CHAPTER 7 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 %regress can perform nearly all of the linear regression analyses presented in Chapter 7 of ASDA. This module uses the JRR method for variance estimation while the %describe command uses the Taylor Series Linearization method for variance estimation. This is reflected in the log file when running IVEware. Some of the fine points of this procedure are the use of a BY statement for subpopulation analyses, use of a CATEGORICAL statement for class variables in the predictor list and optional diagnostic plots and various links depending on the type of regression desired.

For linear regression, use of the LINEAR LINK is required. Note that when performing linear regression without a stratum/cluster variable specification, IVEware treats each person as a separate replicate and runs the Jackknife Repeated Replications on each person in the data set. When using the complex sample design variables the replicates are formed by the usual (#stratum times #clusters minus #clusters) variables.

The %regress module does not include an easy way to tests of parameters as a group (i.e. testing whether race is significantly different from zero) so the adjusted F or Wald tests for groups of predictors demonstrated in the ASDA text in chapter 7 are omitted here. 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. Finally, because the software does not include an easy way to specify the omitted reference category for predictor variables, use of indicator variables for each level of a categorical variable is used in the regression models presented in this chapter.

```
* note: IVEware doesn't include the ability to change the reference category for categorical variables within
the program therefore the highest category is omitted by default rather than the lowest as Stata does therefore the
use of indicator variables for each level of a given categorical variable is used in this chapter;

* note that IVEware does not include the equivalent of the test statement so the bivariate tests are not done here;

* run unweighted and no design effects regression ;
%regress (name=ex7_5, setup=new, dir=. ) ;
title "Analysis Example 7.5: Unweighted and Without Design Correction: NHANES" ;
datain  nhanes0506 ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
run ;

IVEware Setup Checker, Wed Mar 10 11:05:10 2010                                    1

Setup listing:

title "Analysis Example 7.5: Unweighted and Without Design Correction: NHANES" ;
datain  nhanes0506 ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
run ;
IVEware Jackknife Regression Procedure, Wed Mar 10 11:05:11 2010                  1

"Analysis Example 7.5: Unweighted and Without Design Correction: NHANES"

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             other
                        black
                        white
                        othhis
                        nevmar
                        prevmar
                        female
                        agec
By variables:           age18p

By variable               Code
  age18p                     0

Valid cases                948

Degr freedom               939

Sum of squares:
  Model            2081.916289
  Error             107011.801
  Total            109093.7173
  R-square             0.01908
  F-value              2.28353
  P-value              0.02013
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	68.5685628	9.6501523	7.10544	0.00000
other	1.3275406	1.6982734	0.78170	0.43459
black	1.4987521	0.8808379	1.70151	0.08918
white	1.7145007	0.9012227	1.90242	0.05742
othhis	1.5469666	2.1474744	0.72037	0.47148
nevmar	0.1048492	2.7578576	0.03802	0.96968
prevmar	8.6242939	6.7624267	1.27533	0.20251
female	2.2429569	0.6994679	3.20666	0.00139
agec	0.3517940	0.3194359	1.10130	0.27105

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	68.5685628	49.6301950	87.5069305
other	1.3275406	-2.0053110	4.6603923
black	1.4987521	-0.2298872	3.2273913
white	1.7145007	-0.0541437	3.4831451
othhis	1.5469666	-2.6674394	5.7613727
nevmar	0.1048492	-5.3074304	5.5171287
prevmar	8.6242939	-4.6469290	21.8955169
female	2.2429569	0.8702552	3.6156586
agec	0.3517940	-0.2750971	0.9786851

"Analysis Example 7.5: Unweighted and Without Design Correction: NHANES"

By variable	Code
age18p	1

Valid cases	4578
Degr freedom	4569

Sum of squares:

Model	45386.91605
Error	712510.7345
Total	757897.6505
R-square	0.05989
F-value	36.38065
P-value	0.00000

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	69.6721134	0.4643468	150.04329	0.00000
other	2.3119485	1.0045372	2.30151	0.02141
black	4.5081341	0.5634728	8.00062	0.00000
white	1.6719345	0.4914745	3.40187	0.00068
othhis	1.8982318	1.1253790	1.68675	0.09172
nevmar	-4.2163560	0.5100554	-8.26647	0.00000
prevmar	0.3269070	0.5222114	0.62601	0.53134
female	-3.4018135	0.3745900	-9.08143	0.00000
agec	0.0389751	0.0114565	3.40201	0.00067

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	69.6721134	68.7617717	70.5824551
other	2.3119485	0.3425752	4.2813218
black	4.5081341	3.4034580	5.6128101
white	1.6719345	0.7084094	2.6354596
othhis	1.8982318	-0.3080493	4.1045128
nevmar	-4.2163560	-5.2163086	-3.2164034
prevmar	0.3269070	-0.6968771	1.3506912
female	-3.4018135	-4.1361891	-2.6674379
agec	0.0389751	0.0165149	0.0614353

```
* run weighted linear regression  with weight but no complex design variables;
%regress (name=ex7_5, setup=new, dir=. ) ;
title "Analysis Example 7.5: Weighted and Without Design Correction: NHANES";
datain  nhanes0506 ;
weight  wtmec2yr ;
by      age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
run ;

IVEware Setup Checker, Wed Mar 10 11:14:57 2010                                  1
Setup listing:
title "Analysis Example 7.5: Weighted and Without Design Correction: NHANES";
datain  nhanes0506 ;
weight  wtmec2yr ;
by      age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
run ;

IVEware Jackknife Regression Procedure, Wed Mar 10 11:14:57 2010                 1

"Analysis Example 7.5: Weighted and Without Design Correction: NHANES"

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             other
                        black
                        white
                        othhis
                        nevmar
                        prevmar
                        female
                        agec
By variables:           age18p
Stratum variable:       _STRAT_  Constant 1
Cluster variable:       _CLUST_  Observation number
Weight variable:        WTMEC2YR  Full Sample 2 Year MEC Exam Weight

By variable               Code
  age18p                     0

Valid cases                948
Sum weights        15536185.38
Replicates                 947

Degr freedom               947

Sum of squares:
  Model            61676533.22
  Error             1663392602
  Total             1725069135
  R-square             0.03575
  F-value              3.90151
  P-value              0.00007

