Statistics/Data Analysis

```
      name:  <unnamed>
       log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/robust_fil
> tpov_mi5_linear_030220.smcl
  log type:  smcl
 opened on:   2 Mar 2020, 17:34:58

1 . *
2 . * 4B. FILTERED DATA: DISTRICTS WITH ABOVE-AVERAGE POVERTY
3 . *
4 .
5 . egen povertysdmean = mean(povertysd)

6 . egen pocsdmean = mean(pocsd)

7 .
8 . drop if povertysd < povertysdmean
  (10,102 observations deleted)

9 .
10. * PT 1:
11. * 0. controls only
12. mi est, dots: mixed inquiry_full_log primary middle high lnage lnstudents urban pctp
  > dfs || cmoname: ,
  (system variable _mi_id updated due to changed number of obs.)
  (62 m>0 marginal obs. added)

  Imputations (5):
    ..... done

  Multiple-imputation estimates                     Imputations       =          5
  Mixed-effects ML regression                       Number of obs     =      2,814

  Group variable: cmoname                           Number of groups  =        281
                                                    Obs per group:
                                                                  min =          1
                                                                  avg =       10.0
                                                                  max =      1,638
                                                    Average RVI       =     0.0000
                                                    Largest FMI       =     0.0000
  DF adjustment:   Large sample                     DF:     min       =   1.03e+62
                                                            avg       =   1.03e+62
                                                            max       =          .
  Model F test:       Equal FMI                     F(   7, 2.5e+64)  =       7.95
                                                    Prob > F          =     0.0000

------------------------------------------------------------------------------
inquir~l_log |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     primary |   -.008894   .0055067    -1.62   0.106    -.0196869    .0018989
      middle |  -.0254382   .0078573    -3.24   0.001    -.0408381   -.0100382
        high |  -.0219213   .0064534    -3.40   0.001    -.0345698   -.0092728
       lnage |  -.0027335   .0023057    -1.19   0.236    -.0072525    .0017855
  lnstudents |   .0084535   .0025642     3.30   0.001     .0034278    .0134792
       urban |   .0154958    .004788     3.24   0.001     .0061115     .02488
      pctpdfs |   .1607152   .0598385     2.69   0.007     .0434338    .2779966
       _cons |   .0603738   .0166342     3.63   0.000     .0277715    .0929762
------------------------------------------------------------------------------

------------------------------------------------------------------------------
  Random-effects Parameters |   Estimate   Std. Err.     [95% Conf. Interval]
----------------------------+-------------------------------------------------
cmoname: Identity           |
                  sd(_cons) |   .0731272   .0050224      .0639172    .0836643
----------------------------+-------------------------------------------------
               sd(Residual) |   .1009401   .0014078      .0982182    .1037375
------------------------------------------------------------------------------
```

```
13. * 1. school poverty
14. mi est, dots: mixed inquiry_full_log povertyschool primary middle high lnage lnstude
  > nts urban pctpdfs || cmoname: ,

  Imputations (5):
    ..... done

  Multiple-imputation estimates                   Imputations       =          5
  Mixed-effects ML regression                     Number of obs     =      2,814

  Group variable: cmoname                         Number of groups  =        281
                                                  Obs per group:
                                                               min =          1
                                                               avg =       10.0
                                                               max =      1,638
                                                  Average RVI       =     0.0112
                                                  Largest FMI       =     0.0956
  DF adjustment:   Large sample                   DF:     min       =     474.83
                                                          avg       =   1.36e+07
                                                          max       =   1.25e+08
  Model F test:       Equal FMI                   F(   8,114372.7)  =      13.39
                                                  Prob > F          =     0.0000
```

inquir~l_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
povertysch~l	-.0004775	.0000695	-6.87	0.000	-.0006141	-.000341
primary	-.0091937	.0054605	-1.68	0.092	-.0198962	.0015088
middle	-.0235932	.007789	-3.03	0.002	-.0388593	-.0083271
high	-.0224943	.0063962	-3.52	0.000	-.0350305	-.009958
lnage	-.0021243	.002287	-0.93	0.353	-.0066067	.0023581
lnstudents	.0080512	.0025443	3.16	0.002	.0030645	.0130379
urban	.0162177	.0047491	3.41	0.001	.0069096	.0255258
pctpdfs	.1685317	.0596213	2.83	0.005	.0516723	.285391
_cons	.0944653	.0172037	5.49	0.000	.0607463	.1281842

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.0732202	.0049959	.0640549	.083697
sd(Residual)	.0999561	.0013964	.0972563	.1027308

```
15. * 2. school race
16. mi est, dots: mixed inquiry_full_log pocschoolprop primary middle high lnage lnstude
  > nts urban pctpdfs || cmoname: ,

  Imputations (5):
    ..... done

  Multiple-imputation estimates                   Imputations       =          5
  Mixed-effects ML regression                     Number of obs     =      2,814

  Group variable: cmoname                         Number of groups  =        281
                                                  Obs per group:
                                                               min =          1
                                                               avg =       10.0
                                                               max =      1,638
                                                  Average RVI       =     0.0000
                                                  Largest FMI       =     0.0000
  DF adjustment:   Large sample                   DF:     min       =   4.56e+64
                                                          avg       =   4.56e+64
                                                          max       =          .
  Model F test:       Equal FMI                   F(   8, 5.3e+66)  =      15.06
                                                  Prob > F          =     0.0000
```

inquir~l_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pocschoolp~p	-.0678687	.0085145	-7.97	0.000	-.0845567	-.0511806
primary	-.0034858	.0054876	-0.64	0.525	-.0142413	.0072697
middle	-.0180143	.0078255	-2.30	0.021	-.0333521	-.0026765
high	-.0170543	.0064109	-2.66	0.008	-.0296194	-.0044893
lnage	-.004328	.0022888	-1.89	0.059	-.008814	.000158
lnstudents	.0105382	.0025491	4.13	0.000	.005542	.0155344
urban	.027039	.0049513	5.46	0.000	.0173348	.0367433
pctpdfs	.1686376	.0591833	2.85	0.004	.0526404	.2846347
_cons	.0951939	.0170204	5.59	0.000	.0618345	.1285532

