

```
* SAS Analysis Examples Replication for ASDA 3rd Edition
* Berglund Winter 2025
* Chapter 12 ;
```

```
libname d "P:\ASDA3\Data Sets for Analysis Examples and Stata R Code" ;
```

```
options nocenter nodate nonumber ls=118 ps=67 ;
```

```
data c12_nhanes ;
  set d.nhanes1112 ;
  if age >=18 and (wtmec2yr ne . and wtmec2yr > 0) ;

  * variables needed for imputations ;
  bpxdil_1=bpxdil ; if bpxdil = . then bpxdil_1 =0 ;
  agec=age-46.36 ;
  agecsq=agec*agec ;
  descodes=sdmvstra*10+sdmvpsu ;
  high_diastolic=0 ;
  if bpxdil >= 90 and bpxdil ne . then high_diastolic = 1 ; else if bpxdil =. then high_diastolic= . ;
run ;
proc means data=c12_nhanes n nmiss min mean max ;
  var bpxdil agec agecsq descodes high_diastolic riagendr ridreth1 bmx bmi marcat indfmpir ;
run ;
```

```
ods rtf bodytitle file='P:\ASDA3\Replication SAS\Chapter 12\Analysis Example Replication ASDA3 SAS C12 Code and Results.rtf' ;
```

```
* Section 12.6 Application of MI and FI methods using NHANES 2011-2012 data ;
title "Means and Frequencies for Key Variables of Interest, Numbers for Table 12.2";
```

```
proc means n nmiss min mean max data=c12_nhanes ;
  var agec bmx bmi indfmpir bpxdil ;
run ;
proc freq data=c12_nhanes ;
  tables riagendr marcat ridreth1 / missing ;
run ;
```

```
title "Section 12.6.2 Examine Missing Data Problem Using PROC MI without Imputation" ;
```

```
proc mi nimpute=0 data=c12_nhanes ;
  var bpxdil bmx bmi indfmpir marcat riagendr ridreth1 agec agecsq wtme2yr descodes ;
run ;
```

```
* MI Imputations and Analyses with and without Design Variables in Imputation Model ;
```

```
* MI Imputation #1 with Design Variables in Imputation Model ;
```

```
title1 "Section 12.6.3 Imputation of Missing Data with Design Variables" ;
```

```
proc mi data=c12_nhanes nimpute=5 out=outimp_mil seed=2024 ;
  class marcat descodes riagendr ridreth1 ;
  var riagendr ridreth1 agec agecsq wtme2yr descodes bmx bmi marcat indfmpir bpxdil ;
  fcs logistic (marcat=riagendr ridreth1 agec agecsq bmx bmi indfmpir bpxdil /link=glogit) ;
  fcs reg (bmx bmi=riagendr ridreth1 agec agecsq marcat indfmpir bpxdil) ;
  fcs reg (bpxdil=riagendr ridreth1 agec agecsq wtme2yr descodes bmx bmi marcat indfmpir) ;
  fcs reg (indfmpir=riagendr ridreth1 agec agecsq bmx bmi marcat bpxdil) ;
run ;
```

```
title "Obtain Imputed Weighted and Design-Based Means for BMI, Poverty Index, and Blood Pressure, by Imputation, Table 12.3" ;
```

```
proc surveymeans data=outimp_mil stacking ;
  by _imputation_ ;
  weight wtme2yr ; strata sdmvstra ; cluster sdmvpsu ;
  var bmx bmi indfmpir bpxdil ;
run ;
```

```
* MI with Design Variables Analyses ;
```

```
data imputed_mila ;
  set outimp_mil ;
  if bpxdil >=90 then high_diastolic =1 ; else high_diastolic =0 ;
run ;
```

```
title "MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4" ;
```

```
proc surveyfreq data=imputed_mila ;
  by _imputation_ ;
  weight wtme2yr ; strata sdmvstra ; cluster sdmvpsu ;
  tables high_diastolic / cl(type=logit) ;
  ods output oneway = outstats_mla ;
run ;
proc print data=outstats_mla (where=(high_diastolic=1));
run ;
```

```
title "PROC MIANALYZE for Combining Results from MI Design Based Imputation: Table 12.4" ;
proc mianalyze data=outstats_mla (where=(high_diastolic=1)) edf=17 ; * use df reported above ;
```

```

modeleffects percent ;
stderr stderr ;
run ;

* Section 12.6.4.1.2 Logistic Regression Model for High Diastolic Blood Pressure ;
title "PROC SURVEYLOGISTIC using High Diastolic Blood Pressure, Imputed with Design Variables in Model, Table 12.5" ;
proc surveylogistic data=imputed_mila ;
by _imputation_ ;
strata sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
class riagendr (ref='1') ridreth1 (ref='1') / param=ref ;
model high_diastolic (event='1') = ridreth1 riagendr agec agecsq ;
ods output parameterestimates=outest_mi_log ;
run;
proc print data=outest_mi_log ;
run ;

proc mianalyze parms(classvar=classval)= outest_mi_log ;
class ridreth1 riagendr ;
modeleffects intercept ridreth1 riagendr agec agecsq ;
run ;

* MI #2 without Design Variables in Imputation Models;
title "Section 12.6.3 Imputation of Missing Data without Design Variables" ;
proc mi data=c12_nhanes nimpute=5 out=outimp_mi2 seed=2024 ;
class marcat riagendr ridreth1 ;
var riagendr ridreth1 agec agecsq bmx bmi marcat indfmpir bpxdil ;
fcs logistic (marcat=riagendr ridreth1 agec agecsq bmx bmi indfmpir bpxdil / link=glogit) ;
fcs reg (bmx bmi=riagendr ridreth1 agec agecsq marcat indfmpir bpxdil) ;
fcs reg (bpxdil=riagendr ridreth1 agec agecsq bmx bmi marcat indfmpir) ;
fcs reg (indfmpir=riagendr ridreth1 agec agecsq bmx bmi marcat bpxdil) ;
run ;

* use imputed data set and create an indicator of high blood pressure ;
data outimp_mi2a ;
set outimp_mi2 ;
if bpxdil >=90 then high_dbp=1 ; else high_dbp=0 ;
run ;

* MI without Design Variables Analyses ;
title "Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4" ;
proc surveyfreq data=outimp_mi2a ;
by _imputation_ ;
weight wtmec2yr ; strata sdmvstra ; cluster sdmvpsu ;
tables high_dbp / cl(type=logit) ;
ods output oneway=outstats_m2a ;
run ;
proc print data=outstats_m2a (where = (high_dbp=1));
run ;
title "PROC MIANALYZE for Combining Results Table 12.4" ;
proc mianalyze data=outstats_m2a (where = (high_dbp=1)) edf=17 ;
modeleffects percent ;
stderr stderr ;
run ;

title "PROC SURVEYLOGISTIC using High Blood Pressure Imputed without Design Variables in Model, Table 12.5" ;
proc surveylogistic data=outimp_mi2a ;
by _imputation_ ;
strata sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
class riagendr (ref='1') ridreth1 (ref='1') / param=ref ;
model high_dbp (event='1') = ridreth1 riagendr agec agecsq ;
ods output parameterestimates=outest_m2b ;
run;
proc print data=outest_m2b ; run ;

* PROC MIANALYZE uses parameter data, note that use of the CLASS statement prevents use of the TEST statement in this procedure,
one option is to use dummy variables in the 2nd step in PROC SURVEYLOGISTIC and then use TEST statement for the dummy variables of interest (not shown here since we show use of the TEST statement in the CC and SURVEYIMPUTE example below);

proc mianalyze parms(classvar=classval)=outest_m2b ;
class ridreth1 riagendr ;
modeleffects intercept ridreth1 riagendr agec agecsq ;
run ;

* Complete Case Analyses (No Imputations);
title "Weighted Complete Case Analysis" ;
proc means data=c12_nhanes n nmiss min mean max stderr clm ndec=3 ;

```

```

var bpxdil bmx bmi indfmpir ;
weight wt mec2yr ;
run ;

title "Weighted and Design Adjusted Complete Case Analysis for Table 12.4" ;
proc surveymeans data=c12_nhanes mean clm df ;
strata sdmvstra ; cluster sdmvpsu ; weight wt mec2yr ;
var high_diastolic ;
run ;

title "Complete Case Analysis: use of PROC SURVEYLOGISTIC with High Blood Pressure as Outcome" ;
proc surveylogistic data=c12_nhanes ;
strata sdmvstra ; cluster sdmvpsu ; weight wt mec2yr ;
class riagendr (ref='1') ridreth1 (ref='1') / param=ref ;
model high_diastolic (event='1') = ridreth1 riagendr agec agecsq ;
testeth_gender: test ridreth12, ridreth13, ridreth14, ridreth15, riagendr2 ;
run;

* FEFI Hot Deck Method for Imputation ;
title "Section 12.6.3.2 FEFI: Hot Deck Method" ;
data c12_fefi ;
set c12_nhanes ;
* age in categories ;
if age >= 18 & age <= 24 then age4cat=1 ;
if age >= 25 & age <= 44 then age4cat = 2 ;
if age >= 45 & age <= 64 then age4cat = 3 ;
if age >= 65 then age4cat = 4 ;

* bmx bmi in categories ;
if . < bmx bmi < 18.5 then bmicat=1 ;
else if 18.5 <= bmx bmi < 25 then bmicat=2 ;
else if 25.0 <= bmx bmi < 30 then bmicat=3 ;
else if 30 <= bmx bmi then bmicat=4 ;

* indfmpir in 5 categories ;
if . < indfmpir <= .99 then povcat=1 ;
else if 1 <= indfmpir <= 1.99 then povcat=2 ;
else if 2 <= indfmpir <= 2.99 then povcat=3 ;
else if 3 <= indfmpir <= 3.99 then povcat=4 ;
else if 4 <= indfmpir <= 4.99 then povcat=5 ;
else if indfmpir=5 then povcat=6 ;

* 3 category DBP ;
if bpxdil > . and bpxdil < 80 then dbpcat=1 ;
else if bpxdil >= 80 and bpxdil < 90 then dbpcat=2 ;
else if 90<= bpxdil then dbpcat=3 ;
run ;

* note that formats are not used in models due to complexity of referring to them for global tests, included here for
clarity and possible use in models ;
proc format ;
value pf 1='0-1.99' 2='1.0-1.99' 3='2.0-2.99' 4='3.0-3.99' 5='4.0-4.99' 6='5.0' ;
value dbpf 1='<80' 2='80-89.9' 3='90+' ;
value bmif 1='<18.5' 2='18.5-24.99' 3='25-29.99' 4='30+' ;
value rf 1='Hispanic' 2='OthHispanic' 3='White' 4='Black' 5='Other' ;
value af 1='18-24' 2='25-44' 3='45-64' 4='65+' ;
value gf 1='M' 2='F' ;
value yn 1='Y' 0='N' ;
value mf 1='Married' 2='Previously Married' 3='Never Married' ;
run ;

title "PROC SURVEYIMPUTE for Imputation Using the FEFI Method" ;
proc surveyimpute data=c12_fefi method=FEFI varmethod=Jackknife ;
id seqn ;
class age4cat povcat riagendr marcat ridreth1 bmicat dbpcat ;
var age4cat povcat riagendr marcat ridreth1 bmicat dbpcat ;
impjoint povcat bmicat ;
strata sdmvstra ;
cluster sdmvpsu ;
weight wt mec2yr ;
output out=nhanesFEFI outjkcoefs=nhanesJKCOEFS;
run;

title "Explore FEFI Results for DBPCat" ;
proc surveyfreq data=nhanesfefi varmethod=Jackknife ;
weight impwt ;
repweights imprepwt_ / jkcoefs=nhanesJKCOEFS ;
tables dbpcat ; *format dbpcat dbpf. ;
run ;

* FEFI Analyses ;

