.

Notes on the process used and other details are included in the Mplus syntax/output. Additionally, the FEFI method for imputation is not available in Mplus 7.4 and is omitted here. In this chapter, we focus on production of numbers for Tables 12.4 and 12.5 and demonstrate use of the IMPUTE command of Mplus for sequential regression multiple imputation and subsequent analysis of imputed data sets using the correct combining rules and adjustments for design-based analyses (TYPE=IMPUTATION and ANALYSIS: TYPE=COMPLEX). See the examples and Mplus documentation for more details.

Mplus VERSION 7.4  
MUTHEN & MUTHEN  
08/15/2017 9:10 AM  
INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 MULTIPLE IMPUTATION OF MISSING DATA WITH DESCODE IN MODEL**

```

DATA:
file is "P:\ASDA 2\Data sets\nhanes 2011_2012\c12nhanes_mplus.txt" ;
VARIABLE:
NAMES ARE
FEMALE age age18p age4cat agec agecsq black bmxbmi bpxdi1_1 descod indfmpir marcat
mex numsecu other othhisp riagendr ridreth1 sdmvpsu sdmvstra seqn white wtmecc2yr;
! order of variables in output data sets will match usevariables from impute
USEVARIABLES ARE
marcat bmxbmi indfmpir bpxdi1_1 female agec agecsq descod
othhisp white black other n_wtmecc2yr ;
missing are . ;
auxiliary is wtmecc2yr numsecu SDMVPSU SDMVSTRA ;
DEFINE:
n_wtmecc2yr=wtmecc2yr/100 ;
! declare marcat as categorical ;
DATA IMPUTATION:
IMPUTE=bxmbmi indfmpir bpxdi1_1 marcat(c) ;
NDATASETS=5 ;
MODEL=SEQUENTIAL ;
SAVE= IMP_DESCODE*.DAT ;

```

\*\*\* 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 in MODEL command  
All variables are uncorrelated with all other variables in the model.  
Check that this is what is intended.  
2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EXAMPLE 12.6 MULTIPLE IMPUTATION OF MISSING DATA

SUMMARY OF ANALYSIS

Number of groups	1
Average number of observations	5615
Number of replications	
Requested	5
Completed	5
Number of dependent variables	13
Number of independent variables	0
Number of continuous latent variables	0
Observed dependent variables	
Continuous	
MARCAT	BMXBMI
AGECSQ	DESCODE
N_WTMECC2YR	
INDFMPIR	BPXDI1_1
WHITE	FEMALE
BLACK	AGEC
OTHER	
Observed auxiliary variables	
WTMECC2YR	NUMSECU
SDMVPSU	SDMVSTRA
Variables used for imputation	
Variables imputed as continuous	
BMXBMI	INDFMPIR
BPXDI1_1	
Variables imputed as categorical	
MARCAT	
Estimator	ML
Information matrix	OBSERVED
Maximum number of iterations	1000

```

Convergence criterion 0.500D-04
Maximum number of steepest descent iterations 20
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Specifications for Bayesian Estimation
  Point estimate MEDIAN
  Number of Markov chain Monte Carlo (MCMC) chains 2
  Random seed for the first chain 0
  Starting value information UNPERTURBED
  Treatment of categorical mediator OBSERVED
  Algorithm used for Markov chain Monte Carlo GIBBS(PX1)
  Convergence criterion 0.500D-01
  Maximum number of iterations 50000
  K-th iteration used for thinning 1
Specifications for Data Imputation
  Number of imputed data sets 5
  H1 imputation model type SEQUENTIAL
  Iteration intervals for thinning 100
Input data file(s)

```

P:\ASDA 2\Data sets\nhanes 2011\_2012\c12nhanes\_mplus.txt

Input data format FREE

SUMMARY OF DATA FOR THE FIRST DATA SET

Number of missing data patterns 1

SUMMARY OF MISSING DATA PATTERNS FOR THE FIRST DATA SET

MISSING DATA PATTERNS (x = not missing)

1

```

MARCAT x
BMXBMI x
INDFMPIR x
BPXDI1_1 x
FEMALE x
AGEC x
AGECSQ x
DESCODE x
OTHHISP x
WHITE x
BLACK x
OTHER x
N_WTMEC2 x

```

MISSING DATA PATTERN FREQUENCIES

Pattern Frequency

1 5615

COVARIANCE COVERAGE OF DATA FOR THE FIRST DATA SET

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

Covariance Coverage

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	1.000				
BMXBMI	1.000	1.000			
INDFMPIR	1.000	1.000	1.000		
BPXDI1_1	1.000	1.000	1.000	1.000	
FEMALE	1.000	1.000	1.000	1.000	1.000
AGEC	1.000	1.000	1.000	1.000	1.000
AGECSQ	1.000	1.000	1.000	1.000	1.000
DESCODE	1.000	1.000	1.000	1.000	1.000
OTHHISP	1.000	1.000	1.000	1.000	1.000
WHITE	1.000	1.000	1.000	1.000	1.000
BLACK	1.000	1.000	1.000	1.000	1.000
OTHER	1.000	1.000	1.000	1.000	1.000
N_WTMEC2	1.000	1.000	1.000	1.000	1.000

Covariance Coverage					
	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
AGEC	1.000				
AGECSQ	1.000	1.000			
DESCODE	1.000	1.000	1.000		
OTHHISP	1.000	1.000	1.000	1.000	
WHITE	1.000	1.000	1.000	1.000	1.000
BLACK	1.000	1.000	1.000	1.000	1.000
OTHER	1.000	1.000	1.000	1.000	1.000
N_WTMEC2	1.000	1.000	1.000	1.000	1.000

Covariance Coverage			
	BLACK	OTHER	N_WTMEC2
BLACK	1.000		
OTHER	1.000	1.000	
N_WTMEC2	1.000	1.000	1.000

SAMPLE STATISTICS

NOTE: These are average results over 5 data sets.

SAMPLE STATISTICS

Means

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
1	1.653	28.621	2.369	70.973	0.506

Means

	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
1	0.810	345.063	960.314	0.103	0.359

Means

	BLACK	OTHER	N_WTMEC2
1	0.268	0.169	413.184

Covariances

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	0.633				
BMXBMI	-0.038	47.898			
INDFMPIR	-0.240	-0.643	2.766		
BPXDI1_1	-0.553	10.649	1.312	142.561	
FEMALE	0.013	0.247	-0.025	-0.577	0.250
AGEC	-3.365	9.429	3.031	13.267	0.115
AGECSQ	33.227	-300.893	-70.981	-1261.187	-2.105
DESCODE	1.496	21.054	-5.460	3.898	0.207
OTHHISP	-0.005	0.031	-0.039	-0.132	0.004
WHITE	-0.032	-0.015	0.076	-0.037	-0.004
BLACK	0.064	0.464	-0.048	0.222	0.004
OTHER	-0.007	-0.583	0.067	0.096	-0.001
N_WTMEC2	-27.073	3.050	199.229	234.340	4.303

Covariances

	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
AGEC	344.407				
AGECSQ	1441.462	108909.983			
DESCODE	-35.547	138.411	1568.957		
OTHHISP	0.038	-1.080	-2.082	0.092	
WHITE	1.068	16.624	0.066	-0.037	0.230
BLACK	-0.061	-2.656	2.796	-0.028	-0.096
OTHER	-0.574	-6.984	-1.839	-0.017	-0.061
N_WTMEC2	-334.653	-16238.929	-215.130	-15.096	124.246

Covariances

	BLACK	OTHER	N_WTMEC2
--	-------	-------	----------

BLACK	0.196				
OTHER	-0.045	0.141			
N_WTMEC2	-62.328	-37.663	160694.194		
Correlations					
	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	1.000				
BMXBMI	-0.007	1.000			
INDFMPIR	-0.181	-0.056	1.000		
BPXDI1_1	-0.058	0.129	0.066	1.000	
FEMALE	0.034	0.071	-0.030	-0.097	1.000
AGEC	-0.228	0.073	0.098	0.060	0.012
AGECSQ	0.127	-0.132	-0.129	-0.320	-0.013
DESCODE	0.047	0.077	-0.083	0.008	0.010
OTHHISP	-0.019	0.015	-0.077	-0.037	0.023
WHITE	-0.084	-0.005	0.095	-0.006	-0.015
BLACK	0.183	0.151	-0.064	0.042	0.019
OTHER	-0.023	-0.225	0.107	0.021	-0.007
N_WTMEC2	-0.085	0.001	0.299	0.049	0.021
Correlations					
	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
AGEC	1.000				
AGECSQ	0.235	1.000			
DESCODE	-0.048	0.011	1.000		
OTHHISP	0.007	-0.011	-0.173	1.000	
WHITE	0.120	0.105	0.003	-0.253	1.000
BLACK	-0.007	-0.018	0.159	-0.205	-0.453
OTHER	-0.083	-0.056	-0.124	-0.153	-0.337
N_WTMEC2	-0.045	-0.123	-0.014	-0.124	0.646
Correlations					
	BLACK	OTHER	N_WTMEC2		
BLACK	1.000				
OTHER	-0.273	1.000			
N_WTMEC2	-0.351	-0.251	1.000		
MODEL FIT INFORMATION					
Number of Free Parameters			26		
Loglikelihood					
H0 Value			-208419.213		
H1 Value			-200986.405		
* The loglikelihood cannot be used directly for chi-square testing with imputed data.					
Information Criteria					
Akaike (AIC)			416890.425		
Bayesian (BIC)			417062.888		
Sample-Size Adjusted BIC			416980.268		
(n* = (n + 2) / 24)					
Chi-Square Test of Model Fit					
Value			14143.681		
Degrees of Freedom			78		
P-Value			0.0000		
RMSEA (Root Mean Square Error Of Approximation)					
Estimate			0.179		
90 Percent C.I.			0.177	0.182	
Probability RMSEA <= .05			0.000		
CFI/TLI					
CFI			0.000		
TLI			0.000		
Chi-Square Test of Model Fit for the Baseline Model					

