CHAPTER 7 ASDA ANALYSIS EXAMPLES REPLICATION-MPLUS 5.21

GENERAL NOTES ABOUT ANALYSIS EXAMPLES REPLICATION
These examples are intended to provide guidance on how to use the commands/procedures for analysis of complex sample survey data and assume all data management and other preliminary work is done. The relevant syntax for the procedure of interest is shown first along with the associated output for that procedure(s). In some examples, there may be more than one block of syntax and in this case all syntax is first presented followed by the output produced.

In some software packages certain procedures or options are not available but we have made every attempt to demonstrate how to match the output produced by Stata 10+ in the textbook. Check the ASDA website for updates to the various software tools we cover.

NOTES ABOUT LINEAR REGRESSION ANALYSIS IN MPLUS 5.21

The analysis replication examples were all run using Mplus 5.21. Mplus is an advanced modeling tool and offers the ability to correctly account for complex sample survey data for all analytic techniques.

Mplus offers some graphical ability but not the full complement of regression diagnostic tools available in Stata. This type of graphing could be done by saving regression results, creating new variables and graphing in another software package. We do not demonstrate how to do this type of work; see the Mplus documentation for guidance on this approach.

Mplus can perform all of the modeling tasks presented in Chapter 7 of ASDA. Some of the fine points of this tool are use of a unique cluster variable with a different value for each person in the data set, use of a SUBPOPULATION statement for subpopulation analyses, use of TYPE=COMPLEX and ESTIMATOR=MLR on the ANALYSIS command, and a MODELTEST statement for linear contrasts providing a Wald ChiSq test for selected parameter estimates. Please see the Mplus User's Guide for additional detail.

ANALYSIS EXAMPLE 7.5: BIVARIATE TESTING OF PREDICTORS OF BLOOD PRESSURE NHANES DATA

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010   9:37 AM

INPUT INSTRUCTIONS

  TITLE:EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: RACE/ETH
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
         NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
         irregular male female edcat age agecent marcat married prevmar nevmar act
         meanbpxsy meanbpxdi pre_hibp
         bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
         age18p oldblack age51
         age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
         numsecu;

         USEVARIABLES ARE bpxdi1_1 white othhis black other wtmec2yr numsecu sdmvstra ;
         missing are . ;
         WEIGHT IS wtmec2yr ;
         stratification is sdmvstra ;
         cluster is numsecu ;
         subpopulation = (age18p eq 1) ;

  ANALYSIS:
       type is complex;
       estimator is mlr ;

  Model:
       bpxdi1_1 on othhis white black other ;

EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: RACE/ETH

SUMMARY OF ANALYSIS
Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   4
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    WHITE   OTHHIS   BLACK   OTHER

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)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format   FREE

THE MODEL ESTIMATION TERMINATED NORMALLY

TESTS OF MODEL FIT

Chi-Square Test of Model Fit
          Value   0.000*
          Degrees of Freedom   0
          P-Value   0.0000
          Scaling Correction Factor   1.000
            for MLR

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests. MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

