```
------------------------------------------------------------------------------------------------------------------------
      name:  <unnamed>
       log:  d:\temp\propensity.log
  log type:  text
 opened on:  19 Aug 2020, 16:17:53

.
. ************************************************
. * Propensity Score matching using psmatch2
. ************************************************
.
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

.
. ttest bweight, by(mbsmoke)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
nonsmoke |   3,778    3412.912    9.284683    570.6871    3394.708    3431.115
  smoker |     864     3137.66    19.08197    560.8931    3100.207    3175.112
---------+--------------------------------------------------------------------
combined |   4,642     3361.68    8.495534    578.8196    3345.025    3378.335
---------+--------------------------------------------------------------------
    diff |            275.2519     21.4528                233.1942    317.3096
------------------------------------------------------------------------------
    diff = mean(nonsmoke) - mean(smoker)                          t =  12.8306
Ho: diff = 0                                     degrees of freedom =     4640

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000

. regress bweight mbsmoke

      Source |       SS           df       MS      Number of obs   =     4,642
-------------+----------------------------------   F(1, 4640)      =    164.62
       Model |  53275939.9         1  53275939.9   Prob > F        =    0.0000
    Residual |  1.5016e+09     4,640  323622.478   R-squared       =    0.0343
-------------+----------------------------------   Adj R-squared   =    0.0341
       Total |  1.5549e+09     4,641  335032.156   Root MSE        =    568.88

------------------------------------------------------------------------------
     bweight |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     mbsmoke |  -275.2519    21.4528   -12.83   0.000    -317.3096   -233.1942
       _cons |   3412.912   9.255254   368.75   0.000     3394.767    3431.056
------------------------------------------------------------------------------

. regress bweight mbsmoke mmarried c.mage##c.mage fbaby medu

      Source |       SS           df       MS      Number of obs   =     4,642
-------------+----------------------------------   F(6, 4635)      =     46.79
       Model |  88804568.1         6  14800761.4   Prob > F        =    0.0000
    Residual |  1.4661e+09     4,635  316306.293   R-squared       =    0.0571
-------------+----------------------------------   Adj R-squared   =    0.0559
       Total |  1.5549e+09     4,641  335032.156   Root MSE        =    562.41

------------------------------------------------------------------------------
      bweight |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
      mbsmoke |  -224.9573    22.1525   -10.15   0.000    -268.3867   -181.5278
     mmarried |   157.2666   21.82899     7.20   0.000     114.4714    200.0618
         mage |   4.148888   12.51788     0.33   0.740    -20.39212    28.68989
              |
c.mage#c.mage |  -.0671851   .2228202    -0.30   0.763    -.5040187    .3696485
              |
        fbaby |  -52.19038    17.9948    -2.90   0.004    -87.46875   -16.91201
         medu |   7.744133   3.796446     2.04   0.041     .3012922    15.18697
        _cons |   3157.452    163.113    19.36   0.000     2837.673    3477.231
------------------------------------------------------------------------------

. psmatch2 mbsmoke mmarried c.mage##c.mage fbaby medu, out(bweight)

Probit regression                               Number of obs     =      4,642
                                                LR chi2(5)        =     380.48
                                                Prob > chi2       =     0.0000
Log likelihood = -2040.5061                     Pseudo R2         =     0.0853

------------------------------------------------------------------------------
      mbsmoke |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
     mmarried |  -.6484821   .0526991   -12.31   0.000    -.7517705   -.5451938
```

```
         mage |   .1744327   .0352437     4.95   0.000     .1053562    .2435092
              |
c.mage#c.mage |  -.0032559   .0006462    -5.04   0.000    -.0045224   -.0019894
              |
        fbaby |  -.2175962   .0491066    -4.43   0.000    -.3138433    -.121349
         medu |  -.0863631   .0098692    -8.75   0.000    -.1057064   -.0670198
        _cons |  -1.558255   .4511589    -3.45   0.001     -2.44251       -.674
------------------------------------------------------------------------------
