```
* Encoding: UTF-8.
* Syntax for Analysis Example Replication ASDA3 Winter 2025.
* Chapter 7.
* Note: No Bayesian Methods Available in CSGLM.  Also, No Design-Based Model Diagnostics Available in CS
Commands.

GET
  SAS DATA='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes1112.sas7bdat'.
DATASET NAME Nhanes WINDOW=FRONT.
```

Dataset Name

Notes

Output Created		26-FEB-2025 14:10:19
Comments		
Input	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		DATASET NAME Nhanes WINDOW=FRONT.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Warnings

The active dataset will replace the existing dataset named Nhanes.

```
* Section 7.5 Application of Linear Regression.

* Reverse Coding for Categorical Predictors, (need first category as reference to match Stata).
compute revrace=6 - ridreth1.
compute revmarcat= 4 - marcat.
compute revgender=3 - riagendr.

* center age.
compute agec=age-46.36.

* set 0 to missing on dependent variable.
compute bpxdi1_1 = bpxdi1.
RECODE BPXDI1 (0=SYSMIS) INTO bpxdi1_1.

* create age18p.
compute age18p=0.
 if (age >=18) age18p=1.
EXECUTE.

* Bivariate Tests.

* Race.
CSGLM bpxdi1_1  BY revrace
 /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revrace
 /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:19
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revrace /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revrace /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.19

Sample Design Information

		N
Unweighted Cases	Valid	6676
	Invalid	3080
	Total	9756
Population Size		250508512.376
Subpopulation Size		212747914.346[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.6088

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revrace	1.00	16540366.462	7.8%
	2.00	24960921.765	11.7%

	3.00	140677592.241	66.1%
	4.00	13924721.349	6.5%
	5.00	16644312.529	7.8%
Subpopulation Size		212747914.346	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.005

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	4.000	14.000	3.929	.024
(Intercept)	1.000	17.000	17089.652	<.001
revrace	4.000	14.000	3.929	.024

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	69.804	.453	68.848	70.760	154.013	17.000	<.001	.714
[revrace=1.00]	1.306	.704	-.181	2.792	1.853	17.000	.081	.875
[revrace=2.00]	2.290	.703	.807	3.773	3.258	17.000	.005	.913
[revrace=3.00]	2.185	.743	.618	3.752	2.942	17.000	.009	1.718
[revrace=4.00]	-.155	1.456	-3.226	2.916	-.106	17.000	.916	3.452
[revrace=5.00]	.000[b]	.	.	.	.	.	.	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace

b. Set to zero because this parameter is redundant.

```
*Marital Status.
CSGLM bpxdi1_1  BY revmarcat
 /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revmarcat
 /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:19
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>

	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revmarcat /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revmarcat /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.38

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.001

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revmarcat

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	2.000	16.000	.849	.446
(Intercept)	1.000	17.000	16739.526	<.001
revmarcat	2.000	16.000	.849	.446

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revmarcat

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	72.180	.515	71.093	73.266	140.172	17.000	<.001	6.598
[revmarcat=1.00]	-1.121	.844	-2.901	.659	-1.329	17.000	.201	3.787
[revmarcat=2.00]	-.145	.698	-1.617	1.327	-.208	17.000	.838	2.473
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revmarcat

b. Set to zero because this parameter is redundant.

```
*Gender.
 CSGLM bpxdi1_1  BY revgender
 /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revgender
 /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:19
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revgender /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revgender /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF

		/PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.25

Sample Design Information

		N
Unweighted Cases	Valid	6676
	Invalid	3080
	Total	9756
Population Size		250508512.376
Subpopulation Size		212747914.346[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.6088

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revgender	1.00	107972538.690	50.8%
	2.00	104775375.657	49.2%
Subpopulation Size		212747914.346	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.009

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	1.000	17.000	15.012	.001
(Intercept)	1.000	17.000	20213.233	<.001
revgender	1.000	17.000	15.012	.001

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	72.726	.590	71.481	73.971	123.245	17.000	<.001	6.949
[revgender=1.00]	-2.200	.568	-3.399	-1.002	-3.875	17.000	.001	3.516
[revgender=2.00]	.000[b]	.	.	.	.	.	.	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender

b. Set to zero because this parameter is redundant.

```
*Age.
CSGLM bpxdi1_1  with agec
 /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL agec
 /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:19
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 with agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL agec /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.17

Sample Design Information

		N
Unweighted Cases	Valid	6676
	Invalid	3080
	Total	9756
Population Size		250508512.376
Subpopulation Size		212747914.346[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.6088
Covariates	agec	.1304

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.004

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + agec

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	1.000	17.000	4.354	.052
(Intercept)	1.000	17.000	20489.019	<.001
agec	1.000	17.000	4.354	.052

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + agec

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	71.604	.500	70.548	72.659	143.140	17.000	<.001	10.889
agec	.039	.019	.000	.079	2.087	17.000	.052	4.249

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + agec

```
* Naive Analysis Ignoring Weights and Design Variables.

* Filter those age 18plus.
USE ALL.
COMPUTE filter_$=(age18p=1).
VARIABLE LABELS filter_$ 'age18p=1 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.
show filter.
```

SHOW

Notes

Output Created		26-FEB-2025 14:10:20
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
Syntax		show filter.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

System Settings

Keyword	Description	Setting
FILTER	Filter variable	age18p=1 (FILTER)

```
WEIGHT OFF.

* Use GENLIN for Naive analysis, no weights or design variables, with robust standard errors.
* Table 7.2.
GENLIN bpxdi1_1 BY revrace revgender revmarcat  WITH agec
 /MODEL revrace revgender revmarcat agec   INTERCEPT=YES
DISTRIBUTION=NORMAL LINK=IDENTITY
 /CRITERIA SCALE=1 COVB=ROBUST PCONVERGE=1E-006(ABSOLUTE)
SINGULAR=1E-012 ANALYSISTYPE=3(WALD) CILEVEL=95 CITYPE=WALD LIKELIHOOD=FULL
 /MISSING CLASSMISSING=EXCLUDE
 /PRINT CPS DESCRIPTIVES MODELINFO FIT SUMMARY SOLUTION.
```

Generalized Linear Models

Notes

Output Created		26-FEB-2025 14:10:20
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864

Missing Value Handling	Definition of Missing	User-defined missing values for factor, subject and within-subject variables are treated as missing.
	Cases Used	Statistics are based on cases with valid data for all variables in the model.
Weight Handling		not applicable
Syntax		GENLIN bpxdi1_1 BY revrace revgender revmarcat WITH agec /MODEL revrace revgender revmarcat agec INTERCEPT=YES DISTRIBUTION=NORMAL LINK=IDENTITY /CRITERIA SCALE=1 COVB=ROBUST PCONVERGE=1E-006(ABSOLUTE) SINGULAR=1E-012 ANALYSISTYPE=3(WALD) CILEVEL=95 CITYPE=WALD LIKELIHOOD=FULL /MISSING CLASSMISSING=EXCLUDE /PRINT CPS DESCRIPTIVES MODELINFO FIT SUMMARY SOLUTION.
Resources	Processor Time	00:00:00.11
	Elapsed Time	00:00:00.14

Model Information

Dependent Variable	bpxdi1_1
Probability Distribution	Normal
Link Function	Identity

Case Processing Summary

	N	Percent
Included	4845	82.6%
Excluded	1019	17.4%
Total	5864	100.0%

Categorical Variable Information

			N	Percent
Factor	revrace	1.00	822	17.0%
		2.00	1289	26.6%
		3.00	1774	36.6%
		4.00	491	10.1%
		5.00	469	9.7%
		Total	4845	100.0%
	revgender	1.00	2403	49.6%
		2.00	2442	50.4%
		Total	4845	100.0%
	revmarcat	1.00	1053	21.7%
		2.00	1072	22.1%
		3.00	2720	56.1%
		Total	4845	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	bpxdi1_1	4845	10.00	120.00	71.5278	11.76897
Covariate	agec	4845	-26.36	33.64	2.4095	17.75517

Goodness of Fit[a]

	Value	df	Value/df
Deviance	657043.460	4836	135.865
Scaled Deviance	657043.460	4836	
Pearson Chi-Square	657043.460	4836	135.865
Scaled Pearson Chi-Square	657043.460	4836	
Log Likelihood[b]	-332973.987		
Akaike's Information Criterion (AIC)	665965.975		
Finite Sample Corrected AIC (AICC)	665966.012		
Bayesian Information Criterion (BIC)	666024.346		
Consistent AIC (CAIC)	666033.346		

Dependent Variable: bpxdi1_1
Model: (Intercept), revrace, revgender, revmarcat, agec
[a]

a. Information criteria are in smaller-is-better form.

b. The full log likelihood function is displayed and used in computing information criteria.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
13892.056	8	<.001

Dependent Variable: bpxdi1_1
Model: (Intercept), revrace, revgender, revmarcat, agec
[a]

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III Wald Chi-Square	df	Sig.
(Intercept)	118914.513	1	<.001
revrace	23.892	4	<.001
revgender	55.990	1	<.001
revmarcat	27.388	2	<.001
agec	2.891	1	.089

Dependent Variable: bpxdi1_1
Model: (Intercept), revrace, revgender, revmarcat, agec

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval Lower	95% Wald Confidence Interval Upper	Hypothesis Test Wald Chi-Square	Hypothesis Test df	Hypothesis Test Sig.
(Intercept)	72.163	.5307	71.123	73.203	18488.611	1	<.001
[revrace=1.00]	1.776	.6306	.540	3.012	7.930	1	.005
[revrace=2.00]	2.509	.6320	1.270	3.748	15.759	1	<.001
[revrace=3.00]	.942	.5772	-.189	2.073	2.664	1	.103
[revrace=4.00]	.377	.7080	-1.011	1.765	.284	1	.594
[revrace=5.00]	0[a]	.	.	.	.	.	.
[revgender=1.00]	-2.532	.3384	-3.196	-1.869	55.990	1	<.001
[revgender=2.00]	0[a]	.	.	.	.	.	.
[revmarcat=1.00]	-2.440	.4711	-3.364	-1.517	26.839	1	<.001
[revmarcat=2.00]	-.697	.4534	-1.586	.191	2.366	1	.124
[revmarcat=3.00]	0[a]	.	.	.	.	.	.
agec	-.019	.0113	-.041	.003	2.891	1	.089
(Scale)	1[b]						

Dependent Variable: bpxdi1_1
Model: (Intercept), revrace, revgender, revmarcat, agec

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

```
* Table 7.3  Weighted Model without Design Variables, Weight is Assumed to be Frequency weight, SE are
different.
* Create a CSPLAN WITH WEIGHT BUT NO DESIGN FEATURES.
* Use CSGLM with probability weight and no design features.
CSPLAN ANALYSIS
  /PLAN FILE='P:\asda3\data sets for analysis examples and stata r code\nhanes_wt_nodes.csaplan'
  /PLANVARS ANALYSISWEIGHT= wtmec2yr
  /PRINT PLAN
  /DESIGN CLUSTER=seqn
  /ESTIMATOR TYPE=WR.
```

Complex Samples: Plan

Notes

Output Created		26-FEB-2025 14:10:20
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
Syntax		CSPLAN ANALYSIS /PLAN FILE='P:\asda3\data sets for analysis examples and stata r code\nhanes_wt_nodes.csaplan' /PLANVARS ANALYSISWEIGHT= wtmec2yr /PRINT PLAN /DESIGN CLUSTER=seqn /ESTIMATOR TYPE=WR.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.33
Files Saved	Plan File	P:\asda3\data sets for analysis examples and stata r code/nhanes_wt_nodes.csaplan

Warnings

This procedure does not check the consistency of the working data file with the plan file. We recommend looking at the output table or the plan file to check consistency before performing selection or analysis.

Summary

			Stage 1
Design Variables	Cluster	1	Respondent sequence number
Analysis Information	Estimator Assumption		Sampling with replacement

Plan File: P:\asda3\data sets for analysis examples and stata r code\nhanes_wt_nodes.csaplan
Weight Variable: Full sample 2 year MEC exam weight
SRS Estimator: Sampling without replacement

```
CSGLM bpxdi1_1 by revrace revgender revmarcat with agec
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_wt_nodes.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revrace revgender agec revmarcat
```

```
/INTERCEPT INCLUDE=YES SHOW=YES
/STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
/PRINT SUMMARY VARIABLEINFO SAMPLEINFO
/TEST TYPE=F PADJUST=LSD
/SAVE PRED RESID
/MISSING CLASSMISSING=EXCLUDE
/CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:20
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_wt_nodes.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 by revrace revgender revmarcat with agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_wt_nodes.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revrace revgender agec revmarcat /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /SAVE PRED RESID /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.42
Variables Created or Modified	Predicted Values	Predicted
	Residuals	Residual

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	1019
	Total	5864
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	1
	Units	4845
Sampling Design Degrees of Freedom		4844

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agec	1.1132

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.017

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + agec + revmarcat

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	8.000	4837.000	7.506	<.001
(Intercept)	1.000	4844.000	89256.859	<.001
revrace	4.000	4841.000	6.738	<.001
revgender	1.000	4844.000	31.518	<.001
agec	1.000	4844.000	.292	.589
revmarcat	2.000	4843.000	3.029	.048

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + agec + revmarcat

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	71.806	.587	70.656	72.956	122.430	4844.000	<.001	.983
[revrace=1.00]	1.270	.718	-.138	2.679	1.768	4844.000	.077	.821
[revrace=2.00]	2.619	.680	1.285	3.953	3.850	4844.000	<.001	.738
[revrace=3.00]	1.913	.624	.689	3.137	3.065	4844.000	.002	1.073
[revrace=4.00]	-.095	.740	-1.546	1.356	-.128	4844.000	.898	.819
[revrace=5.00]	.000[b]	.	.	.	.	.	.	.
[revgender=1.00]	-2.510	.447	-3.386	-1.633	-5.614	4844.000	<.001	1.854
[revgender=2.00]	.000[b]	.	.	.	.	.	.	.
agec	-.008	.014	-.035	.020	-.540	4844.000	.589	1.496
[revmarcat=1.00]	-1.511	.639	-2.764	-.259	-2.365	4844.000	.018	1.815
[revmarcat=2.00]	.243	.610	-.952	1.439	.399	4844.000	.690	1.813
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + agec + revmarcat

b. Set to zero because this parameter is redundant.