          Value   16.690
          Degrees of Freedom   4
          P-Value   0.0022

CFI/TLI
          CFI   1.000
          TLI   1.000
Loglikelihood

```
          HO Value                         -19209.451
          HO Scaling Correction Factor        1.802
            for MLR
          H1 Value                         -19209.451
          H1 Scaling Correction Factor        1.802
            for MLR


Information Criteria

          Number of Free Parameters            6
          Akaike (AIC)                    38430.901
          Bayesian (BIC)                  38470.645
          Sample-Size Adjusted BIC        38451.578
            (n* = (n + 2) / 24)


RMSEA (Root Mean Square Error Of Approximation)

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


SRMR (Standardized Root Mean Square Residual)

          Value                              0.000

MODEL RESULTS

                                                    Two-Tailed
                        Estimate      S.E.  Est./S.E.   P-Value


 BPXDI1_1 ON
    OTHHIS                 1.592     1.109     1.436     0.151
    WHITE                  2.428     0.554     4.379     0.000
    BLACK                  3.728     0.753     4.949     0.000
    OTHER                  1.785     1.030     1.733     0.083

 Intercepts
    BPXDI1_1              68.300     0.412   165.587     0.000

 Residual Variances
    BPXDI1_1             151.094     4.499    33.581     0.000



QUALITY OF NUMERICAL RESULTS

    Condition Number for the Information Matrix          0.150E-04
      (ratio of smallest to largest eigenvalue)



    Beginning Time:  09:37:00
       Ending Time:  09:37:02
       Elapsed Time: 00:00:02

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ANALYSIS EXAMPLE 7.5 BIVARIATE TESTING OF MARITAL STATUS NHANES DATA

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010   9:45 AM

INPUT INSTRUCTIONS

  TITLE:EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: MARITAL STATUS
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
        NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
        irregular male female edcat age agecent marcat married prevmar nevmar act
        meanbpxsy meanbpxdi pre_hibp
        bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
        age18p oldblack age51
        age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
        numsecu;

        USEVARIABLES ARE bpxdi1_1 prevmar nevmar wtmec2yr numsecu sdmvstra ;
        missing are . ;
        WEIGHT IS wtmec2yr ;
        stratification is sdmvstra ;
        cluster is numsecu ;
        subpopulation = (age18p eq 1) ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  Model:
      bpxdi1_1 on prevmar nevmar ;

EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: MARITAL STATUS

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5559

Number of dependent variables   1
Number of independent variables   2
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    PREVMAR   NEVMAR

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)
  F:\applied_analysis_book\Mplus\nhanes.txt


Input data format  FREE


THE MODEL ESTIMATION TERMINATED NORMALLY


TESTS OF MODEL FIT


Chi-Square Test of Model Fit


          Value                              0.000*
          Degrees of Freedom                     0
          P-Value                            0.0000
          Scaling Correction Factor          1.000
             for MLR


*    The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
     for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
     testing is described in the Mplus Technical Appendices at www.statmodel.com.
     See chi-square difference testing in the index of the Mplus User's Guide.


Chi-Square Test of Model Fit for the Baseline Model


          Value                             40.477
          Degrees of Freedom                     2
          P-Value                            0.0000


CFI/TLI


          CFI                                1.000
          TLI                                1.000


Loglikelihood


          H0 Value                       -24044.673
          H0 Scaling Correction Factor        2.488
             for MLR
          H1 Value                       -24044.673
          H1 Scaling Correction Factor        2.488
             for MLR


Information Criteria


          Number of Free Parameters              4
          Akaike (AIC)                    48097.346
          Bayesian (BIC)                  48123.839
          Sample-Size Adjusted BIC        48111.128
             (n* = (n + 2) / 24)


RMSEA (Root Mean Square Error Of Approximation)


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


SRMR (Standardized Root Mean Square Residual)


          Value                              0.000
```

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BPXDI1_1 ON				
PREVMAR	-0.073	0.681	-0.108	0.914
NEVMAR	-4.386	0.574	-7.640	0.000
Intercepts				
BPXDI1_1	71.393	0.469	152.346	0.000
Residual Variances				
BPXDI1_1	149.020	4.753	31.352	0.000

QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix   0.107E-03
       (ratio of smallest to largest eigenvalue)

     Beginning Time: 09:45:02
        Ending Time: 09:45:03
       Elapsed Time: 00:00:01

ANALYSIS EXAMPLE 7.5 BIVARIATE TESTING OF GENDER NHANES DATA

INPUT INSTRUCTIONS

```
  TITLE:EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: GENDER
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
          NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
          irregular male female edcat age agecent marcat married prevmar nevmar act
          meanbpxsy meanbpxdi pre_hibp
          bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
          age18p oldblack age51
          age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
          numsecu;

          USEVARIABLES ARE  bpxdi1_1 female wtmec2yr numsecu sdmvstra ;
          missing are . ;
          WEIGHT IS wtmec2yr ;
          stratification is sdmvstra ;
          cluster is numsecu ;
          subpopulation = (age18p eq 1) ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  Model:
      bpxdi1_1 on female ;
```

EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: GENDER

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

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

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    FEMALE

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)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format  FREE

THE MODEL ESTIMATION TERMINATED NORMALLY

TESTS OF MODEL FIT

Chi-Square Test of Model Fit

            Value                           0.000*
            Degrees of Freedom                  0
            P-Value                         0.0000
            Scaling Correction Factor        1.000
              for MLR

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

            Value                          44.745
            Degrees of Freedom                  1
            P-Value                         0.0000

CFI/TLI

            CFI                             1.000
            TLI                             1.000

Loglikelihood

            H0 Value                     -23084.308
            H0 Scaling Correction Factor      2.335
              for MLR
            H1 Value                     -23084.308
            H1 Scaling Correction Factor      2.335
              for MLR

Information Criteria

            Number of Free Parameters           3
            Akaike (AIC)                   46174.615
            Bayesian (BIC)                 46194.487
            Sample-Size Adjusted BIC       46184.954
              (n* = (n + 2) / 24)

RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

            Value                           0.000


MODEL RESULTS
```

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BPXDI1_1 ON				
FEMALE	-2.844	0.379	-7.512	0.000
Intercepts				
BPXDI1_1	72.069	0.421	171.371	0.000
Residual Variances				
BPXDI1_1	149.758	4.663	32.118	0.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix   0.389E-03
   (ratio of smallest to largest eigenvalue)

Beginning Time: 10:17:08
   Ending Time: 10:17:09
   Elapsed Time: 00:00:01

EXAMPLE 7.5 ANALYSIS EXAMPLE TEST OF AGE

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010   10:19 AM

INPUT INSTRUCTIONS

  TITLE:EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: AGE (CENTERED)
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
          NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
          irregular male female edcat age agecent marcat married prevmar nevmar act
          meanbpxsy meanbpxdi pre_hibp
          bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
          age18p oldblack age51
          age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
          numsecu;

          USEVARIABLES ARE bpxdi1_1 agecent wtmec2yr numsecu sdmvstra ;
          missing are . ;
          WEIGHT IS wtmec2yr ;
          stratification is sdmvstra ;
          cluster is numsecu ;
          subpopulation = (age18p eq 1) ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  Model:
      bpxdi1_1 on agecent ;

EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: AGE (CENTERED)

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

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

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
   AGECENT

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)
  F:\applied_analysis_book\Mplus\nhanes.txt


Input data format   FREE


THE MODEL ESTIMATION TERMINATED NORMALLY


TESTS OF MODEL FIT


Chi-Square Test of Model Fit


          Value                            0.000*
          Degrees of Freedom                   0
          P-Value                          0.0000
          Scaling Correction Factor         1.000
            for MLR


*    The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
     for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
     testing is described in the Mplus Technical Appendices at www.statmodel.com.
     See chi-square difference testing in the index of the Mplus User's Guide.


Chi-Square Test of Model Fit for the Baseline Model


          Value                            6.760
          Degrees of Freedom                   1
          P-Value                          0.0093


CFI/TLI


          CFI                              1.000
          TLI                              1.000


Loglikelihood


          H0 Value                     -42893.433
          H0 Scaling Correction Factor      3.405
            for MLR
          H1 Value                     -42893.433
          H1 Scaling Correction Factor      3.405
            for MLR


Information Criteria


          Number of Free Parameters            3
          Akaike (AIC)                  85792.865
          Bayesian (BIC)                85812.737
          Sample-Size Adjusted BIC      85803.204
            (n* = (n + 2) / 24)


RMSEA (Root Mean Square Error Of Approximation)


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


SRMR (Standardized Root Mean Square Residual)


          Value                            0.000
MODEL RESULTS
```

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BPXDI1_1 ON				
AGECENT	0.057	0.021	2.774	0.006
Intercepts				
BPXDI1_1	70.615	0.350	201.945	0.000
Residual Variances				
BPXDI1_1	150.800	4.517	33.387	0.000

QUALITY OF NUMERICAL RESULTS

        Condition Number for the Information Matrix   0.151E-01
          (ratio of smallest to largest eigenvalue)

        Beginning Time: 10:19:35
          Ending Time: 10:19:36
         Elapsed Time: 00:00:01

ANALYSIS EXAMPLE 7.5 UNWEIGHTED OLS REGRESSION (NO WEIGHTS OR DESIGN CORRECTION)

INPUT INSTRUCTIONS

```
  TITLE:EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES UNWEIGHTED LINEAR REGRESSION
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
        NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
        irregular male female edcat age agecent marcat married prevmar nevmar act
        meanbpxsy meanbpxdi pre_hibp
        bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
        age18p oldblack age51
        age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
        numsecu;

        USEVARIABLES ARE  bpxdi1_1 othhis white black other prevmar nevmar female
          agecent ;
        missing are . ;
        useobservations = (age18p eq 1) ;

  Model:
      bpxdi1_1 on othhis white black other prevmar nevmar female agecent;
```

EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES UNWEIGHTED LINEAR REGRESSION

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   8
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    OTHHIS   WHITE   BLACK   OTHER   PREVMAR   NEVMAR
    FEMALE   AGECENT

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

Input data file(s)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format FREE

SUMMARY OF DATA

     Number of missing data patterns   4

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100

        PROPORTION OF DATA PRESENT

            Covariance Coverage
              BPXDI1_1   OTHHIS   WHITE   BLACK   OTHER
            _____   _____   _____   _____   _____
 BPXDI1_1   0.823
 OTHHIS   0.823   1.000
 WHITE   0.823   1.000   1.000
 BLACK   0.823   1.000   1.000   1.000
 OTHER   0.823   1.000   1.000   1.000   1.000
 PREVMAR   0.823   0.999   0.999   0.999   0.999
 NEVMAR   0.823   0.999   0.999   0.999   0.999
 FEMALE   0.823   1.000   1.000   1.000   1.000
 AGECENT   0.823   1.000   1.000   1.000   1.000