Variable              Estimate         Std Error            T Test        Prob > |T|
Intercept           65.5540906        14.0837938           4.65458           0.00000
other                0.3738570         1.7660287           0.21169           0.83239
black                1.3781440         0.9955004           1.38437           0.16657
white                2.2953531         0.9631569           2.38316           0.01736
othhis               1.6420044         2.4316284           0.67527           0.49967
nevmar              -5.2751159         7.3326142          -0.71940           0.47207
```

prevmar	8.8483620	11.3971859	0.77636	0.43773
female	2.9326236	0.9133885	3.21071	0.00137
agec	0.0954309	0.4079447	0.23393	0.81509

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	65.5540906	37.9150143	93.1931669
other	0.3738570	-3.0919281	3.8396421
black	1.3781440	-0.5754995	3.3317875
white	2.2953531	0.4051830	4.1855232
othhis	1.6420044	-3.1300026	6.4140113
nevmar	-5.2751159	-19.6651792	9.1149475

"Analysis Example 7.5: Weighted and Without Design Correction: NHANES"

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
prevmar	8.8483620	-13.5183167	31.2150407
female	2.9326236	1.1401225	4.7251246
agec	0.0954309	-0.7051500	0.8960117

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	2.12996	68.5685628	4.59845
other	1.08138	1.3275406	255.09314
black	1.27729	1.4987521	8.75148
white	1.14217	1.7145007	-25.30558
othhis	1.28215	1.5469666	-5.78791
nevmar	7.06926	0.1048492	-101.98762
prevmar	2.84047	8.6242939	-2.53231
female	1.70520	2.2429569	-23.51705
agec	1.63093	0.3517940	268.63757

"Analysis Example 7.5: Weighted and Without Design Correction: NHANES"

By variable	Code
age18p	1

Valid cases	4578
Sum weights	189848121.7
Replicates	4577
Degr freedom	4577

Sum of squares:

Model	1124482773
Error	2.768755958e+010
Total	2.881204235e+010
R-square	0.03903
F-value	20.65411
P-value	0.00000

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	70.6781198	0.4893153	144.44289	0.00000
other	1.9584469	1.0464399	1.87153	0.06133
black	4.4086312	0.6119973	7.20368	0.00000
white	2.1919061	0.5192515	4.22128	0.00002
othhis	1.7865088	1.3265275	1.34676	0.17813
nevmar	-4.3562322	0.6369840	-6.83884	0.00000
prevmar	0.0172510	0.6650048	0.02594	0.97931
female	-2.9973392	0.4413861	-6.79074	0.00000
agec	0.0170349	0.0149678	1.13811	0.25514

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	70.6781198	69.7188234	71.6374162
other	1.9584469	-0.0930850	4.0099789
black	4.4086312	3.2088183	5.6084441
white	2.1919061	1.1739202	3.2098920
othhis	1.7865088	-0.8141312	4.3871488
nevmar	-4.3562322	-5.6050310	-3.1074334
prevmar	0.0172510	-1.2864822	1.3209842
female	-2.9973392	-3.8626709	-2.1320075
agec	0.0170349	-0.0123092	0.0463791

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.11043	69.6721134	-1.42336
other	1.08517	2.3119485	18.05010
black	1.17965	4.5081341	2.25700
white	1.11623	1.6719345	-23.72235
othhis	1.38942	1.8982318	6.25370
nevmar	1.55963	-4.2163560	-3.21094
prevmar	1.62165	0.3269070	1795.00553
female	1.38843	-3.4018135	13.49445
agec	1.70691	0.0389751	128.79527

```
%regress (name=ex7_5, setup=new, dir=. ) ;
title "Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots : NHANES" ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
plots ;
run ;
```


Setup listing:

```
title "Analysis Example 7.5: Weighted and With Design Correction and Diagnostic
 Plots : NHANES" ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
plots ;
run ;
```

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

Regression type: Linear
Dependent variable: bpxdi1_1
Predictors: other
black
white
othhis
nevmar
prevmar
female
agec
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

By variable	Code
age18p	0

Valid cases	948
Sum weights	15536185.38
Replicates	15
Degr freedom	15

Sum of squares:

Model	61676533.22
Error	1663392602
Total	1725069135
R-square	0.03575
F-value	0.06180
P-value	0.99990

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	65.5540906	12.1580282	5.39184	0.00007
other	0.3738570	1.8700034	0.19992	0.84423
black	1.3781440	1.1172089	1.23356	0.23635
white	2.2953531	0.8454164	2.71506	0.01597
othhis	1.6420044	1.8698021	0.87817	0.39370
nevmar	-5.2751159	7.0349046	-0.74985	0.46494
prevmar	8.8483620	8.1639918	1.08383	0.29556
female	2.9326236	0.6470376	4.53238	0.00040
agec	0.0954309	0.3960080	0.24098	0.81283

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	65.5540906	39.6399355	91.4682457
other	0.3738570	-3.6119503	4.3596643
black	1.3781440	-1.0031240	3.7594120
white	2.2953531	0.4933954	4.0973108
othhis	1.6420044	-2.3433738	5.6273825
nevmar	-5.2751159	-20.2696204	9.7193887

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
prevmar	8.8483620	-8.5527285	26.2494525
female	2.9326236	1.5534992	4.3117480
agec	0.0954309	-0.7486379	0.9394996

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.58730	68.5685628	4.59845
other	1.21247	1.3275406	255.09314
black	1.60871	1.4987521	8.75148
white	0.87999	1.7145007	-25.30558
othhis	0.75812	1.5469666	-5.78791
nevmar	6.50688	0.1048492	-101.98762
prevmar	1.45747	8.6242939	-2.53231
female	0.85570	2.2429569	-23.51705
agec	1.53688	0.3517940	268.63757

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

By variable	Code
age18p	1
Valid cases	4578
Sum weights	189848121.7
Replicates	15
Degr freedom	15

Sum of squares:

Model	1124482773
Error	2.768755958e+010
Total	2.881204235e+010
R-square	0.03903
F-value	0.06769
P-value	0.99985

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	70.6781198	0.5004355	141.23323	0.00000
other	1.9584469	0.9876410	1.98295	0.06599
black	4.4086312	0.7710528	5.71768	0.00004