------------------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
         bweight  Unmatched | 3137.65972   3412.91159  -275.251871   21.4528037   -12.83
                        ATT | 3137.65972   3329.16204  -191.502315   54.3323725    -3.52
-----------------------------+------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

           | psmatch2:
 psmatch2: |   Common
 Treatment |  support
assignment | On suppor |     Total
-----------+-----------+----------
 Untreated |     3,778 |     3,778
   Treated |       864 |       864
-----------+-----------+----------
     Total |     4,642 |     4,642


. psmatch2 mbsmoke mmarried c.mage##c.mage fbaby medu, out(bweight) ate

Probit regression                               Number of obs     =      4,642
                                                LR chi2(5)        =     380.48
                                                Prob > chi2       =     0.0000
Log likelihood = -2040.5061                     Pseudo R2         =     0.0853

------------------------------------------------------------------------------
      mbsmoke |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
     mmarried |  -.6484821   .0526991   -12.31   0.000    -.7517705   -.5451938
         mage |   .1744327   .0352437     4.95   0.000     .1053562    .2435092
              |
c.mage#c.mage |  -.0032559   .0006462    -5.04   0.000    -.0045224   -.0019894
              |
        fbaby |  -.2175962   .0491066    -4.43   0.000    -.3138433    -.121349
         medu |  -.0863631   .0098692    -8.75   0.000    -.1057064   -.0670198
        _cons |  -1.558255   .4511589    -3.45   0.001     -2.44251       -.674
------------------------------------------------------------------------------
------------------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
         bweight  Unmatched | 3137.65972   3412.91159  -275.251871   21.4528037   -12.83
                        ATT | 3137.65972   3329.16204  -191.502315   54.3323725    -3.52
                        ATU | 3412.91159   3168.83033   -244.08126            .        .
                        ATE |                          -234.294916            .        .
-----------------------------+------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

           | psmatch2:
 psmatch2: |   Common
 Treatment |  support
assignment | On suppor |     Total
-----------+-----------+----------
 Untreated |     3,778 |     3,778
   Treated |       864 |       864
-----------+-----------+----------
     Total |     4,642 |     4,642


.
.
. ****************************************
. * Create the propensity score youself
. ****************************************
.
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. probit mbsmoke mmarried c.mage##c.mage fbaby medu

Iteration 0:   log likelihood = -2230.7484
Iteration 1:   log likelihood = -2042.6734
Iteration 2:   log likelihood = -2040.5088
Iteration 3:   log likelihood = -2040.5061
Iteration 4:   log likelihood = -2040.5061
```

```
Probit regression                                 Number of obs     =      4,642
                                                  LR chi2(5)        =     380.48
                                                  Prob > chi2       =     0.0000
Log likelihood = -2040.5061                       Pseudo R2         =     0.0853

------------------------------------------------------------------------------
      mbsmoke |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
     mmarried |  -.6484821   .0526991   -12.31   0.000    -.7517705   -.5451938
         mage |   .1744327   .0352437     4.95   0.000     .1053562    .2435092
              |
c.mage#c.mage |  -.0032559   .0006462    -5.04   0.000    -.0045224   -.0019894
              |
        fbaby |  -.2175962   .0491066    -4.43   0.000    -.3138433    -.121349
         medu |  -.0863631   .0098692    -8.75   0.000    -.1057064   -.0670198
        _cons |  -1.558255   .4511589    -3.45   0.001     -2.44251       -.674
------------------------------------------------------------------------------

. predict ps_probit
(option pr assumed; Pr(mbsmoke))

. psmatch2 mbsmoke mmarried c.mage##c.mage fbaby medu, out(bweight) noreplacement

Probit regression                                 Number of obs     =      4,642
                                                  LR chi2(5)        =     380.48
                                                  Prob > chi2       =     0.0000
Log likelihood = -2040.5061                       Pseudo R2         =     0.0853

------------------------------------------------------------------------------
      mbsmoke |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
     mmarried |  -.6484821   .0526991   -12.31   0.000    -.7517705   -.5451938
