SAS Analysis Examples Replication C12

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* SAS Analysis Examples Replication for ASDA 2nd Edition
* Berglund April 2017
* Chapter 12 ;

libname d "P:\asda 2\data sets\nhanes 2011_2012\" ;
data c12_nhanes ;
 set d.c12_impute_subset_nhanes1112 ;
 if age18p=1 and wtmec2yr > 0 ;
 title "Section 12.6 MI and FI methods using NHANES 2011-2012 data" ;
 if bpxdi1_1 >=90 then high_dbp =1 ; else if . < bpxdi1_1 < 90 then high_dbp=0 ; else high_dbp=. ;
run ;

ods rtf style=normalprinter bodytitle ;
title "Examine Missing Data Problem" ;
proc mi nimpute=0 ;
 var bpxdi1_1 bmxbmi indfmpir marcat riagendr ridreth1 agec agecsq wtmec2yr descode ;
run ;

* Complete Case Analyses ;
title "Weighted Complete Case Analysis for Table 12.3" ;
proc means data=c12_nhanes n nmiss mean ;
 var bpxdi1_1 bmxbmi indfmpir ;
 weight wtmec2yr ;
run ;

title "Obtain Complete Case Weighted and Design-Based Means for High Blood Pressure, Table 12.4" ;
proc surveyfreq data=c12_nhanes ;
 weight wtmec2yr ; strata sdmvstra ; cluster sdmvpsu ;
 tables high_dbp / cl(type=logit) ; *NOTE: use CI type=logit to match Stata ;
 run ;
title "Complete Case Analysis : PROC SURVEYLOGISTIC using High Blood Pressure as Outcome" ;
proc surveylogistic data=c12_nhanes ;
 strata sdmvstra ; cluster sdmvpsu ; weight wtmec2yr ;
 class  riagendr (ref='1') ridreth1 (ref='1') / param=ref ;
 model  high_dbp (event='1') = ridreth1 riagendr agec agecsq ;
 run;

* MI Analyses ;
* Method 1: with Design Variables in Imputation Model ;
title "Impute Missing Data using PROC MI FCS: Method with Design Variables in Model for Blood Pressure" ;
proc mi data=c12_nhanes nimpute=5 out=outimp seed=2016 ;
 class marcat descode riagendr ridreth1 ;
 var riagendr ridreth1 agec agecsq wtmec2yr descode  bmxbmi marcat indfmpir bpxdi1_1 ;
 fcs logistic (marcat=riagendr ridreth1 agec agecsq bmxbmi indfmpir bpxdi1_1  /link=glogit) ;
 fcs reg (bmxbmi=riagendr ridreth1 agec agecsq marcat indfmpir bpxdi1_1) ;
 fcs reg (bpxdi1_1=riagendr ridreth1 agec agecsq wtmec2yr descode bmxbmi marcat indfmpir) ;
 fcs reg (indfmpir=riagendr ridreth1 agec agecsq bmxbmi marcat bpxdi1_1) ;
 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 stacking  ;
 by _imputation_ ;
 weight wtmec2yr ; strata sdmvstra ; cluster sdmvpsu ;
 var bmxbmi indfmpir bpxdi1_1 ;
run ;

* Use imputed data set and create an indicator of high blood pressure ;
data outimp_m1 ;
 set outimp ;
 if bpxdi1_1 >=90 then high_dbp=1 ; else high_dbp=0 ;
run ;

title "Obtain Imputed Weighted and Design-Based Means for High Blood Pressure, Table 12.4" ;
proc surveyfreq data=outimp_m1 ;
 by _imputation_ ;
 weight wtmec2yr ; strata sdmvstra ; cluster sdmvpsu ;
 tables high_dbp / cl(type=logit) ;
 ods output oneway = outstats_m1 ;
run ;
proc print data=outstats_m1 (where=(high_dbp=1));
run ;

title "PROC MIANALYZE for Combining Results: Table 12.4"  ;
proc mianalyze data=outstats_m1 (where=(high_dbp=1));
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 modeleffects percent ;
 stderr stderr ;
run ;
title "PROC SURVEYLOGISTIC using High Blood Pressure Imputed with Design Variables in Model, Table 12.5" ;
proc surveylogistic data=outimp_m1 ;
 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_m1 ;
run;
proc print data=outest_m1 ;
run ;
proc mianalyze parms(classvar=classval)= outest_m1 ;
 class ridreth1 riagendr ;
 modeleffects intercept ridreth1 riagendr agec agecsq ;
run ;

* Method 2 : without Design Variables in Imputation Model ;
title "Impute Missing Data using PROC MI FCS: Method without Design Variables in Model for Blood Pressure" ;
proc mi data=c12_nhanes nimpute=5 out=outimp_m2 seed=2016 ;
 class marcat riagendr ridreth1 ;
 var riagendr ridreth1 agec agecsq bmxbmi marcat indfmpir bpxdi1_1 ;
 fcs logistic (marcat=riagendr ridreth1 agec agecsq bmxbmi indfmpir bpxdi1_1  /link=glogit) ;
 fcs reg (bmxbmi=riagendr ridreth1 agec agecsq marcat indfmpir bpxdi1_1) ;
 fcs reg (bpxdi1_1=riagendr ridreth1 agec agecsq bmxbmi marcat indfmpir) ;
 fcs reg (indfmpir=riagendr ridreth1 agec agecsq bmxbmi marcat bpxdi1_1) ;
 run ;
* use imputed data set and create an indicator of high blood pressure ;
data outimp_m2 ;
 set outimp_m2 ;
 if bpxdi1_1 >=90 then high_dbp=1 ; else high_dbp=0 ;
run ;

title "Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure, Table 12.4" ;
proc surveyfreq data=outimp_m2 ;
 by _imputation_ ;
 weight wtmec2yr ; strata sdmvstra ; cluster sdmvpsu ;
 tables high_dbp / cl(type=logit)  ;
 ods output oneway=outstats_m2 ;
run ;
proc print data=outstats_m2 (where = (high_dbp=1));
run ;
title "PROC MIANALYZE for Combining Results: Table 12.4"  ;
proc mianalyze data=outstats_m2 (where = (high_dbp=1)) ;
 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_m2 ;
 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_m2 ;
run;
proc print data=outest_m2 ;
run ;
proc mianalyze parms(classvar=classval)= outest_m2 ;
 class ridreth1 riagendr ;
 modeleffects intercept ridreth1 riagendr agec agecsq ;
run ;

* FEFI ;
title "Section 12.6.3.2 FEFI: Hot Deck Method" ;
data c12_fefi ;
 set d.c12_impute_subset_nhanes1112 ;
 if age18p=1 and wtmec2yr > 0 ;
* create categorical versions of variables for FEFI ;
if . < bmxbmi < 18.5 then bmicat=1 ;
else if  18.5 <= bmxbmi < 25 then bmicat=2 ;
else if 25.0 <= bmxbmi < 30 then bmicat=3 ;
else if 30 <= bmxbmi then bmicat=4 ;
obese=. ;
if bmxbmi >=30 then obese=1 ; else if bmxbmi > . and bmxbmi < 30 then obese=0 ;

* turn indfmpir into discrete categories ;
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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 BP ;
if bpxdi1_1 > . and bpxdi1_1 < 80 then dbpcat=1 ;
else if bpxdi1_1 >= 80 and bpxdi1_1 < 90  then dbpcat=2 ;
else if 90<= bpxdi1_1 then dbpcat=3 ;
run ;
title "PROC SURVEYIMPUTE / method=FEFI" ;
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 wtmec2yr ;
output out=nhanesFEFI outjkcoefs=nhanesJKCOEFS;
run;
proc print data=nhanesfefi (obs=15) ;
run ;

* Create new data set with high blood pressure indicator ;
data imputed ;
 set nhanesfefi ;
 if dbpcat=3 then high_dbp=1 ; else high_dbp=0 ;
run ;

