```
   __  ___  ___  ___  ___(R)
  /_  /  /__/  /  /__/
 __/ /  /  /__/ /  /__/
    Statistics/Data analysis
```

```
1 .
2 . clear

3 . set more off

4 . cd "C:\Users\wonja\Documents\GitHub\14.320\PS3"
  C:\Users\wonja\Documents\GitHub\14.320\PS3

5 . use STAR_public_use

6 .
7 . * Problem 2.(a) i.
8 .
9 . local all_treatments = "ssp sfp sfsp"

10 . foreach treatment in `all_treatments' {
   2.     ttest grade_20059_fall if control == 1 | `treatment' == 1, by(control)
 >  unequal
   3.         eststo: quietly estpost ttest grade_20059_fall if control == 1 | `
 > treatment' == 1, by(control)
   4. }
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	212	64.13365	.8680953	12.63966	62.4224	65.8449
1	854	63.85714	.4120091	12.04026	63.04847	64.66581
combined	1,066	63.91213	.3723244	12.15626	63.18156	64.64271
diff		.276505	.9609063		-1.614151	2.167161

```
   diff = mean(0) - mean(1)                                t =   0.2878
Ho: diff = 0                     Satterthwaite's degrees of freedom =  312.838

   Ha: diff < 0                  Ha: diff != 0                  Ha: diff > 0
Pr(T < t) = 0.6131       Pr(|T| > |t|) = 0.7737       Pr(T > t) = 0.3869
(est1 stored)
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	219	65.83067	.7538433	11.15586	64.34492	67.31642
1	854	63.85714	.4120091	12.04026	63.04847	64.66581
combined	1,073	64.25994	.3628792	11.88672	63.54791	64.97198
diff		1.973527	.8590874		.2840585	3.662995

```
   diff = mean(0) - mean(1)                                t =   2.2972
Ho: diff = 0                     Satterthwaite's degrees of freedom =  359.492

   Ha: diff < 0                  Ha: diff != 0                  Ha: diff > 0
Pr(T < t) = 0.9889       Pr(|T| > |t|) = 0.0222       Pr(T > t) = 0.0111
(est2 stored)
```

Two-sample t test with unequal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	119	66.0979	.9801826	10.69253	64.15687	68.03893
1	854	63.85714	.4120091	12.04026	63.04847	64.66581
combined	973	64.13119	.3815353	11.90121	63.38246	64.87992
diff		2.240756	1.063254		.1411975	4.340315

```
   diff = mean(0) - mean(1)                                t =   2.1075
Ho: diff = 0                     Satterthwaite's degrees of freedom =  162.679
```

```
       Ha: diff < 0                 Ha: diff != 0                  Ha: diff > 0
   Pr(T < t) = 0.9817        Pr(|T| > |t|) = 0.0366        Pr(T > t) = 0.0183
   (est3 stored)
```

```
11 . esttab using PS3-2ai.tex, replace compress cells("b(label(diff) fmt(a3) star)
   >  t(fmt(a3))" se(par fmt(a3))) label nonumber mtitles("control v. ssp" "contro
   > l v. sfp" "control v. sfsp") stats(N, fmt(%9.0gc) label(Observations)) addnot
   > e("standard errors in parentheses" "@starlegend")
   (output written to PS3-2ai.tex)
```

```
12 . eststo clear
```

```
13 .
14 . * Problem 2.(a) ii.
15 .
16 . gen treat = 1 - control
```

```
17 . foreach treatment in `all_treatments' {
    2.      eststo: reg grade_20059_fall treat if treat == 0 | `treatment' == 1
    3. }
```

Source	SS	df	MS			
				Number of obs	=	1,066
				F(1, 1064)	=	0.09
Model	12.9850142	1	12.9850142	Prob > F	=	0.7671
Residual	157367.082	1,064	147.901393	R-squared	=	0.0001
				Adj R-squared	=	-0.0009
Total	157380.067	1,065	147.774711	Root MSE	=	12.161

grade_2005~l	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
treat	.276505	.9331853	0.30	0.767	-1.554587	2.107597
_cons	63.85714	.416157	153.44	0.000	63.04056	64.67372

```
(est1 stored)
```

