```
 1 .
 2 . * Problem 1.(a)
 3 .
 4 . clear

 5 . set more off

 6 . cd "C:\Users\wonja\Documents\GitHub\14.750"
   C:\Users\wonja\Documents\GitHub\14.750

 7 .
 8 . use mitaData

 9 .
10 . gen x2 = x^2

11 . gen y2 = y^2

12 . gen xy = x*y

13 . gen x3 = x^3

14 . gen y3 = y^3

15 . gen x2y = x^2*y

16 . gen xy2 = x*y^2

17 . sum x2 y2 xy x3 y3 x2y xy2
```

Variable	Obs	Mean	Std. Dev.	Min	Max
x2	1,478	1.559018	1.742266	.0013366	5.30487
y2	1,478	.6753147	.5331026	.0019559	2.062252
xy	1,478	-.6167292	1.071495	-3.296669	1.048906
x3	1,478	-1.955574	4.496841	-12.21834	5.178706
y3	1,478	.1631718	1.004153	-1.510134	2.961505
x2y	1,478	.8996912	2.406713	-2.151201	7.592988
xy2	1,478	-.450817	1.384391	-4.718601	1.328887

```
18 .
19 . * Problem 1.(b)
20 .
21 . reg lhhequiv pothuan_mita x2 y2 xy x3 y3 x2y xy2 elv_sh slope infants childre
   > n adults bfe4_1 bfe4_2 bfe4_3 if d_bnd <100, vce(cluster district)

Linear regression                               Number of obs     =      1,478
                                                F(16, 70)         =      10.17
                                                Prob > F          =     0.0000
                                                R-squared         =     0.0523
                                                Root MSE          =     .98864

                                  (Std. Err. adjusted for 71 clusters in district)
```

lhhequiv	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pothuan_mita	-.1862486	.2057123	-0.91	0.368	-.5965288	.2240315
x2	.0532826	.0741381	0.72	0.475	-.0945812	.2011464
y2	.2748969	.1738501	1.58	0.118	-.0718363	.6216301
xy	.1013427	.1369363	0.74	0.462	-.1717682	.3744536
x3	-.0302782	.0372657	-0.81	0.419	-.1046024	.044046
y3	.1094274	.0909916	1.20	0.233	-.0720497	.2909045
x2y	-.0973697	.123546	-0.79	0.433	-.3437744	.149035
xy2	-.0322843	.1564223	-0.21	0.837	-.3442588	.2796901
elv_sh	-.076705	.145748	-0.53	0.600	-.3673902	.2139803
slope	-.0163804	.0179031	-0.91	0.363	-.052087	.0193262
infants	-.0099935	.0255971	-0.39	0.697	-.0610453	.0410583
children	.0131386	.0159049	0.83	0.412	-.0185826	.0448598
adults	.0172327	.0236882	0.73	0.469	-.030012	.0644774
bfe4_1	.3336361	.1863993	1.79	0.078	-.0381255	.7053977

bfe4_2	.0471041	.2546186	0.18	0.854	-.4607167	.554925
bfe4_3	.2244806	.154555	1.45	0.151	-.0837696	.5327307
_cons	6.035346	.7214509	8.37	0.000	4.596458	7.474234

22 . reg lhhequiv pothuan_mita x2 y2 xy x3 y3 x2y xy2 elv_sh slope infants childre
> n adults bfe4_1 bfe4_2 bfe4_3 if d_bnd <75, vce(cluster district)

Linear regression

Number of obs	1,161
F(16, 59)	4.81
Prob > F	0.0000
R-squared	0.0520
Root MSE	.89733

(Std. Err. adjusted for 60 clusters in district)

