IVEware Analysis Example Replication C7

```
* IVEware Analysis Examples Replication for ASDA 2nd Edition
* Berglund April 2017
* Chapter 7 ;
* Note: Run IVEware code in REGULAR PROGRAM EDITOR!!!! ;

libname d "P:\ASDA 2\Data sets\nhanes 2011_2012\" ;
ods listing ;
ods graphics off ;
options nodate nonumber ls=125 ps=68 ;

*set options and location to call IVEware from SAS session ;
options set=srclib "C:\iveware_14jan2017\sas" sasautos=('!srclib' sasautos) mautosource ;

ods rtf style=normalprinter bodytitle ;
title ;

data c7_nhanes ;
  set d.nhanes1112_sub_8aug2016 ;
  bpxdi1_1=bpxdi1 ;
  if bpxdi1=0 then bpxdi1_1=. ;
  agec=age-46.36 ;
  agecsq=agec*agec ;
* reverse coding of class variables to match lowest omitted group of Stata.  IVEware omits highest category by default and does not allow user
to specify omitted group in
code ;
  rev_race=6-ridreth1 ;
  rev_marcat=4-marcat ;
  rev_gender=3-riagendr ;
run ;

* Section 7.5: Application of Linear Regression, Bivariate relationships ;
* Note: IVEware does not offer multivariate tests of groups of variables or levels of class variables but the testing process is demonstrated
here ;

%regress  (setup=new, name="Example 7.5 Bivariate Tests", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5.1 Bivariate Testing: Race" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race ;
 dependent bpxdi1_1 ;
 predictor rev_race ;
run;

%regress  (setup=new, name="Example 7.5 Bivariate Tests", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5.1 Bivariate Testing: Age " ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 dependent bpxdi1_1 ;
 predictor agec ;
run;

%regress  (setup=new, name="Example 7.5 Bivariate Tests", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5.1 Bivariate Testing: Gender " ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 categorical rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_gender  ;
run;

%regress  (setup=new, name="Example 7.5 Bivariate Tests", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5.1 Bivariate Testing: Marital " ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_marcat  ;
 dependent bpxdi1_1 ;
 predictor rev_marcat ;
run;
%regress  (setup=new, name="Example 7.5 Naive Analysis", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5 Naive Analysis Table 7.2 " ;
 datain c7_nhanes ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec ;
run;

%regress  (setup=new, name="Example 7.5 Weighted Regression ", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5 Weighted Regression" ;
 datain c7_nhanes ;
 weight wtmec2yr ;
 by age18p ;
```

```
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec ;
run;

%regress (setup=new, name="Example 7.5 All Design Features or Correct Regression", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware
files) ;
 title "Example 7.5 Design-Based and Weighted Regression" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec ;
 plots ;   * diagnostic plots are stored in DIR location, see output for complete list of plots ;
run;

%regress (setup=new, name="Example 7.5 All Design Features or Correct Regression", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware
files) ;
 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq  ;
 plots ;   * diagnostic plots are stored in DIR location, see output for complete list of plots ;
run;

%regress (setup=new, name="Example 7.5 All Design Features or Correct Regression", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware
files) ;
 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared and Gender Interactions" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq rev_gender*agec rev_gender*agecsq ;
run;

%regress (setup=new, name="Example 7.5 All Design Features or Correct Regression", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware
files) ;
 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared and Race Interactions" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq rev_race*agec rev_race*agecsq ;
run;

ods text="Marginal Predicted Plots are Not Available in IVEware " ;

data c7_nhanes_i ;
  set c7_nhanes ;
  r1_age=(ridreth1=1)*agec ;
  r2_age=(ridreth1=2)*agec ;
  r3_age=(ridreth1=3)*agec ;
  r4_age=(ridreth1=4)*agec ;
  r5_age=(ridreth1=5)*agec ;
  r1_age2=(ridreth1=1)*agecsq ;
  r2_age2=(ridreth1=2)*agecsq ;
  r3_age2=(ridreth1=3)*agecsq ;
  r4_age2=(ridreth1=4)*agecsq ;
  r5_age2=(ridreth1=5)*agecsq ;
  f_age=(riagendr=2)*agec ;
  f_age2=(riagendr=2)*agecsq ;
run ;

 %regress (setup=new, name="Example 7.5 Final Model", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5 Final Model with Main Effects and Interactions" ;
 datain c7_nhanes_i ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq r2_age r3_age r4_age r5_age r2_age2 r3_age2 r4_age2 r5_age2 f_age f_age2 ;
 run;

title " Use Pfeffermann method (Q weighted)" ;
proc glm data=c7_nhanes_i  ;
 class ridreth1 (ref=first) riagendr (ref=first) ;
 model wtmec2yr=ridreth1 riagendr agec / solution ;
 output out=outq predicted=w_hat ;
run ;

* create new weight and re-run final model ;
data c7_nhanes_q ;
```

2

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 set outq ;
 q_wtmec2yr=wtmec2yr/w_hat ;
run ;
proc means ;
 var q_wtmec2yr ;
run ;

%regress (setup=new, name="Example 7.5 Final Model with Q weight", dir=P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files) ;
 title "Example 7.5 Final Model with Main Effects and Interactions with Q Weight" ;
 datain c7_nhanes_q ;
 stratum sdmvstra ; cluster sdmvpsu ; weight q_wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq r2_age r3_age r4_age r5_age r2_age2 r3_age2 r4_age2 r5_age2 f_age f_age2 ;
run;

ods rtf close ;
```

```
Output IVEware Analysis Example Replication C7

* Section 7.5: Application of Linear Regression, Bivariate relationships ;
* Note: IVEware does not offer multivariate tests of groups of variables or levels of class variables but the testing process is demonstrated
here ;
```

```
┌─────────────────────────────────────────────────────────────────────────────────────────────────┐
│ IVEware Setup Checker, Tue May 09 14:54:35 2017                                    1              │
│                                                                                                   │
│ Setup listing:                                                                                    │
│                                                                                                   │
│  title "Example 7.5.1 Bivariate Testing: Race" ;                                                  │
│  datain c7_nhanes ;                                                                               │
│  stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;                                           │
│  by age18p ;                                                                                      │
│  class rev_race ;                                                                                 │
│  dependent bpxdi1_1 ;                                                                             │
│  predictor rev_race ;                                                                             │
│ run;                                                                                              │
└─────────────────────────────────────────────────────────────────────────────────────────────────┘
```

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┌─────────────────────────────────────────────────────────────────────────────────────────────────┐
│ IVEware Jackknife Regression Procedure, Tue May 09 14:54:36 2017                   1              │
│                                                                                                   │
│ "Example 7.5.1 Bivariate Testing: Race"                                                           │
│                                                                                                   │
│ Regression type:        Linear                                                                    │
│ Dependent variable:     bpxdi1_1                                                                  │
│ Predictors:             rev_race                                                                  │
│ Cat. var. ref. codes:   rev_race  5                                                               │
│ By variables:           age18p  Age >=18: 1=Yes 0=No                                              │
│ 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            1564                                                                       │
│ Sum weights       37760598.03                                                                     │
│ Replicates               17                                                                       │
│                                                                                                   │
│ Degr freedom             17                                                                       │
│                                                                                                   │
│ Sum of squares:                                                                                   │
│   Model          37514076.69                                                                      │
│   Error           5056315401                                                                      │
│   Total           5093829478                                                                      │
│   R-square           0.00736                                                                      │
│   F-value            0.02523                                                                      │
│   P-value            0.99965                                                                      │
└─────────────────────────────────────────────────────────────────────────────────────────────────┘
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	55.8381383	0.5764291	96.86905	0.00000
rev_race.1	2.5456195	1.0014635	2.54190	0.02106
rev_race.2	1.5346097	0.8201595	1.87111	0.07864
rev_race.3	2.8288303	1.6629899	1.70105	0.10715
rev_race.4	1.7490988	1.5398020	1.13592	0.27175

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	55.8381383	54.6219791	57.0542974
rev_race.1	2.5456195	0.4327160	4.6585230
rev_race.2	1.5346097	-0.1957759	3.2649953
rev_race.3	2.8288303	-0.6797721	6.3374328
rev_race.4	1.7490988	-1.4995999	4.9977975

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.73167	55.2000000	-1.14284
rev_race.1	1.06950	2.3018051	-9.57780
rev_race.2	0.89705	1.8463576	20.31447
rev_race.3	3.37608	2.2877384	-19.12776
rev_race.4	1.92295	1.5325581	-12.38013

"Example 7.5.1 Bivariate Testing: Race"

By variable	Code
age18p	1

Valid cases	5112
Sum weights	212747914.3
Replicates	17

Degr freedom	17

Sum of squares:

Model	137998267.1
Error	2.771066455e+010
Total	2.784866282e+010
R-square	0.00496
F-value	0.01693
P-value	0.99987

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	69.8040886	0.4444642	157.05223	0.00000
rev_race.1	1.3056136	0.7245169	1.80205	0.08930
rev_race.2	2.2902279	0.6851113	3.34286	0.00386
rev_race.3	2.1846975	0.7788088	2.80518	0.01217
rev_race.4	-0.1548915	1.3801411	-0.11223	0.91196

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	69.8040886	68.8663510	70.7418261
rev_race.1	1.3056136	-0.2229836	2.8342108
rev_race.2	2.2902279	0.8447692	3.7356866
rev_race.3	2.1846975	0.5415543	3.8278406
rev_race.4	-0.1548915	-3.0667351	2.7569520

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.70758	69.5166994	-0.41171
rev_race.1	1.18366	1.9861908	52.12700
rev_race.2	1.22820	2.2673586	-0.99856
rev_race.3	1.70015	1.4570997	-33.30428
rev_race.4	3.46732	0.2893842	-286.83024

