This is a quick-and-dirty example for some syntax and output from pscore and psmatch2.

It is critical that when you run your own analyses, you generate your own syntax. Both of these procedures have very good help files (and a *Stata Journal* article for pscore). It's easy to see what each of these commands and options does, and you'll likely want to adjust some options to assess the sensitivity of your results.

Never use results from commands you don't understand!

```
. pscore married w1male w3age w3white w3black w3natam w3asian w3hispan w3borncit w3lwmom
> w3lwdad w3paratt_m w3paratt_f w3badhealth w3feelold w3feeladult w3marij w3othdrug
w3drink w3binge w3evsmoke w3regsmoke w1nviolent w1violent w3anarrests w1victim w3victim
w1gpa w1aspir w1expec w3highsch w3somecoll w3college w3postba w3studfull w3studpart
w3hasjob w3jobstab w3milreserv w3milactive w3milever w3willmarry w3anyrel w3anyrelnum
w3virgin w3firstsex w3birthcon w3rbirthcon w3condom w3rcondom w3pregnum /*
> */ , pscore(logit1) comsup numblo(5) level (0.001) blockid(block1) logit

**************************************************
Algorithm to estimate the propensity score
**************************************************

The treatment is married

    married |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |     13,377       79.75       79.75
          1 |      3,397       20.25      100.00
------------+-----------------------------------
      Total |     16,774      100.00


Estimation of the propensity score

Iteration 0:   log likelihood =  -5485.472
Iteration 1:   log likelihood = -4897.4988
Iteration 2:   log likelihood = -4854.9867
Iteration 3:   log likelihood =  -4854.195
Iteration 4:   log likelihood = -4854.1946

Logistic regression                               Number of obs   =      10264
                                                  LR chi2(50)     =    1262.55
                                                  Prob > chi2     =     0.0000
Log likelihood = -4854.1946                       Pseudo R2       =     0.1151

------------------------------------------------------------------------------
     married |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      w1male |  -.1918493   .0566349    -3.39   0.001    -.3028517   -.0808469
       w3age |   .1168165   .0176689     6.61   0.000      .082186    .151447
     w3white |    .176504   .1284245     1.37   0.169    -.0752034    .4282114
     w3black |  -.9351439   .1411776    -6.62   0.000    -1.211847   -.6584409
     w3natam |   -.043757   .1294094    -0.34   0.735    -.2973947    .2098808
     w3asian |  -.4113568   .1461858    -2.81   0.005    -.6978758   -.1248378
```

