STaTa
Statistics/Data Analysis

_____

```
      name:  <unnamed>
       log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/results_qu
> ickpass_mi100_linear_clusts_101019.smcl
  log type:  smcl
 opened on:  18 Oct 2019, 18:56:49
```

```
1 . ** --------------------------------------------------------
2 . ** FULLY NESTED MODELS: QUICK PASS OF ONE IMPUTATION EACH
3 . ** --------------------------------------------------------
4 .
5 . ** FULLY NESTED MIXED-EFFECTS LINEAR MODELS PT 1: RACE & POVERTY -> IBL
6 .
7 . * 0. controls only
8 . mi xeq 1: mixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
```

```
m=1 data:
-> mixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || _all:R
> .cmoname || _all:R.state || geodistrict: , cov(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
      structure set to identity
```

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  4562.1359
Iteration 1:   log likelihood =  4563.9654
Iteration 2:   log likelihood =  4563.9668
Iteration 3:   log likelihood =  4563.9668
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

```
                                                Wald chi2(7)      =      71.40
Log likelihood =  4563.9668                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0013426	.003901	0.34	0.731	-.0063031	.0089884
middle	-.0124991	.0058186	-2.15	0.032	-.0239033	-.001095
high	-.0097576	.0046736	-2.09	0.037	-.0189177	-.0005976
lnage	-.0048955	.0016684	-2.93	0.003	-.0081654	-.0016256
lnstudents	.0099569	.0018209	5.47	0.000	.0063881	.0135258
urban	.0059421	.0039068	1.52	0.128	-.001715	.0135992
pctpdfs	.118419	.0318136	3.72	0.000	.0560655	.1807726
_cons	.0756538	.0130765	5.79	0.000	.0500244	.1012832

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0059344	.0006623	.0047685	.0073854
_all: Identity				
var(R.state)	.0006984	.0002558	.0003406	.0014318
geodistrict: Identity				
var(_cons)	.0016853	.0002483	.0012626	.0022495

| | var(Residual) | .0101432 | .000223 | .0097153 | .0105899 |

LR test vs. linear model: chi2(**3**) = **882.28**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

9 . * 1. school poverty
10. mi xeq 1: mixed inquiry_full_log povertyschool primary middle high lnage lnstudents
  > urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)

  m=1 data:
  -> **mixed inquiry_full_log povertyschool primary middle high lnage lnstudents urban pct**
  > **pdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)**
  Note: single-variable random-effects specification in geodistrict equation; covariance
        structure set to identity

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood = **4625.6729**
  Iteration 1:   log likelihood = **4628.1036**
  Iteration 2:   log likelihood = **4628.1054**
  Iteration 3:   log likelihood = **4628.1054**

  Computing standard errors:

  Mixed-effects ML regression   Number of obs   =   **5,784**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	**1**	**5,784**	**5,784.0**	**5,784**
geodistrict	**1,481**	**1**	**3.9**	**251**

                                                    Wald chi2(**8**)   =   **203.70**
  Log likelihood = **4628.1054**   Prob > chi2   =   **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
povertyschool	-.0006201	.0000542	-11.43	0.000	-.0007264	-.0005138
primary	.0007946	.0038597	0.21	0.837	-.0067702	.0083594
middle	-.0116286	.0057605	-2.02	0.044	-.022919	-.0003382
high	-.0110431	.004625	-2.39	0.017	-.020108	-.0019783
lnage	-.004675	.0016489	-2.84	0.005	-.0079069	-.0014432
lnstudents	.0084616	.0018013	4.70	0.000	.0049311	.011992
urban	.0110908	.0038421	2.89	0.004	.0035603	.0186212
pctpdfs	.1135511	.0314229	3.61	0.000	.0519634	.1751388
_cons	.1163203	.0133159	8.74	0.000	.0902216	.142419

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0060439	.0006685	.0048659	.0075071
_all: Identity				
var(R.state)	.0005879	.0002253	.0002774	.0012458
geodistrict: Identity				
var(_cons)	.0014548	.0002331	.0010628	.0019916
var(Residual)	.0099958	.0002196	.0095746	.0104356

LR test vs. linear model: chi2(**3**) = **848.55**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