         mage |   .1744327   .0352437     4.95   0.000     .1053562    .2435092
              |
c.mage#c.mage |  -.0032559   .0006462    -5.04   0.000    -.0045224   -.0019894
              |
        fbaby |  -.2175962   .0491066    -4.43   0.000    -.3138433    -.121349
         medu |  -.0863631   .0098692    -8.75   0.000    -.1057064   -.0670198
        _cons |  -1.558255   .4511589    -3.45   0.001     -2.44251       -.674
------------------------------------------------------------------------------
------------------------------------------------------------------------------
       Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
----------------------------+-------------------------------------------------------------
        bweight  Unmatched | 3137.65972   3412.91159  -275.251871   21.4528037   -12.83
                      ATT | 3137.65972   3399.09375  -261.434028   27.6877371    -9.44
----------------------------+-------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

           | psmatch2:
 psmatch2: |   Common
 Treatment |  support
assignment | On suppor |     Total
-----------+-----------+----------
 Untreated |     3,778 |     3,778
   Treated |       864 |       864
-----------+-----------+----------
     Total |     4,642 |     4,642


.
. list _id ps_probit _pscore in 1/15

     +-----------------------------+
     |  _id   ps_pro~t     _pscore |
     |-----------------------------|
  1. | 1853   .1346141   .13461412 |
  2. | 3674   .4068726    .4068726 |
  3. | 2920   .2350404   .23504041 |
  4. | 2614    .181717   .18171696 |
  5. | 1086   .1012605   .10126054 |
     |-----------------------------|
  6. | 3390   .3170066   .31700657 |
  7. | 2672   .1822108   .18221082 |
  8. | 1573   .1251314   .12513135 |
  9. | 1264   .1087018   .10870183 |
 10. | 1373   .1151621    .1151621 |
     |-----------------------------|
 11. | 3941   .1299902   .12999021 |
 12. | 3109   .2656838   .26568384 |
 13. | 1228   .1058428   .10584279 |
 14. | 2736   .1872679   .18726793 |
 15. | 3298   .3006144   .30061441 |
     +-----------------------------+
```

```
.
.
. ***************************************
. * Assess the equivalence between treatment and untreated groups
. ***************************************
.
.
. ********************************************************************************
. * Obtained the propensity score and identify the match for each treated respondent
. ********************************************************************************
.
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. psmatch2 mbsmoke mmarried c.mage##c.mage fbaby medu, out(bweight) noreplacement

Probit regression                               Number of obs     =      4,642
                                                LR chi2(5)        =     380.48
                                                Prob > chi2       =     0.0000
Log likelihood = -2040.5061                     Pseudo R2         =     0.0853

------------------------------------------------------------------------------
      mbsmoke |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------+---------------------------------------------------------------
     mmarried |  -.6484821   .0526991   -12.31   0.000    -.7517705   -.5451938
        mage |   .1744327   .0352437     4.95   0.000     .1053562    .2435092
             |
c.mage#c.mage |  -.0032559   .0006462    -5.04   0.000    -.0045224   -.0019894
             |
       fbaby |  -.2175962   .0491066    -4.43   0.000    -.3138433    -.121349
        medu |  -.0863631   .0098692    -8.75   0.000    -.1057064   -.0670198
       _cons |  -1.558255   .4511589    -3.45   0.001     -2.44251       -.674
------------------------------------------------------------------------------
-------------------------------------------------------------------------------------
       Variable     Sample |    Treated     Controls   Difference          S.E.   T-stat
--------------------------+----------------------------------------------------------
        bweight  Unmatched | 3137.65972   3412.91159  -275.251871   21.4528037   -12.83
                     ATT | 3137.65972   3399.09375  -261.434028   27.6877371    -9.44
--------------------------+----------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

           | psmatch2:
 psmatch2: |   Common
 Treatment |  support
assignment | On suppor |     Total
-----------+-----------+----------
 Untreated |     3,778 |     3,778
   Treated |       864 |       864
-----------+-----------+----------
     Total |     4,642 |     4,642


. rename _id id

. rename _n1 n1

. rename _pscore pscore

. rename _treated treated

.
