WTADJUST Example #3

SUDAAN Statements and Results Illustrated

- CENTER
- POSTWGT
- WTMIN
- WTMAX
- CLASS

Input Data Set(s):

Example

Data from the Demographic Variables and Sample Weights Public Use File from the 2005-2006 NHANES indicate that 9,950 respondents had the Mobile Examination Center (MEC) exam, and 398 respondents did not. Create a nonresponse adjustment for the 9,950 individuals, assuming the 398 individuals are nonrespondents. Use race/Ethnicity; gender; Born in the United States indicator; age in years; number of people in the household and the interaction of gender and born in U.S. indicator as explanatory variables. Replicate the nonresponse adjustment using the ADJUST=POST option on WTADJUST.

Solution

The primary purpose of this example is to illustrate how the post-stratification option can yield the same adjustments as the nonresponse option on WTADJUST. This example uses data from the NHANES 2005-2006 Public Use File called DEMO_D.xpt. The standalone version of SUDAAN was used to generate the output in this example.

To begin, we gather and define the variables that will be used in the WTADJUST procedure:

Variable	**Definition**
RIAGENDR	Gender
RIDRETH1	Race/Ethnicity
DMDBORN2	Born in U.S. indicator. This was created from the DMDBORN variable available on the public use file as follows: If DMDBORN=1 then DMDBORN2=1; else DMDBORN2=2;
RIDAGEYR	Age at screening in years
DMDHHSIZ	Number of people in the household
MEC_IND	0/1 indicator for MEC exam. This will be the dependent variable used in WTADJUST. This was created from the RIDSTATR variable available on the public use file as follows: If RIDSTATR=2 then MEC_IND=1; Else if RIDSTATR=1 then MEC_IND=0;
WTINT2YR	2-year sample weight for all 9,950+398=10,348 initial records

SDMVSTRA	Masked Variance Strata
SDMVPSU	Masked Primary Sampling Unit (PSU) for Variance Estimation

We will use the DESIGN=WR option on the SUDAAN procedure calls in this example with the following design statements:

```
PROC ____ DESIGN=WR;
WEIGHT wtint2yr;
NEST sdmvstra sdmvpsu;
```

Following the recommended steps outlined in ***Exhibit 1***, the first step in deriving the nonresponse adjustments is to run CROSSTAB or DESCRIPT to get the population totals to which the nonresponse adjusted weights should sum. The code used to gather these totals is presented in ***Exhibit 1***, and the associated output is presented in ***Exhibit 2*** and ***Exhibit 3***.

Exhibit 1. CROSSTAB and DESCRIPT Code to Get Initial Population Totals

```
PROC CROSSTAB DATA="demo_d2.xpt"
              DESIGN=WR NOTSORTED FILETYPE=SASXPORT
              OUTDATA="_demo.xpt"
              REPLACE;
NEST   sdmvstra sdmvpsu;
WEIGHT wtint2yr;
CLASS  riagendr ridreth1 dmdborn2 mec_ind / include=missing;
TABLES mec_ind*ridreth1 mec_ind*riagendr*dmdborn2;
RLABEL riagendr="Gender"
       ridreth1="Race/Ethnicity"
       dmdborn2="Born Where?";
SETENV LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=12;
PRINT  NSUM WSUM / STYLE=NCHS;
TITLE  "Example 15-3";


PROC DESCRIPT DATA="_demo.xpt"
              DESIGN=WR FILETYPE=SASXPORT;
NEST   sdmvstra sdmvpsu;
WEIGHT wtint2yr;
CLASS  mec_ind / include=missing;
TABLES mec_ind;
VAR    ridageyr dmdhhsiz;
RLABEL ridageyr="Age at screening in yrs"
       dmdhhsiz="# People in Household";
SETENV LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=14;
PRINT  NSUM TOTAL / STYLE=NCHS;
TITLE  "Example 15-3";
```

Notice in the original PROC CROSSTAB that the NOTSORTED option is used on the PROC statement. This option is included because the file may not be sorted by the NEST statement variables. In order to increase the efficiency of subsequent SUDAAN procedure calls, a copy of the file sorted by the NEST variables will be saved in the file called _DEMO.XPT. This will be the DATA= file for subsequent procedure calls.

Exhibit 2. Output from CROSSTAB Code

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Race/Ethnicity.

0/1 Indicator for MEC Exam Race/Ethnicity	Sample Size	Weighted Size
Total		
Total	10348	**291616891.84**
Mexican American	2847	**27765632.55**
Other Hispanic	349	**10901692.95**
Non-Hispanic White	3928	**199414591.22**
Non-Hispanic Black	2710	**36009025.11**
Other, Multi-Racial	514	**17525950.01**
Nonrespondent (No MEC Exam)		
Total	398	10539655.35
Mexican American	108	1034065.53
Other Hispanic	19	645708.99
Non-Hispanic White	150	6885160.96
Non-Hispanic Black	95	1134965.69
Other, Multi-Racial	26	839754.18
Respondent (With MEC Exam)		
Total	9950	281077236.49
Mexican American	2739	26731567.02
Other Hispanic	330	10255983.96
Non-Hispanic White	3778	192529430.25
Non-Hispanic Black	2615	34874059.42
Other, Multi-Racial	488	16686195.83

Exhibit 2. Output from CROSSTAB Code-cont

```
Date: 05-22-2008                        SUDAAN                          Page:  6
Time: 12:38:07                                                          Table: 2

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Gender, Born Where?.

for: 0/1 Indicator for MEC Exam = Total.

-------------------------------------------------
Gender                                 Weighted
   Born Where?          Sample Size    Size
-------------------------------------------------
Total
   Total                    10348    291616891.84
   Born in U.S.              8794    254731764.53
   Not Born in
     U.S/Refused             1554     36885127.31
Male
   Total                     5080    142681824.30
   Born in U.S.              4304    124014060.65
   Not Born in
     U.S/Refused              776     18667763.65
Female
   Total                     5268    148935067.53
   Born in U.S.              4490    130717703.88
   Not Born in
     U.S/Refused              778     18217363.66
-------------------------------------------------
```