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.07237	.0049831	.0632337	.0828263
sd(Residual)	.0998149	.0013925	.0971226	.1025819

```
17. * 3. school district poverty
18. mi xeq 0 1 2: mixed inquiry_full_log povertysd primary middle high lnage lnstudents
  > urban pctpdfs || cmoname: ,

  m=0 data:
  -> mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs
  >  || cmoname: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  2302.5975
  Iteration 1:   log likelihood =  2302.5975

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      2,786
  Group variable: cmoname                         Number of groups  =        280

                                                  Obs per group:
                                                                min =          1
                                                                avg =        9.9
                                                                max =      1,627

                                                  Wald chi2(8)      =      61.77
  Log likelihood =  2302.5975                     Prob > chi2       =     0.0000
```

inquir~l_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.1078237	.0375909	-2.87	0.004	-.1815006	-.0341468
primary	-.0089312	.005528	-1.62	0.106	-.0197658	.0019034
middle	-.0261807	.0078984	-3.31	0.001	-.0416614	-.0107
high	-.0220069	.0064752	-3.40	0.001	-.034698	-.0093157
lnage	-.0023958	.0023214	-1.03	0.302	-.0069456	.0021541
lnstudents	.0082817	.0025771	3.21	0.001	.0032306	.0133327
urban	.016084	.0048259	3.33	0.001	.0066254	.0255426
pctpdfs	.1600357	.0599325	2.67	0.008	.0425702	.2775012
_cons	.0821618	.0184695	4.45	0.000	.0459623	.1183614

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0053176**	**.0007343**	**.0040567**	**.0069705**
var(Residual)	**.0101597**	**.0002848**	**.0096165**	**.0107335**

LR test vs. linear model: chibar2(01) = **408.55** Prob >= chibar2 = **0.0000**

m=1 data:
-> **mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs**
> || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **2317.5746**
Iteration 1: log likelihood = **2317.5746**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **2,802**
Group variable: **cmoname** — Number of groups = **281**

Obs per group:
min = **1**
avg = **10.0**
max = **1,634**

Wald chi2(**8**) = **63.58**
Log likelihood = **2317.5746** — Prob > chi2 = **0.0000**

inquir~l_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	**-.1093393**	**.0374061**	**-2.92**	**0.003**	**-.1826538**	**-.0360247**
primary	**-.0092248**	**.0055072**	**-1.68**	**0.094**	**-.0200186**	**.001569**
middle	**-.0266323**	**.0078641**	**-3.39**	**0.001**	**-.0420457**	**-.0112189**
high	**-.022005**	**.006456**	**-3.41**	**0.001**	**-.0346585**	**-.0093514**
lnage	**-.0026222**	**.00231**	**-1.14**	**0.256**	**-.0071497**	**.0019052**
lnstudents	**.0084233**	**.0025649**	**3.28**	**0.001**	**.0033962**	**.0134504**
urban	**.0162129**	**.0048073**	**3.37**	**0.001**	**.0067908**	**.0256349**
pctpdfs	**.1624285**	**.0598753**	**2.71**	**0.007**	**.045075**	**.279782**
_cons	**.0822121**	**.0183721**	**4.47**	**0.000**	**.0462034**	**.1182208**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0053786**	**.000738**	**.0041103**	**.0070383**
var(Residual)	**.0101387**	**.0002835**	**.0095981**	**.0107097**

LR test vs. linear model: chibar2(01) = **417.22** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs**
> || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **2313.5839**
Iteration 1: log likelihood = **2313.5839**

Computing standard errors:

```
Mixed-effects ML regression                     Number of obs     =      2,799
Group variable: cmoname                         Number of groups  =        281

                                                Obs per group:
                                                              min =          1
                                                              avg =       10.0
                                                              max =      1,632

                                                Wald chi2(8)      =      62.33
Log likelihood =  2313.5839                     Prob > chi2       =     0.0000
```

inquir~l_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.1066131	.0374325	-2.85	0.004	-.1799794	-.0332467
primary	-.008686	.005516	-1.57	0.115	-.0194971	.0021251
middle	-.0260775	.0078748	-3.31	0.001	-.0415119	-.0106431
high	-.0212337	.0064627	-3.29	0.001	-.0339003	-.0085671
lnage	-.0023966	.0023112	-1.04	0.300	-.0069265	.0021333
lnstudents	.0084937	.0025641	3.31	0.001	.0034682	.0135192
urban	.0161889	.0048138	3.36	0.001	.006754	.0256238
pctpdfs	.1631359	.0599101	2.72	0.006	.0457141	.2805576
_cons	.0804846	.0183909	4.38	0.000	.0444391	.1165302

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0054574	.0007449	.0041765	.0071313
var(Residual)	.0101401	.0002837	.0095991	.0107116

```
LR test vs. linear model: chibar2(01) = 416.41        Prob >= chibar2 = 0.0000
```

```
19. * 4. school district race
20. mi est, dots: mixed inquiry_full_log pocsd primary middle high lnage lnstudents urba
  > n pctpdfs || cmoname: ,

  Imputations (5):
    .x
  estimation sample varies between m=1 and m=2; click here for details
  r(459);

  end of do-file

  r(459);

21. do "/90days/jhaber/STATATMP/SD21621.000000"

22. mi xeq 0 1 2: mixed inquiry_full_log pocsd primary middle high lnage lnstudents urba
  > n pctpdfs || cmoname: ,

  m=0 data:
  -> mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||
  > cmoname: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  2298.5041
  Iteration 1:   log likelihood =  2298.5041

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      2,786
  Group variable: cmoname                         Number of groups  =        280
```

Obs per group:
min = **1**
avg = **9.9**
max = **1,627**

Log likelihood = **2298.5041**
Wald chi2(**8**) = **53.41**
Prob > chi2 = **0.0000**

inquir~l_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	**-.0010643**	**.0126246**	**-0.08**	**0.933**	**-.025808**	**.0236794**
primary	**-.0083958**	**.0055531**	**-1.51**	**0.131**	**-.0192797**	**.002488**
middle	**-.0246998**	**.0079125**	**-3.12**	**0.002**	**-.0402081**	**-.0091915**
high	**-.0215518**	**.0064844**	**-3.32**	**0.001**	**-.034261**	**-.0088426**
lnage	**-.0024994**	**.0023388**	**-1.07**	**0.285**	**-.0070834**	**.0020847**
lnstudents	**.0083845**	**.0026142**	**3.21**	**0.001**	**.0032607**	**.0135082**
urban	**.0151949**	**.0050139**	**3.03**	**0.002**	**.0053679**	**.0250219**
pctpdfs	**.1599714**	**.0600253**	**2.67**	**0.008**	**.042324**	**.2776188**
_cons	**.059906**	**.0169045**	**3.54**	**0.000**	**.0267738**	**.0930382**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity var(_cons)	**.0052277**	**.0007279**	**.0039791**	**.006868**
var(Residual)	**.010202**	**.000286**	**.0096565**	**.0107782**