```
11. * 2. school race
12. mi xeq 1: mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents
  > urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
```

m=1 data:
-> **mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents urban pct**
> pdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
      structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  4641.0003
Iteration 1:   log likelihood =  4643.1624
Iteration 2:   log likelihood =  4643.1636
Iteration 3:   log likelihood =  4643.1636
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

Wald chi2(**8**)   =   234.08
Log likelihood = **4643.1636**   Prob > chi2   =   0.0000

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
pocschoolprop	-.0800771	.0063159	-12.68	0.000	-.0924561	-.0676981
primary	.0053163	.0038603	1.38	0.168	-.0022496	.0128823
middle	-.0064426	.0057603	-1.12	0.263	-.0177326	.0048473
high	-.0050006	.0046254	-1.08	0.280	-.0140661	.004065
lnage	-.006588	.0016513	-3.99	0.000	-.0098244	-.0033516
lnstudents	.0112313	.0017995	6.24	0.000	.0077044	.0147582
urban	.0192292	.0039827	4.83	0.000	.0114232	.0270352
pctpdfs	.120683	.0313639	3.85	0.000	.0592109	.1821551
_cons	.1104719	.0132795	8.32	0.000	.0844445	.1364993

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0058663	.0006521	.0047177	.0072944
_all: Identity				
var(R.state)	.0007619	.0002722	.0003782	.0015347
geodistrict: Identity				
var(_cons)	.0015889	.0002476	.0011708	.0021564
var(Residual)	.0098787	.0002192	.0094584	.0103178

LR test vs. linear model: chi2(**3**) = **835.68**   Prob > chi2 = **0.0000**

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

```
13. * 3. school district poverty
14. mi xeq 1: mixed inquiry_full_log povertysd primary middle high lnage lnstudents urba
  > n pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
```

  m=1 data:
  -> **mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs**
  > || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
  Note: single-variable random-effects specification in geodistrict equation; covariance
        structure set to identity

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood = **4587.0427**
  Iteration 1:   log likelihood = **4589.5237**
  Iteration 2:   log likelihood = **4589.5257**
  Iteration 3:   log likelihood = **4589.5257**

  Computing standard errors:

  Mixed-effects ML regression   Number of obs   =   **5,784**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	**1**	**5,784**	**5,784.0**	**5,784**
geodistrict	**1,481**	**1**	**3.9**	**251**

			Wald chi2(**8**) = **124.32**
Log likelihood = **4589.5257**			Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
povertysd	**-.2137288**	**.0295683**	**-7.23**	**0.000**	**-.2716816**	**-.155776**
primary	**.001165**	**.0038861**	**0.30**	**0.764**	**-.0064516**	**.0087815**
middle	**-.012866**	**.0058004**	**-2.22**	**0.027**	**-.0242346**	**-.0014975**
high	**-.0094512**	**.0046559**	**-2.03**	**0.042**	**-.0185766**	**-.0003257**
lnage	**-.004915**	**.0016603**	**-2.96**	**0.003**	**-.0081692**	**-.0016608**
lnstudents	**.0101084**	**.0018097**	**5.59**	**0.000**	**.0065614**	**.0136554**
urban	**.012195**	**.0039373**	**3.10**	**0.002**	**.0044781**	**.0199119**
pctpdfs	**.1182624**	**.0316303**	**3.74**	**0.000**	**.056268**	**.1802567**
_cons	**.1011575**	**.0134072**	**7.55**	**0.000**	**.0748799**	**.1274351**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	**.0059531**	**.000661**	**.0047888**	**.0074003**
_all: Identity				
var(R.state)	**.0006273**	**.0002393**	**.000297**	**.0013251**
geodistrict: Identity				
var(_cons)	**.0014593**	**.0002349**	**.0010644**	**.0020007**
var(Residual)	**.0101476**	**.0002224**	**.0097209**	**.0105931**

LR test vs. linear model: chi2(**3**) = **869.01**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

15. * 4. school district race
16. mi xeq 1: mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pc
    > tpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)

   m=1 data:
   -> **mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||**
   > _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
   Note: single-variable random-effects specification in geodistrict equation; covariance
         structure set to identity

   Performing EM optimization:

   Performing gradient-based optimization:

   Iteration 0:   log likelihood = **4566.3226**
   Iteration 1:   log likelihood = **4568.3219**
   Iteration 2:   log likelihood = **4568.3234**
   Iteration 3:   log likelihood = **4568.3234**

   Computing standard errors:

   Mixed-effects ML regression   Number of obs   =   **5,784**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	**1**	**5,784**	**5,784.0**	**5,784**
geodistrict	**1,481**	**1**	**3.9**	**251**

                                                  Wald chi2(**8**)   =   **80.31**
   Log likelihood = **4568.3234**   Prob > chi2   =   **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
pocsd	**-.0376403**	**.0127084**	**-2.96**	**0.003**	**-.0625484**	**-.0127323**
primary	**.0019453**	**.0039037**	**0.50**	**0.618**	**-.0057059**	**.0095965**
middle	**-.0114164**	**.0058289**	**-1.96**	**0.050**	**-.0228407**	**8.00e-06**
high	**-.0091235**	**.0046761**	**-1.95**	**0.051**	**-.0182885**	**.0000415**
lnage	**-.0052377**	**.0016711**	**-3.13**	**0.002**	**-.008513**	**-.0019623**
lnstudents	**.010494**	**.0018283**	**5.74**	**0.000**	**.0069105**	**.0140774**
urban	**.0090576**	**.0040325**	**2.25**	**0.025**	**.001154**	**.0169612**
pctpdfs	**.1177054**	**.0317801**	**3.70**	**0.000**	**.0554175**	**.1799932**
_cons	**.0830961**	**.0132922**	**6.25**	**0.000**	**.0570439**	**.1091483**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	**.0058948**	**.0006595**	**.004734**	**.0073401**
_all: Identity				
var(R.state)	**.0006925**	**.0002546**	**.0003369**	**.0014236**
geodistrict: Identity				
var(_cons)	**.0016285**	**.0002462**	**.0012108**	**.0021903**
var(Residual)	**.0101545**	**.0002234**	**.009726**	**.0106019**

   LR test vs. linear model: chi2(**3**) = **867.28**   Prob > chi2 = **0.0000**

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