proc format ;
value pf 1='0-.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='Hisp' 2='OthHisp' 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 "FEFI : Table 12.4 " ;
proc surveyfreq data=imputed varmethod=jackknife ;
 weight impwt ;
 repweights imprepwt_: / jkcoefs=nhanesjkcoefs ;
 tables bmicat dbpcat povcat high_dbp age4cat ridreth1 marcat / cl ;
 format povcat pf. bmicat bmif. dbpcat dbpf. ridreth1 rf. age4cat af. riagendr gf. high_dbp yn. marcat mf. ;
 run ;
title "FEFI : Table 12.5" ;
proc surveylogistic data=imputed varmethod=Jackknife;
   class  riagendr (ref='1') ridreth1 (ref='1') / param=ref  ;
   model  high_dbp (event='1') = ridreth1 riagendr agec agecsq /*agec*ridreth1 agecsq*ridreth1 agec*riagendr
agecsq*riagendr*/ ;
   weight ImpWt;
   repweights ImpRepWt_: / jkcoefs=nhanesJKCOEFS;
   testeth_gender: test ridreth12, ridreth13, ridreth14, ridreth15, riagendr2 ;
run;
ods rtf close ;
```

Examine Missing Data Problem

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	215985000

Missing Data Patterns

Group	bpxdi1_1	bmxbmi	indfmpir	marcat	riagendr	ridreth1	agec	agecsq	wtmec2yr	descode	Freq	Percent
1	X	X	X	X	X	X	X	X	X	X	4416	78.65
2	X	X	X	.	X	X	X	X	X	X	230	4.10
3	X	X	.	X	X	X	X	X	X	X	369	6.57
4	X	X	.	.	X	X	X	X	X	X	31	0.55
5	X	.	X	X	X	X	X	X	X	X	48	0.85
6	X	.	X	.	X	X	X	X	X	X	6	0.11
7	X	.	.	X	X	X	X	X	X	X	12	0.21
8	.	X	X	X	X	X	X	X	X	X	386	6.87
9	.	X	X	.	X	X	X	X	X	X	22	0.39
10	.	X	.	X	X	X	X	X	X	X	62	1.10
11	.	X	.	.	X	X	X	X	X	X	9	0.16
12	.	.	X	X	X	X	X	X	X	X	18	0.32
13	.	.	X	.	X	X	X	X	X	X	2	0.04
14	.	.	.	X	X	X	X	X	X	X	4	0.07

Missing Data Patterns

Group	Group Means									
	bpxdi1_1	bmxbmi	indfmpir	marcat	riagendr	ridreth1	agec	agecsq	wtmec2yr	descode
1	71.566123	28.783243	2.444812	1.652400	1.498641	3.303895	2.017802	315.481111	43501	960.012908
2	62.234783	25.503478	1.606304	.	1.473913	3.186957	-27.811681	773.737724	27595	962.830435
3	71.495935	27.984011	.	1.685637	1.463415	3.409214	5.590640	365.713016	31449	960.598916
4	60.516129	25.967742	.	.	1.516129	3.645161	-24.613224	784.324845	26241	959.193548
5	69.458333	.	1.978750	1.687500	1.479167	3.145833	11.874007	456.168680	31873	971.375000
6	49.333333	.	0.561667	.	2.000000	2.833333	-27.688493	766.874858	17700	966.833333
7	66.666667	.	.	1.916667	1.583333	3.333333	12.811507	440.273597	20355	972.500000
8	.	29.594560	2.159689	1.639896	1.621762	3.217617	1.046395	313.345611	40647	959.948187
9	.	28.477273	1.695455	.	1.454545	3.136364	-27.627887	763.498474	29447	961.590909
10	.	27.659677	.	1.419355	1.580645	3.451613	6.967421	323.666696	32778	959.919355
11	.	27.111111	.	.	1.444444	2.333333	-17.021826	710.631456	15863	968.444444
12	.	.	2.062222	1.666667	1.888889	3.666667	5.089285	401.258831	35520	967.111111
13	.	.	0.670000	.	2.000000	4.500000	-27.855160	776.159912	14766	991.500000
14	.	.	.	1.500000	1.250000	3.000000	16.394840	594.478257	18287	921.750000

Weighted Complete Case Analysis for Table 12.3

The MEANS Procedure

Variable	Label	N	N Miss	Mean
bpxdi1_1		5112	503	71.6087722
bmxbmi	Body Mass Index (kg/m**2)	5525	90	28.6232688
indfmpir	Ratio of family income to poverty	5128	487	2.8592364

Obtain Complete Case Weighted and Design-Based Means for High Blood Pressure, Table 12.4

The SURVEYFREQ Procedure

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	4795	199808299	12117792	93.9179	0.7962	92.0046	95.3962
1	317	12939615	2033744	6.0821	0.7962	4.6038	7.9954
Total	5112	212747914	13195393	100.000			
Logit confidence limits are computed for percents.							
Frequency Missing = 503							

Complete Case Analysis : PROC SURVEYLOGISTIC using High Blood Pressure as Outcome

The SURVEYLOGISTIC Procedure

Model Information		
Data Set	WORK.C12_NHANES	
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	5112
Sum of Weights Read	2.32E8
Sum of Weights Used	2.1275E8

Response Profile			
Ordered Value	**high_dbp**	**Total Frequency**	**Total Weight**
1	0	4795	199808299
2	1	317	12939615

Probability modeled is high_dbp=1.

Note:	**503 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	97532810	93637943
SC	97532827	93638081

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	97532808	93637927

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	468995	4.2721	72.6263	<.0001
Score	14.36	7	11	<.0001
Wald	6.95	7	11	0.0025
NOTE: Second-order Rao-Scott design correction 0.6385 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	10.33	4	14	0.0004
riagendr	6.92	1	17	0.0175
agec	1.48	1	17	0.2411
agecsq	34.04	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2499	0.1986	-11.33	<.0001
ridreth1	2	-0.7257	0.2451	-2.96	0.0088
ridreth1	3	0.1313	0.2247	0.58	0.5668
ridreth1	4	0.6582	0.2465	2.67	0.0162
ridreth1	5	0.0499	0.2450	0.20	0.8411
riagendr	2	-0.5468	0.2079	-2.63	0.0175
agec		0.00846	0.00697	1.21	0.2411
agecsq		-0.00162	0.000277	-5.83	<.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	0.484	0.289	0.812
ridreth1 3 vs 1	1.140	0.710	1.832
ridreth1 4 vs 1	1.931	1.148	3.249
ridreth1 5 vs 1	1.051	0.627	1.762
riagendr 2 vs 1	0.579	0.373	0.897
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	67.0	Somers' D	0.358
Percent Discordant	31.3	Gamma	0.364
Percent Tied	1.7	Tau-a	0.042
Pairs	1520015	c	0.679

Impute Missing Data using PROC MI FCS: Method with Design Variables in Model for Blood Pressure

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	2016

FCS Model Specification	
Method	**Imputed Variables**
Regression	agec agecsq wtmec2yr bmxbmi indfmpir bpxdi1_1
Logistic Regression	marcat
Discriminant Function	riagendr ridreth1 descode

Missing Data Patterns												
Group	**riagendr**	**ridreth1**	**agec**	**agecsq**	**wtmec2yr**	**descode**	**bmxbmi**	**marcat**	**indfmpir**	**bpxdi1_1**	**Freq**	**Percent**
1	X	X	X	X	X	X	X	X	X	X	4416	78.65
2	X	X	X	X	X	X	X	X	X	.	386	6.87
3	X	X	X	X	X	X	X	X	.	X	369	6.57
4	X	X	X	X	X	X	X	X	.	.	62	1.10
5	X	X	X	X	X	X	X	.	X	X	230	4.10
6	X	X	X	X	X	X	X	.	X	.	22	0.39
7	X	X	X	X	X	X	X	.	.	X	31	0.55
8	X	X	X	X	X	X	X	.	.	.	9	0.16
9	X	X	X	X	X	X	.	X	X	X	48	0.85
10	X	X	X	X	X	X	.	X	X	.	18	0.32
11	X	X	X	X	X	X	.	X	.	X	12	0.21
12	X	X	X	X	X	X	.	X	.	.	4	0.07
13	X	X	X	X	X	X	.	.	X	X	6	0.11
14	X	X	X	X	X	X	.	.	X	.	2	0.04

Missing Data Patterns						
Group	**Group Means**					
	agec	**agecsq**	**wtmec2yr**	**bmxbmi**	**indfmpir**	**bpxdi1_1**
1	2.017802	315.481111	43501	28.783243	2.444812	71.566123
2	1.046395	313.345611	40647	29.594560	2.159689	.
3	5.590640	365.713016	31449	27.984011	.	71.495935
4	6.967421	323.666696	32778	27.659677	.	.
5	-27.811681	773.737724	27595	25.503478	1.606304	62.234783
6	-27.627887	763.498474	29447	28.477273	1.695455	.
7	-24.613224	784.324845	26241	25.967742	.	60.516129
8	-17.021826	710.631456	15863	27.111111	.	.
9	11.874007	456.168680	31873	.	1.978750	69.458333
10	5.089285	401.258831	35520	.	2.062222	.
11	12.811507	440.273597	20355	.	.	66.666667
12	16.394840	594.478257	18287	.	.	.
13	-27.688493	766.874858	17700	.	0.561667	49.333333
14	-27.855160	776.159912	14766	.	0.670000	.

Variance Information (5 Imputations)							
Variable	Variance			DF	Relative Increase in Variance	Fraction Missing Information	Relative Efficiency
	Between	Within	Total				
bmxbmi	0.000016213	0.008532	0.008551	5559	0.002280	0.002278	0.999545
indfmpir	0.000020174	0.000495	0.000520	1370.9	0.048863	0.047619	0.990566
bpxdi1_1	0.000767	0.025489	0.026409	2048.9	0.036098	0.035425	0.992965

Parameter Estimates (5 Imputations)										
Variable	Mean	Std Error	95% Confidence Limits		DF	Minimum	Maximum	Mu0	t for H0: Mean=Mu0	Pr > |t|
bmxbmi	28.613518	0.092474	28.43223	28.79480	5559	28.608262	28.618323	0	309.42	<.0001
indfmpir	2.363214	0.022796	2.31850	2.40793	1370.9	2.358325	2.368691	0	103.67	<.0001
