SUDAAN Analysis Example Replication C5

```
* SUDAAN Analysis Examples Replication for ASDA 2nd Edition, SAS v9.4 TS1M3 ;
* Berglund April 2017
* Chapter 5 ;

libname d "P:\ASDA 2\Data sets\nhanes 2011_2012\" ;
ods graphics off ;
options nodate nonumber ;
title ;
* use list output since Sudaan does not work well with other ODS destinations ;
ods listing ;
data _null_ ;
file print ;
put  "Examples 5.1 and 5.2 are not available in Sudaan software since it does not offer any graphing abilities"
;
run ;
libname ncsr "P:\ASDA 2\Data sets\ncsr\" ;
data c5_ncsr ;
 set ncsr.ncsr_sub_13nov2015 ;
 * create variables needed for NCSR examples ;
 ncsrwtsh_pop = ncsrwtsh * (209128094 / 9282) ;
run ;
proc sort ;
 by sestrat seclustr ;
run ;
title  "ASDA2 Example 5.3 Population Totals of MDE, NCSR Data"  ;
options ls=120 ps=64 ;
proc descript data=c5_ncsr filetype=sas deft1 ;
nest sestrat seclustr ;
weight ncsrwtsh_pop ;
var mde ;
print total setotal lowtotal uptotal defftotal ;
setenv decwidth=3 ;
run ;
title  "ASDA2 Example 5.3 Population Totals of MDE by Marital Status, NCSR Data"  ;
options ls=120 ps=64 ;
proc descript data=c5_ncsr filetype=sas deft1 ;
nest sestrat seclustr ;
weight ncsrwtsh_pop  ;
class mar3cat / nofreq ;
var mde ;
print total setotal lowtotal uptotal defftotal ;
setenv decwidth=3 ;
run ;
title "Example 5.4 : Mean of Total HH Wealth using HRS 2012 data " ;
libname hrs "P:\ASDA 2\Data sets\HRS 2012\" ;
data c5_hrs ;
 set hrs.hrs_sub_28sep2016 ;
 if nfinr=1 then finr=1 ; else if nfinr=0 then finr=0 ; else finr=. ;
 if gender=2 then female=1 ; else female=0 ;
 if nage >=70 then age70=1 ; else age70=0 ;
run ;
proc sort ;
 by stratum secu ;
run ;
proc descript data=c5_hrs filetype=sas deft1 ;
nest stratum secu ;
weight nwgthh ;
subpopn finr=1 ;
var h11atota ;
setenv decwidth=1 colwidth=18 ;
print total setotal lowtotal uptotal defftotal ;
run ;
title "Example 5.5: Estimating the Mean Value of Household Income using the 2012 HRS Data." ;
proc descript data=c5_hrs filetype=sas deft1 ;
nest stratum secu ;
weight nwgthh ;
subpopn finr=1 ;
var h11itot ;
setenv decwidth=1 colwidth=18 ;
print mean semean lowmean upmean deffmean ;
run ;
libname d "P:\ASDA 2\Data sets\nhanes 2011_2012\" ;
data c5_nhanes ;
```

```
  set d.nhanes1112_sub_8aug2016 ;
 int wtmec2yr = int(wtmec2yr) ;
 female=0 ;
 if riagendr=2 then female = 1 ;
 if age > 45 then age45=1 ; else age45=0 ;
run ;
proc sort ;
 by sdmvstra sdmvpsu ;
run ;
title "Example 5.6: Estimating Mean Systolic Blood Pressure using the NHANES Data." ;
proc descript data=c5_nhanes filetype=sas deft1 ;
nest sdmvstra sdmvpsu ;
weight wtmec2yr ;
subpopn age18p=1 ;
var bpxsy1 ;
setenv decwidth=3 colwidth=18 ;
print mean semean lowmean upmean deffmean ;
run ;
title "Example 5.7: Estimating the Mean Value of Total Household Wealth using the HRS Data." ;
proc descript data=c5_hrs filetype=sas deft1 ;
nest stratum secu ;
weight nwgthh ;
subpopn finr=1 ;
var h11atota ;
setenv decwidth=1 colwidth=18 ;
print mean semean lowmean upmean deffmean ;
run ;
data _null_ ;
 file print ;
 put "Sudaan software does not easily produce a SD therefore, Example 5.8: Estimation of the Population Standard
Deviations of NHANES 2011-2012
  Measures of High-density and Total Cholesterol Level, is not shown.";
run ;
title "Example 5.9: Estimating Population Quantiles for Total Household Wealth Using the HRS Data." ;
proc descript filetype=sas data=c5_hrs design=jackknife ;