```

```

data imputed_fefi ;
  set nhanesfefi ;
  if dbpcat=3 then high_dbp=1 ; else high_dbp=0 ;
run ;

title "FEFI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4" ;
proc surveyfreq data=imputed_fefi ;
  weight impwt ; repweights imprepwt_ : / jkcoefs=nhanesjkcoefs ;
  tables high_dbp / cl ;
run ;

title "FEFI Analysis: Logistic Regression of High Diastolic Blood Pressure, Table 12.5" ;
proc surveylogistic data=imputed_fefi varmethod=Jackknife;
  class riagendr (ref=first) ridreth1 (ref=first) / param=ref ;
  model high_dbp (event='1') = ridreth1 riagendr agec agecsq ;
  weight ImpWt;
  repweights ImpRepWt_ : / jkcoefs=nhanesJKCOEFS;
  testeth_gender: test ridreth12, ridreth13, ridreth14, ridreth15, riagendr2 ;
run;

ods rtf close ;

```

*Means and Frequencies for Key Variables of Interest, Numbers for Table 12.2*

*The MEANS Procedure*

<b>Variable</b>	<b>Label</b>	<b>N</b>	<b>N Miss</b>	<b>Minimum</b>	<b>Mean</b>	<b>Maximum</b>
agec		5615	0	-28.3600000	0.8050935	33.6400000
bmbmi	Body Mass Index (kg/m**2)	5525	90	13.4000000	28.6176652	82.1000000
indfmpir	Ratio of family income to poverty	5128	487	0	2.3739255	5.0000000
BPXDI1	Diastolic: Blood pres (1st rdg) mm Hg	5132	483	0	70.7400624	120.0000000

*Means and Frequencies for Key Variables of Interest, Numbers for Table 12.2*

*The FREQ Procedure*

<b>Gender</b>				
<b>riagendr</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
<b>1</b>	2772	49.37	2772	49.37
<b>2</b>	2843	50.63	5615	100.00

<b>1=married 2=prev married 3=never married</b>				
<b>marcat</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
<b>.</b>	300	5.34	300	5.34
<b>1</b>	2991	53.27	3291	58.61
<b>2</b>	1183	21.07	4474	79.68
<b>3</b>	1141	20.32	5615	100.00

<b>1=mex 2=oth hisp 3=white 4=black 5=other</b>				
<b>RIDRETH1</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
<b>1</b>	569	10.13	569	10.13
<b>2</b>	577	10.28	1146	20.41
<b>3</b>	2014	35.87	3160	56.28
<b>4</b>	1505	26.80	4665	83.08
<b>5</b>	950	16.92	5615	100.00

Section 12.6.2 Examine Missing Data Problem Using PROC MI without Imputation

The MI Procedure

Model Information	
Data Set	WORK.C12_NHANES
Method	MCMC
Multiple Imputation Chain	Single Chain
Initial Estimates for MCMC	EM Posterior Mode
Start	Starting Value
Prior	Jeffreys
Number of Imputations	0
Number of Burn-in Iterations	200
Number of Iterations	100
Seed for random number generator	923951000

Missing Data Patterns											
Group	BPXD11	bmx bmi	indfmpir	marcat	riagendr	RIDRETH1	agec	agecsq	WTMEC2YR	decode	Freq
1	X	X	X	X	X	X	X	X	X	X	4430
2	X	X	X	.	X	X	X	X	X	X	231
3	X	X	.	X	X	X	X	X	X	X	371
4	X	X	.	.	X	X	X	X	X	X	32
5	X	.	X	X	X	X	X	X	X	X	49
6	X	.	X	.	X	X	X	X	X	X	7
7	X	.	.	X	X	X	X	X	X	X	12
8	.	X	X	X	X	X	X	X	X	X	372
9	.	X	X	.	X	X	X	X	X	X	21
10	.	X	.	X	X	X	X	X	X	X	60
11	.	X	.	.	X	X	X	X	X	X	8
12	.	.	X	X	X	X	X	X	X	X	17
13	.	.	X	.	X	X	X	X	X	X	1
14	.	.	.	X	X	X	X	X	X	X	4

Missing Data Patterns											
Group	Percent	Group Means									
		BPXD11	bmx bmi	indfmpir	marcat	riagendr	RIDRETH1	agec	agecsq	WTMEC2YR	
1	78.90	71.339955	28.782009	2.443962	1.653499	1.498871	3.304740	2.069571	316.388209	43485	
2	4.11	61.965368	25.516450	1.604935	.	1.471861	3.190476	-27.814545	773.896873	27536	
3	6.61	71.110512	28.007817	.	1.684636	1.466307	3.412399	5.610350	364.275692	31374	
4	0.57	58.625000	26.118750	.	.	1.500000	3.562500	-24.703750	783.438350	26245	
5	0.87	68.040816	.	1.951429	1.693878	1.489796	3.142857	12.313469	469.841437	32027	
6	0.12	42.285714	.	0.647143	.	2.000000	3.000000	-27.788571	772.449600	17208	
7	0.21	66.666667	.	.	1.916667	1.583333	3.333333	12.806667	440.149600	20355	
8	6.63	.	29.639785	2.159086	1.626344	1.623656	3.204301	0.330860	302.220890	40734	
9	0.37	.	28.476190	1.714762	.	1.476190	3.095238	-27.645714	764.489600	30193	
10	1.07	.	27.501667	.	1.416667	1.566667	3.433333	6.856667	330.750267	33288	
11	0.14	.	26.650000	.	.	1.500000	2.500000	-15.735000	706.074600	14549	

Missing Data Patterns										
Group	Percent	Group Means								
		BPXDII	bmx bmi	indfmpir	marcat	riagendr	RIDRETH1	agec	agecsq	WTMEC2YR
12	0.30	.	.	2.145882	1.647059	1.882353	3.705882	3.404706	358.242541	35291
13	0.02	.	.	0.180000	.	2.000000	5.000000	-27.360000	748.569600	15276
14	0.07	.	.	.	1.500000	1.250000	3.000000	16.390000	594.319600	18287

Missing Data Patterns	
Group	Group Means
	decode
1	960.049210
2	962.822511
3	960.576819
4	960.500000
5	970.346939
6	971.857143
7	972.500000
8	959.513441
9	961.619048
10	960.033333
11	964.375000
12	969.823529
13	981.000000
14	921.750000

Section 12.6.3 Imputation of Missing Data with Design Variables

The MI Procedure

Model Information	
Data Set	WORK.C12_NHANES
Method	FCS
Number of Imputations	5
Number of Burn-in Iterations	20
Seed for random number generator	2024

FCS Model Specification	
Method	Imputed Variables
Regression	agec agecsq WTMEC2YR bmx bmi indfmpir BPXD11
Logistic Regression	marcat
Discriminant Function	riagendr RIDRETH1 descodes

Missing Data Patterns											
Group	riagendr	RIDRETH1	agec	agecsq	WTMEC2YR	descodes	bmx bmi	marcat	indfmpir	BPXD11	Freq
1	X	X	X	X	X	X	X	X	X	X	4430
2	X	X	X	X	X	X	X	X	X	.	372
3	X	X	X	X	X	X	X	X	.	X	371
4	X	X	X	X	X	X	X	X	.	.	60
5	X	X	X	X	X	X	X	.	X	X	231
6	X	X	X	X	X	X	X	.	X	.	21
7	X	X	X	X	X	X	X	.	.	X	32
8	X	X	X	X	X	X	X	.	.	.	8
9	X	X	X	X	X	X	.	X	X	X	49
10	X	X	X	X	X	X	.	X	X	.	17
11	X	X	X	X	X	X	.	X	.	X	12
12	X	X	X	X	X	X	.	X	.	.	4
13	X	X	X	X	X	X	.	.	X	X	7
14	X	X	X	X	X	X	.	.	X	.	1

Missing Data Patterns							
Group	Percent	Group Means					
		agec	agecsq	WTMEC2YR	bmx bmi	indfmpir	BPXD11
1	78.90	2.069571	316.388209	43485	28.782009	2.443962	71.339955
2	6.63	0.330860	302.220890	40734	29.639785	2.159086	.
3	6.61	5.610350	364.275692	31374	28.007817	.	71.110512
4	1.07	6.856667	330.750267	33288	27.501667	.	.
5	4.11	-27.814545	773.896873	27536	25.516450	1.604935	61.965368
6	0.37	-27.645714	764.489600	30193	28.476190	1.714762	.
7	0.57	-24.703750	783.438350	26245	26.118750	.	58.625000
8	0.14	-15.735000	706.074600	14549	26.650000	.	.
9	0.87	12.313469	469.841437	32027	.	1.951429	68.040816
10	0.30	3.404706	358.242541	35291	.	2.145882	.