```
* Table 7.4 Analysis Example 7.5 with All Predictors in Model, Weight Applied with Complex Sample Variables.
CSGLM bpxdi1_1 by revrace revgender revmarcat with agec
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revrace revgender agec revmarcat
 /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /SAVE PRED RESID
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:21
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 by revrace revgender revmarcat with agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revrace revgender agec revmarcat /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /SAVE PRED RESID /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.08
	Elapsed Time	00:00:00.22
Variables Created or Modified	Predicted Values	Predicted_1
	Residuals	Residual_1

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	1019
	Total	5864
Population Size		205481294.609

Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agec	1.1132

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.017

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + agec + revmarcat

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	8.000	10.000	11.738	<.001
(Intercept)	1.000	17.000	16027.840	<.001
revrace	4.000	14.000	6.248	.004
revgender	1.000	17.000	21.659	<.001
agec	1.000	17.000	.141	.712
revmarcat	2.000	16.000	1.699	.214

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + agec + revmarcat

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	71.806	.578	70.587	73.025	124.257	17.000	<.001	.954
[revrace=1.00]	1.270	.604	-.005	2.545	2.102	17.000	.051	.581
[revrace=2.00]	2.619	.600	1.353	3.885	4.365	17.000	<.001	.574
[revrace=3.00]	1.913	.763	.304	3.523	2.508	17.000	.023	1.603
[revrace=4.00]	-.095	1.272	-2.779	2.589	-.075	17.000	.941	2.420
[revrace=5.00]	.000[b]	.	.	.	.	.	.	.
[revgender=1.00]	-2.510	.539	-3.648	-1.372	-4.654	17.000	<.001	2.698
[revgender=2.00]	.000[b]	.	.	.	.	.	.	.
agec	-.008	.020	-.050	.035	-.375	17.000	.712	3.106
[revmarcat=1.00]	-1.511	.899	-3.409	.386	-1.680	17.000	.111	3.597
[revmarcat=2.00]	.243	.672	-1.175	1.662	.362	17.000	.722	2.203
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + agec + revmarcat

b. Set to zero because this parameter is redundant.

```
* Table 7.5, Using Design Based Model , Test if Weights are Informative.

* Turn filter Off If Still in Effect. .
FILTER OFF.

* Analysis Preparation Wizard with WGT1 set to 1 for analysis in CSGLM (Unweighted but Uses Design Variables).
COMPUTE WGT1 =1.
EXECUTE.

CSPLAN ANALYSIS
  /PLAN FILE='P:\asda3\data sets for analysis examples and stata r code\nhanes_nowt_wdes.csaplan'
  /PLANVARS ANALYSISWEIGHT= WGT1
  /SRSESTIMATOR TYPE=WOR
  /PRINT PLAN
  /DESIGN STRATA=SDMVSTRA CLUSTER=SDMVPSU
  /ESTIMATOR TYPE=WR.
```

Complex Samples: Plan

Notes

Output Created		26-FEB-2025 14:10:21
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
Syntax		CSPLAN ANALYSIS /PLAN FILE='P:\asda3\data sets for analysis examples and stata r code\nhanes_nowt_wdes.csaplan' /PLANVARS ANALYSISWEIGHT= WGT1 /SRSESTIMATOR TYPE=WOR /PRINT PLAN /DESIGN STRATA=SDMVSTRA CLUSTER=SDMVPSU /ESTIMATOR TYPE=WR.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.31
Files Saved	Plan File	P:\asda3\data sets for analysis examples and stata r code/nhanes_nowt_wdes.csaplan

Warnings

This procedure does not check the consistency of the working data file with the plan file. We recommend looking at the output table or the plan file to check consistency before performing selection or analysis.

Summary

			Stage 1
Design Variables	Stratification	1	Masked variance pseudo-stratum
	Cluster	1	Masked variance pseudo-PSU
Analysis Information	Estimator Assumption		Sampling with replacement

Plan File: P:\asda3\data sets for analysis examples and stata r code\nhanes_nowt_wdes.csaplan
Weight Variable: WGT1

```
* Unweighted Model with Design Variables, with Interactions of Weight wtmec2yr with all Predictors, Are weights
informative?
    Note that all interactions are Tested but not the Weight as a Main Effect, Due to Difficulty in Including in
the LMATRIX.
CSGLM bpxdi1_1 by revrace revgender revmarcat with agec wtmec2yr
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_NOWT_WDES.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revrace revgender revmarcat agec wtmec2yr
   revrace*wtmec2yr revgender*wtmec2yr revmarcat*wtmec2yr agec*wtmec2yr
  /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /SAVE PRED RESID
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95
 /CUSTOM LABEL="TEST OF INTERACTIONS OF WTMEC2YR WITH RACE, GENDER, MARITIAL AND AGEC "
 LMATRIX=
 REVRACE*WTMEC2YR  -1  0 0 0 1 ;
 REVRACE*WTMEC2YR  0 -1 0 0 1 ;
 REVRACE*WTMEC2YR  0 0 -1 0 1 ;
 REVRACE*WTMEC2YR  0 0 0 -1 1 ;
 REVMARCAT*WTMEC2YR -1 0 1;
 REVMARCAT*WTMEC2YR  0 -1 1 ;
 Revgender*wtmec2yr 1 -1
KMATRIX=0;0;0;0;0;0;0.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:21
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_NOWT_WDES.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 by revrace revgender revmarcat with agec wtmec2yr /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_NOWT_WDES.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revrace revgender revmarcat agec wtmec2yr revrace*wtmec2yr revgender*wtmec2yr revmarcat*wtmec2yr agec*wtmec2yr /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE

		CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /SAVE PRED RESID /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95 /CUSTOM LABEL="TEST OF INTERACTIONS OF WTMEC2YR WITH RACE, GENDER, MARITIAL AND AGEC " LMATRIX= REVRACE*WTMEC2YR -1 0 0 0 1 ; REVRACE*WTMEC2YR 0 -1 0 0 1 ; REVRACE*WTMEC2YR 0 0 -1 0 1 ; REVRACE*WTMEC2YR 0 0 0 -1 1 ; REVMARCAT*WTMEC2YR -1 0 1; REVMARCAT*WTMEC2YR 0 -1 1 ; Revgender*wtmec2yr 1 -1 KMATRIX=0;0;0;0;0;0;0.
Resources	Processor Time	00:00:00.05
	Elapsed Time	00:00:00.44
Variables Created or Modified	Predicted Values	Predicted_2
	Residuals	Residual_2

Warnings

The design-based covariance matrix is singular. The validity of results is uncertain.
The estimated parameter variance for the simple random sampling design is zero. The design effects, adjusted Wald F test, or adjusted Wald Chi-square test cannot be computed.

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		4845.000
Subpopulation Size		4845.000[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.5278
Covariates	agec	2.4095
	Full sample 2 year MEC exam weight	42410.9999

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revrace	1.00	822.000	17.0%
	2.00	1289.000	26.6%
	3.00	1774.000	36.6%
	4.00	491.000	10.1%
	5.00	469.000	9.7%
revgender	1.00	2403.000	49.6%
	2.00	2442.000	50.4%
revmarcat	1.00	1053.000	21.7%
	2.00	1072.000	22.1%

3.00	2720.000	56.1%
Subpopulation Size	4845.000	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.032

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec + WTMEC2YR + revrace * WTMEC2YR + revgender * WTMEC2YR + revmarcat * WTMEC2YR + agec * WTMEC2YR

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	16.000	2.000	13.264	.072
(Intercept)	1.000	17.000	6727.999	<.001
revrace	4.000	14.000	2.830	.065
revgender	1.000	17.000	38.340	<.001
revmarcat	2.000	16.000	9.314	.002
agec	1.000	17.000	2.517	.131
WTMEC2YR	1.000	17.000	.313	.583
revrace * WTMEC2YR	4.000	14.000	5.990	.005
revgender * WTMEC2YR	1.000	17.000	.311	.584
revmarcat * WTMEC2YR	2.000	16.000	3.244	.066
agec * WTMEC2YR	1.000	17.000	2.203	.156

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec + WTMEC2YR + revrace * WTMEC2YR + revgender * WTMEC2YR + revmarcat * WTMEC2YR + agec * WTMEC2YR

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test		
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.
(Intercept)	73.379	1.890	69.392	77.367	38.823	17.000	<.001
[revrace=1.00]	1.718	1.881	-2.251	5.688	.913	17.000	.374
[revrace=2.00]	.092	2.307	-4.776	4.960	.040	17.000	.969
[revrace=3.00]	-2.347	1.763	-6.067	1.372	-1.332	17.000	.201
[revrace=4.00]	1.708	2.785	-4.167	7.583	.613	17.000	.548
[revrace=5.00]	.000[b]	.	.	.	.	.	.
[revgender=1.00]	-2.853	.461	-3.825	-1.881	-6.192	17.000	<.001
[revgender=2.00]	.000[b]	.	.	.	.	.	.
[revmarcat=1.00]	-3.609	.811	-5.321	-1.897	-4.449	17.000	<.001
[revmarcat=2.00]	-1.360	.722	-2.884	.164	-1.883	17.000	.077
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.
agec	-.031	.020	-.073	.010	-1.587	17.000	.131
WTMEC2YR	-3.190E-5	4.585E-5	.000	6.482E-5	-.696	17.000	.496
[revrace=1.00] * WTMEC2YR	-1.343E-5	5.091E-5	.000	9.397E-5	-.264	17.000	.795
[revrace=2.00] * WTMEC2YR	.000	6.892E-5	-2.570E-5	.000	1.737	17.000	.100
[revrace=3.00] * WTMEC2YR	5.292E-5	4.622E-5	-4.459E-5	.000	1.145	17.000	.268
[revrace=4.00] * WTMEC2YR	-5.286E-5	5.231E-5	.000	5.749E-5	-1.011	17.000	.326
[revrace=5.00] * WTMEC2YR	.000[b]	.	.	.	.	.	.
[revgender=1.00] * WTMEC2YR	3.946E-6	7.071E-6	-1.097E-5	1.886E-5	.558	17.000	.584
[revgender=2.00] * WTMEC2YR	.000[b]	.	.	.	.	.	.
[revmarcat=1.00] * WTMEC2YR	2.998E-5	1.480E-5	-1.256E-6	6.121E-5	2.025	17.000	.059
[revmarcat=2.00] * WTMEC2YR	2.477E-5	1.201E-5	-5.617E-7	5.010E-5	2.063	17.000	.055
[revmarcat=3.00] * WTMEC2YR	.000[b]	.	.	.	.	.	.
agec * WTMEC2YR	4.452E-7	3.000E-7	-1.876E-7	1.078E-6	1.484	17.000	.156

Parameter Estimates[a]

Parameter	Design Effect
(Intercept)	.
[revrace=1.00]	.
[revrace=2.00]	.
[revrace=3.00]	.
[revrace=4.00]	.
[revrace=5.00]	.
[revgender=1.00]	.
[revgender=2.00]	.
[revmarcat=1.00]	.
[revmarcat=2.00]	.
[revmarcat=3.00]	.
agec	.
WTMEC2YR	.
[revrace=1.00] * WTMEC2YR	.
[revrace=2.00] * WTMEC2YR	.
[revrace=3.00] * WTMEC2YR	.
[revrace=4.00] * WTMEC2YR	.
[revrace=5.00] * WTMEC2YR	.
[revgender=1.00] * WTMEC2YR	.
[revgender=2.00] * WTMEC2YR	.
[revmarcat=1.00] * WTMEC2YR	.
[revmarcat=2.00] * WTMEC2YR	.
[revmarcat=3.00] * WTMEC2YR	.
agec * WTMEC2YR	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec + WTMEC2YR + revrace * WTMEC2YR + revgender * WTMEC2YR + revmarcat * WTMEC2YR + agec * WTMEC2YR

b. Set to zero because this parameter is redundant.

Custom Hypothesis Tests : TEST OF INTERACTIONS OF WTMEC2YR WITH RACE, GENDER, MARITIAL AND AGEC

Contrast Coefficients[a]

	Contrast						
Parameter	L1	L2	L3	L4	L5	L6	L7
(Intercept)	.000	.000	.000	.000	.000	.000	.000
[revrace=1.00]	.000	.000	.000	.000	.000	.000	.000
[revrace=2.00]	.000	.000	.000	.000	.000	.000	.000
[revrace=3.00]	.000	.000	.000	.000	.000	.000	.000
[revrace=4.00]	.000	.000	.000	.000	.000	.000	.000
[revrace=5.00]	.000	.000	.000	.000	.000	.000	.000
[revgender=1.00]	.000	.000	.000	.000	.000	.000	.000
[revgender=2.00]	.000	.000	.000	.000	.000	.000	.000
[revmarcat=1.00]	.000	.000	.000	.000	.000	.000	.000
[revmarcat=2.00]	.000	.000	.000	.000	.000	.000	.000
[revmarcat=3.00]	.000	.000	.000	.000	.000	.000	.000
agec	.000	.000	.000	.000	.000	.000	.000
WTMEC2YR	.000	.000	.000	.000	.000	.000	.000

[revrace=1.00] * WTMEC2YR	-1.000	.000	.000	.000	.000	.000	.000
[revrace=2.00] * WTMEC2YR	.000	-1.000	.000	.000	.000	.000	.000
[revrace=3.00] * WTMEC2YR	.000	.000	-1.000	.000	.000	.000	.000
[revrace=4.00] * WTMEC2YR	.000	.000	.000	-1.000	.000	.000	.000
[revrace=5.00] * WTMEC2YR	1.000	1.000	1.000	1.000	.000	.000	.000
[revgender=1.00] * WTMEC2YR	.000	.000	.000	.000	.000	.000	1.000
[revgender=2.00] * WTMEC2YR	.000	.000	.000	.000	.000	.000	-1.000
[revmarcat=1.00] * WTMEC2YR	.000	.000	.000	.000	-1.000	.000	.000
[revmarcat=2.00] * WTMEC2YR	.000	.000	.000	.000	.000	-1.000	.000
[revmarcat=3.00] * WTMEC2YR	.000	.000	.000	.000	1.000	1.000	.000
agec * WTMEC2YR	.000	.000	.000	.000	.000	.000	.000

Subpopulation: age18p = 1.00[a]

a. The default display of this matrix is the transpose of the corresponding L matrix.

Individual Test Results

Contrast	Contrast Estimate	Hypothesized Value	Difference (Estimate - Hypothesized)	Std. Error	df1	df2	Wald F	Sig.
L1	1.343E-5	.000	1.343E-5	.000	1.000	17.000	.070	.795
L2	.000	.000	.000	.000	1.000	17.000	3.017	.100
L3	-5.292E-5	.000	-5.292E-5	.000	1.000	17.000	1.311	.268
L4	5.286E-5	.000	5.286E-5	.000	1.000	17.000	1.021	.326
L5	-2.998E-5	.000	-2.998E-5	.000	1.000	17.000	4.100	.059
L6	-2.477E-5	.000	-2.477E-5	.000	1.000	17.000	4.256	.055
L7	3.946E-6	.000	3.946E-6	.000	1.000	17.000	.311	.584

Subpopulation: age18p = 1.00

Overall Test Results

df1	df2	Wald F	Sig.
7.000	11.000	4.714	.011

Subpopulation: age18p = 1.00