            Covariance Coverage
              PREVMAR   NEVMAR   FEMALE   AGECENT
            _____   _____   _____   _____
 PREVMAR   0.999
 NEVMAR   0.999   0.999
 FEMALE   0.999   0.999   1.000
 AGECENT   0.999   0.999   1.000   1.000

THE MODEL ESTIMATION TERMINATED NORMALLY

TESTS OF MODEL FIT

Chi-Square Test of Model Fit

        Value   0.000
        Degrees of Freedom   0
        P-Value   0.0000

Chi-Square Test of Model Fit for the Baseline Model

        Value   283.276
        Degrees of Freedom   8
        P-Value   0.0000

CFI/TLI

        CFI   1.000
        TLI   1.000

Loglikelihood

        H0 Value   -53704.053
        H1 Value   -53704.053

Information Criteria

        Number of Free Parameters   10
        Akaike (AIC)   107428.107

```
        Bayesian (BIC)                 107494.346
        Sample-Size Adjusted BIC       107462.569
          (n* = (n + 2) / 24)


RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

        Value                             0.000




MODEL RESULTS

                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value


BPXDI1_1 ON
    OTHHIS             1.898       1.124      1.688      0.091
    WHITE              1.678       0.491      3.418      0.001
    BLACK              4.509       0.563      8.009      0.000
    OTHER              2.314       1.004      2.306      0.021
    PREVMAR            0.327       0.522      0.627      0.531
    NEVMAR            -4.217       0.510     -8.274      0.000
    FEMALE            -3.417       0.374     -9.133      0.000
    AGECENT            0.039       0.011      3.397      0.001


 Intercepts
    BPXDI1_1          69.679       0.464    150.203      0.000


 Residual Variances
    BPXDI1_1         155.659       3.252     47.859      0.000



QUALITY OF NUMERICAL RESULTS

    Condition Number for the Information Matrix         0.209E-04
      (ratio of smallest to largest eigenvalue)



    Beginning Time:  10:27:00
       Ending Time:  10:27:01
       Elapsed Time:  00:00:01
```

ANALYSIS EXAMPLE 7.5 WEIGHTED LINEAR REGRESSION BUT NO COMPLEX SAMPLE CORRECTION

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010   10:33 AM

INPUT INSTRUCTIONS

  TITLE:EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES WEIGHTED/NO DESIGN LINEAR REGRESSIO
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
        NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
        irregular male female edcat age agecent marcat married prevmar nevmar act
        meanbpxsy meanbpxdi pre_hibp
        bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
        age18p oldblack age51
        age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
        numsecu;

        USEVARIABLES ARE bpxdi1_1 othhis white black other prevmar nevmar female
          agecent wtmec2yr ;
        missing are . ;
        WEIGHT IS wtmec2yr ;
        USEOBSERVATIONS = (age18p eq 1) ;
  ANALYSIS:
      estimator is mlr ;
  Model:
      bpxdi1_1 on othhis white black other prevmar nevmar female agecent;

EXAMPLE 7.5 ANALYSIS EXAMPLES REPLICATION NHANES WEIGHTED/NO DESIGN LINEAR REGRESSION

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   8
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    OTHHIS   WHITE   BLACK   OTHER   PREVMAR   NEVMAR
    FEMALE   AGECENT

Variables with special functions

  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)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns            4


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


        PROPORTION OF DATA PRESENT


            Covariance Coverage
            BPXDI1_1      OTHHIS       WHITE       BLACK       OTHER
            _____    _____    _____    _____    _____
 BPXDI1_1     0.823
 OTHHIS       0.823       1.000
 WHITE        0.823       1.000       1.000
 BLACK        0.823       1.000       1.000       1.000
 OTHER        0.823       1.000       1.000       1.000       1.000
 PREVMAR      0.823       0.999       0.999       0.999       0.999
 NEVMAR       0.823       0.999       0.999       0.999       0.999
 FEMALE       0.823       1.000       1.000       1.000       1.000
 AGECENT      0.823       1.000       1.000       1.000       1.000


            Covariance Coverage
             PREVMAR      NEVMAR      FEMALE     AGECENT
            _____    _____    _____    _____
 PREVMAR      0.999
 NEVMAR       0.999       0.999
 FEMALE       0.999       0.999       1.000
 AGECENT      0.999       0.999       1.000       1.000

THE MODEL ESTIMATION TERMINATED NORMALLY

TESTS OF MODEL FIT

Chi-Square Test of Model Fit

            Value                              0.000*
            Degrees of Freedom                      0
            P-Value                            0.0000
            Scaling Correction Factor          1.000
              for MLR