Exhibit 2. Output from CROSSTAB Code-cont

```
Date: 05-22-2008                        SUDAAN                          Page:  7
Time: 12:38:07                                                          Table: 2

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Gender, Born Where?.

for: 0/1 Indicator for MEC Exam = Nonrespondent (No MEC Exam).

-------------------------------------------------
Gender                                 Weighted
   Born Where?          Sample Size    Size
-------------------------------------------------
Total
   Total                      398     10539655.35
   Born in U.S.               325      8649262.30
   Not Born in
     U.S/Refused               73      1890393.05
Male
   Total                      195      4997476.97
   Born in U.S.               161      4229438.92
   Not Born in
     U.S/Refused               34       768038.04
Female
   Total                      203      5542178.39
   Born in U.S.               164      4419823.37
   Not Born in
     U.S/Refused               39      1122355.01
-------------------------------------------------
```

Exhibit 2. Output from CROSSTAB Code-cont.

```
Date: 05-22-2008                        SUDAAN                          Page:  8
Time: 12:38:07                                                          Table: 2

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Gender, Born Where?.

for: 0/1 Indicator for MEC Exam = Respondent (With MEC Exam).

-------------------------------------------------
Gender                                 Weighted
   Born Where?          Sample Size    Size
-------------------------------------------------
Total
   Total                      9950   281077236.49
   Born in U.S.               8469   246082502.23
   Not Born in
     U.S/Refused              1481    34994734.26
Male
   Total                      4885   137684347.34
   Born in U.S.               4143   119784621.73
   Not Born in
     U.S/Refused               742    17899725.61
Female
   Total                      5065   143392889.15
   Born in U.S.               4326   126297880.50
   Not Born in
     U.S/Refused               739    17095008.65
-------------------------------------------------
```

Exhibit 3. Output from DESCRIPT Code

```
Date: 05-22-2008                        SUDAAN                          Page:  2
Time: 12:38:07                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: Variable, 0/1 Indicator for MEC Exam.

-----------------------------------------------------
Variable
   0/1 Indicator for
     MEC Exam             Sample Size            Total
-----------------------------------------------------
Age at screening in
  yrs
   Total                      10348   10563096251.17
   Nonrespondent (No
     MEC Exam)                  398     395715167.05
   Respondent (With
     MEC Exam)                 9950   10167381084.12
# People in
  Household
   Total                      10348     974831529.10
   Nonrespondent (No
     MEC Exam)                  398      32521792.71
   Respondent (With
     MEC Exam)                 9950     942309736.39
-----------------------------------------------------
```

In this example, we are treating the "Age at screening in yrs" variable and the "# People in Household" variable as continuous. Consequently, we used DESCRIPT to get the weighted totals. Note that the

numbers presented in bold type in ***Exhibit 2*** and ***Exhibit 3***, above, are the control totals to which the new nonresponse adjusted weights should sum.

The recommended next step in deriving nonresponse adjustments is to run WTADJUST with no values set for WTMIN, WTMAX, LOWERBD, CENTER and UPPERBD (see Step 2 of ***Exhibit 1***). This code is presented in ***Exhibit 4***, below, and the output is presented in ***Exhibit 5***.

Exhibit 4. Initial WTADJUST

```
PROC WTADJUST DATA="_demo.xpt"
              DESIGN=WR FILETYPE=SASXPORT
              ADJUST=NONRESPONSE;
NEST   sdmvstra sdmvpsu;
WEIGHT wtint2yr;
CLASS  riagendr ridreth1 dmdborn2 / include=missing;
MODEL  mec_ind=ridreth1 riagendr*dmdborn2 ridageyr dmdhhsiz;
IDVAR  seqn mec_ind riagendr ridreth1 dmdborn2 ridageyr dmdhhsiz;
RLABEL riagendr="Gender"
       ridreth1="Race/Ethnicity"
       dmdborn2="Born Where?"
       ridageyr="Age  at screening in yrs"
       dmdhhsiz="# People in Household";
SETENV LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=14;
PRINT  BETA SEBETA P_BETA / BETAFMT=F10.4 SEBETAFMT=F10.4;
PRINT  UNWTDRR WTDRR;
PRINT  INITWTMN INITWTMX NTRIMMED;
PRINT  MARGADJ ADJMIN ADJMAX;
PRINT  UWEORIG UWETRIM UWEFINAL;
PRINT  WALDCHI WALDCHP;
OUTPUT / PREDICTED=ALL
         FILENAME="outsud.sdn"
         REPLACE FILETYPE=SUDAAN;
TITLE  "Example 15-3";
```

Exhibit 5. Output from WTADJUST

```
Date: 05-29-2008                        SUDAAN                              Page:  4
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-----------------------------------------------------------------
Independent
  Variables and        Beta                        P-value T-Test
  Effects              Coeff.          SE Beta     B=0
-----------------------------------------------------------------
Intercept                 0.0544        0.0201           0.0164
Race/Ethnicity
  Mexican American       -0.0072        0.0116           0.5463
  Other Hispanic          0.0118        0.0310           0.7083
  Non-Hispanic White     -0.0102        0.0125           0.4256
  Non-Hispanic Black     -0.0125        0.0131           0.3541
  Other, Multi-
  Racial                  0.0000        0.0000            .
Gender, Born Where?
  Male, Born in U.S.     -0.0273        0.0119           0.0368
  Male, Not Born in
  U.S/Refused            -0.0211        0.0143           0.1598
  Female, Born in
  U.S.                   -0.0280        0.0139           0.0618
  Female, Not Born
  in U.S/Refused          0.0000        0.0000            .
Age  at screening in
  yrs                    -0.0001        0.0002           0.6818
# People in
  Household              -0.0052        0.0018           0.0123
-----------------------------------------------------------------
```

Exhibit 5. Output from WTADJUST-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Unweighted Response Rate (Percent)	Weighted Response Rate (Percent)
Intercept	96.15	96.39
Race/Ethnicity		
Mexican American	96.21	96.28
Other Hispanic	94.56	94.08
Non-Hispanic White	96.18	96.55
Non-Hispanic Black	96.49	96.85
Other, Multi-Racial	94.94	95.21
Gender, Born Where?		
Male, Born in U.S.	96.26	96.59
Male, Not Born in U.S/Refused	95.62	95.89
Female, Born in U.S.	96.35	96.62
Female, Not Born in U.S/Refused	94.99	93.84
Age at screening in yrs	.	.
# People in Household	.	.