bpxdi1_1	71.038154	0.162508	70.71946	71.35685	2048.9	70.994379	71.069072	0	437.14	<.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
bmxbmi	Body Mass Index (kg/m**2)	5615	28.625747	0.210920	28.180746	29.070749
indfmpir	Ratio of family income to poverty	5615	2.824421	0.100784	2.611787	3.037056
bpxdi1_1		5615	71.641024	0.524548	70.534325	72.747723

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
bmxbmi	Body Mass Index (kg/m**2)	5615	28.621681	0.211234	28.176016	29.067345
indfmpir	Ratio of family income to poverty	5615	2.830537	0.101138	2.617154	3.043920
bpxdi1_1		5615	71.545855	0.479867	70.533425	72.558286

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
bmxbmi	Body Mass Index (kg/m**2)	5615	28.614270	0.211919	28.167160	29.061380
indfmpir	Ratio of family income to poverty	5615	2.831826	0.100690	2.619388	3.044263
bpxdi1_1		5615	71.599191	0.523335	70.495052	72.703331

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
bmxbmi	Body Mass Index (kg/m**2)	5615	28.632094	0.217044	28.174171	29.090017
indfmpir	Ratio of family income to poverty	5615	2.821588	0.097330	2.616240	3.026936
bpxdi1_1		5615	71.581523	0.544802	70.432092	72.730953

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
bmxbmi	Body Mass Index (kg/m**2)	5615	28.613224	0.204971	28.180772	29.045675
indfmpir	Ratio of family income to poverty	5615	2.825162	0.102061	2.609832	3.040491
bpxdi1_1		5615	71.601947	0.511073	70.523678	72.680216

Obtain Imputed Weighted and Design-Based Means for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5268	217697344	12750571	93.8340	0.7922	91.9354	95.3085
1	347	14305195	2238910	6.1660	0.7922	4.6915	8.0646
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Means for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5275	218531297	12756011	94.1935	0.7658	92.3505	95.6135
1	340	13471242	2170581	5.8065	0.7658	4.3865	7.6495
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Means for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5268	217930145	12727035	93.9344	0.7947	92.0245	95.4097
1	347	14072394	2249126	6.0656	0.7947	4.5903	7.9755
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Means for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5267	217862414	12710605	93.9052	0.7950	91.9958	95.3819
1	348	14140125	2256787	6.0948	0.7950	4.6181	8.0042
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Means for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5259	217730460	12814019	93.8483	0.7766	91.9911	95.2968
1	356	14272079	2182613	6.1517	0.7766	4.7032	8.0089
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Means for High Blood Pressure, Table 12.4

Obs	_Imputation_	Table	F_high_dbp	high_dbp	Frequency	WgtFreq	StdDev	Percent	StdErr	LowerCL	UpperCL	_SkipLine
2	1	Table high_dbp	1	1	347	14305195	2238910	6.1660	0.7922	4.6915	8.0646	
5	2	Table high_dbp	1	1	340	13471242	2170581	5.8065	0.7658	4.3865	7.6495	
8	3	Table high_dbp	1	1	347	14072394	2249126	6.0656	0.7947	4.5903	7.9755	
11	4	Table high_dbp	1	1	348	14140125	2256787	6.0948	0.7950	4.6181	8.0042	
14	5	Table high_dbp	1	1	356	14272079	2182613	6.1517	0.7766	4.7032	8.0089	

PROC MIANALYZE for Combining Results: Table 12.4

The MIANALYZE Procedure

Model Information	
Data Set	WORK.OUTSTATS_M1
Number of Imputations	5

Variance Information (5 Imputations)							
Parameter	**Variance**			**DF**	**Relative Increase in Variance**	**Fraction Missing Information**	**Relative Efficiency**
	Between	**Within**	**Total**				
percent	0.021273	0.616164	0.641691	2527.6	0.041429	0.040540	0.991957

Parameter Estimates (5 Imputations)										
Parameter	**Estimate**	**Std Error**	**95% Confidence Limits**		**DF**	**Minimum**	**Maximum**	**Theta0**	**t for H0: Parameter=Theta0**	**Pr > |t|**
percent	6.056920	0.801056	4.486126	7.627714	2527.6	5.806506	6.165965	0	7.56	<.0001

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

The SURVEYLOGISTIC Procedure

Imputation Number=1

Model Information		
Data Set	WORK.OUTIMP_M1	
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	5268	217697344
2	1	347	14305195

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	107421766	103064359
SC	107421784	103064497

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	107421764	103064343

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	528400	4.4466	75.5930	<.0001
Score	14.58	7	11	<.0001
Wald	5.99	7	11	0.0046
NOTE: Second-order Rao-Scott design correction 0.5742 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	6.08	4	14	0.0047
riagendr	8.25	1	17	0.0106
agec	1.75	1	17	0.2033
agecsq	36.17	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2127	0.1666	-13.28	<.0001
ridreth1	2	-0.5814	0.2331	-2.49	0.0232
ridreth1	3	0.1474	0.2360	0.62	0.5406
ridreth1	4	0.5929	0.2161	2.74	0.0139
ridreth1	5	0.0299	0.2175	0.14	0.8924
riagendr	2	-0.5380	0.1873	-2.87	0.0106
agec		0.00897	0.00678	1.32	0.2033
agecsq		-0.00172	0.000286	-6.01	<.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	0.342	0.914
ridreth1 3 vs 1	1.159	0.704	1.907
ridreth1 4 vs 1	1.809	1.147	2.854
ridreth1 5 vs 1	1.030	0.651	1.630
riagendr 2 vs 1	0.584	0.393	0.867
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	66.8	Somers' D	0.352
Percent Discordant	31.5	Gamma	0.358
Percent Tied	1.7	Tau-a	0.041
Pairs	1827996	c	0.676

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

The SURVEYLOGISTIC Procedure

Imputation Number=2

Model Information		
Data Set	WORK.OUTIMP_M1	
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	5275	218531297
2	1	340	13471242

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	102828144	98743653
SC	102828161	98743792

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	102828142	98743637

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	508356	3.9384	66.9520	<.0001
Score	14.38	7	11	<.0001
Wald	8.45	7	11	0.0011
NOTE: Second-order Rao-Scott design correction 0.7774 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	13.15	4	14	0.0001
riagendr	7.49	1	17	0.0141
agec	1.92	1	17	0.1839
agecsq	32.98	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.3490	0.1936	-12.13	<.0001
ridreth1	2	-0.6459	0.2417	-2.67	0.0161
ridreth1	3	0.1611	0.2218	0.73	0.4774
ridreth1	4	0.7413	0.2373	3.12	0.0062
ridreth1	5	0.1794	0.2304	0.78	0.4471
riagendr	2	-0.5437	0.1987	-2.74	0.0141
agec		0.00945	0.00682	1.39	0.1839
agecsq		-0.00157	0.000274	-5.74	<.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	0.524	0.315	0.873
ridreth1 3 vs 1	1.175	0.736	1.876
ridreth1 4 vs 1	2.099	1.272	3.463
ridreth1 5 vs 1	1.196	0.736	1.945
riagendr 2 vs 1	0.581	0.382	0.883
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	67.0	Somers' D	0.359
Percent Discordant	31.1	Gamma	0.366
Percent Tied	1.8	Tau-a	0.041
Pairs	1793500	c	0.679

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

The SURVEYLOGISTIC Procedure

Imputation Number=3

Model Information		
Data Set	WORK.OUTIMP_M1	
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	5268	217930145
2	1	347	14072394

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	106150118	101600790
SC	106150135	101600928

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	106150116	101600774

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	512544	4.0015	68.0262	<.0001
Score	13.52	7	11	0.0001
Wald	6.58	7	11	0.0032
NOTE: Second-order Rao-Scott design correction 0.7493 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	6.33	4	14	0.0040
riagendr	9.32	1	17	0.0072
agec	1.10	1	17	0.3092
agecsq	37.77	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2093	0.1765	-12.52	<.0001
ridreth1	2	-0.5456	0.2293	-2.38	0.0294
ridreth1	3	0.1389	0.2273	0.61	0.5491
ridreth1	4	0.6543	0.2325	2.81	0.0120
ridreth1	5	0.00200	0.2179	0.01	0.9928
riagendr	2	-0.6030	0.1976	-3.05	0.0072
agec		0.00732	0.00698	1.05	0.3092
