STaTa®
Statistics/Data Analysis

```
      name:  <unnamed>
       log:  /hdir/0/jhaber/Projects/charter_data/stats_team/logs/results_3_schpoc_mi100_linear_0429
  log type:  smcl
 opened on:  29 Apr 2019, 13:52:37
```

```
1 . ** -------------------------------------------------------
2 . ** MIXED-EFFECTS NBREG MODELS PT 3: IBL, ACADEMICS -> RACE
3 . ** -------------------------------------------------------
4 .
5 . * Sequence of models:
6 . * 0. controls only
7 . * 1. IBL
8 . * 2. academic performance
9 . * 3. fully specified
10.
11. * 0. controls only
12. mi xeq 1 / 5: mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistr
```

m=1 data:
-> **mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistrict: , cov(un**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =    782.4776
Iteration 1:   log likelihood =    782.4776
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

```
                                                Wald chi2(6)      =      207.75
Log likelihood =   782.4776                     Prob > chi2       =      0.0000
```

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0425925	.0069006	6.17	0.000	.0290676	.0561173
middle	.066035	.0100315	6.58	0.000	.0463736	.0856965
high	.0530181	.0082124	6.46	0.000	.0369221	.069114
lnage	-.0140522	.0029191	-4.81	0.000	-.0197736	-.0083308
lnstudents	.0035931	.0031635	1.14	0.256	-.0026072	.0097935
urban	.093397	.0085949	10.87	0.000	.0765514	.1102426
_cons	.4441036	.0351325	12.64	0.000	.3752452	.5129619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.031983	.0082677	.0192699	.0530833
geodistrict: Identity				
var(_cons)	.0406063	.0022307	.0364613	.0452224
var(Residual)	.0325542	.0006699	.0312675	.033894

LR test vs. linear model: chi2(2) = 3432.04   Prob > chi2 = 0.0000

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

m=2 data:
-> **mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistrict: , cov(un**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =   782.4776
Iteration 1:   log likelihood =   782.4776
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Wald chi2(**6**)   =   207.75
Log likelihood =   782.4776   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0425925	.0069006	6.17	0.000	.0290676	.0561173
middle	.066035	.0100315	6.58	0.000	.0463736	.0856965
high	.0530181	.0082124	6.46	0.000	.0369221	.069114
lnage	-.0140522	.0029191	-4.81	0.000	-.0197736	-.0083308
lnstudents	.0035931	.0031635	1.14	0.256	-.0026072	.0097935
urban	.093397	.0085949	10.87	0.000	.0765514	.1102426
_cons	.4441036	.0351325	12.64	0.000	.3752452	.5129619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.031983	.0082677	.0192699	.0530833
geodistrict: Identity				
var(_cons)	.0406063	.0022307	.0364613	.0452224
var(Residual)	.0325542	.0006699	.0312675	.033894

LR test vs. linear model: chi2(**2**) = 3432.04   Prob > chi2 = **0.0000**

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

m=3 data:
-> **mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistrict: , cov(un**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =   782.4776
Iteration 1:   log likelihood =   782.4776
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood =   782.4776

Wald chi2(**6**)   =   207.75
Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0425925	.0069006	6.17	0.000	.0290676	.0561173
middle	.066035	.0100315	6.58	0.000	.0463736	.0856965
high	.0530181	.0082124	6.46	0.000	.0369221	.069114
lnage	-.0140522	.0029191	-4.81	0.000	-.0197736	-.0083308
lnstudents	.0035931	.0031635	1.14	0.256	-.0026072	.0097935
urban	.093397	.0085949	10.87	0.000	.0765514	.1102426
_cons	.4441036	.0351325	12.64	0.000	.3752452	.5129619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.031983	.0082677	.0192699	.0530833
geodistrict: Identity				
var(_cons)	.0406063	.0022307	.0364613	.0452224
var(Residual)	.0325542	.0006699	.0312675	.033894

LR test vs. linear model: chi2(**2**) = 3432.04   Prob > chi2 = **0.0000**

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

m=4 data:
-> **mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistrict: , cov(un**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =   782.4776
Iteration 1:   log likelihood =   782.4776

