**MPLUS Analysis Examples Replication Chapter 7**

Mplus includes all input code and output in the *.out file. This document contains selected output from each analysis presented in Chapter 7. All data preparation and management was prevously done using SAS and then read into Mplus from a text file. Plots in Mplus that require additional coding are not included here, see the Mplus documentation for details and examples.

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Mplus VERSION 7.4
MUTHEN & MUTHEN
07/30/2017   9:36 AM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST:AGE(CENTERED)
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;

      USEVARIABLES ARE  bpxdi1_1 agec wtmec2yr sdmvstra numsecu ;
        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 agec ;

*** 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:  3080
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST:AGE(CENTERED)

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        5112

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
   AGEC

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\c7_nhanes.txt
Input data format  FREE


SUMMARY OF DATA
     Number of missing data patterns             1
     Number of strata                       14
     Number of clusters                     31

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters                        3

Loglikelihood

          H0 Value                       -19703.413
          H0 Scaling Correction Factor      5.5283
            for MLR
          H1 Value                       -19703.413
          H1 Scaling Correction Factor      5.5283
            for MLR

Information Criteria

          Akaike (AIC)                    39412.826
          Bayesian (BIC)                  39432.444
          Sample-Size Adjusted BIC        39422.911
            (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                                1.000
          TLI                                1.000

Chi-Square Test of Model Fit for the Baseline Model

          Value                              4.708
          Degrees of Freedom                     1
          P-Value                           0.0300
SRMR (Standardized Root Mean Square Residual)

          Value                              0.000

MODEL RESULTS
                                                    Two-Tailed
                   Estimate       S.E.  Est./S.E.    P-Value
 BPXDI1_1 ON
    AGEC               0.039      0.019      2.087      0.037
 Intercepts
    BPXDI1_1          71.604      0.500    143.139      0.000
 Residual Variances
    BPXDI1_1         130.429      4.112     31.719      0.000


QUALITY OF NUMERICAL RESULTS
     Condition Number for the Information Matrix              0.127E-01
       (ratio of smallest to largest eigenvalue)
```

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/30/2017   9:52 AM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: RACE/ETH
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;

      USEVARIABLES ARE  bpxdi1_1 black other white othhis wtmec2yr sdmvstra numsecu ;
        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 ;

*** 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:  3080
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: RACE/ETH

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        5112

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
   BLACK       OTHER       WHITE       OTHHIS

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\c7_nhanes.txt

Input data format  FREE


SUMMARY OF DATA

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



THE MODEL ESTIMATION TERMINATED NORMALLY



MODEL FIT INFORMATION

Number of Free Parameters                        6

Loglikelihood

          H0 Value                       -19699.965
          H0 Scaling Correction Factor      3.7605
            for MLR
          H1 Value                       -19699.965
          H1 Scaling Correction Factor      3.7605
            for MLR

Information Criteria

          Akaike (AIC)                    39411.931
          Bayesian (BIC)                  39451.167
          Sample-Size Adjusted BIC        39432.101
            (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 | 1.000 |
| TLI | 1.000 |

Chi-Square Test of Model Fit for the Baseline Model

| | |
|---|---|
| Value | 10.252 |
| Degrees of Freedom | 4 |
| P-Value | 0.0364 |

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 | -0.155 | 1.456 | -0.106 | 0.915 |
| WHITE | 2.185 | 0.743 | 2.942 | 0.003 |
| BLACK | 2.290 | 0.703 | 3.258 | 0.001 |
| OTHER | 1.306 | 0.704 | 1.854 | 0.064 |
| Intercepts | | | | |
| BPXDI1_1 | 69.804 | 0.453 | 154.013 | 0.000 |
| Residual Variances | | | | |
| BPXDI1_1 | 130.252 | 4.117 | 31.639 | 0.000 |

QUALITY OF NUMERICAL RESULTS

| | |
|---|---|
| Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue) | 0.146E-04 |

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/30/2017   2:41 PM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: MARITAL STATUS
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;


      USEVARIABLES ARE  bpxdi1_1  wtmec2yr sdmvstra numsecu prevmar nevmar ;
      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 ;

*** 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:  2372
*** WARNING
  Data set contains cases with missing on x-variables.
  These cases were not included in the analysis.
  Number of cases with missing on x-variables:  1831
*** 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:  708
   3 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS
```

ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES BIVARIATE TEST: MARITAL STATUS

