CHAPTER 6 ASDA ANALYSIS EXAMPLES REPLICATION-IVEware

GENERAL NOTES ABOUT ANALYSIS EXAMPLES REPLICATION

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

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

NOTES ABOUT DESCRIPTIVE ANALYSES IN IVEware

Special note: IVEware MUST BE RUN IN THE REGULAR PROGRAM EDITOR IF RUNNING UNDER SAS!! THE ENHANCED EDITOR DOES NOT WORK WITH SAS BASED IVEware!!

IVEware does not offer the ability to perform weighted histograms or box plots/bar charts, thus they are not included in this output. IVEware %describe can perform nearly all of the descriptive analyses presented in Chapter 6 of ASDA. Some of the fine points of this procedure are the use of a BY statement for subpopulation analyses, use of either a MEAN/TABLES statement for a means or table analysis, a CONTRAST statement for linear contrasts with the MEAN keyword. %describe includes 3 variance estimation methods: MULT, PAIR or DIFF. The MULT is the default. In the case of a subpopulation analysis with empty strata or cluster cells, IVEware will abort and not run the analysis. This will be noted in the log file and will explain why the code does not execute. This problem is handled differently than other software which will either use the subpopulation indicator or set those with an empty cell to zero for the variance calculations. The ability to label variable values is not included in the IVEware software package and as a result, value label codes (as needed) are included in the output as a convenience to the analyst.

```
%describe (name=ex6_1 , setup=new, dir=. ) ;
title  "Analysis Example 6.1: Proportion of the US Adult Population with Irregular Heart Beat: NHANES " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight  wtmec2yr ;
table   irregular ;
by      age18p ;
run ;

IVEware Setup Checker, Wed Mar 10 09:33:50 2010                                    1

Setup listing:

title  "Analysis Example 6.1: Proportion of the US Adult Population with
 Irregular Heart Beat: NHANES " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight  wtmec2yr ;
table   irregular ;
by      age18p ;
run ;

IVEware Design-Based Descriptive Statistics Procedure, Wed Mar 10 09:33:50 2010    1

"Analysis Example 6.1: Proportion of the US Adult Population with Irregular Heart Be

By variables:           age18p
Stratum variable:       SDMVSTRA  Masked Variance Pseudo-Stratum
Cluster variable:       SDMVPSU  Masked Variance Pseudo-PSU
Weight variable:        WTMEC2YR  Full Sample 2 Year MEC Exam Weight

Analysis description:

         5  Variables
        15  Strata
        30  Secus

    Strata  Model
        15  Multiple PSU
         0  Paired Selection
         0  Successive Differences

      9950  Cases Read

IVEware Design-Based Descriptive Statistics Procedure, Wed Mar 10 09:33:50 2010    2

"Analysis Example 6.1: Proportion of the US Adult Population with Irregular Heart Be

By Condition
         age18p
              0

     Problem  1

                 Degrees of freedom
                           15

          Factor   Covariance of denominator
            None        0.07382

           Table      Number of         Sum of       Weighted       Standard
      irregular          Cases        Weights     Proportion          Error
              0           4286   6.93924e+007        0.99170        0.00285
```

1	31	581091.8	0.00830	0.00285

	Lower Bound	Upper Bound	T Test	Prob > |T|
0	0.98561	0.99778	347.44696	0.00000
1	0.00222	0.01439	2.90952	0.01078

	Unweighted Proportion	Bias	Design Effect
0	0.99282	0.11330	4.26945
1	0.00718	-13.52941	4.26945

By Condition
age18p
1

Problem 2

Degrees of freedom
15

Factor	Covariance of denominator
None	0.06093

Table irregular	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
0	4944	2.041045e+008	0.97047	0.00665
1	177	6210830	0.02953	0.00665

	Lower Bound	Upper Bound	T Test	Prob > |T|
0	0.95629	0.98465	145.83400	0.00000
1	0.01535	0.04371	4.43768	0.00048