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood =   782.4776

Wald chi2(**6**)   =   207.75
Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0425925	.0069006	6.17	0.000	.0290676	.0561173
middle	.066035	.0100315	6.58	0.000	.0463736	.0856965
high	.0530181	.0082124	6.46	0.000	.0369221	.069114
lnage	-.0140522	.0029191	-4.81	0.000	-.0197736	-.0083308
lnstudents	.0035931	.0031635	1.14	0.256	-.0026072	.0097935
urban	.093397	.0085949	10.87	0.000	.0765514	.1102426
_cons	.4441036	.0351325	12.64	0.000	.3752452	.5129619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.031983	.0082677	.0192699	.0530833
geodistrict: Identity				
var(_cons)	.0406063	.0022307	.0364613	.0452224
var(Residual)	.0325542	.0006699	.0312675	.033894

LR test vs. linear model: chi2(**2**) = **3432.04**   Prob > chi2 = **0.0000**

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

m=5 data:
-> **mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistrict: , cov(un**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =   **782.4776**
Iteration 1:   log likelihood =   **782.4776**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood =   **782.4776**   Wald chi2(**6**)   =   **207.75**
                                                Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
primary	.0425925	.0069006	6.17	0.000	.0290676	.0561173
middle	.066035	.0100315	6.58	0.000	.0463736	.0856965
high	.0530181	.0082124	6.46	0.000	.0369221	.069114
lnage	-.0140522	.0029191	-4.81	0.000	-.0197736	-.0083308
lnstudents	.0035931	.0031635	1.14	0.256	-.0026072	.0097935
urban	.093397	.0085949	10.87	0.000	.0765514	.1102426
_cons	.4441036	.0351325	12.64	0.000	.3752452	.5129619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.031983	.0082677	.0192699	.0530833
geodistrict: Identity				
var(_cons)	.0406063	.0022307	.0364613	.0452224
var(Residual)	.0325542	.0006699	.0312675	.033894

LR test vs. linear model: chi2(**2**) = **3432.04**   Prob > chi2 = **0.0000**

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

13. mi est, dots post: mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geo

Imputations (**100**):
.........10.........20.........30.........40.........50.........60.........70.........80.........9

Multiple-imputation estimates   Imputations   =   **100**
Mixed-effects ML regression   Number of obs   =   **6,259**

	No. of	Observations per Group		
Group Variable	Groups	Minimum	Average	Maximum
state	**43**	**2**	**145.6**	**1,125**
geodistrict	**1,537**	**1**	**4.1**	**278**

		Average RVI	=	0.0000
		Largest FMI	=	0.0000
DF adjustment:	**Large sample**	<u>DF</u>: min	=	**2.23e+58**
		avg	=	**8.98e+64**
		max	=	**.**
Model F test:	**Equal FMI**	F(**6, 1.1e+64**)	=	**34.63**
		Prob > F	=	**0.0000**

pocschoolprop	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
primary	.0425925	.0069006	6.17	0.000	.0290676	.0561173
middle	.066035	.0100315	6.58	0.000	.0463736	.0856965
high	.0530181	.0082124	6.46	0.000	.0369221	.069114
lnage	-.0140522	.0029191	-4.81	0.000	-.0197736	-.0083308
lnstudents	.0035931	.0031635	1.14	0.256	-.0026072	.0097935
urban	.093397	.0085949	10.87	0.000	.0765514	.1102426
_cons	.4441036	.0351325	12.64	0.000	.3752452	.5129619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
sd(_cons)	.1788379	.0231151	.1388162	.2303981
geodistrict: Identity				
sd(_cons)	.20151	.005535	.1909485	.2126556
sd(Residual)	.1804279	.0018563	.1768261	.1841032

```
14. est store poc0

15. est save "models/3a_schpoc_controls_mi100_linear.ster", replace
    file models/3a_schpoc_controls_mi100_linear.ster saved

16. outreg2 using "tables/3a_schpoc_controls_mi100_linear.rtf", replace word label onecol addstat(Log-
  > e(p), Prob > F, r(p), R-squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > addnote("", "Sources: American Community Survey 2012-16 (U.S. Census Bureau 2018), Common Core of
  > s for State Assessments (USDE 2018), and the author's data collection.") ///
  > title("TABLE 4", "Mixed Effects Models: Effects of IBL Emphasis and Academic Proficiency on Number
  > ctitle("M0: Controls only")
    tables/3a_schpoc_controls_mi100_linear.rtf
    seeout

17. mi xeq 1: quietly mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geod
```

   m=1 data:
   -> **quietly mixed pocschoolprop primary middle high lnage lnstudents urban || state: || geodistrict:**
   -> **estat ic**

   Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	782.4776	10	-1544.955	-1477.537

          Note: N=Obs used in calculating BIC; see **[R] BIC note**.
   -> **estat icc**

   Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	.3041842	.0552218	.2077053	.4216289
geodistrict|state	.6903827	.0256898	.6379212	.7383606

```
18.
19. * 1. IBL
20. mi xeq 1 / 5: mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs |
```

   m=1 data:
   -> **mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs || state: || g**
   Note: single-variable random-effects specification in geodistrict equation; covariance structure set

   Performing EM optimization:

   Performing gradient-based optimization:

```
   Iteration 0:   log likelihood =  797.08178
   Iteration 1:   log likelihood =  797.08178
```

   Computing standard errors:

   Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

```
                                          Wald chi2(8)      =     238.24
   Log likelihood =  797.08178            Prob > chi2       =     0.0000
```

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.534172	.4771648	-5.31	0.000	-3.469397	-1.598946
primary	.0434233	.0068868	6.31	0.000	.0299253	.0569212
middle	.0646441	.010015	6.45	0.000	.0450149	.0842732
high	.0523763	.008195	6.39	0.000	.0363143	.0684382
lnage	-.0144539	.0029136	-4.96	0.000	-.0201644	-.0087434
lnstudents	.0023232	.0031653	0.73	0.463	-.0038806	.008527
urban	.0950244	.0085801	11.07	0.000	.0782077	.1118412
pctpdfs	.0581128	.0600429	0.97	0.333	-.0595691	.1757948
_cons	.4669235	.0352539	13.24	0.000	.3978272	.5360198

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0316453	.008189	.0190564	.0525507
geodistrict: Identity				
var(_cons)	.0403492	.0022199	.0362247	.0449434
var(Residual)	.0324146	.0006671	.0311331	.0337489

LR test vs. linear model: chi2(**2**) = **3372.15**   Prob > chi2 = **0.0000**

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

m=2 data:
-> **mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs || state: || g**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = **797.08178**
Iteration 1:   log likelihood = **797.08178**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood = **797.08178**

Wald chi2(**8**)   =   238.24
Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.534172	.4771648	-5.31	0.000	-3.469397	-1.598946
primary	.0434233	.0068868	6.31	0.000	.0299253	.0569212
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state: Identity				
var(_cons)	.0316453	.008189	.0190564	.0525507
geodistrict: Identity				
var(_cons)	.0403492	.0022199	.0362247	.0449434
var(Residual)	.0324146	.0006671	.0311331	.0337489

LR test vs. linear model: chi2(**2**) = 3372.15   Prob > chi2 = **0.0000**

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

m=3 data:
-> **mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs || state: || g**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = **797.08178**
Iteration 1:   log likelihood = **797.08178**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Wald chi2(**8**)   =   238.24
Log likelihood = **797.08178**   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
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geodistrict: Identity				
var(_cons)	.0403492	.0022199	.0362247	.0449434
var(Residual)	.0324146	.0006671	.0311331	.0337489

LR test vs. linear model: chi2(**2**) = 3372.15   Prob > chi2 = **0.0000**

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

m=4 data:
-> **mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs || state: || g**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =   **797.08178**
Iteration 1:   log likelihood =   **797.08178**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	**43**	**2**	**145.6**	**1,125**
geodistrict	**1,537**	**1**	**4.1**	**278**

Log likelihood = **797.08178**

Wald chi2(**8**)   =   **238.24**
Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.534172	.4771648	-5.31	0.000	-3.469397	-1.598946
primary	.0434233	.0068868	6.31	0.000	.0299253	.0569212
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lnage	-.0144539	.0029136	-4.96	0.000	-.0201644	-.0087434
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pctpdfs	.0581128	.0600429	0.97	0.333	-.0595691	.1757948
_cons	.4669235	.0352539	13.24	0.000	.3978272	.5360198

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var(_cons)	.0316453	.008189	.0190564	.0525507
geodistrict: Identity				
var(_cons)	.0403492	.0022199	.0362247	.0449434
var(Residual)	.0324146	.0006671	.0311331	.0337489

LR test vs. linear model: chi2(**2**) = **3372.15**   Prob > chi2 = **0.0000**

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

m=5 data:
-> **mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs || state: || g**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =   **797.08178**
Iteration 1:   log likelihood =   **797.08178**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood = 797.08178