```
IVEware Setup Checker, Tue May 09 14:54:36 2017                                    1

Setup listing:

 title "Example 7.5.1 Bivariate Testing: Age " ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 dependent bpxdi1_1 ;
 predictor agec ;
run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:37 2017                   1

"Example 7.5.1 Bivariate Testing: Age "

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             agec
By variables:           age18p  Age >=18: 1=Yes 0=No
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             1564
Sum weights       37760598.03
Replicates                17

Degr freedom              17

Sum of squares:
  Model          302971457.7
  Error          4790858020
  Total          5093829478
  R-square           0.05948
  F-value            0.53754
  P-value            0.59379
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	91.7923765	4.7444229	19.34743	0.00000
agec	1.0013268	0.1521093	6.58294	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	91.7923765	81.7825178	101.8022352
agec	1.0013268	0.6804043	1.3222493

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.99572	95.8266854	4.39504
agec	2.41028	1.1411570	13.96449

"Example 7.5.1 Bivariate Testing: Age "

By variable	Code
age18p	1

Valid cases	5112
Sum weights	212747914.3
Replicates	17
Degr freedom	17

Sum of squares:

Model	100594667.7
Error	2.774806815e+010
Total	2.784866282e+010
R-square	0.00361
F-value	0.03081
P-value	0.96971

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	71.6036334	0.5327586	134.40164	0.00000
agec	0.0394091	0.0187624	2.10042	0.05092

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	71.6036334	70.4796108	72.7276561
agec	0.0394091	-0.0001762	0.0789944

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	10.19311	70.9827924	-0.86705
agec	4.35783	0.0400226	1.55676

```
Setup listing:

 title "Example 7.5.1 Bivariate Testing: Gender " ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 categorical rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_gender  ;
run;
```

"Example 7.5.1 Bivariate Testing: Gender "

Regression type:	Linear
Dependent variable:	bpxdi1_1
Predictors:	rev_gender
Cat. var. ref. codes:	rev_gender 2
By variables:	age18p Age >=18: 1=Yes 0=No
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	1564
Sum weights	37760598.03
Replicates	17
Degr freedom	17

Sum of squares:

Model	12495589.16
Error	5081333888
Total	5093829478
R-square	0.00245
F-value	0.02090
P-value	0.97934

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	57.3739050	0.8471613	67.72489	0.00000
rev_gender	1.1515524	0.7628070	1.50962	0.14950

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	57.3739050	55.5865508	59.1612593
rev_gender	1.1515524	-0.4578299	2.7609347

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	4.21063	56.5406091	-1.45240
rev_gender	1.69383	0.6191847	-46.23044

"Example 7.5.1 Bivariate Testing: Gender "

By variable	Code
age18p	1

Valid cases	5112
Sum weights	212747914.3
Replicates	17

Degr freedom	17

Sum of squares:

Model	257471688.8
Error	2.759119113e+010
Total	2.784866282e+010
R-square	0.00925
F-value	0.07932
P-value	0.92408

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	72.7255304	0.6243090	116.48965	0.00000
rev_gender	-2.2004481	0.5761419	-3.81928	0.00137

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	72.7255304	71.4083534	74.0427073
rev_gender	-2.2004481	-3.4160014	-0.9848948

Variable	Design	SRS	% Diff
	Effect	Estimate	SRS v Est
Intercept	7.11622	72.1892940	-0.73734
rev_gender	3.00417	-2.3653003	7.49176

```
IVEware Setup Checker, Tue May 09 14:54:39 2017                                    1

Setup listing:

 title "Example 7.5.1 Bivariate Testing: Marital " ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_marcat  ;
 dependent bpxdi1_1 ;
 predictor rev_marcat ;
run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:39 2017                   1

"Example 7.5.1 Bivariate Testing: Marital "

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             rev_marcat
Cat. var. ref. codes:   rev_marcat  3
By variables:           age18p  Age >=18: 1=Yes 0=No
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                   1

Valid cases             4845
Sum weights       205481294.6
Replicates                17

Degr freedom              17

Sum of squares:
  Model           39502938.53
  Error         2.636315212e+010
  Total         2.640265506e+010
  R-square          0.00150
  F-value           0.00849
  P-value           0.99888
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	72.1795504	0.5319458	135.68967	0.00000
rev_marcat.1	-1.1210302	0.9162477	-1.22350	0.23783
rev_marcat.2	-0.1450875	0.7283967	-0.19919	0.84448

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	72.1795504	71.0572427	73.3018581
rev_marcat.1	-1.1210302	-3.0541441	0.8120837
rev_marcat.2	-0.1450875	-1.6818705	1.3916954

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	5.57812	72.1823529	0.00388
rev_marcat.1	4.61870	-1.7853919	59.26349
rev_marcat.2	2.95675	-1.2047410	730.35457

```
IVEware Setup Checker, Tue May 09 14:54:40 2017                                    1

Setup listing:

 title "Example 7.5 Naive Analysis Table 7.2 " ;
 datain c7_nhanes ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec ;
run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:41 2017                    1

"Example 7.5 Naive Analysis Table 7.2 "

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             rev_race
                        rev_gender
                        agec
Cat. var. ref. codes:   rev_race  5
                        rev_gender  2
By variables:           age18p  Age >=18: 1=Yes 0=No

By variable             Code
  age18p                   0

Valid cases             1564

Degr freedom            1557

Sum of squares:
  Model         17634.57205
  Error         192309.2106
  Total         209943.7826
  R-square          0.08400
  F-value          23.79590
  P-value           0.00000
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	94.0804770	3.4738435	27.08253	0.00000
rev_race.1	1.4924948	0.9326082	1.60034	0.10972
rev_race.2	1.1248033	0.8338059	1.34900	0.17753
rev_race.3	2.0894070	0.8692165	2.40378	0.01634
rev_race.4	1.4022612	1.0663884	1.31496	0.18872
rev_gender	0.5353279	0.5622939	0.95204	0.34122
agec	1.1339559	0.0984243	11.52110	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	94.0804770	87.2665962	100.8943579
rev_race.1	1.4924948	-0.3367992	3.3217888
rev_race.2	1.1248033	-0.5106918	2.7602983
rev_race.3	2.0894070	0.3844545	3.7943594
rev_race.4	1.4022612	-0.6894402	3.4939626
rev_gender	0.5353279	-0.5676013	1.6382571
agec	1.1339559	0.9408984	1.3270134

"Example 7.5 Naive Analysis Table 7.2 "

```
By variable              Code
  age18p                    1

Valid cases              5112

Degr freedom             5105

Sum of squares:
  Model          13100.84982
  Error          715577.7034
  Total          728678.5532
  R-square           0.01798
  F-value           15.57712
  P-value            0.00000
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	70.7835251	0.5478607	129.19986	0.00000
rev_race.1	2.0131114	0.6615166	3.04318	0.00235
rev_race.2	2.2054136	0.6154009	3.58370	0.00034
rev_race.3	1.1925411	0.5973842	1.99627	0.04596
rev_race.4	0.2551924	0.7379793	0.34580	0.72951
rev_gender	-2.4036772	0.3314882	-7.25117	0.00000
agec	0.0413555	0.0090343	4.57763	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	70.7835251	69.7094796	71.8575706
rev_race.1	2.0131114	0.7162509	3.3099720
rev_race.2	2.2054136	0.9989599	3.4118673
rev_race.3	1.1925411	0.0214080	2.3636742
rev_race.4	0.2551924	-1.1915684	1.7019531
rev_gender	-2.4036772	-3.0535384	-1.7538160
agec	0.0413555	0.0236444	0.0590666

Setup listing:

```
 title "Example 7.5 Weighted Regression" ;
 datain c7_nhanes ;
 weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec ;
run;
```

"Example 7.5 Weighted Regression"

```
Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             rev_race
                        rev_gender
                        agec
Cat. var. ref. codes:   rev_race  5
                        rev_gender  2
By variables:           age18p   Age >=18: 1=Yes 0=No
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             1564
Sum weights        37760598.03
Replicates              1563