```
* Initial Model with Diagnostics , Based on Weights Being Informative (Above).
CSGLM bpxdi1_1 by revrace revgender revmarcat with agec
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
 /DOMAIN VARIABLE=age18p(1)
 /MODEL revrace revgender revmarcat agec
  /INTERCEPT INCLUDE=YES SHOW=YES
 /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
 /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
 /TEST TYPE=F PADJUST=LSD
 /SAVE PRED RESID
 /MISSING CLASSMISSING=EXCLUDE
 /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:22
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 by revrace revgender revmarcat with agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revrace revgender revmarcat agec /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /SAVE PRED RESID /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.09
	Elapsed Time	00:00:00.62
Variables Created or Modified	Predicted Values	Predicted_3
	Residuals	Residual_3

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]

Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agec	1.1132

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.017

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	8.000	10.000	11.738	<.001
(Intercept)	1.000	17.000	16027.840	<.001
revrace	4.000	14.000	6.248	.004
revgender	1.000	17.000	21.659	<.001
revmarcat	2.000	16.000	1.699	.214
agec	1.000	17.000	.141	.712

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	71.806	.578	70.587	73.025	124.257	17.000	<.001	.954
[revrace=1.00]	1.270	.604	-.005	2.545	2.102	17.000	.051	.581
[revrace=2.00]	2.619	.600	1.353	3.885	4.365	17.000	<.001	.574
[revrace=3.00]	1.913	.763	.304	3.523	2.508	17.000	.023	1.603
[revrace=4.00]	-.095	1.272	-2.779	2.589	-.075	17.000	.941	2.420
[revrace=5.00]	.000[b]	.	.	.	.	.	.	.
[revgender=1.00]	-2.510	.539	-3.648	-1.372	-4.654	17.000	<.001	2.698
[revgender=2.00]	.000[b]	.	.	.	.	.	.	.
[revmarcat=1.00]	-1.511	.899	-3.409	.386	-1.680	17.000	.111	3.597
[revmarcat=2.00]	.243	.672	-1.175	1.662	.362	17.000	.722	2.203
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.	.
agec	-.008	.020	-.050	.035	-.375	17.000	.712	3.106

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec

b. Set to zero because this parameter is redundant.

```
* Graph Residuals v Agec (no Agec Squared in Model).
GRAPH
  /SCATTERPLOT(BIVAR)=agec WITH Residual
  /MISSING=LISTWISE
  /TITLE='Residuals v. Age without Age Squared Term in Model'.
```

Graph

Notes

Output Created		26-FEB-2025 14:10:22
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
Syntax		GRAPH /SCATTERPLOT(BIVAR)=agec WITH Residual /MISSING=LISTWISE /TITLE='Residuals v. Age without Age Squared Term in Model'.
Resources	Processor Time	00:00:00.11
	Elapsed Time	00:00:00.33


```
* Need agec*agec to evaluate non-linear term.
COMPUTE agecsq=agec*agec.
EXECUTE.
```

```
* TABLE 7.5: Add AGECSQ to Model Due to Non-Linearity.
* Note: Save predicted values and residuals for graphing.

CSGLM  bpxdi1_1 BY revgender revrace revmarcat WITH agecsq agec
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
  /DOMAIN VARIABLE=age18p(1)
  /MODEL revrace revgender revmarcat agec agecsq
  /INTERCEPT INCLUDE=YES SHOW=YES
  /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
  /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
  /TEST TYPE=ADJF PADJUST=LSD
  /SAVE PRED (PREDF)  RESID (RESIDF)
  /MISSING CLASSMISSING=EXCLUDE
  /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:23
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revgender revrace revmarcat WITH agecsq agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revrace revgender revmarcat agec agecsq /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=ADJF PADJUST=LSD /SAVE PRED (PREDF) RESID (RESIDF) /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.23
Variables Created or Modified	Predicted Values	PREDF
	Residuals	RESIDF

Sample Design Information

		N
Unweighted Cases	Valid	4845

	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agecsq	287.7786
	agec	1.1132

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.098

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec + agecsq

Tests of Model Effects[a]

Source	df1	df2	Adjusted Wald F	Sig.
(Corrected Model)	4.396	74.736	22.357	<.001
(Intercept)	1.000	17.000	18514.715	<.001
revrace	1.918	32.611	1.917	.165
revgender	1.000	17.000	18.903	<.001
revmarcat	1.964	33.396	1.489	.240
agec	1.000	17.000	14.181	.002
agecsq	1.000	17.000	186.191	<.001

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec + agecsq

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test			
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.	Design Effect
(Intercept)	74.461	.615	73.164	75.759	121.052	17.000	<.001	1.103
[revrace=1.00]	1.098	.584	-.134	2.330	1.880	17.000	.077	.590
[revrace=2.00]	2.064	.612	.772	3.355	3.371	17.000	.004	.658
[revrace=3.00]	1.822	.793	.149	3.495	2.297	17.000	.035	1.873
[revrace=4.00]	.015	1.114	-2.335	2.364	.013	17.000	.990	2.036

[revrace=5.00]	.000[b]	.	.	.	.	.	.	.
[revgender=1.00]	-2.214	.509	-3.289	-1.140	-4.348	17.000	<.001	2.614
[revgender=2.00]	.000[b]	.	.	.	.	.	.	.
[revmarcat=1.00]	1.135	.758	-.463	2.734	1.498	17.000	.152	2.581
[revmarcat=2.00]	.556	.608	-.726	1.838	.915	17.000	.373	1.974
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.	.
agec	.077	.020	.034	.120	3.766	17.000	.002	3.339
agecsq	-.012	.001	-.013	-.010	-13.645	17.000	<.001	2.114

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revrace + revgender + revmarcat + agec + agecsq

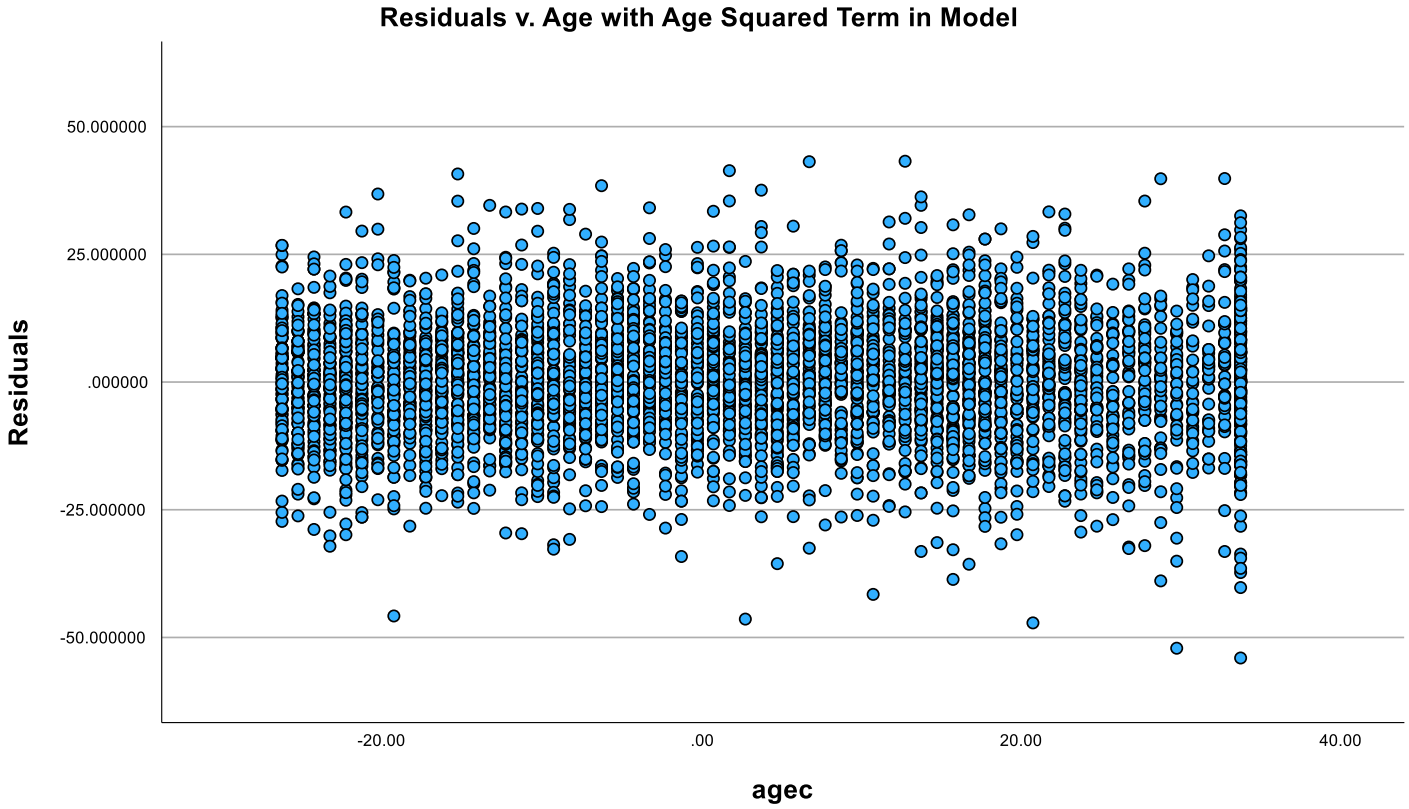
b. Set to zero because this parameter is redundant.