LR test vs. linear model: chibar2(01) = **399.30** Prob >= chibar2 = **0.0000**

m=1 data:
-> **mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||**
> cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **2313.3193**
Iteration 1: log likelihood = **2313.3193**

Computing standard errors:

Mixed-effects ML regression
Group variable: **cmoname**
Number of obs = **2,802**
Number of groups = **281**

Obs per group:
min = **1**
avg = **10.0**
max = **1,634**

Log likelihood = **2313.3193**
Wald chi2(**8**) = **54.90**
Prob > chi2 = **0.0000**

inquir~l_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	**.0001602**	**.0125479**	**0.01**	**0.990**	**-.0244332**	**.0247536**
primary	**-.0087162**	**.0055321**	**-1.58**	**0.115**	**-.0195588**	**.0021265**
middle	**-.0252372**	**.0078804**	**-3.20**	**0.001**	**-.0406824**	**-.0097919**
high	**-.0215703**	**.0064657**	**-3.34**	**0.001**	**-.0342429**	**-.0088978**
lnage	**-.002727**	**.0023271**	**-1.17**	**0.241**	**-.007288**	**.001834**
lnstudents	**.0084977**	**.0026011**	**3.27**	**0.001**	**.0033997**	**.0135958**
urban	**.0151603**	**.0049975**	**3.03**	**0.002**	**.0053653**	**.0249553**
pctpdfs	**.1625597**	**.0599708**	**2.71**	**0.007**	**.0450192**	**.2801002**
_cons	**.0594295**	**.0168183**	**3.53**	**0.000**	**.0264663**	**.0923927**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0052917**	**.0007321**	**.0040349**	**.0069399**
var(Residual)	**.0101815**	**.0002847**	**.0096386**	**.010755**

LR test vs. linear model: chibar2(01) = **407.76** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||**
> cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **2309.5446**
Iteration 1: log likelihood = **2309.5446**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **2,799**
Group variable: **cmoname** — Number of groups = **281**

Obs per group:
min = **1**
avg = **10.0**
max = **1,632**

Wald chi2(**8**) = **54.08**
Log likelihood = **2309.5446** — Prob > chi2 = **0.0000**

inquir~l_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	**-.000093**	**.0125916**	**-0.01**	**0.994**	**-.0247721**	**.0245861**
primary	**-.0082164**	**.0055411**	**-1.48**	**0.138**	**-.0190767**	**.0026439**
middle	**-.024634**	**.0078891**	**-3.12**	**0.002**	**-.0400963**	**-.0091717**
high	**-.0208115**	**.006472**	**-3.22**	**0.001**	**-.0334964**	**-.0081265**
lnage	**-.0024893**	**.0023275**	**-1.07**	**0.285**	**-.0070512**	**.0020725**
lnstudents	**.0085616**	**.0026009**	**3.29**	**0.001**	**.0034639**	**.0136593**
urban	**.0152178**	**.0050029**	**3.04**	**0.002**	**.0054123**	**.0250232**
pctpdfs	**.1632051**	**.0600015**	**2.72**	**0.007**	**.0456044**	**.2808058**
_cons	**.058338**	**.0168337**	**3.47**	**0.001**	**.0253447**	**.0913314**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0053662**	**.0007382**	**.004098**	**.0070268**
var(Residual)	**.0101817**	**.0002848**	**.0096385**	**.0107556**

LR test vs. linear model: chibar2(01) = **407.43** Prob >= chibar2 = **0.0000**

23.
24. * PT 2:

```
25. * 0. controls only
26. mi est, dots: mixed povertyschoolprop primary middle high lnage lnstudents urban ||
  > geodistrict: ,

  Imputations (5):
    ..... done

  Multiple-imputation estimates                     Imputations       =          5
  Mixed-effects ML regression                       Number of obs     =      2,814

  Group variable: geodistrict                       Number of groups  =        499
                                                    Obs per group:
                                                                  min =          1
                                                                  avg =        5.6
                                                                  max =        251
                                                    Average RVI       =     0.0846
                                                    Largest FMI       =     0.1626
  DF adjustment:   Large sample                     DF:     min       =     171.18
                                                            avg       =   6,040.52
                                                            max       =  37,663.45
  Model F test:       Equal FMI                     F(   6, 2540.5)   =       1.76
                                                    Prob > F          =     0.1032
```

povertysch~p	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
primary	.0156636	.0144291	1.09	0.279	-.0127897	.0441168
middle	.0588412	.0192429	3.06	0.002	.0211247	.0965577
high	.004951	.0161191	0.31	0.759	-.0266815	.0365836
lnage	.0003763	.0057487	0.07	0.948	-.0108955	.011648
lnstudents	-.0004333	.0069891	-0.06	0.951	-.0142293	.0133627
urban	-.000369	.0168239	-0.02	0.983	-.0333626	.0326246
_cons	.6584672	.041352	15.92	0.000	.5771298	.7398046

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity sd(_cons)	.1550259	.0100815	.1364717	.1761027
sd(Residual)	.2437206	.0036998	.236559	.2510991

```
27. * 1. IBL
28. mi est, dots: mixed povertyschoolprop inquiry_full_log primary middle high lnage lns
  > tudents urban pctpdfs || geodistrict: ,

  Imputations (5):
    ..... done

  Multiple-imputation estimates                     Imputations       =          5
  Mixed-effects ML regression                       Number of obs     =      2,814

  Group variable: geodistrict                       Number of groups  =        499
                                                    Obs per group:
                                                                  min =          1
                                                                  avg =        5.6
                                                                  max =        251
                                                    Average RVI       =     0.1357
                                                    Largest FMI       =     0.4215
  DF adjustment:   Large sample                     DF:     min       =      27.55
                                                            avg       =   4,467.67
                                                            max       =  35,503.28
  Model F test:       Equal FMI                     F(   8, 1354.7)   =       5.90
                                                    Prob > F          =     0.0000
```