lhhequiv	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pothuan_mita	-.116995	.2176803	-0.54	0.593	-.5525724	.3185823
x2	-.061919	.1108738	-0.56	0.579	-.2837769	.159939
y2	.6675897	.2518794	2.65	0.010	.1635803	1.171599
xy	.2826636	.1269101	2.23	0.030	.0287171	.5366102
x3	-.2446547	.0905947	-2.70	0.009	-.4259342	-.0633751
y3	.3675539	.1524679	2.41	0.019	.0624664	.6726415
x2y	-.4613034	.1668065	-2.77	0.008	-.7950825	-.1275243
xy2	.310831	.1604981	1.94	0.058	-.0103249	.6319868
elv_sh	-.2094638	.1579824	-1.33	0.190	-.5255857	.1066582
slope	-.0336124	.0171973	-1.95	0.055	-.0680241	.0007993
infants	-.0150685	.0297443	-0.51	0.614	-.0745867	.0444497
children	-.004433	.0166518	-0.27	0.791	-.0377532	.0288871
adults	.0239356	.0301363	0.79	0.430	-.0363669	.0842381
bfe4_1	.4919891	.2649057	1.86	0.068	-.0380859	1.022064
bfe4_2	.3009304	.2221088	1.35	0.181	-.1435082	.745369
bfe4_3	.2885445	.1235551	2.34	0.023	.0413114	.5357776
_cons	6.503638	.7259518	8.96	0.000	5.051012	7.956264

23 . reg lhhequiv pothuan_mita x2 y2 xy x3 y3 x2y xy2 elv_sh slope infants childre
> n adults bfe4_1 bfe4_2 bfe4_3 if d_bnd <50, vce(cluster district)

Linear regression

Number of obs	1,013
F(16, 51)	6.97
Prob > F	0.0000
R-squared	0.0657
Root MSE	.83272

(Std. Err. adjusted for 52 clusters in district)