. sort id

. save d:\temp\full.dta, replace
file d:\temp\full.dta saved

.
.
. *****************************
. * generate a data set for the treated
. *****************************
. use d:\temp\full.dta, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. keep if treated ==1
(3,778 observations deleted)

. keep id treated pscore mmarried mage fbaby medu

.
. save d:\temp\treated.dta, replace
file d:\temp\treated.dta saved

.
```

```
.
.
. ******************************
. * generate a data set for the treated
. ******************************
.
. use d:\temp\full.dta, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. keep if n1 ~=.
(3,778 observations deleted)

. keep n1

. rename n1 id

. sort id

. merge 1:1 id using d:\temp\full.dta
(label _support already defined)
(label _treated already defined)
(label YesNo already defined)
(label smoke already defined)
(label mbsmoke already defined)
(label mmarried already defined)

    Result                           # of obs.
    -----------------------------------------
    not matched                         3,778
        from master                         0  (_merge==1)
        from using                      3,778  (_merge==2)

    matched                               864  (_merge==3)
    -----------------------------------------

. keep if _merge ==3
(3,778 observations deleted)

. keep id treated pscore mmarried mage fbaby medu

.
. save d:\temp\untreated.dta, replace
file d:\temp\untreated.dta saved

.
.
. ********************************************************************************************************
. * Appended two data sets together and assess if the treated and untreated groups are equivalent
. ********************************************************************************************************
.
. use d:\temp\treated.dta, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. append using d:\temp\untreated.dta
(label mmarried already defined)
(label YesNo already defined)
(label _treated already defined)

.
. ttest pscore, by(treated)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
Untreate |     864     .255595    .0044089    .1295952    .2469415    .2642484
 Treated |     864    .2543736    .0043414    .1276102    .2458527    .2628946
---------+--------------------------------------------------------------------
combined |   1,728    .2549843    .0030929    .1285707     .248918    .2610506
---------+--------------------------------------------------------------------
    diff |            .0012213    .0061876               -.0109146    .0133573
------------------------------------------------------------------------------
    diff = mean(Untreate) - mean(Treated)                         t =   0.1974
Ho: diff = 0                                     degrees of freedom =     1726

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.5782         Pr(|T| > |t|) = 0.8435          Pr(T > t) = 0.4218

. ttest mage, by( treated)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
```

```
---------+--------------------------------------------------------------------
Untreate |     864    24.97917    .1784929    5.246599    24.62884     25.3295
 Treated |     864    25.16667    .1803555    5.301348    24.81268    25.52065
---------+--------------------------------------------------------------------
combined |   1,728    25.07292    .1268571    5.273351    24.82411    25.32173
---------+--------------------------------------------------------------------
    diff |              -.1875    .2537476               -.6851851    .3101851
------------------------------------------------------------------------------
    diff = mean(Untreate) - mean(Treated)                         t =  -0.7389
Ho: diff = 0                                     degrees of freedom =     1726

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.2300         Pr(|T| > |t|) = 0.4601          Pr(T > t) = 0.7700

. ttest medu, by( treated)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
Untreate |     864    11.52546    .0909179    2.672429    11.34702    11.70391
 Treated |     864    11.63889    .0737481    2.167743    11.49414    11.78364
---------+--------------------------------------------------------------------
combined |   1,728    11.58218    .0585328    2.433163    11.46737    11.69698
---------+--------------------------------------------------------------------
    diff |           -.1134259    .1170677               -.3430354    .1161836
------------------------------------------------------------------------------
    diff = mean(Untreate) - mean(Treated)                         t =  -0.9689
Ho: diff = 0                                     degrees of freedom =     1726

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.1664         Pr(|T| > |t|) = 0.3327          Pr(T > t) = 0.8336

. tab2 mmarried treated, chi2

-> tabulation of mmarried by treated

      1 if |  psmatch2: Treatment
    mother |      assignment
   married | Untreated    Treated |     Total
-----------+----------------------+----------
notmarried |       441        455 |       896
   married |       423        409 |       832
-----------+----------------------+----------
     Total |       864        864 |     1,728

          Pearson chi2(1) =   0.4543   Pr = 0.500

. tab2 fbaby treated, chi2

-> tabulation of fbaby by treated

           |  psmatch2: Treatment
1 if first |      assignment
      baby | Untreated    Treated |     Total
-----------+----------------------+----------
        No |       559        543 |     1,102
       Yes |       305        321 |       626
-----------+----------------------+----------
     Total |       864        864 |     1,728

          Pearson chi2(1) =   0.6413   Pr = 0.423

.
