Statistics/Data Analysis

```
      name:  <unnamed>
       log:  C:\Users\eaj628\Documents\hwk6.smcl
  log type:  smcl
 opened on:  21 Nov 2016, 22:04:52

1 . /*
  >         Assignment 6
  >
  >         Evan Johnston
  > */
2 .
3 . set more off

4 . cd "\\tsclient\Stat Apps Server\hwk6"
  \\tsclient\Stat Apps Server\hwk6

5 .
6 . * problem 1
7 . use "\\tsclient\Stat Apps Server\Data Sets- STATA\fringe.dta", clear

8 . ************************************************
9 .
10. * part 1.a
11. gen pen_bin=(pension==0)

12. tab pen_bin
```

pen_bin	Freq.	Percent	Cum.
0	**444**	**72.08**	**72.08**
1	**172**	**27.92**	**100.00**
Total	**616**	**100.00**	

```
13. sum pension if pen_bin==0
```

Variable	Obs	Mean	Std. Dev.	Min	Max
pension	**444**	**905.0439**	**550.3696**	**7.28**	**2880.27**

```
14.
15. * part 1.b
16. tobit pension exper age tenure educ depends married white male, ll(0)

Tobit regression                                  Number of obs     =        616
                                                  LR chi2(8)        =     184.70
                                                  Prob > chi2       =     0.0000
Log likelihood = -3672.9635                       Pseudo R2         =     0.0245
```