white	2.1919061	0.6082368	3.60371	0.00261
othhis	1.7865088	1.1796441	1.51445	0.15070
nevmar	-4.3562322	0.5553539	-7.84407	0.00000
prevmar	0.0172510	0.7115071	0.02425	0.98098
female	-2.9973392	0.3346950	-8.95543	0.00000
agec	0.0170349	0.0212581	0.80134	0.43545

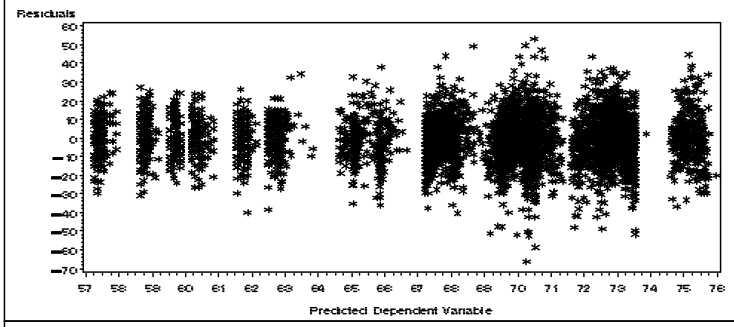
Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	70.6781198	69.6114696	71.7447699
other	1.9584469	-0.1466545	4.0635484
black	4.4086312	2.7651754	6.0520870
white	2.1919061	0.8954835	3.4883287
othhis	1.7865088	-0.7278364	4.3008540
nevmar	-4.3562322	-5.5399377	-3.1725266
prevmar	0.0172510	-1.4992865	1.5337884
female	-2.9973392	-3.7107228	-2.2839556
agec	0.0170349	-0.0282755	0.0623453

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.16148	69.6721134	-1.42336
other	0.96664	2.3119485	18.05010
black	1.87250	4.5081341	2.25700
white	1.53159	1.6719345	-23.72235
othhis	1.09876	1.8982318	6.25370
nevmar	1.18551	-4.2163560	-3.21094
prevmar	1.85638	0.3269070	1795.00553
female	0.79834	-3.4018135	13.49445
agec	3.44306	0.0389751	128.79527

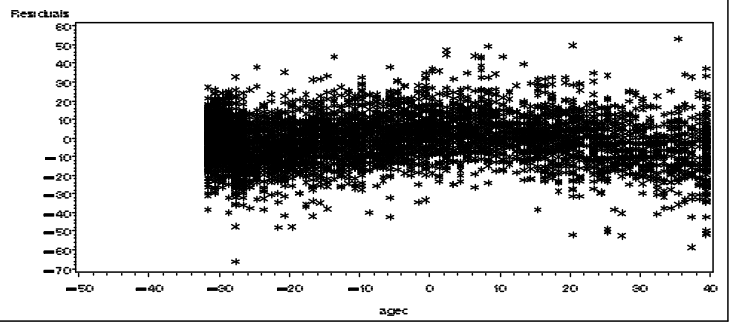
Regression Diagnostic Plots

Residual Plots

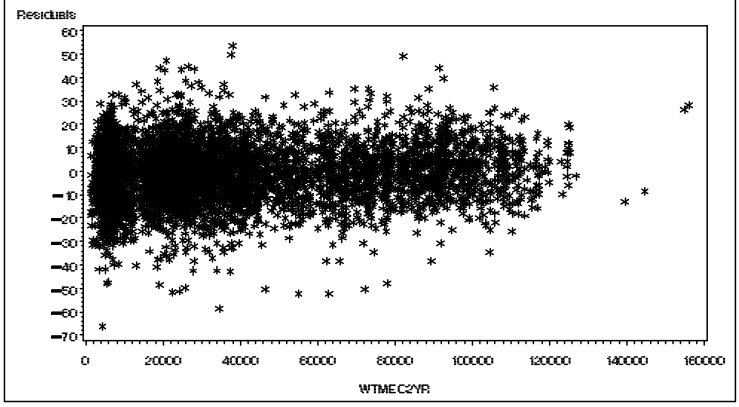
Residuals vs. Predicted Values



Residuals vs. agec



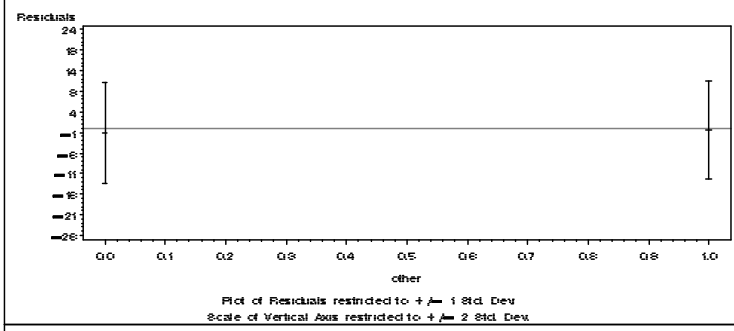
Residuals vs. Weight Variable



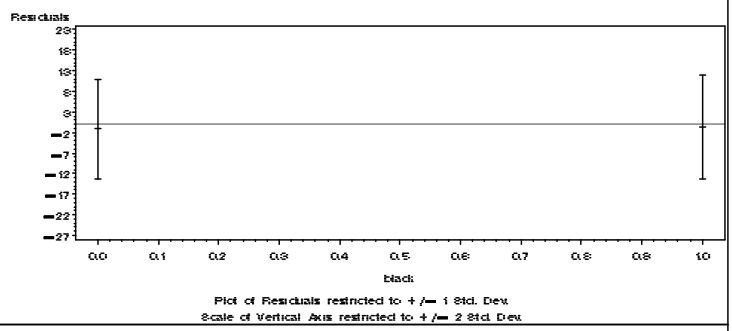
Regression Diagnostic Plots

Standard Deviation Plots

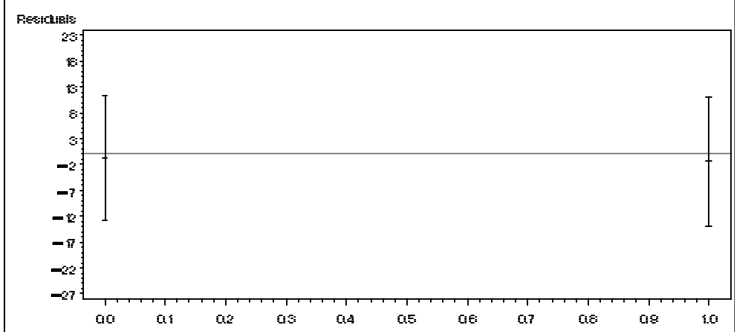
Plot of Residuals vs. Categorical Predictors



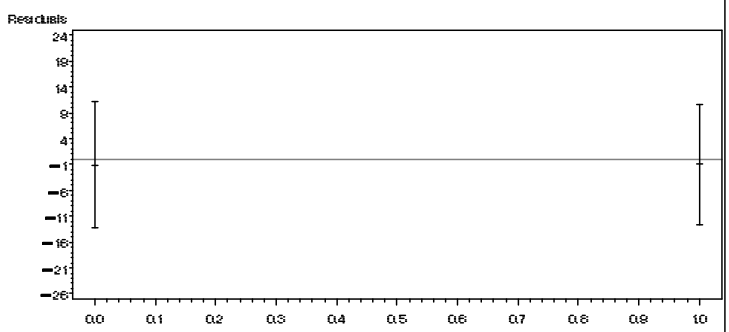
Plot of Residuals vs. Categorical Predictors



Plot of Residuals vs. Categorical Predictors



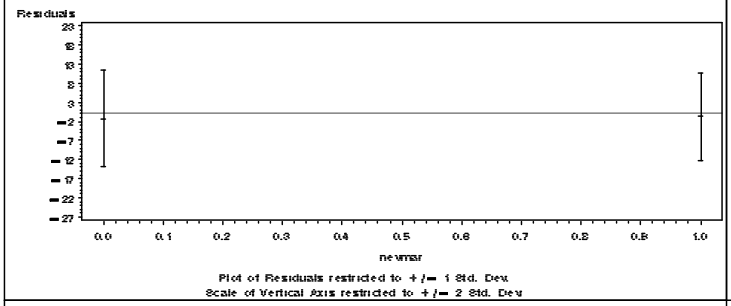
Plot of Residuals vs. Categorical Predictors



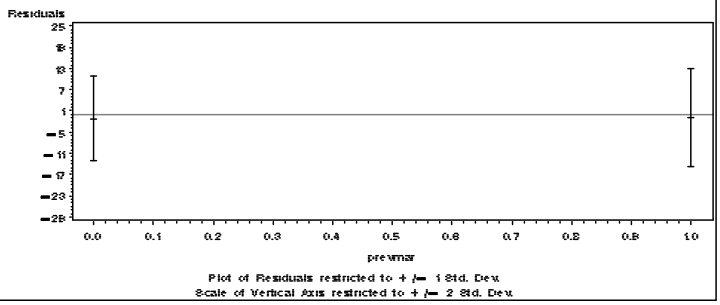
Regression Diagnostic Plots

Standard Deviation Plots

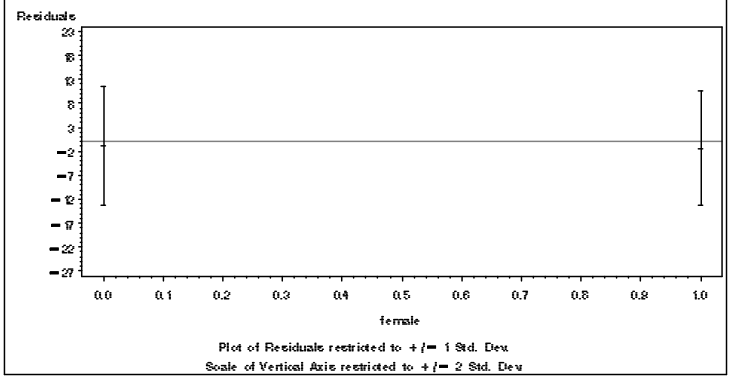
Plot of Residuals vs. Categorical Predictors



Plot of Residuals vs. Categorical Predictors



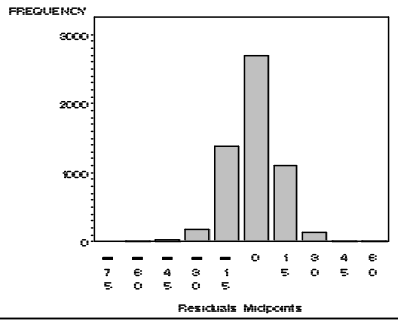
Plot of Residuals vs. Categorical Predictors



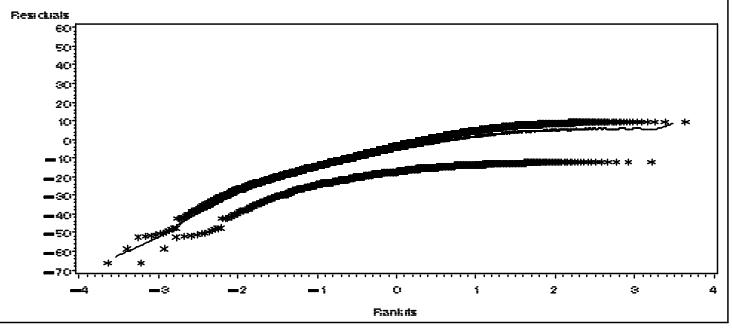
Regression Diagnostic Plots

Histograms and Normal Probability Plot

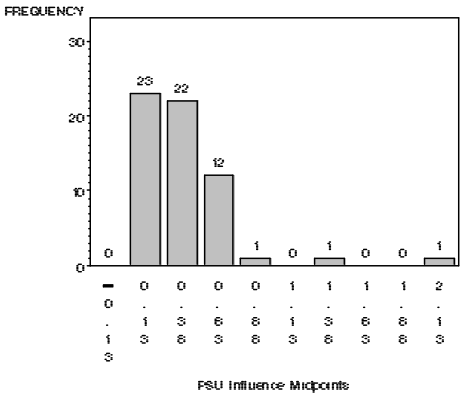
Histogram of Residuals



Normal Probability Plot of the Residuals



Histogram of Influences