nest stratum secu ;
weight nwgthh ;
subpopn nfinr=1 ;
var h11atota ;
percentiles 25 75 / median ;
setenv decwidth=3 colwidth=16  ;
run ;
title "Example 5.10: Estimating the Lorenz Curve and Gini Coefficient for the 2012 HRS Population Distribution
of Total Household Wealth. Not available in Sudaan" ;
* Use SAS for data preparation and pre-analysis ;
title "Example 5.11: Estimation of the Correlation of Adults' Total and High-Density Cholesterol Measures in the
2011-2012 NHANES.";
proc means data=c5_nhanes mean ;
 where age18p=1 ;
 var lbdhdd lbxtc ;
 weight wtmec2yr ;
run ;
proc corr data=c5_nhanes ;
 where age18p=1 ;
 var lbdhdd lbxtc ;
 weight wtmec2yr ;
run ;
data c5_nhanes_1 ;
 set c5_nhanes ;
 stdlbxtc=(lbxtc - 194.4355)/41.05184 ;
 stdlbdhdd = (lbdhdd - 52.83826) / 14.93157 ;
run ;
proc regress data=c5_nhanes_1 filetype=sas ;
nest sdmvstra sdmvpsu ;
weight wtmec2yr ;
subpopn age18p=1 ;
model stdlbdhdd = stdlbxtc ;
setenv decwidth=3 ;
run ;
title "Example 5.12: Estimating the Population Ratio of High Density to Total Cholesterol for U.S. Adults. ";
proc ratio data=c5_nhanes filetype=sas deft1 ;
nest sdmvstra sdmvpsu ; weight wtmec2yr ;
subpopn age18p=1 ;
numer lbdhdd ;
denom lbxtc ;
setenv decwidth=4 ;
```

```
print nsum rhat serhat lowrhat uprhat deffrhat ;
run ;
title "Example 5.13: Estimating the Proportions of Males and Females Age >= 70 with Diabetes Using the HRS
Data." ;
proc descript filetype=sas deft1 data=c5_hrs ;
nest stratum secu ;
weight nwgtr ;
subpopn age70=1 ;
class gender / nofreq ;
var diabetes ;
setenv decwidth=4 ;
print mean semean lowmean upmean deffmean ;
run ;
title "Example 5.14: Estimating Mean Systolic Blood Pressure for Males and Females Age > 45 using the 2011-2012
NHANES data.";
proc descript filetype=sas deft1 data=c5_nhanes ;
nest sdmvstra sdmvpsu ;
weight wtmec2yr ;
subpopn age45=1 ;
class riagendr / nofreq ;
var bpxsy1 ;
setenv decwidth=4 ;
print mean semean lowmean upmean deffmean ;
run ;
title "Example 5.15: Estimating Differences in Mean Total Household Wealth Between HRS Subpopulations Defined by
Educational Attainment Level."  ;
proc descript filetype=sas data=c5_hrs ;
nest stratum secu ;
weight nwgthh ;
subpopn nfinr=1 ;
class edcat / nofreq ;
*rformat edcat edcatf. ;
var h11atota ;
setenv decwidth=2 colwidth=19 ;
run ;
proc descript filetype=sas data=c5_hrs ;
nest stratum secu ;
weight nwgthh ;
subpopn nfinr=1 ;
class edcat / nofreq ;
*rformat edcat edcatf. ;
var h11atota ;
contrast edcat = (1 0 0 -1) ;
setenv decwidth=3 colwidth=15 ;
run ;
title "Example 5.16: Estimating Differences in Mean Total Household Wealth from 2010 to 2012 using Data from the
HRS study. " ;
libname hrs10_12 "P:\ASDA 2\Data sets\HRS 2012\hrs 2010" ;
data hrs_2010_2012_c5 ;
 set hrs10_12.hrs_2010_2012_both ;
 * prepare data for analysis ;
 hhweight = mwgthh ;  if year=2012 then hhweight = nwgthh ;
 totwealth=h10atota ; if year=2012 then totwealth=h11atota ;
 finr2010 = 0 ;  if (year = 2010 & mfinr = 1) then finr2010=1 ;
 finr2012 = 0 ;  if (year = 2012 & nfinr = 1) then finr2012=1 ;
 finr2010_2012 = 0 ; if finr2010 = 1 | finr2012 = 1 then finr2010_2012=1 ;
run ;
proc sort ;
 by stratum secu ;
run ;
proc descript filetype=sas data=hrs_2010_2012_c5 ;
nest stratum secu ;
weight hhweight ;
subpopn finr2010_2012=1 ;
class year ;
*rformat edcat edcatf. ;
var totwealth ;
contrast year = (1 -1) ;
setenv decwidth=3 colwidth=15 ;
run ;
ods listing close ;
```