pension	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
exper	**5.203458**	**6.00928**	**0.87**	**0.387**	**-6.598007**	**17.00492**
age	**-4.638944**	**5.710741**	**-0.81**	**0.417**	**-15.85412**	**6.576228**
tenure	**36.02385**	**4.564348**	**7.89**	**0.000**	**27.06005**	**44.98765**
educ	**93.21262**	**10.89133**	**8.56**	**0.000**	**71.82343**	**114.6018**
depends	**35.28461**	**21.91691**	**1.61**	**0.108**	**-7.757432**	**78.32666**
married	**53.68858**	**71.73266**	**0.75**	**0.454**	**-87.18528**	**194.5624**
white	**144.0855**	**102.0753**	**1.41**	**0.159**	**-56.37738**	**344.5485**
male	**308.1505**	**69.8903**	**4.41**	**0.000**	**170.8948**	**445.4062**
_cons	**-1252.429**	**219.0692**	**-5.72**	**0.000**	**-1682.653**	**-822.2048**
/sigma	**677.7383**	**24.13815**			**630.3341**	**725.1426**

```
        172  left-censored observations at pension <= 0
        444     uncensored observations
          0 right-censored observations
```

```
17.
18. * part 1.c
19. display _b[white]+_b[male]
  452.23604

20.
21. * part 1.d
22. tobit pension exper age tenure educ depends married white male union, ll(0)

Tobit regression                                  Number of obs     =        616
                                                  LR chi2(9)        =     233.52
                                                  Prob > chi2       =     0.0000
Log likelihood = -3648.5515                       Pseudo R2         =     0.0310

------------------------------------------------------------------------------
     pension |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       exper |   4.393523   5.830946     0.75   0.451    -7.057754     15.8448
         age |  -1.653532   5.555708    -0.30   0.766    -12.56427    9.257211
      tenure |   28.77837   4.504963     6.39   0.000     19.93116    37.62557
        educ |   106.8277   10.77274     9.92   0.000     85.67134    127.9841
     depends |   41.46623   21.21414     1.95   0.051    -.1957922    83.12824
     married |   19.74554   69.50047     0.28   0.776     -116.745    156.2361
       white |   159.2972   98.96747     1.61   0.108    -35.06298    353.6575
        male |   257.2457   68.02051     3.78   0.000     123.6615    390.8298
       union |    439.046   62.48832     7.03   0.000     316.3265    561.7656
       _cons |  -1571.506   218.5445    -7.19   0.000    -2000.701   -1142.311
-------------+----------------------------------------------------------------
       /sigma |   652.8974   23.16287                      607.4083    698.3865
------------------------------------------------------------------------------
         172  left-censored observations at pension <= 0
         444     uncensored observations
           0 right-censored observations

23.
24. * part 1.e
25. tobit peratio exper age tenure educ depends married white male union, ll(0)

Tobit regression                                  Number of obs     =        616
                                                  LR chi2(9)        =     156.60
                                                  Prob > chi2       =     0.0000
Log likelihood =  607.59618                       Pseudo R2         =    -0.1479

------------------------------------------------------------------------------
     peratio |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       exper |   .0001697   .0003861     0.44   0.660    -.0005886     .000928
         age |  -.0002176   .0003669    -0.59   0.553    -.0009382     .000503
      tenure |   .0017605   .0003019     5.83   0.000     .0011677    .0023533
        educ |   .0053478   .0007172     7.46   0.000     .0039393    .0067563
     depends |   .0008265   .0014185     0.58   0.560    -.0019593    .0036122
     married |   .0032941   .0046339     0.71   0.477    -.0058063    .0123945
       white |   .0031793   .0065656     0.48   0.628    -.0097147    .0160733
        male |   .0025937   .0045309     0.57   0.567    -.0063045    .0114919
       union |   .0300458   .0041859     7.18   0.000     .0218252    .0382665
       _cons |   -.055063   .0144895    -3.80   0.000    -.0835187   -.0266073
-------------+----------------------------------------------------------------
       /sigma |   .0438472   .0015743                      .0407554    .0469391
------------------------------------------------------------------------------
         172  left-censored observations at peratio <= 0
         444     uncensored observations
           0 right-censored observations
```

```
26.
27. * problem 4
28. use "\\tsclient\Stat Apps Server\Data Sets- STATA\vote2.dta", clear

29. ************************************************
30.
31. * part 4.a
32. regress cvote clinexp clchexp cincshr, robust

Linear regression                               Number of obs     =        157
                                                F(3, 153)         =      17.88
                                                Prob > F          =     0.0000
                                                R-squared         =     0.2437
                                                Root MSE          =     7.7131

------------------------------------------------------------------------------
             |               Robust
       cvote |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     clinexp |  -1.291526    1.29133    -1.00   0.319    -3.842666    1.259614
     clchexp |  -.5985306   .5767269    -1.04   0.301    -1.737907    .5408455
     cincshr |   .1558681   .0528301     2.95   0.004     .0514974    .2602388
       _cons |  -2.555936   .5845835    -4.37   0.000    -3.710833   -1.401038
------------------------------------------------------------------------------

33.
34. * part 4.b
35. test clinexp=clchexp=0

 ( 1)  clinexp - clchexp = 0
 ( 2)  clinexp = 0

       F(  2,   153) =    1.71
            Prob > F =    0.1841

36.
37. * part 4.c
38. regress cvote cincshr, robust

Linear regression                               Number of obs     =        157
                                                F(1, 155)         =      35.50
                                                Prob > F          =     0.0000
                                                R-squared         =     0.2287
                                                Root MSE          =     7.7386

------------------------------------------------------------------------------
             |               Robust
       cvote |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     cincshr |   .2175863   .0365194     5.96   0.000     .1454464    .2897262
       _cons |  -2.681118   .6191986    -4.33   0.000    -3.904275   -1.457961
------------------------------------------------------------------------------

39.
40. * part 4.d
41. regress cvote cincshr, cluster(state) robust

Linear regression                               Number of obs     =        157
                                                F(1, 34)          =      35.41
                                                Prob > F          =     0.0000
                                                R-squared         =     0.2287
                                                Root MSE          =     7.7386

                                   (Std. Err. adjusted for 35 clusters in state)
------------------------------------------------------------------------------
             |               Robust
       cvote |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     cincshr |   .2175863   .0365641     5.95   0.000     .1432791    .2918935
       _cons |  -2.681118   .7534548    -3.56   0.001    -4.212323   -1.149914
------------------------------------------------------------------------------
```

```
42.
43. * part 4.e
44. regress cvote cincshr if rptchall, robust

Linear regression                               Number of obs     =         33
                                                F(1, 31)          =       2.46
                                                Prob > F          =     0.1266
                                                R-squared         =     0.0369
                                                Root MSE          =     5.6752

------------------------------------------------------------------------------
             |               Robust
       cvote |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     cincshr |   .0923912   .0588539     1.57   0.127    -.0276421    .2124245
       _cons |  -2.249822   .9593243    -2.35   0.026    -4.206377   -.2932675
------------------------------------------------------------------------------

45.
46.
47. * problem 5
48. use "\\tsclient\Stat Apps Server\Data Sets- STATA\married_bmi_sample.dta", clear

49. xtset hhid male
        panel variable:  hhid (strongly balanced)
         time variable:  male, 0 to 1
                 delta:  1 unit

50. ************************************************
51.
52. * part 5.a
53. regress bmi male educ age agesq smoke logfaminc withkid, robust

Linear regression                               Number of obs     =     14,110
                                                F(7, 14102)       =     146.27
                                                Prob > F          =     0.0000
                                                R-squared         =     0.0671
                                                Root MSE          =     4.8193

------------------------------------------------------------------------------
             |               Robust
         bmi |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        male |   1.662568     .08179    20.33   0.000     1.502248    1.822887
        educ |  -.2547999   .0183193   -13.91   0.000    -.2907081   -.2188916
         age |   .1859619   .0337493     5.51   0.000     .1198088     .252115
       agesq |  -.0016824   .0003851    -4.37   0.000    -.0024373   -.0009274
       smoke |  -1.241185   .1054405   -11.77   0.000    -1.447862   -1.034507
    logfaminc |  -1.001171   .1553167    -6.45   0.000    -1.305612   -.6967293
      withkid |  -.4525667   .1002064    -4.52   0.000    -.6489845   -.2561489
        _cons |   30.36027   .8814294    34.44   0.000     28.63255    32.08799
------------------------------------------------------------------------------

54.
55. * part 5.b
56. predict uhat, resid

57. gen uhat_sps = uhat[_n-1] if hhid==hhid[_n-1]
  (7,055 missing values generated)
```

```
58. pwcorr uhat uhat_sps, sig star(0.01)
```

	uhat	uhat_sps
uhat	**1.0000**	
uhat_sps	**0.2307*** **0.0000**	**1.0000**

```
59.
60. * part 5.c
61. regress bmi male educ age agesq smoke logfaminc withkid, cluster (hhid) robust
```