"Analysis Example 6.1: Proportion of the US Adult Population with Irregular Heart Be

	Unweighted Proportion	Bias	Design Effect
0	0.96544	-0.51857	7.91144
1	0.03456	17.04149	7.91144

```
%describe (name=ex6_2 , setup=new, dir=. ) ;
title  "Analysis Example 6.2: Proportions by Race: NHANES data " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight  wtmec2yr ;
table   ridreth1 ;
by      age18p ;
run ;


NOTE: CODES FOR RIDRETH1 1=MEXICAN 2=OTHER HISPANIC 3=BLACK 4=WHITE 5=OTHER


IVEware Setup Checker, Wed Mar 10 09:39:15 2010                                1

Setup listing:

title  "Analysis Example 6.2: Proportions by Race: NHANES data " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight  wtmec2yr ;
table   ridreth1 ;
by      age18p ;
run ;

IVEware Design-Based Descriptive Statistics Procedure, Wed Mar 10 09:39:16 2010    1

"Analysis Example 6.2: Proportions by Race: NHANES data "

By variables:           age18p
Stratum variable:       SDMVSTRA  Masked Variance Pseudo-Stratum
Cluster variable:       SDMVPSU  Masked Variance Pseudo-PSU
Weight variable:        WTMEC2YR  Full Sample 2 Year MEC Exam Weight

Analysis description:

         5  Variables
        15  Strata
        30  Secus

    Strata  Model
        15  Multiple PSU
         0  Paired Selection
         0  Successive Differences

      9950  Cases Read

IVEware Design-Based Descriptive Statistics Procedure, Wed Mar 10 09:39:16 2010    2

"Analysis Example 6.2: Proportions by Race: NHANES data "

By Condition
         age18p
              0

     Problem  1

                 Degrees of freedom
                           15

         Factor   Covariance of denominator
           None        0.06962
```

Table RIDRETH1	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	1606	1.020198e+007	0.13802	0.01489
2	166	3425165	0.04634	0.01031
3	1262	4.414512e+007	0.59723	0.03372
4	1315	1.049488e+007	0.14198	0.02156
5	267	5649279	0.07643	0.01337

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	0.10628	0.16976	9.26794	0.00000
2	0.02437	0.06831	4.49553	0.00043
3	0.52535	0.66911	17.70893	0.00000
4	0.09604	0.18793	6.58682	0.00001
5	0.04794	0.10492	5.71828	0.00004

	Unweighted Proportion	Bias	Design Effect
1	0.34792	152.07870	8.60304
2	0.03596	-22.39285	11.09575
3	0.27340	-54.22253	21.82087
4	0.28488	100.64281	17.60193
5	0.05784	-24.31786	11.67946

By Condition
age18p
1

Problem 2

Degrees of freedom
15

Factor	Covariance of denominator
None	0.06040

Table RIDRETH1	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	1133	1.758658e+007	0.08078	0.01005

"Analysis Example 6.2: Proportions by Race: NHANES data "

Table RIDRETH1	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
2	164	7355059	0.03379	0.00742
3	2516	1.554692e+008	0.71414	0.02770
4	1300	2.552817e+007	0.11726	0.01985
5	221	1.176142e+007	0.05403	0.00583

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	0.05936	0.10221	8.03542	0.00000
2	0.01797	0.04960	4.55242	0.00038
3	0.65511	0.77318	25.78306	0.00000
4	0.07496	0.15957	5.90772	0.00003
5	0.04161	0.06644	9.27477	0.00000