Degr freedom            1563

Sum of squares:
  Model           341903587.1
  Error           4751925891
  Total           5093829478
  R-square            0.06712
  F-value            16.06553
  P-value            0.00000
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	89.0460111	4.9016667	18.16648	0.00000
rev_race.1	2.1855638	1.0314100	2.11901	0.03425
rev_race.2	1.0099916	0.8227229	1.22762	0.21977
rev_race.3	2.5036751	0.9165376	2.73167	0.00637
rev_race.4	1.6974638	1.0425780	1.62814	0.10370
rev_gender	0.8313817	0.8231411	1.01001	0.31265
agec	0.9875076	0.1427142	6.91948	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	89.0460111	79.4314386	98.6605836
rev_race.1	2.1855638	0.1624629	4.2086647
rev_race.2	1.0099916	-0.6037716	2.6237548
rev_race.3	2.5036751	0.7058952	4.3014549
rev_race.4	1.6974638	-0.3475430	3.7424706
rev_gender	0.8313817	-0.7832018	2.4459651
agec	0.9875076	0.7075751	1.2674401

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.99098	94.0804770	5.65378

"Example 7.5 Weighted Regression"

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
rev_race.1	1.22311	1.4924948	-31.71122
rev_race.2	0.97359	1.1248033	11.36759
rev_race.3	1.11185	2.0894070	-16.54640
rev_race.4	0.95584	1.4022612	-17.39080
rev_gender	2.14300	0.5353279	-35.60985
agec	2.10247	1.1339559	14.83009

"Example 7.5 Weighted Regression"

By variable	Code
age18p	1

Valid cases	5112
Sum weights	212747914.3
Replicates	5111

Degr freedom	5111

Sum of squares:

Model	485216560.3
Error	2.736344626e+010
Total	2.784866282e+010
R-square	0.01742
F-value	12.94710
P-value	0.00000

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	71.1486968	0.5673045	125.41535	0.00000
rev_race.1	1.2617860	0.7073369	1.78385	0.07451
rev_race.2	2.3019532	0.6462296	3.56213	0.00037
rev_race.3	1.9041990	0.6119813	3.11153	0.00187
rev_race.4	-0.1414120	0.7225675	-0.19571	0.84485
rev_gender	-2.2911357	0.4324372	-5.29819	0.00000
agec	0.0368234	0.0116148	3.17039	0.00153

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	71.1486968	70.0365415	72.2608521
rev_race.1	1.2617860	-0.1248916	2.6484636
rev_race.2	2.3019532	1.0350717	3.5688348
rev_race.3	1.9041990	0.7044586	3.1039394
rev_race.4	-0.1414120	-1.5579479	1.2751240
rev_gender	-2.2911357	-3.1388943	-1.4433772
agec	0.0368234	0.0140536	0.0595933

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.07224	70.7835251	-0.51325
rev_race.1	1.14333	2.0131114	59.54460
rev_race.2	1.10270	2.2054136	-4.19381
rev_race.3	1.04947	1.1925411	-37.37308
rev_race.4	0.95867	0.2551924	-280.46023
rev_gender	1.70181	-2.4036772	4.91204
agec	1.65286	0.0413555	12.30757

```
IVEware Setup Checker, Tue May 09 14:54:46 2017                                    1

Setup listing:

 title "Example 7.5 Design-Based and Weighted Regression" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec ;
 plots ;   * diagnostic plots are stored in DIR location, see output for complete
 list of plots ;
run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:47 2017                    1

"Example 7.5 Design-Based and Weighted Regression"

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             rev_race
                        rev_gender
                        agec
Cat. var. ref. codes:   rev_race  5
                        rev_gender  2
By variables:           age18p  Age >=18: 1=Yes 0=No
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             1564
Sum weights       37760598.03
Replicates               17

Degr freedom             17

Sum of squares:
  Model           341903587.1
  Error           4751925891
  Total           5093829478
  R-square          0.06712
  F-value           0.17474
  P-value           0.98714
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	89.0460111	5.5345311	16.08917	0.00000
rev_race.1	2.1855638	1.0209600	2.14069	0.04709
rev_race.2	1.0099916	0.8652156	1.16733	0.25919
rev_race.3	2.5036751	1.7842226	1.40323	0.17855
rev_race.4	1.6974638	1.5767499	1.07656	0.29672
rev_gender	0.8313817	0.6552919	1.26872	0.22164
agec	0.9875076	0.1548841	6.37578	0.00001

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	89.0460111	77.3691696	100.7228525
rev_race.1	2.1855638	0.0315263	4.3396014
rev_race.2	1.0099916	-0.8154540	2.8354371
rev_race.3	2.5036751	-1.2607061	6.2680562
rev_race.4	1.6974638	-1.6291882	5.0241158
rev_gender	0.8313817	-0.5511635	2.2139269
agec	0.9875076	0.6607307	1.3142845

Variable	Design	SRS	% Diff
	Effect	Estimate	SRS v Est
Intercept	2.53829	94.0804770	5.65378

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:47 2017                    2

"Example 7.5 Design-Based and Weighted Regression"
```

Variable	Design	SRS	% Diff
	Effect	Estimate	SRS v Est
rev_race.1	1.19845	1.4924948	-31.71122
rev_race.2	1.07676	1.1248033	11.36759
rev_race.3	4.21349	2.0894070	-16.54640
rev_race.4	2.18622	1.4022612	-17.39080
rev_gender	1.35813	0.5353279	-35.60985
agec	2.47633	1.1339559	14.83009

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:47 2017                        3

"Example 7.5 Design-Based and Weighted Regression"

By variable            Code
  age18p                  1


Valid cases            5112
Sum weights    212747914.3
Replicates               17

Degr freedom             17

Sum of squares:
  Model        485216560.3
  Error       2.736344626e+010
  Total       2.784866282e+010
  R-square         0.01742
  F-value          0.04306
  P-value          0.99985

Variable            Estimate           Std Error              T Test       Prob > |T|
Intercept          71.1486968          0.5269148           135.02884          0.00000
rev_race.1          1.2617860          0.7294101             1.72987          0.10177
rev_race.2          2.3019532          0.6495770             3.54377          0.00250
rev_race.3          1.9041990          0.8446299             2.25448          0.03765
rev_race.4         -0.1414120          1.2969128            -0.10904          0.91445
rev_gender         -2.2911357          0.5576433            -4.10860          0.00073
agec                0.0368234          0.0207501             1.77461          0.09387

Variable            Estimate            95% Confidence Interval
                                        Lower               Upper
Intercept          71.1486968          70.0370036          72.2603901
rev_race.1          1.2617860          -0.2771350           2.8007071
rev_race.2          2.3019532           0.9314654           3.6724411
rev_race.3          1.9041990           0.1221853           3.6862126
rev_race.4         -0.1414120          -2.8776591           2.5948352
rev_gender         -2.2911357          -3.4676605          -1.1146110
agec                0.0368234          -0.0069555           0.0806024

Variable             Design              SRS                % Diff
                     Effect            Estimate            SRS v Est
Intercept           0.92500           70.7835251           -0.51325
rev_race.1          1.21580            2.0131114           59.54460
rev_race.2          1.11415            2.2054136           -4.19381
rev_race.3          1.99906            1.1925411          -37.37308
rev_race.4          3.08840            0.2551924         -280.46023
rev_gender          2.82994           -2.4036772            4.91204
agec                5.27540            0.0413555           12.30757