```
* Create Scatter Plot of Agec and Residuals with Age Squared in Model.
GRAPH
  /SCATTERPLOT(BIVAR)=agec WITH RESIDF
  /MISSING=LISTWISE
  /TITLE='Residuals v. Age with Age Squared Term in Model'.
```

Graph

Notes

Output Created		26-FEB-2025 14:10:23
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
Syntax		GRAPH /SCATTERPLOT(BIVAR)=agec WITH RESIDF /MISSING=LISTWISE /TITLE='Residuals v. Age with Age Squared Term in Model'.
Resources	Processor Time	00:00:00.16
	Elapsed Time	00:00:00.36


Residuals v. Age with Age Squared Term in Model
Residuals
50.000000
25.000000
.000000
-25.000000
-50.000000
-20.00
.00
20.00
40.00
agec

```
*Section 7.5.6 Test Interactions of Race*Agec and AgecSq.
CSGLM  bpxdi1_1 BY revgender revrace revmarcat WITH agecsq agec
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
  /DOMAIN VARIABLE=age18p(1)
  /MODEL revgender revrace revmarcat  agecsq agec revrace*agec revrace*agecsq
  /INTERCEPT INCLUDE=YES SHOW=YES
  /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
  /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
  /TEST TYPE=F PADJUST=LSD
  /MISSING CLASSMISSING=EXCLUDE
  /CRITERIA CILEVEL=95
  /CUSTOM LABEL="RACE TIMES AGE AND AGE SQUARED "
 LMATRIX =
 REVRACE*AGEC 1 0 0 0 -1 ;
 REVRACE*AGEC 1 0 0 -1 0 ;
 REVRACE*AGEC 1 0 -1 0 0 ;
 REVRACE*AGEC 1 -1 0 0 0 ;
 REVRACE*AGECSQ 1 0 0 0 -1 ;
 REVRACE*AGECSQ 1 0 0 -1 0 ;
 REVRACE*AGECSQ 1 0 -1 0 0 ;
 REVRACE*AGECSQ 1 -1 0 0 0
 KMATRIX =0 ; 0 ; 0 ; 0; 0 ; 0 ; 0 ; 0.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:23
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revgender revrace revmarcat WITH agecsq agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revgender revrace revmarcat agecsq agec revrace*agec revrace*agecsq /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95 /CUSTOM LABEL="RACE TIMES AGE AND AGE SQUARED " LMATRIX = REVRACE*AGEC 1 0 0 0 -1 ;

		REVRACE*AGEC 1 0 0 -1 0 ; REVRACE*AGEC 1 0 -1 0 0 ; REVRACE*AGEC 1 -1 0 0 0 ; REVRACE*AGECSQ 1 0 0 0 -1 ; REVRACE*AGECSQ 1 0 0 -1 0 ; REVRACE*AGECSQ 1 0 -1 0 0 ; REVRACE*AGECSQ 1 -1 0 0 0 KMATRIX =0 ; 0 ; 0 ; 0; 0 ; 0 ; 0 ; 0.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.17

Warnings

The design-based covariance matrix is singular. The validity of results is uncertain.

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agecsq	287.7786
	agec	1.1132

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.101

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agecsq + agec + revrace * agec + revrace * agecsq

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	17.000	1.000	47.064	.114
(Intercept)	1.000	17.000	16660.595	<.001
revgender	1.000	17.000	19.208	<.001
revrace	4.000	14.000	3.853	.026
revmarcat	2.000	16.000	1.315	.296
agecsq	1.000	17.000	163.740	<.001
agec	1.000	17.000	21.027	<.001
revrace * agec	4.000	14.000	3.303	.042
revrace * agecsq	4.000	14.000	6.798	.003

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agecsq + agec + revrace * agec + revrace * agecsq

Parameter Estimates[a]

Parameter	Estimate	Std. Error	95% Confidence Interval		Hypothesis Test		
			Lower	Upper	t	df	Sig.
(Intercept)	74.455	.843	72.676	76.233	88.328	17.000	<.001
[revgender=1.00]	-2.214	.505	-3.280	-1.148	-4.383	17.000	<.001
[revgender=2.00]	.000[b]	.	.	.	.	.	.
[revrace=1.00]	1.380	.878	-.473	3.233	1.572	17.000	.134
[revrace=2.00]	3.394	.991	1.302	5.485	3.424	17.000	.003
[revrace=3.00]	1.552	.939	-.429	3.534	1.653	17.000	.117
[revrace=4.00]	.346	.984	-1.730	2.422	.351	17.000	.730
[revrace=5.00]	.000[b]	.	.	.	.	.	.
[revmarcat=1.00]	1.188	.778	-.454	2.831	1.526	17.000	.145
[revmarcat=2.00]	.549	.629	-.779	1.877	.872	17.000	.395
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.
agecsq	-.012	.002	-.017	-.008	-5.631	17.000	<.001
agec	.050	.035	-.024	.124	1.435	17.000	.169
[revrace=1.00] * agec	.044	.059	-.081	.168	.743	17.000	.468
[revrace=2.00] * agec	.069	.037	-.009	.148	1.873	17.000	.078
[revrace=3.00] * agec	.011	.054	-.103	.125	.206	17.000	.839
[revrace=4.00] * agec	.066	.050	-.040	.172	1.318	17.000	.205
[revrace=5.00] * agec	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agecsq	.000	.002	-.005	.005	-.069	17.000	.946
[revrace=2.00] * agecsq	-.004	.002	-.009	.001	-1.771	17.000	.095
[revrace=3.00] * agecsq	.002	.002	-.002	.006	1.033	17.000	.316
[revrace=4.00] * agecsq	5.103E-5	.003	-.007	.007	.015	17.000	.988
[revrace=5.00] * agecsq	.000[b]	.	.	.	.	.	.

Parameter Estimates[a]

Parameter	Design Effect
(Intercept)	1.109
[revgender=1.00]	2.582
[revgender=2.00]	.
[revrace=1.00]	.673
[revrace=2.00]	.870
[revrace=3.00]	1.295
[revrace=4.00]	.734
[revrace=5.00]	.
[revmarcat=1.00]	2.691
[revmarcat=2.00]	2.114
[revmarcat=3.00]	.
agecsq	.865
agec	.720
[revrace=1.00] * agec	1.180
[revrace=2.00] * agec	.514

[revrace=3.00] * agec	1.586
[revrace=4.00] * agec	.809
[revrace=5.00] * agec	.
[revrace=1.00] * agecsq	.503
[revrace=2.00] * agecsq	.547
[revrace=3.00] * agecsq	.531
[revrace=4.00] * agecsq	.999
[revrace=5.00] * agecsq	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agecsq + agec + revrace * agec + revrace * agecsq

b. Set to zero because this parameter is redundant.

Custom Hypothesis Tests : RACE TIMES AGE AND AGE SQUARED

Contrast Coefficients[a]

	Contrast							
Parameter	L1	L2	L3	L4	L5	L6	L7	L8
(Intercept)	.000	.000	.000	.000	.000	.000	.000	.000
[revgender=1.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revgender=2.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revrace=1.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revrace=2.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revrace=3.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revrace=4.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revrace=5.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revmarcat=1.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revmarcat=2.00]	.000	.000	.000	.000	.000	.000	.000	.000
[revmarcat=3.00]	.000	.000	.000	.000	.000	.000	.000	.000
agecsq	.000	.000	.000	.000	.000	.000	.000	.000
agec	.000	.000	.000	.000	.000	.000	.000	.000
[revrace=1.00] * agec	1.000	1.000	1.000	1.000	.000	.000	.000	.000
[revrace=2.00] * agec	.000	.000	.000	-1.000	.000	.000	.000	.000
[revrace=3.00] * agec	.000	.000	-1.000	.000	.000	.000	.000	.000
[revrace=4.00] * agec	.000	-1.000	.000	.000	.000	.000	.000	.000
[revrace=5.00] * agec	-1.000	.000	.000	.000	.000	.000	.000	.000
[revrace=1.00] * agecsq	.000	.000	.000	.000	1.000	1.000	1.000	1.000
[revrace=2.00] * agecsq	.000	.000	.000	.000	.000	.000	.000	-1.000
[revrace=3.00] * agecsq	.000	.000	.000	.000	.000	.000	-1.000	.000
[revrace=4.00] * agecsq	.000	.000	.000	.000	.000	-1.000	.000	.000
[revrace=5.00] * agecsq	.000	.000	.000	.000	-1.000	.000	.000	.000

Subpopulation: age18p = 1.00[a]

a. The default display of this matrix is the transpose of the corresponding L matrix.

Individual Test Results

Contrast	Contrast Estimate	Hypothesized Value	Difference (Estimate - Hypothesized)	Std. Error	df1	df2	Wald F	Sig.
L1	.044	.000	.044	.059	1.000	17.000	.552	.468
L2	-.022	.000	-.022	.065	1.000	17.000	.118	.736
L3	.033	.000	.033	.046	1.000	17.000	.505	.487
L4	-.026	.000	-.026	.040	1.000	17.000	.413	.529
L5	.000	.000	.000	.002	1.000	17.000	.005	.946

L6	.000	.000	.000	.003	1.000	17.000	.005	.943
L7	-.002	.000	-.002	.002	1.000	17.000	.849	.370
L8	.004	.000	.004	.002	1.000	17.000	2.920	.106

Subpopulation: age18p = 1.00

Overall Test Results

df1	df2	Wald F	Sig.
8.000	10.000	5.920	.006

Subpopulation: age18p = 1.00

```
*Section 7.5.6 Test Interactions of Gender * Agec and AgecSq.
CSGLM  bpxdi1_1 BY revgender revrace revmarcat WITH agecsq agec
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
  /DOMAIN VARIABLE=age18p(1)
  /MODEL revgender revrace revmarcat  agecsq agec revgender*agec revgender*agecsq
  /INTERCEPT INCLUDE=YES SHOW=YES
  /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
  /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
  /TEST TYPE=F PADJUST=LSD
  /MISSING CLASSMISSING=EXCLUDE
  /CRITERIA CILEVEL=95
  /CUSTOM LABEL="GENDER TIMES AGE AND AGE SQUARED "
 LMATRIX =
 REVGENDER*AGEC 1  -1 ;
 REVGENDER*AGECSQ 1 -1
 KMATRIX =0 ; 0.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:23
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revgender revrace revmarcat WITH agecsq agec /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revgender revrace revmarcat agecsq agec revgender*agec revgender*agecsq /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95 /CUSTOM LABEL="GENDER TIMES AGE AND AGE SQUARED " LMATRIX = REVGENDER*AGEC 1 -1 ; REVGENDER*AGECSQ 1 -1 KMATRIX =0 ; 0.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.19

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agecsq	287.7786
	agec	1.1132

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.102

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agecsq + agec + revgender * agec + revgender * agecsq

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	11.000	7.000	77.422	<.001
(Intercept)	1.000	17.000	18811.204	<.001
revgender	1.000	17.000	16.611	<.001
revrace	4.000	14.000	3.508	.035
revmarcat	2.000	16.000	.969	.401
agecsq	1.000	17.000	205.531	<.001
agec	1.000	17.000	13.645	.002
revgender * agec	1.000	17.000	3.886	.065
revgender * agecsq	1.000	17.000	2.998	.101

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agecsq + agec + revgender * agec + revgender * agecsq

Parameter Estimates[a]

Parameter	Estimate	Std. Error	95% Confidence Interval		Hypothesis Test		
			Lower	Upper	t	df	Sig.
(Intercept)	74.969	.703	73.485	76.453	106.594	17.000	<.001
[revgender=1.00]	-3.082	.756	-4.678	-1.487	-4.076	17.000	<.001
[revgender=2.00]	.000[b]	.	.	.	.	.	.
[revrace=1.00]	1.114	.591	-.133	2.362	1.884	17.000	.077
[revrace=2.00]	2.125	.612	.833	3.417	3.470	17.000	.003
[revrace=3.00]	1.837	.781	.189	3.485	2.352	17.000	.031
[revrace=4.00]	.016	1.103	-2.311	2.344	.015	17.000	.988
[revrace=5.00]	.000[b]	.	.	.	.	.	.
[revmarcat=1.00]	1.056	.755	-.536	2.649	1.400	17.000	.180
[revmarcat=2.00]	.293	.620	-1.014	1.600	.473	17.000	.642
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.
agecsq	-.013	.001	-.015	-.011	-14.151	17.000	<.001
agec	.050	.021	.007	.094	2.426	17.000	.027
[revgender=1.00] * agec	.050	.026	-.004	.104	1.971	17.000	.065
[revgender=2.00] * agec	.000[b]	.	.	.	.	.	.
[revgender=1.00] * agecsq	.003	.002	-.001	.007	1.732	17.000	.101
[revgender=2.00] * agecsq	.000[b]	.	.	.	.	.	.

Parameter Estimates[a]

Parameter	Design Effect
(Intercept)	1.302
[revgender=1.00]	2.973
[revgender=2.00]	.
[revrace=1.00]	.601
[revrace=2.00]	.655
[revrace=3.00]	1.803
[revrace=4.00]	1.995
[revrace=5.00]	.
[revmarcat=1.00]	2.541
[revmarcat=2.00]	1.983
[revmarcat=3.00]	.
agecsq	1.218
agec	1.843
[revgender=1.00] * agec	1.753
[revgender=2.00] * agec	.
[revgender=1.00] * agecsq	2.283
[revgender=2.00] * agecsq	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agecsq + agec + revgender * agec + revgender * agecsq

b. Set to zero because this parameter is redundant.

Custom Hypothesis Tests : GENDER TIMES AGE AND AGE SQUARED

Contrast Coefficients[a]

Parameter	Contrast L1	Contrast L2
(Intercept)	.000	.000
[revgender=1.00]	.000	.000
[revgender=2.00]	.000	.000
[revrace=1.00]	.000	.000
[revrace=2.00]	.000	.000
[revrace=3.00]	.000	.000
[revrace=4.00]	.000	.000
[revrace=5.00]	.000	.000
[revmarcat=1.00]	.000	.000
[revmarcat=2.00]	.000	.000
[revmarcat=3.00]	.000	.000
agecsq	.000	.000
agec	.000	.000
[revgender=1.00] * agec	1.000	.000
[revgender=2.00] * agec	-1.000	.000
[revgender=1.00] * agecsq	.000	1.000
[revgender=2.00] * agecsq	.000	-1.000

Subpopulation: age18p = 1.00[a]

a. The default display of this matrix is the transpose of the corresponding L matrix.

Individual Test Results

Contrast	Contrast Estimate	Hypothesized Value	Difference (Estimate - Hypothesized)	Std. Error	df1	df2	Wald F	Sig.
L1	.050	.000	.050	.026	1.000	17.000	3.886	.065
L2	.003	.000	.003	.002	1.000	17.000	2.998	.101

Subpopulation: age18p = 1.00

Overall Test Results

df1	df2	Wald F	Sig.
2.000	16.000	4.269	.033

Subpopulation: age18p = 1.00

```
* Use Interactions in Preliminary Final Model and Obtain Numbers for Predicted Marginal Value Plot for Gender.
* Note that Margin Plots not Available Directly, Could be Saved and Plotted in Subsequent Analysis (Not Shown
Here).
CSGLM  bpxdi1_1 BY revgender revrace revmarcat WITH agec agecsq
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
  /DOMAIN VARIABLE=age18p(1)
  /MODEL revgender revrace revmarcat agec*agec agec
   revgender*agec revgender*agec*agec
   revrace*agec revrace*agec*agec
  /INTERCEPT INCLUDE=YES SHOW=YES
  /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
  /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
  /TEST TYPE=F PADJUST=LSD
  /MISSING CLASSMISSING=EXCLUDE
  /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (-30)  ]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (-25)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (-20)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (-15)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (-10)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (-5)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (0)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (5)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (10)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (15)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (20)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (25)]
 /EMMEANS
   TABLES=REVGENDER
   OTHER = [AGEC (30)]
  /SAVE PRED (PREDF1)  RESID (RESIDF1)
  /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:24
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>

	N of Rows in Working Data File	9756
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_csplan.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revgender revrace revmarcat WITH agec agecsq /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revgender revrace revmarcat agec*agec agec revgender*agec revgender*agec*agec revrace*agec revrace*agec*agec /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /EMMEANS TABLES=REVGENDER OTHER = [AGEC (-30)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (-25)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (-20)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (-15)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (-10)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (-5)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (0)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (5)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (10)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (15)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (20)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (25)] /EMMEANS TABLES=REVGENDER OTHER = [AGEC (30)]

		/SAVE PRED (PREDF1) RESID (RESIDF1) /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.06
	Elapsed Time	00:00:00.44
Variables Created or Modified	Predicted Values	PREDF1
	Residuals	RESIDF1

Warnings

The following factors or covariates are not used in the model: agecsq
The design-based covariance matrix is singular. The validity of results is uncertain.