Missing Data Patterns							
Group	Percent	Group Means					
		agec	agecsq	WTMEC2YR	bmbxmi	indfmpir	BPXD11
11	0.21	12.806667	440.149600	20355	.	.	66.666667
12	0.07	16.390000	594.319600	18287	.	.	.
13	0.12	-27.788571	772.449600	17208	.	0.647143	42.285714
14	0.02	-27.360000	748.569600	15276	.	0.180000	.

Variance Information (5 Imputations)							
Variable	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
	Between	Within	Total				
bmbxmi	0.000221	0.008545	0.008811	2433	0.031089	0.030592	0.993919
indfmpir	0.000091418	0.000496	0.000606	118.88	0.221071	0.194147	0.962622
BPXD11	0.001296	0.028766	0.030321	1182.9	0.054058	0.052531	0.989603

Parameter Estimates (5 Imputations)										
Variable	Mean	Std Error	95% Confidence Limits		DF	Minimum	Maximum	Mu0	t for H0: Mean=Mu0	Pr >  t
bmbxmi	28.619484	0.093865	28.43542	28.80355	2433	28.601908	28.638957	0	304.90	<.0001
indfmpir	2.366093	0.024616	2.31735	2.41484	118.88	2.349681	2.374585	0	96.12	<.0001
BPXD11	70.779071	0.174131	70.43743	71.12071	1182.9	70.722050	70.816407	0	406.47	<.0001

*Obtain Imputed Weighted and Design-Based Means for BMI, Poverty Index, and Blood Pressure, by Imputation, Table 12.3*

*The SURVEYMEANS Procedure*

Imputation Number=1

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Statistics						
Variable	Label	N	Mean	Std Error of Mean	Lower 95% CL for Mean	Upper 95% CL for Mean
<b>bmx bmi</b>	Body Mass Index (kg/m**2)	5615	28.622847	0.207852	28.184318	29.061377
<b>ind fmpir</b>	Ratio of family income to poverty	5615	2.819851	0.100173	2.608504	3.031198
<b>BPXD11</b>	Diastolic: Blood pres (1st rdg) mm Hg	5615	71.364467	0.522247	70.262622	72.466313

*Obtain Imputed Weighted and Design-Based Means for BMI, Poverty Index, and Blood Pressure, by Imputation, Table 12.3*

*The SURVEYMEANS Procedure*

Imputation Number=2

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Statistics						
Variable	Label	N	Mean	Std Error of Mean	Lower 95% CL for Mean	Upper 95% CL for Mean
<b>bmx bmi</b>	Body Mass Index (kg/m**2)	5615	28.629725	0.215241	28.175606	29.083844
<b>ind fmpir</b>	Ratio of family income to poverty	5615	2.830272	0.102946	2.613075	3.047469
<b>BPXD11</b>	Diastolic: Blood pres (1st rdg) mm Hg	5615	71.338809	0.529435	70.221799	72.455819

*Obtain Imputed Weighted and Design-Based Means for BMI, Poverty Index, and Blood Pressure, by Imputation, Table 12.3*

*The SURVEYMEANS Procedure*

Imputation Number=3

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Statistics						
Variable	Label	N	Mean	Std Error of Mean	Lower 95% CL for Mean	Upper 95% CL for Mean
<b>bmx bmi</b>	Body Mass Index (kg/m**2)	5615	28.612887	0.209672	28.170518	29.055256
<b>ind fmpir</b>	Ratio of family income to poverty	5615	2.842159	0.101151	2.628749	3.055569
<b>BPXD11</b>	Diastolic: Blood pres (1st rdg) mm Hg	5615	71.331588	0.474223	70.331065	72.332110

*Obtain Imputed Weighted and Design-Based Means for BMI, Poverty Index, and Blood Pressure, by Imputation, Table 12.3*

*The SURVEYMEANS Procedure*

Imputation Number=4

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Statistics						
Variable	Label	N	Mean	Std Error of Mean	Lower 95% CL for Mean	Upper 95% CL for Mean
<b>bmx bmi</b>	Body Mass Index (kg/m**2)	5615	28.624078	0.209489	28.182094	29.066062
<b>ind fmpir</b>	Ratio of family income to poverty	5615	2.826314	0.098723	2.618026	3.034603
<b>BPXD11</b>	Diastolic: Blood pres (1st rdg) mm Hg	5615	71.385720	0.509446	70.310882	72.460558

Obtain Imputed Weighted and Design-Based Means for BMI, Poverty Index, and Blood Pressure, by Imputation, Table 12.3

The SURVEYMEANS Procedure

Imputation Number=5

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Statistics						
Variable	Label	N	Mean	Std Error of Mean	Lower 95% CL for Mean	Upper 95% CL for Mean
<b>bmxbmi</b>	Body Mass Index (kg/m**2)	5615	28.633204	0.207178	28.196097	29.070310
<b>indfmpir</b>	Ratio of family income to poverty	5615	2.822145	0.099378	2.612475	3.031815
<b>BPXDI1</b>	Diastolic: Blood pres (1st rdg) mm Hg	5615	71.460242	0.478153	70.451427	72.469057

MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

Imputation Number=1

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_diastolic							
high_diastolic	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5265	217884872	12758923	93.9149	0.7984	91.9959	95.3968
1	350	14117667	2245564	6.0851	0.7984	4.6032	8.0041
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

Imputation Number=2

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_diastolic							
high_diastolic	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5269	218013936	12798381	93.9705	0.8724	91.8448	95.5688
1	346	13988603	2382834	6.0295	0.8724	4.4312	8.1552
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

Imputation Number=3

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_diastolic							
high_diastolic	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5270	217793557	12796900	93.8755	0.7095	92.1963	95.2121
1	345	14208982	2053456	6.1245	0.7095	4.7879	7.8037
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

Imputation Number=4

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_diastolic							
high_diastolic	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5264	217856667	12875150	93.9027	0.7726	92.0542	95.3430
1	351	14145872	2149082	6.0973	0.7726	4.6570	7.9458
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

Imputation Number=5

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_diastolic							
high_diastolic	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5268	217894352	12820083	93.9190	0.7015	92.2593	95.2411
1	347	14108187	2026778	6.0810	0.7015	4.7589	7.7407
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

MI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

Obs	_Imputation_	Table	F_high_diastolic	high_diastolic	Frequency
2	1	Table high_diastolic	1	1	350
5	2	Table high_diastolic	1	1	346
8	3	Table high_diastolic	1	1	345
11	4	Table high_diastolic	1	1	351
14	5	Table high_diastolic	1	1	347

Obs	WgtFreq	StdDev	Percent	StdErr	LowerCL	UpperCL	_SkipLine
2	14117667	2245564	6.0851	0.7984	4.6032	8.0041	
5	13988603	2382834	6.0295	0.8724	4.4312	8.1552	
8	14208982	2053456	6.1245	0.7095	4.7879	7.8037	
11	14145872	2149082	6.0973	0.7726	4.6570	7.9458	
14	14108187	2026778	6.0810	0.7015	4.7589	7.7407	

The MIANALYZE Procedure

Model Information	
Data Set	WORK.OUTSTATS_M1A
Number of Imputations	5

Variance Information (5 Imputations)							
Parameter	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
	Between	Within	Total				
percent	0.001199	0.598175	0.599613	15.263	0.002405	0.002402	0.999520

Parameter Estimates (5 Imputations)							
Parameter	Estimate	Std Error	95% Confidence Limits		DF	Minimum	Maximum
percent	6.083495	0.774347	4.435486	7.731503	15.263	6.029504	6.124494

Parameter Estimates (5 Imputations)			
Parameter	Theta0	t for H0: Parameter=Theta0	Pr >  t
percent	0	7.86	<.0001

The SURVEYLOGISTIC Procedure

Imputation Number=1

Model Information		
Data Set	WORK.IMPUTED_MIIA	
Response Variable	high_diastolic	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_diastolic	Total Frequency	Total Weight
1	0	5265	217884872
2	1	350	14117667

Probability modeled is high\_diastolic=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106398052	102609437
SC	106398069	102609576
-2 Log L	106398050	102609421

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	10.45	4.2095	71.5621	<.0001
Score	16.25	7	11	<.0001
Wald	10.59	7	11	0.0004
NOTE: Second-order Rao-Scott design correction 0.6629 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	8.87	4	14	0.0009
riagendr	6.56	1	17	0.0202
agec	2.01	1	17	0.1740
agecsq	35.33	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2767	0.1974	-11.53	<.0001
RIDRETH1	2	-0.5819	0.2361	-2.46	0.0247
RIDRETH1	3	0.1306	0.2372	0.55	0.5890
RIDRETH1	4	0.6062	0.2484	2.44	0.0259
RIDRETH1	5	0.0958	0.2206	0.43	0.6694
riagendr	2	-0.4915	0.1919	-2.56	0.0202
agec		0.00968	0.00682	1.42	0.1740
agecsq		-0.00155	0.000261	-5.94	<.0001
NOTE: The degrees of freedom for the t tests is 17.					

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.559	0.340	0.920
RIDRETH1 3 vs 1	1.140	0.691	1.879
RIDRETH1 4 vs 1	1.833	1.086	3.097
RIDRETH1 5 vs 1	1.101	0.691	1.753
riagendr 2 vs 1	0.612	0.408	0.917
agec	1.010	0.995	1.024
agecsq	0.998	0.998	0.999
NOTE: The degrees of freedom in computing the confidence limits is 17.			

