Chapter 7 Stata v10.1 Analysis Examples Syntax and Output

General Notes on Stata 10.1

Given that this tool is used throughout the ASDA textbook this chapter includes only the syntax and output for the analysis examples provided in Chapter 7. Stata 10.1 is an excellent tool for survey data analysis as well as graphing and related data management tasks. It offers a very comprehensive set of svy commands as well as weighted graphics and convenient syntax and data management abilities. For these reasons, we use Stata as the primary software for the ASDA text.

The examples and syntax presented here assume that all data management including variable construction, labels for variable values and other preparation steps are complete. See the Stata documentation for assistance with these issues.

All analysis examples presented can be performed in Stata 10.1 and are included in this chapter's output.

Please check the Stata documentation and also the ASDA web site for updates to Stata as new versions are released. For example, we have already included an example of how to use Stata 11.0 with the new "factor" variable features/syntax and compared this to the older "xi" type of syntax for including categorical variables in data analysis.

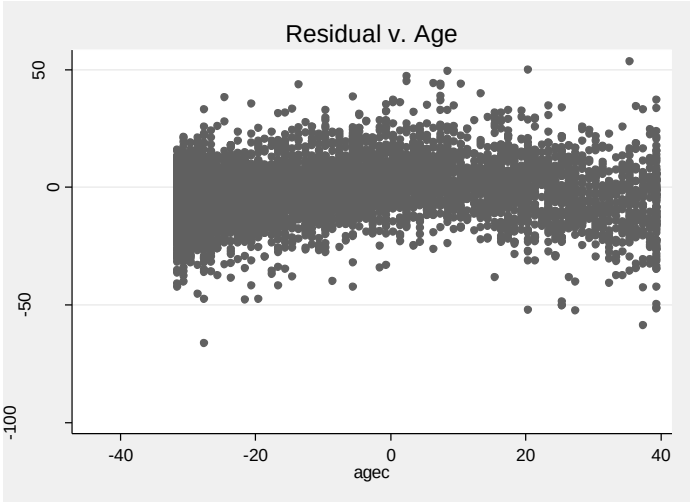
```
CHAPTER 7 LINEAR REGRESSION ANALYSIS EXAMPLES REPLICATION STATA 10
ALL EXAMPLES USE NHANES DATA

*run unweighted tab of ridreth1 for labels of variable values
tab ridreth1

1=mex 2=oth |
       hisp |
    3=white |
    4=black |
    5=other |      Freq.     Percent        Cum.
------------+-----------------------------------
          1 |      2,847       27.51       27.51
          2 |        349        3.37       30.89
          3 |      3,928       37.96       68.84
          4 |      2,710       26.19       95.03
          5 |        514        4.97      100.00
------------+-----------------------------------
      Total |     10,348      100.00


. * run svy models with bivariate tests : see table 7.1
. xi: svy, subpop(age18p): regress bpxdi1_1 i.ridreth1
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                  Number of obs      =       9595
Number of PSUs     =        30                  Population size    =  263929115
                                                Subpop. no. of obs =       4581
                                                Subpop. size       =  190012694
                                                Design df          =         15
                                                F(   4,     12)    =       6.23
                                                Prob > F           =     0.0060
                                                R-squared          =     0.0045

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_Iridreth1_2 |   1.592361   1.108821     1.44   0.172    -.7710361    3.955757
_Iridreth1_3 |   2.427579   .5542985     4.38   0.001     1.246119    3.609038
_Iridreth1_4 |   3.727804   .7532998     4.95   0.000     2.122184    5.333425
_Iridreth1_5 |   1.784708   1.029812     1.73   0.104    -.4102841    3.979701
       _cons |   68.29958   .4124704   165.59   0.000     67.42042    69.17874
------------------------------------------------------------------------------


. test _Iridreth1_2 _Iridreth1_3 _Iridreth1_4 _Iridreth1_5

Adjusted Wald test

 ( 1)  _Iridreth1_2 = 0
 ( 2)  _Iridreth1_3 = 0
 ( 3)  _Iridreth1_4 = 0
 ( 4)  _Iridreth1_5 = 0

       F(  4,    12) =    6.23
            Prob > F =    0.0060

.