povertysch~p	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
inquir~l_log	**-.2740839**	**.0454894**	**-6.03**	**0.000**	**-.3636183**	**-.1845496**
primary	**.0157376**	**.0143687**	**1.10**	**0.275**	**-.0126104**	**.0440856**
middle	**.0534075**	**.0191201**	**2.79**	**0.005**	**.0159316**	**.0908835**
high	**.0008763**	**.0159808**	**0.05**	**0.956**	**-.0304808**	**.0322334**
lnage	**-.0000415**	**.0057048**	**-0.01**	**0.994**	**-.011227**	**.011144**
lnstudents	**.0026721**	**.0069728**	**0.38**	**0.702**	**-.011097**	**.0164413**
urban	**.0039369**	**.016725**	**0.24**	**0.814**	**-.0288644**	**.0367381**
pctpdfs	**.257594**	**.1813407**	**1.42**	**0.167**	**-.1141382**	**.6293263**
_cons	**.6728307**	**.0410445**	**16.39**	**0.000**	**.5921176**	**.7535437**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity sd(_cons)	**.1538473**	**.0100131**	**.1354187**	**.1747838**
sd(Residual)	**.2418623**	**.003664**	**.234771**	**.2491677**

```
29. * 2. academic performance
30. mi est, dots: mixed povertyschoolprop readall14 mathall14 primary middle high lnage
  > lnstudents urban readlevel14 mathlevel14 || geodistrict: ,

  Imputations (5):
    .x
  estimation sample varies between m=1 and m=2; click here for details
  r(459);

  end of do-file

  r(459);

31. do "/90days/jhaber/STATATMP/SD21621.000000"

32. mi xeq 0 1 2: mixed povertyschoolprop readall14 mathall14 primary middle high lnage
  > lnstudents urban readlevel14 mathlevel14 || geodistrict: ,

  m=0 data:
  -> mixed povertyschoolprop readall14 mathall14 primary middle high lnage lnstudents ur
  > ban readlevel14 mathlevel14 || geodistrict: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  83.617301
  Iteration 1:   log likelihood =  83.617314
  Iteration 2:   log likelihood =  83.617314

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      2,222
  Group variable: geodistrict                     Number of groups  =        447

                                                  Obs per group:
                                                               min =          1
                                                               avg =        5.0
                                                               max =        217

                                                  Wald chi2(10)     =     402.20
  Log likelihood =  83.617314                     Prob > chi2       =     0.0000
```

povertysch~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
readall14	**-.4697989**	**.0435606**	**-10.78**	**0.000**	**-.5551761**	**-.3844216**
mathall14	**.0160418**	**.0438766**	**0.37**	**0.715**	**-.0699547**	**.1020382**
primary	**.0202837**	**.0134648**	**1.51**	**0.132**	**-.0061067**	**.0466741**
middle	**.0472953**	**.0192309**	**2.46**	**0.014**	**.0096034**	**.0849873**
high	**.0506618**	**.0156509**	**3.24**	**0.001**	**.0199865**	**.081337**
lnage	**.0113083**	**.0064542**	**1.75**	**0.080**	**-.0013417**	**.0239583**
lnstudents	**-.0109462**	**.008502**	**-1.29**	**0.198**	**-.0276098**	**.0057174**
urban	**-.0071108**	**.0168275**	**-0.42**	**0.673**	**-.0400921**	**.0258705**
readlevel14	**-.0004174**	**.0013445**	**-0.31**	**0.756**	**-.0030527**	**.0022178**
mathlevel14	**-.001498**	**.0013346**	**-1.12**	**0.262**	**-.0041137**	**.0011178**
_cons	**.906805**	**.0540336**	**16.78**	**0.000**	**.8009012**	**1.012709**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity var(_cons)	**.0321025**	**.0037017**	**.0256087**	**.0402428**
var(Residual)	**.043972**	**.0014707**	**.0411819**	**.0469511**

LR test vs. linear model: chibar2(01) = **909.03** Prob >= chibar2 = **0.0000**

m=1 data:
-> **mixed povertyschoolprop readall14 mathall14 primary middle high lnage lnstudents ur**
> ban readlevel14 mathlevel14 || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **-51.661699**
Iteration 1: log likelihood = **-51.661545**
Iteration 2: log likelihood = **-51.661545**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,813**
Group variable: **geodistrict** Number of groups = **499**

Obs per group:
min = **1**
avg = **5.6**
max = **251**

Wald chi2(**10**) = **355.06**
Log likelihood = **-51.661545** Prob > chi2 = **0.0000**

povertysch~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
readall14	**-.3902637**	**.0366196**	**-10.66**	**0.000**	**-.4620368**	**-.3184906**
mathall14	**-.0121573**	**.0365099**	**-0.33**	**0.739**	**-.0837154**	**.0594007**
primary	**.015167**	**.0126763**	**1.20**	**0.232**	**-.0096781**	**.0400121**
middle	**.0527497**	**.0183027**	**2.88**	**0.004**	**.0168771**	**.0886223**
high	**.0254754**	**.0149823**	**1.70**	**0.089**	**-.0038893**	**.0548402**
lnage	**.0085638**	**.0053552**	**1.60**	**0.110**	**-.0019321**	**.0190598**
lnstudents	**.0084275**	**.0069109**	**1.22**	**0.223**	**-.0051176**	**.0219726**
urban	**.0042646**	**.0158414**	**0.27**	**0.788**	**-.0267839**	**.0353132**
readlevel14	**-.0020111**	**.0012001**	**-1.68**	**0.094**	**-.0043632**	**.0003411**
mathlevel14	**.0015914**	**.0011847**	**1.34**	**0.179**	**-.0007306**	**.0039134**
_cons	**.7700715**	**.0435486**	**17.68**	**0.000**	**.6847178**	**.8554251**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity var(_cons)	**.0246883**	**.0029465**	**.019539**	**.0311947**
var(Residual)	**.0522935**	**.0015139**	**.0494088**	**.0553465**

LR test vs. linear model: chibar2(01) = **1165.29** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed povertyschoolprop readall14 mathall14 primary middle high lnage lnstudents ur**
> ban readlevel14 mathlevel14 || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **-73.878068**
Iteration 1: log likelihood = **-73.877899**
Iteration 2: log likelihood = **-73.877899**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **2,811**
Group variable: **geodistrict** — Number of groups = **497**