Output SUDAAN Analysis Example Replication C5

Examples 5.1 and 5.2 are not available in Sudaan software since it does not offer any graphing abilities

Example 5.3 Population Totals of MDE, NCSR Data

```
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                 Release 11.0.1
```

DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement (WR)
Design
    Sample Weight: NCSRWTSH_POP
    Stratification Variables(s): SESTRAT
    Primary Sampling Unit: SECLUSTR

Number of observations read   :   9282   Weighted count :209128097
Denominator degrees of freedom :   42

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:46
Table: 1

Variance Estimation Method: Taylor Series (WR)
by: Variable, SUDAAN Reserved Variable One.

Variable		SUDAAN Reserved Variable One	
		Total	1
Major Depressive Episode 1=Yes 0=No	Total	40092206.52	40092206.52
	SE Total	2567487.98	2567487.98
	Lower 95% Limit Total	34910806.08	34910806.08
	Upper 95% Limit Total	45273606.96	45273606.96
	DEFF Total #1	9.03	9.03

Example 5.3 Population Totals of MDE by Marital Status, NCSR Data

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: NCSRWTSH_POP
    Stratification Variables(s): SESTRAT
    Primary Sampling Unit: SECLUSTR

Number of observations read   :   9282   Weighted count :209128097
Denominator degrees of freedom :   42

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:46
Table: 1

Variance Estimation Method: Taylor Series (WR)
by: Variable, Marital Status 1=Married 2=Previously Married 3=Never Married.

| Variable | | Marital Status 1=Married 2=Previously Married 3=Never Married | | | |
		Total	1	2	3
Major	Total	40092206.52	20304190.50	10360670.65	9427345.37
Depressive	SE Total	2567487.98	1584108.64	702621.51	773137.58
Episode 1=Yes	Lower 95% Limit				
0=No	Total	34910806.08	17107329.88	8942723.06	7867090.58
	Upper 95% Limit				
	Total	45273606.96	23501051.12	11778618.23	10987600.16
	DEFF Total #1	9.03	6.07	2.22	2.95

Example 5.4 : Mean of Total HH Wealth using HRS 2012 data

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: NWGTHH
    Stratification Variables(s): STRATUM
    Primary Sampling Unit: SECU