```

```
*codes for marcat 1=married 2=previously married 3=never married

. xi: svy, subpop(age18p): regress bpxdi1_1 i.marcat
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                  Number of obs      =       9592
Number of PSUs     =        30                  Population size    =  263764542
                                                Subpop. no. of obs =       4578
                                                Subpop. size       =  189848122
                                                Design df          =         15
                                                F(   2,     14)    =      37.48
                                                Prob > F           =     0.0000
                                                R-squared          =     0.0182

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  _Imarcat_2 |  -.0733106   .6811366    -0.11   0.916    -1.525119    1.378498
  _Imarcat_3 |  -4.386166   .5730547    -7.65   0.000    -5.607603   -3.164728
       _cons |   71.39171   .4675421   152.70   0.000     70.39517    72.38825
------------------------------------------------------------------------------


. test _Imarcat_2 _Imarcat_3

Adjusted Wald test

 ( 1)  _Imarcat_2 = 0
 ( 2)  _Imarcat_3 = 0

       F(  2,    14) =   37.48
            Prob > F =    0.0000


*codes for riagendr 1=male 2=female

. xi: svy, subpop(age18p): regress bpxdi1_1 i.riagendr
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                  Number of obs      =       9595
Number of PSUs     =        30                  Population size    =  263929115
                                                Subpop. no. of obs =       4581
                                                Subpop. size       =  190012694
                                                Design df          =         15
                                                F(   1,     15)    =      56.43
                                                Prob > F           =     0.0000
                                                R-squared          =     0.0133

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_Iriagendr_2 |  -2.844205   .3786222    -7.51   0.000     -3.65122   -2.037191
       _cons |   72.06935   .4205453   171.37   0.000     71.17298    72.96572
------------------------------------------------------------------------------


. test _Iriagendr_2

Adjusted Wald test

 ( 1)  _Iriagendr_2 = 0

       F(  1,    15) =   56.43
            Prob > F =    0.0000
```

```
. svy, subpop(age18p): regress bpxdi1_1 agec
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                  Number of obs      =       9595
Number of PSUs     =        30                  Population size    =  263929115
                                                Subpop. no. of obs =       4581
                                                Subpop. size       =  190012694
                                                Design df          =         15
                                                F(   1,     15)    =       7.70
                                                Prob > F           =     0.0142
                                                R-squared          =     0.0065

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        agec |    .057275   .0206465     2.77   0.014     .0132681    .1012819
       _cons |   70.61552   .3496826   201.94   0.000     69.87019    71.36085
------------------------------------------------------------------------------

. test agec

Adjusted Wald test

 ( 1)  agec = 0

       F(  1,    15) =    7.70
            Prob > F =    0.0142



*table 7.2 unweighted OLS regression

. xi: regress bpxdi1_1 i.ridreth1 i.marcat i.riagendr agec if age18p==1
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)

      Source |       SS       df       MS              Number of obs =    4578
-------------+------------------------------           F(  8,  4569) =   36.38
       Model |  45386.9166     8  5673.36457           Prob > F      =  0.0000
    Residual |  712510.734  4569  155.944569           R-squared     =  0.0599
-------------+------------------------------           Adj R-squared =  0.0582