. sort treated

. by treated: sum pscore mage medu

------------------------------------------------------------------------------------------------------------------------
-> treated = Untreated

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
      pscore |        864     .255595    .1295952   .0334317   .7816764
       mage |        864    24.97917    5.246599         14         43
       medu |        864    11.52546    2.672429          0         17

------------------------------------------------------------------------------------------------------------------------
-> treated = Treated

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
      pscore |        864    .2543736    .1276102   .0334317   .7803053
       mage |        864    25.16667    5.301348         14         43
```

```
        medu |        864    11.63889    2.167743          0         17


. 
. 
. save d:\temp\matched.dta, replace
file d:\temp\matched.dta saved

. 
. 
. ******************************************************
. * Treatment Effect with Propensity Score Option
. ******************************************************
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage fbaby medu, probit)

Treatment-effects estimation                   Number of obs      =      4,642
Estimator      : propensity-score matching     Matches: requested =          1
Outcome model  : matching                                  min =          1
Treatment model: probit                                    max =         74
------------------------------------------------------------------------------
                             |               AI Robust
                     bweight |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------
ATE                          |
                     mbsmoke |
(smoker vs nonsmoker)        |  -213.7778   33.44579    -6.39   0.000    -279.3303   -148.2253
------------------------------------------------------------------------------

. teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage fbaby medu, probit), gen(match)

Treatment-effects estimation                   Number of obs      =      4,642
Estimator      : propensity-score matching     Matches: requested =          1
Outcome model  : matching                                  min =          1
Treatment model: probit                                    max =         74
------------------------------------------------------------------------------
                             |               AI Robust
                     bweight |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------
ATE                          |
                     mbsmoke |
(smoker vs nonsmoker)        |  -213.7778   33.44579    -6.39   0.000    -279.3303   -148.2253
------------------------------------------------------------------------------

. 
. 
. * Matching With Multiple Neighbors
. 
. teffects psmatch (bweight) (mbsmoke mmarried c.mage##c.mage fbaby medu, probit), nn(3)

Treatment-effects estimation                   Number of obs      =      4,642
Estimator      : propensity-score matching     Matches: requested =          3
Outcome model  : matching                                  min =          3
Treatment model: probit                                    max =         74
------------------------------------------------------------------------------
                             |               AI Robust
                     bweight |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------
ATE                          |
                     mbsmoke |
(smoker vs nonsmoker)        |  -204.0714   30.73181    -6.64   0.000    -264.3047   -143.8382
------------------------------------------------------------------------------

. 
. 
. 
. 
. ****************************************
. * Propensity Score with Stratification
. ****************************************
. 
. use d:\temp\matched.dta, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. 