Exhibit 5. Output from WTADJUST-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  6
Time: 10:47:10                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-------------------------------------------------------------------------
Independent            Minimum          Maximum
  Variables and        Initial Weight   Initial Weight   Number of
  Effects              Among            Among            Trimmed
                       Respondents      Respondents      Weights
-------------------------------------------------------------------------
Intercept                  1224.97        152162.42                0
Race/Ethnicity
  Mexican American         1224.97         39279.70                0
  Other Hispanic           1735.54        152162.42                0
  Non-Hispanic White       3977.68        151857.80                0
  Non-Hispanic Black       3503.85         58159.86                0
  Other, Multi-
  Racial                   4482.09        121368.54                0
Gender, Born Where?
  Male, Born in U.S.       1224.97        135473.44                0
  Male, Not Born in
  U.S/Refused              2985.37        135350.18                0
  Female, Born in
  U.S.                     1339.05        151857.80                0
  Female, Not Born
  in U.S/Refused           1339.05        152162.42                0
Age  at screening in
  yrs                          .                .                .
# People in
  Household                    .                .                .
-------------------------------------------------------------------------
```

Exhibit 5. Output from WTADJUST-cont.

Date: 05-29-2008 SUDAAN Page: 7
Time: 10:47:10 Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Marginal Weight Adjustment	Minimum Adjustment Factor Among Respondents	Maximum Adjustment Factor Among Respondents
Intercept	1.0375	1.0107	1.0955
Race/Ethnicity			
Mexican American	1.0387	1.0157	1.0788
Other Hispanic	1.0630	1.0378	1.0955
Non-Hispanic White	1.0358	1.0114	1.0759
Non-Hispanic Black	1.0325	1.0107	1.0735
Other, Multi-Racial	1.0503	1.0217	1.0841
Gender, Born Where?			
Male, Born in U.S.	1.0353	1.0111	1.0692
Male, Not Born in U.S/Refused	1.0429	1.0185	1.0756
Female, Born in U.S.	1.0350	1.0107	1.0696
Female, Not Born in U.S/Refused	1.0657	1.0389	1.0955
Age at screening in yrs	1.0389	.	.
# People in Household	1.0345	.	.

Exhibit 5. Output from WTADJUST-cont.

```
Date: 05-29-2008                        SUDAAN                              Page:  8
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-------------------------------------------------------------------------
Independent            Original         Trimmed
  Variables and        Unequal          Unequal          Final Unequal
  Effects              Weighting        Weighting        Weighting
                       Effect           Effect           Effect
-------------------------------------------------------------------------
Intercept                    1.9312           1.9312           1.9334
Race/Ethnicity
  Mexican American           1.5579           1.5579           1.5629
  Other Hispanic             1.6105           1.6105           1.6195
  Non-Hispanic White         1.3046           1.3046           1.3054
  Non-Hispanic Black         1.4391           1.4391           1.4418
  Other, Multi-
  Racial                     1.6560           1.6560           1.6618
Gender, Born Where?
  Male, Born in U.S.         1.9046           1.9046           1.9073
  Male, Not Born in
  U.S/Refused                1.8073           1.8073           1.8168
  Female, Born in
  U.S.                       1.9363           1.9363           1.9386
  Female, Not Born
  in U.S/Refused             2.0676           2.0676           2.0801
Age  at screening in
  yrs                         .                .                .
# People in
  Household                   .                .                .
-------------------------------------------------------------------------
```

Exhibit 5. Output from WTADJUST-cont.

```
Date: 05-29-2008                        SUDAAN                              Page:  9
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Contrast.

-----------------------------------------------------
Contrast                              P-value Wald
                        Wald ChiSq    ChiSq
-----------------------------------------------------
OVERALL MODEL               139.79           0.0000
MODEL MINUS
  INTERCEPT                 123.40           0.0000
INTERCEPT                      .                .
RIDRETH1                      1.81           0.7705
RIAGENDR * DMDBORN2           5.49           0.1390
RIDAGEYR                      0.17           0.6758
DMDHHSIZ                      8.10           0.0044
-----------------------------------------------------
```

This initial run of WTADJUST converged. Page 6 of ***Exhibit 5***, above, indicates that the minimum initial weight is 1,224.97 and the maximum weight is 152,162.42. For illustration purposes, we will somewhat

arbitrarily choose a WTMIN of 1,400 and a WTMAX of 140,000 and see what affect this weight trimming will have on the unequal weighting effect. The code for this version of WTADJUST is presented in ***Exhibit 6***, below, and the associated output is presented in ***Exhibit 7***.

Exhibit 6. WTADJUST Code

```
PROC WTADJUST DATA="_demo.xpt"
              DESIGN=WR FILETYPE=SASXPORT
              ADJUST=NONRESPONSE;
NEST    sdmvstra sdmvpsu;
WEIGHT  wtint2yr;
CLASS   riagendr ridreth1 dmdborn2 / include=missing;
WTMAX   140000;
WTMIN   1400;
MODEL   mec_ind=ridreth1 riagendr*dmdborn2 ridageyr dmdhhsiz;
RLABEL  riagendr="Gender"
        ridreth1="Race/Ethnicity"
        dmdborn2="Born Where?"
        ridageyr="Age  at screening in yrs"
        dmdhhsiz="# People in Household";
SETENV  LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=14;
PRINT   BETA SEBETA P_BETA / BETAFMT=F10.4 SEBETAFMT=F10.4;
PRINT   UNWTDRR WTDRR;
PRINT   INITWTMN INITWTMX NTRIMMED;
PRINT   MARGADJ ADJMIN ADJMAX;
PRINT   UWEORIG UWETRIM UWEFINAL;
PRINT   WALDCHI WALDCHP;
TITLE "Example 15-3";
```

Exhibit 7. WTADJUST Output