       Total |  757897.651  4577    165.5883           Root MSE      =  12.488

------------------------------------------------------------------------------
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_Iridreth1_2 |   1.898232   1.125379     1.69   0.092     -.308055    4.104519
_Iridreth1_3 |   1.671934   .4914745     3.40   0.001     .7084068    2.635462
_Iridreth1_4 |   4.508134   .5634728     8.00   0.000     3.403455    5.612813
_Iridreth1_5 |   2.311948   1.004537     2.30   0.021     .3425701    4.281327
  _Imarcat_2 |    .326907   .5222114     0.63   0.531    -.6968798    1.350694
  _Imarcat_3 |  -4.216356   .5100554    -8.27   0.000    -5.216311   -3.216401
_Iriagendr_2 |  -3.401814     .37459    -9.08   0.000    -4.136191   -2.667436
        agec |   .0389751   .0114565     3.40   0.001     .0165148    .0614354
       _cons |   69.67211   .4643468   150.04   0.000     68.76177    70.58246
------------------------------------------------------------------------------
```

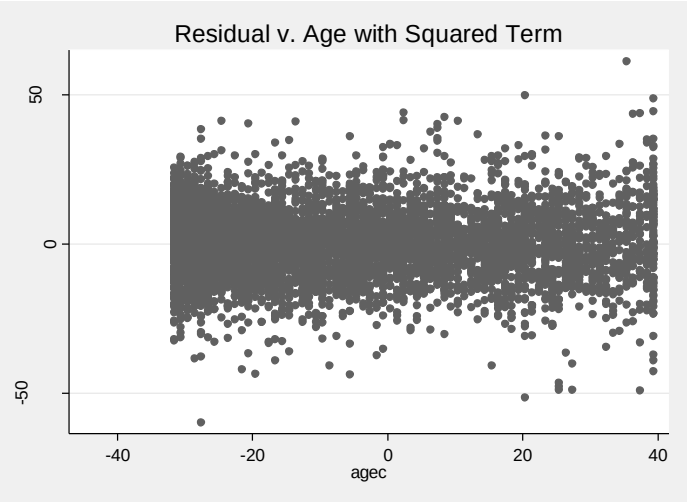
```
*table 7.3 weighted least squares regression: weighted but no svy correction

. xi: regress bpxdi1_1 i.ridreth1 i.marcat i.riagendr agec if age18p==1 [pweight=wtmec2yr]
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
(sum of wgt is   1.8985e+08)

Linear regression                                      Number of obs =    4578
                                                       F(  8,  4569) =   21.59
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.0390
                                                       Root MSE      =  12.088

------------------------------------------------------------------------------
             |               Robust
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_Iridreth1_2 |   1.786509   1.307915     1.37   0.172    -.7776358    4.350653
_Iridreth1_3 |   2.191906   .5188287     4.22   0.000     1.174751    3.209061
_Iridreth1_4 |   4.408631   .6115621     7.21   0.000     3.209674    5.607589
_Iridreth1_5 |   1.958447   1.039596     1.88   0.060    -.0796646    3.996558
  _Imarcat_2 |   .0172509   .6625011     0.03   0.979    -1.281572    1.316073
  _Imarcat_3 |  -4.356232   .6354487    -6.86   0.000    -5.602019   -3.110445
_Iriagendr_2 |  -2.997339   .4404915    -6.80   0.000    -3.860915   -2.133763
        agec |   .0170349   .0149405     1.14   0.254    -.0122556    .0463255
       _cons |   70.67812   .4888712   144.57   0.000      69.7197    71.63654
------------------------------------------------------------------------------


*table 7.4 design based weighted regression
. xi: svy, subpop(age18p): regress bpxdi1_1 i.ridreth1 i.marcat i.riagendr agec
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                  Number of obs      =       9592
Number of PSUs     =        30                  Population size    =  263764542
                                                Subpop. no. of obs =       4578
                                                Subpop. size       =  189848122
                                                Design df          =         15
                                                F(   8,      8)    =      12.66
                                                Prob > F           =     0.0008
                                                R-squared          =     0.0390

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_Iridreth1_2 |   1.786509   1.142193     1.56   0.139    -.6480187    4.221036
_Iridreth1_3 |   2.191906   .6048202     3.62   0.002     .9027623     3.48105
_Iridreth1_4 |   4.408631   .7611566     5.79   0.000     2.786264    6.030998
_Iridreth1_5 |   1.958447   .9880825     1.98   0.066    -.1476011    4.064495
  _Imarcat_2 |   .0172509   .7177698     0.02   0.981    -1.512639    1.547141
  _Imarcat_3 |  -4.356232    .564986    -7.71   0.000    -5.560471   -3.151993
_Iriagendr_2 |  -2.997339   .3311204    -9.05   0.000    -3.703106   -2.291573
        agec |   .0170349   .0218678     0.78   0.448    -.0295751     .063645
       _cons |   70.67812   .5007641   141.14   0.000     69.61077    71.74547
------------------------------------------------------------------------------

. estat effects, deff