Wald chi2(**8**)   =   238.24
Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.534172	.4771648	-5.31	0.000	-3.469397	-1.598946
primary	.0434233	.0068868	6.31	0.000	.0299253	.0569212
middle	.0646441	.010015	6.45	0.000	.0450149	.0842732
high	.0523763	.008195	6.39	0.000	.0363143	.0684382
lnage	-.0144539	.0029136	-4.96	0.000	-.0201644	-.0087434
lnstudents	.0023232	.0031653	0.73	0.463	-.0038806	.008527
urban	.0950244	.0085801	11.07	0.000	.0782077	.1118412
pctpdfs	.0581128	.0600429	0.97	0.333	-.0595691	.1757948
_cons	.4669235	.0352539	13.24	0.000	.3978272	.5360198

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0316453	.008189	.0190564	.0525507
geodistrict: Identity				
var(_cons)	.0403492	.0022199	.0362247	.0449434
var(Residual)	.0324146	.0006671	.0311331	.0337489

LR test vs. linear model: chi2(**2**) = 3372.15   Prob > chi2 = **0.0000**

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

21. mi est, dots post: mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctp

Imputations (**100**):
  ....10.........20.........30.........40.........50.........60.........70.........80.........9

Multiple-imputation estimates   Imputations   =   100
Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Average RVI   =   0.0000
Largest FMI   =   0.0000
DF adjustment: **Large sample**   <u>DF</u>:   min   =   1.55e+61
                                                avg   =   1.55e+61
                                                max   =   .
Model F test: **Equal FMI**   <u>F(8,   .)</u>   =   29.78
                                       Prob > F   =   0.0000

pocschoolprop	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
inquiryprop	-2.534172	.4771648	-5.31	0.000	-3.469397	-1.598946
primary	.0434233	.0068868	6.31	0.000	.0299253	.0569212
middle	.0646441	.010015	6.45	0.000	.0450149	.0842732
high	.0523763	.008195	6.39	0.000	.0363143	.0684382
lnage	-.0144539	.0029136	-4.96	0.000	-.0201644	-.0087434
lnstudents	.0023232	.0031653	0.73	0.463	-.0038806	.008527
urban	.0950244	.0085801	11.07	0.000	.0782077	.1118412
pctpdfs	.0581128	.0600429	0.97	0.333	-.0595691	.1757948
_cons	.4669235	.0352539	13.24	0.000	.3978272	.5360198

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
sd(_cons)	.1778913	.0230168	.1380448	.2292393
geodistrict: Identity				
sd(_cons)	.2008712	.0055257	.1903278	.2119987
sd(Residual)	.1800406	.0018528	.1764457	.1837088

22. est store poc1

23. est save "models/3b_schpoc_ibl_mi100_linear.ster", replace
    file models/3b_schpoc_ibl_mi100_linear.ster saved

24. outreg2 using "tables/3b_schpoc_ibl_mi100_linear.rtf", replace word label onecol addstat(Log-Likel
    > , Prob > F, r(p), R-squared, e(r2)) ///
    > alpha(.001, .01, .05) symbol(***, **, *) ///
    > ctitle("M1: IBL emphasis")
    tables/3b_schpoc_ibl_mi100_linear.rtf
    seeout

25. mi xeq 1: quietly mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpd
    > tat ic; estat icc

    m=1 data:
    -> **quietly mixed pocschoolprop inquiryprop primary middle high lnage lnstudents urban pctpdfs || sta**
    -> **estat ic**

    Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	797.0818	12	-1570.164	-1489.262

          Note: N=Obs used in calculating BIC; see **[R] BIC note**.
    -> **estat icc**

    Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	.3030893	.0551671	.206767	.4204966
geodistrict|state	.6895424	.0257046	.6370632	.7375593

```
26.
27. * 2. academic performance
28. mi xeq 1 / 5: mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readl
  > uctured)
```