. reg mage treated if inrange(pscore, 0.5, 1)

      Source |       SS           df       MS      Number of obs   =        46
-------------+----------------------------------   F(1, 44)        =      1.97
       Model |  48.9865067         1  48.9865067   Prob > F        =    0.1670
    Residual |  1091.44828        44  24.8056426   R-squared       =    0.0430
-------------+----------------------------------   Adj R-squared   =    0.0212
```

```
       Total |  1140.43478        45  25.3429952   Root MSE        =    4.9805

------------------------------------------------------------------------------
        mage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     treated |  -2.137931   1.521355    -1.41   0.167    -5.204021    .9281594
       _cons |   27.13793   .9248605    29.34   0.000       25.274    29.00186
------------------------------------------------------------------------------

. reg mage treated if inrange(pscore, 0, 0.4999999)

      Source |       SS           df       MS      Number of obs   =     1,682
-------------+----------------------------------   F(1, 1680)      =      1.07
       Model |  29.7111746         1  29.7111746   Prob > F        =    0.3018
    Residual |  46777.8536     1,680  27.8439605   R-squared       =    0.0006
-------------+----------------------------------   Adj R-squared   =    0.0000
       Total |  46807.5648     1,681  27.8450713   Root MSE        =    5.2767

------------------------------------------------------------------------------
        mage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     treated |   .2658202   .2573319     1.03   0.302    -.2389046     .770545
       _cons |   24.90419    .182609   136.38   0.000     24.54603    25.26236
------------------------------------------------------------------------------

.
.
.
. ************************************************************
. * Treatment Effect with Inverse-Probabiltiy Weighting
. ************************************************************
.
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. teffects ipw (bweight) (mbsmoke mmarried c.mage##c.mage fbaby medu, probit)

Iteration 0:   EE criterion =  4.621e-21
Iteration 1:   EE criterion =  7.358e-26

Treatment-effects estimation                    Number of obs     =      4,642
Estimator      : inverse-probability weights
Outcome model  : weighted mean
Treatment model: probit
------------------------------------------------------------------------------
                     |               Robust
             bweight |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------------
ATE                  |
             mbsmoke |
(smoker vs nonsmoker)|  -230.6886   25.81524    -8.94   0.000    -281.2856   -180.0917
---------------------+--------------------------------------------------------------
POmean               |
             mbsmoke |
          nonsmoker  |   3403.463   9.571369   355.59   0.000     3384.703    3422.222
------------------------------------------------------------------------------

.
. ************************************************************
. * Treatment Effect with Augmented Inverse-Probabiltiy Weighting
. ************************************************************
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

.
. teffects aipw (bweight prenatal1 mmarried mage fbaby) (mbsmoke mmarried c.mage##c.mage fbaby medu, probit), aequations

Iteration 0:   EE criterion =  4.629e-21
Iteration 1:   EE criterion =  1.944e-25

Treatment-effects estimation                    Number of obs     =      4,642
Estimator      : augmented IPW
Outcome model  : linear by ML
Treatment model: probit
------------------------------------------------------------------------------
                     |               Robust
             bweight |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------------
ATE                  |
             mbsmoke |
(smoker vs nonsmoker)|  -230.9892   26.21056    -8.81   0.000     -282.361   -179.6174
---------------------+--------------------------------------------------------------
POmean               |
             mbsmoke |
```

```
            nonsmoker  |   3403.355   9.568472   355.68   0.000     3384.601    3422.109
-----------------------+------------------------------------------------------------------
OME0                   |
             prenatal1 |   64.40859   27.52699     2.34   0.019     10.45669    118.3605
              mmarried |   160.9513    26.6162     6.05   0.000     108.7845    213.1181
                  mage |   2.546828   2.084324     1.22   0.222    -1.538373    6.632028
                 fbaby |   -71.3286   19.64701    -3.63   0.000     -109.836   -32.82117
                 _cons |   3202.746   54.01082    59.30   0.000     3096.886    3308.605
-----------------------+------------------------------------------------------------------
OME1                   |
             prenatal1 |   25.11133   40.37541     0.62   0.534    -54.02302    104.2457
              mmarried |   133.6617   40.86443     3.27   0.001      53.5689    213.7545
                  mage |  -7.370881    4.21817    -1.75   0.081    -15.63834    .8965804
                 fbaby |   41.43991   39.70712     1.04   0.297    -36.38461    119.2644
                 _cons |   3227.169   104.4059    30.91   0.000     3022.537    3431.801
-----------------------+------------------------------------------------------------------
TME1                   |
              mmarried |  -.6484821   .0554173   -11.70   0.000     -.757098   -.5398663
                  mage |   .1744327   .0363718     4.80   0.000     .1031452    .2457202
                       |
          c.mage#c.mage |  -.0032559   .0006678    -4.88   0.000    -.0045647   -.0019471
                       |
                 fbaby |  -.2175962   .0495604    -4.39   0.000    -.3147328   -.1204595
                  medu |  -.0863631   .0100148    -8.62   0.000    -.1059917   -.0667345
                 _cons |  -1.558255   .4639691    -3.36   0.001    -2.467618   -.6488926
------------------------------------------------------------------------------------------


. 