```
Date: 05-29-2008                      SUDAAN                              Page:  4
Time: 10:47:10                                                            Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-------------------------------------------------------------------
Independent
  Variables and        Beta                       P-value T-Test
  Effects              Coeff.          SE Beta    B=0
-------------------------------------------------------------------
Intercept                 0.0542       0.0202           0.0168
Race/Ethnicity
  Mexican American       -0.0072       0.0116           0.5435
  Other Hispanic          0.0131       0.0309           0.6782
  Non-Hispanic White     -0.0100       0.0125           0.4375
  Non-Hispanic Black     -0.0124       0.0131           0.3580
  Other, Multi-
  Racial                  0.0000       0.0000            .
Gender, Born Where?
  Male, Born in U.S.     -0.0280       0.0123           0.0382
  Male, Not Born in
  U.S/Refused            -0.0219       0.0147           0.1584
  Female, Born in
  U.S.                   -0.0285       0.0142           0.0624
  Female, Not Born
  in U.S/Refused          0.0000       0.0000            .
Age  at screening in
  yrs                    -0.0001       0.0002           0.7079
# People in
  Household              -0.0052       0.0019           0.0141
-------------------------------------------------------------------
```

Exhibit 7. WTADJUST Output-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  5
Time: 10:47:10                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-----------------------------------------------------
Independent
  Variables and        Unweighted       Weighted
  Effects              Response Rate    Response Rate
                       (Percent)        (Percent)
-----------------------------------------------------
Intercept                      96.15            96.39
Race/Ethnicity
  Mexican American             96.21            96.28
  Other Hispanic               94.56            94.08
  Non-Hispanic White           96.18            96.55
  Non-Hispanic Black           96.49            96.85
  Other, Multi-
  Racial                       94.94            95.21
Gender, Born Where?
  Male, Born in U.S.           96.26            96.59
  Male, Not Born in
  U.S/Refused                  95.62            95.89
  Female, Born in
  U.S.                         96.35            96.62
  Female, Not Born
  in U.S/Refused               94.99            93.84
Age  at screening in
  yrs                            .                .
# People in
  Household                      .                .
-----------------------------------------------------
```

Exhibit 7. WTADJUST Output-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Minimum Initial Weight Among Respondents	Maximum Initial Weight Among Respondents	Number of Trimmed Weights
Intercept	1224.97	152162.42	20
Race/Ethnicity			
Mexican American	1224.97	39279.70	17
Other Hispanic	1735.54	152162.42	1
Non-Hispanic White	3977.68	151857.80	2
Non-Hispanic Black	3503.85	58159.86	0
Other, Multi-Racial	4482.09	121368.54	0
Gender, Born Where?			
Male, Born in U.S.	1224.97	135473.44	12
Male, Not Born in U.S/Refused	2985.37	135350.18	0
Female, Born in U.S.	1339.05	151857.80	4
Female, Not Born in U.S/Refused	1339.05	152162.42	4
Age at screening in yrs	.	.	.
# People in Household	.	.	.

Exhibit 7. WTADJUST Output-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Marginal Weight Adjustment	Minimum Adjustment Factor Among Respondents	Maximum Adjustment Factor Among Respondents
Intercept	1.0376	1.0112	1.0972
Race/Ethnicity			
Mexican American	1.0386	1.0160	1.0789
Other Hispanic	1.0642	1.0393	1.0972
Non-Hispanic White	1.0359	1.0122	1.0763
Non-Hispanic Black	1.0325	1.0112	1.0737
Other, Multi-Racial	1.0503	1.0222	1.0844
Gender, Born Where?			
Male, Born in U.S.	1.0353	1.0114	1.0701
Male, Not Born in U.S/Refused	1.0429	1.0187	1.0764
Female, Born in U.S.	1.0352	1.0112	1.0706
Female, Not Born in U.S/Refused	1.0664	1.0398	1.0972
Age at screening in yrs	1.0391	.	.
# People in Household	1.0347	.	.

Exhibit 7. WTADJUST Output-cont.

```
Date: 05-29-2008                        SUDAAN                              Page:  8
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-------------------------------------------------------------------------
Independent            Original         Trimmed
  Variables and        Unequal          Unequal          Final Unequal
  Effects              Weighting        Weighting        Weighting
                       Effect           Effect           Effect
-------------------------------------------------------------------------
Intercept                    1.9312           1.9303           1.9327
Race/Ethnicity
  Mexican American           1.5579           1.5578           1.5628
  Other Hispanic             1.6105           1.6032           1.6120
  Non-Hispanic White         1.3046           1.3042           1.3051
  Non-Hispanic Black         1.4391           1.4391           1.4419
  Other, Multi-
  Racial                     1.6560           1.6560           1.6619
Gender, Born Where?
  Male, Born in U.S.         1.9046           1.9045           1.9073
  Male, Not Born in
  U.S/Refused                1.8073           1.8073           1.8170
  Female, Born in
  U.S.                       1.9363           1.9352           1.9376
  Female, Not Born
  in U.S/Refused             2.0676           2.0615           2.0741
Age  at screening in
  yrs                         .                .                .
# People in
  Household                   .                .                .
-------------------------------------------------------------------------
```

Exhibit 7. WTADJUST Output-cont.

```
Date: 05-29-2008                        SUDAAN                              Page:  9
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Contrast.

-----------------------------------------------------
Contrast                              P-value Wald
                        Wald ChiSq    ChiSq
-----------------------------------------------------
OVERALL MODEL               142.14          0.0000
MODEL MINUS
  INTERCEPT                 124.58          0.0000
INTERCEPT                      .               .
RIDRETH1                      2.03          0.7311
RIAGENDR * DMDBORN2           5.43          0.1430
RIDAGEYR                      0.15          0.7025
DMDHHSIZ                      7.71          0.0055
-----------------------------------------------------
```

Page 6 of ***Exhibit 7***, above, indicates that 20 weights were trimmed as a result of setting WTMIN to 1,400 and WTMAX to 140,000. Page 8 of ***Exhibit 7*** indicates that the unequal weighting effect decreased

slightly from 1.9312 to 1.9303. Also, page 7 indicates that the current nonresponse adjustments range from 1.0112 to 1.0972.