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	66.2	Somers' D	0.343
Percent Discordant	31.9	Gamma	0.350
Percent Tied	1.9	Tau-a	0.040
Pairs	1842750	c	0.672

The SURVEYLOGISTIC Procedure

Imputation Number=2

Model Information		
Data Set	WORK.IMPUTED_MIIA	
Response Variable	high_diastolic	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_diastolic	Total Frequency	Total Weight
1	0	5269	218013936
2	1	346	13988603

Probability modeled is high\_diastolic=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	105690416	101054642
SC	105690433	101054780
-2 Log L	105690414	101054626

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	12.78	4.1642	70.7909	<.0001
Score	17.19	7	11	<.0001
Wald	7.42	7	11	0.0019

**NOTE: Second-order Rao-Scott design correction 0.6810 applied to the Likelihood Ratio test.**

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	6.47	4	14	0.0036
riagendr	11.36	1	17	0.0036
agec	3.06	1	17	0.0985
agecsq	39.06	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.1584	0.2201	-9.81	<.0001
RIDRETH1	2	-0.6492	0.2652	-2.45	0.0255
RIDRETH1	3	0.0814	0.2355	0.35	0.7337
RIDRETH1	4	0.5761	0.2558	2.25	0.0378
RIDRETH1	5	0.000690	0.2392	0.00	0.9977
riagendr	2	-0.6078	0.1803	-3.37	0.0036
agec		0.0108	0.00620	1.75	0.0985
agecsq		-0.00173	0.000277	-6.25	<.0001

**NOTE: The degrees of freedom for the t tests is 17.**

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.522	0.299	0.914
RIDRETH1 3 vs 1	1.085	0.660	1.783
RIDRETH1 4 vs 1	1.779	1.037	3.052
RIDRETH1 5 vs 1	1.001	0.604	1.658
riagendr 2 vs 1	0.545	0.372	0.797
agec	1.011	0.998	1.024
agecsq	0.998	0.998	0.999

**NOTE: The degrees of freedom in computing the confidence limits is 17.**

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.5	Somers' D	0.366
Percent Discordant	30.9	Gamma	0.372
Percent Tied	1.7	Tau-a	0.042
Pairs	1823074	c	0.683

The SURVEYLOGISTIC Procedure

Imputation Number=3

Model Information		
Data Set	WORK.IMPUTED_MIIA	
Response Variable	high_diastolic	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_diastolic	Total Frequency	Total Weight
1	0	5270	217793557
2	1	345	14208982

Probability modeled is high\_diastolic=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106897200	102358328
SC	106897217	102358466
-2 Log L	106897198	102358312

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	12.37	4.2805	72.7683	<.0001
Score	15.97	7	11	<.0001
Wald	6.46	7	11	0.0034

NOTE: Second-order Rao-Scott design correction 0.6353 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	6.91	4	14	0.0027
riagendr	7.58	1	17	0.0136
agec	1.84	1	17	0.1922
agecsq	39.24	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.1471	0.1691	-12.70	<.0001
RIDRETH1	2	-0.6110	0.2565	-2.38	0.0292
RIDRETH1	3	0.0883	0.1958	0.45	0.6576
RIDRETH1	4	0.5584	0.2469	2.26	0.0371
RIDRETH1	5	0.00474	0.1827	0.03	0.9796
riagendr	2	-0.6081	0.2208	-2.75	0.0136
agec		0.00902	0.00664	1.36	0.1922
agecsq		-0.00171	0.000273	-6.26	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.543	0.316	0.933
RIDRETH1 3 vs 1	1.092	0.723	1.651
RIDRETH1 4 vs 1	1.748	1.038	2.943
RIDRETH1 5 vs 1	1.005	0.683	1.477
riagendr 2 vs 1	0.544	0.342	0.867
agec	1.009	0.995	1.023
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.2	Somers' D	0.360
Percent Discordant	31.2	Gamma	0.366
Percent Tied	1.7	Tau-a	0.042
Pairs	1818150	c	0.680

The SURVEYLOGISTIC Procedure

Imputation Number=4

Model Information		
Data Set	WORK.IMPUTED_MIIA	
Response Variable	high_diastolic	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_diastolic	Total Frequency	Total Weight
1	0	5264	217856667
2	1	351	14145872

Probability modeled is high\_diastolic=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106552360	102340406
SC	106552377	102340544
-2 Log L	106552358	102340390

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	12.95	4.4122	75.0069	<.0001
Score	19.61	7	11	<.0001
Wald	6.58	7	11	0.0032

NOTE: Second-order Rao-Scott design correction 0.5865 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	5.37	4	14	0.0078
riagendr	8.29	1	17	0.0104
agec	1.91	1	17	0.1854
agecsq	41.40	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.3242	0.2028	-11.46	<.0001
RIDRETH1	2	-0.3653	0.2278	-1.60	0.1273
RIDRETH1	3	0.2305	0.2181	1.06	0.3054
RIDRETH1	4	0.7079	0.2346	3.02	0.0078
RIDRETH1	5	0.1561	0.2404	0.65	0.5248
riagendr	2	-0.5266	0.1829	-2.88	0.0104
agec		0.00901	0.00653	1.38	0.1854
agecsq		-0.00170	0.000264	-6.43	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.694	0.429	1.122
RIDRETH1 3 vs 1	1.259	0.795	1.995
RIDRETH1 4 vs 1	2.030	1.237	3.329
RIDRETH1 5 vs 1	1.169	0.704	1.941
riagendr 2 vs 1	0.591	0.401	0.869
agec	1.009	0.995	1.023
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.2	Somers' D	0.361
Percent Discordant	31.1	Gamma	0.367
Percent Tied	1.7	Tau-a	0.042
Pairs	1847664	c	0.680

The SURVEYLOGISTIC Procedure

Imputation Number=5

Model Information		
Data Set	WORK.IMPUTED_MIIA	
Response Variable	high_diastolic	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_diastolic	Total Frequency	Total Weight
1	0	5268	217894352
2	1	347	14108187

Probability modeled is high\_diastolic=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106346162	102088825
SC	106346179	102088963
-2 Log L	106346160	102088809

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	12.21	4.2302	71.9137	<.0001
Score	20.19	7	11	<.0001
Wald	6.52	7	11	0.0033

NOTE: Second-order Rao-Scott design correction 0.6548 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	5.63	4	14	0.0065
riagendr	8.39	1	17	0.0100
agec	1.96	1	17	0.1792
agecsq	42.10	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2587	0.1916	-11.79	<.0001
RIDRETH1	2	-0.4741	0.2614	-1.81	0.0874
RIDRETH1	3	0.1498	0.2208	0.68	0.5067
RIDRETH1	4	0.6315	0.2540	2.49	0.0236
RIDRETH1	5	0.2165	0.2393	0.90	0.3782
riagendr	2	-0.5472	0.1888	-2.90	0.0100
agec		0.0108	0.00772	1.40	0.1792
agecsq		-0.00168	0.000260	-6.49	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.622	0.359	1.081
RIDRETH1 3 vs 1	1.162	0.729	1.851
RIDRETH1 4 vs 1	1.880	1.100	3.214
RIDRETH1 5 vs 1	1.242	0.749	2.057
riagendr 2 vs 1	0.579	0.388	0.862
agec	1.011	0.995	1.027
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	66.8	Somers' D	0.352
Percent Discordant	31.6	Gamma	0.358
Percent Tied	1.6	Tau-a	0.041
Pairs	1827996	c	0.676

PROC SURVEYLOGISTIC using High Diastolic Blood Pressure, Imputed with Design Variables in Model, Table 12.5

Obs	_Imputation_	Variable	ClassVal0	DF	Estimate	StdErr	WaldChiSq	ProbChiSq	tValue	ProbT
1	1	Intercept		17	-2.2767	0.1974	133.042	<.0001	-11.53	<.0001
2	1	RIDRETH1	2	17	-0.5819	0.2361	6.074	0.0137	-2.46	0.0247
3	1	RIDRETH1	3	17	0.1306	0.2372	0.303	0.5818	0.55	0.5890
4	1	RIDRETH1	4	17	0.6062	0.2484	5.955	0.0147	2.44	0.0259
5	1	RIDRETH1	5	17	0.0958	0.2206	0.189	0.6639	0.43	0.6694
6	1	riagendr	2	17	-0.4915	0.1919	6.562	0.0104	-2.56	0.0202
7	1	agec		17	0.00968	0.00682	2.013	0.1560	1.42	0.1740
8	1	agecsq		17	-0.00155	0.000261	35.331	<.0001	-5.94	<.0001
9	2	Intercept		17	-2.1584	0.2201	96.201	<.0001	-9.81	<.0001
10	2	RIDRETH1	2	17	-0.6492	0.2652	5.993	0.0144	-2.45	0.0255
11	2	RIDRETH1	3	17	0.0814	0.2355	0.120	0.7295	0.35	0.7337
12	2	RIDRETH1	4	17	0.5761	0.2558	5.071	0.0243	2.25	0.0378
13	2	RIDRETH1	5	17	0.000690	0.2392	0.000	0.9977	0.00	0.9977
14	2	riagendr	2	17	-0.6078	0.1803	11.365	0.0007	-3.37	0.0036
15	2	agec		17	0.0108	0.00620	3.056	0.0805	1.75	0.0985
16	2	agecsq		17	-0.00173	0.000277	39.058	<.0001	-6.25	<.0001
17	3	Intercept		17	-2.1471	0.1691	161.289	<.0001	-12.70	<.0001
18	3	RIDRETH1	2	17	-0.6110	0.2565	5.673	0.0172	-2.38	0.0292
19	3	RIDRETH1	3	17	0.0883	0.1958	0.203	0.6519	0.45	0.6576
20	3	RIDRETH1	4	17	0.5584	0.2469	5.114	0.0237	2.26	0.0371
21	3	RIDRETH1	5	17	0.00474	0.1827	0.001	0.9793	0.03	0.9796
22	3	riagendr	2	17	-0.6081	0.2208	7.583	0.0059	-2.75	0.0136
23	3	agec		17	0.00902	0.00664	1.844	0.1745	1.36	0.1922
24	3	agecsq		17	-0.00171	0.000273	39.238	<.0001	-6.26	<.0001
25	4	Intercept		17	-2.3242	0.2028	131.399	<.0001	-11.46	<.0001
26	4	RIDRETH1	2	17	-0.3653	0.2278	2.570	0.1089	-1.60	0.1273
27	4	RIDRETH1	3	17	0.2305	0.2181	1.117	0.2906	1.06	0.3054
28	4	RIDRETH1	4	17	0.7079	0.2346	9.108	0.0025	3.02	0.0078
29	4	RIDRETH1	5	17	0.1561	0.2404	0.422	0.5162	0.65	0.5248
30	4	riagendr	2	17	-0.5266	0.1829	8.286	0.0040	-2.88	0.0104
31	4	agec		17	0.00901	0.00653	1.905	0.1675	1.38	0.1854
32	4	agecsq		17	-0.00170	0.000264	41.402	<.0001	-6.43	<.0001
33	5	Intercept		17	-2.2587	0.1916	138.934	<.0001	-11.79	<.0001
34	5	RIDRETH1	2	17	-0.4741	0.2614	3.289	0.0697	-1.81	0.0874
35	5	RIDRETH1	3	17	0.1498	0.2208	0.460	0.4976	0.68	0.5067
36	5	RIDRETH1	4	17	0.6315	0.2540	6.182	0.0129	2.49	0.0236
37	5	RIDRETH1	5	17	0.2165	0.2393	0.819	0.3656	0.90	0.3782
38	5	riagendr	2	17	-0.5472	0.1888	8.395	0.0038	-2.90	0.0100
39	5	agec		17	0.0108	0.00772	1.962	0.1613	1.40	0.1792
40	5	agecsq		17	-0.00168	0.000260	42.095	<.0001	-6.49	<.0001