------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.       DEFF
-------------+----------------------------------
_Iridreth1_2 |   1.786509   1.142193     1.56644
_Iridreth1_3 |   2.191906   .6048202     1.35955
_Iridreth1_4 |   4.408631   .7611566     1.26592
_Iridreth1_5 |   1.958447   .9880825     1.57608
  _Imarcat_2 |   .0172509   .7177698     2.67185
  _Imarcat_3 |  -4.356232    .564986     1.68663
_Iriagendr_2 |  -2.997339   .3311204     1.29408
        agec |   .0170349   .0218678     3.95006
       _cons |   70.67812   .5007641     .945646
------------------------------------------------
```

```
*examine residuals

predict resid, resid
scatter resid agec  , name(resid_agec, replace) title(Residual v. Age)
```




```
. * figure 7.3 residual v. age with squared term in model
. * examine curvilinear relationship of age
. gen agecsq = agec*agec

. xi: svy, subpop(age18p): regress bpxdi1_1 i.ridreth1 i.marcat i.riagendr agec agecsq
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                 Number of obs      =       9592
Number of PSUs     =        30                 Population size    =  263764542
                                                Subpop. no. of obs =       4578
                                                Subpop. size       =  189848122
                                                Design df          =        15
                                                F(   9,      7)    =     87.12
                                                Prob > F           =    0.0000
                                                R-squared          =    0.1335

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_Iridreth1_2 |   1.189159   1.086694     1.09   0.291    -1.127075    3.505392
_Iridreth1_3 |   1.780553   .6306574     2.82   0.013     .4363384    3.124767
_Iridreth1_4 |   3.465117   .7792454     4.45   0.000     1.804195    5.126039
_Iridreth1_5 |   1.188585   .9341707     1.27   0.223    -.8025525    3.179723
  _Imarcat_2 |   1.040476   .6217367     1.67   0.115    -.2847247    2.365676
  _Imarcat_3 |  -.3432435   .5818098    -0.59   0.564    -1.583342    .8968548
_Iriagendr_2 |  -2.721181   .3375608    -8.06   0.000    -3.440675   -2.001687
        agec |   .1252716   .0148188     8.45   0.000       .093686    .1568573
      agecsq |  -.0124771   .0007638   -16.34   0.000    -.0141051   -.0108492
       _cons |   73.85902   .4548829   162.37   0.000     72.88946    74.82858
------------------------------------------------------------------------------

. estat effects, deff

-------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.       DEFF
-------------+-----------------------------------
_Iridreth1_2 |   1.189159   1.086694     1.55715
_Iridreth1_3 |   1.780553   .6306574      1.6731
_Iridreth1_4 |   3.465117   .7792454       1.482
_Iridreth1_5 |   1.188585   .9341707     1.53654
  _Imarcat_2 |   1.040476   .6217367     2.20887
  _Imarcat_3 |  -.3432435   .5818098     1.82883
_Iriagendr_2 |  -2.721181   .3375608     1.48586
        agec |   .1252716   .0148188     2.02923
      agecsq |  -.0124771   .0007638     2.25683
       _cons |   73.85902   .4548829     .826085
-------------------------------------------------
```

```
predict resid1a, resid
scatter resid1a agec , name(resid_agec_with_square, replace) title(Residual v. Age with Squared Term)
```

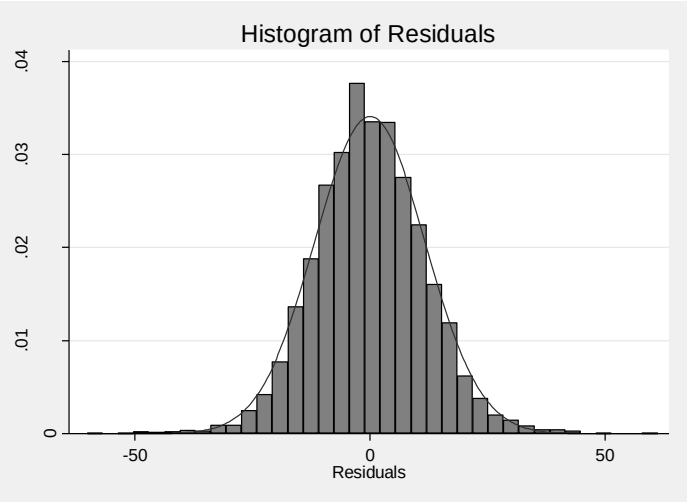


```
. * test of interactions
. * add interaction of age * ethnicity
. xi: svy, subpop(age18p): regress bpxdi1_1 i.marcat i.riagendr i.ridreth1*agec i.ridreth1*agecsq
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
i.ridreth1*agec   _IridXagec_#        (coded as above)
i.ridr~1*agecsq   _IridXagecs_#       (coded as above)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                 Number of obs      =       9592
Number of PSUs     =        30                 Population size    =  263764542
                                                Subpop. no. of obs =       4578
                                                Subpop. size       =  189848122
                                                Design df          =         15
                                                F(  15,      1)    =          .