Number of observations read   : 19990   Weighted count : 89174512
Number of observations skipped :   564
(WEIGHT variable nonpositive)
Observations in subpopulation : 13657   Weighted count : 58969863
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:47
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: FINR = 1
by: Variable, SUDAAN Reserved Variable One.

| Variable | | | SUDAAN Reserved Variable One | |
| | | |---|---|
			Total	1
H11ATOTA:W11	Total		25266861736223.7	25266861736223.7
Total of all	SE Total		1353710422880.1	1353710422880.1
Assets--Cross-	Lower 95% Limit			
wave	Total		22555053915310.2	22555053915310.2
	Upper 95% Limit			
	Total		27978669557137.2	27978669557137.2
	DEFF Total #1		5.3	5.3

Example 5.5: Estimating the Mean Value of Household Income using the 2012 HRS Data.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: NWGTHH
    Stratification Variables(s): STRATUM
    Primary Sampling Unit: SECU

Number of observations read   : 19990   Weighted count : 89174512
Number of observations skipped :   564
(WEIGHT variable nonpositive)
Observations in subpopulation : 13657   Weighted count : 58969863
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:47
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: FINR = 1
by: Variable, SUDAAN Reserved Variable One.

		SUDAAN Reserved Variable One
Variable		---
		Total	1

H11ITOT:W11	Mean	71382.4	71382.4
Incm: Total	SE Mean	1937.2	1937.2
HHold / R+Sp	Lower 95% Limit		
only	Mean	67501.7	67501.7
	Upper 95% Limit		
	Mean	75263.1	75263.1
	DEFF Mean #1	3.3	3.3

Example 5.6: Estimating Mean Systolic Blood Pressure using the NHANES Data.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: WTMEC2YR
    Stratification Variables(s): SDMVSTRA
    Primary Sampling Unit: SDMVPSU

Number of observations read   :   9338   Weighted count :306590681
Number of observations skipped :   418
(WEIGHT variable nonpositive)
Observations in subpopulation :   5615   Weighted count :232002539
Denominator degrees of freedom :   17

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: AGE18P = 1
by: Variable, SUDAAN Reserved Variable One.

| Variable | | | SUDAAN Reserved Variable One | |
| | | |---|---|
			Total	1
Systolic: Blood	Mean		122.029	122.029
pres (1st rdg)	SE Mean		0.616	0.616
mm Hg	Lower 95% Limit			
	Mean		120.729	120.729
	Upper 95% Limit			
	Mean		123.330	123.330
	DEFF Mean #1		8.184	8.184

Example 5.7: Estimating the Mean Value of Total Household Wealth using the HRS Data.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement (WR)
Design
    Sample Weight: NWGTHH
    Stratification Variables(s): STRATUM
    Primary Sampling Unit: SECU

Number of observations read   : 19990   Weighted count : 89174512
Number of observations skipped :   564
(WEIGHT variable nonpositive)
Observations in subpopulation : 13657   Weighted count : 58969863
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: FINR = 1
by: Variable, SUDAAN Reserved Variable One.

		SUDAAN Reserved Variable One
Variable		---------------------------------------
		Total	1

H11ATOTA:W11	Mean	428470.8	428470.8
Total of all	SE Mean	17353.8	17353.8
Assets--Cross-	Lower 95% Limit		
wave	Mean	393707.0	393707.0
	Upper 95% Limit		
	Mean	463234.5	463234.5
	DEFF Mean #1	3.2	3.2

Sudaan software does not easily produce a SD therefore, Example 5.8: Estimation of the Population Standard
Deviations of NHANES 2011-2012 Measures of High-density and Total Cholesterol Level, is not shown.

Example 5.9: Estimating Population Quantiles for Total Household Wealth Using the HRS Data.