	Unweighted Proportion	Bias	Design Effect
1	0.21241	162.93890	7.25870
2	0.03075	-8.99525	8.99790
3	0.47169	-33.95004	20.04188
4	0.24372	107.84039	20.29833
5	0.04143	-23.30999	3.54068

```
%describe (name=ex6_3 , setup=new, dir=. ) ;
title  "Analysis Example 6.3: Proportions of US Adults by Blood Pressure Category: NHANES data " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight  wtmec2yr ;
table   bp_cat ;
by      age18p ;
run ;

NOTE: CODES FOR BP_CAT 1=NORMAL 2=PRE-HYPERTENSIVE 3=STAGE 1 HBP 4=STAGE 2 HBP


IVEware Setup Checker, Wed Mar 10 09:41:43 2010                                  1

Setup listing:

title  "Analysis Example 6.3: Proportions of US Adults by Blood Pressure
 Category: NHANES data " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight  wtmec2yr ;
table   bp_cat ;
by      age18p ;
run ;

IVEware Design-Based Descriptive Statistics Procedure, Wed Mar 10 09:41:44 2010    1

"Analysis Example 6.3: Proportions of US Adults by Blood Pressure Category: NHANES d

By variables:           age18p
Stratum variable:       SDMVSTRA  Masked Variance Pseudo-Stratum
Cluster variable:       SDMVPSU  Masked Variance Pseudo-PSU
Weight variable:        WTMEC2YR  Full Sample 2 Year MEC Exam Weight

Analysis description:

         5  Variables
        15  Strata
        30  Secus

    Strata  Model
        15  Multiple PSU
         0  Paired Selection
         0  Successive Differences

      9950  Cases Read
```

"Analysis Example 6.3: Proportions of US Adults by Blood Pressure Category: NHANES d

By Condition
age18p
0

Problem 1

Degrees of freedom
15

Factor	Covariance of denominator
None	0.07901

Table bp_cat	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	2016	3.6159e+007	0.89110	0.01233
2	278	4323929	0.10656	0.01157
3	8	95070.28	0.00234	0.00118
4	0	-1.788139e-007	0.00000	0.00000

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	0.86482	0.91737	72.28420	0.00000
2	0.08189	0.13122	9.20828	0.00000
3	-0.00017	0.00485	1.98891	0.06527
4	0.00000	0.00000	0.00000	0.00000

	Unweighted Proportion	Bias	Design Effect
1	0.87576	-1.72129	3.60348
2	0.12076	13.33173	3.23654
3	0.00348	48.33051	1.36602
4	0.00000	0.00000	0.00000

By Condition
age18p
1

Problem 2

Degrees of freedom
15

Factor	Covariance of denominator
None	0.06200

Table bp_cat	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	2441	9.797916e+007	0.47108	0.01109
2	1988	8.705187e+007	0.41854	0.01179
3	470	1.797207e+007	0.08641	0.00621
4	158	4985247	0.02397	0.00240

"Analysis Example 6.3: Proportions of US Adults by Blood Pressure Category: NHANES d

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	0.44745	0.49471	42.49590	0.00000
2	0.39342	0.44366	35.50932	0.00000
3	0.07318	0.09964	13.91967	0.00000
4	0.01884	0.02909	9.96854	0.00000

	Unweighted Proportion	Bias	Design Effect
1	0.48270	2.46608	2.49355
2	0.39312	-6.07432	2.88631
3	0.09294	7.55874	2.46807
4	0.03124	30.35162	1.24948

```
* example 6.4 GOF test not available in IVEware ;
* example 6.5 vertical bar and pie charts not available in IVEware ;

%describe (name=ex6_6 , setup=new, dir=. ) ;
title  "Analysis Example 6.6: Gender and MDE: NCS-R data" ;
datain  ncsr;
stratum sestrat;
cluster seclustr;
weight  ncsrwtsh;
table   sex*mde ;
run ;

NOTE: CODES FOR SEX 1=MALE 2=FEMALE, MDE 0=NO 1=YES.


IVEware Setup Checker, Wed Mar 10 09:55:42 2010                                  1

Setup listing:

title  "Analysis Example 6.6: Gender and MDE: NCS-R data" ;
datain  ncsr;
stratum sestrat;
cluster seclustr;
weight  ncsrwtsh;
table   sex*mde ;
run ;
IVEware Design-Based Descriptive Statistics Procedure, Wed Mar 10 09:55:42 2010    1

"Analysis Example 6.6: Gender and MDE: NCS-R data"

Stratum variable:       SESTRAT  SAMPLING ERROR STRATUM
Cluster variable:       SECLUSTR  SAMPLING ERROR CLUSTER
Weight variable:        NCSRWTSH  NCSR sample part 1 weight

Analysis description:

         5  Variables
        42  Strata
        84  Secus

    Strata  Model
        42  Multiple PSU
         0  Paired Selection
         0  Successive Differences

      9282  Cases Read
```