SUMMARY OF ANALYSIS

```
Number of groups                                                 1
Number of observations                                        4845

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)
  P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt
Input data format  FREE
SUMMARY OF DATA
     Number of missing data patterns             1
     Number of strata                       14
     Number of clusters                     31

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters                        4
Loglikelihood

          H0 Value                       -18634.463
          H0 Scaling Correction Factor      4.7190
            for MLR
          H1 Value                       -18634.463
          H1 Scaling Correction Factor      4.7190
            for MLR

Information Criteria
          Akaike (AIC)                    37276.925
          Bayesian (BIC)                  37302.868
          Sample-Size Adjusted BIC        37290.157
            (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                               1.000
          TLI                               1.000

Chi-Square Test of Model Fit for the Baseline Model
          Value                             2.219
          Degrees of Freedom                    2
          P-Value                           0.3296

SRMR (Standardized Root Mean Square Residual)

          Value                             0.000

MODEL RESULTS
                                                    Two-Tailed
                    Estimate       S.E.  Est./S.E.    P-Value
 BPXDI1_1 ON
    PREVMAR           -0.145      0.698     -0.208      0.835
    NEVMAR            -1.121      0.844     -1.329      0.184

 Intercepts
    BPXDI1_1          72.180      0.515    140.172      0.000

 Residual Variances
    BPXDI1_1         128.304      4.360     29.430      0.000


QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix              0.908E-04
       (ratio of smallest to largest eigenvalue)
```

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/30/2017   2:53 PM
INPUT INSTRUCTIONS
  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES NAIVE ANALYSIS
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";
  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;
      USEVARIABLES ARE  bpxdi1_1  OTHHIS WHITE BLACK OTHER AGEC FEMALE ;
      missing are . ;
      useobservations = (age18p eq 1) ;
  DEFINE:
         IF RIAGENDR==2 THEN FEMALE=1 ; IF RIAGENDR==1 THEN FEMALE=0 ;
  ANALYSIS:
      estimator is mlr ;
  Model:
      bpxdi1_1 on OTHHIS WHITE BLACK OTHER AGEC FEMALE ;
** 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:  752
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES NAIVE ANALYSIS
SUMMARY OF ANALYSIS
Number of groups                                                 1
Number of observations                                        5112
Number of dependent variables                                    1
Number of independent variables                                  6
Number of continuous latent variables                            0
Observed dependent variables
  Continuous
   BPXDI1_1
Observed independent variables
   OTHHIS      WHITE       BLACK       OTHER       AGEC        FEMALE
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\c7_nhanes.txt
Input data format  FREE
SUMMARY OF DATA
     Number of missing data patterns             1
COVARIANCE COVERAGE OF DATA
Minimum covariance coverage value   0.100
     PROPORTION OF DATA PRESENT
           Covariance Coverage
              BPXDI1_1      OTHHIS        WHITE         BLACK         OTHER
              ________      ________      ________      ________      ________
```

```
 BPXDI1_1       1.000
 OTHHIS         1.000         1.000
 WHITE          1.000         1.000         1.000
 BLACK          1.000         1.000         1.000         1.000
 OTHER          1.000         1.000         1.000         1.000         1.000
 AGEC           1.000         1.000         1.000         1.000         1.000
 FEMALE         1.000         1.000         1.000         1.000         1.000
           Covariance Coverage
              AGEC          FEMALE
              _______       ________
 AGEC           1.000
 FEMALE         1.000         1.000
THE MODEL ESTIMATION TERMINATED NORMALLY
MODEL FIT INFORMATION
Number of Free Parameters                        8
Loglikelihood
          H0 Value                       -19884.086
          H0 Scaling Correction Factor       1.0527
            for MLR
          H1 Value                       -19884.086
          H1 Scaling Correction Factor       1.0527
            for MLR
Information Criteria
          Akaike (AIC)                    39784.173
          Bayesian (BIC)                  39836.488
          Sample-Size Adjusted BIC        39811.066
            (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                                1.000
          TLI                                1.000
Chi-Square Test of Model Fit for the Baseline Model
          Value                             92.469
          Degrees of Freedom                     6
          P-Value                           0.0000
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             0.255      0.708      0.360      0.718
    WHITE              1.193      0.579      2.061      0.039
    BLACK              2.205      0.617      3.573      0.000
    OTHER              2.013      0.630      3.195      0.001
```