Obs per group:
min = **1**
avg = **5.7**
max = **251**

Wald chi2(**10**) = **356.12**
Log likelihood = **-73.877899** — Prob > chi2 = **0.0000**

povertysch~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
readall14	**-.3750877**	**.0373843**	**-10.03**	**0.000**	**-.4483596**	**-.3018158**
mathall14	**-.0378385**	**.0371565**	**-1.02**	**0.309**	**-.110664**	**.0349869**
primary	**.0143038**	**.0127818**	**1.12**	**0.263**	**-.0107482**	**.0393558**
middle	**.05038**	**.0184495**	**2.73**	**0.006**	**.0142197**	**.0865403**
high	**.0240952**	**.015081**	**1.60**	**0.110**	**-.0054631**	**.0536535**
lnage	**.0069795**	**.0054107**	**1.29**	**0.197**	**-.0036253**	**.0175842**
lnstudents	**.0085896**	**.0070121**	**1.22**	**0.221**	**-.0051539**	**.0223331**
urban	**.0023897**	**.0160457**	**0.15**	**0.882**	**-.0290592**	**.0338386**
readlevel14	**-.0006623**	**.001206**	**-0.55**	**0.583**	**-.003026**	**.0017013**
mathlevel14	**.0003072**	**.0011997**	**0.26**	**0.798**	**-.0020441**	**.0026586**
_cons	**.776444**	**.0443227**	**17.52**	**0.000**	**.689573**	**.8633149**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity var(_cons)	**.0257831**	**.0030972**	**.0203744**	**.0326276**
var(Residual)	**.0529954**	**.0015391**	**.050063**	**.0560995**

LR test vs. linear model: chibar2(01) = **1175.76** Prob >= chibar2 = **0.0000**

```
33. * 3. fully specified
34. mi est, dots: mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary m
  > iddle high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || geodistrict: ,

  Imputations (5):
    .x
  estimation sample varies between m=1 and m=2; click here for details
  r(459);

  end of do-file

  r(459);

35. do "/90days/jhaber/STATATMP/SD21621.000000"

36. mi xeq 0 1 2: mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary m
  > iddle high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || geodistrict: ,

  m=0 data:
  -> mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary middle high ln
  > age lnstudents urban pctpdfs readlevel14 mathlevel14 || geodistrict: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  96.978677
  Iteration 1:   log likelihood =  96.978691
  Iteration 2:   log likelihood =  96.978691

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      2,222
  Group variable: geodistrict                     Number of groups  =        447

                                                  Obs per group:
                                                                min =          1
                                                                avg =        5.0
                                                                max =        217

                                                  Wald chi2(12)     =     433.60
  Log likelihood =  96.978691                     Prob > chi2       =     0.0000
```

povertysch~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inquir~l_log	-.2165098	.0432573	-5.01	0.000	-.3012925	-.131727
readall14	-.4446736	.0435845	-10.20	0.000	-.5300975	-.3592496
mathall14	.0014662	.043723	0.03	0.973	-.0842293	.0871617
primary	.0191064	.0133891	1.43	0.154	-.0071358	.0453486
middle	.0424268	.0191461	2.22	0.027	.0049012	.0799524
high	.0471746	.015576	3.03	0.002	.0166463	.077703
lnage	.0097644	.0064235	1.52	0.128	-.0028254	.0223542
lnstudents	-.0089689	.0084621	-1.06	0.289	-.0255543	.0076166
urban	-.0030485	.016728	-0.18	0.855	-.0358348	.0297377
pctpdfs	.2677185	.1492705	1.79	0.073	-.0248463	.5602834
readlevel14	-.0004347	.0013369	-0.33	0.745	-.003055	.0021855
mathlevel14	-.0015728	.0013272	-1.19	0.236	-.0041741	.0010284
_cons	.9176097	.0537648	17.07	0.000	.8122327	1.022987

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity				
var(_cons)	.0314711	.0036357	.0250944	.0394683
var(Residual)	.0434915	.0014542	.0407327	.0464371

```
  LR test vs. linear model: chibar2(01) = 891.94        Prob >= chibar2 = 0.0000
```

m=1 data:
-> **mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary middle high ln**
> age lnstudents urban pctpdfs readlevel14 mathlevel14 || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **-37.118358**
Iteration 1: log likelihood = **-37.118189**
Iteration 2: log likelihood = **-37.118189**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,813**
Group variable: **geodistrict** Number of groups = **499**

Obs per group:
min = **1**
avg = **5.6**
max = **251**

Wald chi2(**12**) = **387.80**
Log likelihood = **-37.118189** Prob > chi2 = **0.0000**

povertysch~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inquir~l_log	**-.2157304**	**.0406996**	**-5.30**	**0.000**	**-.2955**	**-.1359607**
readall14	**-.3670227**	**.0366941**	**-10.00**	**0.000**	**-.4389419**	**-.2951035**
mathall14	**-.0265874**	**.0364387**	**-0.73**	**0.466**	**-.0980058**	**.0448311**
primary	**.015422**	**.0126146**	**1.22**	**0.221**	**-.0093022**	**.0401462**
middle	**.0482438**	**.0182342**	**2.65**	**0.008**	**.0125055**	**.0839822**
high	**.0217568**	**.0149239**	**1.46**	**0.145**	**-.0074936**	**.0510072**
lnage	**.0079072**	**.0053296**	**1.48**	**0.138**	**-.0025386**	**.0183531**
lnstudents	**.0099551**	**.0068816**	**1.45**	**0.148**	**-.0035325**	**.0234428**
urban	**.0078384**	**.0157539**	**0.50**	**0.619**	**-.0230388**	**.0387155**
pctpdfs	**.1996992**	**.1353046**	**1.48**	**0.140**	**-.0654929**	**.4648913**
readlevel14	**-.0020289**	**.0011942**	**-1.70**	**0.089**	**-.0043696**	**.0003117**
mathlevel14	**.0015021**	**.0011791**	**1.27**	**0.203**	**-.0008088**	**.0038131**
_cons	**.782612**	**.0434121**	**18.03**	**0.000**	**.6975258**	**.8676983**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity var(_cons)	**.0242158**	**.0029001**	**.0191496**	**.0306224**
var(Residual)	**.0518005**	**.0014994**	**.0489435**	**.0548244**

LR test vs. linear model: chibar2(01) = **1138.67** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary middle high ln**
> age lnstudents urban pctpdfs readlevel14 mathlevel14 || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **-59.205535**
Iteration 1: log likelihood = **-59.205356**
Iteration 2: log likelihood = **-59.205356**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,811**
Group variable: **geodistrict** Number of groups = **497**