Linear regression

Number of obs	=	**14,110**	
F(7, 7054)	=	**155.61**	
Prob > F	=	**0.0000**	
R-squared	=	**0.0671**	
Root MSE	=	**4.8193**	

(Std. Err. adjusted for **7,055** clusters in hhid)

bmi	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
male	**1.662568**	**.0722031**	**23.03**	**0.000**	**1.521028**	**1.804107**
educ	**-.2547999**	**.0193232**	**-13.19**	**0.000**	**-.2926792**	**-.2169205**
age	**.1859619**	**.0365102**	**5.09**	**0.000**	**.1143909**	**.2575329**
agesq	**-.0016824**	**.0004168**	**-4.04**	**0.000**	**-.0024995**	**-.0008652**
smoke	**-1.241185**	**.1093209**	**-11.35**	**0.000**	**-1.455486**	**-1.026883**
logfaminc	**-1.001171**	**.1707395**	**-5.86**	**0.000**	**-1.335871**	**-.6664698**
withkid	**-.4525667**	**.1124459**	**-4.02**	**0.000**	**-.6729944**	**-.232139**
_cons	**30.36027**	**.9640189**	**31.49**	**0.000**	**28.4705**	**32.25004**

```
62.
63. * part 5.d
64.
65. ***** FD estimation: *****
66. *regress D.(bmi male educ age agesq smoke logfaminc withkid), cluster (hhid) robust
67.
68. ***** FE estimation: *****
69. xtreg bmi male educ age agesq smoke logfaminc withkid, fe robust
  note: logfaminc omitted because of collinearity
  note: withkid omitted because of collinearity
```

Fixed-effects (within) regression

Number of obs	=	**14,110**	
Group variable: **hhid**	Number of groups	=	**7,055**
R-sq:	Obs per group:		
within = **0.0836**	min	=	**2**
between = **0.0030**	avg	=	**2.0**
overall = **0.0144**	max	=	**2**
	F(**5,7054**)	=	**132.34**
corr(u_i, Xb) = **-0.1287**	Prob > F	=	**0.0000**

(Std. Err. adjusted for **7,055** clusters in hhid)

bmi	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
male	**1.784283**	**.0784792**	**22.74**	**0.000**	**1.63044**	**1.938125**
educ	**.0537942**	**.0311876**	**1.72**	**0.085**	**-.0073429**	**.1149313**
age	**.2789986**	**.0832553**	**3.35**	**0.001**	**.1157932**	**.442204**
agesq	**-.0034346**	**.0008973**	**-3.83**	**0.000**	**-.0051936**	**-.0016756**
smoke	**-1.367462**	**.1758653**	**-7.78**	**0.000**	**-1.71221**	**-1.022713**
logfaminc	**0**	(omitted)				
withkid	**0**	(omitted)				
_cons	**20.52984**	**1.960812**	**10.47**	**0.000**	**16.68605**	**24.37362**

sigma_u	**3.9947894**
sigma_e	**4.2042562**
rho	**.47446896** (fraction of variance due to u_i)

```
70.
71. * part 5.e
72. xtreg obese male educ age agesq smoke logfaminc withkid, fe robust
  note: logfaminc omitted because of collinearity
  note: withkid omitted because of collinearity

  Fixed-effects (within) regression               Number of obs      =     14,110
  Group variable: hhid                            Number of groups   =      7,055

  R-sq:                                           Obs per group:
       within  = 0.0172                                         min =          2
       between = 0.0062                                         avg =        2.0
       overall = 0.0001                                         max =          2

                                                  F(5,7054)          =      24.32
  corr(u_i, Xb)  = -0.2153                        Prob > F           =     0.0000

                                (Std. Err. adjusted for 7,055 clusters in hhid)
------------------------------------------------------------------------------
             |               Robust
       obese |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        male |    .066885   .0072819     9.19   0.000     .0526104    .0811597
        educ |   .0027649   .0028189     0.98   0.327    -.0027611    .0082908
         age |   .0165162   .0079739     2.07   0.038     .0008849    .0321475
       agesq |  -.0002389   .0000866    -2.76   0.006    -.0004087   -.0000692
       smoke |  -.0951609   .0159899    -5.95   0.000     -.126506   -.0638158
    logfaminc |          0  (omitted)
      withkid |          0  (omitted)
        _cons |  -.0348694   .1849855    -0.19   0.850    -.3974965    .3277577
-------------+----------------------------------------------------------------
      sigma_u |  .34519693
      sigma_e |  .38872981
          rho |  .44089292   (fraction of variance due to u_i)
------------------------------------------------------------------------------

73.
74. log close
      name:  <unnamed>
       log:  C:\Users\eaj628\Documents\hwk6.smcl
  log type:  smcl
 closed on:  21 Nov 2016, 22:04:54
```