Source	SS	df	MS			
				Number of obs	=	1,073
				F(1, 1071)	=	4.82
Model	678.872694	1	678.872694	Prob > F	=	0.0283
Residual	150788.333	1,071	140.792094	R-squared	=	0.0045
				Adj R-squared	=	0.0036
Total	151467.205	1,072	141.294035	Root MSE	=	11.866

grade_2005~l	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
treat	1.973527	.8987481	2.20	0.028	.2100199	3.737034
_cons	63.85714	.4060319	157.27	0.000	63.06043	64.65385

```
(est2 stored)
```

Source	SS	df	MS			
				Number of obs	=	973
				F(1, 971)	=	3.71
Model	524.422422	1	524.422422	Prob > F	=	0.0543
Residual	137148.484	971	141.244577	R-squared	=	0.0038
				Adj R-squared	=	0.0028
Total	137672.907	972	141.638793	Root MSE	=	11.885

grade_2005~l	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
treat	2.240756	1.162893	1.93	0.054	-.0413174	4.52283
_cons	63.85714	.4066839	157.02	0.000	63.05906	64.65522

```
(est3 stored)
```

```
18 . esttab using PS3-2aii.tex, replace compress cells("b(label(coef) fmt(a3) star
   > ) t(fmt(a3))" se(par fmt(a3))) label nonumber varlabels(treat "Fall grade" _c
   > ons "Constant") mtitles(`all_treatments') stats(N, fmt(%9.0gc) label(Observat
   > ions)) addnote("standard errors in parentheses" "@starlegend")
   (output written to PS3-2aii.tex)
```

```
19 . eststo clear
```

```
20 .
21 . * Problem 2.(b) i.
22 .
23 . eststo: reg grade_20059_fall `all_treatments'
```

Source	SS	df	MS
Model	1058.00605	3	352.668683
Residual	197988.856	1,400	141.420611
Total	199046.862	1,403	141.872318

Number of obs	=	1,404
F(3, 1400)	=	2.49
Prob > F	=	0.0585
R-squared	=	0.0053
Adj R-squared	=	0.0032
Root MSE	=	11.892

grade_2005~l	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ssp	.276505	.912511	0.30	0.762	-1.513531	2.066541
sfp	1.973527	.900752	2.19	0.029	.2065578	3.740496
sfsp	2.240756	1.163618	1.93	0.054	-.0418661	4.523379
_cons	63.85714	.4069372	156.92	0.000	63.05887	64.65542

(**est1** stored)

```
24 . esttab using PS3-2bi.tex, replace compress label nonumber stats(N, fmt(%9.0gc
   > ) label(Observations))
   (output written to PS3-2bi.tex)
```

```
25 . eststo clear
```

```
26 .
27 . * Problem 2.(c)
28 .
29 . gen sfp_sfsp = 0
```

```
30 . replace sfp_sfsp = 1 if sfp == 1 | sfsp == 1
   (400 real changes made)
```

```
31 . eststo: reg grade_20059_fall ssp sfp_sfsp
```

Source	SS	df	MS
Model	1052.49996	2	526.24998
Residual	197994.362	1,401	141.323599
Total	199046.862	1,403	141.872318

Number of obs	=	1,404
F(2, 1401)	=	3.72
Prob > F	=	0.0244
R-squared	=	0.0053
Adj R-squared	=	0.0039
Root MSE	=	11.888

grade_2005~l	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
ssp	.276505	.9121979	0.30	0.762	-1.512916	2.065926
sfp_sfsp	2.067611	.7639381	2.71	0.007	.5690247	3.566196
_cons	63.85714	.4067976	156.98	0.000	63.05914	64.65514

(**est1** stored)

```
32 . esttab using PS3-2c.tex, replace compress label nonumber varlabels(sfp_sfsp "
   > Offered sfp or sfsp" _cons "Constant") stats(N, fmt(%9.0gc) label(Observation
   > s))
   (output written to PS3-2c.tex)

33 . eststo clear

34 .
35 . * Problem 2.(d)
36 .
37 . eststo: reg grade_20059_fall ssp sfp_sfsp female gpa0 i.dad_edn i.mom_edn
```

Source	SS	df	MS		
Model	17895.9928	20	894.799638		
Residual	161212.847	1,257	128.252066		
Total	179108.84	1,277	140.25751		