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agec	1.1132
	agecsq	287.7786

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.105

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec * agec + agec + revgender * agec + revgender * agec * agec + revrace * agec + revrace * agec * agec

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	17.000	1.000	155.631	.063
(Intercept)	1.000	17.000	16919.395	<.001
revgender	1.000	17.000	16.839	<.001
revrace	4.000	14.000	4.193	.019
revmarcat	2.000	16.000	.995	.392
agec * agec	1.000	17.000	165.147	<.001
agec	1.000	17.000	20.136	<.001
revgender * agec	1.000	17.000	3.476	.080
revgender * agec * agec	1.000	17.000	3.139	.094
revrace * agec	4.000	14.000	2.973	.057
revrace * agec * agec	4.000	14.000	6.207	.004

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec * agec + agec + revgender * agec + revgender * agec * agec + revrace * agec + revrace * agec * agec

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test		
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.
(Intercept)	74.928	.933	72.960	76.896	80.330	17.000	<.001
[revgender=1.00]	-3.103	.756	-4.698	-1.507	-4.104	17.000	<.001
[revgender=2.00]	.000[b]	.	.	.	.	.	.
[revrace=1.00]	1.416	.862	-.402	3.235	1.644	17.000	.119
[revrace=2.00]	3.520	.991	1.429	5.611	3.552	17.000	.002
[revrace=3.00]	1.614	.944	-.378	3.606	1.710	17.000	.106
[revrace=4.00]	.406	.980	-1.661	2.473	.414	17.000	.684
[revrace=5.00]	.000[b]	.	.	.	.	.	.
[revmarcat=1.00]	1.108	.776	-.529	2.744	1.428	17.000	.171
[revmarcat=2.00]	.291	.640	-1.059	1.641	.454	17.000	.655
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.
agec * agec	-.014	.002	-.019	-.009	-5.832	17.000	<.001
agec	.028	.040	-.056	.112	.709	17.000	.488
[revgender=1.00] * agec	.048	.026	-.006	.103	1.864	17.000	.080
[revgender=2.00] * agec	.000[b]	.	.	.	.	.	.
[revgender=1.00] * agec * agec	.003	.002	-.001	.007	1.772	17.000	.094
[revgender=2.00] * agec * agec	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agec	.039	.062	-.092	.170	.629	17.000	.538
[revrace=2.00] * agec	.065	.039	-.018	.147	1.652	17.000	.117
[revrace=3.00] * agec	.008	.056	-.111	.127	.136	17.000	.893
[revrace=4.00] * agec	.061	.052	-.049	.170	1.165	17.000	.260
[revrace=5.00] * agec	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agec * agec	.000	.002	-.006	.005	-.152	17.000	.881
[revrace=2.00] * agec * agec	-.004	.002	-.009	.001	-1.802	17.000	.089
[revrace=3.00] * agec * agec	.002	.002	-.003	.006	.788	17.000	.442
[revrace=4.00] * agec * agec	.000	.004	-.008	.007	-.089	17.000	.930
[revrace=5.00] * agec * agec	.000[b]	.	.	.	.	.	.

Parameter Estimates[a]

Parameter	Design Effect
(Intercept)	1.299
[revgender=1.00]	2.969
[revgender=2.00]	.
[revrace=1.00]	.645
[revrace=2.00]	.864
[revrace=3.00]	1.294
[revrace=4.00]	.725
[revrace=5.00]	.
[revmarcat=1.00]	2.650

[revmarcat=2.00]	2.113
[revmarcat=3.00]	.
agec * agec	.910
agec	.856
[revgender=1.00] * agec	1.824
[revgender=2.00] * agec	.
[revgender=1.00] * agec * agec	2.297
[revgender=2.00] * agec * agec	.
[revrace=1.00] * agec	1.260
[revrace=2.00] * agec	.553
[revrace=3.00] * agec	1.656
[revrace=4.00] * agec	.844
[revrace=5.00] * agec	.
[revrace=1.00] * agec * agec	.583
[revrace=2.00] * agec * agec	.608
[revrace=3.00] * agec * agec	.594
[revrace=4.00] * agec * agec	1.133
[revrace=5.00] * agec * agec	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec * agec + agec + revgender * agec + revgender * agec * agec + revrace * agec + revrace * agec * agec

b. Set to zero because this parameter is redundant.

Estimated Marginal Means 1: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	95% Confidence Interval Upper
1.00	59.9608	1.25740	57.3080	62.6137
2.00	61.8084	.95694	59.7894	63.8274

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-30.0000; agecsq=287.7786

Estimated Marginal Means 2: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	95% Confidence Interval Upper
1.00	63.6909	.91177	61.7672	65.6145
2.00	66.1239	.67817	64.6931	67.5548

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-25.0000; agecsq=287.7786

Estimated Marginal Means 3: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	66.8437	.69141	65.3849	68.3024
2.00	69.7117	.50700	68.6421	70.7814

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-20.0000; agecsq=287.7786

Estimated Marginal Means 4: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	69.4192	.61239	68.1272	70.7113
2.00	72.5718	.45980	71.6017	73.5418

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-15.0000; agecsq=287.7786

Estimated Marginal Means 5: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	71.4176	.63790	70.0717	72.7634
2.00	74.7040	.49900	73.6512	75.7568

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-10.0000; agecsq=287.7786

Estimated Marginal Means 6: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	72.8387	.69952	71.3628	74.3145
2.00	76.1086	.56345	74.9198	77.2973

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-5.0000; agecsq=287.7786

Estimated Marginal Means 7: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	73.6826	.75417	72.0914	75.2737
2.00	76.7853	.62142	75.4743	78.0964

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=.0000; agecsq=287.7786

Estimated Marginal Means 8: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	73.9492	.78909	72.2844	75.6140
2.00	76.7343	.66789	75.3252	78.1435

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=5.0000; agecsq=287.7786

Estimated Marginal Means 9: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	73.6386	.81198	71.9255	75.3517
2.00	75.9556	.71410	74.4490	77.4622

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=10.0000; agecsq=287.7786

Estimated Marginal Means 10: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	72.7508	.84732	70.9631	74.5385
2.00	74.4491	.78237	72.7985	76.0998

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=15.0000; agecsq=287.7786

Estimated Marginal Means 11: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	71.2857	.93205	69.3193	73.2522
2.00	72.2149	.89924	70.3176	74.1121

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=20.0000; agecsq=287.7786

Estimated Marginal Means 12: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	69.2434	1.10121	66.9201	71.5668
2.00	69.2529	1.08502	66.9637	71.5421

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=25.0000; agecsq=287.7786

Estimated Marginal Means 13: revgender

Estimates[a]

revgender	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	66.6239	1.37176	63.7297	69.5181
2.00	65.5631	1.34813	62.7188	68.4074