The MIANALYZE Procedure

Model Information	
PARMS Data Set	WORK.OUTEST_MI_LOG
Number of Imputations	5

Variance Information (5 Imputations)									
Parameter	ridreth1	riagendr	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
			Between	Within	Total				
intercept			0.005953	0.038760	0.045904	165.14	0.184317	0.165675	0.967928
ridreth1	2		0.013383	0.062424	0.078484	95.529	0.257272	0.220772	0.957713
ridreth1	3		0.003598	0.049269	0.053587	616.02	0.087643	0.083551	0.983564
ridreth1	4		0.003424	0.061529	0.065638	1020.8	0.066779	0.064430	0.987278
ridreth1	5		0.008884	0.050864	0.061525	133.21	0.209603	0.185421	0.964242
riagendr		2	0.002625	0.037440	0.040590	664.27	0.084128	0.080364	0.984181
agec			0.000000828	0.000046246	0.000047240	9033.8	0.021495	0.021259	0.995766
agecsq			5.2357235E-9	7.1311035E-8	7.7593903E-8	610.1	0.088105	0.083969	0.983484

Parameter Estimates (5 Imputations)									
Parameter	ridreth1	riagendr	Estimate	Std Error	95% Confidence Limits		DF	Minimum	Maximum
intercept			-2.233015	0.214252	-2.65604	-1.80999	165.14	-2.324181	-2.147137
ridreth1	2		-0.536289	0.280150	-1.09242	0.01984	95.529	-0.649200	-0.365275
ridreth1	3		0.136121	0.231489	-0.31848	0.59072	616.02	0.081445	0.230474
ridreth1	4		0.616012	0.256199	0.11327	1.11875	1020.8	0.558385	0.707895
ridreth1	5		0.094768	0.248042	-0.39584	0.58538	133.21	0.000690	0.216518
riagendr		2	-0.556211	0.201469	-0.95180	-0.16062	664.27	-0.608088	-0.491463
agec			0.009870	0.006873	-0.00360	0.02334	9033.8	0.009011	0.010832
agecsq			-0.001675	0.000279	-0.00222	-0.00113	610.1	-0.001733	-0.001550

Parameter Estimates (5 Imputations)					
Parameter	ridreth1	riagendr	Theta0	t for H0: Parameter=Theta0	Pr >  t
intercept			0	-10.42	<.0001
ridreth1	2		0	-1.91	0.0586
ridreth1	3		0	0.59	0.5567
ridreth1	4		0	2.40	0.0164
ridreth1	5		0	0.38	0.7030
riagendr		2	0	-2.76	0.0059
agec			0	1.44	0.1510
agecsq			0	-6.01	<.0001

Section 12.6.3 Imputation of Missing Data without Design Variables

The MI Procedure

Model Information	
Data Set	WORK.C12_NHANES
Method	FCS
Number of Imputations	5
Number of Burn-in Iterations	20
Seed for random number generator	2024

FCS Model Specification	
Method	Imputed Variables
Regression	agec agecsq bmx bmi indfmpir BPXDI1
Logistic Regression	marcat
Discriminant Function	riagendr RIDRETH1

Missing Data Patterns										
Group	riagendr	RIDRETH1	agec	agecsq	bmx bmi	marcat	indfmpir	BPXDI1	Freq	Percent
1	X	X	X	X	X	X	X	X	4430	78.90
2	X	X	X	X	X	X	X	.	372	6.63
3	X	X	X	X	X	X	.	X	371	6.61
4	X	X	X	X	X	X	.	.	60	1.07
5	X	X	X	X	X	.	X	X	231	4.11
6	X	X	X	X	X	.	X	.	21	0.37
7	X	X	X	X	X	.	.	X	32	0.57
8	X	X	X	X	X	.	.	.	8	0.14
9	X	X	X	X	.	X	X	X	49	0.87
10	X	X	X	X	.	X	X	.	17	0.30
11	X	X	X	X	.	X	.	X	12	0.21
12	X	X	X	X	.	X	.	.	4	0.07
13	X	X	X	X	.	.	X	X	7	0.12
14	X	X	X	X	.	.	X	.	1	0.02

Missing Data Patterns					
Group	Group Means				
	agec	agecsq	bmx bmi	indfmpir	BPXDI1
1	2.069571	316.388209	28.782009	2.443962	71.339955
2	0.330860	302.220890	29.639785	2.159086	.
3	5.610350	364.275692	28.007817	.	71.110512
4	6.856667	330.750267	27.501667	.	.
5	-27.814545	773.896873	25.516450	1.604935	61.965368
6	-27.645714	764.489600	28.476190	1.714762	.
7	-24.703750	783.438350	26.118750	.	58.625000
8	-15.735000	706.074600	26.650000	.	.
9	12.313469	469.841437	.	1.951429	68.040816
10	3.404706	358.242541	.	2.145882	.

Missing Data Patterns					
Group	Group Means				
	agec	agecsq	bmbmi	indfmpir	BPXD11
11	12.806667	440.149600	.	.	66.666667
12	16.390000	594.319600	.	.	.
13	-27.788571	772.449600	.	0.647143	42.285714
14	-27.360000	748.569600	.	0.180000	.

Variance Information (5 Imputations)							
Variable	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
	Between	Within	Total				
bmbmi	0.000015937	0.008509	0.008528	5560.3	0.002248	0.002245	0.999551
indfmpir	0.000038664	0.000494	0.000541	491.35	0.093850	0.089144	0.982484
BPXD11	0.000553	0.028785	0.029449	3231.8	0.023070	0.022798	0.995461

Parameter Estimates (5 Imputations)										
Variable	Mean	Std Error	95% Confidence Limits		DF	Minimum	Maximum	Mu0	t for H0: Mean=Mu0	Pr >  t
bmbmi	28.618200	0.092347	28.43716	28.79924	5560.3	28.612829	28.623465	0	309.90	<.0001
indfmpir	2.375920	0.023255	2.33023	2.42161	491.35	2.366404	2.383420	0	102.17	<.0001
BPXD11	70.716170	0.171606	70.37970	71.05264	3231.8	70.686894	70.739824	0	412.08	<.0001

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4

The SURVEYFREQ Procedure

Imputation Number=1

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5265	217767648	12730249	93.8643	0.7465	92.0871	95.2629
1	350	14234892	2153814	6.1357	0.7465	4.7371	7.9129
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4

The SURVEYFREQ Procedure

Imputation Number=2

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5271	217866476	12734651	93.9069	0.7749	92.0518	95.3509
1	344	14136063	2207398	6.0931	0.7749	4.6491	7.9482
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4

The SURVEYFREQ Procedure

Imputation Number=3

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5270	217727538	12799259	93.8470	0.7360	92.0987	95.2286
1	345	14275001	2106224	6.1530	0.7360	4.7714	7.9013
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4

The SURVEYFREQ Procedure

Imputation Number=4

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5273	217941485	12702771	93.9393	0.7362	92.1867	95.3187
1	342	14061054	2141187	6.0607	0.7362	4.6813	7.8133
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4

The SURVEYFREQ Procedure

Imputation Number=5

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Table of high_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5261	217723722	12796132	93.8454	0.8554	91.7738	95.4214
1	354	14278817	2351878	6.1546	0.8554	4.5786	8.2262
<b>Total</b>	5615	232002539	14006079	100.0000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure (Without Design Variables in Imputation Models), Table 12.4

Obs	_Imputation_	Table	F_high_dbp	high_dbp	Frequency	WgtFreq	StdDev	Percent
2	1	Table high_dbp	1	1	350	14234892	2153814	6.1357
5	2	Table high_dbp	1	1	344	14136063	2207398	6.0931
8	3	Table high_dbp	1	1	345	14275001	2106224	6.1530
11	4	Table high_dbp	1	1	342	14061054	2141187	6.0607
14	5	Table high_dbp	1	1	354	14278817	2351878	6.1546

Obs	StdErr	LowerCL	UpperCL	_SkipLine
2	0.7465	4.7371	7.9129	
5	0.7749	4.6491	7.9482	
8	0.7360	4.7714	7.9013	
11	0.7362	4.6813	7.8133	
14	0.8554	4.5786	8.2262	

The MIANALYZE Procedure

Model Information	
Data Set	WORK.OUTSTATS_M2A
Number of Imputations	5

Variance Information (5 Imputations)							
Parameter	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
	Between	Within	Total				
percent	0.001691	0.594648	0.596677	15.247	0.003413	0.003407	0.999319

Parameter Estimates (5 Imputations)							
Parameter	Estimate	Std Error	95% Confidence Limits		DF	Minimum	Maximum
percent	6.119401	0.772449	4.475288	7.763513	15.247	6.060733	6.154595

Parameter Estimates (5 Imputations)			
Parameter	Theta0	t for H0: Parameter=Theta0	Pr >  t
percent	0	7.92	<.0001

The SURVEYLOGISTIC Procedure

Imputation Number=1

Model Information		
Data Set	WORK.OUTIMP_M12A	
Response Variable	high_dbp	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_dbp	Total Frequency	Total Weight
1	0	5265	217767648
2	1	350	14234892

Probability modeled is high\_dbp=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	107038599	102563293
SC	107038616	102563431
-2 Log L	107038597	102563277

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	11.95	4.2189	71.7211	<.0001
Score	21.03	7	11	<.0001
Wald	11.94	7	11	0.0002