m=1 data:
-> **mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readlevel mathleve**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  1262.9116
Iteration 1:   log likelihood =  1262.9116
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Wald chi2(**10**)   =   **1276.94**
Log likelihood = **1262.9116**   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall	-.3362844	.0177742	-18.92	0.000	-.3711211	-.3014477
mathall	-.0701708	.0174302	-4.03	0.000	-.1043333	-.0360083
primary	.0546472	.0064418	8.48	0.000	.0420215	.0672729
middle	.0793892	.0093635	8.48	0.000	.061037	.0977414
high	.0580678	.0077724	7.47	0.000	.0428342	.0733014
lnage	-.0088084	.0027064	-3.25	0.001	-.014113	-.0035039
lnstudents	.0175044	.0033242	5.27	0.000	.0109891	.0240197
urban	.0820826	.0079749	10.29	0.000	.066452	.0977132
readlevel	.001656	.0005418	3.06	0.002	.0005941	.0027179
mathlevel	-.0022396	.0005247	-4.27	0.000	-.003268	-.0012111
_cons	.5572051	.0366889	15.19	0.000	.4852962	.629114

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0339662	.008438	.0208732	.0552719
geodistrict: Identity				
var(_cons)	.0358065	.0019775	.0321331	.0398998
var(Residual)	.0277288	.0005732	.0266278	.0288753

LR test vs. linear model: chi2(**2**) = **4017.16**   Prob > chi2 = **0.0000**

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

m=2 data:
-> **mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readlevel mathleve**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  1274.7413
Iteration 1:   log likelihood =  1274.7413
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood = 1274.7413

Wald chi2(10)   =   1305.25
Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall	-.3514477	.0181808	-19.33	0.000	-.3870814	-.315814
mathall	-.0548098	.0178636	-3.07	0.002	-.0898217	-.0197978
primary	.0550323	.0064266	8.56	0.000	.0424364	.0676282
middle	.0792928	.00932	8.51	0.000	.0610259	.0975597
high	.0577248	.0077369	7.46	0.000	.0425609	.0728888
lnage	-.0096695	.0026985	-3.58	0.000	-.0149585	-.0043806
lnstudents	.0181578	.0033066	5.49	0.000	.011677	.0246386
urban	.0833189	.0079582	10.47	0.000	.0677211	.0989167
readlevel	.0014255	.0005726	2.49	0.013	.0003033	.0025478
mathlevel	-.0020139	.0005522	-3.65	0.000	-.0030962	-.0009316
_cons	.5544533	.0365757	15.16	0.000	.4827663	.6261403

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0340744	.008473	.0209299	.0554739
geodistrict: Identity				
var(_cons)	.0357492	.0019709	.0320876	.0398286
var(Residual)	.0276109	.0005706	.0265149	.0287523

LR test vs. linear model: chi2(2) = 4042.41   Prob > chi2 = 0.0000

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

m=3 data:
-> **mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readlevel mathleve**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  1251.608
Iteration 1:   log likelihood =  1251.608
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

```
Log likelihood =   1251.608                 Wald chi2(10)    =    1250.15
                                            Prob > chi2      =     0.0000
```

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall	-.3324302	.0184203	-18.05	0.000	-.3685332	-.2963271
mathall	-.0639562	.0184504	-3.47	0.001	-.1001183	-.027794
primary	.0548462	.0064668	8.48	0.000	.0421716	.0675208
middle	.0808676	.0093673	8.63	0.000	.062508	.0992272
high	.0573918	.0077842	7.37	0.000	.0421351	.0726486
lnage	-.0084055	.0027106	-3.10	0.002	-.0137182	-.0030929
lnstudents	.0205645	.0033143	6.20	0.000	.0140685	.0270605
urban	.0837016	.0079858	10.48	0.000	.0680497	.0993534
readlevel	.0021031	.0005546	3.79	0.000	.0010161	.0031902
mathlevel	-.0022672	.0005292	-4.28	0.000	-.0033044	-.00123
_cons	.5308725	.0365142	14.54	0.000	.4593059	.6024391

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0337679	.0084162	.0207183	.0550371
geodistrict: Identity				
var(_cons)	.0358063	.0019809	.0321269	.039907
var(Residual)	.0278508	.0005758	.0267449	.0290025

```
LR test vs. linear model: chi2(2) = 3978.85           Prob > chi2 = 0.0000
```

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

m=4 data:
-> **mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readlevel mathleve**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =   1251.8229
Iteration 1:   log likelihood =   1251.8229
```

Computing standard errors:

```
Mixed-effects ML regression                 Number of obs     =      6,259
```

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