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DESIGN SUMMARY: Variances will be computed using the Delete-1 Jackknife (JACKKNIFE) Replication Method
     Sample Weight: NWGTHH
     Stratification Variable(s): STRATUM
     Primary Sampling Unit (PSU): SECU

Number of observations read   : 19990   Weighted count : 89174512
Number of observations skipped :   564
(WEIGHT variable nonpositive)
Observations in subpopulation : 13657   Weighted count : 58969863
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:48
Table: 1

Variance Estimation Method: Delete-1 Jackknife
For Subpopulation: NFINR = 1
by: Variable, SUDAAN Reserved Variable One, Percentiles.

for: Variable = H11ATOTA:W11 Total of all Assets--Cross-wave.

SUDAAN Reserved
  Variable One
   Percentiles   Sample Size   Weighted Size   Quantile   Lower 95% Limit   Upper 95%
Limit

Total
    25.00   13657.000   58969863.000   21953.460   17051.085
26855.835
    50.00   13657.000   58969863.000   141906.554   125014.497
158798.610
    75.00   13657.000   58969863.000   439965.201   405982.698
473947.703
1
    25.00   13657.000   58969863.000   21953.460   17051.085
26855.835
    50.00   13657.000   58969863.000   141906.554   125014.497
158798.610
    75.00   13657.000   58969863.000   439965.201   405982.698
473947.703

Date: 05-15-2017   SUDAAN
Page: 2
Time: 12:10:48
Table: 1
Variance Estimation Method: Delete-1 Jackknife
For Subpopulation: NFINR = 1
by: Variable, SUDAAN Reserved Variable One, Percentiles.
for: Variable = H11ATOTA:W11 Total of all Assets--Cross-wave.

SUDAAN Reserved
  Variable One
   Percentiles   SE Quantile

Total
    25.00   2447.222
    50.00   8432.365
    75.00   16963.764
1
    25.00   2447.222

```
   50.00                        8432.365
   75.00                       16963.764
------------------------------------
```
Example 5.11: Estimation of the Correlation of Adults' Total and High-Density Cholesterol Measures in the 2011-2012 NHANES

                          The CORR Procedure

               2   Variables: LBDHDD   LBXTC
                  Weight Variable: WTMEC2YR

                           Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum	Label
LBDHDD (mg/dL)	5187	52.83826	3066	1.15527E10	14.00000	175.00000	Direct HDL-Cholesterol
LBXTC (mg/dL)	5187	194.43547	8428	4.25118E10	59.00000	523.00000	Total Cholesterol(mg/dL)

                Pearson Correlation Coefficients, N = 5187
                      Prob > |r| under H0: Rho=0

	LBDHDD	LBXTC
LBDHDD Direct HDL-Cholesterol (mg/dL)	1.00000	0.24144 <.0001
LBXTC Total Cholesterol(mg/dL)	0.24144 <.0001	1.00000

```
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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: WTMEC2YR
    Stratification Variables(s): SDMVSTRA
    Primary Sampling Unit: SDMVPSU
Number of observations read       :   9338    Weighted count:306590681
Number of observations skipped    :    418
(WEIGHT variable nonpositive)
Observations in subpopulation     :   5615    Weighted count:232002539
Observations used in the analysis :   5187    Weighted count:218642036
Denominator degrees of freedom    :     17


Maximum number of estimable parameters for the model is  2


File C5_NHANES_1 contains   31 Clusters
  31 clusters were used to fit the model
Maximum cluster size is 231 records
Minimum cluster size is  72 records


Weighted mean response is 0.000000
Multiple R-Square for the dependent variable STDLBDHDD: 0.058295


Date: 05-15-2017                                 SUDAAN
Page:  1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
SE Method: Robust (Binder, 1983)
Working Correlations: Independent
Link Function: Identity
Response variable STDLBDHDD: STDLBDHDD
For Subpopulation: AGE18P = 1
by: Independent Variables and Effects.
```