w3hispan	-.2007916	.0778879	-2.58	0.010	-.3534491	-.0481341
w3borncit	-.550219	.3001274	-1.83	0.067	-1.138458	.0380199
w3lwmom	-.1559957	.0767775	-2.03	0.042	-.3064768	-.0055146
w3lwdad	.0503012	.0819374	0.61	0.539	-.1102932	.2108956
w3paratt_m	.0191287	.0073715	2.59	0.009	.0046808	.0335766
w3paratt_f	.0252506	.0105785	2.39	0.017	.0045172	.045984
w3badhealth	-.0499224	.0317887	-1.57	0.116	-.112227	.0123823
w3feelold	.0386948	.0322794	1.20	0.231	-.0245716	.1019612
w3feeladult	.0627364	.0271365	2.31	0.021	.0095498	.115923
w3marij	-.3239558	.0672887	-4.81	0.000	-.4558392	-.1920724
w3othdrug	-.1812095	.1032346	-1.76	0.079	-.3835456	.0211267
w3drink	-.0786059	.0231718	-3.39	0.001	-.1240217	-.03319
w3binge	-.0272923	.0254246	-1.07	0.283	-.0771237	.0225391
w3evsmoke	-.1133643	.074764	-1.52	0.129	-.259899	.0331705
w3regsmoke	-.0234748	.0857581	-0.27	0.784	-.1915575	.144608
w1nviolent	-.0196366	.0201483	-0.97	0.330	-.0591266	.0198535
w1violent	-.0178439	.0318575	-0.56	0.575	-.0802835	.0445957
w3anarrests	-.0731794	.0486501	-1.50	0.133	-.1685319	.0221731
w1victim	.0334187	.0383416	0.87	0.383	-.0417295	.1085669
w3victim	-.0297907	.0458016	-0.65	0.515	-.1195602	.0599787
w1gpa	.0658452	.0404899	1.63	0.104	-.0135136	.145204
w1aspir	-.0467139	.0374636	-1.25	0.212	-.1201412	.0267133
w1expec	.0467394	.0350962	1.33	0.183	-.022048	.1155267
w3highsch	.0607136	.1008166	0.60	0.547	-.1368833	.2583105
w3somecoll	.0249917	.1097448	0.23	0.820	-.1901042	.2400876
w3college	.2404832	.1312462	1.83	0.067	-.0167547	.4977211
w3postba	.2201523	.15622	1.41	0.159	-.0860333	.526338
w3studfull	.0473986	.0704989	0.67	0.501	-.0907766	.1855739
w3studpart	-.0288639	.0920649	-0.31	0.754	-.2093079	.1515801
w3hasjob	.2716228	.0693612	3.92	0.000	.1356774	.4075682
w3jobstab	.1435788	.1081439	1.33	0.184	-.0683794	.3555369
w3milreserv	.0306402	.1881574	0.16	0.871	-.3381415	.399422
w3milactive	.5259571	.202558	2.60	0.009	.1289506	.9229635
w3milever	.4027751	.193226	2.08	0.037	.0240591	.7814911
w3willmarry	-.4840388	.0285845	-16.93	0.000	-.5400633	-.4280143
w3anyrel	.1897455	.0802232	2.37	0.018	.032511	.34698
w3anyrelnum	.0044024	.0094108	0.47	0.640	-.0140424	.0228472
w3virgin	-.3562088	.0964476	-3.69	0.000	-.5452426	-.1671749
w3firstsex	-.0176317	.0135987	-1.30	0.195	-.0442846	.0090212
w3birthcon	.0362381	.0265115	1.37	0.172	-.0157235	.0881997
w3rbirthcon	.1617378	.0847088	1.91	0.056	-.0042885	.3277641
w3condom	-.0584226	.027779	-2.10	0.035	-.1128685	-.0039767
w3rcondom	-.1620617	.0857905	-1.89	0.059	-.330208	.0060845
w3pregnum	-.0082511	.0374689	-0.22	0.826	-.0816889	.0651866
_cons	-3.260862	.5315544	-6.13	0.000	-4.302689	-2.219034

Note: the common support option has been selected
The region of common support is [.00563074, .78917042]

Description of the estimated propensity score
in region of common support

Estimated propensity score

```
      Percentiles      Smallest
 1%      .018827       .0056307
 5%     .0388676       .0060989
10%     .0602847       .0065916       Obs                11354
25%     .1136353       .0066464       Sum of Wgt.        11354

50%     .2019286                      Mean           .2299126
                       Largest        Std. Dev.       .145665
75%     .3265931       .7585653
90%     .4407855       .7675806       Variance       .0212183
95%     .5066688       .7880642       Skewness       .6949197
99%     .6128524       .7891704       Kurtosis       2.835612


****************************************************
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
****************************************************

The final number of blocks is 8

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

****************************************************************
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
****************************************************************

Variable w3firstsex is not balanced in block 1

The balancing property is not satisfied

Try a different specification of the propensity score
```

***pscore* tells you exactly which variables failed to balance. You'll modify your model to achieve balance on observed covariates.**

```
  Inferior |
  of block |        married
of pscore  |         0          1 |     Total
-----------+----------------------+----------
         0 |     2,127        152 |     2,279
        .1 |     1,351        177 |     1,528
       .15 |     1,169        232 |     1,401
        .2 |     1,609        521 |     2,130
        .3 |       975        507 |     1,482
        .4 |       479        414 |       893
        .5 |       185        242 |       427
        .6 |        45         75 |       120
-----------+----------------------+----------
     Total |     7,940      2,320 |    10,260

Note: the common support option has been selected

****************************************
End of the algorithm to estimate the pscore
****************************************
```