NOTE: Second-order Rao-Scott design correction 0.6592 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	9.14	4	14	0.0008
riagendr	6.70	1	17	0.0191
agec	1.50	1	17	0.2368
agecsq	39.38	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2208	0.1911	-11.62	<.0001
RIDRETH1	2	-0.6813	0.2564	-2.66	0.0166
RIDRETH1	3	0.1508	0.1982	0.76	0.4571
RIDRETH1	4	0.6300	0.2427	2.60	0.0188
RIDRETH1	5	0.0973	0.1989	0.49	0.6310
riagendr	2	-0.5674	0.2192	-2.59	0.0191
agec		0.00843	0.00687	1.23	0.2368
agecsq		-0.00170	0.000270	-6.28	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.506	0.295	0.869
RIDRETH1 3 vs 1	1.163	0.765	1.766
RIDRETH1 4 vs 1	1.878	1.125	3.133
RIDRETH1 5 vs 1	1.102	0.724	1.677
riagendr 2 vs 1	0.567	0.357	0.900
agec	1.008	0.994	1.023
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.5	Somers' D	0.367
Percent Discordant	30.8	Gamma	0.373
Percent Tied	1.7	Tau-a	0.043
Pairs	1842750	c	0.683

The SURVEYLOGISTIC Procedure

Imputation Number=2

Model Information		
Data Set	WORK.OUTIMP_M12A	
Response Variable	high_dbp	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_dbp	Total Frequency	Total Weight
1	0	5271	217866476
2	1	344	14136063

Probability modeled is high\_dbp=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106498712	102042797
SC	106498729	102042935
-2 Log L	106498710	102042781

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	12.21	3.9275	66.7680	<.0001
Score	17.66	7	11	<.0001
Wald	10.25	7	11	0.0005

NOTE: Second-order Rao-Scott design correction 0.7823 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	7.22	4	14	0.0023
riagendr	7.09	1	17	0.0164
agec	1.99	1	17	0.1764
agecsq	46.90	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2637	0.2065	-10.96	<.0001
RIDRETH1	2	-0.6000	0.2277	-2.63	0.0174
RIDRETH1	3	0.1871	0.2028	0.92	0.3691
RIDRETH1	4	0.6556	0.2559	2.56	0.0202
RIDRETH1	5	0.0616	0.2161	0.29	0.7791
riagendr	2	-0.5378	0.2019	-2.66	0.0164
agec		0.0102	0.00725	1.41	0.1764
agecsq		-0.00173	0.000253	-6.85	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.549	0.339	0.887
RIDRETH1 3 vs 1	1.206	0.786	1.850
RIDRETH1 4 vs 1	1.926	1.123	3.305
RIDRETH1 5 vs 1	1.064	0.674	1.678
riagendr 2 vs 1	0.584	0.381	0.894
agec	1.010	0.995	1.026
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.6	Somers' D	0.367
Percent Discordant	30.8	Gamma	0.373
Percent Tied	1.6	Tau-a	0.042
Pairs	1813224	c	0.684

The SURVEYLOGISTIC Procedure

Imputation Number=3

Model Information		
Data Set	WORK.OUTIMP_M12A	
Response Variable	high_dbp	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_dbp	Total Frequency	Total Weight
1	0	5270	217727538
2	1	345	14275001

Probability modeled is high\_dbp=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	107257296	102523289
SC	107257313	102523427
-2 Log L	107257294	102523273

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	13.58	4.3782	74.4293	<.0001
Score	18.77	7	11	<.0001
Wald	9.72	7	11	0.0006

NOTE: Second-order Rao-Scott design correction 0.5988 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	10.14	4	14	0.0005
riagendr	7.25	1	17	0.0154
agec	2.29	1	17	0.1490
agecsq	43.83	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2563	0.1714	-13.17	<.0001
RIDRETH1	2	-0.7035	0.2408	-2.92	0.0095
RIDRETH1	3	0.2086	0.1952	1.07	0.3000
RIDRETH1	4	0.6833	0.2335	2.93	0.0094
RIDRETH1	5	0.0807	0.2402	0.34	0.7409
riagendr	2	-0.5677	0.2108	-2.69	0.0154
agec		0.0103	0.00681	1.51	0.1490
agecsq		-0.00174	0.000263	-6.62	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.495	0.298	0.822
RIDRETH1 3 vs 1	1.232	0.816	1.860
RIDRETH1 4 vs 1	1.980	1.210	3.241
RIDRETH1 5 vs 1	1.084	0.653	1.799
riagendr 2 vs 1	0.567	0.363	0.884
agec	1.010	0.996	1.025
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	68.2	Somers' D	0.379
Percent Discordant	30.2	Gamma	0.386
Percent Tied	1.6	Tau-a	0.044
Pairs	1818150	c	0.690

The SURVEYLOGISTIC Procedure

Imputation Number=4

Model Information		
Data Set	WORK.OUTIMP_M12A	
Response Variable	high_dbp	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_dbp	Total Frequency	Total Weight
1	0	5273	217941485
2	1	342	14061054

Probability modeled is high\_dbp=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106087964	102157778
SC	106087982	102157916
-2 Log L	106087962	102157762

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	11.11	4.3738	74.3551	<.0001
Score	26.28	7	11	<.0001
Wald	13.51	7	11	0.0001

NOTE: Second-order Rao-Scott design correction 0.6004 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	5.78	4	14	0.0058
riagendr	5.54	1	17	0.0308
agec	1.69	1	17	0.2114
agecsq	44.49	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.3411	0.2043	-11.46	<.0001
RIDRETH1	2	-0.4411	0.2958	-1.49	0.1542
RIDRETH1	3	0.2202	0.2189	1.01	0.3287
RIDRETH1	4	0.6661	0.2473	2.69	0.0154
RIDRETH1	5	0.1186	0.2676	0.44	0.6632
riagendr	2	-0.4534	0.1926	-2.35	0.0308
agec		0.00780	0.00601	1.30	0.2114
agecsq		-0.00170	0.000255	-6.67	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.643	0.345	1.201
RIDRETH1 3 vs 1	1.246	0.785	1.978
RIDRETH1 4 vs 1	1.947	1.155	3.280
RIDRETH1 5 vs 1	1.126	0.640	1.980
riagendr 2 vs 1	0.635	0.423	0.954
agec	1.008	0.995	1.021
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	66.5	Somers' D	0.349
Percent Discordant	31.6	Gamma	0.355
Percent Tied	1.8	Tau-a	0.040
Pairs	1803366	c	0.674

The SURVEYLOGISTIC Procedure

Imputation Number=5

Model Information		
Data Set	WORK.OUTIMP_M12A	
Response Variable	high_dbp	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_dbp	Total Frequency	Total Weight
1	0	5261	217723722
2	1	354	14278817

Probability modeled is high\_dbp=1.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	107278087	102659695
SC	107278105	102659833
-2 Log L	107278085	102659679

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	11.72	3.9047	66.3792	<.0001
Score	17.96	7	11	<.0001
Wald	7.64	7	11	0.0017

NOTE: Second-order Rao-Scott design correction 0.7927 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	10.96	4	14	0.0003
riagendr	10.33	1	17	0.0051
agec	1.83	1	17	0.1936
agecsq	41.05	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.1505	0.2319	-9.28	<.0001
RIDRETH1	2	-0.6837	0.2637	-2.59	0.0190
RIDRETH1	3	0.0826	0.2613	0.32	0.7558
RIDRETH1	4	0.6006	0.2586	2.32	0.0328
RIDRETH1	5	0.0314	0.2809	0.11	0.9124
riagendr	2	-0.6079	0.1892	-3.21	0.0051
agec		0.00920	0.00680	1.35	0.1936
agecsq		-0.00168	0.000262	-6.41	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.505	0.289	0.880
RIDRETH1 3 vs 1	1.086	0.626	1.885
RIDRETH1 4 vs 1	1.823	1.057	3.146
RIDRETH1 5 vs 1	1.032	0.570	1.866
riagendr 2 vs 1	0.544	0.365	0.812
agec	1.009	0.995	1.024
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.3	Somers' D	0.363
Percent Discordant	31.0	Gamma	0.369
Percent Tied	1.7	Tau-a	0.043
Pairs	1862394	c	0.682

PROC SURVEYLOGISTIC using High Blood Pressure Imputed without Design Variables in Model, Table 12.5