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=30.0000; agecsq=287.7786

```
* Use Interactions in Preliminary Final Model and Obtain Numbers for Predicted Marginal Value Plot for Race.
CSGLM  bpxdi1_1 BY revgender revrace revmarcat WITH agec agecsq
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_csplan.csaplan'
  /DOMAIN VARIABLE=age18p(1)
  /MODEL revgender revrace revmarcat agec agecsq
   revgender*agec revgender*agecsq   revrace*agec revrace*agecsq
  /INTERCEPT INCLUDE=YES SHOW=YES
  /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
  /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
  /TEST TYPE=F PADJUST=LSD
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  /EMMEANS
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  /CRITERIA CILEVEL=95.
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Complex Samples: General Linear Model

Notes

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		factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
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Variables Created or Modified	Predicted Values	PREDF_2

Residuals	RESIDF_2

Warnings

The design-based covariance matrix is singular. The validity of results is uncertain.

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	4911
	Total	9756
Population Size		205481294.609
Subpopulation Size		205481294.609[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.9282
Covariates	agec	1.1132
	agecsq	287.7786

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revgender	1.00	104864184.938	51.0%
	2.00	100617109.671	49.0%
revrace	1.00	15882981.242	7.7%
	2.00	23651896.255	11.5%
	3.00	136913064.300	66.6%
	4.00	13283614.666	6.5%
	5.00	15749738.145	7.7%
revmarcat	1.00	41125108.825	20.0%
	2.00	38262967.426	18.6%
	3.00	126093218.357	61.4%
Subpopulation Size		205481294.609	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.105

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec + agecsq + revgender * agec + revgender * agecsq + revrace * agec + revrace * agecsq

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	17.000	1.000	155.631	.063
(Intercept)	1.000	17.000	16919.395	<.001
revgender	1.000	17.000	16.839	<.001
revrace	4.000	14.000	4.193	.019
revmarcat	2.000	16.000	.995	.392
agec	1.000	17.000	20.136	<.001
agecsq	1.000	17.000	165.147	<.001
revgender * agec	1.000	17.000	3.476	.080

revgender * agecsq	1.000	17.000	3.139	.094
revrace * agec	4.000	14.000	2.973	.057
revrace * agecsq	4.000	14.000	6.207	.004

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec + agecsq + revgender * agec + revgender * agecsq + revrace * agec + revrace * agecsq

Parameter Estimates[a]

			95% Confidence Interval		Hypothesis Test		
Parameter	Estimate	Std. Error	Lower	Upper	t	df	Sig.
(Intercept)	74.928	.933	72.960	76.896	80.330	17.000	<.001
[revgender=1.00]	-3.103	.756	-4.698	-1.507	-4.104	17.000	<.001
[revgender=2.00]	.000[b]	.	.	.	.	.	.
[revrace=1.00]	1.416	.862	-.402	3.235	1.644	17.000	.119
[revrace=2.00]	3.520	.991	1.429	5.611	3.552	17.000	.002
[revrace=3.00]	1.614	.944	-.378	3.606	1.710	17.000	.106
[revrace=4.00]	.406	.980	-1.661	2.473	.414	17.000	.684
[revrace=5.00]	.000[b]	.	.	.	.	.	.
[revmarcat=1.00]	1.108	.776	-.529	2.744	1.428	17.000	.171
[revmarcat=2.00]	.291	.640	-1.059	1.641	.454	17.000	.655
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.
agec	.028	.040	-.056	.112	.709	17.000	.488
agecsq	-.014	.002	-.019	-.009	-5.832	17.000	<.001
[revgender=1.00] * agec	.048	.026	-.006	.103	1.864	17.000	.080
[revgender=2.00] * agec	.000[b]	.	.	.	.	.	.
[revgender=1.00] * agecsq	.003	.002	-.001	.007	1.772	17.000	.094
[revgender=2.00] * agecsq	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agec	.039	.062	-.092	.170	.629	17.000	.538
[revrace=2.00] * agec	.065	.039	-.018	.147	1.652	17.000	.117
[revrace=3.00] * agec	.008	.056	-.111	.127	.136	17.000	.893
[revrace=4.00] * agec	.061	.052	-.049	.170	1.165	17.000	.260
[revrace=5.00] * agec	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agecsq	.000	.002	-.006	.005	-.152	17.000	.881
[revrace=2.00] * agecsq	-.004	.002	-.009	.001	-1.802	17.000	.089
[revrace=3.00] * agecsq	.002	.002	-.003	.006	.788	17.000	.442
[revrace=4.00] * agecsq	.000	.004	-.008	.007	-.089	17.000	.930
[revrace=5.00] * agecsq	.000[b]	.	.	.	.	.	.

Parameter Estimates[a]

Parameter	Design Effect
(Intercept)	1.299
[revgender=1.00]	2.969
[revgender=2.00]	.
[revrace=1.00]	.645
[revrace=2.00]	.864
[revrace=3.00]	1.294
[revrace=4.00]	.725
[revrace=5.00]	.
[revmarcat=1.00]	2.650
[revmarcat=2.00]	2.113
[revmarcat=3.00]	.
agec	.856
agecsq	.910
[revgender=1.00] * agec	1.824
[revgender=2.00] * agec	.
[revgender=1.00] * agecsq	2.297
[revgender=2.00] * agecsq	.
[revrace=1.00] * agec	1.260
[revrace=2.00] * agec	.553

[revrace=3.00] * agec	1.656
[revrace=4.00] * agec	.844
[revrace=5.00] * agec	.
[revrace=1.00] * agecsq	.583
[revrace=2.00] * agecsq	.608
[revrace=3.00] * agecsq	.594
[revrace=4.00] * agecsq	1.133
[revrace=5.00] * agecsq	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec + agecsq + revgender * agec + revgender * agecsq + revrace * agec + revrace * agecsq

b. Set to zero because this parameter is redundant.

Estimated Marginal Means 1: revrace

Estimates[a]

			95% Confidence Interval	
revrace	Mean	Std. Error	Lower	Upper
1.00	68.8507	1.11488	66.4985	71.2029
2.00	69.0576	.81863	67.3305	70.7848
3.00	70.5394	1.25300	67.8958	73.1830
4.00	67.2092	.88795	65.3358	69.0826
5.00	68.7132	.94431	66.7209	70.7055

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-30.0000; agecsq=287.7786

Estimated Marginal Means 2: revrace

Estimates[a]

			95% Confidence Interval	
revrace	Mean	Std. Error	Lower	Upper
1.00	69.3079	.90990	67.3882	71.2277
2.00	69.6430	.77994	67.9975	71.2885
3.00	70.8400	1.14013	68.4346	73.2455
4.00	67.7742	.82069	66.0427	69.5057
5.00	68.9754	.77820	67.3335	70.6172

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-25.0000; agecsq=287.7786

Estimated Marginal Means 3: revrace Estimates[a]

			95% Confidence Interval	
revrace	Mean	Std. Error	Lower	Upper
1.00	69.7652	.72654	68.2323	71.2980
2.00	70.2284	.74932	68.6475	71.8093
3.00	71.1406	1.03087	68.9657	73.3155
4.00	68.3392	.82137	66.6063	70.0722
5.00	69.2375	.62259	67.9239	70.5510

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-20.0000; agecsq=287.7786

Estimated Marginal Means 4: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	70.2224	.58547	68.9872	71.4576
2.00	70.8138	.72777	69.2783	72.3492
3.00	71.4412	.92650	69.4864	73.3959
4.00	68.9043	.88984	67.0269	70.7817
5.00	69.4996	.48762	68.4708	70.5284

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-15.0000; agecsq=287.7786

Estimated Marginal Means 5: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	70.6796	.52218	69.5779	71.7813
2.00	71.3992	.71613	69.8883	72.9101
3.00	71.7418	.82888	69.9930	73.4906
4.00	69.4693	1.01244	67.3332	71.6053
5.00	69.7618	.39506	68.9283	70.5953

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-10.0000; agecsq=287.7786

Estimated Marginal Means 6: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	71.1369	.56350	69.9480	72.3257
2.00	71.9846	.71487	70.4763	73.4928
3.00	72.0424	.74067	70.4797	73.6050
4.00	70.0343	1.17230	67.5610	72.5076
5.00	70.0239	.37751	69.2274	70.8204

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=-5.0000; agecsq=287.7786

Estimated Marginal Means 7: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	71.5941	.69092	70.1364	73.0518
2.00	72.5699	.72406	71.0423	74.0976
3.00	72.3430	.66563	70.9386	73.7473
4.00	70.5993	1.35631	67.7378	73.4609
5.00	70.2860	.44395	69.3494	71.2227

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=.0000; agecsq=287.7786

Estimated Marginal Means 8: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	72.0513	.86728	70.2215	73.8811
2.00	73.1553	.74329	71.5871	74.7235
3.00	72.6435	.60864	71.3594	73.9277
4.00	71.1644	1.55594	67.8816	74.4471
5.00	70.5482	.56551	69.3550	71.7413

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=5.0000; agecsq=287.7786

Estimated Marginal Means 9: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	72.5085	1.06863	70.2539	74.7632
2.00	73.7407	.77183	72.1123	75.3691
3.00	72.9441	.57510	71.7308	74.1575
4.00	71.7294	1.76588	68.0037	75.4551
5.00	70.8103	.71461	69.3026	72.3180

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=10.0000; agecsq=287.7786

Estimated Marginal Means 10: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	72.9658	1.28325	70.2584	75.6732
2.00	74.3261	.80868	72.6199	76.0323
3.00	73.2447	.56917	72.0439	74.4456
4.00	72.2944	1.98287	68.1109	76.4779
5.00	71.0725	.87730	69.2215	72.9234

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=15.0000; agecsq=287.7786

Estimated Marginal Means 11: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	73.4230	1.50548	70.2467	76.5993
2.00	74.9115	.85278	73.1123	76.7107
3.00	73.5453	.59168	72.2970	74.7937
4.00	72.8594	2.20482	68.2077	77.5112
5.00	71.3346	1.04728	69.1250	73.5442

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=20.0000; agecsq=287.7786

Estimated Marginal Means 12: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	73.8802	1.73239	70.2252	77.5352
2.00	75.4969	.90305	73.5916	77.4021
3.00	73.8459	.63964	72.4964	75.1954
4.00	73.4244	2.43039	68.2968	78.5521
5.00	71.5967	1.22150	69.0196	74.1739

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=25.0000; agecsq=287.7786

Estimated Marginal Means 13: revrace

Estimates[a]

revrace	Mean	Std. Error	95% Confidence Interval Lower	Upper
1.00	74.3375	1.96236	70.1972	78.4777
2.00	76.0823	.95853	74.0599	78.1046
3.00	74.1465	.70788	72.6530	75.6400
4.00	73.9895	2.65864	68.3802	79.5987
5.00	71.8589	1.39838	68.9085	74.8092

Subpopulation: age18p = 1.00[a]

a. Covariates appearing in the model are fixed at the following values: agec=30.0000; agecsq=287.7786

```
* Simple Model Diagnostic Plots for Table 7.6, Based on Final Model.
* Note: Additional Design-Based Diagnostics not available in SPSS 29, see text for Examples in R.
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  /TITLE='Predicted v. Residuals'.
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Graph

Notes

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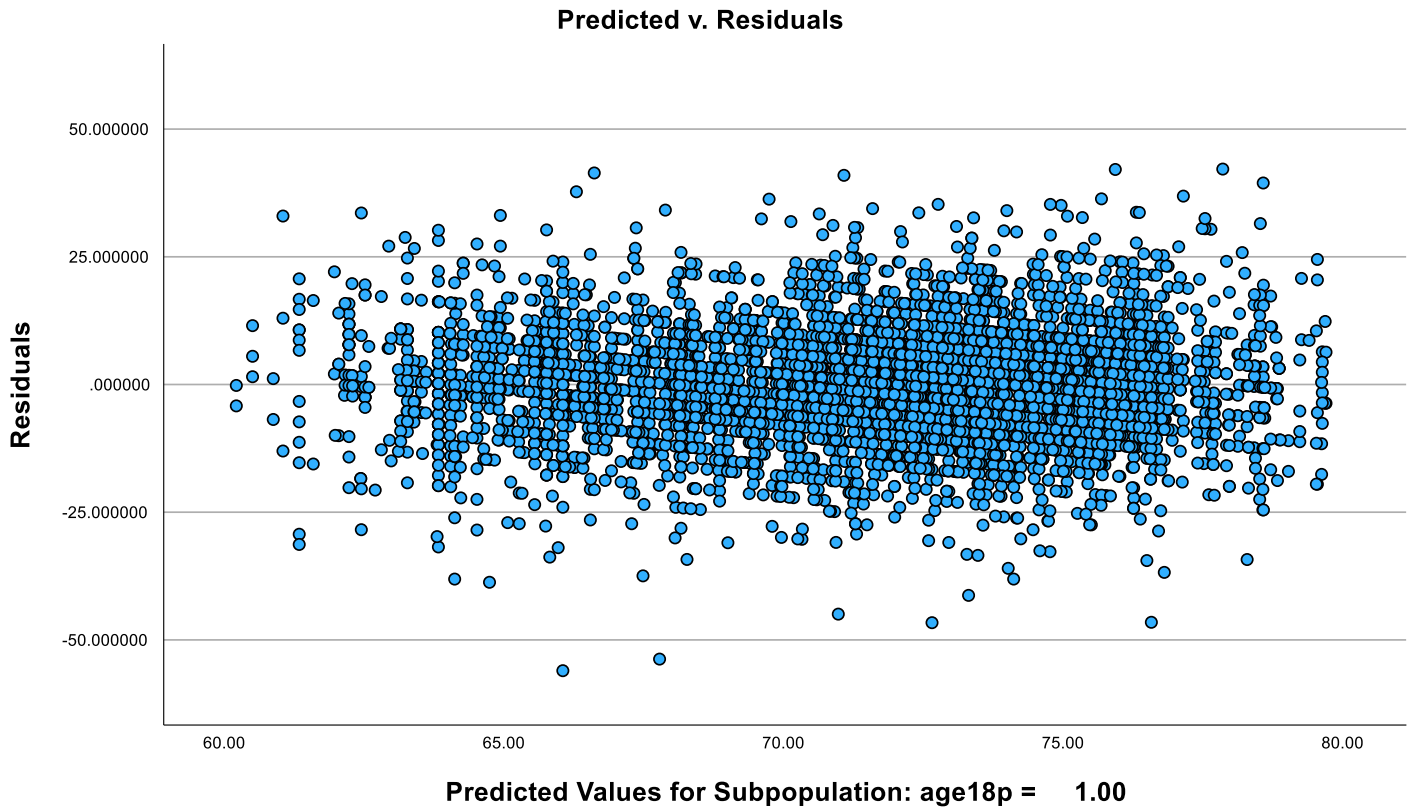
Resources	Processor Time	00:00:00.09
	Elapsed Time	00:00:00.31



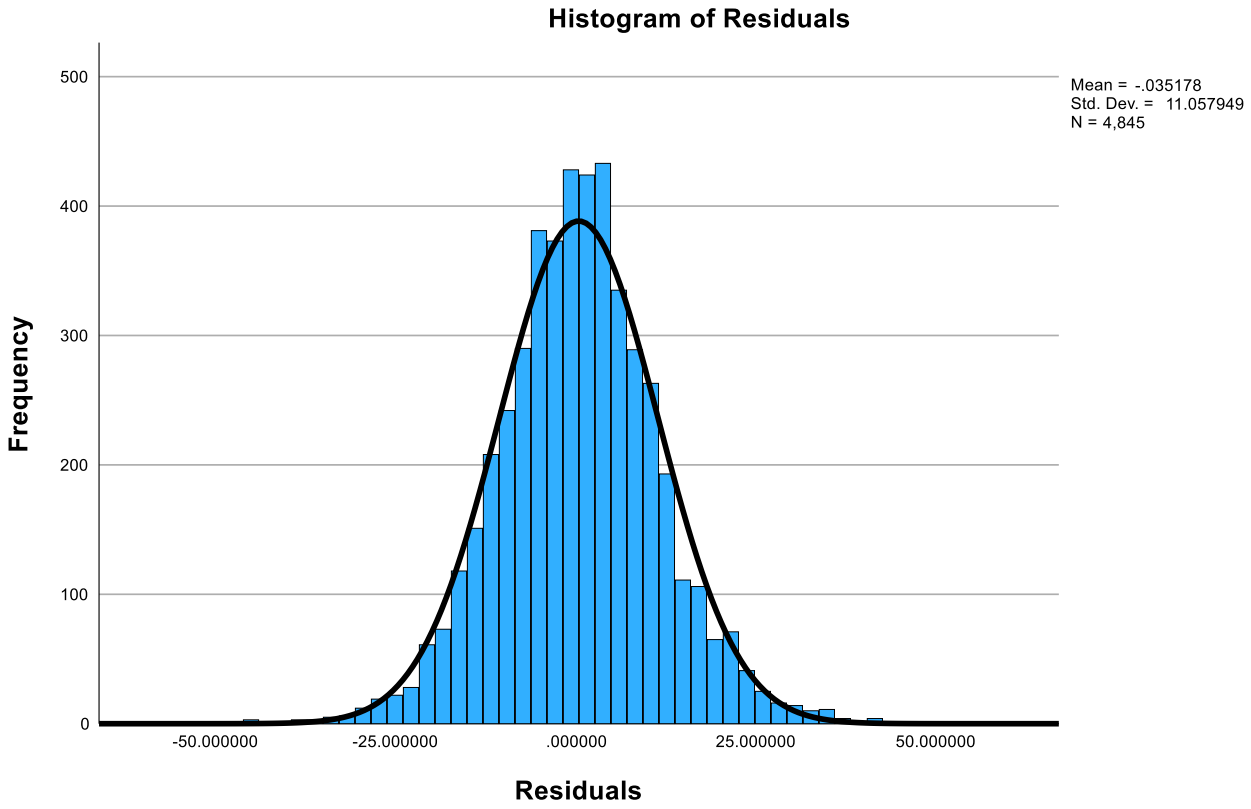

```
GRAPH
  /HISTOGRAM(NORMAL)=Residf_2
```

```
 /title ='Histogram of Residuals'.
```