Obs per group:
min = **1**
avg = **5.7**
max = **251**

Wald chi2(**12**) = **389.27**
Log likelihood = **-59.205356** Prob > chi2 = **0.0000**

povertysch~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inquir~l_log	**-.2115214**	**.0409277**	**-5.17**	**0.000**	**-.2917382**	**-.1313047**
readall14	**-.3556569**	**.0373774**	**-9.52**	**0.000**	**-.4289152**	**-.2823987**
mathall14	**-.048517**	**.0370349**	**-1.31**	**0.190**	**-.1211041**	**.0240701**
primary	**.0146134**	**.0127183**	**1.15**	**0.251**	**-.0103141**	**.0395409**
middle	**.046192**	**.0183771**	**2.51**	**0.012**	**.0101736**	**.0822104**
high	**.0205513**	**.0150188**	**1.37**	**0.171**	**-.0088851**	**.0499877**
lnage	**.0063512**	**.0053842**	**1.18**	**0.238**	**-.0042016**	**.0169039**
lnstudents	**.0102637**	**.0069828**	**1.47**	**0.142**	**-.0034223**	**.0239498**
urban	**.005932**	**.0159662**	**0.37**	**0.710**	**-.0253612**	**.0372251**
pctpdfs	**.2813855**	**.1364498**	**2.06**	**0.039**	**.0139488**	**.5488221**
readlevel14	**-.00065**	**.0012001**	**-0.54**	**0.588**	**-.0030021**	**.0017021**
mathlevel14	**.0002235**	**.0011942**	**0.19**	**0.852**	**-.002117**	**.002564**
_cons	**.7870123**	**.0441809**	**17.81**	**0.000**	**.7004193**	**.8736052**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
geodistrict: Identity var(_cons)	**.0254029**	**.0030592**	**.0200621**	**.0321655**
var(Residual)	**.0524677**	**.0015239**	**.0495644**	**.0555412**

LR test vs. linear model: chibar2(01) = **1152.69** Prob >= chibar2 = **0.0000**

```
37.
38. * PT 3:
39. * 0. controls only
40. mi est, dots: mixed pocschoolprop primary middle high lnage lnstudents urban || stat
  > e: || geodistrict: ,
```

Imputations (**5**):
..... done

Multiple-imputation estimates Imputations = **5**
Mixed-effects ML regression Number of obs = **2,814**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**35**	**1**	**80.4**	**523**
geodistrict	**503**	**1**	**5.6**	**251**

Average RVI = **0.0000**
Largest FMI = **0.0000**
DF adjustment: **Large sample** DF: min = **.**
avg = **.**
max = **.**
Model F test: **Equal FMI** F(6, .) = **12.59**
Prob > F = **0.0000**

pocschoolp~p	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
primary	.049945	.0102964	4.85	0.000	.0297644	.0701256
middle	.0733783	.0146524	5.01	0.000	.0446602	.1020964
high	.0567926	.0120217	4.72	0.000	.0332305	.0803546
lnage	-.0205558	.0044027	-4.67	0.000	-.029185	-.0119267
lnstudents	.008026	.0050797	1.58	0.114	-.0019301	.0179821
urban	.0612436	.0154308	3.97	0.000	.0309998	.0914875
_cons	.5668778	.0419807	13.50	0.000	.4845971	.6491585

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity				
sd(_cons)	.1408806	.0266658	.0972156	.204158
geodistrict: Identity				
sd(_cons)	.2175494	.0106435	.1976574	.2394433
sd(Residual)	.1810481	.0027048	.1758236	.1864278

```
41. * 1. IBL
42. mi est, dots: mixed pocschoolprop inquiry_full_log primary middle high lnage lnstude
  > nts urban pctpdfs || state: || geodistrict: ,

  Imputations (5):
    ..... done

  Multiple-imputation estimates                     Imputations      =          5
  Mixed-effects ML regression                       Number of obs    =      2,814
```

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	35	1	80.4	523
geodistrict	503	1	5.6	251

```
                                                  Average RVI       =     0.0000
                                                  Largest FMI       =     0.0000
  DF adjustment:   Large sample                   DF:     min       =   3.64e+55
                                                          avg       =   1.40e+62
                                                          max       =          .
  Model F test:       Equal FMI                   F(   8, 1.5e+63)  =      18.87
                                                  Prob > F          =     0.0000
```

pocschoolp~p	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
inquir~l_log	-.2776665	.0326212	-8.51	0.000	-.341603	-.2137301
primary	.0495451	.0101475	4.88	0.000	.0296564	.0694338
middle	.0680215	.0144509	4.71	0.000	.0396983	.0963447
high	.0529658	.0118551	4.47	0.000	.0297302	.0762014
lnage	-.0206781	.0043404	-4.76	0.000	-.0291851	-.0121712
lnstudents	.0109426	.0050207	2.18	0.029	.0011022	.0207831
urban	.0649288	.0152853	4.25	0.000	.0349702	.0948873
pctpdfs	.2450441	.1160666	2.11	0.035	.0175576	.4725305
_cons	.5835193	.0418786	13.93	0.000	.5014387	.6655998

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity				
sd(_cons)	**.1421537**	**.0264174**	**.0987583**	**.2046175**
geodistrict: Identity				
sd(_cons)	**.2181136**	**.0105477**	**.1983899**	**.2397982**
sd(Residual)	**.1782682**	**.0026624**	**.1731257**	**.1835635**

```
43. * 2. academic performance
44. mi est, dots: mixed pocschoolprop readall14 mathall14 primary middle high lnage lnst
  > udents urban readlevel14 mathlevel14 || state: || geodistrict: ,

  Imputations (5):
    .x
  estimation sample varies between m=1 and m=2; click here for details
  r(459);

  end of do-file

  r(459);

45. do "/90days/jhaber/STATATMP/SD21621.000000"

46. mi xeq 0 1 2: mixed pocschoolprop readall14 mathall14 primary middle high lnage lnst
  > udents urban readlevel14 mathlevel14 || state: || geodistrict: ,

  m=0 data:
  -> mixed pocschoolprop readall14 mathall14 primary middle high lnage lnstudents urban
  > readlevel14 mathlevel14 || state: || geodistrict: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  436.68916
  Iteration 1:   log likelihood =  436.68916

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      2,397
```

