CHAPTER 8 ANALYSIS EXAMPLES REPLICATION WesVar 4.3

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.

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 LOGISTIC REGRESSION ANALYSES USING WesVar 4.3

WesVar uses repeated replication variance estimation methods exclusively and as a result does not offer the Taylor Series Linearization approach.

WesVar is a point and click tool with log and output files that echo the options and variables selected for the particular analysis. As a result the output presented for WesVar examples consists of the log file and the output file. The exact syntax is not presented since it is not generated by the program nor is it possible to run WesVar with just user-written syntax but "Workbook" files can be created for a record of the analysis session. The workbook files will be posted on the ASDA web site in the near future and would enhance this output. From the output provided, you can determine the data used, output options, variables analyzed and other details of the analysis.

WesVar Regression menus can perform only some of the regression examples in Chapter 8: logistic regression with the logit link is an available option but Probit and Clog-log links are not.

Some of the fine points of this tool are the use of the subpopulation filter in the regression request statement, creation of variables used in the analyses (means, ratios, differences, etc.), various output options to specify the statistics of interest and a number of Repeated Replication variance estimation methods (JK1, JK2, BRR, etc.). For these examples, the JK2 and BRR (for a few examples) methods were used throughout but other methods are available. As in the linear regression examples, use of the reverse coded classification variables is used to match the default reference category of Stata (the lowest category). See the WesVar User's Guide for details.

BIVARIATE TESTS USING TABLES MENU WITH CHISQ TESTS OF SIGNIFICANCE

ag4cat	mde	STATISTIC	EST_TYPE	ESTIMATE	STDERROR	LOWER 95%	UPPER 95%	DEFF
18-29	No	SUM_WTS	ROWPCT	81.60	0.888	79.81	83.39	0.720
18-29	Yes	SUM_WTS	ROWPCT	18.40	0.888	16.61	20.19	0.720
18-29	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
30-44	No	SUM_WTS	ROWPCT	77.12	1.105	74.89	79.35	1.263
30-44	Yes	SUM_WTS	ROWPCT	22.88	1.105	20.65	25.11	1.263
30-44	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
45-59	No	SUM_WTS	ROWPCT	77.67	1.250	75.15	80.19	1.369
45-59	Yes	SUM_WTS	ROWPCT	22.33	1.250	19.81	24.85	1.369
45-59	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
60+	No	SUM_WTS	ROWPCT	88.94	0.958	87.01	90.87	0.908
60+	Yes	SUM_WTS	ROWPCT	11.06	0.958	9.13	12.99	0.908
60+	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
MARGINAL	No	SUM_WTS	ROWPCT	80.82	0.638	79.54	82.11	1.497
MARGINAL	Yes	SUM_WTS	ROWPCT	19.18	0.638	17.89	20.46	1.497
MARGINAL	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.

CHI-SQUARE	D.F.	VALUE	PROB
PEARSON	3.00	75.970	0.000
RS2	3.00	76.226	0.000
RS3	2.71	68.907	0.000

Sex	mde	STATISTIC	EST_TYPE	ESTIMATE	STDERROR	LOWER 95%	UPPER 95%	DEFF
Male	No	SUM_WTS	ROWPCT	84.71	0.907	82.88	86.54	1.514
Male	Yes	SUM_WTS	ROWPCT	15.29	0.907	13.46	17.12	1.514
Male	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
Female	No	SUM_WTS	ROWPCT	77.38	0.674	76.02	78.74	0.858
Female	Yes	SUM_WTS	ROWPCT	22.62	0.674	21.26	23.98	0.858
Female	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
MARGINAL	No	SUM_WTS	ROWPCT	80.82	0.638	79.54	82.11	1.497
MARGINAL	Yes	SUM_WTS	ROWPCT	19.18	0.638	17.89	20.46	1.497
MARGINAL	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.

CHI-SQUARE	D.F.	VALUE	PROB
PEARSON	1.00	49.117	0.000
RS2	1.00	52.411	0.000
RS3	1.00	52.383	0.000

ald	mde	STATISTIC	EST_TYPE	ESTIMATE	STDERROR	LOWER 95%	UPPER 95%	DEFF
No	No	SUM_WTS	ROWPCT	82.31	0.645	81.01	83.61	1.502
No	Yes	SUM_WTS	ROWPCT	17.69	0.645	16.39	18.99	1.502
No	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
Yes	No	SUM_WTS	ROWPCT	54.84	2.879	49.03	60.65	1.483
Yes	Yes	SUM_WTS	ROWPCT	45.16	2.879	39.35	50.97	1.483
Yes	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
MARGINAL	No	SUM_WTS	ROWPCT	80.82	0.638	79.54	82.11	1.497
MARGINAL	Yes	SUM_WTS	ROWPCT	19.18	0.638	17.89	20.46	1.497
MARGINAL	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.