Next, we set an appropriate lower and upper bound on the weight adjustments. Again, for each record, recall that the lower bound must be less than or equal to the "Marginal Weight Adjustment" in all rows that the record falls into in ***Exhibit 7***, and the upper bound must be greater than or equal to the "Marginal Weight Adjustment" in all rows the record fall into. If this is not the case, convergence will not be achieved. For illustration purposes, we set LOWERBD to 1.00 and UPPERBD to 1.08 for every record and let CENTER retain its default value. The code for this final run of WTADJUST is presented in ***Exhibit 8***, below, and the output is presented in ***Exhibit 9***.

Exhibit 8. WTADJUST Code

```
PROC WTADJUST DATA="_demo.xpt"
              DESIGN=WR FILETYPE=SASXPORT
              ADJUST=NONRESPONSE;
NEST    sdmvstra sdmvpsu;
WEIGHT  wtint2yr;
CLASS   riagendr ridreth1 dmdborn2 / include=missing;
WTMAX   140000;
WTMIN   1400;
LOWERBD 1.00;
UPPERBD 1.08;
MODEL   mec_ind=ridreth1 riagendr*dmdborn2 ridageyr dmdhhsiz;
IDVAR   seqn mec_ind riagendr ridreth1 dmdborn2 ridageyr dmdhhsiz;
RLABEL  riagendr="Gender"
        ridreth1="Race/Ethnicity"
        dmdborn2="Born Where?"
        ridageyr="Age  at screening in yrs"
        dmdhhsiz="# People in Household";
SETENV  LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=14;
PRINT   BETA SEBETA P_BETA / BETAFMT=F10.4 SEBETAFMT=F10.4;
PRINT   UNWTDRR WTDRR;
PRINT   INITWTMN INITWTMX NTRIMMED;
PRINT   MARGADJ ADJMIN ADJMAX;
PRINT   UWEORIG UWETRIM UWEFINAL;
PRINT   WALDCHI WALDCHP;
OUTPUT  / PREDICTED=ALL
          FILENAME="outsud.sdn"
          REPLACE FILETYPE=SUDAAN;
TITLE "Example 15-3";
```

Exhibit 9. WTADJUST Output

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Beta Coeff.	SE Beta	P-value T-Test B=0
Intercept	0.0651	0.0285	0.0374
Race/Ethnicity			
Mexican American	-0.0085	0.0141	0.5541
Other Hispanic	0.0184	0.0512	0.7240
Non-Hispanic White	-0.0109	0.0143	0.4571
Non-Hispanic Black	-0.0136	0.0150	0.3799
Other, Multi-Racial	0.0000	0.0000	.
Gender, Born Where?			
Male, Born in U.S.	-0.0361	0.0213	0.1105
Male, Not Born in U.S/Refused	-0.0296	0.0244	0.2440
Female, Born in U.S.	-0.0367	0.0230	0.1310
Female, Not Born in U.S/Refused	0.0000	0.0000	.
Age at screening in yrs	-0.0001	0.0002	0.6880
# People in Household	-0.0057	0.0020	0.0122

Exhibit 9. WTADJUST Output-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Unweighted Response Rate (Percent)	Weighted Response Rate (Percent)
Intercept	96.15	96.39
Race/Ethnicity		
Mexican American	96.21	96.28
Other Hispanic	94.56	94.08
Non-Hispanic White	96.18	96.55
Non-Hispanic Black	96.49	96.85
Other, Multi-Racial	94.94	95.21
Gender, Born Where?		
Male, Born in U.S.	96.26	96.59
Male, Not Born in U.S/Refused	95.62	95.89
Female, Born in U.S.	96.35	96.62
Female, Not Born in U.S/Refused	94.99	93.84
Age at screening in yrs	.	.
# People in Household	.	.

Exhibit 9. WTADJUST Output-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Minimum Initial Weight Among Respondents	Maximum Initial Weight Among Respondents	Number of Trimmed Weights
Intercept	1224.97	152162.42	20
Race/Ethnicity			
Mexican American	1224.97	39279.70	17
Other Hispanic	1735.54	152162.42	1
Non-Hispanic White	3977.68	151857.80	2
Non-Hispanic Black	3503.85	58159.86	0
Other, Multi-Racial	4482.09	121368.54	0
Gender, Born Where?			
Male, Born in U.S.	1224.97	135473.44	12
Male, Not Born in U.S/Refused	2985.37	135350.18	0
Female, Born in U.S.	1339.05	151857.80	4
Female, Not Born in U.S/Refused	1339.05	152162.42	4
Age at screening in yrs	.	.	.
# People in Household	.	.	.

Exhibit 9. WTADJUST Output-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Marginal Weight Adjustment	Minimum Adjustment Factor Among Respondents	Maximum Adjustment Factor Among Respondents
Intercept	1.0376	1.0134	1.0777
Race/Ethnicity			
Mexican American	1.0386	1.0162	1.0730
Other Hispanic	1.0642	1.0434	1.0777
Non-Hispanic White	1.0359	1.0140	1.0723
Non-Hispanic Black	1.0325	1.0134	1.0713
Other, Multi-Racial	1.0503	1.0216	1.0748
Gender, Born Where?			
Male, Born in U.S.	1.0353	1.0135	1.0691
Male, Not Born in U.S/Refused	1.0429	1.0186	1.0718
Female, Born in U.S.	1.0352	1.0134	1.0694
Female, Not Born in U.S/Refused	1.0664	1.0452	1.0777
Age at screening in yrs	1.0391	.	.
# People in Household	1.0347	.	.