```
17.
18.
19. ** FULLY NESTED MIXED-EFFECTS LINEAR MODELS PT 2: IBL, ACADEMICS -> POVERTY
20.
21. * 0. controls only
22. mi xeq 1: mixed povertyschoolprop primary middle high lnage lnstudents urban || _all
  > :R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
```

m=1 data:
-> **mixed povertyschoolprop primary middle high lnage lnstudents urban || _all:R.cmonam**
> e || _all:R.state || geodistrict: , cov(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
       structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:    log likelihood = -404.35461
Iteration 1:    log likelihood = -404.33061
Iteration 2:    log likelihood = -404.33061
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

Log likelihood = **-404.33061**

Wald chi2(**6**)   =   83.36
Prob > chi2   =   0.0000

povertyschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	-.0087213	.0091266	-0.96	0.339	-.026609	.0091665
middle	.0159343	.0135135	1.18	0.238	-.0105516	.0424201
high	-.0213508	.0109145	-1.96	0.050	-.0427428	.0000412
lnage	.0056785	.0039246	1.45	0.148	-.0020136	.0133706
lnstudents	-.0261785	.0043301	-6.05	0.000	-.0346654	-.0176917
urban	.0652448	.0101968	6.40	0.000	.0452595	.08523
_cons	.6659472	.0340634	19.55	0.000	.5991841	.7327102

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0149593	.0022956	.0110736	.0202086
_all: Identity				
var(R.state)	.0128041	.0037427	.0072201	.0227069
geodistrict: Identity				
var(_cons)	.0238271	.0019359	.0203195	.0279403
var(Residual)	.0527848	.0011508	.0505767	.0550892

LR test vs. linear model: chi2(**3**) = **2243.15**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

```
23. * 1. IBL
24. mi xeq 1: mixed povertyschoolprop inquiry_full_log primary middle high lnage lnstude
  > nts urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructur
  > ed)
```

m=1 data:
-> **mixed povertyschoolprop inquiry_full_log primary middle high lnstudents urban**
> pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
      structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood = -349.69489
Iteration 1:   log likelihood = -349.66456
Iteration 2:   log likelihood = -349.66456
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   5,784

| Group Variable | No. of Groups | Observations per Group | | |
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

Log likelihood = **-349.66456**

Wald chi2(**8**)   =   **196.81**
Prob > chi2   =   **0.0000**

povertyschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiry_full_log	-.3207907	.0304704	-10.53	0.000	-.3805115	-.2610698
primary	-.0087421	.0090492	-0.97	0.334	-.0264782	.0089941
middle	.0118571	.0134117	0.88	0.377	-.0144294	.0381435
high	-.0242991	.0108276	-2.24	0.025	-.0455207	-.0030775
lnage	.0040999	.0038935	1.05	0.292	-.0035311	.011731
lnstudents	-.0226979	.0043039	-5.27	0.000	-.0311334	-.0142624
urban	.0683224	.0100547	6.80	0.000	.0486156	.0880293
pctpdfs	.0136261	.0749115	0.18	0.856	-.1331977	.16045
_cons	.6896673	.0336775	20.48	0.000	.6236607	.755674

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0159604	.002387	.0119053	.0213967
_all: Identity				
var(R.state)	.0120784	.0035649	.0067729	.0215397
geodistrict: Identity				
var(_cons)	.0223588	.0018581	.0189982	.0263139
var(Residual)	.0519605	.0011323	.049788	.0542278

LR test vs. linear model: chi2(**3**) = **2189.68**   Prob > chi2 = **0.0000**

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