Running *pscore* again, having respecified the propensity score model as much as needed...

```
. pscore married covariates covariates covariates /*
> */ , pscore(logit2) comsup numblo(5) level (0.001) blockid(block1) logit


**************************************************
Algorithm to estimate the propensity score
**************************************************


The treatment is married

    married |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |     13,377       79.75       79.75
          1 |      3,397       20.25      100.00
------------+-----------------------------------
      Total |     16,774      100.00


Estimation of the propensity score

Iteration 0:   log likelihood = -5499.6148
Iteration 1:   log likelihood =  -4909.949
Iteration 2:   log likelihood = -4867.2317
Iteration 3:   log likelihood = -4866.4337
Iteration 4:   log likelihood = -4866.4333

Logistic regression                               Number of obs   =      10300
                                                  LR chi2(49)     =    1266.36
                                                  Prob > chi2     =     0.0000
Log likelihood = -4866.4333                       Pseudo R2       =     0.1151

------------------------------------------------------------------------------
     married |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      w1male |  -.1956318   .0565382    -3.46   0.001    -.3064447    -.084819

                  etc etc etc

       _cons |   -3.47201   .5002261    -6.94   0.000    -4.452435   -2.491585
------------------------------------------------------------------------------

Note: the common support option has been selected
The region of common support is [.00574559, .78324625]

Description of the estimated propensity score
in region of common support

                 Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
```

1%	.0186865	.0057456		
5%	.0392789	.0058879		
10%	.0598639	.0067045	Obs	11393
25%	.1134345	.0067167	Sum of Wgt.	11393
50%	.2011893		Mean	.2294791
		Largest	Std. Dev.	.1454779
75%	.3266644	.7415157		
90%	.4404727	.7495315	Variance	.0211638
95%	.5062561	.7682616	Skewness	.6943207
99%	.6122316	.7832463	Kurtosis	2.831798

****
Step 1: Identification of the optimal number of blocks
Use option detail if you want more detailed output
****

The final number of blocks is 8

This number of blocks ensures that the mean propensity score
is not different for treated and controls in each blocks

****
Step 2: Test of balancing property of the propensity score
Use option detail if you want more detailed output
****

The balancing property is satisfied **Success!**

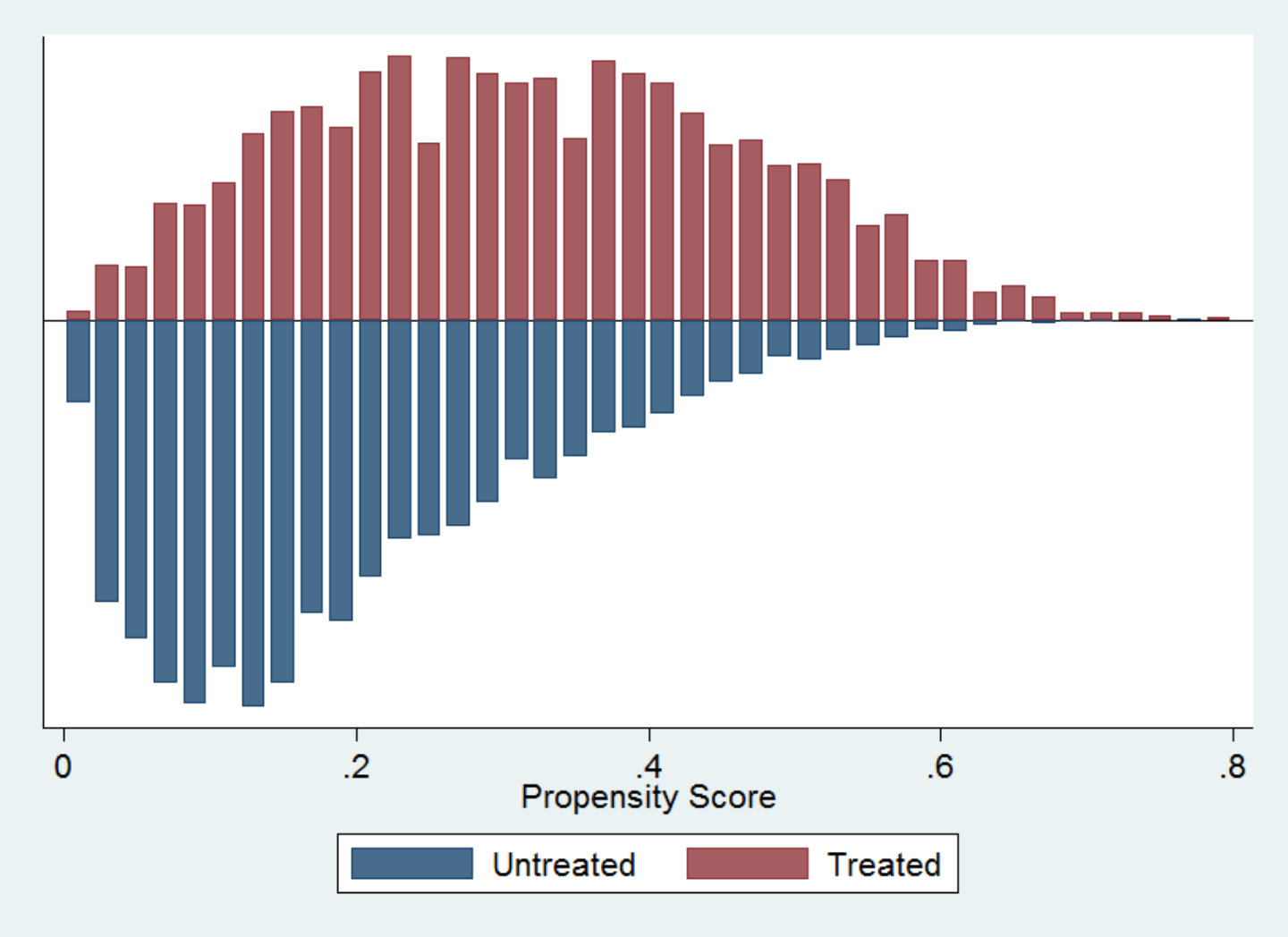
This table shows the inferior bound, the number of treated
and the number of controls for each block