Obs	_Imputation_	Variable	ClassVal0	DF	Estimate	StdErr	WaldChiSq	ProbChiSq	tValue	ProbT
1	1	Intercept		17	-2.2208	0.1911	135.050	<.0001	-11.62	<.0001
2	1	RIDRETH1	2	17	-0.6813	0.2564	7.060	0.0079	-2.66	0.0166
3	1	RIDRETH1	3	17	0.1508	0.1982	0.579	0.4467	0.76	0.4571
4	1	RIDRETH1	4	17	0.6300	0.2427	6.740	0.0094	2.60	0.0188
5	1	RIDRETH1	5	17	0.0973	0.1989	0.239	0.6247	0.49	0.6310
6	1	riagendr	2	17	-0.5674	0.2192	6.701	0.0096	-2.59	0.0191
7	1	agec		17	0.00843	0.00687	1.504	0.2201	1.23	0.2368
8	1	agecsq		17	-0.00170	0.000270	39.378	<.0001	-6.28	<.0001
9	2	Intercept		17	-2.2637	0.2065	120.127	<.0001	-10.96	<.0001
10	2	RIDRETH1	2	17	-0.6000	0.2277	6.943	0.0084	-2.63	0.0174
11	2	RIDRETH1	3	17	0.1871	0.2028	0.851	0.3561	0.92	0.3691
12	2	RIDRETH1	4	17	0.6556	0.2559	6.564	0.0104	2.56	0.0202
13	2	RIDRETH1	5	17	0.0616	0.2161	0.081	0.7756	0.29	0.7791
14	2	riagendr	2	17	-0.5378	0.2019	7.094	0.0077	-2.66	0.0164
15	2	agec		17	0.0102	0.00725	1.989	0.1584	1.41	0.1764
16	2	agecsq		17	-0.00173	0.000253	46.903	<.0001	-6.85	<.0001
17	3	Intercept		17	-2.2563	0.1714	173.341	<.0001	-13.17	<.0001
18	3	RIDRETH1	2	17	-0.7035	0.2408	8.536	0.0035	-2.92	0.0095
19	3	RIDRETH1	3	17	0.2086	0.1952	1.143	0.2851	1.07	0.3000
20	3	RIDRETH1	4	17	0.6833	0.2335	8.564	0.0034	2.93	0.0094
21	3	RIDRETH1	5	17	0.0807	0.2402	0.113	0.7368	0.34	0.7409
22	3	riagendr	2	17	-0.5677	0.2108	7.250	0.0071	-2.69	0.0154
23	3	agec		17	0.0103	0.00681	2.285	0.1306	1.51	0.1490
24	3	agecsq		17	-0.00174	0.000263	43.834	<.0001	-6.62	<.0001
25	4	Intercept		17	-2.3411	0.2043	131.340	<.0001	-11.46	<.0001
26	4	RIDRETH1	2	17	-0.4411	0.2958	2.224	0.1359	-1.49	0.1542
27	4	RIDRETH1	3	17	0.2202	0.2189	1.011	0.3146	1.01	0.3287
28	4	RIDRETH1	4	17	0.6661	0.2473	7.254	0.0071	2.69	0.0154
29	4	RIDRETH1	5	17	0.1186	0.2676	0.196	0.6576	0.44	0.6632
30	4	riagendr	2	17	-0.4534	0.1926	5.542	0.0186	-2.35	0.0308
31	4	agec		17	0.00780	0.00601	1.687	0.1940	1.30	0.2114
32	4	agecsq		17	-0.00170	0.000255	44.487	<.0001	-6.67	<.0001
33	5	Intercept		17	-2.1505	0.2319	86.034	<.0001	-9.28	<.0001
34	5	RIDRETH1	2	17	-0.6837	0.2637	6.724	0.0095	-2.59	0.0190
35	5	RIDRETH1	3	17	0.0826	0.2613	0.100	0.7520	0.32	0.7558
36	5	RIDRETH1	4	17	0.6006	0.2586	5.396	0.0202	2.32	0.0328
37	5	RIDRETH1	5	17	0.0314	0.2809	0.012	0.9111	0.11	0.9124
38	5	riagendr	2	17	-0.6079	0.1892	10.327	0.0013	-3.21	0.0051
39	5	agec		17	0.00920	0.00680	1.832	0.1759	1.35	0.1936
40	5	agecsq		17	-0.00168	0.000262	41.047	<.0001	-6.41	<.0001

The MIANALYZE Procedure

Model Information	
PARMS Data Set	WORK.OUTEST_M2B
Number of Imputations	5

Variance Information (5 Imputations)									
Parameter	ridreth1	riagendr	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
			Between	Within	Total				
intercept			0.004806	0.040806	0.046573	260.9	0.141319	0.130461	0.974571
ridreth1	2		0.011793	0.066514	0.080666	129.96	0.212768	0.187844	0.963792
ridreth1	3		0.003078	0.046937	0.050631	751.71	0.078687	0.075403	0.985143
ridreth1	4		0.001050	0.061382	0.062642	9885.4	0.020529	0.020314	0.995954
ridreth1	5		0.001118	0.058893	0.060234	8065.8	0.022776	0.022512	0.995518
riagendr		2	0.003349	0.041226	0.045245	507	0.097482	0.092396	0.981856
agec			0.000001203	0.000045712	0.000047155	4267.1	0.031584	0.031071	0.993824
agecsq			6.199702E-10	6.7928657E-8	6.8672622E-8	34082	0.010952	0.010892	0.997826

Parameter Estimates (5 Imputations)									
Parameter	ridreth1	riagendr	Estimate	Std Error	95% Confidence Limits		DF	Minimum	Maximum
intercept			-2.246481	0.215807	-2.67143	-1.82154	260.9	-2.341145	-2.150525
ridreth1	2		-0.621913	0.284018	-1.18381	-0.06002	129.96	-0.703529	-0.441101
ridreth1	3		0.169852	0.225013	-0.27188	0.61158	751.71	0.082588	0.220157
ridreth1	4		0.647130	0.250285	0.15652	1.13774	9885.4	0.600606	0.683318
ridreth1	5		0.077910	0.245427	-0.40319	0.55901	8065.8	0.031362	0.118578
riagendr		2	-0.546829	0.212708	-0.96473	-0.12893	507	-0.607900	-0.453396
agec			0.009192	0.006867	-0.00427	0.02266	4267.1	0.007805	0.010301
agecsq			-0.001709	0.000262	-0.00222	-0.00120	34082	-0.001741	-0.001681

Parameter Estimates (5 Imputations)					
Parameter	ridreth1	riagendr	Theta0	t for H0: Parameter=Theta0	Pr >  t
intercept			0	-10.41	<.0001
ridreth1	2		0	-2.19	0.0303
ridreth1	3		0	0.75	0.4506
ridreth1	4		0	2.59	0.0097
ridreth1	5		0	0.32	0.7509
riagendr		2	0	-2.57	0.0104
agec			0	1.34	0.1808
agecsq			0	-6.52	<.0001

*Weighted Complete Case Analysis*

*The MEANS Procedure*

<b>Variable</b>	<b>Label</b>	<b>N</b>	<b>N Miss</b>	<b>Minimum</b>	<b>Mean</b>	<b>Maximum</b>	<b>Std Error</b>	<b>Lower 95% CL for Mean</b>	<b>Upper 95% CL for Mean</b>
BPXDII	Diastolic: Blood pres (1st rdg) mm Hg	5132	483	0.000	71.386	120.000	0.169	71.054	71.717
bmbmi	Body Mass Index (kg/m**2)	5525	90	13.400	28.623	82.100	0.090	28.447	28.800
indfmpir	Ratio of family income to poverty	5128	487	0.000	2.859	5.000	0.024	2.813	2.906

*Weighted and Design Adjusted Complete Case Analysis for Table 12.4*

*The SURVEYMEANS Procedure*

Data Summary	
Number of Strata	14
Number of Clusters	31
Number of Observations	5615
Sum of Weights	232002539

Statistics					
Variable	DF	Mean	Std Error of Mean	95% CL for Mean	
high_diastolic	17	0.060632	0.007932	0.04389702	0.07736646

The SURVEYLOGISTIC Procedure

Model Information		
Data Set	WORK.C12_NHANES	
Response Variable	high_diastolic	
Number of Response Levels	2	
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Number of Strata	14	
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Number of Clusters	31	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	
Variance Adjustment	Degrees of Freedom (DF)	

Variance Estimation	
Method	Taylor Series
Variance Adjustment	Degrees of Freedom (DF)

Number of Observations Read	5615
Number of Observations Used	5132
Sum of Weights Read	2.32E8
Sum of Weights Used	2.1341E8

Response Profile			
Ordered Value	high_diastolic	Total Frequency	Total Weight
1	0	4815	200473603
2	1	317	12939615

*Probability modeled is high\_diastolic=1.*

**Note:** 483 observations were deleted due to missing values for the response or explanatory variables.

Class Level Information					
Class	Value	Design Variables			
riagendr	1	0			
	2	1			
RIDRETH1	1	0	0	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	0	1	0
	5	0	0	0	1

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	97616170	93700973
SC	97616187	93701110
-2 Log L	97616168	93700957

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	11.37	4.2750	72.6743	<.0001
Score	14.49	7	11	<.0001
Wald	6.96	7	11	0.0025

NOTE: Second-order Rao-Scott design correction 0.6374 applied to the Likelihood Ratio test.

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	10.21	4	14	0.0004
riagendr	7.03	1	17	0.0168
agec	1.42	1	17	0.2492
agecsq	34.65	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2489	0.1983	-11.34	<.0001
RIDRETH1	2	-0.7242	0.2456	-2.95	0.0090
RIDRETH1	3	0.1312	0.2246	0.58	0.5668
RIDRETH1	4	0.6547	0.2467	2.65	0.0167
RIDRETH1	5	0.0508	0.2448	0.21	0.8382
riagendr	2	-0.5497	0.2073	-2.65	0.0168
agec		0.00829	0.00695	1.19	0.2492
agecsq		-0.00162	0.000276	-5.89	<.0001

NOTE: The degrees of freedom for the t tests is 17.

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.485	0.289	0.814
RIDRETH1 3 vs 1	1.140	0.710	1.831
RIDRETH1 4 vs 1	1.925	1.144	3.239
RIDRETH1 5 vs 1	1.052	0.628	1.763
riagendr 2 vs 1	0.577	0.373	0.894
agec	1.008	0.994	1.023
agecsq	0.998	0.998	0.999

NOTE: The degrees of freedom in computing the confidence limits is 17.

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	67.1	Somers' D	0.358
Percent Discordant	31.2	Gamma	0.364
Percent Tied	1.7	Tau-a	0.042
Pairs	1526355	c	0.679

Linear Hypotheses Testing Results				
Label	F Value	Num DF	Den DF	Pr > F
testeth_gender	7.88	5	13	0.0013

*PROC SURVEYIMPUTE for Imputation Using the FEFI Method*

*The SURVEYIMPUTE Procedure*

Imputation Information		
Data Set	WORK.C12_FEFI	
Weight Variable	WTMEC2YR	Full sample 2 year MEC exam weight
Stratum Variable	sdmvstra	Masked variance pseudo-stratum
Cluster Variable	sdmvpsu	Masked variance pseudo-PSU
Imputation Method	FEFI	
Replication Method	JACKKNIFE	
Number of Replicates	31	

Number of Observations Read	5615
Number of Observations Used	5615
Sum of Weights Read	232002539
Sum of Weights Used	232002539

Class Level Information		
Class	Levels	Values
age4cat	4	1 2 3 4
povcat	6	1 2 3 4 5 6
riagendr	2	1 2
marcat	3	1 2 3
RIDRETH1	5	1 2 3 4 5
bmicat	4	1 2 3 4
dbpcat	3	1 2 3