```
* note: add agec*agec to account for curvilinear plot from above model ;
%regress (name=ex7_5, setup=new, dir=. ) ;
title "Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots : NHANES" ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec agecsq  ;
link linear ;
plots ;
run ;

IVEware Setup Checker, Wed Mar 10 11:17:52 2010                                    1

Setup listing:

title "Analysis Example 7.5: Weighted and With Design Correction and Diagnostic
 Plots : NHANES" ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec ;
link linear ;
plots ;
run ;
```

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

Regression type: Linear
Dependent variable: bpxdi1_1
Predictors: other
black
white
othhis
nevmar
prevmar
female
agec
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

By variable	Code
age18p	0

Valid cases	948
Sum weights	15536185.38
Replicates	15
Degr freedom	15

Sum of squares:

Model	61676533.22
Error	1663392602
Total	1725069135
R-square	0.03575
F-value	0.06180
P-value	0.99990

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	65.5540906	12.1580282	5.39184	0.00007
other	0.3738570	1.8700034	0.19992	0.84423
black	1.3781440	1.1172089	1.23356	0.23635
white	2.2953531	0.8454164	2.71506	0.01597
othhis	1.6420044	1.8698021	0.87817	0.39370
nevmar	-5.2751159	7.0349046	-0.74985	0.46494
prevmar	8.8483620	8.1639918	1.08383	0.29556
female	2.9326236	0.6470376	4.53238	0.00040
agec	0.0954309	0.3960080	0.24098	0.81283

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	65.5540906	39.6399355	91.4682457
other	0.3738570	-3.6119503	4.3596643
black	1.3781440	-1.0031240	3.7594120
white	2.2953531	0.4933954	4.0973108
othhis	1.6420044	-2.3433738	5.6273825
nevmar	-5.2751159	-20.2696204	9.7193887

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
prevmar	8.8483620	-8.5527285	26.2494525
female	2.9326236	1.5534992	4.3117480
agec	0.0954309	-0.7486379	0.9394996

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.58730	68.5685628	4.59845
other	1.21247	1.3275406	255.09314
black	1.60871	1.4987521	8.75148
white	0.87999	1.7145007	-25.30558
othhis	0.75812	1.5469666	-5.78791
nevmar	6.50688	0.1048492	-101.98762
prevmar	1.45747	8.6242939	-2.53231
female	0.85570	2.2429569	-23.51705
agec	1.53688	0.3517940	268.63757

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

By variable	Code
age18p	1
Valid cases	4578
Sum weights	189848121.7
Replicates	15
Degr freedom	15

Sum of squares:

Model	1124482773
Error	2.768755958e+010
Total	2.881204235e+010
R-square	0.03903
F-value	0.06769
P-value	0.99985

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	70.6781198	0.5004355	141.23323	0.00000
other	1.9584469	0.9876410	1.98295	0.06599
black	4.4086312	0.7710528	5.71768	0.00004
white	2.1919061	0.6082368	3.60371	0.00261
othhis	1.7865088	1.1796441	1.51445	0.15070
nevmar	-4.3562322	0.5553539	-7.84407	0.00000
prevmar	0.0172510	0.7115071	0.02425	0.98098
female	-2.9973392	0.3346950	-8.95543	0.00000
agec	0.0170349	0.0212581	0.80134	0.43545

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	70.6781198	69.6114696	71.7447699
other	1.9584469	-0.1466545	4.0635484
black	4.4086312	2.7651754	6.0520870
white	2.1919061	0.8954835	3.4883287
othhis	1.7865088	-0.7278364	4.3008540
nevmar	-4.3562322	-5.5399377	-3.1725266
prevmar	0.0172510	-1.4992865	1.5337884
female	-2.9973392	-3.7107228	-2.2839556
agec	0.0170349	-0.0282755	0.0623453

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.16148	69.6721134	-1.42336
other	0.96664	2.3119485	18.05010
black	1.87250	4.5081341	2.25700
white	1.53159	1.6719345	-23.72235
othhis	1.09876	1.8982318	6.25370
nevmar	1.18551	-4.2163560	-3.21094
prevmar	1.85638	0.3269070	1795.00553
female	0.79834	-3.4018135	13.49445
agec	3.44306	0.0389751	128.79527

Setup listing:

```
title "Analysis Example 7.5: Weighted and With Design Correction and Diagnostic
 Plots : NHANES" ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec agecsq  ;
link linear ;
plots ;
run ;
```


"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

Regression type:	Linear
Dependent variable:	bpxdi1_1
Predictors:	other
	black
	white
	othhis
	nevmar
	prevmar
	female
	agec
	agecsq
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

By variable	Code
age18p	0

Valid cases	948
Sum weights	15536185.38
Replicates	15
Degr freedom	15

Sum of squares:

Model	72274461.19
Error	1652794674
Total	1725069135
R-square	0.04190
F-value	0.06559
P-value	0.99994

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	-686.7610381	455.4506620	-1.50787	0.15236
other	0.6448923	1.8669146	0.34543	0.73457
black	1.5070108	1.1825710	1.27435	0.22193
white	2.3215836	0.8793746	2.64004	0.01856
othhis	1.8078572	1.9699882	0.91770	0.37330
nevmar	-5.5548960	7.2290172	-0.76842	0.45417
prevmar	8.1422663	7.9380373	1.02573	0.32128
female	2.9367665	0.6221827	4.72010	0.00027
agec	-49.9587820	30.5276811	-1.63651	0.12254
agecsq	-0.8312272	0.5093437	-1.63196	0.12350

Variable	Estimate	95% Confidence Interval Lower	Upper
Intercept	-686.7610381	-1657.5285740	284.0064978
other	0.6448923	-3.3343314	4.6241160
black	1.5070108	-1.0135730	4.0275945
white	2.3215836	0.4472460	4.1959212

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

Variable	Estimate	95% Confidence Interval Lower	Upper
othhis	1.8078572	-2.3910621	6.0067765
nevmar	-5.5548960	-20.9631406	9.8533487
prevmar	8.1422663	-8.7772148	25.0617475
female	2.9367665	1.6106189	4.2629141
agec	-49.9587820	-115.0268217	15.1092577
agecsq	-0.8312272	-1.9168649	0.2544104

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	2.09343	-465.6552258	-32.19545
other	1.20978	1.4145464	119.34614
black	1.80077	1.5797492	4.82667
white	0.95400	1.7097109	-26.35583
othhis	0.84316	1.5786635	-12.67764
nevmar	6.87383	-0.0811485	-98.53915
prevmar	1.38067	8.6395224	6.10710
female	0.79231	2.2729230	-22.60457
agec	2.12382	-35.2113493	-29.51920
agecsq	2.14189	-0.5909182	-28.91015

"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

By variable	Code
age18p	1

Valid cases	4578
Sum weights	189848121.7
Replicates	15
Degr freedom	15

Sum of squares:

Model	3847654448
Error	2.49643879e+010
Total	2.881204235e+010
R-square	0.13354
F-value	0.23119
P-value	0.98788

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	73.8590162	0.4569453	161.63644	0.00000
other	1.1885852	0.9326244	1.27445	0.22189
black	3.4651170	0.7859860	4.40862	0.00051
white	1.7805528	0.6331219	2.81234	0.01313
othhis	1.1891589	1.1116266	1.06975	0.30165
nevmar	-0.3432436	0.5668773	-0.60550	0.55390
prevmar	1.0404757	0.6158576	1.68947	0.11180
female	-2.7211812	0.3395184	-8.01483	0.00000
agec	0.1252717	0.0146878	8.52895	0.00000
agecsq	-0.0124771	0.0007422	-16.81167	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	73.8590162	72.8850628	74.8329696
other	1.1885852	-0.7992515	3.1764218
black	3.4651170	1.7898319	5.1404022
white	1.7805528	0.4310890	3.1300165
othhis	1.1891589	-1.1802108	3.5585286
nevmar	-0.3432436	-1.5515108	0.8650236
prevmar	1.0404757	-0.2721902	2.3531417
female	-2.7211812	-3.4448455	-1.9975169
agec	0.1252717	0.0939654	0.1565779
agecsq	-0.0124771	-0.0140590	-0.0108952

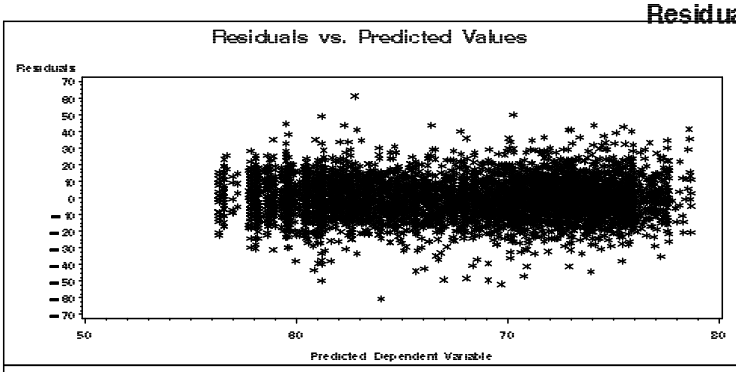
Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.95238	73.3588340	-0.67721
other	0.96048	1.8133740	52.56576
black	2.15747	3.6020177	3.95082
white	1.85015	1.6729851	-6.04125
othhis	1.08748	1.4687097	23.50827
nevmar	1.19354	0.1287138	-137.49927
prevmar	1.53684	1.4006010	34.61160

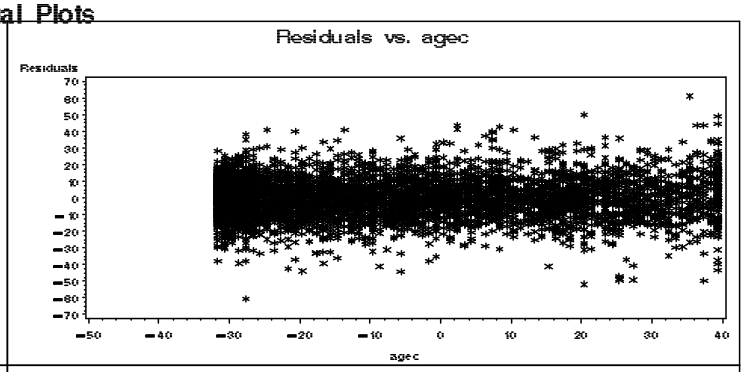
"Analysis Example 7.5: Weighted and With Design Correction and Diagnostic Plots :

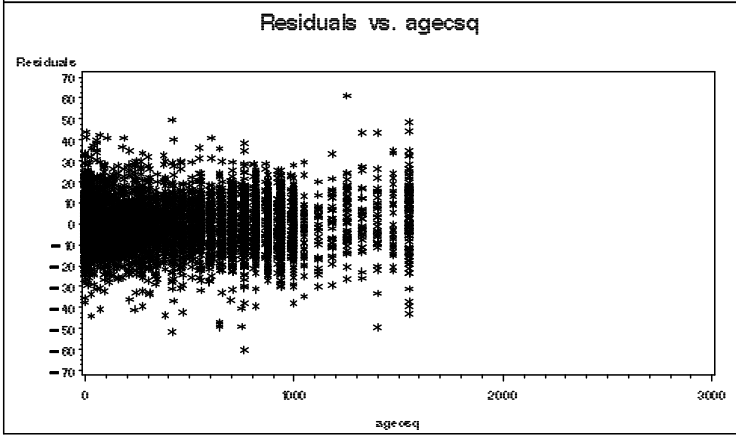
Variable	Design Effect	SRS Estimate	% Diff SRS v Est
female	0.91476	-3.1145495	14.45579
agec	1.55064	0.1450678	15.80257
agecsq	2.04751	-0.0118952	-4.66399

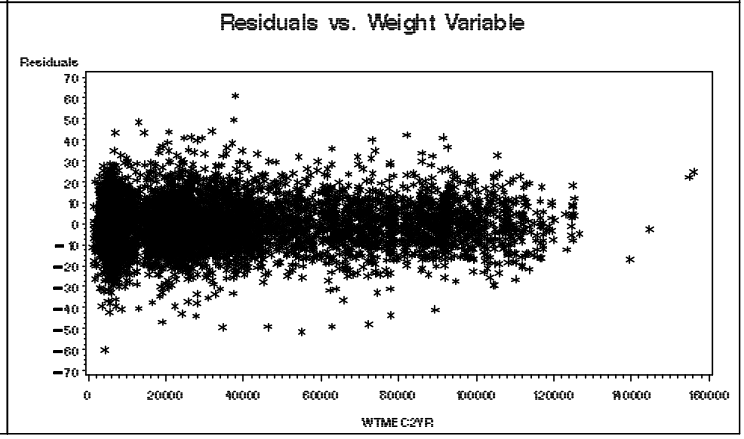
Regression Diagnostic Plots

Residual Plots