```
    AGEC               0.041      0.010      4.312      0.000
    FEMALE            -2.404      0.331     -7.256      0.000
 Intercepts
    BPXDI1_1          70.784      0.529    133.817      0.000
 Residual Variances
    BPXDI1_1         139.984      3.314     42.240      0.000
QUALITY OF NUMERICAL RESULTS
     Condition Number for the Information Matrix              0.180E-04
       (ratio of smallest to largest eigenvalue)
```

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/30/2017   2:59 PM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WEIGHT ONLY ANALYSIS
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;

      USEVARIABLES ARE  bpxdi1_1 wtmec2yr OTHHIS WHITE BLACK OTHER AGEC FEMALE ;
      missing are . ;
      useobservations = (age18p eq 1) ;
      weight is wtmec2yr ;
  DEFINE:
         IF RIAGENDR==2 THEN FEMALE=1 ; IF RIAGENDR==1 THEN FEMALE=0 ;
  ANALYSIS:
      estimator is mlr ;
  Model:
      bpxdi1_1 on OTHHIS WHITE BLACK OTHER AGEC FEMALE ;

*** 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:  752
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS



ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WEIGHT ONLY ANALYSIS

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        5112

Number of dependent variables                                    1
Number of independent variables                                  6
Number of continuous latent variables                            0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
   OTHHIS      WHITE       BLACK       OTHER       AGEC        FEMALE

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)
  P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt

Input data format  FREE


SUMMARY OF DATA

     Number of missing data patterns             1


COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value   0.100


     PROPORTION OF DATA PRESENT


           Covariance Coverage
              BPXDI1_1      OTHHIS        WHITE         BLACK         OTHER
              ________      ________      ________      ________      ________
 BPXDI1_1       1.000
 OTHHIS         1.000         1.000
 WHITE          1.000         1.000         1.000
 BLACK          1.000         1.000         1.000         1.000
 OTHER          1.000         1.000         1.000         1.000         1.000
 AGEC           1.000         1.000         1.000         1.000         1.000
 FEMALE         1.000         1.000         1.000         1.000         1.000


           Covariance Coverage
              AGEC          FEMALE
              ________      ________
 AGEC           1.000
 FEMALE         1.000         1.000


THE MODEL ESTIMATION TERMINATED NORMALLY


MODEL FIT INFORMATION

Number of Free Parameters                        8

Loglikelihood

          H0 Value                      -19667.736
          H0 Scaling Correction Factor      1.4030
            for MLR
```

```
          H1 Value                       -19667.736
          H1 Scaling Correction Factor        1.4030
            for MLR

Information Criteria

          Akaike (AIC)                    39351.472
          Bayesian (BIC)                  39403.787
          Sample-Size Adjusted BIC        39378.366
            (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                                 1.000
          TLI                                 1.000

Chi-Square Test of Model Fit for the Baseline Model

          Value                              79.048
          Degrees of Freedom                      6
          P-Value                            0.0000

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          -0.142      0.721     -0.197      0.844
    WHITE            1.904      0.610      3.119      0.002
    BLACK            2.302      0.645      3.571      0.000
    OTHER            1.262      0.705      1.790      0.073
    AGEC             0.037      0.012      3.177      0.001
    FEMALE          -2.291      0.432     -5.309      0.000

 Intercepts
```

```
    BPXDI1_1          71.149      0.566    125.745      0.000

 Residual Variances
    BPXDI1_1         128.632      4.082     31.513      0.000


QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix              0.136E-04
       (ratio of smallest to largest eigenvalue)


DIAGRAM INFORMATION

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

  Diagram output
    p:\asda 2\analysis example replication\mplus\asda 2 ex7.5 wgt only analysis.dgm

     Beginning Time:  14:59:00
        Ending Time:  14:59:01
       Elapsed Time:  00:00:01



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3463 Stoner Ave.
Los Angeles, CA  90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

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```

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/30/2017   3:02 PM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES ALL DESIGN FEATURES ANALYSIS
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;

      USEVARIABLES ARE  bpxdi1_1 sdmvstra numsecu wtmec2yr OTHHIS WHITE BLACK OTHER AGEC
        FEMALE ;
      missing are . ;
      stratification sdmvstra ;
      cluster numsecu ;
      subpopulation = (age18p eq 1) ;
      weight is wtmec2yr ;
  DEFINE:
         IF RIAGENDR==2 THEN FEMALE=1 ; IF RIAGENDR==1 THEN FEMALE=0 ;
  ANALYSIS:
      type is complex ;
      estimator is mlr ;
  Model:
      bpxdi1_1 on OTHHIS WHITE BLACK OTHER AGEC FEMALE ;

*** 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:  3080
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS



ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES ALL DESIGN FEATURES ANALYSIS

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        5112

Number of dependent variables                                    1
Number of independent variables                                  6
Number of continuous latent variables                            0

Observed dependent variables

  Continuous
   BPXDI1_1

Observed independent variables
   OTHHIS      WHITE       BLACK       OTHER       AGEC        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)
  P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt

Input data format  FREE


SUMMARY OF DATA

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



THE MODEL ESTIMATION TERMINATED NORMALLY



MODEL FIT INFORMATION

Number of Free Parameters                        8

Loglikelihood

          H0 Value                       -19667.736
          H0 Scaling Correction Factor      3.8309
            for MLR
          H1 Value                       -19667.736
          H1 Scaling Correction Factor      3.8309
            for MLR

Information Criteria

          Akaike (AIC)                    39351.472
          Bayesian (BIC)                  39403.787
          Sample-Size Adjusted BIC        39378.366
            (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                                 1.000
          TLI                                 1.000

Chi-Square Test of Model Fit for the Baseline Model

          Value                              29.961
          Degrees of Freedom                     6
          P-Value                           0.0000

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            -0.142      1.375     -0.103      0.918
    WHITE              1.904      0.809      2.353      0.019
    BLACK              2.302      0.665      3.464      0.001
    OTHER              1.262      0.707      1.786      0.074
    AGEC               0.037      0.021      1.770      0.077
    FEMALE            -2.291      0.548     -4.179      0.000

 Intercepts
    BPXDI1_1          71.149      0.518    137.365      0.000

 Residual Variances
    BPXDI1_1         128.632      4.284     30.029      0.000


QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix              0.136E-04
       (ratio of smallest to largest eigenvalue)


DIAGRAM INFORMATION

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

  Diagram output
    p:\asda 2\analysis example replication\mplus\asda 2 ex7.5 all design features analysis.dgm
```

```
     Beginning Time:  15:02:35
        Ending Time:  15:02:36
       Elapsed Time:  00:00:01



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Los Angeles, CA  90066

Tel: (310) 391-9971
Fax: (310) 391-8971
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```