agecsq		-0.00171	0.000279	-6.15	<.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	0.580	0.357	0.940
ridreth1 3 vs 1	1.149	0.711	1.856
ridreth1 4 vs 1	1.924	1.178	3.142
ridreth1 5 vs 1	1.002	0.633	1.587
riagendr 2 vs 1	0.547	0.361	0.830
agec	1.007	0.993	1.022
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	66.7	Somers' D	0.351
Percent Discordant	31.6	Gamma	0.358
Percent Tied	1.7	Tau-a	0.041
Pairs	1827996	c	0.676

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

The SURVEYLOGISTIC Procedure

Imputation Number=4

Model Information		
Data Set	WORK.OUTIMP_M1	
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	5267	217862414
2	1	348	14140125

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	106520932	102192447
SC	106520949	102192585

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	106520930	102192431

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	480920	4.1866	71.1720	<.0001
Score	17.06	7	11	<.0001
Wald	9.18	7	11	0.0008
NOTE: Second-order Rao-Scott design correction 0.6720 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	12.13	4	14	0.0002
riagendr	7.71	1	17	0.0129
agec	1.21	1	17	0.2873
agecsq	43.32	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2997	0.2086	-11.03	<.0001
ridreth1	2	-0.5480	0.2671	-2.05	0.0559
ridreth1	3	0.1995	0.2216	0.90	0.3804
ridreth1	4	0.7313	0.2401	3.05	0.0073
ridreth1	5	0.0650	0.2731	0.24	0.8147
riagendr	2	-0.5376	0.1937	-2.78	0.0129
agec		0.00841	0.00765	1.10	0.2873
agecsq		-0.00165	0.000251	-6.58	<.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	0.578	0.329	1.016
ridreth1 3 vs 1	1.221	0.765	1.949
ridreth1 4 vs 1	2.078	1.252	3.449
ridreth1 5 vs 1	1.067	0.600	1.899
riagendr 2 vs 1	0.584	0.388	0.879
agec	1.008	0.992	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	66.9	Somers' D	0.356
Percent Discordant	31.3	Gamma	0.363
Percent Tied	1.8	Tau-a	0.041
Pairs	1832916	c	0.678

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

The SURVEYLOGISTIC Procedure

Imputation Number=5

Model Information		
Data Set	WORK.OUTIMP_M1	
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	5259	217730460
2	1	356	14272079

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	107241372	102909395
SC	107241389	102909533

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	107241370	102909379

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	499465	4.6742	79.4617	<.0001
Score	19.14	7	11	<.0001
Wald	12.43	7	11	0.0002
NOTE: Second-order Rao-Scott design correction 0.4976 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	6.79	4	14	0.0030
riagendr	9.65	1	17	0.0064
agec	2.57	1	17	0.1276
agecsq	36.72	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2308	0.2111	-10.57	<.0001
ridreth1	2	-0.5597	0.2897	-1.93	0.0702
ridreth1	3	0.1393	0.2417	0.58	0.5721
ridreth1	4	0.6635	0.2490	2.66	0.0163
ridreth1	5	0.0733	0.2684	0.27	0.7881
riagendr	2	-0.5878	0.1892	-3.11	0.0064
agec		0.00935	0.00584	1.60	0.1276
agecsq		-0.00160	0.000263	-6.06	<.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	0.571	0.310	1.053
ridreth1 3 vs 1	1.149	0.690	1.914
ridreth1 4 vs 1	1.942	1.148	3.283
ridreth1 5 vs 1	1.076	0.611	1.896
riagendr 2 vs 1	0.556	0.373	0.828
agec	1.009	0.997	1.022
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	1872204	c	0.681

PROC SURVEYLOGISTIC using High 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	-2.2127	0.1666	176.344	0.00000	-13.28	<.0001
2	1	ridreth1	2	17	-0.5814	0.2331	6.221	0.01262	-2.49	0.0232
3	1	ridreth1	3	17	0.1474	0.2360	0.390	0.53234	0.62	0.5406
4	1	ridreth1	4	17	0.5929	0.2161	7.527	0.00608	2.74	0.0139
5	1	ridreth1	5	17	0.0299	0.2175	0.019	0.89080	0.14	0.8924
6	1	riagendr	2	17	-0.5380	0.1873	8.250	0.00408	-2.87	0.0106
7	1	agec		17	0.00897	0.00678	1.751	0.18577	1.32	0.2033
8	1	agecsq		17	-0.00172	0.000286	36.171	0.00000	-6.01	<.0001
9	2	Intercept		17	-2.3490	0.1936	147.196	0.00000	-12.13	<.0001
10	2	ridreth1	2	17	-0.6459	0.2417	7.138	0.00755	-2.67	0.0161
11	2	ridreth1	3	17	0.1611	0.2218	0.528	0.46753	0.73	0.4774
12	2	ridreth1	4	17	0.7413	0.2373	9.754	0.00179	3.12	0.0062
13	2	ridreth1	5	17	0.1794	0.2304	0.606	0.43636	0.78	0.4471
14	2	riagendr	2	17	-0.5437	0.1987	7.485	0.00622	-2.74	0.0141
15	2	agec		17	0.00945	0.00682	1.919	0.16600	1.39	0.1839
16	2	agecsq		17	-0.00157	0.000274	32.978	0.00000	-5.74	<.0001
17	3	Intercept		17	-2.2093	0.1765	156.696	0.00000	-12.52	<.0001
18	3	ridreth1	2	17	-0.5456	0.2293	5.659	0.01736	-2.38	0.0294
19	3	ridreth1	3	17	0.1389	0.2273	0.374	0.54099	0.61	0.5491
20	3	ridreth1	4	17	0.6543	0.2325	7.916	0.00490	2.81	0.0120
21	3	ridreth1	5	17	0.00200	0.2179	0.000	0.99267	0.01	0.9928
22	3	riagendr	2	17	-0.6030	0.1976	9.318	0.00227	-3.05	0.0072
23	3	agec		17	0.00732	0.00698	1.099	0.29452	1.05	0.3092
24	3	agecsq		17	-0.00171	0.000279	37.774	0.00000	-6.15	<.0001
25	4	Intercept		17	-2.2997	0.2086	121.591	0.00000	-11.03	<.0001
26	4	ridreth1	2	17	-0.5480	0.2671	4.209	0.04021	-2.05	0.0559
27	4	ridreth1	3	17	0.1995	0.2216	0.811	0.36787	0.90	0.3804
28	4	ridreth1	4	17	0.7313	0.2401	9.273	0.00233	3.05	0.0073
29	4	ridreth1	5	17	0.0650	0.2731	0.057	0.81190	0.24	0.8147
30	4	riagendr	2	17	-0.5376	0.1937	7.707	0.00550	-2.78	0.0129
31	4	agec		17	0.00841	0.00765	1.207	0.27196	1.10	0.2873
32	4	agecsq		17	-0.00165	0.000251	43.315	0.00000	-6.58	<.0001
33	5	Intercept		17	-2.2308	0.2111	111.637	0.00000	-10.57	<.0001
34	5	ridreth1	2	17	-0.5597	0.2897	3.733	0.05336	-1.93	0.0702
35	5	ridreth1	3	17	0.1393	0.2417	0.332	0.56454	0.58	0.5721
36	5	ridreth1	4	17	0.6635	0.2490	7.101	0.00770	2.66	0.0163
37	5	ridreth1	5	17	0.0733	0.2684	0.075	0.78480	0.27	0.7881
38	5	riagendr	2	17	-0.5878	0.1892	9.654	0.00189	-3.11	0.0064
39	5	agec		17	0.00935	0.00584	2.566	0.10915	1.60	0.1276
40	5	agecsq		17	-0.00160	0.000263	36.725	0.00000	-6.06	<.0001

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

The MIANALYZE Procedure

Model Information	
PARMS Data Set	WORK.OUTEST_M1
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			0.003792	0.036894	0.041444	331.84	0.123332	0.115109	0.977496
ridreth1	2		0.001721	0.064128	0.066194	4107.9	0.032210	0.031676	0.993705
ridreth1	3		0.000640	0.052818	0.053586	19466	0.014543	0.014436	0.997121
ridreth1	4		0.003714	0.055355	0.059811	720.57	0.080504	0.077064	0.984821
ridreth1	5		0.004557	0.058900	0.064368	554.16	0.092848	0.088244	0.982657
riagendr		2	0.000964	0.037380	0.038536	4438.1	0.030951	0.030458	0.993945
agec			0.000000762	0.000046795	0.000047710	10887	0.019543	0.019349	0.996145
agecsq			4.5321119E-9	7.3391253E-8	7.8829787E-8	840.38	0.074103	0.071199	0.985960

Parameter Estimates (5 Imputations)												
Parameter	**ridreth1**	**riagendr**	**Estimate**	**Std Error**	**95% Confidence Limits**		**DF**	**Minimum**	**Maximum**	**Theta0**	**t for H0: Parameter=Theta0**	**Pr > |t|**
intercept			-2.260292	0.203579	-2.66076	-1.85982	331.84	-2.349013	-2.209281	0	-11.10	<.0001
ridreth1	2		-0.576103	0.257281	-1.08051	-0.07169	4107.9	-0.645859	-0.545570	0	-2.24	0.0252
ridreth1	3		0.157251	0.231486	-0.29648	0.61098	19466	0.138923	0.199544	0	0.68	0.4970
ridreth1	4		0.676642	0.244563	0.19650	1.15678	720.57	0.592860	0.741262	0	2.77	0.0058
ridreth1	5		0.069899	0.253709	-0.42845	0.56825	554.16	0.002001	0.179352	0	0.28	0.7830
riagendr		2	-0.562036	0.196307	-0.94690	-0.17718	4438.1	-0.603029	-0.537646	0	-2.86	0.0042
agec			0.008701	0.006907	-0.00484	0.02224	10887	0.007321	0.009450	0	1.26	0.2078
agecsq			-0.001651	0.000281	-0.00220	-0.00110	840.38	-0.001722	-0.001572	0	-5.88	<.0001

Impute Missing Data using PROC MI FCS: Method without Design Variables in Model for Blood Pressure

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	2016

FCS Model Specification	
Method	**Imputed Variables**
Regression	agec agecsq bmxbmi indfmpir bpxdi1_1
Logistic Regression	marcat
