```
      name:  <unnamed>
       log:  /Users/carsoncrenshaw/Library/CloudStorage/OneDrive-Universityof
> Virginia/RMDA I/RMDA1_Homework7-8_log.smcl
  log type:  smcl
 opened on:   4 Dec 2023, 23:22:31

 1 .
 2 . *********
 3 . *       1: Homework Code
 4 . *********
 5 .
 6 . use "${classpath}star.dta", clear

 7 .
 8 . *QUESTION 5
 9 . *5B
10 . *How old were students in regular classes, on average, when they started ki
   > ndergarten?
11 . summarize age if class_small==0

    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
         age |      2,190    5.428768    .3505773        3.8   7.665753

12 . *Estimate the difference in average age for students in small classes
13 . reg age class_small, cluster(id_class)

Linear regression                               Number of obs     =      4,08
> 6
                                                F(1, 225)         =       1.6
> 6
                                                Prob > F          =     0.198
> 8
                                                R-squared         =     0.000
> 5
                                                Root MSE          =     .3496
> 1
```

```
                                (Std. err. adjusted for 226 clusters in id_class
> )
-------------------------------------------------------------------------------
> -
             |               Robust
         age | Coefficient  std. err.      t    P>|t|     [95% conf. interval
> ]
-------------+-----------------------------------------------------------------
> -
 class_small |    .016362   .0126956     1.29   0.199    -.0086556    .041379
> 5
       _cons |   5.428768   .0086348   628.71   0.000     5.411753    5.44578
> 4
-------------+-----------------------------------------------------------------
> -

14 .
15 . *5C
16 . *Covariate balance test with subsidized lunch receipts instead of age
17 . reg lunch class_small, cluster(id_class)

Linear regression                               Number of obs     =      4,07
> 9
                                                F(1, 225)         =       0.0
> 3
                                                Prob > F          =     0.868
> 4
                                                R-squared         =     0.000
> 0
                                                Root MSE          =     .4994
> 6

                                (Std. err. adjusted for 226 clusters in id_class
> )
-------------------------------------------------------------------------------
> -
             |               Robust
       lunch | Coefficient  std. err.      t    P>|t|     [95% conf. interval
> ]
-------------+-----------------------------------------------------------------
> -
 class_small |   -.006436   .0388081    -0.17   0.868    -.0829098    .070037
> 8
       _cons |   .4773663   .0298935    15.97   0.000     .4184592    .536273
> 3
-------------+-----------------------------------------------------------------
```

```
> —

18 .
19 . *QUESTION 6
20 . *6A
21 . *What was the average reading score of students in regular classes?
22 . summarize score_read if class_small==0

    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
  score_read |      2,006   -.0628594    .9757032  -3.839158    6.00117

23 .
24 . *6B
25 . *Estimate the effect of small classes on students' reading scores
26 . reg score_read class_small, cluster(id_class)

Linear regression                               Number of obs     =      3,74
> 5
                                                F(1, 225)         =       5.7
> 7
                                                Prob > F          =     0.017
> 2
                                                R-squared         =     0.008
> 3
                                                Root MSE          =     .9988
> 7

                               (Std. err. adjusted for 226 clusters in id_class
> )
-------------+----------------------------------------------------------------
> —
             |               Robust
  score_read | Coefficient  std. err.      t    P>|t|     [95% conf. interval
> ]
-------------+----------------------------------------------------------------
> —
 class_small |   .1834066   .0763812     2.40   0.017     .0328927    .333920
> 5
       _cons |  -.0628594    .055961    -1.12   0.263    -.1731342    .047415
> 3
-------------+----------------------------------------------------------------
> —
```

```
27 .
28 . *6C
29 . *Add the baseline covariates from Question 5 (lunch, age) to tbe regression
30 . reg score_read class_small age lunch, cluster(id_class)

Linear regression                               Number of obs     =      3,73
> 1
                                                F(3, 225)         =      37.6
> 9
                                                Prob > F          =     0.000
> 0
                                                R-squared         =     0.081
> 4
                                                Root MSE          =     .9628
> 3

                               (Std. err. adjusted for 226 clusters in id_class
> )
-------------┬----------------------------------------------------------------
> -
             │               Robust
  score_read │ Coefficient  std. err.      t    P>|t|     [95% conf. interval
> ]
-------------┼----------------------------------------------------------------
> -
 class_small │   .1819962   .0731539     2.49   0.014     .0378418    .326150
> 7
         age │   .1377372   .0472703     2.91   0.004     .0445881    .230886
> 3
       lunch │  -.5344381   .0511756   -10.44   0.000    -.6352829   -.433593
> 4
       _cons │  -.5581526   .2695105    -2.07   0.040    -1.08924    -.02706
> 5
-------------┴----------------------------------------------------------------
> -
```

```
31 .