. *************************************************************************
. * Treatment effects with inverse-probability-weighted regression adjustment
. *************************************************************************
. 
. use http://www.stata-press.com/data/r13/cattaneo2, clear
(Excerpt from Cattaneo (2010) Journal of Econometrics 155: 138-154)

. 
. teffects ipwra (bweight prenatal1 mmarried mage fbaby) (mbsmoke mmarried c.mage##c.mage fbaby medu, probit), aequation

Iteration 0:   EE criterion =  9.885e-21
Iteration 1:   EE criterion =  7.847e-26

Treatment-effects estimation                    Number of obs     =      4,642
Estimator      : IPW regression adjustment
Outcome model  : linear
Treatment model: probit
------------------------------------------------------------------------------------------
                       |               Robust
                bweight |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------+------------------------------------------------------------------
ATE                    |
                mbsmoke |
(smoker vs nonsmoker)  |  -229.9671   26.62668    -8.64   0.000    -282.1544   -177.7798
-----------------------+------------------------------------------------------------------
POmean                 |
                mbsmoke |
            nonsmoker  |   3403.336    9.57126   355.58   0.000     3384.576    3422.095
-----------------------+------------------------------------------------------------------
OME0                   |
             prenatal1 |   67.98549   28.78428     2.36   0.018     11.56933    124.4017
              mmarried |   155.5893   26.46903     5.88   0.000      103.711    207.4677
                  mage |   2.893051   2.134788     1.36   0.175    -1.291056    7.077158
                 fbaby |   -71.9215   20.39317    -3.53   0.000    -111.8914   -31.95162
                 _cons |   3194.808   55.04911    58.04   0.000     3086.913    3302.702
-----------------------+------------------------------------------------------------------
OME1                   |
             prenatal1 |   34.76923   43.18534     0.81   0.421    -49.87248    119.4109
              mmarried |   124.0941   40.29775     3.08   0.002     45.11193    203.0762
                  mage |  -5.068833   5.954425    -0.85   0.395    -16.73929    6.601626
                 fbaby |   39.89692   56.82072     0.70   0.483    -71.46966    151.2635
                 _cons |   3175.551   153.8312    20.64   0.000     2874.047    3477.054
-----------------------+------------------------------------------------------------------
TME1                   |
              mmarried |  -.6484821   .0554173   -11.70   0.000     -.757098   -.5398663
                  mage |   .1744327   .0363718     4.80   0.000     .1031452    .2457202
                       |
          c.mage#c.mage |  -.0032559   .0006678    -4.88   0.000    -.0045647   -.0019471
                       |
                 fbaby |  -.2175962   .0495604    -4.39   0.000    -.3147328   -.1204595
                  medu |  -.0863631   .0100148    -8.62   0.000    -.1059917   -.0667345
                 _cons |  -1.558255   .4639691    -3.36   0.001    -2.467618   -.6488926
------------------------------------------------------------------------------------------


. 
. log close
```

```
      name:  <unnamed>
       log:  d:\temp\propensity.log
  log type:  text
 closed on:  19 Aug 2020, 16:18:08
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```