Value 14143.681  
 Degrees of Freedom 78  
 P-Value 0.0000  
 SRMR (Standardized Root Mean Square Residual)  
 Value 0.135

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	Rate of Missing
<b>Means</b>					
MARCAT	1.653	0.011	153.982	0.000	0.021
BMXBMI	28.621	0.093	308.499	0.000	0.009
INDFMPIR	2.369	0.024	98.874	0.000	0.151
BPXDI1_1	70.973	0.163	436.071	0.000	0.042
FEMALE	0.506	0.007	75.897	0.000	0.000
AGEC	0.810	0.248	3.270	0.001	0.000
AGECSQ	345.063	4.404	78.351	0.000	0.000
DESCODE	960.314	0.539	1781.372	0.000	0.039
OTHHISP	0.103	0.004	25.359	0.000	0.000
WHITE	0.359	0.006	56.043	0.000	0.000
BLACK	0.268	0.006	45.342	0.000	0.000
OTHER	0.169	0.005	33.815	0.000	0.000
N_WTMEC2YR	413.183	5.349	77.239	0.000	0.000
<b>Variances</b>					
MARCAT	0.633	0.012	52.942	0.000	0.002
BMXBMI	47.898	0.925	51.768	0.000	0.046
INDFMPIR	2.766	0.055	50.115	0.000	0.110
BPXDI1_1	142.561	2.814	50.659	0.000	0.089
FEMALE	0.250	0.005	52.989	0.000	0.000
AGEC	344.408	6.500	52.985	0.000	0.000
AGECSQ	*****	2055.510	52.984	0.000	0.000
DESCODE	1568.959	29.611	52.986	0.000	0.000
OTHHISP	0.092	0.002	52.984	0.000	0.000
WHITE	0.230	0.004	52.986	0.000	0.000
BLACK	0.196	0.004	52.986	0.000	0.000
OTHER	0.141	0.003	52.986	0.000	0.000
N_WTMEC2YR	*****	3032.661	52.988	0.000	0.000

QUALITY OF NUMERICAL RESULTS

Average Condition Number for the Information Matrix 0.198E-04  
 (ratio of smallest to largest eigenvalue)

TECHNICAL 1 OUTPUT

PARAMETER SPECIFICATION

NU					
	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
1	1	2	3	4	5
NU					
	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
1	6	7	8	9	10
NU					
	BLACK	OTHER	N_WTMEC2		
1	11	12	13		
THETA					
	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	14				
BMXBMI	0	15			

INDFMPIR	0	0	16		
BPXDI1_1	0	0	0	17	
FEMALE	0	0	0	0	18
AGEC	0	0	0	0	0
AGECSQ	0	0	0	0	0
DESCODE	0	0	0	0	0
OTHHISP	0	0	0	0	0
WHITE	0	0	0	0	0
BLACK	0	0	0	0	0
OTHER	0	0	0	0	0
N_WTMEC2	0	0	0	0	0

THETA

	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
AGEC	19				
AGECSQ	0	20			
DESCODE	0	0	21		
OTHHISP	0	0	0	22	
WHITE	0	0	0	0	23
BLACK	0	0	0	0	0
OTHER	0	0	0	0	0
N_WTMEC2	0	0	0	0	0

THETA

	BLACK	OTHER	N_WTMEC2
BLACK	24		
OTHER	0	25	
N_WTMEC2	0	0	26

STARTING VALUES

NU

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
1	0.000	0.000	0.000	0.000	0.000

NU

	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
1	0.000	0.000	0.000	0.000	0.000

NU

	BLACK	OTHER	N_WTMEC2
1	0.000	0.000	0.000

THETA

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	0.328				
BMXBMI	0.000	23.940			
INDFMPIR	0.000	0.000	1.388		
BPXDI1_1	0.000	0.000	0.000	71.271	
FEMALE	0.000	0.000	0.000	0.000	0.125
AGEC	0.000	0.000	0.000	0.000	0.000
AGECSQ	0.000	0.000	0.000	0.000	0.000
DESCODE	0.000	0.000	0.000	0.000	0.000
OTHHISP	0.000	0.000	0.000	0.000	0.000
WHITE	0.000	0.000	0.000	0.000	0.000
BLACK	0.000	0.000	0.000	0.000	0.000
OTHER	0.000	0.000	0.000	0.000	0.000
N_WTMEC2	0.000	0.000	0.000	0.000	0.000

THETA

	AGEC	AGECSQ	DESCODE	OTHHISP	WHITE
AGEC	172.204				

AGECSQ	0.000	54454.992			
DESCODE	0.000	0.000	784.479		
OTHHISP	0.000	0.000	0.000	0.046	
WHITE	0.000	0.000	0.000	0.000	0.115
BLACK	0.000	0.000	0.000	0.000	0.000
OTHER	0.000	0.000	0.000	0.000	0.000
N_WTMEC2	0.000	0.000	0.000	0.000	0.000

THETA

	BLACK	OTHER	N_WTMEC2
BLACK	0.098		
OTHER	0.000	0.070	
N_WTMEC2	0.000	0.000	80347.094

SAVEDATA INFORMATION

Save file

IMP\_DESCODE\*.DAT

Order of variables

MARCAT  
 BMXBMI  
 INDFMPIR  
 BPXDI1\_1  
 FEMALE  
 AGECSQ  
 DESCODE  
 OTHHISP  
 WHITE  
 BLACK  
 OTHER  
 N\_WTMEC2  
 WTMEC2YR  
 NUMSECU  
 SDMVPSU  
 SDMVSTRA

Save file format Free  
 Save file record length 10000

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Mplus VERSION 7.4  
MUTHEN & MUTHEN  
08/15/2017 11:11 AM  
INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITH DESCODE IN MODEL**

!USE IMPUTED DATA SETS FROM IMPUTE COMMAND OF MPLUS

DATA:

FILE IS "P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp\_descodelist.dat";

TYPE = IMPUTATION ;

!Order must match that given in usevar and auxilliary list from imputation

VARIABLE:

NAMES ARE

MARCAT

BMXBMI

INDFMPIR

BPXDI1\_1

FEMALE

AGEC

AGECSQ

DESCODE

OTHHISP

WHITE

BLACK

OTHER

N\_WTMEC2YR

WTMEC2YR

NUMSECU

SDMVPSU

SDMVSTRA ;

USEVARIABLES ARE FEMALE AGECSQ OTHHISP WHITE BLACK OTHER

WTMEC2YR sdmvstra numsecu HIGH\_DP ;

WEIGHT IS WTMEC2YR ;

missing are . ;

STRATIFICATION IS sdmvstra ;

CLUSTER IS numsecu ;

categorical is high\_dp ;

DEFINE:

if bpxdi1\_1 >= 90 then high\_dp=1 ; if bpxdi1\_1 < 90 then high\_dp=0 ;

ANALYSIS:

type is complex ;

estimator = mlr ;

MODEL:

high\_dp on

othhisp (p1)

white (p2)

black (p3)

other (p4)

female (p5)

agec agecsq ;

model test:

0=p1 ;

0=p2 ;

0=p3 ;

0=p4 ;

0=p5 ;

INPUT READING TERMINATED NORMALLY

ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITH DESCODE IN MODEL  
SUMMARY OF ANALYSIS

Number of groups	1
Average number of observations	5615
Number of replications	
Requested	5
Completed	5
Number of dependent variables	1
Number of independent variables	7
Number of continuous latent variables	0
Observed dependent variables	
Binary and ordered categorical (ordinal)	
HIGH_DP	
Observed independent variables	
FEMALE	
AGEC	
AGECSQ	
OTHHISP	
WHITE	
BLACK	
OTHER	
Variables with special functions	
Stratification	SDMVSTRA
Cluster variable	NUMSECU
Weight variable	WTMEC2YR
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)	
Multiple data files from	
P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp_descodelist.dat	
Input data format	FREE

SUMMARY OF DATA FOR THE FIRST DATA SET

Number of missing data patterns 1  
 Number of y missing data patterns 0  
 Number of u missing data patterns 1  
 Number of strata 14  
 Number of clusters 31

SUMMARY OF MISSING DATA PATTERNS FOR THE FIRST DATA SET

COVARIANCE COVERAGE OF DATA FOR THE FIRST DATA SET

Minimum covariance coverage value 0.100

UNIVARIATE PROPORTIONS FOR CATEGORICAL VARIABLES FOR THE FIRST REPLICATION

HIGH\_DP

Category 1 0.941  
 Category 2 0.059

SAMPLE STATISTICS

NOTE: These are average results over 5 data sets.