Exhibit 9. WTADJUST Output-cont.

```
Date: 05-29-2008                        SUDAAN                              Page:  8
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Independent Variables and Effects.

-------------------------------------------------------------------------
Independent            Original         Trimmed
  Variables and        Unequal          Unequal          Final Unequal
  Effects              Weighting        Weighting        Weighting
                       Effect           Effect           Effect
-------------------------------------------------------------------------
Intercept                    1.9312           1.9303           1.9326
Race/Ethnicity
  Mexican American           1.5579           1.5578           1.5631
  Other Hispanic             1.6105           1.6032           1.6087
  Non-Hispanic White         1.3046           1.3042           1.3051
  Non-Hispanic Black         1.4391           1.4391           1.4419
  Other, Multi-
  Racial                     1.6560           1.6560           1.6613
Gender, Born Where?
  Male, Born in U.S.         1.9046           1.9045           1.9074
  Male, Not Born in
  U.S/Refused                1.8073           1.8073           1.8180
  Female, Born in
  U.S.                       1.9363           1.9352           1.9377
  Female, Not Born
  in U.S/Refused             2.0676           2.0615           2.0690
Age  at screening in
  yrs                         .                .                .
# People in
  Household                   .                .                .
-------------------------------------------------------------------------
```

Exhibit 9. WTADJUST Output-cont.

```
Date: 05-29-2008                        SUDAAN                              Page:  9
Time: 10:47:10                                                              Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Nonresponse Adjustment
Example 15-3
by: Contrast.

-----------------------------------------------------
Contrast                              P-value Wald
                        Wald ChiSq    ChiSq
-----------------------------------------------------
OVERALL MODEL             82.41          0.0000
MODEL MINUS
  INTERCEPT               62.09          0.0000
INTERCEPT                   .              .
RIDRETH1                   1.62           0.8058
RIAGENDR * DMDBORN2        3.47           0.3243
RIDAGEYR                   0.17           0.6823
DMDHHSIZ                   8.12           0.0044
-----------------------------------------------------
```

Notice from ***Exhibit 8*** that an OUTPUT statement was included in the last run of the WTADJUST procedure. This line requests that the variables in the PREDICTED SUDAAN output group be sent to a

SUDAAN-type file called OUTSUD. This file can be used to merge the final sample weight onto an analysis file.

Page 7 of ***Exhibit 9*** indicates that the final weight adjustments range from 1.0134 to 1.0777, and page 8 indicates that the unequal weighting effect went from 1.9303 after weight trimming, to 1.9326 after the final nonresponse adjustment was applied.

Exhibit 10 presents the code that was run to check the final weight sums. The CROSSTAB and DESCRIPT procedures were run on the OUTSUD file from the WTADJUST run in ***Exhibit 8***.

Exhibit 10. Checking the Sample Weights Using CROSSTAB and DESCRIPT

```
PROC CROSSTAB DATA="outsud.sdn"
              DESIGN=WR FILETYPE=SUDAAN;
NEST   sdmvstra sdmvpsu;
WEIGHT wtfinal;
CLASS  riagendr ridreth1 dmdborn2 mec_ind / include=missing;
TABLES mec_ind*ridreth1 mec_ind*riagendr*dmdborn2;
RLABEL riagendr="Gender"
       ridreth1="Race/Ethnicity"
       dmdborn2="Born Where?";
SETENV LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=12;
PRINT  NSUM WSUM / STYLE=NCHS;
TITLE  "Example 15-3";


PROC DESCRIPT DATA="outsud.sdn"
              DESIGN=WR FILETYPE=SUDAAN;
NEST   sdmvstra sdmvpsu;
WEIGHT wtfinal;
CLASS  mec_ind / include=missing;
TABLES mec_ind;
VAR    ridageyr dmdhhsiz;
RLABEL ridageyr="Age  at screening in yrs"
       dmdhhsiz="# People in Household";
SETENV LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=14;
PRINT  NSUM TOTAL / STYLE=NCHS;
TITLE  "Example 15-3";
```

The code displayed in ***Exhibit 10*** is the same code that was run at the beginning of this example (displayed in ***Exhibit 1***). The output from ***Exhibit 10*** is presented in ***Exhibit 11*** and ***Exhibit 12***.

Exhibit 11. Output From Checking the Sample Weights Using CROSSTAB

```
Date: 05-29-2008                        SUDAAN                          Page:  5
Time: 11:38:13                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Race/Ethnicity.

--------------------------------------------------
0/1 Indicator for
  MEC Exam                             Weighted
   Race/Ethnicity       Sample Size    Size
--------------------------------------------------
Total
   Total                      9950    291616891.84
   Mexican American           2739     27765632.55
   Other Hispanic              330     10901692.95
   Non-Hispanic
     White                    3778    199414591.22
   Non-Hispanic
     Black                    2615     36009025.11
   Other, Multi-
     Racial                    488     17525950.01
Respondent (With MEC
  Exam)
   Total                      9950    291616891.84
   Mexican American           2739     27765632.55
   Other Hispanic              330     10901692.95
   Non-Hispanic
     White                    3778    199414591.22
   Non-Hispanic
     Black                    2615     36009025.11
   Other, Multi-
     Racial                    488     17525950.01
--------------------------------------------------
```

Exhibit 11. Output From Checking the Sample Weights Using CROSSTAB-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  6
Time: 11:38:13                                                          Table: 2

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Gender, Born Where?.

for: 0/1 Indicator for MEC Exam = Total.

-------------------------------------------------
Gender                                 Weighted
   Born Where?          Sample Size    Size
-------------------------------------------------
Total
   Total                      9950    291616891.84
   Born in U.S.               8469    254731764.53
   Not Born in
     U.S/Refused              1481     36885127.31
Male
   Total                      4885    142681824.31
   Born in U.S.               4143    124014060.65
   Not Born in
     U.S/Refused               742     18667763.65
Female
   Total                      5065    148935067.53
   Born in U.S.               4326    130717703.88
   Not Born in
     U.S/Refused               739     18217363.66
-------------------------------------------------
```

Exhibit 1. Output From Checking the Sample Weights Using CROSSTAB-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  7
Time: 11:38:13                                                          Table: 2

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: 0/1 Indicator for MEC Exam, Gender, Born Where?.

for: 0/1 Indicator for MEC Exam = Respondent (With MEC Exam).

-------------------------------------------------
Gender                                 Weighted
   Born Where?          Sample Size    Size
-------------------------------------------------
Total
   Total                      9950    291616891.84
   Born in U.S.               8469   254731764.53
   Not Born in
     U.S/Refused              1481    36885127.31
Male
   Total                      4885    142681824.31
   Born in U.S.               4143   124014060.65
   Not Born in
     U.S/Refused               742    18667763.65
Female
   Total                      5065    148935067.53
   Born in U.S.               4326   130717703.88
   Not Born in
     U.S/Refused               739    18217363.66
-------------------------------------------------
```