                                                Prob > F           =          .
                                                R-squared          =     0.1351

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  _Imarcat_2 |   .9900764   .6245233     1.59   0.134    -.3410635    2.321216
  _Imarcat_3 |  -.3356541   .5859098    -0.57   0.575    -1.584491     .913183
_Iriagendr_2 |  -2.720991   .3420341    -7.96   0.000    -3.450019   -1.991962
_Iridreth1_2 |   .6084533   1.251902     0.49   0.634    -2.059913    3.276819
_Iridreth1_3 |   1.423878   .5665703     2.51   0.024     .2162615    2.631494
_Iridreth1_4 |   3.022179   .9171764     3.30   0.005     1.067263    4.977094
_Iridreth1_5 |   .7066886   1.179878     0.60   0.558    -1.808161    3.221538
        agec |   .1336988   .0306828     4.36   0.001     .0682999    .1990977
_IridXagec_2 |   .0673284    .077694     0.87   0.400    -.0982725    .2329293
_IridXagec_3 |  -.0132595   .0396181    -0.33   0.742    -.0977035    .0711845
_IridXagec_4 |   .0411398   .0365897     1.12   0.279    -.0368492    .1191288
_IridXagec_5 |  -.0910532   .0532633    -1.71   0.108    -.2045812    .0224747
_Iridreth1_2 |   .6084533   1.251902     0.49   0.634    -2.059913    3.276819
_Iridreth1_3 |   1.423878   .5665703     2.51   0.024     .2162615    2.631494
_Iridreth1_4 |   3.022179   .9171764     3.30   0.005     1.067263    4.977094
_Iridreth1_5 |   .7066886   1.179878     0.60   0.558    -1.808161    3.221538
      agecsq |  -.0135515   .0011299   -11.99   0.000    -.0159599   -.0111431
_IridXag~s_2 |   .0040395   .0034694     1.16   0.262    -.0033554    .0114343
_IridXag~s_3 |   .0011135   .0011504     0.97   0.348    -.0013385    .0035655
_IridXag~s_4 |   .0019761   .0016857     1.17   0.259     -.001617    .0055692
_IridXag~s_5 |    .000203   .0029075     0.07   0.945    -.0059942    .0064002
       _cons |   74.22003   .4655643   159.42   0.000      73.2277    75.21236
------------------------------------------------------------------------------

. test _IridXagec_2 _IridXagec_3 _IridXagec_4 _IridXagec_5 _IridXagecs_2 _IridXagecs_3 _IridXagecs_4
_IridXagecs_5

Adjusted Wald test

 ( 1)  _IridXagec_2 = 0
 ( 2)  _IridXagec_3 = 0
 ( 3)  _IridXagec_4 = 0
 ( 4)  _IridXagec_5 = 0
 ( 5)  _IridXagecs_2 = 0
 ( 6)  _IridXagecs_3 = 0
 ( 7)  _IridXagecs_4 = 0
 ( 8)  _IridXagecs_5 = 0

       F(  8,     8) =    0.98
            Prob > F =    0.5091
```

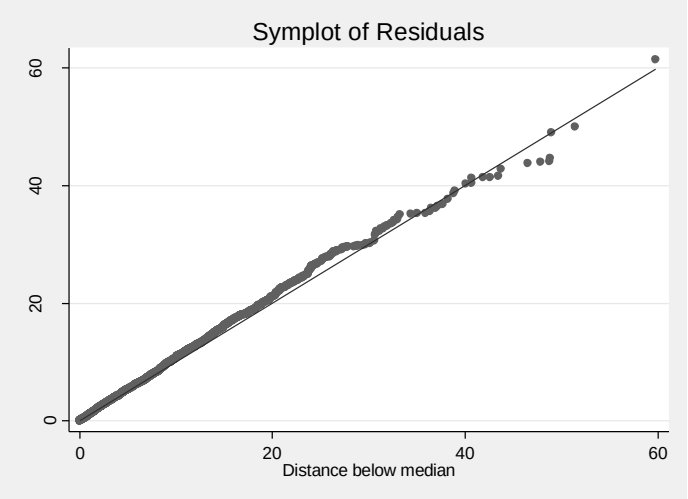
```
. xi: svy, subpop(age18p): regress bpxdi1_1 i.marcat i.ridreth1 i.riagendr*agec i.riagendr*agecsq
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
i.riagendr*agec   _IriaXagec_#        (coded as above)
i.riag~r*agecsq   _IriaXagecs_#       (coded as above)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                 Number of obs      =       9592
Number of PSUs     =        30                 Population size    =  263764542
                                                Subpop. no. of obs =       4578
                                                Subpop. size       =  189848122
                                                Design df          =         15
                                                F(  11,      5)    =          .