```
Mplus VERSION 7.4
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07/30/2017   3:13 PM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH AGEC * AGEC ANALYSIS
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;

      USEVARIABLES ARE  bpxdi1_1 sdmvstra numsecu wtmec2yr OTHHIS WHITE BLACK OTHER AGEC
       AGECSQ FEMALE ;
      missing are . ;
      stratification sdmvstra ;
      cluster numsecu ;
      subpopulation = (age18p eq 1) ;
      weight is wtmec2yr ;
  DEFINE:
         IF RIAGENDR==2 THEN FEMALE=1 ; IF RIAGENDR==1 THEN FEMALE=0 ;

  ANALYSIS:
      type is complex ;
      estimator is mlr ;
  MODEL:
      bpxdi1_1 on OTHHIS WHITE BLACK OTHER FEMALE AGEC AGECSQ ;
  OUTPUT:
      CINT ;


*** 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:  3080
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS



ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH AGEC * AGEC ANALYSIS

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

  Continuous
```

```
   BPXDI1_1

Observed independent variables
   OTHHIS      WHITE       BLACK       OTHER       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)
  P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt

Input data format  FREE


SUMMARY OF DATA

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



THE MODEL ESTIMATION TERMINATED NORMALLY



MODEL FIT INFORMATION

Number of Free Parameters                        9

Loglikelihood

          H0 Value                       -19403.109
          H0 Scaling Correction Factor      3.3391
            for MLR
          H1 Value                       -19403.109
          H1 Scaling Correction Factor      3.3391
            for MLR

Information Criteria

          Akaike (AIC)                    38824.218
          Bayesian (BIC)                  38883.072
          Sample-Size Adjusted BIC        38854.473
            (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                                1.000
          TLI                                1.000

Chi-Square Test of Model Fit for the Baseline Model

          Value                            249.115
          Degrees of Freedom                     7
          P-Value                           0.0000

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             0.218      1.217      0.179      0.858
    WHITE              2.084      0.857      2.432      0.015
    BLACK              2.511      0.734      3.422      0.001
    OTHER              1.410      0.687      2.051      0.040
    FEMALE            -2.169      0.489     -4.433      0.000
    AGEC               0.075      0.016      4.802      0.000
    AGECSQ            -0.012      0.001    -16.284      0.000