Plot titles and image files

Histogram of Residuals\nage18p = 0
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p001.png
```

"Example 7.5 Design-Based and Weighted Regression"

Histogram of Residuals\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p002.png

Histogram of Residuals\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p003.png

Histogram of Influences\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p004.png

Histogram of Influences\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p005.png

Histogram of Influences\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p006.png

Normal Probability of the Residuals\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p007.png

Normal Probability of the Residuals\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p008.png

Normal Probability of the Residuals\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p009.png

Residuals vs. Predicted Values\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p010.png

Residuals vs. Predicted Values\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p011.png

Residuals vs. Predicted Values\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p012.png

Residuals vs. WTMEC2YR\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p013.png

Residuals vs. WTMEC2YR\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p014.png

Residuals vs. WTMEC2YR\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p015.png

Residuals vs. rev_race\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p016.png

Residuals vs. rev_race\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p017.png

Residuals vs. rev_race\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p018.png

Residuals vs. rev_gender\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p019.png

Residuals vs. rev_gender\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p020.png

Residuals vs. rev_gender\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p021.png

Residuals vs. agec\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p022.png
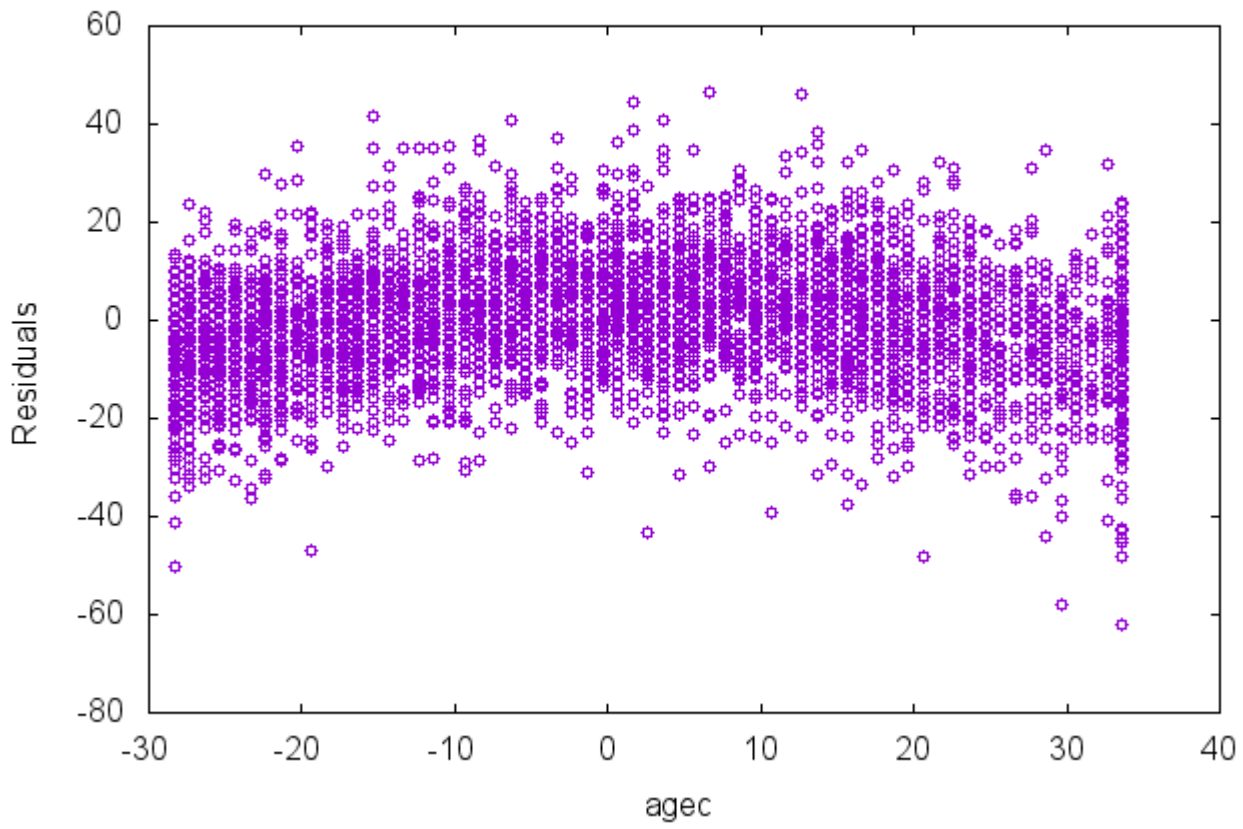
Residuals vs. agec\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p023.png

Residuals vs. agec\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p024.png

Regression Diagnostic Plots: Residuals vs. agec
age18p = 1

```
IVEware Setup Checker, Tue May 09 14:54:49 2017                              1

Setup listing:

 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
 Squared" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq  ;
 plots ;    * diagnostic plots are stored in DIR location, see output for complete
 list of plots ;
run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:49 2017             1

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared"

Regression type:       Linear
Dependent variable:    bpxdi1_1
Predictors:            rev_race
                       rev_gender
                       agec
                       agecsq
Cat. var. ref. codes:  rev_race  5
                       rev_gender  2
By variables:          age18p  Age >=18: 1=Yes 0=No
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            1564
Sum weights       37760598.03
Replicates               17

Degr freedom             17

Sum of squares:
  Model          351745863.7
  Error          4742083614
  Total          5093829478
  R-square           0.06905
  F-value            0.15762
  P-value            0.99395
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	8.5037141	48.1747451	0.17652	0.86197
rev_race.1	2.2156884	1.0268505	2.15775	0.04555
rev_race.2	1.0274362	0.8576237	1.19800	0.24735
rev_race.3	2.5281532	1.7897497	1.41257	0.17583
rev_race.4	1.7085867	1.5767421	1.08362	0.29366
rev_gender	0.8271233	0.6766733	1.22234	0.23826
agec	-3.7994757	2.8598143	-1.32857	0.20155
agecsq	-0.0706464	0.0423252	-1.66913	0.11340

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	8.5037141	-93.1361276	110.1435559
rev_race.1	2.2156884	0.0492229	4.3821538
rev_race.2	1.0274362	-0.7819919	2.8368643
rev_race.3	2.5281532	-1.2478892	6.3041956
rev_race.4	1.7085867	-1.6180487	5.0352222
rev_gender	0.8271233	-0.6005327	2.2547793
agec	-3.7994757	-9.8331573	2.2342059
agecsq	-0.0706464	-0.1599449	0.0186521

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared"

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.16029	66.0251757	676.42751
rev_race.1	1.21147	1.5028082	-32.17421
rev_race.2	1.05749	1.1282467	9.81185
rev_race.3	4.23711	2.0973170	-17.04154
rev_race.4	2.18533	1.4046611	-17.78813
rev_gender	1.44625	0.5243148	-36.60984
agec	1.16811	-0.5298008	-86.05595
agecsq	1.18261	-0.0244891	-65.33574

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared"

By variable	Code
age18p	1

Valid cases	5112
Sum weights	212747914.3
Replicates	17
Degr freedom	17

Sum of squares:
Model	3176483462
Error	2.467217936e+010
Total	2.784866282e+010
R-square	0.11406
F-value	0.27359
P-value	0.96609

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	74.4622832	0.5751553	129.46467	0.00000
rev_race.1	1.4095682	0.7070440	1.99361	0.06249
rev_race.2	2.5108637	0.7115265	3.52884	0.00258
rev_race.3	2.0844882	0.8940766	2.33144	0.03229
rev_race.4	0.2178048	1.1346528	0.19196	0.85005
rev_gender	-2.1692000	0.5108199	-4.24651	0.00054
agec	0.0748534	0.0162818	4.59737	0.00026
agecsq	-0.0116898	0.0007411	-15.77338	0.00000

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	74.4622832	73.2488115	75.6757549
rev_race.1	1.4095682	-0.0821644	2.9013007
rev_race.2	2.5108637	1.0096739	4.0120536
rev_race.3	2.0844882	0.1981512	3.9708253
rev_race.4	0.2178048	-2.1761037	2.6117133
rev_gender	-2.1692000	-3.2469359	-1.0914640
agec	0.0748534	0.0405018	0.1092050
agecsq	-0.0116898	-0.0132534	-0.0101262

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.15979	74.7270310	0.35555
rev_race.1	1.30150	2.2221709	57.64906
rev_race.2	1.52187	2.6660609	6.18103
rev_race.3	2.54203	2.1454865	2.92630
rev_race.4	2.69234	0.6596773	202.87546
rev_gender	2.70556	-2.4856958	14.59044
agec	3.52035	0.0925488	23.64010
agecsq	2.30876	-0.0130235	11.40901

Plot titles and image files

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared"

Histogram of Residuals\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p001.png

Histogram of Residuals\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p002.png

Histogram of Residuals\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p003.png

Histogram of Influences\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p004.png

Histogram of Influences\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p005.png

Histogram of Influences\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p006.png

Normal Probability of the Residuals\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p007.png

Normal Probability of the Residuals\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p008.png

Normal Probability of the Residuals\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p009.png

Residuals vs. Predicted Values\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p010.png

Residuals vs. Predicted Values\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p011.png

Residuals vs. Predicted Values\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p012.png

Residuals vs. WTMEC2YR\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p013.png

Residuals vs. WTMEC2YR\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p014.png

Residuals vs. WTMEC2YR\nAll by levels
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p015.png

Residuals vs. rev_race\nage18p = 0
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p016.png

Residuals vs. rev_race\nage18p = 1
   P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p017.png

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared"

Residuals vs. rev_race\nAll by levels
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p018.png

Residuals vs. rev_gender\nage18p = 0
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p019.png

Residuals vs. rev_gender\nage18p = 1
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p020.png

Residuals vs. rev_gender\nAll by levels
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p021.png

Residuals vs. agec\nage18p = 0
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p022.png

Residuals vs. agec\nage18p = 1
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p023.png

Residuals vs. agec\nAll by levels
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p024.png