Number of obs	=	1,278
F(20, 1257)	=	6.98
Prob > F	=	0.0000
R-squared	=	0.0999
Adj R-squared	=	0.0856
Root MSE	=	11.325

```
> ────────────────────────────────────────────────
                                   grade_20059_fall |     Coef.    St
> d. Err.
>          t
>                   P>|t|
>                           [95% Con
>                               f. Interval]
                                                    |
> ────────────────────────────────────────────────
                                               ssp |   .2055478    .9
> 194369
>        0.22
>               0.823
>                       -1.598252
>                               2.009348
                                           sfp_sfsp |   2.130455    .7
> 707422
>        2.76
>               0.006
>                       .6183716
>                               3.642537
                                            female |  -2.163597    .6
> 494279
>       -3.33
>               0.001
>                       -3.437679
>                               -.889515
                                              gpa0 |   .769513    .0
> 751319
>       10.24
>               0.000
>                       .6221153
>                               .9169107
                                                    |
                                           dad_edn |
                         graduated from high school |  -.8473027   1.
> 439926
>       -0.59
>               0.556
>                       -3.672226
>                               1.977621
  attended a community college but did not complete diploma |  1.430523   2.
> 296817
>        0.62
>               0.534
>                       -3.075494
>                               5.93654
              completed a community college diploma program |  -1.855676   1.
> 458063
>       -1.27
>               0.203
>                       -4.716181
>                               1.004829
```

```
attended university but did not complete bachelor s degree │  -1.146519   1.
> 982571
>        -0.58
>               0.563
>                       -5.036032
>                               2.742993
      completed a bachelor s degree (b.a., b.comm., etc) │  -.5894812   1.
> 392295
>        -0.42
>               0.672
>                       -3.32096
>                               2.141997
        completed a master s degree (m.a., m.sc., etc) │    .135981   1.
> 528454
>         0.09
>               0.929
>                       -2.862621
>                               3.134583
completed a doctoral degree or professional program (ph.d., │   1.280013   1.
> 900696
>         0.67
>               0.501
>                       -2.448873
>                               5.008899
                       don t know/not applicable │  -1.323459   1.
> 915141
>        -0.69
>               0.490
>                       -5.080685
>                               2.433766
                                                            │
                                                    mom_edn │
                               graduated from high school │   .1471409   1.
> 451823
>         0.10
>               0.919
>                       -2.701121
>                               2.995403
  attended a community college but did not complete diploma │   2.986115   2.
> 234794
>         1.34
>               0.182
>                       -1.398222
>                               7.370453
          completed a community college diploma program │   1.480158   1.
> 512341
>         0.98
>               0.328
>                       -1.486833
>                               4.447148
  attended university but did not complete bachelor s degree │   -1.45958   1.
> 993704
>        -0.73
>               0.464
>                       -5.370935
>                               2.451775
      completed a bachelor s degree (b.a., b.comm., etc) │   .1568883   1.
> 509544
>         0.10
>               0.917
>                       -2.804616
>                               3.118392
        completed a master s degree (m.a., m.sc., etc) │  -.4907967   1.
> 790531
>        -0.27
>               0.784
>                       -4.003556
>                               3.021962
completed a doctoral degree or professional program (ph.d., │  -1.951073   2.
> 408195
>        -0.81
>               0.418
>                       -6.675598
```

```
>                                         2.773452
                          don t know/not applicable │   .8216663   2.
> 010148
>          0.41
>                0.683
>                          -3.121949
>                                         4.765282

                                                  │
                                          _cons │   4.843574   5.
> 990784
>          0.81
>                0.419
>                          -6.909464
>                                         16.59661              │
> ──────────────────────────────────────────────────

> ──────────────────────────────────────────────────
(est1 stored)
```

38 . esttab using PS3-2d.tex, replace compress nonumber mtitles("Fall grade") varl
> abels(ssp "Offered ssp" sfp_sfsp "Offered sfp or sfsp" female "Female" gpa0 "
> High school GPA" _cons "Constant") indicate("Father's education dummies = *.d
> ad_edn" "Mother's education dummies = *.mom_edn") stats(N, fmt(%9.0gc) label
> (Observations))
(output written to PS3-2d.tex)

39 . <u>eststo</u> clear

40 .
41 . log close
         name: <unnamed>
          log: C:\Users\wonja\Documents\GitHub\14.320\PS3\PS3-2.smcl
     log type: smcl
    closed on: 1 Apr 2021, 12:28:45
    ──