 Intercepts
    BPXDI1_1          74.462      0.565    131.731      0.000

 Residual Variances
    BPXDI1_1         115.969      3.903     29.711      0.000


QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix              0.947E-07
       (ratio of smallest to largest eigenvalue)


CONFIDENCE INTERVALS OF MODEL RESULTS
```

| | Lower .5% | Lower 2.5% | Lower 5% | Estimate | Upper 5% | Upper 2.5% | Upper .5% |
|---|---|---|---|---|---|---|---|
| BPXDI1_1 ON | | | | | | | |
| OTHHIS | -2.917 | -2.168 | -1.784 | 0.218 | 2.220 | 2.603 | 3.353 |
| WHITE | -0.124 | 0.404 | 0.674 | 2.084 | 3.495 | 3.765 | 4.292 |
| BLACK | 0.621 | 1.073 | 1.304 | 2.511 | 3.718 | 3.949 | 4.401 |
| OTHER | -0.361 | 0.062 | 0.279 | 1.410 | 2.540 | 2.757 | 3.180 |
| FEMALE | -3.430 | -3.128 | -2.974 | -2.169 | -1.364 | -1.210 | -0.909 |
| AGEC | 0.035 | 0.044 | 0.049 | 0.075 | 0.100 | 0.105 | 0.115 |
| AGECSQ | -0.014 | -0.013 | -0.013 | -0.012 | -0.011 | -0.010 | -0.010 |
| Intercepts | | | | | | | |
| BPXDI1_1 | 73.006 | 73.354 | 73.532 | 74.462 | 75.392 | 75.570 | 75.918 |
| Residual Variances | | | | | | | |
| BPXDI1_1 | 105.915 | 108.319 | 109.548 | 115.969 | 122.390 | 123.620 | 126.023 |

DIAGRAM INFORMATION

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

Diagram output
p:\asda 2\analysis example replication\mplus\asda 2 ex7.5 with agec squared analysis.dgm

Beginning Time: 15:13:54
Ending Time: 15:13:55
Elapsed Time: 00:00:01

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3463 Stoner Ave.
Los Angeles, CA 90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/31/2017  11:25 AM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH AGEXRACE INTERACTION
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2 BPXSY3 BPXSY4 DMDMARTL INDFMPIR
      LBDHDD LBDHDDSI
      LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044
      ag4559 age
      age18p agec agecsq black bp_cat bpxdi1_1 edcat irregular marcat married mex nevmar
      numsecu other
      othhis pre_hibp prevmar white;

      USEVARIABLES ARE  bpxdi1_1 sdmvstra numsecu wtmec2yr OTHHIS WHITE BLACK OTHER AGEC
      AGECSQ FEMALE othhisagec blackagec   otheragec  whiteagec  othhisagecsq
      blackagecsq otheragecsq whiteagecsq ;
      missing are . ;
      stratification sdmvstra ;
      cluster numsecu ;
      subpopulation = (age18p eq 1) ;
      weight is wtmec2yr ;
  DEFINE:
      IF RIAGENDR==2 THEN FEMALE=1 ; IF RIAGENDR==1 THEN FEMALE=0 ;
      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 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 ;

*** WARNING in VARIABLE command
  Note that only the first 8 characters of variable names are used in the output.
  Shorten variable names to avoid any confusion.
*** WARNING
  Data set contains cases with missing on all variables except
  x-variables.  These cases were not included in the analysis.
  Number of cases with missing on all variables except x-variables:  3080
   2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS
```

ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH AGEXRACE INTERACTION

SUMMARY OF ANALYSIS

```
Number of groups                                                 1
Number of observations                                        5112

Number of dependent variables                                    1
Number of independent variables                                 15
Number of continuous latent variables                            0
```

Observed dependent variables

```
  Continuous
   BPXDI1_1
```

Observed independent variables

```
   OTHHIS      WHITE       BLACK       OTHER       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)
  P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt

Input data format  FREE
```