"Analysis Example 6.6: Gender and MDE: NCS-R data"

Problem 1

Degrees of freedom
42

Factor	Covariance of denominator
None	0.04886

Table SEX	mde	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	0	3522	3774.474	0.40664	0.00698
1	1	617	670.2321	0.07221	0.00344
2	0	3931	3728.062	0.40164	0.00536
2	1	1212	1109.232	0.11950	0.00303

		Lower Bound	Upper Bound	T Test	Prob > |T|
1	0	0.39256	0.42073	58.25808	0.00000
1	1	0.06527	0.07915	21.00460	0.00000
2	0	0.39083	0.41246	74.92532	0.00000
2	1	0.11339	0.12561	39.46856	0.00000

		Unweighted Proportion	Bias	Design Effect
1	0	0.37944	-6.68899	1.87406
1	1	0.06647	-7.94233	1.63719
2	0	0.42351	5.44352	1.10974
2	1	0.13058	9.26482	0.80862

```
%describe (name=ex6_6 , setup=new, dir=. ) ;
title  "Analysis Example 6.6: Gender and MDE: NCS-R data" ;
datain  ncsr;
stratum sestrat;
cluster seclustr;
weight  ncsrwtsh;
mean mde ;
table sex ;
contrast sex (1 -1) ;
run ;
```


Setup listing:


```
title  "Analysis Example 6.6: Gender and MDE: NCS-R data" ;
datain  ncsr;
stratum sestrat;
cluster seclustr;
weight  ncsrwtsh;
mean mde ;
table sex ;
contrast sex (1 -1) ;
run ;
```

"Analysis Example 6.6: Gender and MDE: NCS-R data"

Stratum variable: SESTRAT SAMPLING ERROR STRATUM
Cluster variable: SECLUSTR SAMPLING ERROR CLUSTER
Weight variable: NCSRWTSH NCSR sample part 1 weight

Analysis description:

5 Variables
42 Strata
84 Secus

Strata	Model
42	Multiple PSU
0	Paired Selection
0	Successive Differences

9282 Cases Read

"Analysis Example 6.6: Gender and MDE: NCS-R data"

Problem 1

Degrees of freedom
42

Factor	Covariance of denominator
SEX	0.04853
1	

Table SEX	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	4139	4444.706	1.00000	0.00000
2	0	0	0.00000	0.00000

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	1.00000	1.00000	0.00000	0.00000
2	0.00000	0.00000	0.00000	0.00000

	Unweighted Proportion	Bias	Design Effect
1	1.00000	0.00000	0.00000
2	0.00000	0.00000	0.00000

Factor	Covariance of denominator
SEX	0.05133
2	

Table SEX	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	0	0	0.00000	0.00000
2	5143	4837.294	1.00000	0.00000

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	0.00000	0.00000	0.00000	0.00000
2	1.00000	1.00000	0.00000	0.00000

	Unweighted Proportion	Bias	Design Effect
1	0.00000	0.00000	0.00000
2	1.00000	0.00000	0.00000

Contrast	Code	Nonzero coef
SEX	1	1
	2	-1

Table SEX	Number of Cases	Sum of Weights	Weighted Proportion	Standard Error
1	4139	4444.706	1.00000	0.00000
2	5143	4837.294	-1.00000	0.00000

"Analysis Example 6.6: Gender and MDE: NCS-R data"

	Lower Bound	Upper Bound	T Test	Prob > |T|
1	1.00000	1.00000	0.00000	0.00000
2	-1.00000	-1.00000	0.00000	0.00000