Inferior of block of pscore	married 0	married 1	Total
.0057456	2,144	150	2,294
.1	1,374	182	1,556
.15	1,154	240	1,394
.2	1,620	519	2,139
.3	975	507	1,482
.4	476	413	889
.5	186	239	425
.6	42	74	116
Total	7,971	2,324	10,295

Note: the common support option has been selected

****
End of the algorithm to estimate the pscore
****

```
. psgraph, treated(married) pscore(logit2) bin(50)
```



Note: the y axis in *psgraph* is proportional by group – the treated and untreated are not necessarily on the same scale.

```
. attnd w4anycrime married, pscore(logit2) comsup dots detail
[Or: attnd w4anycrime married covariates covariates covariates, logit comsup dots detail
to find a propensity score, match, and get estimates all in one command.]

But remember: it's better to go one step at a time!

************************************************************
Estimation of the ATT with the nearest neighbor matching method
Random draw version
************************************************************

 Note: the common support option has been selected
 The region of common support is [.00574559, .78324625]

 The outcome is w4anycrime

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
  w4anycrime |      9824    .1673453    .3733029          0          1

 The treatment is married

    married |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |      7,971       77.43       77.43
          1 |      2,324       22.57      100.00
------------+-----------------------------------
      Total |     10,295      100.00

 The distribution of the pscore is

                  Estimated propensity score
-------------------------------------------------------------
      Percentiles      Smallest
 1%     .0186865       .0057456
 5%     .0392789       .0058879
10%     .0598639       .0067045       Obs               11393
25%     .1134345       .0067167       Sum of Wgt.       11393

50%     .2011893                      Mean           .2294791
                        Largest       Std. Dev.      .1454779
75%     .3266644       .7415157
90%     .4404727       .7495315       Variance       .0211638
95%     .5062561       .7682616       Skewness       .6943207
99%     .6122316       .7832463       Kurtosis       2.831798

 The program is searching the nearest neighbor of each treated unit.
 This operation may take a while.

 ************************************************
 Forward search (233 missing values generated)
 Backward search (198 missing values generated)
Choice between backward or forward match

************************************************
```

```
Display of final results
************************************************

The number of treated is 2324
The number of treated which have been matched is  2324

Average absolute pscore difference between treated and controls
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
       PSDIF |      2324    .0001466    .0007497   5.67e-08   .0187302

Average outcome of the matched treated
    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
  w4anycrime |      2322    .0865633    .2812546          0          1

Average outcome of the matched controls
    Variable |     Obs      Weight        Mean   Std. Dev.       Min        Max
-------------+-----------------------------------------------------------------
  w4anycrime |    1282  2323.99993    .1461187    .353363          0          1


ATT estimation with Nearest Neighbor Matching method
(random draw version)
Analytical standard errors
-------------------------------------------------------
n. treat.   n. contr.         ATT    Std. Err.          t
-------------------------------------------------------

     2324        1282      -0.060        0.013     -4.533

-------------------------------------------------------
Note: the numbers of treated and controls refer to actual
nearest neighbour matches

************************************************************************
End of the estimation with the nearest neighbor matching (random draw) method
************************************************************************
```