```
                                            Wald chi2(10)    =    1249.94
Log likelihood =  1251.8229                 Prob > chi2      =     0.0000
```

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall	-.3393929	.0182946	-18.55	0.000	-.3752497	-.303536
mathall	-.0612066	.0180766	-3.39	0.001	-.0966361	-.0257771
primary	.0531856	.0064474	8.25	0.000	.0405489	.0658223
middle	.0781318	.0093567	8.35	0.000	.059793	.0964706
high	.058367	.0077893	7.49	0.000	.0431003	.0736337
lnage	-.0089518	.0027104	-3.30	0.001	-.0142641	-.0036395
lnstudents	.0163804	.0032924	4.98	0.000	.0099274	.0228333
urban	.0825129	.0079906	10.33	0.000	.0668516	.0981742
readlevel	.0010713	.0005543	1.93	0.053	-.000015	.0021577

mathlevel	-.0019678	.0005324	-3.70	0.000	-.0030114	-.0009242
_cons	.5644116	.0365786	15.43	0.000	.4927187	.6361044

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0339967	.0084538	.0208821	.0553479
geodistrict: Identity				
var(_cons)	.0360449	.0019897	.0323488	.0401634
var(Residual)	.0278108	.000575	.0267063	.0289609

LR test vs. linear model: chi2(**2**) = 3998.95   Prob > chi2 = **0.0000**

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

m=5 data:
-> **mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readlevel mathleve**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = 1265.7697
Iteration 1:   log likelihood = 1265.7697

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Wald chi2(**10**)   =   1283.62
Log likelihood = **1265.7697**   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
readall	-.3411464	.0181107	-18.84	0.000	-.3766426	-.3056502
mathall	-.0635879	.017812	-3.57	0.000	-.0984988	-.0286769
primary	.0537074	.0064439	8.33	0.000	.0410776	.0663372
middle	.0790262	.009337	8.46	0.000	.0607261	.0973263
high	.0581604	.007745	7.51	0.000	.0429805	.0733402
lnage	-.0083829	.0027063	-3.10	0.002	-.0136871	-.0030787
lnstudents	.0163714	.0032715	5.00	0.000	.0099593	.0227835
urban	.0838821	.0079697	10.53	0.000	.0682618	.0995023
readlevel	.0005639	.0005419	1.04	0.298	-.0004982	.001626
mathlevel	-.0014818	.0005253	-2.82	0.005	-.0025113	-.0004522
_cons	.5612075	.0363746	15.43	0.000	.4899146	.6325004

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0336392	.0083695	.0206569	.0547804
geodistrict: Identity				
var(_cons)	.0358333	.0019771	.0321604	.0399257
var(Residual)	.0276961	.0005725	.0265965	.0288411

LR test vs. linear model: chi2(**2**) = **4006.33**   Prob > chi2 = **0.0000**

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

29. mi est, dots post: mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban
> unstructured)

Imputations (**100**):
.........10.........20.........30.........40.........50.........60.........70.........80.........9

Multiple-imputation estimates   Imputations   =   100
Mixed-effects ML regression   Number of obs   =   6,259

| Group Variable | No. of Groups | Observations per Group | | |
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

		Average RVI	=	0.0939
		Largest FMI	=	0.2667
DF adjustment:	**Large sample**	DF: min	=	1,402.41
		avg	=	1658705.34
		max	=	1.94e+07
Model F test:	**Equal FMI**	F(10,77048.7)	=	113.11
		Prob > F	=	0.0000

pocschoolprop	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
readall	-.343558	.0211548	-16.24	0.000	-.3850564	-.3020596
mathall	-.0594687	.0207544	-2.87	0.004	-.1001806	-.0187569
primary	.0543975	.0064974	8.37	0.000	.0416628	.0671322
middle	.0791809	.0094447	8.38	0.000	.0606697	.0976922
high	.0569043	.0078822	7.22	0.000	.0414553	.0723533
lnage	-.0088247	.0027366	-3.22	0.001	-.0141884	-.003461
lnstudents	.0183216	.0035043	5.23	0.000	.0114524	.0251908
urban	.0834216	.0080163	10.41	0.000	.0677098	.0991333
readlevel	.0012606	.0006489	1.94	0.052	-.0000121	.0025334
mathlevel	-.0018491	.0006253	-2.96	0.003	-.0030756	-.0006225
_cons	.550728	.0372116	14.80	0.000	.4777933	.6236627

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
sd(_cons)	.1835128	.0228622	.143755	.2342662
geodistrict: Identity				
sd(_cons)	.189551	.0052482	.1795389	.2001215
sd(Residual)	.1664754	.0017468	.1630866	.1699347