Residuals vs. agecsq\nage18p = 0
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p025.png
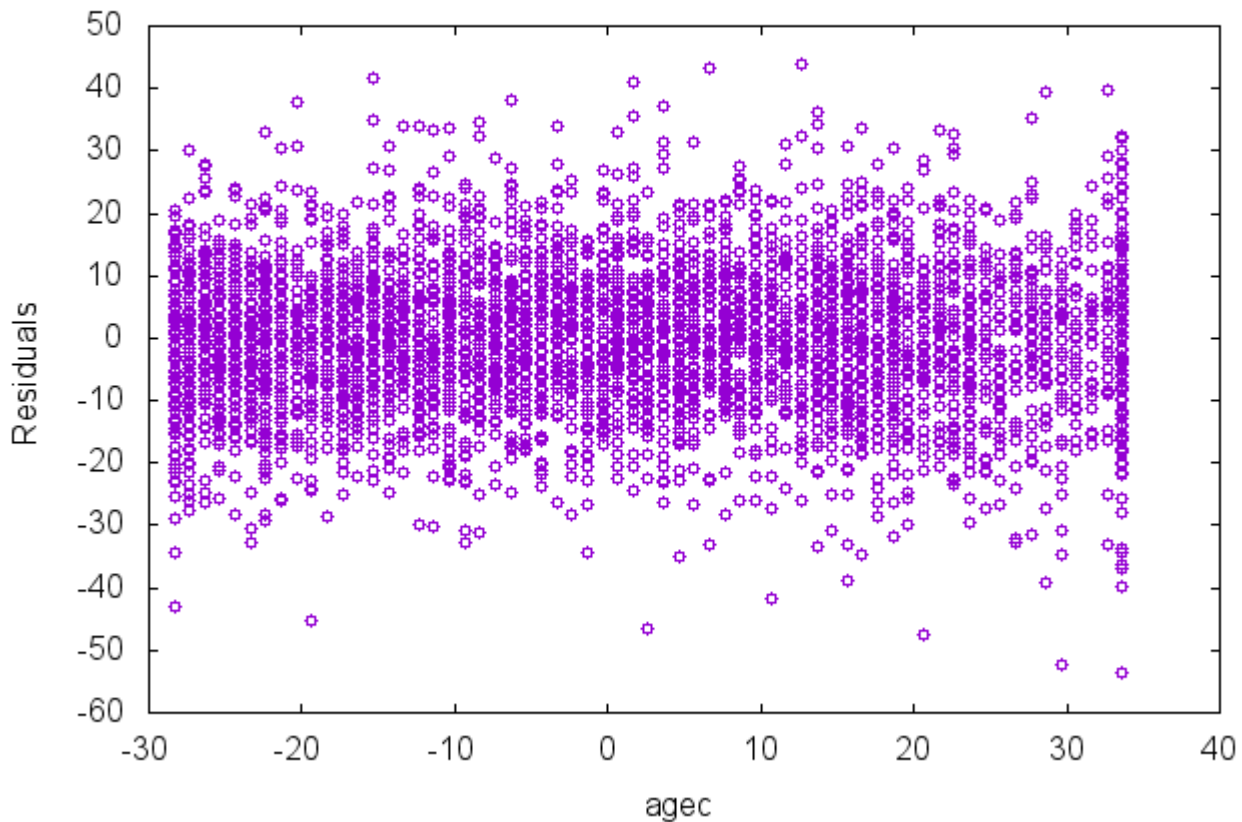
Residuals vs. agecsq\nage18p = 1
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p026.png

Residuals vs. agecsq\nAll by levels
  P:\ASDA 2\Analysis Example Replication\IVEware\IVEware files\Example 7.5 All Design Features or Correct Regression_p027.png

Regression Diagnostic Plots: Residuals vs. agec
age18p = 1

```
IVEware Setup Checker, Tue May 09 14:54:51 2017                              1

Setup listing:

 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
 Squared and Gender Interactions" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq rev_gender*agec rev_gender*agecsq ;
run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:52 2017             1

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared and Gender Interactions

Regression type:        Linear
Dependent variable:     bpxdi1_1
Predictors:             rev_race
                        rev_gender
                        agec
                        agecsq
                        XACT1   rev_gender*agec
                        XACT2   rev_gender*agecsq
Cat. var. ref. codes:   rev_race  5
                        rev_gender  2
By variables:           age18p  Age >=18: 1=Yes 0=No
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             1564
Sum weights       37760598.03
Replicates               17

Degr freedom             17

Sum of squares:
  Model         367514204.7
  Error         4726315273
  Total         5093829478
  R-square          0.07215
  F-value           0.13219
  P-value           0.99875
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	76.5363345	65.9302585	1.16087	0.26174
rev_race.1	2.2734529	1.0271661	2.21333	0.04084
rev_race.2	1.0335531	0.8447079	1.22356	0.23781
rev_race.3	2.6594576	1.7755646	1.49781	0.15252
rev_race.4	1.7248105	1.5444957	1.11675	0.27964
rev_gender	-119.4886155	87.0757126	-1.37224	0.18783
agec	0.0337739	3.9582636	0.00853	0.99329
agecsq	-0.0172094	0.0589902	-0.29173	0.77402
XACT1	-6.7546498	5.1777429	-1.30455	0.20943
XACT2	-0.0938696	0.0763044	-1.23020	0.23537

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	76.5363345	-62.5643712	215.6370401
rev_race.1	2.2734529	0.1063216	4.4405842
rev_race.2	1.0335531	-0.7486250	2.8157312
rev_race.3	2.6594576	-1.0866567	6.4055720
rev_race.4	1.7248105	-1.5337911	4.9834122
rev_gender	-119.4886155	-303.2023357	64.2251048
agec	0.0337739	-8.3174333	8.3849812
agecsq	-0.0172094	-0.1416679	0.1072492
XACT1	-6.7546498	-17.6787339	4.1694343
XACT2	-0.0938696	-0.2548578	0.0671185

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.10686	48.8327295	-36.19667
rev_race.1	1.21003	1.4874479	-34.57318
rev_race.2	1.02493	1.1139074	7.77457
rev_race.3	4.16156	2.0979112	-21.11507
rev_race.4	2.08618	1.4698982	-14.77915
rev_gender	0.93850	38.7937191	-132.46646
agec	1.14186	-1.6339718	-4937.96664
agecsq	1.17498	-0.0419509	143.76786
XACT1	0.94724	2.4464931	-136.21939
XACT2	0.95041	0.0385530	-141.07077

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared and Gender Interactions

By variable   Code
  age18p   1

Valid cases   5112
Sum weights   212747914.3
Replicates   17

Degr freedom   17

Sum of squares:
  Model   3283313505
  Error   2.456534932e+010
  Total   2.784866282e+010
  R-square   0.11790
  F-value   0.22722
  P-value   0.98926

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	74.9846596	0.6314548	118.74906	0.00000
rev_race.1	1.4274416	0.7106745	2.00857	0.06074
rev_race.2	2.5401774	0.7109003	3.57318	0.00234
rev_race.3	2.0990068	0.8784763	2.38937	0.02874
rev_race.4	0.2056088	1.1263041	0.18255	0.85731
rev_gender	-3.1707086	0.7576988	-4.18466	0.00062
agec	0.0481536	0.0157584	3.05574	0.00715
agecsq	-0.0135697	0.0008235	-16.47890	0.00000
XACT1	0.0476044	0.0220551	2.15843	0.04549
XACT2	0.0033007	0.0015697	2.10271	0.05069

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	74.9846596	73.6524063	76.3169129
rev_race.1	1.4274416	-0.0719507	2.9268339
rev_race.2	2.5401774	1.0403087	4.0400460
rev_race.3	2.0990068	0.2455837	3.9524300
rev_race.4	0.2056088	-2.1706856	2.5819031
rev_gender	-3.1707086	-4.7693135	-1.5721037
agec	0.0481536	0.0149063	0.0814009
agecsq	-0.0135697	-0.0153070	-0.0118323
XACT1	0.0476044	0.0010722	0.0941366
XACT2	0.0033007	-0.0000112	0.0066125

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.27449	75.2942623	0.41289
rev_race.1	1.31808	2.2276342	56.05782
rev_race.2	1.52286	2.6742966	5.27991
rev_race.3	2.45999	2.1426214	2.07786
rev_race.4	2.65925	0.6470319	214.69079
rev_gender	2.78445	-3.5961820	13.41887
agec	1.71246	0.0826679	71.67536

"Example 7.5 Design-Based and Weighted Regression With Agec and Agec Squared and G Gender Interactions

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
agecsq	1.42224	-0.0146464	7.93488
XACT1	1.64490	0.0191457	-59.78166
XACT2	2.61011	0.0031747	-3.81816

```
Setup listing:

 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
 Squared and Race Interactions" ;
 datain c7_nhanes ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq rev_race*agec rev_race*agecsq ;
run;
```

IVEware Jackknife Regression Procedure, Tue May 09 14:54:54 2017   1

 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
 Squared and Race Interactions" ;
```
Dependent variable:       bpxdi1_1
Predictors:               rev_race
                          rev_gender
                          agec
                          agecsq
                          XACT1  rev_race*agec
                          XACT2  rev_race*agecsq
Cat. var. ref. codes:     rev_race  5
                          rev_gender  2
By variables:             age18p  Age >=18: 1=Yes 0=No
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           1564
Sum weights      37760598.03
Replicates              17