SUMMARY OF DATA

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

```
THE MODEL ESTIMATION TERMINATED NORMALLY
```

MODEL FIT INFORMATION

```
Number of Free Parameters                       17

Loglikelihood

          H0 Value                      -19395.993
          H0 Scaling Correction Factor      2.2139
```

```
            for MLR
          H1 Value                        -19395.993
          H1 Scaling Correction Factor         2.2139
            for MLR

Information Criteria

          Akaike (AIC)                     38825.985
          Bayesian (BIC)                   38937.154
          Sample-Size Adjusted BIC         38883.134
            (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.

Wald Test of Parameter Constraints

          Value                            95.163
          Degrees of Freedom                    8
          P-Value                           0.0000

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                               1.000
          TLI                               1.000

Chi-Square Test of Model Fit for the Baseline Model

          Value                           380.288
          Degrees of Freedom                   15
          P-Value                           0.0000

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            0.224      0.928      0.242      0.809
```

```
    WHITE              1.399      0.907      1.542      0.123
    BLACK              3.342      0.962      3.474      0.001
    OTHER              1.085      0.900      1.206      0.228
    FEMALE            -2.168      0.490     -4.426      0.000
    AGEC               0.061      0.033      1.857      0.063
    AGECSQ            -0.014      0.002     -7.476      0.000
    OTHHISAGEC         0.056      0.047      1.179      0.238
    WHITEAGEC         -0.001      0.050     -0.023      0.982
    BLACKAGEC          0.040      0.036      1.110      0.267
    OTHERAGEC          0.019      0.046      0.417      0.677
    OTHHISAGEC         0.001      0.003      0.376      0.707
    WHITEAGECS         0.003      0.002      1.889      0.059
    BLACKAGECS        -0.002      0.002     -1.081      0.280
    OTHERAGECS         0.002      0.003      0.637      0.524

 Intercepts
    BPXDI1_1          74.859      0.761     98.400      0.000

 Residual Variances
    BPXDI1_1         115.647      3.871     29.878      0.000


QUALITY OF NUMERICAL RESULTS

     Condition Number for the Information Matrix              0.305E-07
       (ratio of smallest to largest eigenvalue)
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3463 Stoner Ave.
Los Angeles, CA  90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

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```

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/31/2017   2:06 PM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH AGEXRACE AND AGEXGENDER
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt";

  VARIABLE:
      NAMES ARE
      BMXBMI BPXDI1 BPXDI2 BPXDI3 BPXDI4 BPXSY1 BPXSY2
      BPXSY3 BPXSY4 DMDMARTL FEMALE INDFMPIR LBDHDD
      LBDHDDSI LBDTCSI LBXTC RIAGENDR RIDRETH1 SDMVPSU SDMVSTRA
      SEQN WTMEC2YR ag60 ag1829 ag3044 ag4559
      age age18p agec agecsq black blackagec blackagecsq bp_cat
      bpxdi1_1 edcat femaleagec femaleagecsq
      irregular marcat married mex nevmar numsecu other otheragec
      otheragecsq othhis othhisagec
      othhisagecsq pre_hibp prevmar white whiteagec whiteagecsq ;

      USEVARIABLES ARE  bpxdi1_1 sdmvstra numsecu wtmec2yr
      OTHHIS WHITE BLACK OTHER AGEC AGECSQ FEMALE
      othhisagec blackagec otheragec whiteagec othhisagecsq blackagecsq otheragecsq
      whiteagecsq femaleagec femaleagecsq ;

      missing are . ;

      stratification sdmvstra ;

      cluster numsecu ;

      subpopulation = (age18p eq 1) ;

      weight is wtmec2yr ;

  ANALYSIS:
      type is complex ;
      estimator is mlr ;
  MODEL:
      bpxdi1_1 on OTHHIS WHITE BLACK OTHER FEMALE AGEC AGECSQ
      othhisagec (p1)
      whiteagec (p2)
      blackagec (p3)
      otheragec (p4)
      othhisagecsq (p5)
      whiteagecsq (p6)
      blackagecsq (p7)
      otheragecsq (p8)
      femaleagec (p9)
      femaleagecsq (p10);

   Model Test:
      p9=0 ;
      p10=0 ;

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

```
  Data set contains cases with missing on all variables except
  x-variables.  These cases were not included in the analysis.
  Number of cases with missing on all variables except x-variables:  3080
   2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH AGEXRACE AND AGEXGENDER

SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        5112

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
   OTHHIS      WHITE       BLACK       OTHER       AGEC        AGECSQ
   FEMALE      OTHHISAG    BLACKAGE    OTHERAGE    WHITEAGE    OTHHISAG
   BLACKAGE    OTHERAGE    WHITEAGE    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)
  P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes.txt

Input data format  FREE


SUMMARY OF DATA

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



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      -0.131D-15.  PROBLEM INVOLVING THE FOLLOWING PARAMETER:
```

```
     Parameter 19, BPXDI1_1

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



MODEL FIT INFORMATION

Number of Free Parameters                       19

Loglikelihood

          H0 Value                      -19384.949
          H0 Scaling Correction Factor      2.2432
            for MLR
          H1 Value                      -19384.949
          H1 Scaling Correction Factor      2.2432
            for MLR

Information Criteria

          Akaike (AIC)                   38807.899
          Bayesian (BIC)                 38932.146
          Sample-Size Adjusted BIC       38871.771
            (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.