SAMPLE STATISTICS

Means

	FEMALE	AGEC	AGECSQ	OTHHISP	WHITE
1	0.517	0.000	305.761	0.066	0.659

Means

	BLACK	OTHER
1	0.117	0.078

Covariances

	FEMALE	AGEC	AGECSQ	OTHHISP	WHITE
FEMALE	0.250				
AGEC	0.412	305.761			
AGECSQ	3.272	1022.536	97025.835		
OTHHISP	0.001	-0.293	-0.133	0.062	
WHITE	-0.003	1.477	5.669	-0.044	0.225
BLACK	0.005	-0.330	-1.180	-0.008	-0.077
OTHER	0.001	-0.231	-1.018	-0.005	-0.051

Covariances

	BLACK	OTHER
BLACK	0.103	
OTHER	-0.009	0.072

Correlations

	FEMALE	AGEC	AGECSQ	OTHHISP	WHITE
FEMALE	1.000				
AGEC	0.047	1.000			
AGECSQ	0.021	0.188	1.000		
OTHHISP	0.007	-0.067	-0.002	1.000	
WHITE	-0.013	0.178	0.038	-0.371	1.000
BLACK	0.029	-0.059	-0.012	-0.097	-0.507
OTHER	0.004	-0.049	-0.012	-0.077	-0.405

Correlations

	BLACK	OTHER
BLACK	1.000	
OTHER	-0.106	1.000

MODEL FIT INFORMATION

Number of Free Parameters 8  
 Loglikelihood

HO Value

Mean -1217.465  
 Std Dev 3.492  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-1225.589	-1222.340
0.980	1.000	-1224.637	-1222.340
0.950	1.000	-1223.209	-1222.340
0.900	0.800	-1221.940	-1222.340
0.800	0.600	-1220.404	-1222.340
0.700	0.600	-1219.296	-1222.340
0.500	0.600	-1217.465	-1220.658
0.300	0.400	-1215.633	-1216.058
0.200	0.200	-1214.526	-1215.324
0.100	0.200	-1212.989	-1215.324
0.050	0.000	-1211.721	-1215.324
0.020	0.000	-1210.293	-1215.324
0.010	0.000	-1209.341	-1215.324

Information Criteria

Akaike (AIC)

Mean 2450.929  
 Std Dev 6.984  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	2434.682	2441.887
0.980	1.000	2436.586	2441.887
0.950	1.000	2439.441	2441.887
0.900	0.800	2441.978	2441.887
0.800	0.800	2445.052	2441.887
0.700	0.600	2447.267	2441.887
0.500	0.400	2450.929	2446.647
0.300	0.400	2454.592	2448.116
0.200	0.400	2456.807	2457.317
0.100	0.200	2459.881	2457.317
0.050	0.000	2462.418	2457.317
0.020	0.000	2465.273	2457.317
0.010	0.000	2467.177	2457.317

Bayesian (BIC)

Mean 2503.995  
 Std Dev 6.984  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	2487.748	2494.952
0.980	1.000	2489.651	2494.952
0.950	1.000	2492.507	2494.952
0.900	0.800	2495.044	2494.952
0.800	0.800	2498.117	2494.952
0.700	0.600	2500.333	2494.952
0.500	0.400	2503.995	2499.713
0.300	0.400	2507.658	2501.182
0.200	0.400	2509.873	2510.382
0.100	0.200	2512.946	2510.382
0.050	0.000	2515.484	2510.382
0.020	0.000	2518.339	2510.382
0.010	0.000	2520.243	2510.382

Sample-Size Adjusted BIC ( $n^* = (n + 2) / 24$ )

Mean 2478.573  
 Std Dev 6.984

Number of successful computations		5	
Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	2462.326	2469.531
0.980	1.000	2464.230	2469.531
0.950	1.000	2467.085	2469.531
0.900	0.800	2469.622	2469.531
0.800	0.800	2472.696	2469.531
0.700	0.600	2474.911	2469.531
0.500	0.400	2478.573	2474.291
0.300	0.400	2482.236	2475.760
0.200	0.400	2484.451	2484.961
0.100	0.200	2487.525	2484.961
0.050	0.000	2490.062	2484.961
0.020	0.000	2492.917	2484.961
0.010	0.000	2494.821	2484.961

**Wald Test of Parameter Constraints**

<b>Value</b>	<b>54.343</b>
<b>Degrees of Freedom</b>	<b>5</b>
<b>P-Value</b>	<b>0.0000</b>

**MODEL RESULTS**

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	Rate of Missing
<b>HIGH_DP ON</b>					
OTHHISP	-0.769	0.248	-3.104	0.002	0.029
WHITE	0.085	0.216	0.394	0.694	0.040
BLACK	0.626	0.235	2.663	0.008	0.028
OTHER	0.070	0.248	0.282	0.778	0.171
FEMALE	-0.559	0.198	-2.818	0.005	0.050
AGEC	0.008	0.006	1.326	0.185	0.011
AGECSQ	-0.002	0.000	-5.936	0.000	0.086
<b>Thresholds</b>					
HIGH_DP\$1	2.211	0.199	11.135	0.000	0.076

**QUALITY OF NUMERICAL RESULTS**

Average Condition Number for the Information Matrix 0.126E-06  
(ratio of smallest to largest eigenvalue)

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INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 MULTIPLE IMPUTATION OF MISSING DATA WITHOUT DESCODE IN MODEL**

DATA:

file is "P:\ASDA 2\Data sets\nhanes 2011\_2012\c12nhanes\_mplus.txt" ;

VARIABLE:

NAMES ARE

FEMALE age age18p age4cat agec agecsq black bmx bmi bpxdi1\_1 descode indfmpir marcat  
mex numsecu other othhisp riagendr ridreth1 sdmvpsu sdmvstra seqn white wtmecc2yr;

! order of variables in output data sets will match usevariables from impute

USEVARIABLES ARE

marcat bmx bmi indfmpir bpxdi1\_1 female agec agecsq othhisp white black other n\_wtmecc2yr ;  
missing are . ;

auxiliary is wtmecc2yr numsecu SDMVPSU SDMVSTRA ;

DEFINE:

n\_wtmecc2yr=wtmecc2yr/100 ;

! declare marcat as categorical ;

DATA IMPUTATION:

IMPUTE=bx bmi indfmpir bpxdi1\_1 marcat(c) ;

NDATASETS=5 ;

MODEL=SEQUENTIAL ;

SAVE= IMP\_NODESCODE\*.DAT ;

\*\*\* 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 in MODEL command

All variables are uncorrelated with all other variables in the model.

Check that this is what is intended.

2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EXAMPLE 12.6 MULTIPLE IMPUTATION OF MISSING DATA WITHOUT DESCODE IN MODEL

SUMMARY OF ANALYSIS

Number of groups 1  
 Average number of observations 5615

Number of replications  
 Requested 5  
 Completed 5

Number of dependent variables 12  
 Number of independent variables 0  
 Number of continuous latent variables 0

Observed dependent variables

Continuous  
 MARCAT BMXBMI INDFMPIR BPXDI1\_1 FEMALE AGECSQ  
 AGESQ OTHHISP WHITE BLACK OTHER N\_WTMEC2YR

Observed auxiliary variables

WTMEC2YR NUMSECU SDMVPSU SDMVSTRA

Variables used for imputation

Variables imputed as continuous  
 BMXBMI INDFMPIR BPXDI1\_1

Variables imputed as categorical  
 MARCAT

Estimator ML  
 Information matrix OBSERVED  
 Maximum number of iterations 1000  
 Convergence criterion 0.500D-04  
 Maximum number of steepest descent iterations 20  
 Maximum number of iterations for H1 2000  
 Convergence criterion for H1 0.100D-03  
 Specifications for Bayesian Estimation  
 Point estimate MEDIAN  
 Number of Markov chain Monte Carlo (MCMC) chains 2  
 Random seed for the first chain 0  
 Starting value information UNPERTURBED  
 Treatment of categorical mediator OBSERVED  
 Algorithm used for Markov chain Monte Carlo GIBBS(PX1)  
 Convergence criterion 0.500D-01  
 Maximum number of iterations 50000  
 K-th iteration used for thinning 1  
 Specifications for Data Imputation  
 Number of imputed data sets 5  
 H1 imputation model type SEQUENTIAL  
 Iteration intervals for thinning 100