Independent Variables and Effects	Beta Coeff.	SE Beta	Lower 95% Limit Beta	Upper 95% Limit Beta	T-Test B=0	P-value T-Test B=0
Intercept	0.000	0.034	-0.072	0.072	0.000	1.000
STDLBXTC	0.241	0.014	0.211	0.271	16.988	0.000

```
Date: 05-15-2017                                 SUDAAN
Page:  2
Time: 12:10:48
Table: 1
Variance Estimation Method: Taylor Series (WR)
SE Method: Robust (Binder, 1983)
Working Correlations: Independent
Link Function: Identity
Response variable STDLBDHDD: STDLBDHDD
For Subpopulation: AGE18P = 1
by: Contrast.
```

Contrast	Degrees of Freedom	Wald F	P-value Wald F
OVERALL MODEL	2.000	163.856	0.000
MODEL MINUS INTERCEPT	1.000	288.582	0.000
INTERCEPT	1.000	0.000	1.000
STDLBXTC	1.000	288.582	0.000

Example 5.12: Estimating the Population Ratio of High Density to Total Cholesterol for U.S. Adults.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: WTMEC2YR
    Stratification Variables(s): SDMVSTRA
    Primary Sampling Unit: SDMVPSU

Number of observations read   :   9338   Weighted count :306590681
Number of observations skipped :   418
(WEIGHT variable nonpositive)
Observations in subpopulation :   5615   Weighted count :232002539
Denominator degrees of freedom :   17

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: AGE18P = 1
by: Variable, SUDAAN Reserved Variable One.

| Variable | | | SUDAAN Reserved Variable One | |
| | | |---| |
			Total	1
Direct HDL-Cholesterol (mg/dL)/Total Cholesterol(mg/dL)	Sample Size		5187.0000	5187.0000
	Ratio Est.		0.2718	0.2718
	SE Ratio		0.0029	0.0029
	Lower 95% Limit Ratio		0.2656	0.2656
	Upper 95% Limit Ratio		0.2779	0.2779
	DEFF Ratio #1		7.8993	7.8993

Example 5.13: Estimating the Proportions of Males and Females Age >= 70 with Diabetes Using the HRS Data.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement (WR)
Design
     Sample Weight: NWGTR
     Stratification Variables(s): STRATUM
     Primary Sampling Unit: SECU

Number of observations read   : 18851   Weighted count : 90698760
Number of observations skipped : 1703
(WEIGHT variable nonpositive)
Observations in subpopulation : 8138   Weighted count : 28553170
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: AGE70 = 1
by: Variable, Gender 1=Male 2=Female.

| Variable | | Gender 1=Male 2=Female | | |
		Total	1	2
1=Yes Diabetes	Mean	0.2469	0.2736	0.2270
0=No Diabetes	SE Mean	0.0065	0.0075	0.0086
	Lower 95% Limit			
	Mean	0.2338	0.2587	0.2098
	Upper 95% Limit			
	Mean	0.2600	0.2886	0.2441
	DEFF Mean #1	1.3684	0.7114	1.4167

16

Example 5.14: Estimating Mean Systolic Blood Pressure for Males and Females Age > 45 using the 2011-2012 NHANES data.


```
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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: WTMEC2YR
    Stratification Variables(s): SDMVSTRA
    Primary Sampling Unit: SDMVPSU


Number of observations read    :  9338    Weighted count :306590681
Number of observations skipped :   418
(WEIGHT variable nonpositive)
Observations in subpopulation  :  2910    Weighted count :117452998
Denominator degrees of freedom :    17
```


```
Date: 05-15-2017                                         SUDAAN
Page:   1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: AGE45 = 1
by: Variable, Gender.
```

| Variable | | | Gender | | |
			Total	1	2
Systolic: Blood	Mean		128.2380	128.3005	128.1820
pres (1st rdg)	SE Mean		0.7962	0.8687	0.9460
mm Hg	Lower 95% Limit				
	Mean		126.5583	126.4677	126.1861
	Upper 95% Limit				
	Mean		129.9177	130.1334	130.1779
	DEFF Mean #1		5.8007	3.4299	4.1399