lhhequiv	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
pothuan_mita	-.296028	.2258329	-1.31	0.196	-.7494065	.1573504
x2	.2270403	.1328985	1.71	0.094	-.0397646	.4938453
y2	.427346	.309261	1.38	0.173	-.1935215	1.048213
xy	.3513672	.2141744	1.64	0.107	-.0786058	.7813403
x3	-.2376309	.0899925	-2.64	0.011	-.4182984	-.0569635
y3	.2613486	.1746234	1.50	0.141	-.0892225	.6119197
x2y	-.4018467	.2138274	-1.88	0.066	-.8311231	.0274298
xy2	.4015729	.2167306	1.85	0.070	-.033532	.8366777
elv_sh	-.0628714	.1373205	-0.46	0.649	-.3385538	.212811
slope	-.0148321	.0158727	-0.93	0.354	-.0466978	.0170336
infants	-.0401478	.0297204	-1.35	0.183	-.099814	.0195185
children	-.0063496	.0178577	-0.36	0.724	-.0422004	.0295012
adults	.0071632	.0288193	0.25	0.805	-.050694	.0650204
bfe4_1	.2154848	.2423497	0.89	0.378	-.2710525	.7020221
bfe4_2	.3291986	.3225237	1.02	0.312	-.3182948	.976692
bfe4_3	.2896214	.1159132	2.50	0.016	.056916	.5223268
_cons	5.917887	.6141928	9.64	0.000	4.684844	7.150931

```
24 .
25 . * Problem 1.(C)
26 .
27 . gen dpot2 = dpot^2

28 . gen dpot3 = dpot^3

29 .
30 . reg lhhequiv pothuan_mita dpot dpot2 dpot3 elv_sh slope infants children adul
   > ts bfe4_1 bfe4_2 bfe4_3 if d_bnd <100, vce(cluster district)

Linear regression                               Number of obs     =      1,478
                                                F(12, 70)         =       4.14
                                                Prob > F          =     0.0001
                                                R-squared         =     0.0463
                                                Root MSE          =     .99038

                                  (Std. Err. adjusted for 71 clusters in district)
------------------------------------------------------------------------------
             |               Robust
    lhhequiv |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
pothuan_mita |  -.3368099   .0870028    -3.87   0.000    -.5103315   -.1632884
        dpot |  -2.838273   4.704792    -0.60   0.548    -12.22169    6.545138
       dpot2 |    .269934   .5655069     0.48   0.635    -.8579338    1.397802
       dpot3 |  -.0082634   .0220649    -0.37   0.709    -.0522705    .0357437
      elv_sh |  -.1759927   .1184049    -1.49   0.142    -.4121439    .0601584
       slope |  -.0284839   .0169523    -1.68   0.097    -.0622943    .0053265
     infants |  -.0106256   .0257637    -0.41   0.681    -.0620097    .0407585
    children |   .0103591    .016799     0.62   0.539    -.0231454    .0438636
      adults |   .0169945    .023573     0.72   0.473    -.0300204    .0640094
      bfe4_1 |   .5149854   .1174166     4.39   0.000     .2808055    .7491653
      bfe4_2 |  -.0705154   .2485321    -0.28   0.777    -.5661971    .4251663
      bfe4_3 |   .0839917    .145616     0.58   0.566    -.2064303    .3744137
       _cons |   16.49349   12.83085     1.29   0.203    -9.096834    42.08382
------------------------------------------------------------------------------

31 . reg lhhequiv pothuan_mita dpot dpot2 dpot3 elv_sh slope infants children adul
   > ts bfe4_1 bfe4_2 bfe4_3 if d_bnd <75, vce(cluster district)

Linear regression                               Number of obs     =      1,161
                                                F(12, 59)         =       3.20
                                                Prob > F          =     0.0014
                                                R-squared         =     0.0359
                                                Root MSE          =     .90334

                                  (Std. Err. adjusted for 60 clusters in district)
------------------------------------------------------------------------------
             |               Robust
    lhhequiv |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
pothuan_mita |  -.3069573   .1006485    -3.05   0.003    -.5083544   -.1055601
        dpot |    9.21022   7.451534     1.24   0.221    -5.700264     24.1207
       dpot2 |  -1.023293   .8733029    -1.17   0.246    -2.770768    .7241819
       dpot3 |   .0376757   .0334497     1.13   0.265    -.0292569    .1046084
      elv_sh |  -.1631486   .1622206    -1.01   0.319    -.4877512     .161454
       slope |   -.022673   .0159619    -1.42   0.161    -.0546127    .0092666
     infants |  -.0187796   .0310941    -0.60   0.548    -.0809988    .0434396
    children |  -.0050012    .017205    -0.29   0.772    -.0394284     .029426
      adults |   .0203649   .0304119     0.67   0.506    -.0404891     .081219
      bfe4_1 |   .4385589   .1353119     3.24   0.002     .1678004    .7093173
      bfe4_2 |   .0694295   .2470858     0.28   0.780    -.4249881    .5638471
      bfe4_3 |   .1145125   .1519462     0.75   0.454    -.1895311     .418556
       _cons |  -20.76562   20.62003    -1.01   0.318    -62.02622    20.49497
------------------------------------------------------------------------------
```

```
32 . reg lhhequiv pothuan_mita dpot dpot2 dpot3 elv_sh slope infants children adul
   > ts bfe4_1 bfe4_2 bfe4_3 if d_bnd <50, vce(cluster district)

Linear regression                               Number of obs     =      1,013
                                                F(12, 51)         =       2.89
                                                Prob > F          =     0.0041
                                                R-squared         =     0.0474
                                                Root MSE          =     .83917

                                (Std. Err. adjusted for 52 clusters in district)
------------------------------------------------------------------------------
             |               Robust
    lhhequiv |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
  pothuan_mita |  -.3286248    .095942    -3.43   0.001    -.5212363   -.1360132
        dpot |   17.33642   22.66792     0.76   0.448    -28.17132    62.84417
       dpot2 |   -2.07749   2.377488    -0.87   0.386    -6.850496    2.695517
       dpot3 |   .0812902   .0828349     0.98   0.331    -.0850078    .2475882
      elv_sh |  -.1733314   .1407297    -1.23   0.224    -.4558581    .1091954
       slope |  -.0114384   .0161196    -0.71   0.481    -.0437998     .020923
     infants |  -.0456089   .0300003    -1.52   0.135    -.1058371    .0146193
    children |  -.0115699   .0184617    -0.63   0.534    -.0486333    .0254934
      adults |   .0062839   .0296396     0.21   0.833    -.0532201    .0657879
      bfe4_1 |    .451834    .137118     3.30   0.002     .1765582    .7271098
      bfe4_2 |   -.178946   .3350383    -0.53   0.596    -.8515636    .4936715
      bfe4_3 |   .0968534   .1324545     0.73   0.468    -.1690601    .3627669
       _cons |  -40.25695   71.81646    -0.56   0.578    -184.4345    103.9206
------------------------------------------------------------------------------

33 .
34 . log close
      name:  <unnamed>
       log:  C:\Users\wonja\Documents\GitHub\14.750\ps2-1.smcl
  log type:  smcl
 closed on:  18 Mar 2021, 07:06:55
```