Input data file(s)

P:\ASDA 2\Data sets\ nhanes 2011\_2012\c12nhanes\_mplus.txt

Input data format FREE

SUMMARY OF DATA FOR THE FIRST DATA SET

Number of missing data patterns 1

SUMMARY OF MISSING DATA PATTERNS FOR THE FIRST DATA SET

MISSING DATA PATTERNS (x = not missing)

1  
MARCAT x  
BMXBMI x  
INDFMPIR x  
BPXDI1\_1 x  
FEMALE x  
AGEC x  
AGECSQ x  
OTHHISP x  
WHITE x  
BLACK x  
OTHER x  
N\_WTMEC2 x

MISSING DATA PATTERN FREQUENCIES

Pattern	Frequency
1	5615

COVARIANCE COVERAGE OF DATA FOR THE FIRST DATA SET

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

	Covariance Coverage				
	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	1.000				
BMXBMI	1.000	1.000			
INDFMPIR	1.000	1.000	1.000		
BPXDI1_1	1.000	1.000	1.000	1.000	
FEMALE	1.000	1.000	1.000	1.000	1.000
AGEC	1.000	1.000	1.000	1.000	1.000
AGECSQ	1.000	1.000	1.000	1.000	1.000
OTHHISP	1.000	1.000	1.000	1.000	1.000
WHITE	1.000	1.000	1.000	1.000	1.000
BLACK	1.000	1.000	1.000	1.000	1.000
OTHER	1.000	1.000	1.000	1.000	1.000
N_WTMEC2	1.000	1.000	1.000	1.000	1.000

	Covariance Coverage				
	AGEC	AGECSQ	OTHHISP	WHITE	BLACK
AGEC	1.000				



AGECSQ	1.000	1.000			
OTHHISP	1.000	1.000	1.000		
WHITE	1.000	1.000	1.000	1.000	
BLACK	1.000	1.000	1.000	1.000	1.000
OTHER	1.000	1.000	1.000	1.000	1.000
N_WTMEC2	1.000	1.000	1.000	1.000	1.000

Covariance Coverage

	OTHER	N_WTMEC2
OTHER	1.000	
N_WTMEC2	1.000	1.000

SAMPLE STATISTICS

NOTE: These are average results over 5 data sets.

SAMPLE STATISTICS

Means

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
1	1.654	28.621	2.371	71.003	0.506

Means

	AGEC	AGECSQ	OTHHISP	WHITE	BLACK
1	0.810	345.063	0.103	0.359	0.268

Means

	OTHER	N_WTMEC2
1	0.169	413.184

Covariances

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	0.633				
BMXBMI	-0.042	47.886			
INDFMPIR	-0.241	-0.635	2.751		
BPXDI1_1	-0.565	10.954	1.214	142.656	
FEMALE	0.013	0.251	-0.020	-0.553	0.250
AGEC	-3.401	9.221	3.052	13.691	0.115
AGECSQ	33.826	-303.872	-70.162	-1267.866	-2.105
OTHHISP	-0.004	0.030	-0.039	-0.119	0.004
WHITE	-0.032	-0.024	0.075	-0.033	-0.004
BLACK	0.065	0.466	-0.048	0.223	0.004
OTHER	-0.007	-0.581	0.065	0.083	-0.001
N_WTMEC2	-27.173	2.056	197.594	233.708	4.303

Covariances

	AGEC	AGECSQ	OTHHISP	WHITE	BLACK
AGEC	344.407				
AGECSQ	1441.462	108909.983			

OTHHISP	0.038	-1.080	0.092		
WHITE	1.068	16.624	-0.037	0.230	
BLACK	-0.061	-2.656	-0.028	-0.096	0.196
OTHER	-0.574	-6.984	-0.017	-0.061	-0.045
N_WTMEC2	-334.653	-16238.929	-15.096	124.246	-62.328

Covariances

	OTHER	N_WTMEC2
OTHER	0.141	
N_WTMEC2	-37.663	160694.194

Correlations

	MARCAT	BMXBMI	INDFMPIR	BPXDI1_1	FEMALE
MARCAT	1.000				
BMXBMI	-0.008	1.000			
INDFMPIR	-0.182	-0.055	1.000		
BPXDI1_1	-0.059	0.133	0.061	1.000	
FEMALE	0.033	0.073	-0.025	-0.093	1.000
AGEC	-0.230	0.072	0.099	0.062	0.012
AGECSQ	0.129	-0.133	-0.128	-0.322	-0.013
OTHHISP	-0.018	0.014	-0.078	-0.033	0.023
WHITE	-0.083	-0.007	0.094	-0.006	-0.015
BLACK	0.184	0.152	-0.065	0.042	0.019
OTHER	-0.024	-0.224	0.104	0.018	-0.007
N_WTMEC2	-0.085	0.001	0.297	0.049	0.021

Correlations

	AGEC	AGECSQ	OTHHISP	WHITE	BLACK
AGEC	1.000				
AGECSQ	0.235	1.000			
OTHHISP	0.007	-0.011	1.000		
WHITE	0.120	0.105	-0.253	1.000	
BLACK	-0.007	-0.018	-0.205	-0.453	1.000
OTHER	-0.083	-0.056	-0.153	-0.337	-0.273
N_WTMEC2	-0.045	-0.123	-0.124	0.646	-0.351

Correlations

	OTHER	N_WTMEC2
OTHER	1.000	
N_WTMEC2	-0.251	1.000

MODEL FIT INFORMATION

Number of Free Parameters 24

Loglikelihood

H0 Value -179777.188  
H1 Value -172559.277

\* The loglikelihood cannot be used directly for chi-square testing with imputed data.

Information Criteria

Akaike (AIC)	359602.376
Bayesian (BIC)	359761.572
Sample-Size Adjusted BIC	359685.308
(n* = (n + 2) / 24)	

Chi-Square Test of Model Fit

Value	13730.420
Degrees of Freedom	66
P-Value	0.0000

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.192
90 Percent C.I.	0.189 0.195
Probability RMSEA <= .05	0.000

CFI/TLI

CFI	0.000
TLI	0.000

Chi-Square Test of Model Fit for the Baseline Model

Value	13730.420
Degrees of Freedom	66
P-Value	0.0000

SRMR (Standardized Root Mean Square Residual)

Value	0.141
-------	-------

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	Rate of Missing
<b>Means</b>					
MARCAT	1.654	0.011	153.380	0.000	0.032
BMXBMI	28.621	0.094	303.229	0.000	0.044
INDFMPIR	2.371	0.025	95.655	0.000	0.219
BPXDI1_1	71.003	0.172	412.377	0.000	0.152
FEMALE	0.506	0.007	75.896	0.000	0.000
AGEC	0.810	0.248	3.270	0.001	0.000
AGECSQ	345.063	4.404	78.348	0.000	0.000
OTHHISP	0.103	0.004	25.359	0.000	0.000
WHITE	0.359	0.006	56.043	0.000	0.000
BLACK	0.268	0.006	45.343	0.000	0.000
OTHER	0.169	0.005	33.815	0.000	0.000
N_WTMEC2YR	413.183	5.349	77.238	0.000	0.000
<b>Variiances</b>					
MARCAT	0.633	0.012	52.923	0.000	0.002
BMXBMI	47.886	0.908	52.754	0.000	0.009
INDFMPIR	2.751	0.053	51.945	0.000	0.040
BPXDI1_1	142.656	3.053	46.731	0.000	0.241

FEMALE	0.250	0.005	52.989	0.000	0.000
AGEC	344.407	6.500	52.987	0.000	0.000
AGECSQ	*****	2055.445	52.986	0.000	0.000
OTHHISP	0.092	0.002	52.983	0.000	0.000
WHITE	0.230	0.004	52.986	0.000	0.000
BLACK	0.196	0.004	52.986	0.000	0.000
OTHER	0.141	0.003	52.987	0.000	0.000
N_WTMEC2YR	*****	3032.687	52.987	0.000	0.000

QUALITY OF NUMERICAL RESULTS

Average Condition Number for the Information Matrix      0.494E-04  
 (ratio of smallest to largest eigenvalue)

SAVEDATA INFORMATION

Save file  
 IMP\_NODESCODE\*.DAT  
 Order of variables  
 MARCAT  
 BMXBMI  
 INDFMPIR  
 BPXDI1\_1  
 FEMALE  
 AGECSQ  
 AGECSQ  
 OTHHISP  
 WHITE  
 BLACK  
 OTHER  
 N\_WTMEC2  
 WTMEC2YR  
 NUMSECU  
 SDMVPSU  
 SDMVSTRA  
 Save file format            Free  
 Save file record length    10000

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**INPUT INSTRUCTIONS**

**TITLE: ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITHOUT DESCODE IN MODEL**

!USE IMPUTED DATA SETS FROM IMPUTE COMMAND OF MPLUS

DATA:

FILE IS "P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp\_nodescodelist.dat";

TYPE = IMPUTATION ;

!Order must match that given in usevar and auxilliary list from imputation

VARIABLE:

NAMES ARE

MARCAT

BMXBMI

INDFMPIR

BPXDI1\_1

FEMALE

AGEC

AGECSQ

OTHHISP

WHITE

BLACK

OTHER

N\_WTMEC2YR

WTMEC2YR

NUMSECU

SDMVPSU

SDMVSTRA;

USEVARIABLES ARE FEMALE AGEC AGECSQ OTHHISP WHITE BLACK OTHER

WTMEC2YR sdmvstra numsecu HIGH\_DP ;

WEIGHT IS WTMEC2YR ;

missing are . ;

STRATIFICATION IS sdmvstra ;

CLUSTER IS numsecu ;

categorical is high\_dp ;

DEFINE:

if bpxdi1\_1 >= 90 then high\_dp=1 ; if bpxdi1\_1 < 90 then high\_dp=0 ;

ANALYSIS:

type is complex ;

estimator = mlr ;

MODEL:

high\_dp on

othhisp (p1)

white (p2)

black (p3)

other (p4)

female (p5)

agec agecsq ;

model test:

0=p1 ;

0=p2 ;

0=p3 ;

0=p4 ;

0=p5 ;

INPUT READING TERMINATED NORMALLY

ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITHOUT DESCODE IN MODEL

SUMMARY OF ANALYSIS

Number of groups	1
Average number of observations	5615
Number of replications	
Requested	5
Completed	5
Number of dependent variables	1
Number of independent variables	7
Number of continuous latent variables	0
Observed dependent variables	
Binary and ordered categorical (ordinal)	
HIGH_DP	
Observed independent variables	
FEMALE	
AGEC	
AGECSQ	
OTHHISP	
WHITE	
BLACK	
OTHER	
Variables with special functions	
Stratification	SDMVSTRA
Cluster variable	NUMSECU
Weight variable	WTMEC2YR
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)	
Multiple data files from	
P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp_nodescodelist.da	
Input data format	FREE

SUMMARY OF DATA FOR THE FIRST DATA SET

Number of missing data patterns 1  
 Number of y missing data patterns 0  
 Number of u missing data patterns 1  
 Number of strata 14  
 Number of clusters 31

SUMMARY OF MISSING DATA PATTERNS FOR THE FIRST DATA SET

COVARIANCE COVERAGE OF DATA FOR THE FIRST DATA SET

Minimum covariance coverage value 0.100

UNIVARIATE PROPORTIONS FOR CATEGORICAL VARIABLES FOR THE FIRST REPLICATION

HIGH\_DP

Category 1 0.941  
 Category 2 0.059

SAMPLE STATISTICS

NOTE: These are average results over 5 data sets.

SAMPLE STATISTICS

Means

	FEMALE	AGEC	AGECSQ	OTHHISP	WHITE
1	0.517	0.000	305.761	0.066	0.659

Means

	BLACK	OTHER
1	0.117	0.078

Covariances

	FEMALE	AGEC	AGECSQ	OTHHISP	WHITE
FEMALE	0.250				
AGEC	0.412	305.761			
AGECSQ	3.272	1022.536	97025.835		
OTHHISP	0.001	-0.293	-0.133	0.062	
WHITE	-0.003	1.477	5.669	-0.044	0.225
BLACK	0.005	-0.330	-1.180	-0.008	-0.077
OTHER	0.001	-0.231	-1.018	-0.005	-0.051

Covariances

	BLACK	OTHER
BLACK	0.103	
OTHER	-0.009	0.072

Correlations

	FEMALE	AGEC	AGECSQ	OTHHISP	WHITE
FEMALE	1.000				
AGEC	0.047	1.000			
AGECSQ	0.021	0.188	1.000		
OTHHISP	0.007	-0.067	-0.002	1.000	
WHITE	-0.013	0.178	0.038	-0.371	1.000
BLACK	0.029	-0.059	-0.012	-0.097	-0.507
OTHER	0.004	-0.049	-0.012	-0.077	-0.405

Correlations

	BLACK	OTHER
BLACK	1.000	
OTHER	-0.106	1.000

MODEL FIT INFORMATION

Number of Free Parameters 8

Loglikelihood

HO Value

Mean -1233.875  
 Std Dev 24.573  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-1291.039	-1280.261
0.980	1.000	-1284.340	-1280.261
0.950	0.800	-1274.295	-1280.261
0.900	0.800	-1265.368	-1280.261
0.800	0.800	-1254.556	-1280.261
0.700	0.800	-1246.761	-1280.261
0.500	0.600	-1233.875	-1236.016
0.300	0.400	-1220.989	-1224.896
0.200	0.000	-1213.195	-1214.457
0.100	0.000	-1202.382	-1214.457
0.050	0.000	-1193.455	-1214.457
0.020	0.000	-1183.410	-1214.457
0.010	0.000	-1176.711	-1214.457

Information Criteria

Akaike (AIC)

Mean 2483.750  
 Std Dev 49.146  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	2369.422	2443.490
0.980	1.000	2382.819	2443.490
0.950	1.000	2402.910	2443.490
0.900	1.000	2420.765	2443.490
0.800	1.000	2442.389	2443.490
0.700	0.600	2457.978	2443.490
0.500	0.400	2483.750	2444.914
0.300	0.200	2509.522	2465.793
0.200	0.200	2525.111	2488.031
0.100	0.200	2546.735	2488.031
0.050	0.200	2564.590	2488.031
0.020	0.000	2584.681	2488.031
0.010	0.000	2598.078	2488.031

Bayesian (BIC)

Mean 2536.816  
 Std Dev 49.146  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	2422.488	2496.556
0.980	1.000	2435.885	2496.556
0.950	1.000	2455.976	2496.556
0.900	1.000	2473.830	2496.556
0.800	1.000	2495.455	2496.556
0.700	0.600	2511.044	2496.556
0.500	0.400	2536.816	2497.979
0.300	0.200	2562.588	2518.858
0.200	0.200	2578.177	2541.097
0.100	0.200	2599.801	2541.097
0.050	0.200	2617.656	2541.097
0.020	0.000	2637.746	2541.097
0.010	0.000	2651.144	2541.097



Sample-Size Adjusted BIC ( $n^* = (n + 2) / 24$ )

Mean 2511.394  
 Std Dev 49.146  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	2397.066	2471.134
0.980	1.000	2410.463	2471.134
0.950	1.000	2430.554	2471.134
0.900	1.000	2448.409	2471.134
0.800	1.000	2470.033	2471.134
0.700	0.600	2485.622	2471.134
0.500	0.400	2511.394	2472.558
0.300	0.200	2537.166	2493.437
0.200	0.200	2552.755	2515.675
0.100	0.200	2574.379	2515.675
0.050	0.200	2592.234	2515.675
0.020	0.000	2612.325	2515.675
0.010	0.000	2625.722	2515.675

**Wald Test of Parameter Constraints**

Value 38.995  
 Degrees of Freedom 5  
 P-Value 0.0000

**MODEL RESULTS**

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	Rate of Missing
<b>HIGH_DP ON</b>					
OTHHISP	-0.709	0.318	-2.230	0.026	0.368
WHITE	0.062	0.231	0.270	0.787	0.098
BLACK	0.580	0.246	2.361	0.018	0.161
OTHER	-0.037	0.240	-0.154	0.878	0.032
FEMALE	-0.526	0.199	-2.644	0.008	0.002
AGEC	0.009	0.007	1.300	0.194	0.106
AGECSQ	-0.002	0.000	-5.620	0.000	0.163
<b>Thresholds</b>					
HIGH_DP\$1	2.199	0.200	11.009	0.000	0.154

**QUALITY OF NUMERICAL RESULTS**

Average Condition Number for the Information Matrix 0.124E-06  
 (ratio of smallest to largest eigenvalue)

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INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 ANALYSIS OF HIGH BLOOD PRESSURE USING COMPLETE CASE ANALYSIS**

!USE NON IMPUTED DATA SET FOR CC ANALYSIS

DATA:

FILE IS "P:\ASDA 2\Data sets\nhanes 2011\_2012\c12nhanes\_mplus.txt";

VARIABLE:

NAMES ARE

FEMALE age age18p age4cat agec agecsq black bmx bmi bpxdi1\_1 descodes indfmpir  
marcat mex numsecu other othhisp riagendr ridreth1 sdmvpsu  
sdmvstra seqn white wtmecc2yr ;

USEVARIABLES ARE FEMALE AGE C AGECSQ OTHHISP WHITE BLACK OTHER

WTMECC2YR sdmvstra numsecu HIGH\_DP ;

WEIGHT IS WTMECC2YR ;

missing are . ;

STRATIFICATION IS sdmvstra ;

CLUSTER IS numsecu ;

categorical is high\_dp ;

DEFINE:

if bpxdi1\_1 >= 90 then high\_dp=1 ; if bpxdi1\_1 < 90 then high\_dp=0 ;