Degr freedom            17


Sum of squares:
  Model         366718761.4
  Error         4727110716
  Total         5093829478
  R-square          0.07199
  F-value           0.08243
  P-value           1.00000
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	35.6435757	73.5529396	0.48460	0.63415
rev_race.1	121.7662081	169.3484445	0.71903	0.48189
rev_race.2	103.1174488	104.0212573	0.99131	0.33543
rev_race.3	-85.3518571	99.3978277	-0.85869	0.40246
rev_race.4	-19.4372834	162.2099963	-0.11983	0.90602
rev_gender	0.8835425	0.6666284	1.32539	0.20258
agec	-2.2528535	4.2651335	-0.52820	0.60419
agecsq	-0.0488025	0.0617255	-0.79064	0.44005
XACT1.1	7.0082837	10.0356785	0.69834	0.49441
XACT1.2	6.0443607	6.1705457	0.97955	0.34104
XACT1.3	-5.0386321	5.8256814	-0.86490	0.39913
XACT1.4	-1.5202287	9.5099227	-0.15986	0.87488
XACT2.1	0.1019298	0.1478461	0.68943	0.49985
XACT2.2	0.0888032	0.0915116	0.97040	0.34545
XACT2.3	-0.0716610	0.0854944	-0.83819	0.41355
XACT2.4	-0.0262492	0.1388766	-0.18901	0.85232

 title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
 Squared and Race Interactions" ;

		Lower	Upper
Intercept	35.6435757	-119.5395834	190.8267348
rev_race.1	121.7662081	-235.5278275	479.0602438
rev_race.2	103.1174488	-116.3482506	322.5831482
rev_race.3	-85.3518571	-295.0629714	124.3592571
rev_race.4	-19.4372834	-361.6705077	322.7959410
rev_gender	0.8835425	-0.5229207	2.2900056
agec	-2.2528535	-11.2514999	6.7457929
agecsq	-0.0488025	-0.1790318	0.0814269
XACT1.1	7.0082837	-14.1651500	28.1817174
XACT1.2	6.0443607	-6.9743545	19.0630759
XACT1.3	-5.0386321	-17.3297471	7.2524829
XACT1.4	-1.5202287	-21.5844146	18.5439573
XACT2.1	0.1019298	-0.2099983	0.4138580
XACT2.2	0.0888032	-0.1042694	0.2818757
XACT2.3	-0.0716610	-0.2520385	0.1087165
XACT2.4	-0.0262492	-0.3192532	0.2667547

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.45445	14.6989439	-58.76131
rev_race.1	1.23603	85.0820110	-30.12675
rev_race.2	0.57948	94.0644595	-8.77930
rev_race.3	0.47754	20.6945957	-124.24622
rev_race.4	0.89590	44.6628340	-329.77920
rev_gender	1.38286	0.4840724	-45.21232
agec	0.44216	-3.4087413	51.30772
agecsq	0.43340	-0.0645385	32.24434
XACT1.1	1.24384	4.7352120	-32.43407
XACT1.2	0.58517	5.4277221	-10.20188
XACT1.3	0.47255	0.9118809	-118.09779
XACT1.4	0.88992	2.1344983	-240.40640
XACT2.1	1.25176	0.0665575	-34.70267
XACT2.2	0.59741	0.0787694	-11.29894
XACT2.3	0.47431	0.0107445	-114.99356
XACT2.4	0.88696	0.0253409	-196.53953

  title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
  Squared and Race Interactions" ;
   age18p   1

Valid cases   5112
Sum weights   212747914.3
Replicates   17

Degr freedom   17

Sum of squares:
  Model   3245079241
  Error   2.460358358e+010
  Total   2.784866282e+010
  R-square   0.11653
  F-value   0.14014
  P-value   0.99986

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	74.8592013	0.7560723	99.01063	0.00000
rev_race.1	1.0847841	0.9569356	1.13360	0.27270
rev_race.2	3.3415833	0.9145967	3.65361	0.00197
rev_race.3	1.3989931	0.9089077	1.53920	0.14216
rev_race.4	0.2240800	0.8939565	0.25066	0.80508
rev_gender	-2.1684555	0.5096973	-4.25440	0.00054
agec	0.0611597	0.0284827	2.14726	0.04649
agecsq	-0.0136111	0.0015849	-8.58807	0.00000
XACT1.1	0.0190378	0.0421935	0.45120	0.65755
XACT1.2	0.0400011	0.0312358	1.28062	0.21752
XACT1.3	-0.0011241	0.0468701	-0.02398	0.98114
XACT1.4	0.0558551	0.0458544	1.21810	0.23982
XACT2.1	0.0017277	0.0025383	0.68067	0.50525
XACT2.2	-0.0019481	0.0016046	-1.21402	0.24134
XACT2.3	0.0029605	0.0014511	2.04020	0.05718
XACT2.4	0.0012086	0.0029125	0.41498	0.68334

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	74.8592013	73.2640279	76.4543748
rev_race.1	1.0847841	-0.9341738	3.1037420
rev_race.2	3.3415833	1.4119528	5.2712139
rev_race.3	1.3989931	-0.5186348	3.3166209
rev_race.4	0.2240800	-1.6620036	2.1101635
rev_gender	-2.1684555	-3.2438229	-1.0930880
agec	0.0611597	0.0010665	0.1212529
agecsq	-0.0136111	-0.0169550	-0.0102673
XACT1.1	0.0190378	-0.0699827	0.1080583
XACT1.2	0.0400011	-0.0259006	0.1059029
XACT1.3	-0.0011241	-0.1000114	0.0977631
XACT1.4	0.0558551	-0.0408893	0.1525995
XACT2.1	0.0017277	-0.0036276	0.0070830
XACT2.2	-0.0019481	-0.0053336	0.0014374

  title "Example 7.5 Design-Based and Weighted Regression With Agec and Agec
  Squared and Race Interactions" ;

		Lower	Upper
XACT2.3	0.0029605	-0.0001010	0.0060220
XACT2.4	0.0012086	-0.0049363	0.0073536

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.10893	75.1179306	0.34562
rev_race.1	1.15125	1.6866694	55.48435
rev_race.2	1.21317	2.9730162	-11.02972
rev_race.3	1.28734	1.1219299	-19.80447
rev_race.4	0.78269	0.2042760	-8.83790
rev_gender	2.69858	-2.4774702	14.25045
agec	0.88975	0.0825067	34.90368
agecsq	0.79409	-0.0145424	6.84181
XACT1.1	1.28044	0.0490246	157.51199
XACT1.2	0.82919	0.0188573	-52.85801
XACT1.3	1.91907	-0.0327472	2813.10297
XACT1.4	1.30153	0.0315707	-43.47743
XACT2.1	1.33628	0.0023374	35.28959
XACT2.2	0.62731	-0.0005779	-70.33531
XACT2.3	0.55503	0.0035742	20.72936
XACT2.4	1.46581	0.0016110	33.29087

```
IVEware Setup Checker, Tue May 09 14:54:55 2017                              1

Setup listing:

 title "Example 7.5 Final Model with Main Effects and Interactions" ;
 datain c7_nhanes_i ;
 stratum sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq r2_age r3_age r4_age r5_age r2_age2
 r3_age2 r4_age2 r5_age2 f_age f_age2 ;
 run;
```

```
IVEware Jackknife Regression Procedure, Tue May 09 14:54:56 2017             1

"Example 7.5 Final Model with Main Effects and Interactions"

Regression type:       Linear
Dependent variable:    bpxdi1_1
Predictors:            rev_race
                       rev_gender
                       agec
                       agecsq
                       r2_age
                       r3_age
                       r4_age
                       r5_age
                       r2_age2
                       r3_age2
                       r4_age2
                       r5_age2
                       f_age
                       f_age2
Cat. var. ref. codes:  rev_race  5
                       rev_gender  2
By variables:          age18p  Age >=18: 1=Yes 0=No
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            1564
Sum weights      37760598.03
Replicates               17

Degr freedom             17

Sum of squares:
  Model          379296829.5
  Error          4714532648
  Total          5093829478
  R-square          0.07446
  F-value           0.07598
  P-value           1.00000
```

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	77.5923601	58.8580690	1.31830	0.20489
rev_race.1	138.5032459	172.4564417	0.80312	0.43299
rev_race.2	114.7096411	102.7950435	1.11591	0.27999
rev_race.3	-57.0770348	107.0857726	-0.53300	0.60093
rev_race.4	-7.1593674	166.9046610	-0.04289	0.96629
rev_gender	-108.7102894	83.8824374	-1.29598	0.21230
agec	0.0908841	3.4607061	0.02626	0.97935
agecsq	-0.0164557	0.0507911	-0.32399	0.74990
r2_age	-0.7859718	9.7972021	-0.08022	0.93700
r3_age	-3.4269860	6.2626573	-0.54721	0.59135

"Example 7.5 Final Model with Main Effects and Interactions"