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

            Value                            137.430
            Degrees of Freedom                     8
            P-Value                            0.0000
```

CFI/TLI

          CFI   1.000
          TLI   1.000

Loglikelihood

          H0 Value   -51008.727
          H0 Scaling Correction Factor   1.507
            for MLR
          H1 Value   -51008.727
          H1 Scaling Correction Factor   1.507
            for MLR

Information Criteria

          Number of Free Parameters   10
          Akaike (AIC)   102037.454
          Bayesian (BIC)   102103.693
          Sample-Size Adjusted BIC   102071.916
            (n* = (n + 2) / 24)

RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

          Value   0.000

MODEL RESULTS

                                                    Two-Tailed
                        Estimate   S.E.   Est./S.E.   P-Value

 BPXDI1_1 ON
    OTHHIS   1.788   1.307   1.368   0.171
    WHITE   2.194   0.518   4.234   0.000
    BLACK   4.410   0.611   7.218   0.000
    OTHER   1.961   1.039   1.888   0.059
    PREVMAR   0.017   0.662   0.026   0.979
    NEVMAR   -4.356   0.635   -6.861   0.000
    FEMALE   -3.014   0.440   -6.853   0.000
    AGECENT   0.017   0.015   1.137   0.256

 Intercepts
    BPXDI1_1   70.685   0.488   144.737   0.000

 Residual Variances
    BPXDI1_1   145.835   4.480   32.556   0.000

QUALITY OF NUMERICAL RESULTS

    Condition Number for the Information Matrix   0.138E-04
       (ratio of smallest to largest eigenvalue)

    Beginning Time: 10:33:35
       Ending Time: 10:33:36

ANALYSIS EXAMPLE 7.5 MODEL USING WEIGHTS AND COMPLEX SAMPLE DESIGN VARIABLES WITH AGE SQUARED ADDED

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010 10:50 AM

INPUT INSTRUCTIONS

  TITLE: ANALYSIS EXAMPLE 7.5 NHANES DATA WITH AGE AND AGE SQUARED
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
          NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
          irregular male female edcat age agecent marcat married prevmar nevmar act
          meanbpxsy meanbpxdi pre_hibp
          bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
          age18p oldblack age51
          age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
          numsecu;

        USEVARIABLES ARE bpxdi1_1 white othhis black other prevmar nevmar agec agecsq
        wtmec2yr numsecu sdmvstra female ;
        missing are . ;
        WEIGHT IS wtmec2yr ;
        stratification is sdmvstra ;
        cluster is numsecu ;
        subpopulation = (age18p eq 1) ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  MODEL:
      bpxdi1_1 on othhis white black other prevmar nevmar female agec agecsq ;

  OUTPUT:
  CINT ;

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   9
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    WHITE   OTHHIS   BLACK   OTHER   PREVMAR   NEVMAR
    AGEC   AGECSQ   FEMALE

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)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format   FREE

THE MODEL ESTIMATION TERMINATED NORMALLY
TESTS OF MODEL FIT

Chi-Square Test of Model Fit

        Value   0.000*
        Degrees of Freedom   0
        P-Value   0.0000
        Scaling Correction Factor   1.000
          for MLR

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests. MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

        Value   462.653
        Degrees of Freedom   9
        P-Value   0.0000

CFI/TLI

        CFI   1.000
        TLI   1.000

Loglikelihood

          H0 Value   -90559.791
          H0 Scaling Correction Factor   1.736
            for MLR
          H1 Value   -90559.791
          H1 Scaling Correction Factor   1.736
            for MLR

Information Criteria

          Number of Free Parameters   11
          Akaike (AIC)   181141.583
          Bayesian (BIC)   181214.446
          Sample-Size Adjusted BIC   181179.491
            (n* = (n + 2) / 24)

RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

          Value   0.000

MODEL RESULTS

                                                    Two-Tailed
                      Estimate   S.E. Est./S.E.   P-Value

 BPXDI1_1 ON
    OTHHIS   1.191   1.086   1.096   0.273
    WHITE   1.780   0.631   2.823   0.005
    BLACK   3.466   0.779   4.451   0.000
    OTHER   1.190   0.934   1.274   0.203
    PREVMAR   1.041   0.622   1.674   0.094
    NEVMAR   -0.343   0.582   -0.590   0.555
    FEMALE   -2.737   0.338   -8.095   0.000
    AGEC   0.125   0.015   8.499   0.000
    AGECSQ   -0.012   0.001   -16.576   0.000

 Intercepts
    BPXDI1_1   73.864   0.459   161.098   0.000

 Residual Variances
    BPXDI1_1   131.499   4.199   31.316   0.000

QUALITY OF NUMERICAL RESULTS

    Condition Number for the Information Matrix   0.797E-07
      (ratio of smallest to largest eigenvalue)

CONFIDENCE INTERVALS OF MODEL RESULTS

                Lower .5% Lower 2.5%   Estimate Upper 2.5% Upper .5%

 BPXDI1_1 ON
    OTHHIS   -1.607   -0.938   1.191   3.319   3.988

WHITE	0.156	0.544	1.780	3.017	3.405
BLACK	1.460	1.940	3.466	4.992	5.472
OTHER	-1.216	-0.641	1.190	3.022	3.597
PREVMAR	-0.561	-0.178	1.041	2.259	2.642
NEVMAR	-1.842	-1.484	-0.343	0.798	1.156
FEMALE	-3.608	-3.400	-2.737	-2.074	-1.866
AGEC	0.087	0.096	0.125	0.154	0.163
AGECSQ	-0.014	-0.014	-0.012	-0.011	-0.011

Intercepts
BPXDI1_1	72.683	72.966	73.864	74.763	75.045

Residual Variances
BPXDI1_1	120.683	123.269	131.499	139.729	142.315