We can compare those matched results above to our unmatched full sample... but you'd want to pay attention to the *N*s.

```
. sum w4anycrime if (married == 1)

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
  w4anycrime |      3394    .0936948    .2914465          0          1

. sum w4anycrime if (married == 0)

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
  w4anycrime |      8606    .2103184    .4075584          0          1
```

psmatch2 doesn't give as much detail, but it does have more matching options,
and it conveniently presents unmatched and matched comparisons side-by-side.

```
. psmatch2 married, outcome(w4anycrime) pscore(logit2) neighbor(1) caliper(.001) common
------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
      w4anycrime  Unmatched | .086563307   .204088001  -.117524694   .009072566   -12.95
                        ATT | .088287489    .15350488  -.065217391   .012758584    -5.11
-----------------------------+------------------------------------------------------------
 psmatch2: |   psmatch2: Common
 Treatment |        support
assignment | Off suppo  On suppor |     Total
-----------+----------------------+----------
 Untreated |         0      6,409 |     6,409
   Treated |        68      2,254 |     2,322
-----------+----------------------+----------
     Total |        68      8,663 |     8,731
```

```
. psmatch2 married, outcome(w4anycrime) pscore(logit2) neighbor(1) caliper(.001) common
noreplacement
------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
      w4anycrime  Unmatched | .086563307   .204088001  -.117524694   .009072566   -12.95
                        ATT |  .09382716   .154567901  -.060740741   .010323337    -5.88
-----------------------------+------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

 psmatch2: |   psmatch2: Common
 Treatment |        support
assignment | Off suppo  On suppor |     Total
-----------+----------------------+----------
 Untreated |         0      6,409 |     6,409
   Treated |       297      2,025 |     2,322
-----------+----------------------+----------
     Total |       297      8,434 |     8,731
```

```
. psmatch2 married, outcome(w4anycrime) pscore(logit2) neighbor(1) caliper(.0001) common
------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
      w4anycrime  Unmatched | .086563307   .204088001  -.117524694   .009072566   -12.95
                        ATT | .102809325   .160191273  -.057381949   .013334398    -4.30
-----------------------------+------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

 psmatch2: |   psmatch2: Common
 Treatment |        support
assignment | Off suppo  On suppor |     Total
-----------+----------------------+----------
 Untreated |         0      6,409 |     6,409
   Treated |       649      1,673 |     2,322
-----------+----------------------+----------
     Total |       649      8,082 |     8,731
```

```
. psmatch2 married, outcome(w4anycrime) pscore(logit2) kernel common
------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
      w4anycrime  Unmatched | .086563307   .204088001  -.117524694   .009072566   -12.95
                        ATT | .086787565    .15045892  -.063671355   .009256977    -6.88
-----------------------------+------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

 psmatch2: |   psmatch2: Common
 Treatment |        support
assignment | Off suppo  On suppor |     Total
-----------+----------------------+----------
 Untreated |         0      6,409 |     6,409
   Treated |         6      2,316 |     2,322
-----------+----------------------+----------
     Total |         6      8,725 |     8,731
```


```
. psmatch2 married, outcome(w4anycrime) pscore(logit2) kernel common
------------------------------------------------------------------------------
        Variable     Sample |    Treated     Controls   Difference         S.E.   T-stat
-----------------------------+------------------------------------------------------------
      w4anycrime  Unmatched | .086563307   .204088001  -.117524694   .009072566   -12.95
                        ATT | .086787565    .15045892  -.063671355   .009256977    -6.88
-----------------------------+------------------------------------------------------------
Note: S.E. does not take into account that the propensity score is estimated.

 psmatch2: |   psmatch2: Common
 Treatment |        support
assignment | Off suppo  On suppor |     Total
-----------+----------------------+----------
 Untreated |         0      6,409 |     6,409
   Treated |         6      2,316 |     2,322
-----------+----------------------+----------
     Total |         6      8,725 |     8,731
```