Exhibit 12. Output From Checking the Sample Weights Using DESCRIPT

```
Date: 05-29-2008                        SUDAAN                          Page:  2
Time: 11:38:13                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Example 15-3
by: Variable, 0/1 Indicator for MEC Exam.

-----------------------------------------------------------
Variable
   0/1 Indicator for
     MEC Exam             Sample Size            Total
-----------------------------------------------------------
Age  at screening in
  yrs
   Total                         9950   10563096251.17
   Respondent (With
     MEC Exam)                   9950   10563096251.17
# People in
  Household
   Total                         9950     974831529.10
   Respondent (With
     MEC Exam)                   9950     974831529.10
-----------------------------------------------------------
```

Note that the numbers bolded in ***Exhibit 11*** and ***Exhibit 12*** match the corresponding numbers that are bolded in ***Exhibit 2*** and ***Exhibit 3***. This is the desired result.

Finally, we demonstrate how the final run of the WTADJUST with ADJUST=NONRESPONSE (in ***Exhibit 8***) can be replicated using WTADUST with ADJUST=POST. In other words, we demonstrate how post-stratification adjustments can be computed from WTADJUST that are equivalent to nonresponse adjustments.

The code used to create the same adjustments with ADJUST=POST is presented in ***Exhibit 13***.

Exhibit 13. Code Used For WTADJUST with ADJUST=POST

```
PROC WTADJUST DATA="_demo.xpt"
              DESIGN=WR FILETYPE=SASXPORT
              ADJUST=POST;
NEST    sdmvstra sdmvpsu;
WEIGHT  wtint2yr;
CLASS   riagendr ridreth1 dmdborn2 / include=missing;
WTMAX   140000;
WTMIN   1400;
LOWERBD 1.00;
UPPERBD 1.08;
CENTER  1.037452;
MODEL   mec_ind=ridreth1 riagendr*dmdborn2 ridageyr dmdhhsiz;
POSTWGT 291616891.84
        27765632.55 10901692.95 199414591.22 36009025.11 17525950.01
        124014060.65 18667763.65 130717703.88 18217363.66
        10563096251.17
        974831529.10;
RLABEL  riagendr="Gender"
        ridreth1="Race/Ethnicity"
        dmdborn2="Born Where?"
        ridageyr="Age  at screening in yrs"
        dmdhhsiz="# People in Household";
SETENV  LEFTMGN=0 TOPMGN=0 LINESIZE=84 PAGESIZE=68 COLWIDTH=14;
PRINT   BETA SEBETA P_BETA / BETAFMT=F10.4 SEBETAFMT=F10.4;
PRINT   UNWTDRR WTDRR;
PRINT   INITWTMN INITWTMX NTRIMMED;
PRINT   MARGADJ ADJMIN ADJMAX;
PRINT   UWEORIG UWETRIM UWEFINAL;
PRINT   WALDCHI WALDCHP;
TITLE "Example 15-3";
```

There are two important things to point out in ***Exhibit 13***:

- The control totals listed on the POSTWGT statement come from the bolded numbers presented in ***Exhibit 2*** and ***Exhibit 3***. These are the population totals to which the final adjusted weights should sum.
- All lines in this procedure are the same as what is displayed in ***Exhibit 8***, except for the addition of POSTWGT and CENTER statements. The default value for CENTER that SUDAAN uses is different for nonresponse applications compared to post-stratification applications. For nonresponse applications, the default value is generally the inverse overall response rate, and for post-stratification applications, the default value is generally one. There are a few exceptions to this, which are explained in **Section 15.7.1** of the **SUDAAN 10 Language Manual**.

  Exhibit 9 shows that the overall weighted response rate is 96.39% (see the row corresponding to INTERCEPT), and 1/.9639 = 1.037452. Consequently, we set CENTER to this value in ***Exhibit 13***.

The output from ***Exhibit 13*** is displayed in ***Exhibit 14***.

Exhibit 14. Output from WTADJUST with ADJUST=POST

```
Date: 05-29-2008                      SUDAAN                          Page:  4
Time: 11:38:13                                                        Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Post-stratification Adjustment
Example 15-3
by: Independent Variables and Effects.

-----------------------------------------------------------------
Independent
  Variables and        Beta                       P-value T-Test
  Effects              Coeff.          SE Beta    B=0
-----------------------------------------------------------------
Intercept                0.0652        0.3795           0.8659
Race/Ethnicity
  Mexican American      -0.0085        0.1929           0.9653
  Other Hispanic         0.0184        0.3655           0.9605
  Non-Hispanic White    -0.0109        0.1510           0.9434
  Non-Hispanic Black    -0.0136        0.2185           0.9513
  Other, Multi-
  Racial                 0.0000        0.0000            .
Gender, Born Where?
  Male, Born in U.S.    -0.0360        0.2697           0.8955
  Male, Not Born in
  U.S/Refused           -0.0296        0.1471           0.8435
  Female, Born in
  U.S.                  -0.0366        0.2664           0.8924
  Female, Not Born
  in U.S/Refused         0.0000        0.0000            .
Age  at screening in
  yrs                   -0.0001        0.0017           0.9655
# People in
  Household             -0.0057        0.0238           0.8145
-----------------------------------------------------------------
```

Exhibit 14. Output from WTADJUST with ADJUST=POST-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  5
Time: 11:38:13                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Post-stratification Adjustment
Example 15-3
by: Independent Variables and Effects.