Wald Test of Parameter Constraints

          Value                            10.259
          Degrees of Freedom                    2
          P-Value                           0.0059

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                               1.000
          TLI                               1.000

Chi-Square Test of Model Fit for the Baseline Model

          Value                           371.839
```

| | |
|---|---|
| Degrees of Freedom | 17 |
| 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 |
|---|---|---|---|---|
| BPXDI1_1 ON | | | | |
| OTHHIS | 0.271 | 0.921 | 0.295 | 0.768 |
| WHITE | 1.461 | 0.910 | 1.605 | 0.109 |
| BLACK | 3.450 | 0.961 | 3.590 | 0.000 |
| OTHER | 1.144 | 0.895 | 1.279 | 0.201 |
| FEMALE | -3.195 | 0.759 | -4.208 | 0.000 |
| AGEC | 0.039 | 0.040 | 0.986 | 0.324 |
| AGECSQ | -0.015 | 0.002 | -8.426 | 0.000 |
| OTHHISAGEC | 0.050 | 0.050 | 0.999 | 0.318 |
| WHITEAGEC | -0.004 | 0.053 | -0.084 | 0.933 |
| BLACKAGEC | 0.035 | 0.039 | 0.892 | 0.372 |
| OTHERAGEC | 0.015 | 0.049 | 0.303 | 0.762 |
| OTHHISAGEC | 0.001 | 0.003 | 0.243 | 0.808 |
| WHITEAGECS | 0.003 | 0.002 | 1.552 | 0.121 |
| BLACKAGECS | -0.002 | 0.002 | -1.195 | 0.232 |
| OTHERAGECS | 0.001 | 0.003 | 0.484 | 0.628 |
| FEMALEAGEC | 0.045 | 0.023 | 1.938 | 0.053 |
| FEMALEAGEC | 0.003 | 0.002 | 2.037 | 0.042 |
| Intercepts | | | | |
| BPXDI1_1 | 75.346 | 0.819 | 91.991 | 0.000 |
| Residual Variances | | | | |
| BPXDI1_1 | 115.148 | 3.674 | 31.339 | 0.000 |

QUALITY OF NUMERICAL RESULTS

| | |
|---|---|
| Condition Number for the Information Matrix (ratio of smallest to largest eigenvalue) | 0.254E-07 |

MUTHEN & MUTHEN
3463 Stoner Ave.
Los Angeles, CA 90066

Tel: (310) 391-9971
Fax: (310) 391-8971
Web: www.StatModel.com
Support: Support@StatModel.com

*NOTE: PLOTS CAN BE DONE IN MPLUS BUT THIS IS LEFT TO THE ANALYST FOR THIS REPLICATION, SEE MPLUS USER GUIDE FOR DETAILS.

```
Mplus VERSION 7.4
MUTHEN & MUTHEN
07/31/2017   2:55 PM

INPUT INSTRUCTIONS

  TITLE:ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH Q WEIGHT
  DATA:
    FILE IS "P:\ASDA 2\DATA SETS\NHANES 2011_2012\c7_nhanes_q.txt";

  VARIABLE:
  NAMES ARE
  FEMALE SDMVPSU SDMVSTRA SEQN WTMEC2YR ag60 ag1829 ag3044 ag4559 age age18p agec agecsq
  black
  blackagec blackagecsq bp_cat bpxdi1_1 edcat femaleagec femaleagecsq irregular marcat
  married mex
  nevmar numsecu other otheragec otheragecsq othhis othhisagec othhisagecsq pre_hibp
  prevmar
  q_wtmec2yr white whiteagec whiteagecsq ;

  USEVARIABLES ARE  bpxdi1_1 sdmvstra numsecu q_wtmec2yr
  OTHHIS WHITE BLACK OTHER AGEC AGECSQ FEMALE
  othhisagec blackagec otheragec whiteagec othhisagecsq blackagecsq otheragecsq
  whiteagecsq femaleagec femaleagecsq ;

  missing are . ;
  stratification sdmvstra ;
  cluster numsecu ;
  subpopulation = (age18p eq 1) ;
  weight is q_wtmec2yr ;