CHI-SQUARE	D.F.	VALUE	PROB
PEARSON	1.00	141.704	0.000
RS2	1.00	90.330	0.000
RS3	1.00	90.230	0.000

Years of education

	mde	STATISTIC	EST_TYPE	ESTIMATE	STDERROR	LOWER 95%	UPPER 95%	DEFF
0-11	No	SUM_WTS	ROWPCT	83.69	1.198	81.27	86.11	0.893
0-11	Yes	SUM_WTS	ROWPCT	16.31	1.198	13.89	18.73	0.893
0-11	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
12	No	SUM_WTS	ROWPCT	81.45	0.829	79.78	83.12	0.779
12	Yes	SUM_WTS	ROWPCT	18.55	0.829	16.88	20.22	0.779
12	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
13-15	No	SUM_WTS	ROWPCT	78.75	1.046	76.64	80.86	1.118
13-15	Yes	SUM_WTS	ROWPCT	21.25	1.046	19.14	23.36	1.118
13-15	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
16+	No	SUM_WTS	ROWPCT	80.33	1.097	78.12	82.55	1.083
16+	Yes	SUM_WTS	ROWPCT	19.67	1.097	17.45	21.88	1.083
16+	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
MARGINAL	No	SUM_WTS	ROWPCT	80.82	0.638	79.54	82.11	1.497
MARGINAL	Yes	SUM_WTS	ROWPCT	19.18	0.638	17.89	20.46	1.497
MARGINAL	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.

CHI-SQUARE	D.F.	VALUE	PROB
PEARSON	3.00	10.081	0.018
RS2	3.00	12.688	0.005
RS3	2.89	12.161	0.006

Marital Status-3 categories

	Mde	STATISTIC	EST_TYPE	ESTIMATE	STDERROR	LOWER 95%	UPPER 95%	DEFF
Married	No	SUM_WTS	ROWPCT	82.67	0.734	81.19	84.15	1.217
Married	Yes	SUM_WTS	ROWPCT	17.33	0.734	15.85	18.81	1.217
Married	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
Previously Married	No	SUM_WTS	ROWPCT	76.10	1.448	73.18	79.02	1.428
Previously Married	Yes	SUM_WTS	ROWPCT	23.90	1.448	20.98	26.82	1.428
Previously Married	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
Never Married	No	SUM_WTS	ROWPCT	80.60	1.154	78.27	82.93	1.037
Never Married	Yes	SUM_WTS	ROWPCT	19.40	1.154	17.07	21.73	1.037
Never Married	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.
MARGINAL	No	SUM_WTS	ROWPCT	80.82	0.638	79.54	82.11	1.497
MARGINAL	Yes	SUM_WTS	ROWPCT	19.18	0.638	17.89	20.46	1.497
MARGINAL	MARGINAL	SUM_WTS	ROWPCT	100.00	.	.	.	.

CHI-SQUARE	D.F.	VALUE	PROB
PEARSON	2.00	24.142	0.000
RS2	2.00	21.625	0.000
RS3	1.93	20.907	0.000

ANALYSIS EXAMPLE 8.1: LOGISTIC REGRESSION NCS-R DATA

```
 OPTIONS :      Intercept,
        No Standardized Coefficient,
        Degrees of Freedom = 42
        t VALUE : 2.018
 STARTING VALUES :      INTERCEPT : 0.0000
        AGECAT_REV.1 : 0.0000
        AGECAT_REV.2 : 0.0000
        AGECAT_REV.3 : 0.0000
        sexf.1 : 0.0000
        ED4CAT_REV.1 : 0.0000
        ED4CAT_REV.2 : 0.0000
        ED4CAT_REV.3 : 0.0000
        MAR3CAT_REV.1 : 0.0000
        MAR3CAT_REV.2 : 0.0000
        ald : 0.0000
 BY :    None Specified.
 MISSING :      0            (UNWEIGHTED)
        0.000000     (WEIGHTED)
 NONMISSING :   5692         (UNWEIGHTED)
        5692.000478  (WEIGHTED)
 Success = records with dependent value equal to     1 :  1796         (UNWEIGHTED)
             1091.523362  (WEIGHTED)
 Failure = records with dependent value equal to     0 :  3896         (UNWEIGHTED)
             4600.477116  (WEIGHTED)
 ITERATIONS REQUIRED FOR FULL SAMPLE :        5
 MAXIMUM ITERATIONS FOR REPLICATE SAMPLE :    5
 -2 LOG LIKELIHOOD FOR FULL SAMPLE :  5268.52642
 -2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY :     5564.17351
```