Design Summary	
Number of Strata	14
Number of Clusters	31

Missing Data Patterns											
Group	age4cat	povcat	riagendr	marcat	RIDRETH1	bmicat	dbpcat	Freq	Sum of Weights	Unweighted Percent	Weighted Percent
1	X	X	X	X	X	X	X	4430	192638897	78.90	83.03
2	X	X	X	X	X	X	.	372	15153221.8	6.63	6.53
3	X	X	X	X	X	.	X	49	1569330.87	0.87	0.68
4	X	X	X	X	X	.	.	17	599938.761	0.30	0.26
5	X	X	X	.	X	X	X	231	6360716.36	4.11	2.74
6	X	X	X	.	X	X	.	21	634061.759	0.37	0.27
7	X	X	X	.	X	.	X	7	120454.251	0.12	0.05
8	X	X	X	.	X	.	.	1	15275.7884	0.02	0.01
9	X	.	X	X	X	X	X	371	11639715.7	6.61	5.02
10	X	.	X	X	X	X	.	60	1997279.62	1.07	0.86
11	X	.	X	X	X	.	X	12	244256.273	0.21	0.11
12	X	.	X	X	X	.	.	4	73149.4833	0.07	0.03

Missing Data Patterns											
Group	age4cat	povcat	riagendr	marcat	RIDRETH1	bmicat	dbpcat	Freq	Sum of Weights	Unweighted Percent	Weighted Percent
13	X	.	X	.	X	X	X	32	839847.692	0.57	0.36
14	X	.	X	.	X	X	.	8	116393.432	0.14	0.05

Missing Data Patterns											
Group	Group Means										
	age4cat 1	age4cat 2	age4cat 3	age4cat 4	povcat 1	povcat 2	povcat 3	povcat 4	povcat 5	povcat 6	riagendr 1
1	0.101010	0.353768	0.374079	0.171143	0.171500	0.209551	0.142146	0.121139	0.105690	0.249973	0.489328
2	0.122236	0.425766	0.318517	0.133481	0.239632	0.218174	0.125891	0.122543	0.109750	0.184011	0.385744
3	0	0.220956	0.319010	0.460034	0.282737	0.298216	0.272995	0.015270	0.012824	0.117958	0.451083
4	0	0.594811	0.232123	0.173067	0.268012	0.158153	0.036300	0	0.265890	0.271646	0.057103
5	1.000000	0	0	0	0.350186	0.202789	0.100712	0.184906	0.049367	0.112041	0.603947
6	1.000000	0	0	0	0.487202	0.039138	0.199463	0.106067	0.021883	0.146246	0.723423
7	1.000000	0	0	0	0.881644	0.118356	0	0	0	0	0
8	1.000000	0	0	0	1.000000	0	0	0	0	0	0
9	0.092114	0.319550	0.325734	0.262602	.	.	.	.	.	.	0.490099
10	0.007768	0.294690	0.439271	0.258270	.	.	.	.	.	.	0.338262
11	0	0.402027	0.189297	0.408677	.	.	.	.	.	.	0.453826
12	0	0.446471	0.233978	0.319551	.	.	.	.	.	.	0.797523
13	0.968089	0	0.014275	0.017635	.	.	.	.	.	.	0.424922
14	0.791224	0	0.089873	0.118902	.	.	.	.	.	.	0.523608

Missing Data Patterns										
Group	Group Means									
	riagendr 2	marcat 1	marcat 2	marcat 3	RIDRETH1 1	RIDRETH1 2	RIDRETH1 3	RIDRETH1 4	RIDRETH1 5	
1	0.510672	0.614471	0.184939	0.200590	0.072766	0.064045	0.677124	0.110688	0.075377	
2	0.614256	0.620564	0.180680	0.198756	0.085309	0.081455	0.644056	0.112642	0.076538	
3	0.548917	0.508441	0.320504	0.171055	0.153479	0	0.647371	0.149760	0.049390	
4	0.942897	0.459190	0.445295	0.095515	0.062265	0	0.664938	0.136021	0.136776	
5	0.396053	.	.	.	0.123169	0.093350	0.526710	0.174956	0.081814	
6	0.276577	.	.	.	0.140279	0.025843	0.659322	0.147387	0.027168	
7	1.000000	.	.	.	0.290183	0	0.198399	0.511418	0	
8	1.000000	.	.	.	0	0	0	0	1.000000	
9	0.509901	0.609046	0.199216	0.191738	0.127557	0.074528	0.505242	0.182715	0.109958	
10	0.661738	0.660137	0.202401	0.137463	0.090601	0.080452	0.622482	0.087734	0.118730	
11	0.546174	0.456789	0.306626	0.236585	0.026909	0.321300	0.236602	0.334462	0.080727	
12	0.202477	0.680449	0.319551	0	0.563545	0	0	0	0.436455	
13	0.575078	.	.	.	0.122104	0.056360	0.464815	0.193608	0.163113	
14	0.476392	.	.	.	0.474865	0.241589	0	0.229488	0.054057	

Missing Data Patterns							
Group	Group Means						
	bmicat 1	bmicat 2	bmicat 3	bmicat 4	dbpcat 1	dbpcat 2	dbpcat 3
1	0.013935	0.298840	0.339023	0.348202	0.754141	0.182723	0.063135
2	0.028167	0.245238	0.334935	0.391660	.	.	.
3	.	.	.	.	0.833063	0.151546	0.015391

Missing Data Patterns							
Group	Group Means						
	bmicat 1	bmicat 2	bmicat 3	bmicat 4	dbpcat 1	dbpcat 2	dbpcat 3
4	.	.	.	.	.	.	.
5	0.097682	0.489030	0.233071	0.180217	0.956568	0.041718	0.001714
6	0	0.506579	0.211071	0.282350	.	.	.
7	.	.	.	.	1.000000	0	0
8	.	.	.	.	.	.	.
9	0.047602	0.257323	0.337582	0.357492	0.777326	0.158909	0.063766
10	0.023474	0.310305	0.401544	0.264677	.	.	.
11	.	.	.	.	0.973091	0.026909	0
12	.	.	.	.	.	.	.
13	0.128969	0.523775	0.112159	0.235096	1.000000	0	0
14	0	0.568558	0	0.431442	.	.	.

Donor Cell Counts		
Donors	Units	Total Rows
0	4430	4430
3	603	1809
4	49	196
6	371	2226
9	21	189
12	24	288
18	92	1656
24	12	288
36	1	36
54	8	432
72	4	288

Iteration History		
Iteration Number	Maximum Absolute Difference	Maximum Relative Difference
1	264.809	0.12023
2	70.45454	0.00271
3	12.1376	0.00041

EM algorithm converged

Imputation Summary		
Observation Status	Number of Observations	Sum of Weights
Nonmissing	4430	192638897
Missing	1185	39363641.8
Missing, Imputed	1185	39363641.8
Missing, Not Imputed	0	0



Explore FEFI Results for DBPCat

The SURVEYFREQ Procedure

Data Summary	
Number of Observations	11838
Sum of Weights	232002539

Variance Estimation	
Method	Jackknife
Replicate Weights	NHANESFEFI
Number of Replicates	31

Table of dbpcat					
dbpcat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent
1	7908	177105202	9960915	76.3376	1.2397
2	2368	40830620	3673002	17.5992	0.9164
3	1562	14066718	2227071	6.0632	0.7940
<b>Total</b>	11838	232002539	14006079	100.0000	

FEFI Analysis: Obtain Imputed Weighted and Design-Based Means for High Diastolic Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

Data Summary	
Number of Observations	11838
Sum of Weights	232002539

Variance Estimation	
Method	Jackknife
Replicate Weights	IMPUTED_FEFI
Number of Replicates	31

Table of high_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	10276	217935821	12778217	93.9368	0.7940	92.3174	95.5563
1	1562	14066718	2227071	6.0632	0.7940	4.4437	7.6826
<b>Total</b>	11838	232002539	14006079	100.0000			

The SURVEYLOGISTIC Procedure

Model Information		
Data Set	WORK.IMPUTED_FEFI	
Response Variable	high_dbp	
Number of Response Levels	2	
Weight Variable	ImpWt	Imputation-Adjusted Weight
Model	Binary Logit	
Optimization Technique	Fisher's Scoring	

Number of Observations Read	11838
Number of Observations Used	11838
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	high_dbp	Total Frequency	Total Weight
1	0	10276	217935821
2	1	1562	14066718

Probability modeled is high\_dbp=1.

Class Level Information						
Class	Value	Design Variables				
riagendr	1	0				
	2	1				
RIDRETH1	1	0	0	0	0	0
	2	1	0	0	0	0
	3	0	1	0	0	0
	4	0	0	1	0	0
	5	0	0	0	0	1

Variance Estimation	
Method	Jackknife
Replicate Weights	IMPUTED_FEFI
Number of Replicates	31

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	106119009	102579231
SC	106119027	102579369

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	106119007	102579215

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	19.59	4.2057	130.38	<.0001
Score	15.19	7	31	<.0001
Wald	12.21	7	31	<.0001
NOTE: Second-order Rao-Scott design correction 0.6644 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
RIDRETH1	13.24	4	31	<.0001
riagendr	7.12	1	31	0.0120
agec	1.32	1	31	0.2602
agecsq	36.41	1	31	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr >  t
Intercept		-2.2816	0.1831	-12.46	<.0001
RIDRETH1	2	-0.6186	0.2106	-2.94	0.0062
RIDRETH1	3	0.1183	0.2093	0.57	0.5760
RIDRETH1	4	0.5992	0.2316	2.59	0.0146
RIDRETH1	5	0.0436	0.2234	0.19	0.8467
riagendr	2	-0.5034	0.1887	-2.67	0.0120
agec		0.00731	0.00637	1.15	0.2602
agecsq		-0.00144	0.000239	-6.03	<.0001
NOTE: The degrees of freedom for the t tests is 31.					

Odds Ratio Estimates			
Effect	Point Estimate	95% Confidence Limits	
RIDRETH1 2 vs 1	0.539	0.351	0.828
RIDRETH1 3 vs 1	1.126	0.734	1.725
RIDRETH1 4 vs 1	1.821	1.135	2.920
RIDRETH1 5 vs 1	1.045	0.662	1.647
riagendr 2 vs 1	0.604	0.411	0.888
agec	1.007	0.994	1.021
agecsq	0.999	0.998	0.999
NOTE: The degrees of freedom in computing the confidence limits is 31.			

Association of Predicted Probabilities and Observed Responses			
Percent Concordant	53.1	Somers' D	0.088
Percent Discordant	44.3	Gamma	0.090
Percent Tied	2.6	Tau-a	0.020
Pairs	16051112	c	0.544

Linear Hypotheses Testing Results				
Label	F Value	Num DF	Den DF	Pr > F
testeth_gender	11.40	5	31	<.0001