Graph

Notes

Output Created		26-FEB-2025 14:10:25
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
Syntax		GRAPH /HISTOGRAM(NORMAL)=Residf_2 /title ='Histogram of Residuals'.
Resources	Processor Time	00:00:00.08
	Elapsed Time	00:00:00.23




```
*PP plot using residf.
PPLOT
  /VARIABLES=RESIDF_2
  /NOLOG
  /NOSTANDARDIZE
  /TYPE=Q-Q
  /FRACTION=BLOM
  /TIES=MEAN
```

```
/DIST=NORMAL.
```

PPlot

Notes

Output Created		26-FEB-2025 14:10:25
Comments		
Input	Active Dataset	Nhanes
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	9756
	Date	<none>
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	For a given sequence or time series variable, cases with missing values are not used in the analysis. Cases with negative or zero values are also not used, if the log transform is requested.
Syntax		PPLOT /VARIABLES=RESIDF_2 /NOLOG /NOSTANDARDIZE /TYPE=Q-Q /FRACTION=BLOM /TIES=MEAN /DIST=NORMAL.
Resources	Processor Time	00:00:00.36
	Elapsed Time	00:00:00.56
Use	From	First observation
	To	Last observation
Time Series Settings (TSET)	Amount of Output	PRINT = DEFAULT
	Saving New Variables	NEWVAR = CURRENT
	Maximum Number of Lags in Autocorrelation or Partial Autocorrelation Plots	MXAUTO = 16
	Maximum Number of Lags Per Cross-Correlation Plots	MXCROSS = 7
	Maximum Number of New Variables Generated Per Procedure	MXNEWVAR = 60
	Maximum Number of New Cases Per Procedure	MXPREDICT = 1000
	Treatment of User-Missing Values	MISSING = EXCLUDE
	Confidence Interval Percentage Value	CIN = 95
	Tolerance for Entering Variables in Regression Equations	TOLER = .0001
	Maximum Iterative Parameter Change	CNVERGE = .001
	Method of Calculating Std. Errors for Autocorrelations	ACFSE = IND
	Length of Seasonal Period	Unspecified
	Variable Whose Values Label Observations in Plots	Unspecified
	Equations Include	CONSTANT

Model Description

Model Name	MOD_5

Series or Sequence	1	Residuals
Transformation		None
Non-Seasonal Differencing		0
Seasonal Differencing		0
Length of Seasonal Period		No periodicity
Standardization		Not applied
Distribution	Type	Normal
	Location	estimated
	Scale	estimated
Fractional Rank Estimation Method		Blom's
Rank Assigned to Ties		Mean rank of tied values

Applying the model specifications from MOD_5

Case Processing Summary

		Residuals
Series or Sequence Length		9756
Number of Missing Values in the Plot	User-Missing	0
	System-Missing	4911

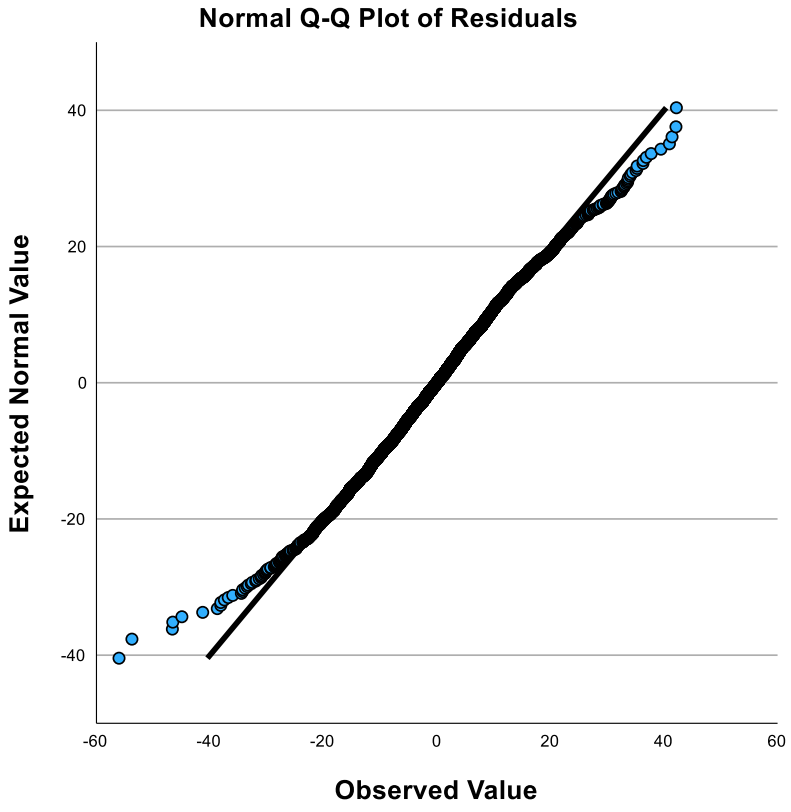
The cases are unweighted.

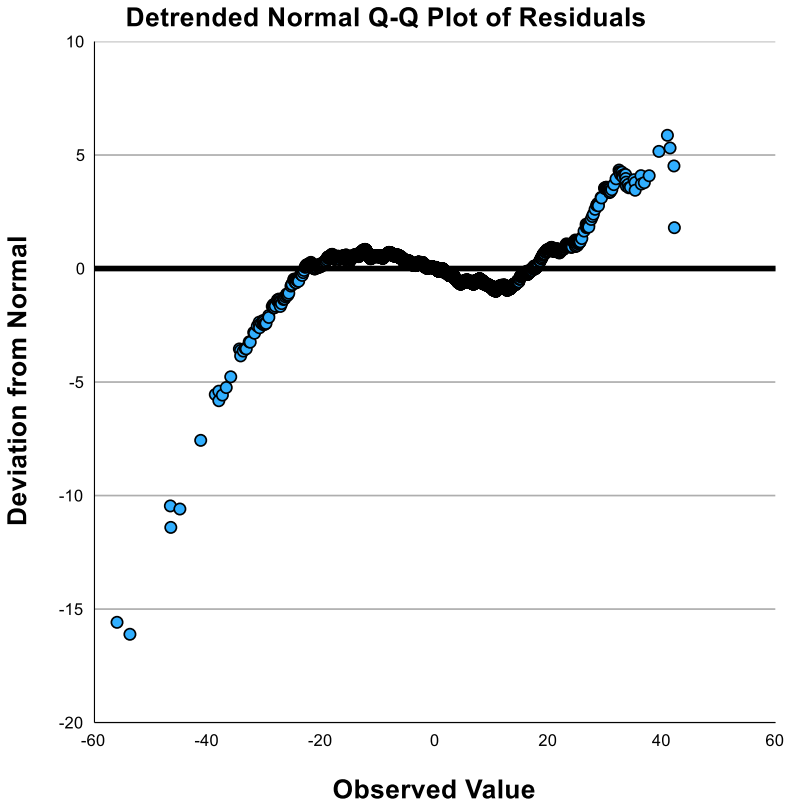
Estimated Distribution Parameters

		Residuals
Normal Distribution	Location	-.03517817
	Scale	11.057949054

The cases are unweighted.

Residuals






```
* Prepare weight for Pfefferman Q Method.
* Turn Weight Off and Filter by age18p=1.
WEIGHT OFF.
EXECUTE.
* reuse filter created above .
FILTER BY filter_$.
SHOW FILTER.
```

SHOW

Notes

Output Created		26-FEB-2025 14:10:26
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
Syntax		SHOW FILTER.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

System Settings

Keyword	Description	Setting
FILTER	Filter variable	age18p=1 (FILTER)

```
* predict  from model below.
GENLIN wtmec2yr BY revrace revgender revmarcat WITH agec  agecsq
 /MODEL  revgender revrace revmarcat agec agecsq
   revgender*agec revgender*agecsq
   revrace*agec revrace*agecsq  INTERCEPT=YES
 DISTRIBUTION=NORMAL LINK=IDENTITY
 /CRITERIA SCALE=1 COVB=MODEL PCONVERGE=1E-006(ABSOLUTE)
SINGULAR=1E-012 ANALYSISTYPE=3(WALD) CILEVEL=95 CITYPE=WALD LIKELIHOOD=FULL
 /MISSING CLASSMISSING=EXCLUDE
 /SAVE XBPRED (PREDQ1)
 /PRINT CPS DESCRIPTIVES MODELINFO FIT SUMMARY SOLUTION.
```

Generalized Linear Models

Notes

Output Created		26-FEB-2025 14:10:26
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
Missing Value Handling	Definition of Missing	User-defined missing values for factor, subject and within-subject variables are treated as missing.
	Cases Used	Statistics are based on cases with valid data for all variables in the model.
Weight Handling		not applicable
Syntax		GENLIN wtmec2yr BY revrace revgender revmarcat WITH agec agecsq /MODEL revgender revrace revmarcat agec agecsq revgender*agec revgender*agecsq revrace*agec revrace*agecsq INTERCEPT=YES DISTRIBUTION=NORMAL LINK=IDENTITY /CRITERIA SCALE=1 COVB=MODEL PCONVERGE=1E-006(ABSOLUTE) SINGULAR=1E-012 ANALYSISTYPE=3(WALD) CILEVEL=95 CITYPE=WALD LIKELIHOOD=FULL /MISSING CLASSMISSING=EXCLUDE /SAVE XBPRED (PREDQ1) /PRINT CPS DESCRIPTIVES MODELINFO FIT SUMMARY SOLUTION.
Resources	Processor Time	00:00:00.09
	Elapsed Time	00:00:00.30
Variables Created or Modified	Predicted Value of the Linear Predictor	PREDQ1

Model Information

Dependent Variable	Full sample 2 year MEC exam weight
Probability Distribution	Normal
Link Function	Identity

Case Processing Summary

	N	Percent
Included	5553	94.7%
Excluded	311	5.3%
Total	5864	100.0%

Categorical Variable Information

			N	Percent
Factor	revrace	1.00	944	17.0%
		2.00	1453	26.2%
		3.00	2040	36.7%
		4.00	576	10.4%
		5.00	540	9.7%
		Total	5553	100.0%
	revgender	1.00	2815	50.7%
		2.00	2738	49.3%
		Total	5553	100.0%
	revmarcat	1.00	1188	21.4%
		2.00	1242	22.4%
		3.00	3123	56.2%
		Total	5553	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	Full sample 2 year MEC exam weight	5553	.00	222579.78	40323.3909	40617.75202
Covariate	agec	5553	-26.36	33.64	2.5656	17.87018
	agecsq	5553	.13	1131.65	325.8683	326.11373

Goodness of Fit[a]

	Value	df	Value/df
Deviance	4854275911155.896	5533	877331630.428
Scaled Deviance	4854275911155.896	5533	
Pearson Chi-Square	4854275911155.896	5533	877331630.428
Scaled Pearson Chi-Square	4854275911155.896	5533	
Log Likelihood[b]	-2427137960680.814		
Akaike's Information Criterion (AIC)	4854275921401.627		
Finite Sample Corrected AIC (AICC)	4854275921401.778		
Bayesian Information Criterion (BIC)	4854275921534.068		
Consistent AIC (CAIC)	4854275921554.068		

Dependent Variable: Full sample 2 year MEC exam weight
Model: (Intercept), revgender, revrace, revmarcat, agec, agecsq, revgender * agec, revgender * agecsq, revrace * agec, revrace * agecsq
[a]

a. Information criteria are in smaller-is-better form.

b. The full log likelihood function is displayed and used in computing information criteria.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
4305423566554.811	19	<.001

Dependent Variable: Full sample 2 year MEC exam weight
Model: (Intercept), revgender, revrace, revmarcat, agec, agecsq, revgender * agec, revgender * agecsq, revrace * agec, revrace * agecsq
[a]

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III Wald Chi-Square	df	Sig.
(Intercept)	2189394780040.865	1	<.001
revgender	824013043.062	1	<.001
revrace	2834803450076.299	4	<.001
revmarcat	47853721404.610	2	<.001
agec	43245363313.398	1	<.001
agecsq	30582278657.206	1	<.001
revgender * agec	2228906884.602	1	<.001
revgender * agecsq	8278728124.918	1	<.001
revrace * agec	114388542675.669	4	<.001
revrace * agecsq	244318779789.439	4	<.001

Dependent Variable: Full sample 2 year MEC exam weight
Model: (Intercept), revgender, revrace, revmarcat, agec, agecsq, revgender * agec, revgender * agecsq, revrace * agec, revrace * agecsq

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval Lower	95% Wald Confidence Interval Upper	Hypothesis Test Wald Chi-Square	Hypothesis Test df
(Intercept)	32315.183	.0640	32315.057	32315.308	255017428287.370	1
[revgender=1.00]	1115.575	.0389	1115.499	1115.652	824013043.062	1
[revgender=2.00]	0[a]	.	.	.	.	.
[revrace=1.00]	-13289.522	.0771	-13289.673	-13289.371	29726992057.084	1
[revrace=2.00]	-11703.620	.0726	-11703.762	-11703.478	26021672484.251	1
[revrace=3.00]	59412.633	.0695	59412.497	59412.769	731644902916.748	1
[revrace=4.00]	-4653.548	.0862	-4653.717	-4653.379	2912560631.675	1
[revrace=5.00]	0[a]	.	.	.	.	.
[revmarcat=1.00]	235.529	.0392	235.452	235.606	36078880.514	1
[revmarcat=2.00]	-7724.564	.0361	-7724.635	-7724.493	45676794923.408	1
[revmarcat=3.00]	0[a]	.	.	.	.	.
agec	-661.506	.0029	-661.512	-661.500	52430102432.955	1
agecsq	-5.293	.0002	-5.293	-5.293	878766272.892	1
[revgender=1.00] * agec	78.308	.0017	78.305	78.312	2228906884.602	1
[revgender=2.00] * agec	0[a]	.	.	.	.	.
[revgender=1.00] * agecsq	8.223	9.0378E-5	8.223	8.223	8278728124.918	1
[revgender=2.00] * agecsq	0[a]	.	.	.	.	.
[revrace=1.00] * agec	625.825	.0034	625.818	625.832	33463099106.168	1
[revrace=2.00] * agec	478.212	.0032	478.206	478.219	22285116022.117	1
[revrace=3.00] * agec	827.264	.0031	827.258	827.270	70064575690.383	1
[revrace=4.00] * agec	73.795	.0038	73.788	73.802	381143904.890	1
[revrace=5.00] * agec	0[a]	.	.	.	.	.
[revrace=1.00] * agecsq	.221	.0002	.221	.222	1112569.741	1
[revrace=2.00] * agecsq	-2.370	.0002	-2.371	-2.370	146093474.236	1
[revrace=3.00] * agecsq	-46.978	.0002	-46.978	-46.977	62453046806.829	1
[revrace=4.00] * agecsq	4.069	.0002	4.069	4.070	314769964.264	1
[revrace=5.00] * agecsq	0[a]	.	.	.	.	.
(Scale)	1[b]					

Parameter Estimates

Parameter	Hypothesis Test Sig.
(Intercept)	<.001
[revgender=1.00]	<.001
[revgender=2.00]	.