PARAMETER	PARAMETER ESTIMATE	STANDARD ERROR OF ESTIMATE	TEST FOR H0: PARAMETER=0	PROB>|T|	LOWER 95%	UPPER 95%
INTERCEPT	-1.58	0.119	-13.259	0.000	-1.824	-1.342
AGECAT_REV.1	-0.68	0.142	-4.761	0.000	-0.962	-0.389
AGECAT_REV.2	0.21	0.091	2.261	0.029	0.022	0.391
AGECAT_REV.3	0.26	0.095	2.697	0.010	0.064	0.447
sexf.1	-0.58	0.076	-7.617	0.000	-0.730	-0.424
ED4CAT_REV.1	0.16	0.110	1.486	0.145	-0.058	0.384
ED4CAT_REV.2	0.23	0.092	2.499	0.016	0.044	0.417
ED4CAT_REV.3	0.08	0.094	0.843	0.404	-0.111	0.269
MAR3CAT_REV.1	0.12	0.108	1.074	0.289	-0.102	0.333
MAR3CAT_REV.2	0.49	0.085	5.692	0.000	0.314	0.659
ald	1.42	0.150	9.491	0.000	1.121	1.726

TEST	F VALUE	NUM. DF	DENOM. DF	PROB>F
OVERALL FIT	28.707	10	33	0.000
AGECAT_REV[4]	18.956	3	40	0.000
sexf[2]	58.025	1	42	0.000
ED4CAT_REV[4]	2.137	3	40	0.111
MAR3CAT_REV[3]	16.643	2	41	0.000
ald	90.084	1	42	0.000

PARAMETER	ESTIMATE	LOWER 95%	UPPER 95%
AGECAT_REV.1	0.51	0.382	0.678
AGECAT_REV.2	1.23	1.022	1.478
AGECAT_REV.3	1.29	1.066	1.563
sexf.1	0.56	0.482	0.654
ED4CAT_REV.1	1.18	0.943	1.468
ED4CAT_REV.2	1.26	1.045	1.517
ED4CAT_REV.3	1.08	0.895	1.309
MAR3CAT_REV.1	1.12	0.903	1.395
MAR3CAT_REV.2	1.63	1.369	1.933
ald	4.15	3.068	5.620

NOTE: CODES FOR AG4CAT: 1=18-29 2=30-44 3=45-59 4=60+, CODES FOR MDE 0=NO 1=YES, CODES FOR SEX 1=MALE 2=FEMALE, CODES FOR ALD 0=NO 1=YES, EDUCATION 1=0-11 2=12 3=13-15 4=16+ YEARS OF EDUCATION, MARITAL STATUS 1=MARRIED 2=PREVIOUSLY MARRIED 3=NEVER MARRIED. THE REVERSE CODING SIMPLY REVERSES THE CATEGORIES LISTED ABOVE.