Example 5.15: Estimating Differences in Mean Total Household Wealth Between HRS Subpopulations Defined by Educational Attainment Level.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement (WR)
Design
    Sample Weight: NWGTHH
    Stratification Variables(s): STRATUM
    Primary Sampling Unit: SECU

Number of observations read   : 19990   Weighted count : 89174512
Number of observations skipped :   564
(WEIGHT variable nonpositive)
Observations in subpopulation : 13657   Weighted count : 58969863
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:48
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: NFINR = 1
by: Variable, Education 1=0-11 Yrs 2=12 Yrs 3=13-15 Yrs 4=16+ Yrs.

| Variable | | Education 1=0-11 Yrs 2=12 Yrs 3=13-15 Yrs 4=16+ Yrs | | |
		Total	1	2
H11ATOTA:W11	Sample Size	13589.00	2870.00	4222.00
Total of all	Weighted Size	58685309.00	9008461.00	17514052.00
Assets--Cross-	Total	25203275952445.47	1099830753953.12	4536615163179.62
wave	Lower 95% Limit			
	Total	22484820495771.75	943670841569.93	4162111284145.26
	Upper 95% Limit			
	Total	27921731409119.18	1255990666336.30	4911119042213.99
	Mean	429464.82	122088.64	259027.16
	SE Mean	17452.97	10595.60	9802.47
	Lower 95% Limit			
	Mean	394502.33	100863.10	239390.45
	Upper 95% Limit			
	Mean	464427.32	143314.18	278663.87

18

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: NFINR = 1
by: Variable, Education 1=0-11 Yrs 2=12 Yrs 3=13-15 Yrs 4=16+ Yrs.

```
--------------------------------------------------------------------------------
|                   |                 | Education 1=0-11 Yrs 2=12 Yrs 3=13-15 Yrs 4=16+ Yrs
| Variable          |                 |-----------------------------------------|
|                   |                 | 3                    | 4                  |
--------------------------------------------------------------------------------
|                   |                 |                      |                    |
| H11ATOTA:W11      | Sample Size     |             3265.00  |            3232.00 |
| Total of all      | Weighted Size   |         14586188.00  |        17576608.00 |
| Assets--Cross-    | Total           |     4905460778023.10 |  14661369257289.63 |
| wave              | Lower 95% Limit |                      |                    |
|                   |  Total          |     4320066093107.27 |  12310841677607.39 |
|                   | Upper 95% Limit |                      |                    |
|                   |  Total          |     5490855462938.93 |  17011896836971.87 |
|                   | Mean            |           336308.62  |          834140.99 |
|                   | SE Mean         |            17201.79  |           46477.79 |
|                   | Lower 95% Limit |                      |                    |
|                   |  Mean           |           301849.30  |          741034.79 |
|                   | Upper 95% Limit |                      |                    |
|                   |  Mean           |           370767.94  |          927247.19 |
--------------------------------------------------------------------------------
```

19

```
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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement
(WR)
Design
    Sample Weight: NWGTHH
    Stratification Variables(s): STRATUM
    Primary Sampling Unit: SECU


Number of observations read    : 19990    Weighted count : 89174512
Number of observations skipped :    564
(WEIGHT variable nonpositive)
Observations in subpopulation  : 13657    Weighted count : 58969863
Denominator degrees of freedom :     56


Date: 05-15-2017                                      SUDAAN
Page:   1
Time: 12:10:49
Table: 1

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: NFINR = 1
by: Variable, SUDAAN Reserved Variable One, Contrast.

for: Variable = H11ATOTA:W11 Total of all Assets--Cross-wave.
```