```
25. * 2. academic performance
26. mi xeq 1 : mixed povertyschoolprop readall14 mathall14 primary middle high lnage lns
  > tudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistri
  > ct: , cov(unstructured)
```

m=1 data:
-> mixed povertyschoolprop readall14 mathall14 primary middle high lnage lnstudents ur
> ban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistrict: , cov(
> unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
      structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  165.02013
Iteration 1:   log likelihood =  165.17241
Iteration 2:   log likelihood =  165.17251
Iteration 3:   log likelihood =  165.17251
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

                                                Wald chi2(**10**)   =   1388.37
Log likelihood = **165.17251**   Prob > chi2   =   0.0000

povertyschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall14	-.4486169	.0242432	-18.50	0.000	-.4961328	-.401101
mathall14	-.1306555	.024255	-5.39	0.000	-.1781945	-.0831165
primary	.0062145	.0083657	0.74	0.458	-.010182	.0226109
middle	.0240547	.0124751	1.93	0.054	-.000396	.0485054
high	-.0029858	.0101059	-0.30	0.768	-.0227929	.0168213
lnage	.016542	.0035875	4.61	0.000	.0095107	.0235733
lnstudents	-.0052513	.0044989	-1.17	0.243	-.0140689	.0035663
urban	.0564001	.00897	6.29	0.000	.0388193	.073981
readlevel14	-.0000576	.0008104	-0.07	0.943	-.001646	.0015308
mathlevel14	.0001649	.0007899	0.21	0.835	-.0013832	.0017129
_cons	.7994273	.0359884	22.21	0.000	.7288914	.8699632

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0141828	.002026	.0107194	.0187652
_all: Identity				
var(R.state)	.0146103	.0039135	.0086429	.0246978
geodistrict: Identity				
var(_cons)	.0143619	.0013797	.011897	.0173374
var(Residual)	.0446757	.0009689	.0428165	.0466157

LR test vs. linear model: chi2(**3**) = **2549.36**   Prob > chi2 = **0.0000**

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

```
27. * 3. fully specified
28. mi xeq 1 : mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary midd
  > le high lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || _all:R.cmoname ||
  > _all:R.state || geodistrict: , cov(unstructured)
```

m=1 data:
-> **mixed povertyschoolprop inquiry_full_log readall14 mathall14 primary middle high ln**
> **age lnstudents urban pctpdfs readlevel14 mathlevel14 || _all:R.cmoname || _all:R.sta**
> **te || geodistrict: , cov(unstructured)**
Note: single-variable random-effects specification in geodistrict equation; covariance
      structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  190.89131
Iteration 1:   log likelihood =  191.06506
Iteration 2:   log likelihood =  191.06639
Iteration 3:   log likelihood =  191.06639
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

Wald chi2(**12**)   =   1457.57
Log likelihood = **191.06639**   Prob > chi2   =   **0.0000**

povertyschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiry_full_log	-.2029393	.0281337	-7.21	0.000	-.2580803	-.1477982
readall14	-.4294674	.0242951	-17.68	0.000	-.4770849	-.3818499
mathall14	-.1369535	.0241698	-5.67	0.000	-.1843255	-.0895816
primary	.0061474	.0083326	0.74	0.461	-.0101842	.022479
middle	.0211309	.0124366	1.70	0.089	-.0032444	.0455061
high	-.0050496	.0100706	-0.50	0.616	-.0247876	.0146883
lnage	.0151923	.0035772	4.25	0.000	.0081811	.0222035
lnstudents	-.0040269	.0044822	-0.90	0.369	-.0128118	.004758
urban	.0585597	.0089026	6.58	0.000	.0411109	.0760085
pctpdfs	-.0032613	.068085	-0.05	0.962	-.1367054	.1301828
readlevel14	-.0000817	.0008072	-0.10	0.919	-.0016638	.0015003
mathlevel14	.000101	.0007868	0.13	0.898	-.0014411	.001643
_cons	.8143159	.0357534	22.78	0.000	.7442405	.8843914

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0145775	.002056	.0110568	.0192192
_all: Identity				
var(R.state)	.0140541	.0037906	.0082837	.0238442
geodistrict: Identity				
var(_cons)	.0137792	.0013445	.0113807	.0166831
var(Residual)	.0443836	.0009615	.0425386	.0463087

LR test vs. linear model: chi2(**3**) = **2465.49**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