ANALYSIS EXAMPLE 8.1: LOGISTIC REGRESSION NCS-R DATA

INTERACTION TESTING FOR SEX*(ALL OTHER PREDICTORS)

```
 OPTIONS :      Intercept,
        No Standardized Coefficient,
        Degrees of Freedom = 42
        t VALUE : 2.018
 STARTING VALUES :      INTERCEPT : 0.0000
        AGECAT_REV.1 : 0.0000
        AGECAT_REV.2 : 0.0000
        AGECAT_REV.3 : 0.0000
        sexm : 0.0000
        ald : 0.0000
        MAR3CAT_REV.1 : 0.0000
        MAR3CAT_REV.2 : 0.0000
        AGECAT_REV.1*SEXM : 0.0000
        AGECAT_REV.2*SEXM : 0.0000
        AGECAT_REV.3*SEXM : 0.0000
        ALD*SEXM : 0.0000
        MAR3CAT_REV.1*SEXM : 0.0000
        MAR3CAT_REV.2*SEXM : 0.0000
        ED4CAT_REV.1 : 0.0000
        ED4CAT_REV.2 : 0.0000
        ED4CAT_REV.3 : 0.0000
        ED4CAT_REV.1*SEXM : 0.0000
        ED4CAT_REV.2*SEXM : 0.0000
        ED4CAT_REV.3*SEXM : 0.0000
 BY :    None Specified.
 MISSING :      0            (UNWEIGHTED)
        0.000000     (WEIGHTED)
 NONMISSING :   5692         (UNWEIGHTED)
        5692.000478  (WEIGHTED)
 Success = records with dependent value equal to      1 :  1796         (UNWEIGHTED)
             1091.523362  (WEIGHTED)
 Failure = records with dependent value equal to      0 :  3896         (UNWEIGHTED)
             4600.477116  (WEIGHTED)
 ITERATIONS REQUIRED FOR FULL SAMPLE :        6
 MAXIMUM ITERATIONS FOR REPLICATE SAMPLE :    6
 -2 LOG LIKELIHOOD FOR FULL SAMPLE :   5264.85754
 -2 LOG LIKELIHOOD FOR MODEL CONTAINING INTERCEPT ONLY :     5564.17351
```

PARAMETER	PARAMETER ESTIMATE	STANDARD ERROR OF ESTIMATE	TEST FOR H0: PARAMETER=0	PROB>|T|	LOWER 95%	UPPER 95%
INTERCEPT	-1.60	0.134	-11.984	0.000	-1.869	-1.330
AGECAT_REV.1	-0.65	0.176	-3.675	0.001	-1.000	-0.291
AGECAT_REV.2	0.21	0.101	2.120	0.040	0.010	0.419
AGECAT_REV.3	0.22	0.114	1.931	0.060	-0.010	0.451
sexm	-0.55	0.345	-1.584	0.121	-1.242	0.150
ald	1.55	0.208	7.461	0.000	1.133	1.973
MAR3CAT_REV.1	0.02	0.129	0.134	0.894	-0.244	0.278
MAR3CAT_REV.2	0.42	0.111	3.770	0.001	0.194	0.641
AGECAT_REV.1*SEXM	-0.04	0.302	-0.125	0.901	-0.646	0.571
AGECAT_REV.2*SEXM	0.00	0.212	0.012	0.990	-0.426	0.431
AGECAT_REV.3*SEXM	0.10	0.201	0.481	0.633	-0.309	0.502
ALD*SEXM	-0.20	0.240	-0.835	0.409	-0.685	0.284
MAR3CAT_REV.1*SEXM	0.23	0.213	1.089	0.282	-0.198	0.662
MAR3CAT_REV.2*SEXM	0.18	0.204	0.893	0.377	-0.230	0.595
ED4CAT_REV.1	0.24	0.153	1.582	0.121	-0.067	0.551
ED4CAT_REV.2	0.30	0.118	2.530	0.015	0.060	0.535
ED4CAT_REV.3	0.13	0.084	1.555	0.127	-0.039	0.300
ED4CAT_REV.1*SEXM	-0.19	0.334	-0.581	0.564	-0.868	0.480
ED4CAT_REV.2*SEXM	-0.17	0.261	-0.647	0.521	-0.695	0.357
ED4CAT_REV.3*SEXM	-0.14	0.262	-0.525	0.602	-0.667	0.392

TEST	F VALUE	NUM. DF	DENOM. DF	PROB>F
OVERALL FIT	17.378	19	24	0.000
AGECAT_REV[4]	12.859	3	40	0.000
sexm	29.077	1	42	0.000
ald	55.673	1	42	0.000
MAR3CAT_REV[3]	7.006	2	41	0.002
AGECAT_REV[4]*SEXM	0.249	3	40	0.861
ALD*SEXM	0.697	1	42	0.409
MAR3CAT_REV[3]*SEXM	0.774	2	41	0.468
ED4CAT_REV[4]	2.227	3	40	0.100
ED4CAT_REV[4]*SEXM	0.134	3	40	0.939

ANALYSIS EXAMPLE BUILDING ON 8.1: COMPARISON OF LOGIT, PROBIT AND CLOG-LOG NOT AVAILABLE IN WesVar