-----------------------------------------------------
Independent
  Variables and        Unweighted       Weighted
  Effects              Response Rate    Response Rate
                       (Percent)        (Percent)
-----------------------------------------------------
Intercept                    100.00           100.00
Race/Ethnicity
  Mexican American           100.00           100.00
  Other Hispanic             100.00           100.00
  Non-Hispanic White         100.00           100.00
  Non-Hispanic Black         100.00           100.00
  Other, Multi-
  Racial                     100.00           100.00
Gender, Born Where?
  Male, Born in U.S.         100.00           100.00
  Male, Not Born in
  U.S/Refused                100.00           100.00
  Female, Born in
  U.S.                       100.00           100.00
  Female, Not Born
  in U.S/Refused             100.00           100.00
Age  at screening in
  yrs                           .                .
# People in
  Household                     .                .
-----------------------------------------------------
```

Exhibit 14. Output from WTADJUST with ADJUST=POST-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  6
Time: 11:38:13                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Post-stratification Adjustment
Example 15-3
by: Independent Variables and Effects.
```

Independent Variables and Effects	Minimum Initial Weight Among Respondents	Maximum Initial Weight Among Respondents	Number of Trimmed Weights
Intercept	1224.97	152162.42	20
Race/Ethnicity			
Mexican American	1224.97	39279.70	17
Other Hispanic	1735.54	152162.42	1
Non-Hispanic White	3977.68	151857.80	2
Non-Hispanic Black	3503.85	58159.86	0
Other, Multi-Racial	4482.09	121368.54	0
Gender, Born Where?			
Male, Born in U.S.	1224.97	135473.44	12
Male, Not Born in U.S/Refused	2985.37	135350.18	0
Female, Born in U.S.	1339.05	151857.80	4
Female, Not Born in U.S/Refused	1339.05	152162.42	4
Age at screening in yrs	.	.	.
# People in Household	.	.	.

Exhibit 14. Output from WTADJUST with ADJUST=POST-cont.

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Post-stratification Adjustment
Example 15-3
by: Independent Variables and Effects.

Independent Variables and Effects	Marginal Weight Adjustment	Minimum Adjustment Factor Among Respondents	Maximum Adjustment Factor Among Respondents
Intercept	1.0376	1.0134	1.0777
Race/Ethnicity			
Mexican American	1.0386	1.0162	1.0730
Other Hispanic	1.0642	1.0434	1.0777
Non-Hispanic White	1.0359	1.0140	1.0723
Non-Hispanic Black	1.0325	1.0134	1.0713
Other, Multi-Racial	1.0503	1.0216	1.0748
Gender, Born Where?			
Male, Born in U.S.	1.0353	1.0135	1.0691
Male, Not Born in U.S/Refused	1.0429	1.0186	1.0718
Female, Born in U.S.	1.0352	1.0134	1.0694
Female, Not Born in U.S/Refused	1.0664	1.0452	1.0777
Age at screening in yrs	1.0391	.	.
# People in Household	1.0347	.	.

Exhibit 14. Output from WTADJUST with ADJUST=POST-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  8
Time: 11:38:13                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Post-stratification Adjustment
Example 15-3
by: Independent Variables and Effects.

-------------------------------------------------------------------------
Independent            Original         Trimmed
  Variables and        Unequal          Unequal          Final Unequal
  Effects              Weighting        Weighting        Weighting
                       Effect           Effect           Effect
-------------------------------------------------------------------------
Intercept                      1.9312           1.9303           1.9326
Race/Ethnicity
  Mexican American             1.5579           1.5578           1.5631
  Other Hispanic               1.6105           1.6032           1.6087
  Non-Hispanic White           1.3046           1.3042           1.3051
  Non-Hispanic Black           1.4391           1.4391           1.4419
  Other, Multi-
  Racial                       1.6560           1.6560           1.6613
Gender, Born Where?
  Male, Born in U.S.           1.9046           1.9045           1.9074
  Male, Not Born in
  U.S/Refused                  1.8073           1.8073           1.8180
  Female, Born in
  U.S.                         1.9363           1.9352           1.9377
  Female, Not Born
  in U.S/Refused               2.0676           2.0615           2.0690
Age  at screening in
  yrs                           .                .                .
# People in
  Household                     .                .                .
-------------------------------------------------------------------------
```

Exhibit 14. Output from WTADJUST with ADJUST=POST-cont.

```
Date: 05-29-2008                        SUDAAN                          Page:  9
Time: 11:38:13                                                          Table: 1

Variance Estimation Method: Taylor Series (WR)
Response variable MEC_IND: 0/1 Indicator for MEC Exam
Post-stratification Adjustment
Example 15-3
by: Contrast.

-----------------------------------------------------
Contrast                              P-value Wald
                         Wald ChiSq   ChiSq
-----------------------------------------------------
OVERALL MODEL                  0.39           1.0000
MODEL MINUS
  INTERCEPT                    0.25           1.0000
INTERCEPT                       .              .
RIDRETH1                       0.01           1.0000
RIAGENDR * DMDBORN2            0.07           0.9957
RIDAGEYR                       0.00           0.9650
DMDHHSIZ                       0.06           0.8113
-----------------------------------------------------
```

The above output is equivalent to what we obtained when ADJUST was set to NONRESPONSE (***Exhibit 9***) except for the following:

- The estimated beta coefficients are the same (except for some rounding issues), but the standard error of the beta coefficients and the p-values are different. This occurs because the basic model used in ***Exhibit 9*** and ***Exhibit 14*** is the same, and only the respondent records are used to estimate the betas in both cases. However, the nonrespondent records contribute to the variance of the betas when ADJUST= NONRESPONSE, and the nonrespondent records are largely ignored when ADJUST=POST.[1] Consequently, the variance of the betas will be different between the two approaches.
- The unweighted and weighted response rates are 100% in the post-stratification run. Again, this is because the nonrespondent records are not considered in the post-stratification application. The unweighted and weighted response rates will always equal 100% when ADJUST=POST.
- The Wald Chi-squared statistics are different—again, because the nonrespondent records contribute to the variance in a nonresponse adjustment model, but not in a post-stratification model.

All other columns between ***Exhibit 9*** and ***Exhibit 14*** are equivalent, including the Minimum and Maximum Weight Among Respondents; the Number of Trimmed Weights; the Marginal Weight Adjustment, the Minimum and Maximum Adjustment Factor Among Respondents; and the Unequal Weighting Effects. A record-level comparison of the PREDICTED=ALL output files can be done to further ensure that the results from the two procedures are producing the same weight adjustment factor.

[1] Nonrespondent records may be needed for SUDAAN to compute the appropriate degrees of freedom in the post-stratification case.