Discriminant Function	riagendr ridreth1

Missing Data Patterns										
Group	**riagendr**	**ridreth1**	**agec**	**agecsq**	**bmxbmi**	**marcat**	**indfmpir**	**bpxdi1_1**	**Freq**	**Percent**
1	X	X	X	X	X	X	X	X	4416	78.65
2	X	X	X	X	X	X	X	.	386	6.87
3	X	X	X	X	X	X	.	X	369	6.57
4	X	X	X	X	X	X	.	.	62	1.10
5	X	X	X	X	X	.	X	X	230	4.10
6	X	X	X	X	X	.	X	.	22	0.39
7	X	X	X	X	X	.	.	X	31	0.55
8	X	X	X	X	X	.	.	.	9	0.16
9	X	X	X	X	.	X	X	X	48	0.85
10	X	X	X	X	.	X	X	.	18	0.32
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	6	0.11
14	X	X	X	X	.	.	X	.	2	0.04

Missing Data Patterns					
Group	**Group Means**				
	agec	**agecsq**	**bmxbmi**	**indfmpir**	**bpxdi1_1**
1	2.017802	315.481111	28.783243	2.444812	71.566123
2	1.046395	313.345611	29.594560	2.159689	.
3	5.590640	365.713016	27.984011	.	71.495935
4	6.967421	323.666696	27.659677	.	.
5	-27.811681	773.737724	25.503478	1.606304	62.234783
6	-27.627887	763.498474	28.477273	1.695455	.
7	-24.613224	784.324845	25.967742	.	60.516129
8	-17.021826	710.631456	27.111111	.	.
9	11.874007	456.168680	.	1.978750	69.458333
10	5.089285	401.258831	.	2.062222	.
11	12.811507	440.273597	.	.	66.666667
12	16.394840	594.478257	.	.	.
13	-27.688493	766.874858	.	0.561667	49.333333
14	-27.855160	776.159912	.	0.670000	.

Variance Information (5 Imputations)					
Variable	**Variance**	**DF**	**Relative**	**Fraction**	**Relative**

	Between	Within	Total		Increase in Variance	Missing Information	Efficiency
bmxbmi	0.000029238	0.008537	0.008572	5461.2	0.004110	0.004102	0.999180
indfmpir	0.000020690	0.000494	0.000519	1318.3	0.050209	0.048895	0.990316
bpxdi1_1	0.000069204	0.025518	0.025601	5512.7	0.003254	0.003249	0.999351

Parameter Estimates (5 Imputations)										
Variable	**Mean**	**Std Error**	**95% Confidence Limits**		**DF**	**Minimum**	**Maximum**	**Mu0**	**t for H0: Mean=Mu0**	**Pr > |t|**
bmxbmi	28.620755	0.092583	28.43926	28.80225	5461.2	28.615231	28.627705	0	309.14	<.0001
indfmpir	2.365115	0.022788	2.32041	2.40982	1318.3	2.360892	2.370718	0	103.79	<.0001
bpxdi1_1	70.997087	0.160005	70.68342	71.31076	5512.7	70.989391	71.011113	0	443.72	<.0001

Obtain Imputed Weighted and Design-Based Proportions for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5270	217704219	12658977	93.8370	0.8855	91.6824	95.4611
1	345	14298320	2462248	6.1630	0.8855	4.5389	8.3176
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5262	217663985	12762633	93.8197	0.6765	92.2287	95.1022
1	353	14338554	2004965	6.1803	0.6765	4.8978	7.7713
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5272	218168977	12858385	94.0373	0.7084	92.3552	95.3679
1	343	13833562	2021366	5.9627	0.7084	4.6321	7.6448
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5270	218243093	12861339	94.0693	0.6905	92.4334	95.3692
1	345	13759446	1983406	5.9307	0.6905	4.6308	7.5666
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High 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_dbp							
high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0	5265	217861924	12899188	93.9050	0.7493	92.1187	95.3070
1	350	14140615	2091746	6.0950	0.7493	4.6930	7.8813
Total	5615	232002539	14006079	100.000			
Logit confidence limits are computed for percents.							

Obtain Imputed Weighted and Design-Based Proportions for High Blood Pressure, Table 12.4

Obs	_Imputation_	Table	F_high_dbp	high_dbp	Frequency	WgtFreq	StdDev	Percent	StdErr	LowerCL	UpperCL	_SkipLine
2	1	Table high_dbp	1	1	345	14298320	2462248	6.1630	0.8855	4.5389	8.3176	
5	2	Table high_dbp	1	1	353	14338554	2004965	6.1803	0.6765	4.8978	7.7713	
8	3	Table high_dbp	1	1	343	13833562	2021366	5.9627	0.7084	4.6321	7.6448	
11	4	Table high_dbp	1	1	345	13759446	1983406	5.9307	0.6905	4.6308	7.5666	
14	5	Table high_dbp	1	1	350	14140615	2091746	6.0950	0.7493	4.6930	7.8813	

PROC MIANALYZE for Combining Results: Table 12.4

The MIANALYZE Procedure

Model Information	
Data Set	WORK.OUTSTATS_M2
Number of Imputations	5

Variance Information (5 Imputations)							
Parameter	**Variance**			**DF**	**Relative Increase in Variance**	**Fraction Missing Information**	**Relative Efficiency**
	Between	**Within**	**Total**				
percent	0.013075	0.556397	0.572087	5318.1	0.028199	0.027791	0.994473

Parameter Estimates (5 Imputations)										
Parameter	**Estimate**	**Std Error**	**95% Confidence Limits**		**DF**	**Minimum**	**Maximum**	**Theta0**	**t for H0: Parameter=Theta0**	**Pr > |t|**
percent	6.066356	0.756364	4.583572	7.549140	5318.1	5.930731	6.180344	0	8.02	<.0001

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

The SURVEYLOGISTIC Procedure

Imputation Number=1

Model Information		
Data Set	WORK.OUTIMP_M2	
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	217704219
2	1	345	14298320

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	107384331	102895411
SC	107384349	102895549

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	107384329	102895395

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	520496	3.4398	58.4770	<.0001
Score	17.19	7	11	<.0001
Wald	8.04	7	11	0.0014
NOTE: Second-order Rao-Scott design correction 1.0350 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	10.86	4	14	0.0003
riagendr	7.73	1	17	0.0128
agec	1.38	1	17	0.2566
agecsq	43.54	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2990	0.2032	-11.31	<.0001
ridreth1	2	-0.7461	0.2430	-3.07	0.0069
ridreth1	3	0.2486	0.2293	1.08	0.2934
ridreth1	4	0.6747	0.2404	2.81	0.0121
ridreth1	5	0.0720	0.2313	0.31	0.7592
riagendr	2	-0.5167	0.1858	-2.78	0.0128
agec		0.00793	0.00676	1.17	0.2566
agecsq		-0.00173	0.000262	-6.60	<.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	0.474	0.284	0.792
ridreth1 3 vs 1	1.282	0.790	2.080
ridreth1 4 vs 1	1.964	1.182	3.261
ridreth1 5 vs 1	1.075	0.660	1.751
riagendr 2 vs 1	0.596	0.403	0.883
agec	1.008	0.994	1.022
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	31.3	Gamma	0.364
Percent Tied	1.6	Tau-a	0.041
Pairs	1818150	c	0.679

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

The SURVEYLOGISTIC Procedure

Imputation Number=2

Model Information		
Data Set	WORK.OUTIMP_M2	
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	5262	217663985
2	1	353	14338554

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	107603326	103128910
SC	107603343	103129048

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	107603324	103128894

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	596017	4.7401	80.5821	<.0001
Score	16.54	7	11	<.0001
Wald	7.24	7	11	0.0021
NOTE: Second-order Rao-Scott design correction 0.4768 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	8.95	4	14	0.0008
riagendr	7.76	1	17	0.0127
agec	1.11	1	17	0.3072
agecsq	32.58	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2324	0.2059	-10.84	<.0001
ridreth1	2	-0.7329	0.2515	-2.91	0.0097
ridreth1	3	0.1519	0.1845	0.82	0.4216
ridreth1	4	0.6726	0.2151	3.13	0.0061
ridreth1	5	0.0940	0.2410	0.39	0.7014
riagendr	2	-0.5225	0.1875	-2.79	0.0127
agec		0.00620	0.00589	1.05	0.3072
agecsq		-0.00171	0.000300	-5.71	<.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	0.480	0.283	0.817
ridreth1 3 vs 1	1.164	0.789	1.718
ridreth1 4 vs 1	1.959	1.245	3.085
ridreth1 5 vs 1	1.099	0.661	1.827
riagendr 2 vs 1	0.593	0.399	0.881
agec	1.006	0.994	1.019
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	66.9	Somers' D	0.355
Percent Discordant	31.4	Gamma	0.361
Percent Tied	1.6	Tau-a	0.042
Pairs	1857486	c	0.677

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

The SURVEYLOGISTIC Procedure

Imputation Number=3

Model Information		
Data Set	WORK.OUTIMP_M2	
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	5272	218168977
2	1	343	13833562

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	104836999	100254741
SC	104837016	100254879