Variable	Estimate	Std Error	T Test	Prob > |T|
r4_age	6.7139296	6.1063518	1.09950	0.28688
r5_age	7.9637574	10.2120963	0.77984	0.44621
r2_age2	-0.0153326	0.1432045	-0.10707	0.91599
r3_age2	-0.0487730	0.0916056	-0.53242	0.60132
r4_age2	0.0984214	0.0906702	1.08549	0.29286
r5_age2	0.1155120	0.1503140	0.76847	0.45275
f_age	-6.1552980	4.9785828	-1.23636	0.23314
f_age2	-0.0855939	0.0732127	-1.16911	0.25849

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	77.5923601	-46.5873280	201.7720481
rev_race.1	138.5032459	-225.3480916	502.3545835
rev_race.2	114.7096411	-102.1689729	331.5882552
rev_race.3	-57.0770348	-283.0082973	168.8542277
rev_race.4	-7.1593674	-359.2974698	344.9787351
rev_gender	-108.7102894	-285.6867870	68.2662083
agec	0.0908841	-7.2105685	7.3923367
agecsq	-0.0164557	-0.1236156	0.0907042
r2_age	-0.7859718	-21.4562643	19.8843207
r3_age	-3.4269860	-16.6400397	9.7860678
r4_age	6.7139296	-6.1693483	19.5972075
r5_age	7.9637574	-13.5818855	29.5094003
r2_age2	-0.0153326	-0.3174678	0.2868027
r3_age2	-0.0487730	-0.2420439	0.1444978
r4_age2	0.0984214	-0.0928761	0.2897189
r5_age2	0.1155120	-0.2016228	0.4326468
f_age	-6.1552980	-16.6591909	4.3485949
f_age2	-0.0855939	-0.2400591	0.0688714

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.25238	-3.1512010	-104.06123
rev_race.1	1.27680	91.3212609	-34.06562
rev_race.2	0.56479	95.9832947	-16.32500
rev_race.3	0.55154	26.8953542	-147.12115
rev_race.4	0.94474	53.6073316	-848.77191
rev_gender	0.85984	31.0794901	-128.58928
agec	0.25147	-4.5494751	-5105.79718
agecsq	0.25257	-0.0825059	401.38155
r2_age	0.94045	2.6846033	-441.56483
r3_age	0.54356	1.2752520	-137.21206
r4_age	0.57198	5.5405527	-17.47675
r5_age	1.28308	5.1063726	-35.87986
r2_age2	0.93874	0.0337667	-320.22876
r3_age2	0.54213	0.0160338	-132.87435
r4_age2	0.58541	0.0804046	-18.30575
r5_age2	1.28915	0.0720265	-37.64590
f_age	0.86465	1.9837210	-132.22786
f_age2	0.86379	0.0316328	-136.95684

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"Example 7.5 Final Model with Main Effects and Interactions"

By variable	Code
age18p	1

Valid cases	5112
Sum weights	212747914.3
Replicates	17
Degr freedom	17

Sum of squares:

Model	3351149822
Error	2.4497513e+010
Total	2.784866282e+010
R-square	0.12033
F-value	0.12920
P-value	0.99996

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	75.3464498	0.8063234	93.44445	0.00000
rev_race.1	1.1441363	0.9521789	1.20160	0.24599
rev_race.2	3.4500173	0.9141666	3.77395	0.00151
rev_race.3	1.4611713	0.9141001	1.59848	0.12836
rev_race.4	0.2714371	0.8837139	0.30715	0.76246
rev_gender	-3.1953718	0.7581910	-4.21447	0.00058
agec	0.0392266	0.0346506	1.13206	0.27333
agecsq	-0.0152356	0.0016210	-9.39860	0.00000
r2_age	0.0496377	0.0475794	1.04326	0.31144
r3_age	-0.0044755	0.0493747	-0.09064	0.92884
r4_age	0.0345488	0.0329987	1.04697	0.30977
r5_age	0.0149059	0.0449252	0.33179	0.74410
r2_age2	0.0008365	0.0031196	0.26815	0.79181
r3_age2	0.0026623	0.0015290	1.74122	0.09971
r4_age2	-0.0023680	0.0017183	-1.37812	0.18604
r5_age2	0.0014446	0.0027547	0.52440	0.60677
f_age	0.0454944	0.0226467	2.00887	0.06070
f_age2	0.0033864	0.0015955	2.12246	0.04879

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	75.3464498	73.6452558	77.0476438
rev_race.1	1.1441363	-0.8647859	3.1530585
rev_race.2	3.4500173	1.5212941	5.3787405
rev_race.3	1.4611713	-0.4674115	3.3897541
rev_race.4	0.2714371	-1.5930365	2.1359107
rev_gender	-3.1953718	-4.7950152	-1.5957285
agec	0.0392266	-0.0338799	0.1123330
agecsq	-0.0152356	-0.0186557	-0.0118155
r2_age	0.0496377	-0.0507462	0.1500216
r3_age	-0.0044755	-0.1086470	0.0996961
r4_age	0.0345488	-0.0350725	0.1041701
r5_age	0.0149059	-0.0798779	0.1096897

"Example 7.5 Final Model with Main Effects and Interactions"

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
r2_age2	0.0008365	-0.0057453	0.0074184
r3_age2	0.0026623	-0.0005636	0.0058882
r4_age2	-0.0023680	-0.0059933	0.0012573
r5_age2	0.0014446	-0.0043674	0.0072566
f_age	0.0454944	-0.0022860	0.0932749
f_age2	0.0033864	0.0000202	0.0067525

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	1.20791	75.6588897	0.41467
rev_race.1	1.14253	1.7286150	51.08471
rev_race.2	1.21404	3.0564582	-11.40745
rev_race.3	1.30524	1.1522977	-21.13876
rev_race.4	0.76627	0.2911617	7.26672
rev_gender	2.79047	-3.6318464	13.65959
agec	1.23947	0.0755784	92.67145
agecsq	0.78421	-0.0160418	5.29140
r2_age	1.40232	0.0296270	-40.31355
r3_age	2.13443	-0.0348324	678.29655
r4_age	0.92703	0.0176383	-48.94682
r5_age	1.45483	0.0469147	214.73856
r2_age2	1.68309	0.0012681	51.58503
r3_age2	0.61753	0.0034287	28.78630
r4_age2	0.72007	-0.0008493	-64.13350
r5_age2	1.57729	0.0021814	51.00292
f_age	1.73194	0.0162975	-64.17700
f_age2	2.69219	0.0033111	-2.22164

Marginal Predicted Plots are Not Available in IVEware

Use Pfeffermann method (Q weighted), SetUp Done in SAS

The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
RIDRETH1	5	2 3 4 5 1
RIAGENDR	2	2 1

Number of Observations Read	9756
Number of Observations Used	9756

Use Pfeffermann method (Q weighted)

The GLM Procedure

Dependent Variable: WTMEC2YR   Full sample 2 year MEC exam weight

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	4.9921232E12	832020525279	1143.25	<.0001
Error	9749	7.0950221E12	727769222.08		
Corrected Total	9755	1.2087145E13			

R-Square	Coeff Var	Root MSE	WTMEC2YR Mean
0.413011	85.84395	26977.20	31425.86

Source	DF	Type I SS	Mean Square	F Value	Pr > F
RIDRETH1	4	4.8420933E12	1.2105233E12	1663.33	<.0001
RIAGENDR	1	8127518971.4	8127518971.4	11.17	0.0008
agec	1	141902371760	141902371760	194.98	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
RIDRETH1	4	4.4577235E12	1.1144309E12	1531.30	<.0001
RIAGENDR	1	7184507364.5	7184507364.5	9.87	0.0017
agec	1	141902371760	141902371760	194.98	<.0001

Parameter		Estimate		Standard Error	t Value	Pr > |t|
Intercept		24948.55321	B	826.842014	30.17	<.0001
RIDRETH1	**2**	-3410.17192	B	1105.368730	-3.09	0.0020
RIDRETH1	**3**	40374.18828	B	901.335647	44.79	<.0001
RIDRETH1	**4**	-9093.87677	B	903.702190	-10.06	<.0001
RIDRETH1	**5**	-8421.65485	B	989.514053	-8.51	<.0001
RIDRETH1	**1**	0.00000	B	.	.	.
RIAGENDR	**2**	1716.86166	B	546.428883	3.14	0.0017
RIAGENDR	**1**	0.00000	B	.	.	.
agec		158.49692		11.350705	13.96	<.0001

Note:	The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.