```
* note: no "chunk testing of variables" available in IVEware ;
* skip the interaction testing ;
* refit the final model

* do standard diagnostic plots for "final" model
* includes the age squared term
* residual analysis
* residual versus observed Y plot
* residual versus predicted y scatter plot  ;

%regress (name=ex7_5, setup=new, dir=. ) ;
title "Analysis Example 7.5: Final Model of Main Effects with Plots: NHANES " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec agecsq  ;
link linear ;
plots ;
run ;

IVEware Setup Checker, Wed Mar 10 11:34:47 2010                                    1

Setup listing:

title "Analysis Example 7.5: Final Model of Main Effects with Plots: NHANES " ;
datain  nhanes0506 ;
stratum sdmvstra ;
cluster sdmvpsu ;
weight wtmec2yr ;
by age18p ;
dependent bpxdi1_1 ;
predictor other black white othhis nevmar prevmar female agec agecsq ;
link linear ;
plots ;
run ;
```

"Analysis Example 7.5: Final Model of Main Effects with Plots: NHANES "

Regression type: Linear
Dependent variable: bpxdi1_1
Predictors: other
black
white
othhis
nevmar
prevmar
female
agec
agecsq
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

By variable	Code
age18p	0

Valid cases	948
Sum weights	15536185.38
Replicates	15
Degr freedom	15

Sum of squares:

Model	72274461.19
Error	1652794674
Total	1725069135
R-square	0.04190
F-value	0.06559
P-value	0.99994

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	-686.7610381	455.4506620	-1.50787	0.15236
other	0.6448923	1.8669146	0.34543	0.73457
black	1.5070108	1.1825710	1.27435	0.22193
white	2.3215836	0.8793746	2.64004	0.01856
othhis	1.8078572	1.9699882	0.91770	0.37330
nevmar	-5.5548960	7.2290172	-0.76842	0.45417
prevmar	8.1422663	7.9380373	1.02573	0.32128
female	2.9367665	0.6221827	4.72010	0.00027
agec	-49.9587820	30.5276811	-1.63651	0.12254
agecsq	-0.8312272	0.5093437	-1.63196	0.12350

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	-686.7610381	-1657.5285740	284.0064978
other	0.6448923	-3.3343314	4.6241160
black	1.5070108	-1.0135730	4.0275945
white	2.3215836	0.4472460	4.1959212

"Analysis Example 7.5: Final Model of Main Effects with Plots: NHANES "

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
othhis	1.8078572	-2.3910621	6.0067765
nevmar	-5.5548960	-20.9631406	9.8533487
prevmar	8.1422663	-8.7772148	25.0617475
female	2.9367665	1.6106189	4.2629141
agec	-49.9587820	-115.0268217	15.1092577
agecsq	-0.8312272	-1.9168649	0.2544104

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	2.09343	-465.6552258	-32.19545
other	1.20978	1.4145464	119.34614
black	1.80077	1.5797492	4.82667
white	0.95400	1.7097109	-26.35583
othhis	0.84316	1.5786635	-12.67764
nevmar	6.87383	-0.0811485	-98.53915
prevmar	1.38067	8.6395224	6.10710
female	0.79231	2.2729230	-22.60457