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	104836997	100254725

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	568510	4.1244	70.1148	<.0001
Score	21.13	7	11	<.0001
Wald	7.99	7	11	0.0014
NOTE: Second-order Rao-Scott design correction 0.6972 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	10.97	4	14	0.0003
riagendr	7.89	1	17	0.0121
agec	1.79	1	17	0.1982
agecsq	45.31	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2324	0.1839	-12.14	<.0001
ridreth1	2	-0.8142	0.2453	-3.32	0.0041
ridreth1	3	0.1201	0.2415	0.50	0.6255
ridreth1	4	0.6702	0.2201	3.05	0.0073
ridreth1	5	0.0915	0.2030	0.45	0.6579
riagendr	2	-0.5671	0.2019	-2.81	0.0121
agec		0.00880	0.00657	1.34	0.1982
agecsq		-0.00171	0.000254	-6.73	<.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	0.443	0.264	0.743
ridreth1 3 vs 1	1.128	0.677	1.877
ridreth1 4 vs 1	1.955	1.229	3.110
ridreth1 5 vs 1	1.096	0.714	1.682
riagendr 2 vs 1	0.567	0.370	0.868
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	67.7	Somers' D	0.372
Percent Discordant	30.5	Gamma	0.378
Percent Tied	1.8	Tau-a	0.043
Pairs	1808296	c	0.686

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

The SURVEYLOGISTIC Procedure

Imputation Number=4

Model Information		
Data Set	WORK.OUTIMP_M2	
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	218243093
2	1	345	13759446

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	104427725	100212515
SC	104427742	100212653

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	104427723	100212499

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	499497	4.4228	75.1876	<.0001
Score	21.62	7	11	<.0001
Wald	7.20	7	11	0.0022
NOTE: Second-order Rao-Scott design correction 0.5827 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	8.08	4	14	0.0014
riagendr	6.69	1	17	0.0192
agec	1.71	1	17	0.2087
agecsq	43.51	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2469	0.1918	-11.71	<.0001
ridreth1	2	-0.7491	0.2592	-2.89	0.0102
ridreth1	3	0.0837	0.2245	0.37	0.7140
ridreth1	4	0.6313	0.2363	2.67	0.0161
ridreth1	5	0.0710	0.2349	0.30	0.7660
riagendr	2	-0.4645	0.1797	-2.59	0.0192
agec		0.00925	0.00708	1.31	0.2087
agecsq		-0.00173	0.000262	-6.60	<.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	0.473	0.274	0.817
ridreth1 3 vs 1	1.087	0.677	1.746
ridreth1 4 vs 1	1.880	1.142	3.095
ridreth1 5 vs 1	1.074	0.654	1.762
riagendr 2 vs 1	0.628	0.430	0.918
agec	1.009	0.994	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	67.1	Somers' D	0.360
Percent Discordant	31.1	Gamma	0.366
Percent Tied	1.7	Tau-a	0.042
Pairs	1818150	c	0.680

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

The SURVEYLOGISTIC Procedure

Imputation Number=5

Model Information		
Data Set	WORK.OUTIMP_M2	
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	217861924
2	1	350	14140615

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	106523609	102384655
SC	106523627	102384793

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
-2 Log L	106523607	102384639

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Likelihood Ratio	494299	4.7135	80.1301	<.0001
Score	15.29	7	11	<.0001
Wald	5.32	7	11	0.0073
NOTE: Second-order Rao-Scott design correction 0.4851 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	5.40	4	14	0.0076
riagendr	6.46	1	17	0.0211
agec	1.52	1	17	0.2341
agecsq	37.98	1	17	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2193	0.2199	-10.09	<.0001
ridreth1	2	-0.4349	0.3264	-1.33	0.2003
ridreth1	3	0.0880	0.2251	0.39	0.7007
ridreth1	4	0.6133	0.2529	2.42	0.0268
ridreth1	5	0.1328	0.2375	0.56	0.5833
riagendr	2	-0.4912	0.1933	-2.54	0.0211
agec		0.00837	0.00678	1.23	0.2341
agecsq		-0.00173	0.000281	-6.16	<.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	0.647	0.325	1.289
ridreth1 3 vs 1	1.092	0.679	1.756
ridreth1 4 vs 1	1.846	1.083	3.148
ridreth1 5 vs 1	1.142	0.692	1.885
riagendr 2 vs 1	0.612	0.407	0.920
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	67.2	Somers' D	0.361
Percent Discordant	31.1	Gamma	0.367
Percent Tied	1.7	Tau-a	0.042
Pairs	1842750	c	0.681

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	-2.2990	0.2032	127.942	0.00000	-11.31	<.0001
2	1	ridreth1	2	17	-0.7461	0.2430	9.428	0.00214	-3.07	0.0069
3	1	ridreth1	3	17	0.2486	0.2293	1.176	0.27826	1.08	0.2934
4	1	ridreth1	4	17	0.6747	0.2404	7.879	0.00500	2.81	0.0121
5	1	ridreth1	5	17	0.0720	0.2313	0.097	0.75546	0.31	0.7592
6	1	riagendr	2	17	-0.5167	0.1858	7.732	0.00542	-2.78	0.0128
7	1	agec		17	0.00793	0.00676	1.378	0.24041	1.17	0.2566
8	1	agecsq		17	-0.00173	0.000262	43.538	0.00000	-6.60	<.0001
9	2	Intercept		17	-2.2324	0.2059	117.528	0.00000	-10.84	<.0001
10	2	ridreth1	2	17	-0.7329	0.2515	8.492	0.00357	-2.91	0.0097
11	2	ridreth1	3	17	0.1519	0.1845	0.678	0.41024	0.82	0.4216
12	2	ridreth1	4	17	0.6726	0.2151	9.778	0.00177	3.13	0.0061
13	2	ridreth1	5	17	0.0940	0.2410	0.152	0.69657	0.39	0.7014
14	2	riagendr	2	17	-0.5225	0.1875	7.763	0.00533	-2.79	0.0127
15	2	agec		17	0.00620	0.00589	1.108	0.29249	1.05	0.3072
16	2	agecsq		17	-0.00171	0.000300	32.578	0.00000	-5.71	<.0001
17	3	Intercept		17	-2.2324	0.1839	147.316	0.00000	-12.14	<.0001
18	3	ridreth1	2	17	-0.8142	0.2453	11.021	0.00090	-3.32	0.0041
19	3	ridreth1	3	17	0.1201	0.2415	0.247	0.61913	0.50	0.6255
20	3	ridreth1	4	17	0.6702	0.2201	9.274	0.00232	3.05	0.0073
21	3	ridreth1	5	17	0.0915	0.2030	0.203	0.65216	0.45	0.6579
22	3	riagendr	2	17	-0.5671	0.2019	7.887	0.00498	-2.81	0.0121
23	3	agec		17	0.00880	0.00657	1.793	0.18054	1.34	0.1982
24	3	agecsq		17	-0.00171	0.000254	45.311	0.00000	-6.73	<.0001
25	4	Intercept		17	-2.2469	0.1918	137.195	0.00000	-11.71	<.0001
26	4	ridreth1	2	17	-0.7491	0.2592	8.352	0.00385	-2.89	0.0102
27	4	ridreth1	3	17	0.0837	0.2245	0.139	0.70937	0.37	0.7140
28	4	ridreth1	4	17	0.6313	0.2363	7.138	0.00755	2.67	0.0161
29	4	ridreth1	5	17	0.0710	0.2349	0.091	0.76238	0.30	0.7660
30	4	riagendr	2	17	-0.4645	0.1797	6.686	0.00972	-2.59	0.0192
31	4	agec		17	0.00925	0.00708	1.708	0.19125	1.31	0.2087
32	4	agecsq		17	-0.00173	0.000262	43.512	0.00000	-6.60	<.0001
33	5	Intercept		17	-2.2193	0.2199	101.814	0.00000	-10.09	<.0001
34	5	ridreth1	2	17	-0.4349	0.3264	1.775	0.18274	-1.33	0.2003
35	5	ridreth1	3	17	0.0880	0.2251	0.153	0.69582	0.39	0.7007
36	5	ridreth1	4	17	0.6133	0.2529	5.879	0.01532	2.42	0.0268
37	5	ridreth1	5	17	0.1328	0.2375	0.313	0.57601	0.56	0.5833
38	5	riagendr	2	17	-0.4912	0.1933	6.457	0.01105	-2.54	0.0211
39	5	agec		17	0.00837	0.00678	1.522	0.21729	1.23	0.2341
40	5	agecsq		17	-0.00173	0.000281	37.980	0.00000	-6.16	<.0001

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

The MIANALYZE Procedure

Model Information	
PARMS Data Set	WORK.OUTEST_M2
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			0.000972	0.040544	0.041710	5111.4	0.028779	0.028354	0.994361
ridreth1	2		0.022208	0.071236	0.097886	53.966	0.374101	0.297802	0.943788
ridreth1	3		0.004551	0.049206	0.054668	400.79	0.110990	0.104360	0.979555
ridreth1	4		0.000801	0.054459	0.055420	13297	0.017650	0.017492	0.996514
ridreth1	5		0.000626	0.052875	0.053627	20359	0.014216	0.014114	0.997185
riagendr		2	0.001463	0.036025	0.037781	1852.8	0.048727	0.047491	0.990591
agec			0.000001384	0.000043923	0.000045583	3014.2	0.037806	0.037067	0.992641
agecsq			9.887572E-11	7.4161546E-8	7.4280197E-8	1.57E6	0.001600	0.001599	0.999680

Parameter Estimates (5 Imputations)

Parameter	ridreth1	riagendr	Estimate	Std Error	95% Confidence Limits		DF	Minimum	Maximum	Theta0	t for H0: Parameter=Theta0	Pr > |t|
intercept			-2.245999	0.204231	-2.64638	-1.84562	5111.4	-2.298977	-2.219314	0	-11.00	<.0001
ridreth1	2		-0.695446	0.312867	-1.32272	-0.06818	53.966	-0.814214	-0.434910	0	-2.22	0.0304
ridreth1	3		0.138460	0.233811	-0.32119	0.59811	400.79	0.083657	0.248629	0	0.59	0.5541