```
  Beginning Time:  10:50:15
     Ending Time:  10:50:17
    Elapsed Time:  00:00:02
```

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/09/2010   8:20 AM

INPUT INSTRUCTIONS

  TITLE: ANALYSIS EXAMPLE 7.5 NHANES DATA WITH TEST OF RACE INTERACTIONS
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
          NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
          irregular male female edcat age agecent marcat married prevmar nevmar act
          meanbpxsy meanbpxdi pre_hibp
          bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
          age18p oldblack age51
          age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
          numsecu;

          USEVARIABLES ARE bpxdi1_1 white othhis black other prevmar nevmar agec agecsq
          wtmec2yr numsecu sdmvstra female othhisagec blackagec otheragec whiteagec
          othhisagecsq blackagecsq otheragecsq whiteagecsq ;
          missing are . ;
          WEIGHT IS wtmec2yr ;
          stratification is sdmvstra ;
          cluster is numsecu ;
          subpopulation = (age18p eq 1) ;
  define:
        othhisagec = othhis*agec ;
        blackagec= black*agec ;
        otheragec=other*agec ;
        whiteagec=white*agec ;
        othhisagecsq = othhis*agecsq ;
        blackagecsq= black*agecsq ;
        otheragecsq=other*agecsq ;
        whiteagecsq=white*agecsq ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  Model:
        bpxdi1_1 on othhis white black other prevmar nevmar female agec agecsq
        othhisagec (p1)
        whiteagec (p2)
        blackagec (p3)
        otheragec (p4)
        othhisagecsq (p5)
        whiteagecsq (p6)
        blackagecsq (p7)
        otheragecsq (p8) ;

  Model Test:
  p1=0 ;
  p2=0 ;
  p3=0 ;
  p4=0 ;
  p5=0 ;
  p6=0 ;
  p7=0 ;
  p8=0 ;

ANALYSIS EXAMPLE 7.5 NHANES DATA WITH TEST OF RACE INTERACTIONS

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   17
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    WHITE   OTHHIS   BLACK   OTHER   PREVMAR   NEVMAR
    AGEC   AGECSQ   FEMALE   OTHHISAG   BLACKAGE   OTHERAGE
    WHITEAGE   OTHHISAG   BLACKAGE   OTHERAGE   WHITEAGE

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)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format FREE

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   0.282D-17. PROBLEM INVOLVING PARAMETER 16.

     THIS IS MOST LIKELY DUE TO HAVING MORE PARAMETERS THAN THE NUMBER
     OF CLUSTERS MINUS THE NUMBER OF STRATA WITH MORE THAN ONE CLUSTER.

```
TESTS OF MODEL FIT

Chi-Square Test of Model Fit

            Value                          0.000*
            Degrees of Freedom                 0
            P-Value                       0.0000
            Scaling Correction Factor      1.000
              for MLR

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

            Value                        565.631
            Degrees of Freedom                17
            P-Value                       0.0000

CFI/TLI

            CFI                            1.000
            TLI                            1.000

Wald Test of Parameter Constraints

            Value                         14.728
            Degrees of Freedom                 8
            P-Value                       0.0647

Loglikelihood

            H0 Value                  -276664.579
            H0 Scaling Correction Factor   1.407
              for MLR
            H1 Value                  -276664.579
            H1 Scaling Correction Factor   1.407
              for MLR

Information Criteria

            Number of Free Parameters         19
            Akaike (AIC)               553367.158
            Bayesian (BIC)             553493.012
            Sample-Size Adjusted BIC   553432.636
              (n* = (n + 2) / 24)

RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

            Value                          0.000
```

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BPXDI1_1 ON				
OTHHIS	0.609	1.252	0.487	0.627
WHITE	1.421	0.566	2.512	0.012
BLACK	3.024	0.917	3.299	0.001
OTHER	0.708	1.180	0.600	0.549
PREVMAR	0.990	0.624	1.585	0.113
NEVMAR	-0.336	0.586	-0.573	0.567
FEMALE	-2.737	0.343	-7.987	0.000
AGEC	0.134	0.031	4.359	0.000
AGECSQ	-0.014	0.001	-11.990	0.000
OTHHISAGEC	0.067	0.078	0.866	0.387
WHITEAGEC	-0.013	0.040	-0.334	0.739
BLACKAGEC	0.041	0.037	1.124	0.261
OTHERAGEC	-0.091	0.053	-1.710	0.087
OTHHISAGEC	0.004	0.003	1.164	0.245
WHITEAGECS	0.001	0.001	0.980	0.327
BLACKAGECS	0.002	0.002	1.172	0.241
OTHERAGECS	0.000	0.003	0.070	0.944
Intercepts				
BPXDI1_1	74.227	0.466	159.182	0.000
Residual Variances				
BPXDI1_1	131.268	4.254	30.857	0.000

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix   0.216E-07
   (ratio of smallest to largest eigenvalue)

ANALYSIS EXAMPLE 7.5 COMPLEX SAMPLE CORRECTED MODEL WITH GENDER * AGE INTERACTIONS

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/09/2010   8:23 AM

INPUT INSTRUCTIONS

  TITLE: ANALYSIS EXAMPLE 7.5 NHANES DATA WITH TEST OF GENDER BY AGE
       INTERACTIONS
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
          NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
          irregular male female edcat age agecent marcat married prevmar nevmar act
          meanbpxsy meanbpxdi pre_hibp
          bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
          age18p oldblack age51
          age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
          numsecu;

          USEVARIABLES ARE bpxdi1_1 white othhis black other prevmar nevmar agec agecsq
          wtmec2yr numsecu sdmvstra female femaleagec femaleagecsq ;
          missing are . ;
          WEIGHT IS wtmec2yr ;
          stratification is sdmvstra ;
          cluster is numsecu ;
          subpopulation = (age18p eq 1) ;
  define:
        femaleagec=female*agec ;
        femaleagecsq=female*agecsq ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  Model:
      bpxdi1_1 on othhis white black other prevmar nevmar female agec agecsq
      femaleagec (pfagec)
      femaleagecsq (pfagesq) ;

  model test:
  pfagec=0 ;
  pfagesq=0 ;

ANALYSIS EXAMPLE 7.5 NHANES DATA WITH TEST OF GENDER BY AGE
INTERACTIONS

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   11
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    WHITE   OTHHIS   BLACK   OTHER   PREVMAR   NEVMAR
    AGEC   AGECSQ   FEMALE   FEMALEAG   FEMALEAG

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)
  F:\applied_analysis_book\Mplus\nhanes.txt

Input data format FREE

THE MODEL ESTIMATION TERMINATED NORMALLY

```
TESTS OF MODEL FIT

Chi-Square Test of Model Fit

            Value                              0.000*
            Degrees of Freedom                     0
            P-Value                           0.0000
            Scaling Correction Factor          1.000
              for MLR

*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.

Chi-Square Test of Model Fit for the Baseline Model

            Value                            441.254
            Degrees of Freedom                    11
            P-Value                           0.0000

CFI/TLI

            CFI                                1.000
            TLI                                1.000

Wald Test of Parameter Constraints

            Value                              3.770
            Degrees of Freedom                     2
            P-Value                           0.1518

Loglikelihood

            H0 Value                     -146658.294
            H0 Scaling Correction Factor       1.772
              for MLR
            H1 Value                     -146658.294
            H1 Scaling Correction Factor       1.772
              for MLR

Information Criteria

            Number of Free Parameters             13
            Akaike (AIC)                  293342.587
            Bayesian (BIC)                293428.698
            Sample-Size Adjusted BIC      293387.388
              (n* = (n + 2) / 24)

RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

            Value                              0.000
```

MODEL RESULTS

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BPXDI1_1 ON				
OTHHIS	1.201	1.096	1.096	0.273
WHITE	1.796	0.632	2.842	0.004
BLACK	3.493	0.777	4.495	0.000
OTHER	1.209	0.933	1.296	0.195
PREVMAR	0.907	0.652	1.391	0.164
NEVMAR	-0.347	0.585	-0.593	0.553
FEMALE	-3.269	0.718	-4.554	0.000
AGEC	0.118	0.019	6.089	0.000
AGECSQ	-0.013	0.001	-10.491	0.000
FEMALEAGEC	0.013	0.028	0.479	0.632
FEMALEAGEC	0.002	0.002	1.104	0.270
Intercepts				
BPXDI1_1	74.152	0.573	129.366	0.000
Residual Variances				
BPXDI1_1	131.369	4.280	30.691	0.000

QUALITY OF NUMERICAL RESULTS

    Condition Number for the Information Matrix   0.577E-07
       (ratio of smallest to largest eigenvalue)

    Beginning Time: 08:23:08
       Ending Time: 08:23:10
       Elapsed Time: 00:00:02

ANALYSIS EXAMPLE 7.5 FINAL MODEL WITHOUT INTERACTIONS

Mplus VERSION 5.21
MUTHEN & MUTHEN
04/07/2010 11:17 AM

INPUT INSTRUCTIONS

  TITLE: ANALYSIS EXAMPLE 7.5 NHANES DATA SURVEY ADJUSTED FINAL MODEL
  DATA:
    FILE IS "F:\applied_analysis_book\Mplus\nhanes.txt";

  VARIABLE:
          NAMES ARE RIAGENDR RIDAGEYR RIDRETH1 WTMEC2YR SDMVPSU SDMVSTRA BPXSY1 BPXDI1
          irregular male female edcat age agecent marcat married prevmar nevmar act
          meanbpxsy meanbpxdi pre_hibp
          bp_cat ag1829 ag3044 ag4559 ag60 mex othhis white black other bpxdi1_1
          age18p oldblack age51
          age45 agec agecsq actdaily strata_one rtime30days activeage18p offset
          numsecu;

          USEVARIABLES ARE bpxdi1_1 white othhis black other prevmar nevmar agec agecsq
          wtmec2yr numsecu sdmvstra female ;
          missing are . ;
          WEIGHT IS wtmec2yr ;
          stratification is sdmvstra ;
          cluster is numsecu ;
          subpopulation = (age18p eq 1) ;

  ANALYSIS:
      type is complex;
      estimator is mlr ;

  Model:
       bpxdi1_1 on othhis white black other prevmar nevmar female agec agecsq ;

ANALYSIS EXAMPLE 7.5 NHANES DATA SURVEY ADJUSTED FINAL MODEL

SUMMARY OF ANALYSIS

Number of groups   1
Number of observations   5563

Number of dependent variables   1
Number of independent variables   9
Number of continuous latent variables   0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
    WHITE   OTHHIS   BLACK   OTHER   PREVMAR   NEVMAR
    AGEC   AGECSQ   FEMALE

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)
  F:\applied_analysis_book\Mplus\nhanes.txt


Input data format  FREE


THE MODEL ESTIMATION TERMINATED NORMALLY


TESTS OF MODEL FIT


Chi-Square Test of Model Fit

          Value                             0.000*
          Degrees of Freedom                     0
          P-Value                           0.0000
          Scaling Correction Factor          1.000
            for MLR


*   The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used
    for chi-square difference tests.  MLM, MLR and WLSM chi-square difference
    testing is described in the Mplus Technical Appendices at www.statmodel.com.
    See chi-square difference testing in the index of the Mplus User's Guide.


Chi-Square Test of Model Fit for the Baseline Model

          Value                            462.653
          Degrees of Freedom                     9
          P-Value                           0.0000


CFI/TLI

          CFI                                1.000
          TLI                                1.000


Loglikelihood

          H0 Value                       -90559.791
          H0 Scaling Correction Factor       1.736
            for MLR
          H1 Value                       -90559.791
          H1 Scaling Correction Factor       1.736
            for MLR


Information Criteria

          Number of Free Parameters             11
          Akaike (AIC)                   181141.583
          Bayesian (BIC)                 181214.446
          Sample-Size Adjusted BIC       181179.491
            (n* = (n + 2) / 24)


RMSEA (Root Mean Square Error Of Approximation)

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

SRMR (Standardized Root Mean Square Residual)

         Value   0.000

MODEL RESULTS

                                              Two-Tailed
                  Estimate   S.E. Est./S.E.   P-Value

 BPXDI1_1 ON
    OTHHIS   1.191   1.086   1.096   0.273
    WHITE   1.780   0.631   2.823   0.005
    BLACK   3.466   0.779   4.451   0.000
    OTHER   1.190   0.934   1.274   0.203
    PREVMAR   1.041   0.622   1.674   0.094
    NEVMAR   -0.343   0.582   -0.590   0.555
    FEMALE   -2.737   0.338   -8.095   0.000
    AGEC   0.125   0.015   8.499   0.000
    AGECSQ   -0.012   0.001   -16.576   0.000

 Intercepts
    BPXDI1_1   73.864   0.459   161.098   0.000

 Residual Variances
    BPXDI1_1   131.499   4.199   31.316   0.000

QUALITY OF NUMERICAL RESULTS

    Condition Number for the Information Matrix   0.797E-07
      (ratio of smallest to largest eigenvalue)

    Beginning Time: 11:17:24
       Ending Time: 11:17:26
      Elapsed Time: 00:00:02