Use Pfeffermann method (Q weighted)

The MEANS Procedure

Analysis Variable : q_wtmec2yr				
N	**Mean**	**Std Dev**	**Minimum**	**Maximum**
9756	1.0052277	0.6685386	0	11.0659580

Setup listing:

```
 title "Example 7.5 Final Model with Main Effects and Interactions with Q Weight"
 ;
 datain c7_nhanes_q ;
 stratum sdmvstra ; cluster sdmvpsu ; weight q_wtmec2yr ;
 by age18p ;
 class rev_race rev_gender ;
 dependent bpxdi1_1 ;
 predictor rev_race rev_gender agec agecsq r2_age r3_age r4_age r5_age r2_age2
 r3_age2 r4_age2 r5_age2 f_age f_age2 ;
run;
```

Use Pfeffermann method (Q weighted)

"Example 7.5 Final Model with Main Effects and Interactions with Q Weight"

Regression type:	Linear
Dependent variable:	bpxdi1_1
Predictors:	rev_race
	rev_gender
	agec
	agecsq
	r2_age
	r3_age
	r4_age
	r5_age
	r2_age2
	r3_age2
	r4_age2
	r5_age2
	f_age
	f_age2
Cat. var. ref. codes:	rev_race 5
	rev_gender 2
By variables:	age18p Age >=18: 1=Yes 0=No
Stratum variable:	SDMVSTRA Masked variance pseudo-stratum
Cluster variable:	SDMVPSU Masked variance pseudo-PSU
Weight variable:	q_wtmec2yr

By variable	Code
age18p	0

Valid cases	1564
Sum weights	1513.363444
Replicates	17
Degr freedom	17

Sum of squares:

Model	16500.13063
Error	185169.5407
Total	201669.6713
R-square	0.08182
F-value	0.08416
P-value	1.00000

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	44.5323409	68.8842694	0.64648	0.52660
rev_race.1	137.1939456	179.9369920	0.76246	0.45624
rev_race.2	101.4720874	100.8643741	1.00603	0.32851
rev_race.3	-64.1562287	107.7500137	-0.59542	0.55941
rev_race.4	-11.5895094	166.0262518	-0.06981	0.94516
rev_gender	-32.6153412	95.9631385	-0.33987	0.73811
agec	-1.8531523	4.0731230	-0.45497	0.65489
agecsq	-0.0446412	0.0601828	-0.74176	0.46836
r2_age	-1.0363820	9.7264979	-0.10655	0.91639
r3_age	-3.8383540	6.2945529	-0.60979	0.55007

IVEware Jackknife Regression Procedure, Tue May 09 14:54:59 2017   2

"Example 7.5 Final Model with Main Effects and Interactions with Q Weight"

Variable	Estimate	Std Error	T Test	Prob > |T|
r4_age	5.9156075	5.9970946	0.98641	0.33776
r5_age	7.9023071	10.6399217	0.74270	0.46780
r2_age2	-0.0188801	0.1419084	-0.13304	0.89572
r3_age2	-0.0547543	0.0920189	-0.59503	0.55966
r4_age2	0.0864584	0.0891574	0.96973	0.34578
r5_age2	0.1148014	0.1563852	0.73409	0.47290
f_age	-1.6797740	5.7210909	-0.29361	0.77261
f_age2	-0.0205560	0.0847404	-0.24258	0.81124

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	44.5323409	-100.8007837	189.8654656
rev_race.1	137.1939456	-242.4399757	516.8278669
rev_race.2	101.4720874	-111.3331698	314.2773446
rev_race.3	-64.1562287	-291.4889175	163.1764601
rev_race.4	-11.5895094	-361.8743301	338.6953113
rev_gender	-32.6153412	-235.0798938	169.8492113
agec	-1.8531523	-10.4466918	6.7403871
agecsq	-0.0446412	-0.1716157	0.0823333
r2_age	-1.0363820	-21.5575016	19.4847376
r3_age	-3.8383540	-17.1187015	9.4419935
r4_age	5.9156075	-6.7371579	18.5683730
r5_age	7.9023071	-14.5459687	30.3505828
r2_age2	-0.0188801	-0.3182807	0.2805205
r3_age2	-0.0547543	-0.2488972	0.1393887
r4_age2	0.0864584	-0.1016474	0.2745641
r5_age2	0.1148014	-0.2151425	0.4447453
f_age	-1.6797740	-13.7502225	10.3906745
f_age2	-0.0205560	-0.1993427	0.1582307

Variable	Design Effect	SRS Estimate	% Diff SRS v Est
Intercept	0.34568	-3.1512010	-107.07621
rev_race.1	1.38997	91.3212609	-33.43638
rev_race.2	0.54377	95.9832947	-5.40917
rev_race.3	0.55840	26.8953542	-141.92166
rev_race.4	0.93482	53.6073316	-562.55048
rev_gender	1.12534	31.0794901	-195.29102
agec	0.34835	-4.5494751	145.49925
agecsq	0.35460	-0.0825059	84.82024
r2_age	0.92693	2.6846033	-359.03609
r3_age	0.54911	1.2752520	-133.22393
r4_age	0.55169	5.5405527	-6.34009
r5_age	1.39284	5.1063726	-35.38124
r2_age2	0.92182	0.0337667	-278.84806
r3_age2	0.54703	0.0160338	-129.28324
r4_age2	0.56603	0.0804046	-7.00193
r5_age2	1.39539	0.0720265	-37.25993
f_age	1.14179	1.9837210	-218.09452
f_age2	1.15722	0.0316328	-253.88608

IVEware Jackknife Regression Procedure, Tue May 09 14:54:59 2017   3

"Example 7.5 Final Model with Main Effects and Interactions with Q Weight"

By variable	Code
age18p	1

Valid cases	5112
Sum weights	6034.143674
Replicates	17

Degr freedom	17

Sum of squares:

Model	119442.196
Error	706589.8566
Total	826032.0526
R-square	0.14460
F-value	0.15965
P-value	0.99984

Variable	Estimate	Std Error	T Test	Prob > |T|
Intercept	75.4133925	0.7579682	99.49414	0.00000
rev_race.1	1.2376971	0.9501854	1.30258	0.21009
rev_race.2	3.5663901	0.9423305	3.78465	0.00148
rev_race.3	1.5009990	0.9021336	1.66383	0.11447
rev_race.4	0.2475892	0.9067265	0.27306	0.78810
rev_gender	-3.4289996	0.6199807	-5.53082	0.00004
agec	0.0467342	0.0356321	1.31158	0.20710
agecsq	-0.0148196	0.0015324	-9.67081	0.00000
r2_age	0.0482448	0.0461029	1.04646	0.31000
r3_age	-0.0055085	0.0479038	-0.11499	0.90980
r4_age	0.0359587	0.0317545	1.13240	0.27319
r5_age	0.0126690	0.0427886	0.29608	0.77075
r2_age2	0.0010371	0.0031178	0.33263	0.74348
r3_age2	0.0025174	0.0015665	1.60706	0.12645
r4_age2	-0.0026837	0.0017200	-1.56024	0.13712
r5_age2	0.0012444	0.0028595	0.43519	0.66890
f_age	0.0343899	0.0255039	1.34842	0.19522
f_age2	0.0029241	0.0015444	1.89341	0.07545

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
Intercept	75.4133925	73.8142192	77.0125658
rev_race.1	1.2376971	-0.7670191	3.2424132
rev_race.2	3.5663901	1.5782462	5.5545341
rev_race.3	1.5009990	-0.4023369	3.4043349
rev_race.4	0.2475892	-1.6654367	2.1606151
rev_gender	-3.4289996	-4.7370446	-2.1209546
agec	0.0467342	-0.0284429	0.1219114
agecsq	-0.0148196	-0.0180527	-0.0115865
r2_age	0.0482448	-0.0490239	0.1455134
r3_age	-0.0055085	-0.1065767	0.0955598
r4_age	0.0359587	-0.0310374	0.1029549
r5_age	0.0126690	-0.0776071	0.1029450

IVEware Jackknife Regression Procedure, Tue May 09 14:54:59 2017   4

"Example 7.5 Final Model with Main Effects and Interactions with Q Weight"

Variable	Estimate	95% Confidence Interval	
		Lower	Upper
r2_age2	0.0010371	-0.0055409	0.0076151
r3_age2	0.0025174	-0.0007876	0.0058225
r4_age2	-0.0026837	-0.0063126	0.0009453
r5_age2	0.0012444	-0.0047885	0.0072773
f_age	0.0343899	-0.0194187	0.0881985
f_age2	0.0029241	-0.0003342	0.0061824

Variable	Design	SRS	% Diff
	Effect	Estimate	SRS v Est
Intercept	1.06738	75.6588897	0.32554
rev_race.1	1.13775	1.7286150	39.66382
rev_race.2	1.28999	3.0564582	-14.29826
rev_race.3	1.27129	1.1522977	-23.23128
rev_race.4	0.80669	0.2911617	17.59872
rev_gender	1.86585	-3.6318464	5.91563
agec	1.31068	0.0755784	61.71947
agecsq	0.70079	-0.0160418	8.24683
r2_age	1.31663	0.0296270	-38.59028
r3_age	2.00916	-0.0348324	532.34406
r4_age	0.85844	0.0176383	-50.94857
r5_age	1.31974	0.0469147	270.31123
r2_age2	1.68113	0.0012681	22.27231
r3_age2	0.64818	0.0034287	36.19772
r4_age2	0.72153	-0.0008493	-68.35222
r5_age2	1.69947	0.0021814	75.29399
f_age	2.19653	0.0162975	-52.60974
f_age2	2.52244	0.0033111	13.23492