ANALYSIS:

type is complex ;

estimator = mlr ;

MODEL:

high\_dp on

othhisp (p1)

white (p2)

black (p3)

other (p4)

female (p5)

agec agecsq ;

model test:

0=p1 ;

0=p2 ;

0=p3 ;

0=p4 ;

0=p5 ;

\*\*\* 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: 503

1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	5112
Number of dependent variables	1
Number of independent variables	7
Number of continuous latent variables	0

Observed dependent variables

Binary and ordered categorical (ordinal)  
HIGH\_DP

Observed independent variables

FEMALE      AGE      AGECSQ      OTHHISP      WHITE      BLACK  
OTHER

Variables with special functions

Stratification      SDMVSTRA  
Cluster variable      NUMSECU  
Weight variable      WTMEC2YR

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\ nhanes 2011\_2012\c12nhanes\_mplus.txt

Input data format FREE

SUMMARY OF DATA

Number of missing data patterns	1
Number of y missing data patterns	0
Number of u missing data patterns	1
Number of strata	14
Number of clusters	31

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

HIGH\_DP

Category 1	0.939	4801.081
Category 2	0.061	310.919

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 8

Loglikelihood

H0 Value	-1124.987
H0 Scaling Correction Factor for MLR	2.0616

Information Criteria

Akaike (AIC)	2265.973
Bayesian (BIC)	2318.288
Sample-Size Adjusted BIC ( $n^* = (n + 2) / 24$ )	2292.867

Wald Test of Parameter Constraints

Value	51.989
Degrees of Freedom	5
P-Value	0.0000

**MODEL RESULTS**

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
<b>HIGH_DP ON</b>				
OTHHISP	-0.726	0.245	-2.963	0.003
WHITE	0.131	0.225	0.585	0.559
BLACK	0.658	0.246	2.672	0.008
OTHER	0.050	0.245	0.204	0.839
FEMALE	-0.547	0.208	-2.632	0.008
AGEC	0.008	0.007	1.215	0.224
AGECSQ	-0.002	0.000	-5.838	0.000
<b>Thresholds</b>				
HIGH_DP\$1	2.250	0.199	11.334	0.000

**LOGISTIC REGRESSION ODDS RATIO RESULTS**

<b>HIGH_DP ON</b>	
OTHHISP	0.484
WHITE	1.140
BLACK	1.931
OTHER	1.051
FEMALE	0.579
AGEC	1.008
AGECSQ	0.998

**QUALITY OF NUMERICAL RESULTS**

Condition Number for the Information Matrix 0.119E-06  
 (ratio of smallest to largest eigenvalue)

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INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITHOUT DESCODE IN MODEL  
I USE NO PREDICTORS TO OBTAIN WEIGHTED/DESIGN BASED PROPORTION, TABLE 12.4**

!USE IMPUTED DATA SETS FROM IMPUTE COMMAND OF MPLUS

DATA:

FILE IS "P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp\_nodescodelist.dat";

TYPE = IMPUTATION ;

!Order must match that given in usevar and auxilliary list from imputation

VARIABLE:

NAMES ARE

MARCAT

BMXBMI

INDFMPIR

BPXDI1\_1

FEMALE

AGEC

AGECSQ

OTHHISP

WHITE

BLACK

OTHER

N\_WTMEC2YR

WTMEC2YR

NUMSECU

SDMVPSU

SDMVSTRA;

USEVARIABLES ARE WTMEC2YR sdmvstra numsecu HIGH\_DP ;

WEIGHT IS WTMEC2YR ;

missing are . ;

STRATIFICATION IS sdmvstra ;

CLUSTER IS numsecu ;

!categorical is high\_dp ;

DEFINE:

if bpxdi1\_1 >= 90 then high\_dp=1 ; if bpxdi1\_1 < 90 then high\_dp=0 ;

ANALYSIS:

type is complex ;

estimator = mlr ;

MODEL:

high\_dp ;

\*\*\* WARNING in MODEL command

All variables are uncorrelated with all other variables in the model.

Check that this is what is intended.

1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITHOUT DESCODE IN MODEL

SUMMARY OF ANALYSIS

Number of groups 1  
Average number of observations 5615

Number of replications  
Requested 5  
Completed 5

Number of dependent variables 1  
Number of independent variables 0  
Number of continuous latent variables 0

Observed dependent variables

Continuous  
HIGH\_DP

Variables with special functions

Stratification SDMVSTRA  
Cluster variable NUMSECU  
Weight variable WTMEC2YR

Estimator MLR  
Information matrix OBSERVED  
Maximum number of iterations 1000  
Convergence criterion 0.500D-04  
Maximum number of steepest descent iterations 20  
Maximum number of iterations for H1 2000  
Convergence criterion for H1 0.100D-03

Input data file(s)

Multiple data files from  
P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp\_nodescodelist.da

Input data format FREE

SUMMARY OF DATA FOR THE FIRST DATA SET

Number of missing data patterns 1  
Number of strata 14  
Number of clusters 31

SUMMARY OF MISSING DATA PATTERNS FOR THE FIRST DATA SET

MISSING DATA PATTERNS (x = not missing)

1  
HIGH\_DP x

MISSING DATA PATTERN FREQUENCIES

Pattern Frequency

COVARIANCE COVERAGE OF DATA FOR THE FIRST DATA SET

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

	Covariance Coverage
	HIGH_DP
HIGH_DP	1.000

SAMPLE STATISTICS

NOTE: These are average results over 5 data sets.

ESTIMATED SAMPLE STATISTICS

	Means
	HIGH_DP
1	0.061

	Covariances
	HIGH_DP
HIGH_DP	0.057

	Correlations
	HIGH_DP
HIGH_DP	1.000

MODEL FIT INFORMATION

Number of Free Parameters 2

Loglikelihood

H0 Value

Mean	81.405
Std Dev	63.656
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-66.679	-37.620
0.980	1.000	-49.326	-37.620
0.950	0.800	-23.304	-37.620
0.900	0.800	-0.177	-37.620



0.800	0.800	27.832	-37.620
0.700	0.800	48.023	-37.620
0.500	0.600	81.405	74.141
0.300	0.400	114.786	101.826
0.200	0.200	134.978	131.170
0.100	0.000	162.987	131.170
0.050	0.000	186.113	131.170
0.020	0.000	212.136	131.170
0.010	0.000	229.489	131.170

H1 Value

Mean	81.405
Std Dev	63.656
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-66.679	-37.620
0.980	1.000	-49.326	-37.620
0.950	0.800	-23.304	-37.620
0.900	0.800	-0.177	-37.620
0.800	0.800	27.832	-37.620
0.700	0.800	48.023	-37.620
0.500	0.600	81.405	74.141
0.300	0.400	114.786	101.826
0.200	0.200	134.978	131.170
0.100	0.000	162.987	131.170
0.050	0.000	186.113	131.170
0.020	0.000	212.136	131.170
0.010	0.000	229.489	131.170

Information Criteria

Akaike (AIC)

Mean	-158.810
Std Dev	127.313
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-454.978	-271.015
0.980	1.000	-420.272	-271.015
0.950	1.000	-368.227	-271.015
0.900	1.000	-321.974	-271.015
0.800	0.800	-265.956	-271.015
0.700	0.600	-225.573	-271.015
0.500	0.400	-158.810	-258.340
0.300	0.200	-92.047	-199.651
0.200	0.200	-51.663	-144.283
0.100	0.200	4.354	-144.283
0.050	0.200	50.607	-144.283
0.020	0.000	102.653	-144.283
0.010	0.000	137.358	-144.283

Bayesian (BIC)

Mean	-145.543
Std Dev	127.313
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-441.711	-257.749
0.980	1.000	-407.006	-257.749
0.950	1.000	-354.960	-257.749
0.900	1.000	-308.708	-257.749
0.800	0.800	-252.690	-257.749
0.700	0.600	-212.306	-257.749
0.500	0.400	-145.543	-245.073
0.300	0.200	-78.780	-186.385
0.200	0.200	-38.397	-131.016
0.100	0.200	17.621	-131.016
0.050	0.200	63.874	-131.016
0.020	0.000	115.919	-131.016
0.010	0.000	150.625	-131.016

Sample-Size Adjusted BIC ( $n^* = (n + 2) / 24$ )

Mean	-151.899
Std Dev	127.313
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-448.067	-264.104
0.980	1.000	-413.361	-264.104
0.950	1.000	-361.316	-264.104
0.900	1.000	-315.063	-264.104
0.800	0.800	-259.045	-264.104
0.700	0.600	-218.662	-264.104
0.500	0.400	-151.899	-251.429
0.300	0.200	-85.136	-192.740
0.200	0.200	-44.752	-137.372
0.100	0.200	11.265	-137.372
0.050	0.200	57.518	-137.372
0.020	0.000	109.564	-137.372
0.010	0.000	144.269	-137.372