ridreth1	4		0.652427	0.235414	0.19098	1.11387	13297	0.613258	0.674747	0	2.77	0.0056
ridreth1	5		0.092270	0.231575	-0.36163	0.54618	20359	0.071025	0.132789	0	0.40	0.6903
riagendr		2	-0.512421	0.194373	-0.89363	-0.13121	1852.8	-0.567072	-0.464533	0	-2.64	0.0085
agec			0.008110	0.006752	-0.00513	0.02135	3014.2	0.006197	0.009248	0	1.20	0.2298
agecsq			-0.001722	0.000273	-0.00226	-0.00119	1.57E6	-0.001733	-0.001709	0	-6.32	<.0001

PROC SURVEYIMPUTE / method=FEFI

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	

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

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**	**Group Means**		
												age4cat 1	**age4cat 2**	**age4cat 3**
1	X	X	X	X	X	X	X	4416	1.921E8	78.65	82.80	0.101118	0.354756	0.374264
2	X	X	X	X	X	X	.	386	15689749	6.87	6.76	0.120188	0.411207	0.318152
3	X	X	X	X	X	.	X	48	1529914	0.85	0.66	0	0.226649	0.327229
4	X	X	X	X	X	.	.	18	639355.7	0.32	0.28	0	0.558140	0.217812
5	X	X	X	.	X	X	X	230	6346946	4.10	2.74	1.000000	0	0
6	X	X	X	.	X	X	.	22	647832	0.39	0.28	1.000000	0	0
7	X	X	X	.	X	.	X	6	106197.8	0.11	0.05	1.000000	0	0
8	X	X	X	.	X	.	.	2	29532.23	0.04	0.01	1.000000	0	0
9	X	.	X	X	X	X	X	369	11604755	6.57	5.00	0.092391	0.320513	0.323702
10	X	.	X	X	X	X	.	62	2032241	1.10	0.88	0.007634	0.289621	0.448918
11	X	.	X	X	X	.	X	12	244256.3	0.21	0.11	0	0.402027	0.189297
12	X	.	X	X	X	.	.	4	73149.48	0.07	0.03	0	0.446471	0.233978
13	X	.	X	.	X	X	X	31	813475.8	0.55	0.35	0.967055	0	0.014738
14	X	.	X	.	X	X	.	9	142765.3	0.16	0.06	0.829790	0	0.073272

Missing Data Patterns														
Group	**Group Means**													
	age4cat 4	**povcat 1**	**povcat 2**	**povcat 3**	**povcat 4**	**povcat 5**	**povcat 6**	**riagendr 1**	**riagendr 2**	**marcat 1**	**marcat 2**	**marcat 3**	**ridreth1 1**	**ridreth1 2**
1	0.169862	0.171604	0.209066	0.142120	0.120920	0.105619	0.250671	0.489810	0.510190	0.614843	0.184394	0.200763	0.072969	0.064224
2	0.150453	0.236033	0.223818	0.126770	0.125175	0.110486	0.177718	0.383378	0.616622	0.615798	0.187505	0.196697	0.082392	0.078670
3	0.446122	0.264257	0.305900	0.280029	0.015664	0.013154	0.120997	0.462705	0.537295	0.521541	0.302997	0.175462	0.157433	0
4	0.224048	0.313140	0.148403	0.034062	0	0.249497	0.254898	0.053583	0.946417	0.430881	0.479493	0.089626	0.058427	0
5	0	0.350946	0.201059	0.100930	0.185307	0.049474	0.112284	0.603088	0.396912	.	.	.	0.123436	0.093552

Missing Data Patterns														
Group	Group Means													
	age4cat 4	povcat 1	povcat 2	povcat 3	povcat 4	povcat 5	povcat 6	riagendr 1	riagendr 2	marcat 1	marcat 2	marcat 3	ridreth1 1	ridreth1 2
6	0	0.476846	0.059562	0.195224	0.103813	0.021418	0.143137	0.729302	0.270698	.	.	.	0.137297	0.025294
7	0	1.000000	0	0	0	0	0	0	1.000000	.	.	.	0.329138	0
8	0	0.517258	0.482742	0	0	0	0	0	1.000000	.	.	.	0	0
9	0.263393	.	.	.	.	.	.	0.491575	0.508425	0.609315	0.198370	0.192315	0.127941	0.074752
10	0.253827	.	.	.	.	.	.	0.332443	0.667557	0.657723	0.207179	0.135098	0.089043	0.079068
11	0.408677	.	.	.	.	.	.	0.453826	0.546174	0.456789	0.306626	0.236585	0.026909	0.321300
12	0.319551	.	.	.	.	.	.	0.797523	0.202477	0.680449	0.319551	0	0.563545	0
13	0.018207	.	.	.	.	.	.	0.406278	0.593722	.	.	.	0.093643	0.058187
14	0.096938	.	.	.	.	.	.	0.611608	0.388392	.	.	.	0.571869	0.196962

Missing Data Patterns										
Group	Group Means									
	ridreth1 3	ridreth1 4	ridreth1 5	bmicat 1	bmicat 2	bmicat 3	bmicat 4	dbpcat 1	dbpcat 2	dbpcat 3
1	0.676711	0.110584	0.075511	0.013974	0.298524	0.339885	0.347617	0.753454	0.183234	0.063312
2	0.650238	0.113846	0.074854	0.027204	0.250941	0.324511	0.397344	.	.	.
3	0.638286	0.153619	0.050662	.	.	.	.	0.828762	0.155450	0.015787
4	0.685595	0.127635	0.128344	.	.	.	.	.	.	.
5	0.527853	0.173166	0.081991	0.097894	0.490091	0.231407	0.180608	0.956474	0.041809	0.001717
6	0.645308	0.165510	0.026591	0	0.495812	0.227840	0.276348	.	.	.
7	0.225033	0.445829	0	.	.	.	.	1.000000	0	0
8	0	0.482742	0.517258	.	.	.	.	.	.	.
9	0.506764	0.180253	0.110290	0.047746	0.258099	0.337152	0.357003	0.776655	0.159387	0.063958
10	0.611773	0.103428	0.116688	0.023070	0.304967	0.402896	0.269067	.	.	.
11	0.236602	0.334462	0.080727	.	.	.	.	0.973091	0.026909	0
12	0	0	0.436455	.	.	.	.	.	.	.
13	0.479884	0.199885	0.168401	0.133151	0.540755	0.115795	0.210299	1.000000	0	0
14	0	0.187097	0.044072	0	0.463533	0	0.536467	.	.	.

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	4416	1.921E8
Missing	1199	39900169
Missing, Imputed	1199	39900169
Missing, Not Imputed	0	0
Missing, Partially Imputed	0	0

PROC SURVEYIMPUTE / method=FEFI

Obs	Recipient	ImpWt	ImpRepWt_1	ImpRepWt_2	ImpRepWt_3	ImpRepWt_4	ImpRepWt_5	ImpRepWt_6	ImpRepWt_7
1	0	104236.58	104236.58	104236.58	104236.58	0.00	156354.87	156354.87	104236.58
2	0	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23
3	0	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60	0.00
4	0	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91
5	1	20847.34	31384.98	31187.77	0.00	20704.79	20941.19	20894.54	20835.11
6	2	4825.95	7097.72	7323.70	0.00	4933.96	4783.13	4762.52	4857.74
7	3	1662.61	2521.14	2492.37	0.00	1697.14	1611.57	1678.83	1643.04
8	1	41337.29	41487.94	41227.25	41299.13	41054.63	41523.38	41430.87	41313.03
9	2	9569.16	9382.51	9681.23	9640.51	9783.34	9484.26	9443.40	9632.21
10	3	3296.71	3332.71	3294.67	3263.51	3365.18	3195.52	3328.88	3257.92
11	1	1534.17	1568.19	1508.08	1527.31	1565.98	1537.90	1499.47	2317.56
12	2	1481.63	1456.70	1474.75	1512.66	1529.60	1455.06	1460.82	2204.64
13	3	1009.56	1031.60	982.44	1015.36	1006.16	1045.43	977.76	1540.95
14	4	1022.42	1012.42	1050.88	1003.60	961.19	1073.54	1032.24	1471.86
15	5	737.35	759.39	734.68	718.64	714.52	746.72	750.48	1115.02

Obs	ImpRepWt_8	ImpRepWt_9	ImpRepWt_10	ImpRepWt_11	ImpRepWt_12	ImpRepWt_13	ImpRepWt_14	ImpRepWt_15
1	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58
2	127965.23	127965.23	127965.23	127965.23	0.00	255930.45	127965.23	127965.23
3	22175.40	22175.40	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60
4	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91
5	20827.25	20879.54	20778.77	20914.59	20836.92	20857.58	20847.20	20847.50
6	4852.91	4767.60	4898.35	4754.94	4840.64	4811.52	4798.30	4852.08
7	1655.73	1688.75	1658.77	1666.36	1658.34	1666.79	1690.40	1636.31
8	41297.44	41401.13	41201.31	41470.63	41316.61	41357.59	41337.00	41337.60
9	9622.63	9453.47	9712.73	9428.37	9598.30	9540.55	9514.34	9620.98
10	3283.08	3348.55	3289.11	3304.16	3288.25	3305.02	3351.82	3244.57
11	0.00	2239.00	1611.89	1461.38	1511.45	1557.30	1515.85	1551.90
12	0.00	2177.19	1548.17	1419.32	1453.80	1509.99	1471.48	1491.53
13	0.00	1516.71	1024.48	995.52	1016.40	1002.62	964.10	1053.83
14	0.00	1573.97	1020.01	1024.69	1009.92	1035.14	1000.35	1043.91
15	0.00	1131.05	731.81	742.55	768.74	705.37	760.99	714.37

Obs	ImpRepWt_16	ImpRepWt_17	ImpRepWt_18	ImpRepWt_19	ImpRepWt_20	ImpRepWt_21	ImpRepWt_22
1	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58
2	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23
3	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60
4	54245.82	0.00	27122.91	27122.91	27122.91	27122.91	27122.91
5	20880.35	20814.18	20832.66	20861.23	21050.53	20653.40	21028.50
6	4826.76	4825.13	4787.82	4862.01	4813.06	4838.24	4692.70
7	1628.79	1696.59	1715.41	1612.65	1472.30	1844.26	1614.70
8	41402.73	41271.53	41308.18	41364.83	41740.18	40952.72	0.00
9	9570.76	9567.54	9493.56	9640.67	9543.61	9593.54	0.00
10	3229.66	3364.09	3401.42	3197.66	2919.37	3656.90	0.00
11	1530.84	1537.56	1603.09	1469.70	1446.20	1614.71	1555.47
12	1487.90	1475.31	1555.78	1412.25	1526.39	1440.63	1481.15
13	1023.35	995.65	1033.66	987.03	1027.24	993.29	1002.45
14	1034.79	1009.94	974.22	1067.49	1007.52	1035.99	998.16
15	730.00	744.75	711.50	761.54	755.07	721.40	701.48