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**34**	**1**	**70.5**	**460**
geodistrict	**469**	**1**	**5.1**	**217**

```
                                                Wald chi2(10)     =     395.02
Log likelihood =  436.68916                     Prob > chi2       =     0.0000
```

pocschoolp~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
readall14	**-.2914024**	**.035068**	**-8.31**	**0.000**	**-.3601345**	**-.2226704**
mathall14	**-.0788581**	**.0360584**	**-2.19**	**0.029**	**-.1495313**	**-.0081848**
primary	**.0533439**	**.0107821**	**4.95**	**0.000**	**.0322114**	**.0744763**
middle	**.0764061**	**.0154918**	**4.93**	**0.000**	**.0460427**	**.1067696**
high	**.078377**	**.0127358**	**6.15**	**0.000**	**.0534154**	**.1033387**
lnage	**-.0075306**	**.0052489**	**-1.43**	**0.151**	**-.0178182**	**.002757**
lnstudents	**.0321986**	**.0070171**	**4.59**	**0.000**	**.0184453**	**.0459519**
urban	**.0576743**	**.0154839**	**3.72**	**0.000**	**.0273265**	**.0880221**
readlevel14	**.0016116**	**.001117**	**1.44**	**0.149**	**-.0005776**	**.0038008**
mathlevel14	**-.000824**	**.0011017**	**-0.75**	**0.455**	**-.0029834**	**.0013354**
_cons	**.5501652**	**.0529138**	**10.40**	**0.000**	**.446456**	**.6538744**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity var(_cons)	**.0200335**	**.0072615**	**.0098452**	**.0407652**
geodistrict: Identity var(_cons)	**.0414884**	**.0043051**	**.0338532**	**.0508455**
var(Residual)	**.0298869**	**.0009809**	**.028025**	**.0318725**

LR test vs. linear model: chi2(**2**) = **797.01** Prob > chi2 = **0.0000**

Note: LR test is conservative and provided only for reference.

m=1 data:
-> **mixed pocschoolprop readall14 mathall14 primary middle high lnage lnstudents urban**
> readlevel14 mathlevel14 || state: || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **564.06238**
Iteration 1: log likelihood = **564.06238**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,813**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**35**	**1**	**80.4**	**523**
geodistrict	**503**	**1**	**5.6**	**251**

Wald chi2(**10**) = **410.29**
Log likelihood = **564.06238** Prob > chi2 = **0.0000**

pocschoolp~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
readall14	**-.264383**	**.0284235**	**-9.30**	**0.000**	**-.320092**	**-.2086739**
mathall14	**-.0606132**	**.0287065**	**-2.11**	**0.035**	**-.1168769**	**-.0043496**
primary	**.0506974**	**.0097869**	**5.18**	**0.000**	**.0315155**	**.0698794**
middle	**.0709545**	**.0140517**	**5.05**	**0.000**	**.0434137**	**.0984953**
high	**.0706775**	**.0115804**	**6.10**	**0.000**	**.0479804**	**.0933746**
lnage	**-.0143548**	**.0041868**	**-3.43**	**0.001**	**-.0225608**	**-.0061487**
lnstudents	**.0189251**	**.0054317**	**3.48**	**0.000**	**.0082793**	**.029571**
urban	**.0615947**	**.0146607**	**4.20**	**0.000**	**.0328603**	**.0903292**
readlevel14	**-.0007676**	**.0009244**	**-0.83**	**0.406**	**-.0025793**	**.0010441**
mathlevel14	**.0008793**	**.0009089**	**0.97**	**0.333**	**-.0009021**	**.0026607**
_cons	**.6263439**	**.0446268**	**14.04**	**0.000**	**.538877**	**.7138107**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity var(_cons)	**.0207927**	**.0074629**	**.0102896**	**.0420168**
geodistrict: Identity var(_cons)	**.0439594**	**.0042473**	**.0363756**	**.0531243**
var(Residual)	**.029181**	**.0008717**	**.0275216**	**.0309405**

LR test vs. linear model: chi2(**2**) = **937.02** Prob > chi2 = **0.0000**

Note: LR test is conservative and provided only for reference.

m=2 data:
-> **mixed pocschoolprop readall14 mathall14 primary middle high lnage lnstudents urban**
> readlevel14 mathlevel14 || state: || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **571.93552**
Iteration 1: log likelihood = **571.93552**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,811**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**35**	**1**	**80.3**	**522**
geodistrict	**501**	**1**	**5.6**	**251**

Log likelihood = **571.93552**
Wald chi2(**10**) = **423.89**
Prob > chi2 = **0.0000**

pocschoolp~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
readall14	**-.2875502**	**.028801**	**-9.98**	**0.000**	**-.3439992**	**-.2311012**
mathall14	**-.0411705**	**.0289591**	**-1.42**	**0.155**	**-.0979293**	**.0155882**
primary	**.0508251**	**.0097691**	**5.20**	**0.000**	**.031678**	**.0699722**
middle	**.0702547**	**.0140301**	**5.01**	**0.000**	**.0427562**	**.0977532**
high	**.0704892**	**.01155**	**6.10**	**0.000**	**.0478517**	**.0931268**
lnage	**-.0132234**	**.0041901**	**-3.16**	**0.002**	**-.0214358**	**-.0050109**
lnstudents	**.0211917**	**.0054552**	**3.88**	**0.000**	**.0104996**	**.0318838**
urban	**.0598376**	**.0146045**	**4.10**	**0.000**	**.0312132**	**.088462**
readlevel14	**.0006496**	**.0009162**	**0.71**	**0.478**	**-.0011461**	**.0024453**
mathlevel14	**-.0002965**	**.0009096**	**-0.33**	**0.744**	**-.0020794**	**.0014863**
_cons	**.6163336**	**.0449446**	**13.71**	**0.000**	**.5282437**	**.7044235**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity var(_cons)	**.0213839**	**.0076394**	**.0106169**	**.0430702**
geodistrict: Identity var(_cons)	**.0429993**	**.0041793**	**.035541**	**.0520228**
var(Residual)	**.0290825**	**.0008686**	**.0274289**	**.0308358**

LR test vs. linear model: chi2(**2**) = **933.89** Prob > chi2 = **0.0000**

Note: LR test is conservative and provided only for reference.

47. * 3. fully specified
48. mi est, dots: mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middl
> e high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || state: || geodistri
> ct: ,

Imputations (**5**):
.x
estimation sample varies between *m*=1 and *m*=2; click here for details
r(459);

end of do-file

r(459);

```
49. do "/90days/jhaber/STATATMP/SD21621.000000"

50. mi xeq 0 1 2: mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middl
  > e high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || state: || geodistri
  > ct: ,

  m=0 data:
  -> mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle high lnage
  > lnstudents urban pctpdfs readlevel14 mathlevel14 || state: || geodistrict: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  456.89776
  Iteration 1:   log likelihood =  456.89776

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      2,397
```