Chi-Square Test of Model Fit

Degrees of freedom	0
Mean	0.000
Std Dev	0.000
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	0.000	0.000
0.980	1.000	0.000	0.000
0.950	1.000	0.000	0.000
0.900	1.000	0.000	0.000
0.800	1.000	0.000	0.000
0.700	1.000	0.000	0.000
0.500	1.000	0.000	0.000
0.300	1.000	0.000	0.000
0.200	1.000	0.000	0.000
0.100	1.000	0.000	0.000
0.050	1.000	0.000	0.000
0.020	1.000	0.000	0.000

0.010 1.000 0.000 0.000

RMSEA (Root Mean Square Error Of Approximation)

Mean 0.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.000	0.000	0.000
0.980	0.000	0.000	0.000
0.950	0.000	0.000	0.000
0.900	0.000	0.000	0.000
0.800	0.000	0.000	0.000
0.700	0.000	0.000	0.000
0.500	0.000	0.000	0.000
0.300	0.000	0.000	0.000
0.200	0.000	0.000	0.000
0.100	0.000	0.000	0.000
0.050	0.000	0.000	0.000
0.020	0.000	0.000	0.000
0.010	0.000	0.000	0.000

CFI/TLI

CFI

Mean 0.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.000	0.000	0.000
0.980	0.000	0.000	0.000
0.950	0.000	0.000	0.000
0.900	0.000	0.000	0.000
0.800	0.000	0.000	0.000
0.700	0.000	0.000	0.000
0.500	0.000	0.000	0.000
0.300	0.000	0.000	0.000
0.200	0.000	0.000	0.000
0.100	0.000	0.000	0.000
0.050	0.000	0.000	0.000
0.020	0.000	0.000	0.000
0.010	0.000	0.000	0.000

TLI

Mean 1.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.000	1.000	1.000
0.980	0.000	1.000	1.000
0.950	0.000	1.000	1.000
0.900	0.000	1.000	1.000
0.800	0.000	1.000	1.000

0.700	0.000	1.000	1.000
0.500	0.000	1.000	1.000
0.300	0.000	1.000	1.000
0.200	0.000	1.000	1.000
0.100	0.000	1.000	1.000
0.050	0.000	1.000	1.000
0.020	0.000	1.000	1.000
0.010	0.000	1.000	1.000

SRMR (Standardized Root Mean Square Residual)

Mean 0.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	0.000	0.000
0.980	1.000	0.000	0.000
0.950	1.000	0.000	0.000
0.900	1.000	0.000	0.000
0.800	0.800	0.000	0.000
0.700	0.400	0.000	0.000
0.500	0.400	0.000	0.000
0.300	0.400	0.000	0.000
0.200	0.400	0.000	0.000
0.100	0.200	0.000	0.000
0.050	0.000	0.000	0.000
0.020	0.000	0.000	0.000
0.010	0.000	0.000	0.000

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	Rate of Missing
<b>Means</b>					
HIGH_DP	0.061	0.007	8.081	0.000	0.061
<b>Variances</b>					
HIGH_DP	0.057	0.007	8.638	0.000	0.061

QUALITY OF NUMERICAL RESULTS

Average Condition Number for the Information Matrix 0.112E+00  
(ratio of smallest to largest eigenvalue)

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INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITH DESCODE IN MODEL  
! OBTAIN WEIGHTED PROPORTION HIGH BLOOD PRESSURE**

DATA:

FILE IS "P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp\_descodelist.dat";

TYPE = IMPUTATION ;

!Order must match that given in usevar and auxilliary list from imputation

VARIABLE:

NAMES ARE

MARCAT

BMXBMI

INDFMPIR

BPXDI1\_1

FEMALE

AGEC

AGECSQ

DESCODE

OTHHISP

WHITE

BLACK

OTHER

N\_WTMEC2YR

WTMEC2YR

NUMSECU

SDMVPSU

SDMVSTRA ;

USEVARIABLES ARE WTMEC2YR sdmvstra numsecu HIGH\_DP ;

WEIGHT IS WTMEC2YR ;

missing are . ;

STRATIFICATION IS sdmvstra ;

CLUSTER IS numsecu ;

DEFINE:

if bpxdi1\_1 >= 90 then high\_dp=1 ; if bpxdi1\_1 < 90 then high\_dp=0 ;

ANALYSIS:

type is complex ;

estimator = mlr ;

MODEL:

high\_dp

\*\*\* WARNING in MODEL command

All variables are uncorrelated with all other variables in the model.

Check that this is what is intended.

1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EXAMPLE 12.6 ANALYSIS OF MI DATA SETS WITH DESCODE IN MODEL

SUMMARY OF ANALYSIS

Number of groups 1  
Average number of observations 5615

Number of replications  
Requested 5  
Completed 5

Number of dependent variables 1  
Number of independent variables 0  
Number of continuous latent variables 0

Observed dependent variables

Continuous  
HIGH\_DP

Variables with special functions

Stratification SDMVSTRA  
Cluster variable NUMSECU  
Weight variable WTMEC2YR

Estimator MLR  
Information matrix OBSERVED  
Maximum number of iterations 1000  
Convergence criterion 0.500D-04  
Maximum number of steepest descent iterations 20  
Maximum number of iterations for H1 2000  
Convergence criterion for H1 0.100D-03

Input data file(s)

Multiple data files from  
P:\ASDA 2\Analysis Example Replication\MPLUS\Chapter 12\imp\_descodelist.dat

Input data format FREE

SUMMARY OF DATA FOR THE FIRST DATA SET

Number of missing data patterns 1  
Number of strata 14  
Number of clusters 31

SUMMARY OF MISSING DATA PATTERNS FOR THE FIRST DATA SET

MISSING DATA PATTERNS (x = not missing)

1  
HIGH\_DP x

MISSING DATA PATTERN FREQUENCIES

Pattern Frequency

COVARIANCE COVERAGE OF DATA FOR THE FIRST DATA SET

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT

	Covariance Coverage
	HIGH_DP
HIGH_DP	1.000

SAMPLE STATISTICS

NOTE: These are average results over 5 data sets.

ESTIMATED SAMPLE STATISTICS

	Means
	HIGH_DP
1	0.060

	Covariances
	HIGH_DP
HIGH_DP	0.056

	Correlations
	HIGH_DP
HIGH_DP	1.000

MODEL FIT INFORMATION

Number of Free Parameters 2

Loglikelihood

H0 Value

Mean 116.056  
 Std Dev 12.366  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	87.289	94.632
0.980	1.000	90.660	94.632
0.950	0.800	95.715	94.632
0.900	0.800	100.207	94.632

0.800	0.800	105.648	94.632
0.700	0.800	109.571	94.632
0.500	0.600	116.056	113.130
0.300	0.400	122.540	117.770
0.200	0.200	126.463	123.019
0.100	0.000	131.904	123.019
0.050	0.000	136.396	123.019
0.020	0.000	141.452	123.019
0.010	0.000	144.823	123.019

H1 Value

Mean	116.056
Std Dev	12.366
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	87.289	94.632
0.980	1.000	90.660	94.632
0.950	0.800	95.715	94.632
0.900	0.800	100.207	94.632
0.800	0.800	105.648	94.632
0.700	0.800	109.571	94.632
0.500	0.600	116.056	113.130
0.300	0.400	122.540	117.770
0.200	0.200	126.463	123.019
0.100	0.000	131.904	123.019
0.050	0.000	136.396	123.019
0.020	0.000	141.452	123.019
0.010	0.000	144.823	123.019

Information Criteria

Akaike (AIC)

Mean	-228.111
Std Dev	24.732
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-285.645	-259.455
0.980	1.000	-278.903	-259.455
0.950	1.000	-268.793	-259.455
0.900	1.000	-259.808	-259.455
0.800	0.800	-248.926	-259.455
0.700	0.600	-241.081	-259.455
0.500	0.400	-228.111	-242.038
0.300	0.200	-215.142	-231.540
0.200	0.200	-207.297	-222.259
0.100	0.200	-196.415	-222.259
0.050	0.200	-187.430	-222.259
0.020	0.000	-177.319	-222.259
0.010	0.000	-170.577	-222.259

Bayesian (BIC)

Mean	-214.845
Std Dev	24.732
Number of successful computations	5



Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-272.379	-246.189
0.980	1.000	-265.637	-246.189
0.950	1.000	-255.526	-246.189
0.900	1.000	-246.541	-246.189
0.800	0.800	-235.659	-246.189
0.700	0.600	-227.814	-246.189
0.500	0.400	-214.845	-228.772
0.300	0.200	-201.875	-218.274
0.200	0.200	-194.030	-208.993
0.100	0.200	-183.148	-208.993
0.050	0.200	-174.163	-208.993
0.020	0.000	-164.053	-208.993
0.010	0.000	-157.311	-208.993

Sample-Size Adjusted BIC ( $n^* = (n + 2) / 24$ )