[revrace=1.00]	<.001
[revrace=2.00]	<.001
[revrace=3.00]	<.001
[revrace=4.00]	<.001
[revrace=5.00]	.
[revmarcat=1.00]	<.001
[revmarcat=2.00]	<.001
[revmarcat=3.00]	.
agec	<.001
agecsq	<.001
[revgender=1.00] * agec	<.001
[revgender=2.00] * agec	.
[revgender=1.00] * agecsq	<.001
[revgender=2.00] * agecsq	.
[revrace=1.00] * agec	<.001
[revrace=2.00] * agec	<.001
[revrace=3.00] * agec	<.001
[revrace=4.00] * agec	<.001
[revrace=5.00] * agec	.
[revrace=1.00] * agecsq	<.001
[revrace=2.00] * agecsq	<.001
[revrace=3.00] * agecsq	<.001
[revrace=4.00] * agecsq	<.001
[revrace=5.00] * agecsq	.
(Scale)	

Dependent Variable: Full sample 2 year MEC exam weight
Model: (Intercept), revgender, revrace, revmarcat, agec, agecsq, revgender * agec, revgender * agecsq, revrace * agec, revrace * agecsq

a. Set to zero because this parameter is redundant.

b. Fixed at the displayed value.

```
* Check PREDQ1 and Filter.
DESCRIPTIVES VARIABLES=PREDQ1 AGE18P
  /STATISTICS=MEAN STDDEV RANGE MIN MAX.
```

Descriptives

Notes

Output Created		26-FEB-2025 14:10:26
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.

	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=PREDQ1 AGE18P /STATISTICS=MEAN STDDEV RANGE MIN MAX.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Predicted Value of Linear Predictor	5864	97036.088	-3652.379	93383.710	40027.79344	27312.942390
age18p	5864	.00	1.00	1.00	1.0000	.00000
Valid N (listwise)	5864					

```
* Set values < 0 to 1 percentile.
COMPUTE predq1_t =predq1.
if predq1  < 0 predq1_t =4809.
EXECUTE.
* Create New Weight.
COMPUTE Q_WTMEC2YR=WTMEC2YR/ PREDQ1_t .
EXECUTE.

* Analysis Preparation Wizard.
CSPLAN ANALYSIS
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_Q.csaplan'
  /PLANVARS ANALYSISWEIGHT=Q_WTMEC2YR
  /SRSESTIMATOR TYPE=WOR
  /PRINT PLAN
  /DESIGN STRATA=SDMVSTRA CLUSTER=SDMVPSU
  /ESTIMATOR TYPE=WR.
```

Complex Samples: Plan

Notes

Output Created		26-FEB-2025 14:10:26
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
Syntax		CSPLAN ANALYSIS /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_Q.csaplan' /PLANVARS ANALYSISWEIGHT=Q_WTMEC2YR /SRSESTIMATOR TYPE=WOR /PRINT PLAN /DESIGN STRATA=SDMVSTRA CLUSTER=SDMVPSU /ESTIMATOR TYPE=WR.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.83
Files Saved	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_Q.csaplan

Warnings

This procedure does not check the consistency of the working data file with the plan file. We recommend looking at the output table or the plan file to check consistency before performing selection or analysis.

Summary

			Stage 1
Design Variables	Stratification	1	Masked variance pseudo-stratum
	Cluster	1	Masked variance pseudo-PSU
Analysis Information	Estimator Assumption		Sampling with replacement

Plan File: P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_Q.csaplan
Weight Variable: Q_WTMEC2YR
SRS Estimator: Sampling without replacement

```
* Final Model Run With Q Weight.
CSGLM  bpxdi1_1 BY revrace revgender revmarcat WITH agec  agecsq
  /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_Q.csaplan'
  /DOMAIN VARIABLE=age18p(1)
  /MODEL  revgender revrace revmarcat agec agecsq  revgender*agec revgender*agecsq  revrace*agec revrace*agecsq
  /INTERCEPT INCLUDE=YES SHOW=YES
  /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF
  /PRINT SUMMARY VARIABLEINFO SAMPLEINFO
  /TEST TYPE=F PADJUST=LSD
  /MISSING CLASSMISSING=EXCLUDE
  /CRITERIA CILEVEL=95.
```

Complex Samples: General Linear Model

Notes

Output Created		26-FEB-2025 14:10:27
Comments		
Input	Active Dataset	Nhanes
	Filter	age18p=1 (FILTER)
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	5864
	Plan File	P:\ASDA3\Data Sets for Analysis Examples and Stata R Code/nhanes_Q.csaplan
Missing Value Handling	Definition of Missing	User-defined missing values among the strata, cluster, subpopulation and factor variables are treated as missing.
	Cases Used	Only cases with valid data for all analysis variables are used in computing any statistics.
Syntax		CSGLM bpxdi1_1 BY revrace revgender revmarcat WITH agec agecsq /PLAN FILE='P:\ASDA3\Data Sets for Analysis Examples and Stata R Code\nhanes_Q.csaplan' /DOMAIN VARIABLE=age18p(1) /MODEL revgender revrace revmarcat agec agecsq revgender*agec revgender*agecsq revrace*agec revrace*agecsq /INTERCEPT INCLUDE=YES SHOW=YES /STATISTICS PARAMETER SE CINTERVAL TTEST DEFF /PRINT SUMMARY VARIABLEINFO SAMPLEINFO /TEST TYPE=F PADJUST=LSD /MISSING CLASSMISSING=EXCLUDE /CRITERIA CILEVEL=95.
Resources	Processor Time	00:00:00.09
	Elapsed Time	00:00:00.20

Warnings

The design-based covariance matrix is singular. The validity of results is uncertain.

Sample Design Information

		N
Unweighted Cases	Valid	4845
	Invalid	1019
	Total	5864

Population Size		5257.282
Subpopulation Size		5257.282[a]
Stage 1	Strata	14
	Units	31
Sampling Design Degrees of Freedom		17

a. Subpopulation: age18p = 1.00

Variable Information

		Mean
Dependent Variable	bpxdi1_1	71.4297
Covariates	agec	3.0352
	agecsq	335.6223

Subpopulation: age18p = 1.00

Factor Information

		Weighted Count	Weighted Percent
revrace	1.00	886.386	16.9%
	2.00	1450.712	27.6%
	3.00	1860.526	35.4%
	4.00	552.011	10.5%
	5.00	507.647	9.7%
revgender	1.00	2535.762	48.2%
	2.00	2721.520	51.8%
revmarcat	1.00	1076.380	20.5%
	2.00	1405.421	26.7%
	3.00	2775.482	52.8%
Subpopulation Size		5257.282	100.0%

Subpopulation: age18p = 1.00

Model Summary[a]

R Square	.129

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec + agecsq + revgender * agec + revgender * agecsq + revrace * agec + revrace * agecsq

Tests of Model Effects[a]

Source	df1	df2	Wald F	Sig.
(Corrected Model)	17.000	1.000	55.468	.105
(Intercept)	1.000	17.000	24752.453	<.001
revgender	1.000	17.000	29.366	<.001
revrace	4.000	14.000	3.046	.053
revmarcat	2.000	16.000	.780	.475
agec	1.000	17.000	21.228	<.001
agecsq	1.000	17.000	126.240	<.001
revgender * agec	1.000	17.000	1.141	.300
revgender * agecsq	1.000	17.000	2.348	.144
revrace * agec	4.000	14.000	4.556	.014
revrace * agecsq	4.000	14.000	2.716	.073

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec + agecsq + revgender * agec + revgender * agecsq + revrace * agec + revrace * agecsq

Parameter Estimates[a]

Parameter	Estimate	Std. Error	95% Confidence Interval		Hypothesis Test		
			Lower	Upper	t	df	Sig.
(Intercept)	75.437	.968	73.396	77.478	77.969	17.000	<.001
[revgender=1.00]	-3.437	.634	-4.775	-2.099	-5.419	17.000	<.001
[revgender=2.00]	.000[b]	.	.	.	.	.	.
[revrace=1.00]	1.173	.999	-.935	3.282	1.174	17.000	.256
[revrace=2.00]	3.406	1.050	1.191	5.622	3.244	17.000	.005
[revrace=3.00]	1.406	1.068	-.847	3.659	1.317	17.000	.205
[revrace=4.00]	.733	.976	-1.326	2.792	.751	17.000	.463
[revrace=5.00]	.000[b]	.	.	.	.	.	.
[revmarcat=1.00]	.549	.591	-.698	1.797	.929	17.000	.366
[revmarcat=2.00]	-.250	.516	-1.338	.838	-.485	17.000	.634
[revmarcat=3.00]	.000[b]	.	.	.	.	.	.
agec	.041	.043	-.050	.132	.955	17.000	.353
agecsq	-.014	.003	-.020	-.008	-5.021	17.000	<.001
[revgender=1.00] * agec	.031	.029	-.031	.093	1.068	17.000	.300
[revgender=2.00] * agec	.000[b]	.	.	.	.	.	.
[revgender=1.00] * agecsq	.003	.002	-.001	.007	1.532	17.000	.144
[revgender=2.00] * agecsq	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agec	.040	.059	-.086	.165	.668	17.000	.513
[revrace=2.00] * agec	.071	.039	-.011	.154	1.825	17.000	.086
[revrace=3.00] * agec	-.002	.060	-.127	.124	-.026	17.000	.980
[revrace=4.00] * agec	.023	.063	-.110	.156	.367	17.000	.718
[revrace=5.00] * agec	.000[b]	.	.	.	.	.	.
[revrace=1.00] * agecsq	.001	.003	-.005	.007	.320	17.000	.753
[revrace=2.00] * agecsq	-.003	.003	-.010	.003	-1.023	17.000	.321
[revrace=3.00] * agecsq	.002	.002	-.003	.007	.903	17.000	.379
[revrace=4.00] * agecsq	-.003	.005	-.013	.007	-.647	17.000	.526
[revrace=5.00] * agecsq	.000[b]	.	.	.	.	.	.

Parameter Estimates[a]

Parameter	Design Effect
(Intercept)	23.306
[revgender=1.00]	24.816
[revgender=2.00]	.
[revrace=1.00]	18.294
[revrace=2.00]	20.281
[revrace=3.00]	23.884
[revrace=4.00]	13.476
[revrace=5.00]	.
[revmarcat=1.00]	18.037
[revmarcat=2.00]	18.841
[revmarcat=3.00]	.
agec	23.342
agecsq	35.257
[revgender=1.00] * agec	29.870
[revgender=2.00] * agec	.
[revgender=1.00] * agecsq	38.437
[revgender=2.00] * agecsq	.
[revrace=1.00] * agec	29.944
[revrace=2.00] * agec	14.478
[revrace=3.00] * agec	38.151
[revrace=4.00] * agec	28.755
[revrace=5.00] * agec	.
[revrace=1.00] * agecsq	23.625
[revrace=2.00] * agecsq	29.649
[revrace=3.00] * agecsq	19.312
[revrace=4.00] * agecsq	52.482
[revrace=5.00] * agecsq	.

Subpopulation: age18p = 1.00[a]

a. Model: bpxdi1_1 = (Intercept) + revgender + revrace + revmarcat + agec + agecsq + revgender * agec + revgender * agecsq + revrace * agec + revrace * agecsq

b. Set to zero because this parameter is redundant.

```
* Export Output.
OUTPUT EXPORT
  /CONTENTS  EXPORT=ALL  LAYERS=PRINTSETTING  MODELVIEWS=PRINTSETTING
  /DOC  DOCUMENTFILE=
 'P:\ASDA3\Replication SPSS 29\Chapter 7\Analysis Example Replication ASDA3 '+
    'SPSS C7 Code and Results.docx'
     NOTESCAPTIONS=YES  WIDETABLES=WRAP PAGEBREAKS=YES
     PAGESIZE=INCHES(8.5, 11.0)  TOPMARGIN=INCHES(.5)  BOTTOMMARGIN=INCHES(.5)
```