32 . *QUESTION 7
33 . *7B
34 . *Generate a dummy variable that identifies first-year teachers (no teaching
   >  experience)
35 . *If the variable = 1, the teacher has no experience/is a first year teacher
   >
36 . generate first_year_teach = 0

37 . replace first_year_teach = 1 if tch_exp == 0
   (188 real changes made)

38 .
39 . distinct id_teacher if first_year_teach == 1 // Counting the teachers only
   > once (because the dataset is organized by student, teachers are repeated)

             |        Observations
             |       total   distinct
-------------+----------------------
  id_teacher |        188         10

40 .
41 . *7C
42 . * testscore = B0 + B1(class size) + B2(dummy teach experience) + B3(interac
   > tion)
43 . gen class_teach_interaction_dummy = class_small * first_year_teach

44 . reg score_read class_small first_year_teach class_teach_interaction_dummy,
   > cluster(id_class)

   Linear regression                               Number of obs     =      3,74
   > 5
                                                   F(3, 225)         =       2.6
   > 1
                                                   Prob > F          =     0.052
   > 1
                                                   R-squared         =     0.009
   > 3
                                                   Root MSE          =     .9986
   > 6
```

```
                                                (Std. err. adjusted for 226 clu
> sters in id_class)
------------------------------------------------------------------------------
> ----------------
                             |               Robust
                  score_read | Coefficient  std. err.      t    P>|t|     [9
> 5% con
>       f. interval]
-----------------------------+------------------------------------------------
> ----------------
                 class_small |   .1760589   .0791889     2.22   0.027     .0
> 200123
>           .3321056
             first_year_teach |  -.0049543    .103832    -0.05   0.962    -.2
> 095619
>           .1996534
class_teach_interaction_dummy |   .3047672   .3236309     0.94   0.347     -.
> 332968
>           .9425023
                       _cons |  -.0625804   .0590988    -1.06   0.291    -.1
> 790383
>           .0538776
------------------------------------------------------------------------------
> ----------------
```

```
45 .
46 . *7D
47 . * testscore = B0 + B1(class size) + B2(teach experience) + B3(interaction)
48 . gen class_teach_interaction = class_small * tch_exp

49 . reg score_read class_small tch_exp class_teach_interaction, cluster(id_clas
> s)

Linear regression                               Number of obs     =      3,74
> 5
                                                F(3, 225)         =       5.3
> 3
                                                Prob > F          =     0.001
> 5
                                                R-squared         =     0.018
> 7
                                                Root MSE          =     .9938
> 8
```

```
                                             (Std. err. adjusted for 226 clusters
> in id_class)
------------------------------------------------------------------------------
> -------------
                        |               Robust
             score_read | Coefficient  std. err.      t    P>|t|     [95% con
> f. interval]
------------------------+-----------------------------------------------------
> -------------
            class_small |   .3152922   .1312002     2.40   0.017     .0567539
>     .5738306
                tch_exp |   .0230837   .0084794     2.72   0.007     .0063746
>     .0397928
class_teach_interaction |  -.0144693   .0121782    -1.19   0.236    -.0384672
>     .0095287
                  _cons |  -.2722352   .0883081    -3.08   0.002    -.4462518
>    -.0982185
------------------------------------------------------------------------------
> -------------

50 .
51 . *********
52 . *       2: Close log file
53 . *********
54 .
55 .         log close
       name:  <unnamed>
        log:  /Users/carsoncrenshaw/Library/CloudStorage/OneDrive-Universityof
> Virginia/RMDA I/RMDA1_Homework7-8_log.smcl
  log type:  smcl
 closed on:   4 Dec 2023, 23:22:31
------------------------------------------------------------------------------
```