Mean	-221.200
Std Dev	24.732
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	-278.734	-252.544
0.980	1.000	-271.992	-252.544
0.950	1.000	-261.882	-252.544
0.900	1.000	-252.897	-252.544
0.800	0.800	-242.015	-252.544
0.700	0.600	-234.170	-252.544
0.500	0.400	-221.200	-235.127
0.300	0.200	-208.231	-224.629
0.200	0.200	-200.386	-215.348
0.100	0.200	-189.504	-215.348
0.050	0.200	-180.519	-215.348
0.020	0.000	-170.408	-215.348
0.010	0.000	-163.666	-215.348

Chi-Square Test of Model Fit

Degrees of freedom	0
Mean	0.000
Std Dev	0.000
Number of successful computations	5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	0.000	0.000
0.980	1.000	0.000	0.000
0.950	1.000	0.000	0.000
0.900	1.000	0.000	0.000
0.800	1.000	0.000	0.000
0.700	1.000	0.000	0.000
0.500	1.000	0.000	0.000
0.300	1.000	0.000	0.000
0.200	1.000	0.000	0.000
0.100	1.000	0.000	0.000
0.050	1.000	0.000	0.000
0.020	1.000	0.000	0.000

0.010 1.000 0.000 0.000

RMSEA (Root Mean Square Error Of Approximation)

Mean 0.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.000	0.000	0.000
0.980	0.000	0.000	0.000
0.950	0.000	0.000	0.000
0.900	0.000	0.000	0.000
0.800	0.000	0.000	0.000
0.700	0.000	0.000	0.000
0.500	0.000	0.000	0.000
0.300	0.000	0.000	0.000
0.200	0.000	0.000	0.000
0.100	0.000	0.000	0.000
0.050	0.000	0.000	0.000
0.020	0.000	0.000	0.000
0.010	0.000	0.000	0.000

CFI/TLI

CFI

Mean 0.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.000	0.000	0.000
0.980	0.000	0.000	0.000
0.950	0.000	0.000	0.000
0.900	0.000	0.000	0.000
0.800	0.000	0.000	0.000
0.700	0.000	0.000	0.000
0.500	0.000	0.000	0.000
0.300	0.000	0.000	0.000
0.200	0.000	0.000	0.000
0.100	0.000	0.000	0.000
0.050	0.000	0.000	0.000
0.020	0.000	0.000	0.000
0.010	0.000	0.000	0.000

TLI

Mean 1.000  
Std Dev 0.000  
Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	0.000	1.000	1.000
0.980	0.000	1.000	1.000
0.950	0.000	1.000	1.000
0.900	0.000	1.000	1.000
0.800	0.000	1.000	1.000

0.700	0.000	1.000	1.000
0.500	0.000	1.000	1.000
0.300	0.000	1.000	1.000
0.200	0.000	1.000	1.000
0.100	0.000	1.000	1.000
0.050	0.000	1.000	1.000
0.020	0.000	1.000	1.000
0.010	0.000	1.000	1.000

SRMR (Standardized Root Mean Square Residual)

Mean 0.000  
 Std Dev 0.000  
 Number of successful computations 5

Proportions		Percentiles	
Expected	Observed	Expected	Observed
0.990	1.000	0.000	0.000
0.980	1.000	0.000	0.000
0.950	1.000	0.000	0.000
0.900	1.000	0.000	0.000
0.800	0.800	0.000	0.000
0.700	0.600	0.000	0.000
0.500	0.400	0.000	0.000
0.300	0.400	0.000	0.000
0.200	0.200	0.000	0.000
0.100	0.200	0.000	0.000
0.050	0.000	0.000	0.000
0.020	0.000	0.000	0.000
0.010	0.000	0.000	0.000

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value	Rate of Missing
<b>Means</b>					
HIGH_DP	0.060	0.007	8.436	0.000	0.002
<b>Variances</b>					
HIGH_DP	0.056	0.006	9.008	0.000	0.002

QUALITY OF NUMERICAL RESULTS

Average Condition Number for the Information Matrix 0.113E+00  
 (ratio of smallest to largest eigenvalue)

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INPUT INSTRUCTIONS

**TITLE: ASDA 2 EXAMPLE 12.6 ANALYSIS OF HIGH BLOOD PRESSURE USING COMPLETE CASE METHOD**  
**! OBTAIN WEIGHTED PROPORTION OF HIGH BLOOD PRESSURE**  
**! USE NON IMPUTED DATA SET FOR CC ANALYSIS**

DATA:

FILE IS "P:\ASDA 2\Data sets\nhanes 2011\_2012\c12nhanes\_mplus.txt";

VARIABLE:

NAMES ARE

FEMALE age age18p age4cat agec agecsq black bmx bmi bpxdi1\_1 descodes indfmpir  
marcat mex numsecu other othhisp riagendr ridreth1 sdmvpsu  
sdmvstra seqn white wtme2yr ;

USEVARIABLES ARE WTMEC2YR sdmvstra numsecu HIGH\_DP ;

WEIGHT IS WTMEC2YR ;

missing are . ;

STRATIFICATION IS sdmvstra ;

CLUSTER IS numsecu ;

DEFINE:

if bpxdi1\_1 >= 90 then high\_dp=1 ; if bpxdi1\_1 < 90 then high\_dp=0 ;

ANALYSIS:

type is complex ;

estimator = mlr ;

MODEL:

high\_dp ;

\*\*\* WARNING in MODEL command

All variables are 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.

These cases were not included in the analysis.

Number of cases with missing on all variables: 503

2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EXAMPLE 12.6 ANALYSIS OF HIGH BLOOD PRESSURE USING COMPLETE CASE METHOD

SUMMARY OF ANALYSIS

Number of groups	1
Number of observations	5112
Number of dependent variables	1
Number of independent variables	0
Number of continuous latent variables	0

Observed dependent variables

Continuous  
HIGH\_DP

Variables with special functions

Stratification           SDMVSTRA  
Cluster variable        NUMSECU  
Weight variable         WTMEC2YR

Estimator                                   MLR  
Information matrix                        OBSERVED  
Maximum number of iterations             1000  
Convergence criterion                     0.500D-04  
Maximum number of steepest descent iterations     20  
Maximum number of iterations for H1         2000  
Convergence criterion for H1               0.100D-03

Input data file(s)

P:\ASDA 2\Data sets\nhanes 2011\_2012\c12nhanes\_mplus.txt

Input data format   FREE

SUMMARY OF DATA

Number of missing data patterns	1
Number of strata	14
Number of clusters	31

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100

PROPORTION OF DATA PRESENT

	Covariance Coverage
	HIGH_DP
	-----
HIGH_DP	1.000

THE MODEL ESTIMATION TERMINATED NORMALLY

THE STANDARD ERRORS OF THE MODEL PARAMETER ESTIMATES MAY NOT BE TRUSTWORTHY FOR SOME PARAMETERS DUE TO A NON-POSITIVE DEFINITE FIRST-ORDER DERIVATIVE PRODUCT MATRIX. THIS MAY BE DUE TO THE STARTING VALUES BUT MAY ALSO BE AN INDICATION OF MODEL NONIDENTIFICATION. THE CONDITION NUMBER IS 0.503D-11. PROBLEM INVOLVING THE FOLLOWING PARAMETER:  
Parameter 2, HIGH\_DP

THIS IS MOST LIKELY DUE TO VARIABLE HIGH\_DP BEING DICHOTOMOUS BUT DECLARED AS CONTINUOUS.

MODEL FIT INFORMATION

Number of Free Parameters 2

Loglikelihood

HO Value 63.100  
 HO Scaling Correction Factor 21.9952  
 for MLR  
 H1 Value 63.100  
 H1 Scaling Correction Factor 21.9952  
 for MLR

Information Criteria

Akaike (AIC) -122.200  
 Bayesian (BIC) -109.121  
 Sample-Size Adjusted BIC -115.476  
 (n\* = (n + 2) / 24)

Chi-Square Test of Model Fit

Value 0.000\*  
 Degrees of Freedom 0  
 P-Value 0.0000  
 Scaling Correction Factor 1.0000  
 for MLR

\* The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used for chi-square difference testing in the regular way. MLM, MLR and WLSM chi-square difference testing is described on the Mplus website. MLMV, WLSMV, and ULSMV difference testing is done using the DIFFTEST option.

RMSEA (Root Mean Square Error Of Approximation)

Estimate 0.000  
 90 Percent C.I. 0.000 0.000  
 Probability RMSEA <= .05 0.000

CFI/TLI

CFI 0.000  
 TLI 1.000

Chi-Square Test of Model Fit for the Baseline Model

Value 0.000  
 Degrees of Freedom 0  
 P-Value 0.0000

SRMR (Standardized Root Mean Square Residual)

Value 0.000

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
<b>Means</b>				
HIGH_DP	0.061	0.008	7.638	0.000
<b>Variiances</b>				
HIGH_DP	0.057	0.007	8.168	0.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix                    0.114E+00  
(ratio of smallest to largest eigenvalue)

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