SUDAAN Reserved Variable One			Contrast CONTRAST_1
Total		Sample Size	6102.000
		Weighted Size	26585069.000
		Cntrst Total	–***************
		Lower 95% Limit Cntrst Total	–***************
		Upper 95% Limit Cntrst Total	–***************
		Cntrst Mean	–712052.353
		SE Cntrst Mean	48886.056
		Lower 95% Limit Cntrst Mean	–809982.891
		Upper 95% Limit Cntrst Mean	–614121.815
		T-Test Cont.Mean=0	–14.566
		P-value T-Test Cont. Mean=0	0.000
1		Sample Size	6102.000
		Weighted Size	26585069.000
		Cntrst Total	–***************
		Lower 95% Limit Cntrst Total	–***************
		Upper 95% Limit Cntrst Total	–***************
		Cntrst Mean	–712052.353
		SE Cntrst Mean	48886.056
		Lower 95% Limit Cntrst Mean	–809982.891
		Upper 95% Limit Cntrst Mean	–614121.815
		T-Test Cont.Mean=0	–14.566
		P-value T-Test Cont. Mean=0	0.000

Example 5.16: Estimating Differences in Mean Total Household Wealth from 2010 to 2012 using Data from the HRS study.

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DESIGN SUMMARY: Variances will be computed using the Taylor Linearization Method, Assuming a With Replacement (WR)
Design
     Sample Weight: HHWEIGHT
     Stratification Variables(s): STRATUM
     Primary Sampling Unit: SECU

Number of observations read   : 37291   Weighted count :164299555
Number of observations skipped :   659
(WEIGHT variable nonpositive)
Observations in subpopulation : 25182   Weighted count :107277623
Denominator degrees of freedom :   56

Date: 05-15-2017   SUDAAN
Page: 1
Time: 12:10:49
Table: 1

Frequencies and Values for CLASS Variables
by: YEAR.

YEAR   Frequency   Value

Ordered
  Position:
  1   12676   2010
Ordered
  Position:
  2   12506   2012

Variance Estimation Method: Taylor Series (WR)
For Subpopulation: FINR2010_2012 = 1
by: Variable, SUDAAN Reserved Variable One, Contrast.

for: Variable = TOTWEALTH.

```
---------------------------------------------------------
|               |                | Contrast             |
| SUDAAN Reserved |              |----------------------|
| Variable One  |                | CONTRAST_1           |
---------------------------------------------------------
|               |                |                      |
| Total         | Sample Size    |          25182.000   |
|               | Weighted Size  |      107277623.000   |
|               | Cntrst Total   | -**************       |
|               | Lower 95% Limit|                      |
|               |  Cntrst Total  | -**************       |
|               | Upper 95% Limit|                      |
|               |  Cntrst Total  | **************        |
|               | Cntrst Mean    |          -4978.066   |
|               | SE Cntrst Mean |           7936.797   |
|               | Lower 95% Limit|                      |
|               |  Cntrst Mean   |         -20877.382   |
|               | Upper 95% Limit|                      |
|               |  Cntrst Mean   |          10921.249   |
|               | T-Test         |                      |
|               |  Cont.Mean=0   |             -0.627   |
|               | P-value T-Test |                      |
|               |  Cont. Mean=0  |              0.533   |
---------------------------------------------------------
|               |                |                      |
| 1             | Sample Size    |          25182.000   |
|               | Weighted Size  |      107277623.000   |
|               | Cntrst Total   | -**************       |
|               | Lower 95% Limit|                      |
|               |  Cntrst Total  | -**************       |
|               | Upper 95% Limit|                      |
|               |  Cntrst Total  | **************        |
|               | Cntrst Mean    |          -4978.066   |
|               | SE Cntrst Mean |           7936.797   |
|               | Lower 95% Limit|                      |
|               |  Cntrst Mean   |         -20877.382   |
|               | Upper 95% Limit|                      |
|               |  Cntrst Mean   |          10921.249   |
|               | T-Test         |                      |
|               |  Cont.Mean=0   |             -0.627   |
|               | P-value T-Test |                      |
|               |  Cont. Mean=0  |              0.533   |
---------------------------------------------------------
```