```
30. est store poc2

31. est save "models/3c_schpoc_acad_mi100_linear.ster", replace
    file models/3c_schpoc_acad_mi100_linear.ster saved

32. outreg2 using "tables/3c_schpoc_acad_mi100_linear.rtf", replace word label onecol addstat(Log-Like
   > ), Prob > F, r(p), R-squared, e(r2)) ///
   > alpha(.001, .01, .05) symbol(***, **, *) ///
   > ctitle("M2: Academic proficiency")
   tables/3c_schpoc_acad_mi100_linear.rtf
   seeout

33. mi xeq 1: quietly mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban r
   > nstructured); estat ic; estat icc
```

   m=1 data:
   -> **quietly mixed pocschoolprop readall mathall primary middle high lnage lnstudents urban readlevel**
   > **ed)**
   -> **estat ic**

   Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	1262.912	14	-2497.823	-2403.438

         Note: N=Obs used in calculating BIC; see **[R] BIC note**.
   -> **estat icc**

   Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	.3483659	.056901	.2464737	.4663134
geodistrict|state	.7156064	.0257707	.6625288	.7633182

```
34.
35. * 3. fully specified
36. mi xeq 1 / 5: mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents
   > istrict: , cov(unstructured)
```

   m=1 data:
   -> **mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents urban pctpdf**
   > **v(unstructured)**
   Note: single-variable random-effects specification in geodistrict equation; covariance structure set

   Performing EM optimization:

   Performing gradient-based optimization:

   Iteration 0:   log likelihood = **1282.4174**
   Iteration 1:   log likelihood = **1282.4174**

   Computing standard errors:

   Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

                                             Wald chi2(**12**)   =   **1323.70**
   Log likelihood = **1282.4174**   Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.72385	.4415817	-6.17	0.000	-3.589334	-1.858366
readall	-.3364087	.0177165	-18.99	0.000	-.3711324	-.301685
mathall	-.0716491	.0173766	-4.12	0.000	-.1057065	-.0375916
primary	.0556297	.0064228	8.66	0.000	.0430412	.0682182
middle	.0780711	.0093372	8.36	0.000	.0597707	.0963716
high	.0569234	.0077491	7.35	0.000	.0417353	.0721114
lnage	-.0091868	.0026984	-3.40	0.001	-.0144755	-.0038981
lnstudents	.0163611	.0033183	4.93	0.000	.0098574	.0228649
urban	.0836056	.0079562	10.51	0.000	.0680118	.0991994
pctpdfs	.0535197	.0554735	0.96	0.335	-.0552063	.1622456
readlevel	.0014753	.0005408	2.73	0.006	.0004153	.0025352
mathlevel	-.0020342	.000524	-3.88	0.000	-.0030613	-.0010071
_cons	.5809523	.0367155	15.82	0.000	.5089913	.6529133

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0335518	.0083404	.0206121	.0546148
geodistrict: Identity				
var(_cons)	.035693	.0019711	.0320314	.0397732
var(Residual)	.027541	.0005695	.0264472	.0286801

LR test vs. linear model: chi2(**2**) = 3955.57   Prob > chi2 = **0.0000**

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

m=2 data:
-> **mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents urban pctpdf**
> v(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = 1294.8095
Iteration 1:   log likelihood = 1294.8095

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

                                               Wald chi2(**12**)   =   1353.55
Log likelihood = 1294.8095   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.743629	.4402686	-6.23	0.000	-3.60654	-1.880719
readall	-.3516183	.0181195	-19.41	0.000	-.3871319	-.3161046
mathall	-.0562454	.0178052	-3.16	0.002	-.0911429	-.021348
primary	.0560178	.006407	8.74	0.000	.0434603	.0685753
middle	.0779127	.0092927	8.38	0.000	.0596994	.096126
high	.0566746	.0077126	7.35	0.000	.0415583	.071791
lnage	-.0100628	.0026902	-3.74	0.000	-.0153354	-.0047901
lnstudents	.0169501	.0033009	5.14	0.000	.0104806	.0234197
urban	.0848536	.0079389	10.69	0.000	.0692935	.1004136

pctpdfs	.0620016	.0553555	1.12	0.263	-.0464932	.1704964
readlevel	.0012738	.0005712	2.23	0.026	.0001544	.0023933