```
29.
30.
31. ** FULLY NESTED MIXED-EFFECTS LINEAR MODELS PT 3: IBL, ACADEMICS -> RACE
32.
33. * 0. controls only
34. mi xeq 1: mixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.c
  > moname || _all:R.state || geodistrict: , cov(unstructured)
```

m=1 data:
-> **mixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.cmoname ||**
> _all:R.state || geodistrict: , cov(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
        structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = **806.12965**
Iteration 1:   log likelihood = **806.12972**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **5,784**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	**1**	**5,784**	**5,784.0**	**5,784**
geodistrict	**1,481**	**1**	**3.9**	**251**

Log likelihood = **806.12972**

Wald chi2(**6**)   =   **232.12**
Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0379008	.0071607	5.29	0.000	.0238662	.0519355
middle	.056734	.0104648	5.42	0.000	.0362233	.0772447
high	.0484905	.0085671	5.66	0.000	.0316993	.0652818
lnage	-.0135443	.003089	-4.38	0.000	-.0195985	-.00749
lnstudents	-.0007739	.0034639	-0.22	0.823	-.0075629	.0060152
urban	.1100231	.0088529	12.43	0.000	.0926717	.1273746
_cons	.51009	.0361719	14.10	0.000	.4391943	.5809856

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0109269	.001472	.0083913	.0142286
_all: Identity				
var(R.state)	.0295903	.0075866	.0179024	.048909
geodistrict: Identity				
var(_cons)	.0379301	.0021484	.0339447	.0423835
var(Residual)	.0294606	.0006558	.0282028	.0307745

LR test vs. linear model: chi2(**3**) = **3329.41**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

```
35. * 1. IBL
36. mi xeq 1: mixed pocschoolprop inquiry_full_log primary middle high lnage lnstudents
   > urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)

   m=1 data:
   -> mixed pocschoolprop inquiry_full_log primary middle high lnage lnstudents urban pct
   > pdfs || _all:R.cmoname || _all:R.state || geodistrict: , cov(unstructured)
   Note: single-variable random-effects specification in geodistrict equation; covariance
         structure set to identity

   Performing EM optimization:

   Performing gradient-based optimization:

   Iteration 0:   log likelihood =   889.9694
   Iteration 1:   log likelihood =  889.96946

   Computing standard errors:
```

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

Wald chi2(**8**)   =   **407.17**
Log likelihood = **889.96946**   Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiry_full_log	-.3096746	.0238338	-12.99	0.000	-.356388	-.2629613
primary	.0375302	.0070513	5.32	0.000	.02371	.0513504
middle	.052509	.0103082	5.09	0.000	.0323053	.0727127
high	.0452528	.0084402	5.36	0.000	.0287104	.0617952
lnage	-.0147347	.0030435	-4.84	0.000	-.0206999	-.0087696
lnstudents	.0021921	.0034223	0.64	0.522	-.0045156	.0088997
urban	.1119548	.0087322	12.82	0.000	.0948401	.1290695
pctpdfs	.1158298	.0595079	1.95	0.052	-.0008036	.2324632
_cons	.5343757	.035846	14.91	0.000	.4641188	.6046325

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0109849	.0014652	.0084579	.0142669
_all: Identity				
var(R.state)	.0291167	.0074707	.0176093	.048144
geodistrict: Identity				
var(_cons)	.0374133	.0021142	.0334908	.0417951
var(Residual)	.0284828	.0006351	.0272648	.0297551

LR test vs. linear model: chi2(**3**) = **3292.09**   Prob > chi2 = **0.0000**

Note: <u>LR test is conservative</u> and provided only for reference.