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**34**	**1**	**70.5**	**460**
geodistrict	**469**	**1**	**5.1**	**217**

```
                                                Wald chi2(12)     =     442.08
Log likelihood =  456.89776                     Prob > chi2       =     0.0000
```

pocschoolp~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inquir~l_log	-.2141386	.0347209	-6.17	0.000	-.2821903	-.1460868
readall14	-.2667873	.0349596	-7.63	0.000	-.3353069	-.1982678
mathall14	-.0928478	.0357974	-2.59	0.009	-.1630094	-.0226861
primary	.0531102	.0106794	4.97	0.000	.0321789	.0740414
middle	.0723275	.015359	4.71	0.000	.0422244	.1024306
high	.0759159	.0126185	6.02	0.000	.0511841	.1006476
lnage	-.0086868	.0052023	-1.67	0.095	-.0188831	.0015096
lnstudents	.0339839	.00696	4.88	0.000	.0203425	.0476253
urban	.060515	.0154007	3.93	0.000	.0303302	.0906997
pctpdfs	.2490503	.112719	2.21	0.027	.0281251	.4699754
readlevel14	.0015474	.0011061	1.40	0.162	-.0006205	.0037153
mathlevel14	-.0008761	.0010911	-0.80	0.422	-.0030146	.0012625
_cons	.5620528	.0526712	10.67	0.000	.4588192	.6652865

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity var(_cons)	.0200884	.0072053	.0099457	.0405746
geodistrict: Identity var(_cons)	.0417704	.004291	.0341529	.051087
var(Residual)	.0292732	.0009603	.0274503	.0312172

```
  LR test vs. linear model: chi2(2) = 796.07                Prob > chi2 = 0.0000

  Note: LR test is conservative and provided only for reference.

  m=1 data:
  -> mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle high lnage
  > lnstudents urban pctpdfs readlevel14 mathlevel14 || state: || geodistrict: ,

  Performing EM optimization:
```

Performing gradient-based optimization:

Iteration 0: log likelihood = **591.33316**
Iteration 1: log likelihood = **591.33316**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,813**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**35**	**1**	**80.4**	**523**
geodistrict	**503**	**1**	**5.6**	**251**

Log likelihood = **591.33316**

Wald chi2(**12**) = **472.95**
Prob > chi2 = **0.0000**

pocschoolp~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inquir~l_log	**-.2290948**	**.0312155**	**-7.34**	**0.000**	**-.2902762**	**-.1679135**
readall14	**-.2382557**	**.0283322**	**-8.41**	**0.000**	**-.2937857**	**-.1827256**
mathall14	**-.0763103**	**.0284812**	**-2.68**	**0.007**	**-.1321325**	**-.0204882**
primary	**.0504803**	**.0096795**	**5.22**	**0.000**	**.0315089**	**.0694518**
middle	**.0661175**	**.0139103**	**4.75**	**0.000**	**.0388539**	**.0933811**
high	**.0667174**	**.0114644**	**5.82**	**0.000**	**.0442476**	**.0891872**
lnage	**-.0148151**	**.0041425**	**-3.58**	**0.000**	**-.0229344**	**-.0066959**
lnstudents	**.0202825**	**.0053772**	**3.77**	**0.000**	**.0097434**	**.0308216**
urban	**.0646112**	**.0145652**	**4.44**	**0.000**	**.0360639**	**.0931584**
pctpdfs	**.1926453**	**.1102805**	**1.75**	**0.081**	**-.0235005**	**.408791**
readlevel14	**-.0008186**	**.0009141**	**-0.90**	**0.371**	**-.0026102**	**.000973**
mathlevel14	**.0008179**	**.0008988**	**0.91**	**0.363**	**-.0009438**	**.0025796**
_cons	**.6419483**	**.0444554**	**14.44**	**0.000**	**.5548172**	**.7290793**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity var(_cons)	**.0208551**	**.0074179**	**.0103861**	**.0418766**
geodistrict: Identity var(_cons)	**.0443407**	**.0042408**	**.0367615**	**.0534826**
var(Residual)	**.0284992**	**.0008511**	**.026879**	**.030217**

LR test vs. linear model: chi2(**2**) = **939.55** Prob > chi2 = **0.0000**

Note: LR test is conservative and provided only for reference.

m=2 data:
-> **mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle high lnage**
> lnstudents urban pctpdfs readlevel14 mathlevel14 || state: || geodistrict: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **599.48219**
Iteration 1: log likelihood = **599.48219**

Computing standard errors:

Mixed-effects ML regression Number of obs = **2,811**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	**35**	**1**	**80.3**	**522**
geodistrict	**501**	**1**	**5.6**	**251**

Log likelihood = **599.48219**

Wald chi2(**12**) = **487.38**
Prob > chi2 = **0.0000**

pocschoolp~p	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
inquir~l_log	**-.2292402**	**.0310815**	**-7.38**	**0.000**	**-.2901589**	**-.1683216**
readall14	**-.2653244**	**.0286336**	**-9.27**	**0.000**	**-.3214452**	**-.2092036**
mathall14	**-.0529957**	**.0286868**	**-1.85**	**0.065**	**-.1092207**	**.0032294**
primary	**.0504693**	**.0096606**	**5.22**	**0.000**	**.0315349**	**.0694038**
middle	**.0654718**	**.0138869**	**4.71**	**0.000**	**.038254**	**.0926897**
high	**.0666957**	**.0114317**	**5.83**	**0.000**	**.0442899**	**.0891014**
lnage	**-.0136412**	**.0041451**	**-3.29**	**0.001**	**-.0217655**	**-.0055169**
lnstudents	**.0226513**	**.0054006**	**4.19**	**0.000**	**.0120663**	**.0332363**
urban	**.0629251**	**.01451**	**4.34**	**0.000**	**.034486**	**.0913643**
pctpdfs	**.1936163**	**.1099578**	**1.76**	**0.078**	**-.0218971**	**.4091296**
readlevel14	**.0006557**	**.0009059**	**0.72**	**0.469**	**-.0011198**	**.0024311**
mathlevel14	**-.0003892**	**.0008996**	**-0.43**	**0.665**	**-.0021524**	**.0013739**
_cons	**.6312871**	**.0447494**	**14.11**	**0.000**	**.5435798**	**.7189944**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
state: Identity var(_cons)	**.021391**	**.0075747**	**.010686**	**.04282**
geodistrict: Identity var(_cons)	**.0434175**	**.004176**	**.0359579**	**.0524248**
var(Residual)	**.0283935**	**.0008478**	**.0267795**	**.0301047**

LR test vs. linear model: chi2(**2**) = **934.19** Prob > chi2 = **0.0000**

Note: LR test is conservative and provided only for reference.

```
51.
52. log close
       name:  <unnamed>
        log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/robust_fil
> tpov_mi5_linear_030220.smcl
   log type:  smcl
  closed on:   2 Mar 2020, 17:39:38
```