                                                Prob > F           =          .
                                                R-squared          =     0.1344

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  _Imarcat_2 |    .907239   .6526285     1.39   0.185    -.4838057    2.298284
  _Imarcat_3 |  -.3462008   .5848811    -0.59   0.563    -1.592845    .9004438
_Iridreth1_2 |   1.200924   1.096066     1.10   0.291    -1.135286    3.537134
_Iridreth1_3 |   1.796412   .6317084     2.84   0.012     .4499576    3.142867
_Iridreth1_4 |   3.492023   .7774519     4.49   0.000     1.834924    5.149123
_Iridreth1_5 |   1.207868   .9329902     1.29   0.215     -.780754    3.196489
_Iriagendr_2 |  -3.237223   .7134577    -4.54   0.000    -4.757922   -1.716524
        agec |   .1178361   .0195237     6.04   0.000     .0762223    .1594499
_IriaXagec_2 |   .0140117   .0277547     0.50   0.621    -.0451461    .0731695
_Iriagendr_2 |  -3.237223   .7134577    -4.54   0.000    -4.757922   -1.716524
      agecsq |  -.0134673   .0012867   -10.47   0.000    -.0162099   -.0107248
_IriaXag~s_2 |   .0017819   .0016538     1.08   0.298    -.0017431     .005307
       _cons |   74.13833   .5672572   130.70   0.000     72.92925    75.34741
------------------------------------------------------------------------------

. *estat effects, deff
. *des _I*
. test _IriaXagec_2 _IriaXagecs_2

Adjusted Wald test

 ( 1)  _IriaXagec_2 = 0
 ( 2)  _IriaXagecs_2 = 0

       F(  2,    14) =    1.73
            Prob > F =    0.2127
```

```
. * refit the final model without interactions
. xi: svy, subpop(age18p) : regress bpxdi1_1 i.marcat i.riagendr i.ridreth1 agec agecsq
i.marcat          _Imarcat_1-3        (naturally coded; _Imarcat_1 omitted)
i.riagendr        _Iriagendr_1-2      (naturally coded; _Iriagendr_1 omitted)
i.ridreth1        _Iridreth1_1-5      (naturally coded; _Iridreth1_1 omitted)
(running regress on estimation sample)

Survey: Linear regression

Number of strata   =        15                 Number of obs      =       9592
Number of PSUs     =        30                 Population size    =  263764542
                                                Subpop. no. of obs =       4578
                                                Subpop. size       =  189848122
                                                Design df          =         15
                                                F(   9,      7)    =      87.12