```
37. * 2. academic performance
38. mi xeq 1: mixed pocschoolprop readall14 mathall14 primary middle high lnage lnstuden
  > ts urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistrict: ,
  >  cov(unstructured)
```

m=1 data:
-> **mixed pocschoolprop readall14 mathall14 primary middle high lnage lnstudents urban**
> readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistrict: , cov(unst
> ructured)
Note: single-variable random-effects specification in geodistrict equation; covariance
      structure set to identity

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  1293.1595
Iteration 1:   log likelihood =  1293.1595
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **5,784**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	**1**	**5,784**	**5,784.0**	**5,784**
geodistrict	**1,481**	**1**	**3.9**	**251**

Log likelihood = **1293.1595**

Wald chi2(**10**)   =   **1332.44**
Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall14	-.3367612	.0190067	-17.72	0.000	-.3740135	-.2995088
mathall14	-.0790027	.0189923	-4.16	0.000	-.1162269	-.0417785
primary	.0460647	.0066018	6.98	0.000	.0331255	.0590039
middle	.060914	.0096865	6.29	0.000	.0419288	.0798993
high	.0599566	.0079824	7.51	0.000	.0443114	.0756018
lnage	-.0047002	.0028465	-1.65	0.099	-.0102793	.0008789
lnstudents	.0156416	.0036219	4.32	0.000	.0085427	.0227405
urban	.1026449	.008141	12.61	0.000	.0866889	.118601
readlevel14	-.0001072	.0006321	-0.17	0.865	-.001346	.0011317
mathlevel14	.000491	.0006146	0.80	0.424	-.0007137	.0016957
_cons	.5961117	.0367698	16.21	0.000	.5240442	.6681793

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0115013	.0014501	.0089831	.0147253
_all: Identity				
var(R.state)	.0286674	.0071821	.0175443	.0468426
geodistrict: Identity				
var(_cons)	.0335014	.0019029	.0299718	.0374467
var(Residual)	.0244016	.0005481	.0233506	.0254999

LR test vs. linear model: chi2(**3**) = **3725.47**   Prob > chi2 = **0.0000**

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

```
39. * 3. fully specified
40. mi xeq 1: mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle hi
  > gh lnage lnstudents urban pctpdfs readlevel14 mathlevel14 || _all:R.cmoname || _all:
  > R.state || geodistrict: , cov(unstructured)

  m=1 data:
  -> mixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle high lnage
  > lnstudents urban pctpdfs readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state |
  > | geodistrict: , cov(unstructured)
  Note: single-variable random-effects specification in geodistrict equation; covariance
        structure set to identity

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  1343.2473
  Iteration 1:   log likelihood =  1343.2473

  Computing standard errors:
```

Mixed-effects ML regression   Number of obs   =   5,784

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
_all	1	5,784	5,784.0	5,784
geodistrict	1,481	1	3.9	251

Wald chi2(**12**)   =   1455.51
Log likelihood = **1343.2473**   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiry_full_log	-.2208016	.0222191	-9.94	0.000	-.2643503	-.1772529
readall14	-.3168695	.0189356	-16.73	0.000	-.3539825	-.2797564
mathall14	-.0837649	.0188186	-4.45	0.000	-.1206488	-.046881
primary	.0456	.0065394	6.97	0.000	.032783	.0584171
middle	.0574098	.0095996	5.98	0.000	.0385949	.0762248
high	.057278	.0079109	7.24	0.000	.0417731	.072783
lnage	-.0059084	.0028227	-2.09	0.036	-.0114408	-.000376
lnstudents	.0166226	.0035911	4.63	0.000	.0095842	.0236609
urban	.104089	.008079	12.88	0.000	.0882543	.1199236
pctpdfs	.1141451	.0549323	2.08	0.038	.0064798	.2218103
readlevel14	-.0001525	.000626	-0.24	0.808	-.0013795	.0010744
mathlevel14	.0004415	.0006087	0.73	0.468	-.0007515	.0016346
_cons	.6129543	.0365415	16.77	0.000	.5413344	.6845742

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
_all: Identity				
var(R.cmoname)	.0112948	.0014194	.0088289	.0144493
_all: Identity				
var(R.state)	.0283204	.0071087	.0173157	.0463189
geodistrict: Identity				
var(_cons)	.0334276	.0018916	.0299183	.0373484
var(Residual)	.0239033	.0005373	.0228731	.0249798

LR test vs. linear model: chi2(**3**) = **3668.59**   Prob > chi2 = **0.0000**

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

```
41.
42. log close
          name:  <unnamed>
           log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/results_qu
     > ickpass_mi100_linear_clusts_101019.smcl
      log type:  smcl
     closed on:  18 Oct 2019, 20:29:00
   ─────────────────────────────────────────────────────────────────────────────────────
```