agec	2.12382	-35.2113493	-29.51920
agecsq	2.14189	-0.5909182	-28.91015

"Analysis Example 7.5: Final Model of Main Effects with Plots: NHANES "

By variable	Code
age18p	1

Valid cases	4578
Sum weights	189848121.7
Replicates	15
Degr freedom	15

Sum of squares:

Model	3847654448
Error	2.49643879e+010
Total	2.881204235e+010
R-square	0.13354
F-value	0.23119
P-value	0.98788

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	73.8590162	0.4569453	161.63644	0.00000
other	1.1885852	0.9326244	1.27445	0.22189
black	3.4651170	0.7859860	4.40862	0.00051
white	1.7805528	0.6331219	2.81234	0.01313
othhis	1.1891589	1.1116266	1.06975	0.30165
nevmar	-0.3432436	0.5668773	-0.60550	0.55390
prevmar	1.0404757	0.6158576	1.68947	0.11180
female	-2.7211812	0.3395184	-8.01483	0.00000
agec	0.1252717	0.0146878	8.52895	0.00000
agecsq	-0.0124771	0.0007422	-16.81167	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	73.8590162	72.8850628	74.8329696
other	1.1885852	-0.7992515	3.1764218
black	3.4651170	1.7898319	5.1404022
white	1.7805528	0.4310890	3.1300165
othhis	1.1891589	-1.1802108	3.5585286
nevmar	-0.3432436	-1.5515108	0.8650236
prevmar	1.0404757	-0.2721902	2.3531417
female	-2.7211812	-3.4448455	-1.9975169
agec	0.1252717	0.0939654	0.1565779
agecsq	-0.0124771	-0.0140590	-0.0108952

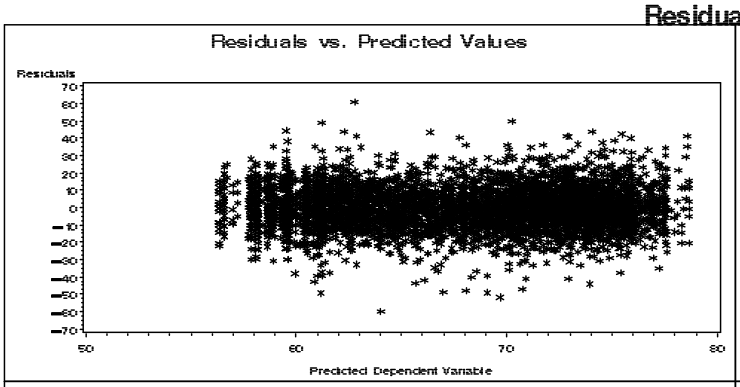
Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.95238	73.3588340	-0.67721
other	0.96048	1.8133740	52.56576
black	2.15747	3.6020177	3.95082
white	1.85015	1.6729851	-6.04125
othhis	1.08748	1.4687097	23.50827
nevmar	1.19354	0.1287138	-137.49927
prevmar	1.53684	1.4006010	34.61160

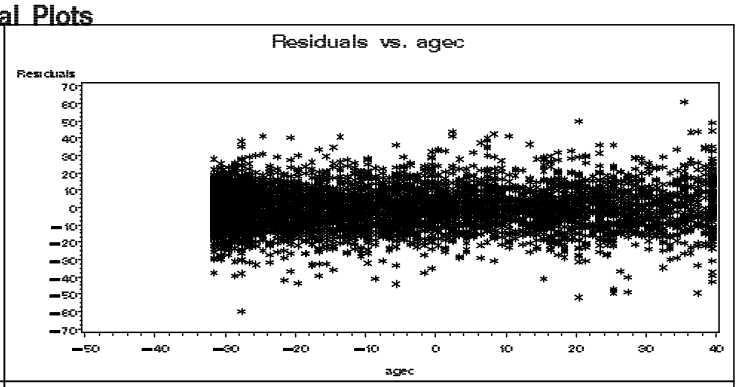
"Analysis Example 7.5: Final Model of Main Effects with Plots: NHANES "

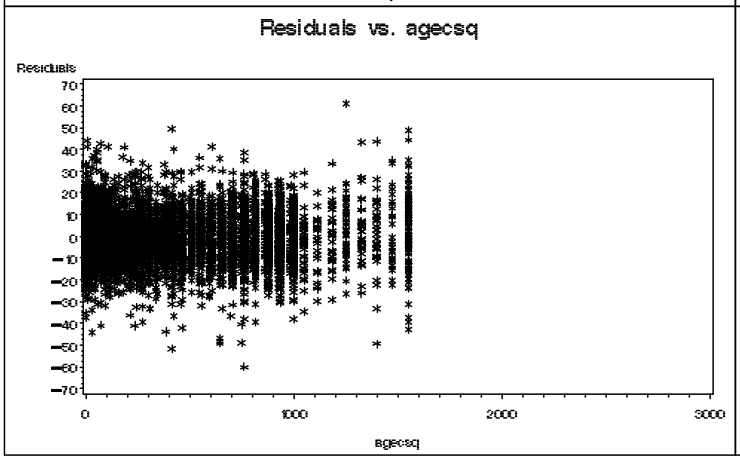
Variable	Design Effect	SRS Estimate	% Diff SRS v Est
female	0.91476	-3.1145495	14.45579
agec	1.55064	0.1450678	15.80257
agecsq	2.04751	-0.0118952	-4.66399

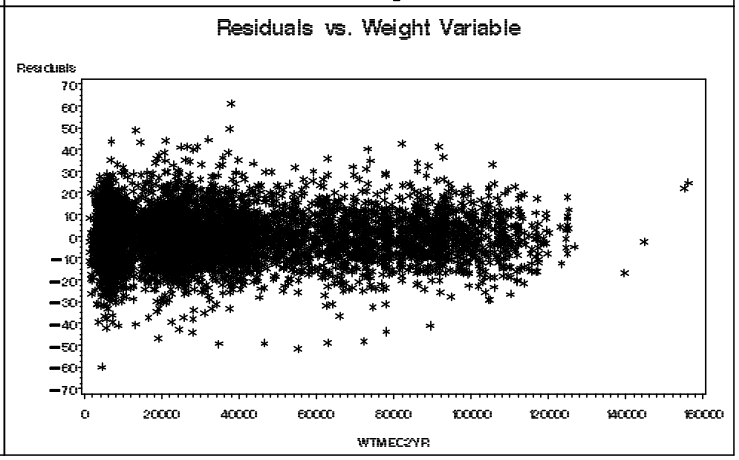
Regression Diagnostic Plots

Residual Plots



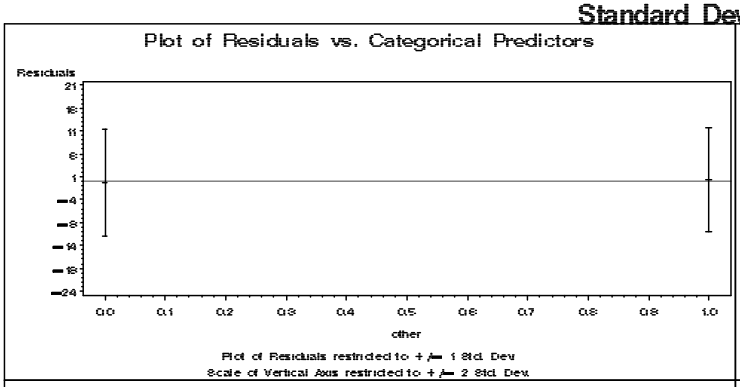


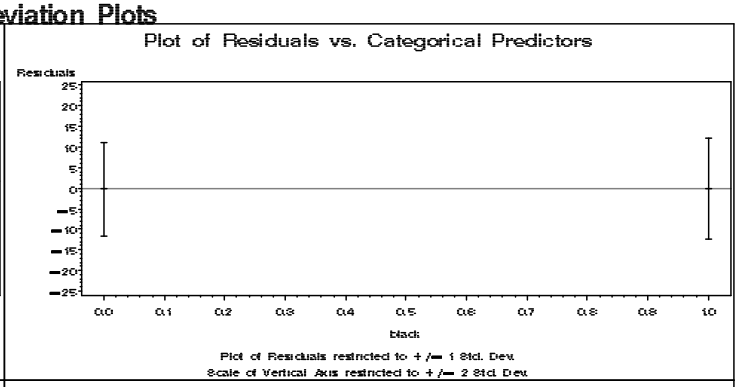


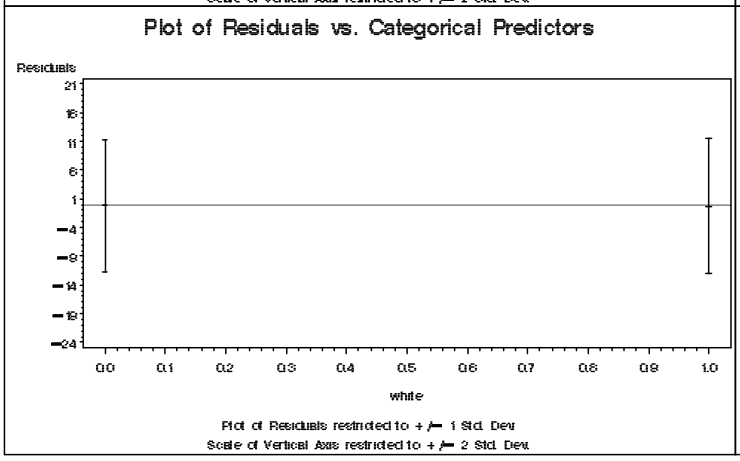


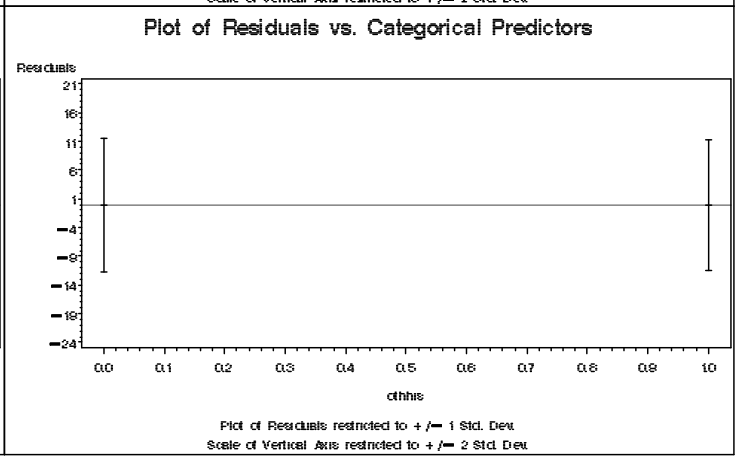
Regression Diagnostic Plots

Standard Deviation Plots





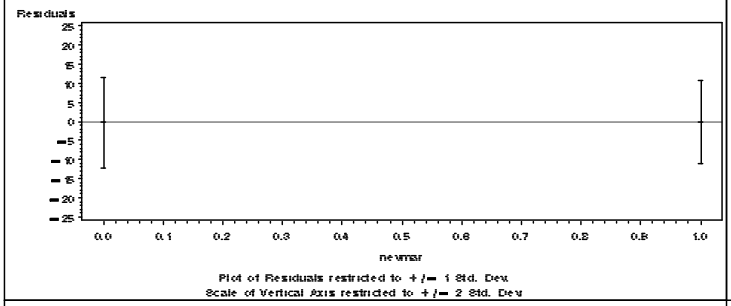




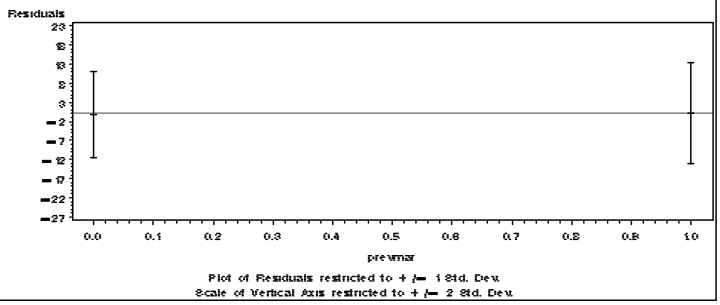
Regression Diagnostic Plots

Standard Deviation Plots

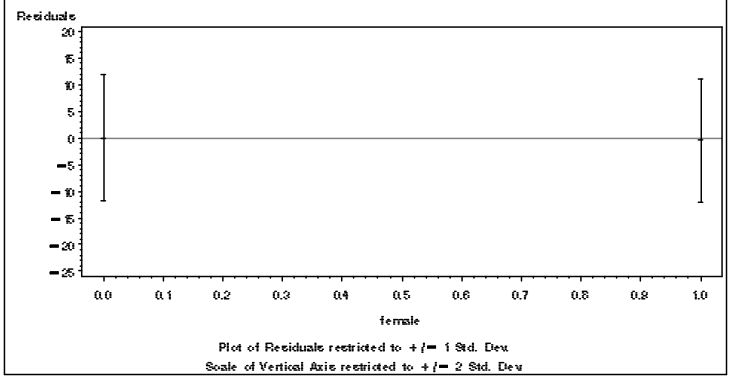
Plot of Residuals vs. Categorical Predictors



Plot of Residuals vs. Categorical Predictors



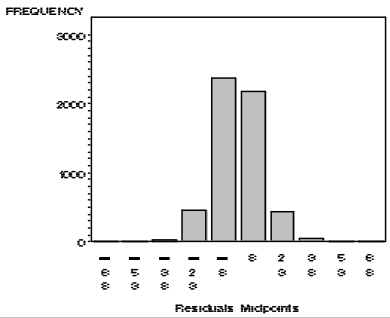
Plot of Residuals vs. Categorical Predictors



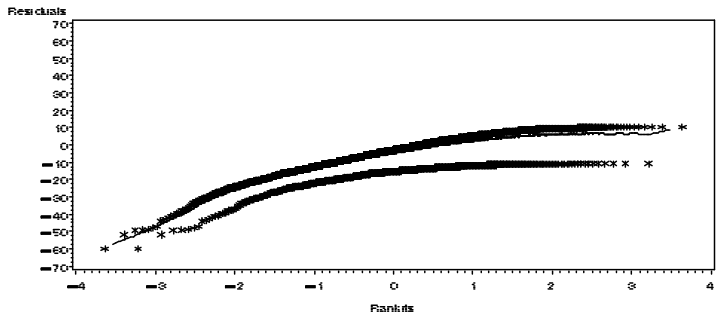
Regression Diagnostic Plots

Histograms and Normal Probability Plot

Histogram of Residuals



Normal Probability Plot of the Residuals



Histogram of Influences