  ANALYSIS:
      type is complex ;
      estimator is mlr ;
  MODEL:
      bpxdi1_1 on OTHHIS WHITE BLACK OTHER FEMALE AGEC AGECSQ
      othhisagec (p1)
      whiteagec (p2)
      blackagec (p3)
      otheragec (p4)
      othhisagecsq (p5)
      whiteagecsq (p6)
      blackagecsq (p7)
      otheragecsq (p8)
      femaleagec (p9)
      femaleagecsq (p10);


*** WARNING in VARIABLE command
  Note that only the first 8 characters of variable names are used in the output.
  Shorten variable names to avoid any confusion.
*** WARNING
  Data set contains cases with missing on all variables except
  x-variables.  These cases were not included in the analysis.
  Number of cases with missing on all variables except x-variables:  3080
   2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS



ASDA 2 EX7.5 ANALYSIS EXAMPLES REPLICATION NHANES WITH Q WEIGHT
```

```
SUMMARY OF ANALYSIS

Number of groups                                                 1
Number of observations                                        5112

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
   OTHHIS      WHITE       BLACK       OTHER       AGEC        AGECSQ
   FEMALE      OTHHISAG    BLACKAGE    OTHERAGE    WHITEAGE    OTHHISAG
   BLACKAGE    OTHERAGE    WHITEAGE    FEMALEAG    FEMALEAG

Variables with special functions

  Stratification        SDMVSTRA
  Cluster variable      NUMSECU
  Weight variable       Q_WTMEC2

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\c7_nhanes_q.txt

Input data format  FREE


SUMMARY OF DATA

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



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      -0.645D-18.  PROBLEM INVOLVING THE FOLLOWING PARAMETER:
     Parameter 18, BPXDI1_1 ON FEMALEAGECSQ (equality/label)

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

MODEL FIT INFORMATION

Number of Free Parameters 19

Loglikelihood

| | |
|---|---|
| H0 Value | -19427.884 |
| H0 Scaling Correction Factor for MLR | 2.4168 |
| H1 Value | -19427.884 |
| H1 Scaling Correction Factor for MLR | 2.4168 |

Information Criteria

| | |
|---|---|
| Akaike (AIC) | 38893.768 |
| Bayesian (BIC) | 39018.015 |
| Sample-Size Adjusted BIC (n* = (n + 2) / 24) | 38957.640 |

Chi-Square Test of Model Fit

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

* 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 | 1.000 |
| TLI | 1.000 |

Chi-Square Test of Model Fit for the Baseline Model

| | |
|---|---|
| Value | 403.282 |
| Degrees of Freedom | 17 |
| 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 |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| BPXDI1_1 ON | | | | |
| OTHHIS | 0.248 | 0.954 | 0.260 | 0.795 |
| WHITE | 1.501 | 0.895 | 1.677 | 0.093 |
| BLACK | 3.566 | 0.989 | 3.605 | 0.000 |
| OTHER | 1.238 | 0.892 | 1.387 | 0.165 |
| FEMALE | -3.429 | 0.633 | -5.419 | 0.000 |
| AGEC | 0.047 | 0.040 | 1.157 | 0.247 |
| AGECSQ | -0.015 | 0.002 | -8.794 | 0.000 |
| OTHHISAGEC | 0.048 | 0.047 | 1.016 | 0.310 |
| WHITEAGEC | -0.006 | 0.051 | -0.107 | 0.914 |
| BLACKAGEC | 0.036 | 0.037 | 0.971 | 0.331 |
| OTHERAGEC | 0.013 | 0.046 | 0.273 | 0.785 |
| OTHHISAGEC | 0.001 | 0.003 | 0.308 | 0.758 |
| WHITEAGECS | 0.003 | 0.002 | 1.470 | 0.141 |
| BLACKAGECS | -0.003 | 0.002 | -1.368 | 0.171 |
| OTHERAGECS | 0.001 | 0.003 | 0.407 | 0.684 |
| FEMALEAGEC | 0.034 | 0.026 | 1.301 | 0.193 |
| FEMALEAGEC | 0.003 | 0.002 | 1.776 | 0.076 |
| Intercepts | | | | |
| BPXDI1_1 | 75.413 | 0.772 | 97.624 | 0.000 |
| Residual Variances | | | | |
| BPXDI1_1 | 117.098 | 3.760 | 31.144 | 0.000 |

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.467E-07
(ratio of smallest to largest eigenvalue)