	Unweighted Proportion	Bias	Design Effect
1	1.00000	0.00000	0.00000
2	-1.00000	0.00000	0.00000

Problem 2

Degrees of freedom
42

Factor	Covariance of denominator
SEX	0.04853
1	

Mean mde	Number of Cases	Sum of Weights	Weighted Mean	Standard Error
	4139	4444.706	0.1507933	0.007747811

Lower Bound	Upper Bound	T Test	Prob > |T|
0.1351576	0.166429	19.46270	0.00000

Unweighted Mean	Bias	Design Effect
0.1490698	-1.14296	1.93978

Factor	Covariance of denominator
SEX	0.05133
2	

Mean mde	Number of Cases	Sum of Weights	Weighted Mean	Standard Error
	5143	4837.294	0.2293083	0.005647255

Lower Bound	Upper Bound	T Test	Prob > |T|
0.2179117	0.2407049	40.60527	0.00000

Unweighted Mean	Bias	Design Effect
0.2356601	2.76999	0.92791

Contrast	Code	Nonzero coef
SEX	1	1
	2	-1

"Analysis Example 6.6: Gender and MDE: NCS-R data"

Mean mde	Number of Cases	Sum of Weights	Weighted Mean	Standard Error
	9282	9282	-0.07851497	0.009551836

Lower Bound	Upper Bound	T Test	Prob > |T|
-0.09779132	-0.05923861	-8.21988	0.00000

Unweighted Mean	Bias	Design Effect
-0.0865903	10.28509	1.39688

```
* note that without the ability to run a subpop or domain analysis, this results in bad strata and will not run ;
%describe (name=ex6_8 , setup=new, dir=. ) ;
title  "Analysis Example 6.8: Education Categories and Alcohol Dependence in Young Adults  : NCS-R data" ;
datain  ncsr  ;
stratum sestrat ;
cluster seclustr  ;
weight  ncsrwtlg ;
table   ed4cat*ald   ;
by      age29;
run ;


%regress (name=ex6_9 , setup=new, dir=. ) ;
title  "Analysis Example 6.9: Simple Logistic Regression Gender Predicting MDE: NCS-R data" ;
datain  ncsr  ;
stratum sestrat ;
cluster seclustr  ;
weight  ncsrwtsh ;
dependent mde ;
predictor sex ;
link logistic  ;
run ;

IVEware Setup Checker, Wed Mar 10 09:58:39 2010                                    1

Setup listing:

title  "Analysis Example 6.9: Simple Logistic Regression Gender Predicting MDE:
 NCS-R data" ;
datain  ncsr  ;
stratum sestrat ;
cluster seclustr  ;
weight  ncsrwtsh ;
dependent mde ;
predictor sex ;
link    logistic  ;
run ;
```

"Analysis Example 6.9: Simple Logistic Regression Gender Predicting MDE: NCS-R dat

Regression type: Logistic
Dependent variable: mde
Predictors: SEX Sex
Cat. var. ref. codes: mde 1
Stratum variable: SESTRAT SAMPLING ERROR STRATUM
Cluster variable: SECLUSTR SAMPLING ERROR CLUSTER
Weight variable: NCSRWTSH NCSR sample part 1 weight

Valid cases 9282
Sum weights 9282.000152
Replicates 42

Degr freedom 42

-2 LogLike 8979.023905

Variable	Estimate	Std Error	Wald test	Prob > Chi
Intercept	2.2445635	0.1273309	310.73950	0.00000
SEX	-0.5161712	0.0693894	55.33520	0.00000

Variable	Odds Ratio	95% Confidence Interval Lower	Upper
Intercept			
SEX	0.5968012	0.5188168	0.6865076

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.86443	2.3072085	2.79096
SEX	1.61378	-0.5652933	9.51661

* example 6.10 is graphics, not available in IVEware ;
* example 6.11 is CMH trends test, not available in IVEware ;