Obs	ImpRepWt_23	ImpRepWt_24	ImpRepWt_25	ImpRepWt_26	ImpRepWt_27	ImpRepWt_28	ImpRepWt_29
1	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58	104236.58
2	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23	127965.23
3	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60	14783.60
4	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91	27122.91

Obs	ImpRepWt_23	ImpRepWt_24	ImpRepWt_25	ImpRepWt_26	ImpRepWt_27	ImpRepWt_28	ImpRepWt_29
5	20670.06	20865.46	20829.83	20921.43	20776.65	20874.71	20819.60
6	4956.34	4843.58	4808.91	4732.06	4915.54	4775.33	4877.27
7	1709.49	1626.85	1697.15	1682.41	1643.70	1685.86	1639.03
8	81971.54	41373.22	41302.57	41484.19	41197.11	41391.55	41282.27
9	19655.43	9604.11	9535.38	9382.99	9746.82	9468.80	9670.92
10	6779.35	3225.82	3365.21	3335.98	3259.23	3342.81	3249.96
11	1513.14	1572.51	1497.06	1672.09	1396.09	1518.38	1549.74
12	1482.14	1488.42	1475.11	1399.77	1563.51	1441.24	1521.58
13	1016.62	1002.39	1016.51	983.03	1036.17	1064.35	955.46
14	1046.42	1087.87	959.00	1033.88	1010.96	1030.60	1014.33
15	772.84	693.20	780.03	726.38	748.34	740.89	733.83

Obs	ImpRepWt_30	ImpRepWt_31	seqn	riagendr	ridreth1	wtmec2yr	sdmvpsu	sdmvstra	indfmpir	bmxbmi	age18p	age
1	104236.58	104236.58	62161	1	3	104236.58	1	91	3.15	23.3	1	22
2	127965.23	127965.23	62164	2	3	127965.23	1	94	1.67	23.2	1	44
3	14783.60	14783.60	62169	1	5	14783.60	1	92	0.33	20.1	1	21
4	27122.91	27122.91	62172	2	4	27122.91	2	96	2.02	33.3	1	43
5	20794.02	20900.77	62174	1	3	27335.90	3	90	4.30	33.9	1	80
6	4871.86	4779.94	62174	1	3	27335.90	3	90	4.30	33.9	1	80
7	1670.01	1655.19	62174	1	3	27335.90	3	90	4.30	33.9	1	80
8	41231.56	41443.23	62176	2	3	54203.16	1	99	5.00	23.3	1	34
9	9660.21	9477.93	62176	2	3	54203.16	1	99	5.00	23.3	1	34
10	3311.39	3282.00	62176	2	3	54203.16	1	99	5.00	23.3	1	34
11	1515.18	1553.20	62177	1	5	7851.28	2	92	.	20.1	1	51
12	1488.91	1474.31	62177	1	5	7851.28	2	92	.	20.1	1	51
13	1020.37	998.75	62177	1	5	7851.28	2	92	.	20.1	1	51
14	1032.66	1012.13	62177	1	5	7851.28	2	92	.	20.1	1	51
15	747.71	726.95	62177	1	5	7851.28	2	92	.	20.1	1	51

Obs	marcat	descode	bpxdi1_1	agec	agecsq	age4cat	bmicat	obese	povcat	dbpcat
1	3	911	82	-24.3552	593.17	1	2	0	4	2
2	1	941	56	-2.3552	5.55	2	2	0	2	1
3	3	921	80	-25.3552	642.88	1	2	0	1	2
4	3	962	70	-3.3552	11.26	2	4	1	3	1
5	1	903	.	33.6448	1131.98	4	4	1	5	1
6	1	903	.	33.6448	1131.98	4	4	1	5	2
7	1	903	.	33.6448	1131.98	4	4	1	5	3
8	1	991	.	-12.3552	152.65	2	2	0	6	1
9	1	991	.	-12.3552	152.65	2	2	0	6	2
10	1	991	.	-12.3552	152.65	2	2	0	6	3
11	1	922	68	4.6448	21.57	3	2	0	1	1
12	1	922	68	4.6448	21.57	3	2	0	2	1
13	1	922	68	4.6448	21.57	3	2	0	3	1
14	1	922	68	4.6448	21.57	3	2	0	4	1
15	1	922	68	4.6448	21.57	3	2	0	5	1

FEFI : Table 12.4

The SURVEYFREQ Procedure

Data Summary	
Number of Observations	11964
Sum of Weights	232002539

Variance Estimation	
Method	Jackknife
Replicate Weights	IMPUTED
Number of Replicates	31

Table of bmicat

bmicat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
<18.5	572	4497313	601181	1.9385	0.2754	1.3768	2.5001
18.5-24.99	3920	69613901	5313579	30.0057	1.5473	26.8498	33.1615
25-29.99	3539	77689540	6265321	33.4865	1.3577	30.7175	36.2555
30+	3933	80201785	5562294	34.5694	1.3813	31.7521	37.3866
Total	11964	232002539	14006079	100.000			

Table of dbpcat

dbpcat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
<80	7908	176933527	9936029	76.2636	1.2399	73.7349	78.7923
80-89.9	2431	40958305	3682808	17.6542	0.9141	15.7900	19.5185
90+	1625	14110707	2236180	6.0821	0.7971	4.4564	7.7078
Total	11964	232002539	14006079	100.000			

Table of povcat

povcat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
0-.99	2968	42735113	3791540	18.4201	1.8645	14.6174	22.2228
1.0-1.99	2621	48699253	4439627	20.9908	1.4897	17.9525	24.0291
2.0-2.99	1709	32591317	3307521	14.0478	0.9659	12.0779	16.0177
3.0-3.99	1463	28293173	3690961	12.1952	1.4020	9.3357	15.0547
4.0-4.99	1346	24058617	2994177	10.3700	1.0171	8.2956	12.4444
5.0	1857	55625067	6936036	23.9761	2.3011	19.2829	28.6692
Total	11964	232002539	14006079	100.000			

Table of high_dbp

high_dbp	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
N	10339	217891832	12772220	93.9179	0.7971	92.2922	95.5436
Y	1625	14110707	2236180	6.0821	0.7971	4.4564	7.7078
Total	11964	232002539	14006079	100.000			

Table of age4cat

age4cat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
18-24	2708	30434086	4663837	13.1180	2.0759	8.8842	17.3517
25-44	3158	79743638	5196185	34.3719	1.6388	31.0295	37.7142
45-64	3534	82283259	7318054	35.4665	1.4513	32.5066	38.4265
65+	2564	39541556	3868903	17.0436	1.0725	14.8561	19.2310

Table of age4cat							
age4cat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
Total	11964	232002539	14006079	100.000			

1=mex 2=oth hisp 3=white 4=black 5=other							
ridreth1	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
Hisp	1569	18367148	3766583	7.9168	1.7225	4.4037	11.4299
OthHisp	1283	15364222	3326881	6.6224	1.5203	3.5217	9.7232
White	3449	152979327	17375408	65.9386	3.8901	58.0047	73.8726
Black	3345	27187123	4297116	11.7185	2.3390	6.9481	16.4888
Other	2318	18104719	2512016	7.8037	1.0870	5.5867	10.0206
Total	11964	232002539	14006079	100.000			

1=married 2=prev married 3=never married							
marcat	Frequency	Weighted Frequency	Std Err of Wgt Freq	Percent	Std Err of Percent	95% Confidence Limits for Percent	
Married	6256	142379671	11439037	61.3699	2.0168	57.2566	65.4832
Previously Married	3048	43471096	3360441	18.7373	0.7551	17.1973	20.2774
Never Married	2660	46151771	4940206	19.8928	2.3423	15.1156	24.6699
Total	11964	232002539	14006079	100.000			

FEFI : Table 12.5

The SURVEYLOGISTIC Procedure

Model Information		
Data Set	WORK.IMPUTED	
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	11964
Number of Observations Used	11964
Sum of Weights Read	2.32E8
Sum of Weights Used	2.32E8

Response Profile			
Ordered Value	**high_dbp**	**Total Frequency**	**Total Weight**
1	0	10339	217891832
2	1	1625	14110707

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

Variance Estimation	
Method	Jackknife
Replicate Weights	IMPUTED
Number of Replicates	31

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

Model Fit Statistics		
Criterion	**Intercept Only**	**Intercept and Covariates**
AIC	106359959	102851505
SC	106359976	102851643
-2 Log L	106359957	102851489

Testing Global Null Hypothesis: BETA=0				
Test	**F Value**	**Num DF**	**Den DF**	**Pr > F**
Likelihood Ratio	380071	4.2204	130.83	<.0001

Testing Global Null Hypothesis: BETA=0				
Test	F Value	Num DF	Den DF	Pr > F
Score	15.31	7	31	<.0001
Wald	12.21	7	31	<.0001
NOTE: Second-order Rao-Scott design correction 0.6586 applied to the Likelihood Ratio test.				

Type 3 Analysis of Effects				
Effect	F Value	Num DF	Den DF	Pr > F
ridreth1	13.41	4	31	<.0001
riagendr	7.05	1	31	0.0124
agec	1.40	1	31	0.2452
agecsq	35.68	1	31	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter		Estimate	Standard Error	t Value	Pr > |t|
Intercept		-2.2832	0.1830	-12.47	<.0001
ridreth1	2	-0.6202	0.2096	-2.96	0.0059
ridreth1	3	0.1180	0.2090	0.56	0.5766
ridreth1	4	0.5999	0.2302	2.61	0.0140
ridreth1	5	0.0416	0.2233	0.19	0.8534
riagendr	2	-0.4998	0.1882	-2.66	0.0124
agec		0.00750	0.00633	1.18	0.2452
agecsq		-0.00142	0.000238	-5.97	<.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	0.538	0.351	0.825
ridreth1 3 vs 1	1.125	0.735	1.723
ridreth1 4 vs 1	1.822	1.139	2.914
ridreth1 5 vs 1	1.042	0.661	1.644
riagendr 2 vs 1	0.607	0.413	0.890
agec	1.008	0.995	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	52.5	Somers' D	0.078
Percent Discordant	44.7	Gamma	0.080
Percent Tied	2.7	Tau-a	0.018
Pairs	16800875	c	0.539

Linear Hypotheses Testing Results				
Label	F Value	Num DF	Den DF	Pr > F
testeth_gender	11.48	5	31	<.0001