                                                Prob > F           =     0.0000
                                                R-squared          =     0.1335

------------------------------------------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  _Imarcat_2 |   1.040476   .6217367     1.67   0.115    -.2847247    2.365676
  _Imarcat_3 |  -.3432435   .5818098    -0.59   0.564    -1.583342    .8968548
_Iriagendr_2 |  -2.721181   .3375608    -8.06   0.000    -3.440675   -2.001687
_Iridreth1_2 |   1.189159   1.086694     1.09   0.291    -1.127075    3.505392
_Iridreth1_3 |   1.780553   .6306574     2.82   0.013     .4363384    3.124767
_Iridreth1_4 |   3.465117   .7792454     4.45   0.000     1.804195    5.126039
_Iridreth1_5 |   1.188585   .9341707     1.27   0.223    -.8025525    3.179723
        agec |   .1252716   .0148188     8.45   0.000      .093686    .1568573
      agecsq |  -.0124771   .0007638   -16.34   0.000    -.0141051   -.0108492
       _cons |   73.85902   .4548829   162.37   0.000     72.88946    74.82858
------------------------------------------------------------------------------

. estat effects, deff

-----------------------------------------------
             |             Linearized
    bpxdi1_1 |      Coef.   Std. Err.       DEFF
-------------+---------------------------------
  _Imarcat_2 |   1.040476   .6217367     2.20887
  _Imarcat_3 |  -.3432435   .5818098     1.82883
_Iriagendr_2 |  -2.721181   .3375608     1.48586
_Iridreth1_2 |   1.189159   1.086694     1.55715
_Iridreth1_3 |   1.780553   .6306574      1.6731
_Iridreth1_4 |   3.465117   .7792454       1.482
_Iridreth1_5 |   1.188585   .9341707     1.53654
        agec |   .1252716   .0148188     2.02923
      agecsq |  -.0124771   .0007638     2.25683
       _cons |   73.85902   .4548829      .826085
-----------------------------------------------
```

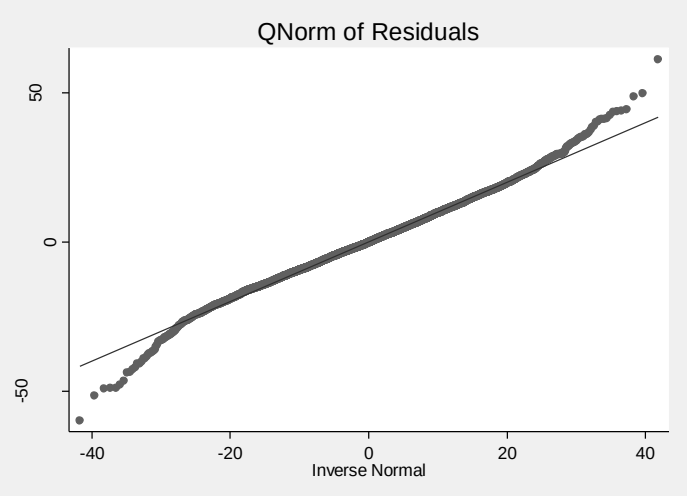
```
*diagnostics for final model
predict ehat1, resid
histogram ehat1, normal name(h_ehat1, replace) title(Histogram of Residuals)
```



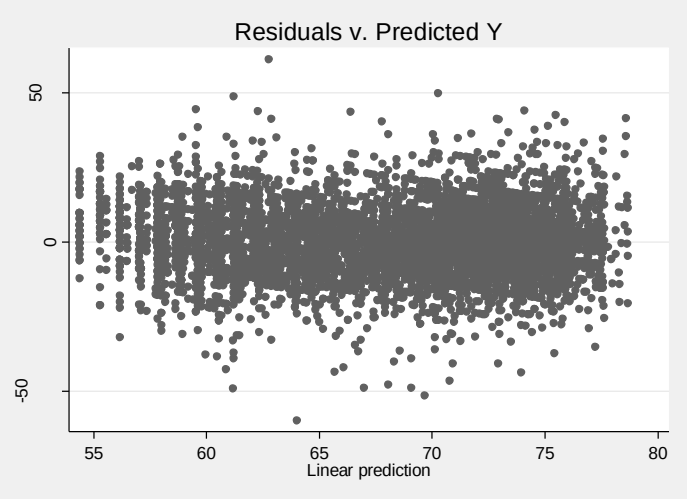

```
symplot ehat1, name(sym_ehat1, replace) title(Symplot of Residuals)
```




```
qnorm ehat1, name(qnorm_ehat1, replace) title(QNorm of Residuals)
```



```
predict yhat1 , xb
scatter ehat1 yhat1, name(ehat1xyhat1, replace) title(Residuals v. Predicted Y)
```




```
*create a matrix of the four graphs
* create multiple graph matrix
graph combine sym_ehat1 h_ehat1 qnorm_ehat1 ehat1xyhat1 , rows(2)
```