mathlevel	-.0018455	.000551	-3.35	0.001	-.0029253	-.0007656
_cons	.5787217	.036622	15.80	0.000	.5069439	.6504995

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0337042	.0083874	.0206947	.054892
geodistrict: Identity				
var(_cons)	.0356385	.0019646	.0319886	.0397049
var(Residual)	.0274174	.0005668	.0263287	.0285511

LR test vs. linear model: chi2(**2**) = 3981.75   Prob > chi2 = **0.0000**

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

m=3 data:
-> **mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents urban pctpdf**
> **v(unstructured)**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =   **1269.8055**
Iteration 1:   log likelihood =   **1269.8055**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

                                                Wald chi2(**12**)   =   1293.59
Log likelihood = **1269.8055**   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.619924	.4426762	-5.92	0.000	-3.487554	-1.752295
readall	-.3314826	.0183674	-18.05	0.000	-.3674819	-.2954832
mathall	-.0662027	.018402	-3.60	0.000	-.10227	-.0301354
primary	.0558016	.0064491	8.65	0.000	.0431616	.0684416
middle	.07944	.0093431	8.50	0.000	.0611279	.0977522
high	.0563448	.0077623	7.26	0.000	.041131	.0715586
lnage	-.0087914	.0027031	-3.25	0.001	-.0140894	-.0034933
lnstudents	.0193186	.0033106	5.84	0.000	.01283	.0258072
urban	.0851739	.0079688	10.69	0.000	.0695553	.1007924
pctpdfs	.0633556	.0556007	1.14	0.255	-.0456198	.172331
readlevel	.0018955	.000554	3.42	0.001	.0008096	.0029814
mathlevel	-.0020574	.0005287	-3.89	0.000	-.0030936	-.0010211
_cons	.5544315	.0365774	15.16	0.000	.4827411	.6261219

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.033408	.0083337	.0204888	.0544734
geodistrict: Identity				
var(_cons)	.0357075	.0019752	.0320387	.0397965
var(Residual)	.0276736	.0005723	.0265744	.0288183

LR test vs. linear model: chi2(**2**) = **3918.22**   Prob > chi2 = **0.0000**

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

m=4 data:
-> **mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents urban pctpdf**
> **v(unstructured)**
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = **1269.2155**
Iteration 1:   log likelihood = **1269.2155**

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   **6,259**

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Log likelihood = **1269.2155**

Wald chi2(**12**)   =   **1291.52**
Prob > chi2   =   **0.0000**

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.562979	.4426232	-5.79	0.000	-3.430505	-1.695454
readall	-.3385283	.0182422	-18.56	0.000	-.3742824	-.3027743
mathall	-.0628003	.0180263	-3.48	0.000	-.0981312	-.0274694
primary	.0541054	.0064308	8.41	0.000	.0415013	.0667095
middle	.0767681	.009334	8.22	0.000	.0584739	.0950623
high	.0573045	.0077688	7.38	0.000	.0420778	.0725311
lnage	-.0093434	.0027034	-3.46	0.001	-.014642	-.0040447
lnstudents	.0151933	.003289	4.62	0.000	.008747	.0216395
urban	.0839418	.0079742	10.53	0.000	.0683126	.099571
pctpdfs	.0607341	.0555843	1.09	0.275	-.0482091	.1696774
readlevel	.0008597	.0005539	1.55	0.121	-.0002258	.0019453
mathlevel	-.0017458	.0005322	-3.28	0.001	-.002789	-.0007027
_cons	.5870826	.0366355	16.02	0.000	.5152783	.6588869

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0336301	.008369	.0206492	.0547715
geodistrict: Identity				
var(_cons)	.0359304	.0019835	.0322458	.040036
var(Residual)	.0276447	.0005717	.0265466	.0287882

LR test vs. linear model: chi2(**2**) = **3936.04**   Prob > chi2 = **0.0000**

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

m=5 data:
-> **mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents urban pctpdf**
> v(unstructured)
Note: single-variable random-effects specification in geodistrict equation; covariance structure set

Performing EM optimization:

Performing gradient-based optimization:

```
Iteration 0:   log likelihood =  1284.8154
Iteration 1:   log likelihood =  1284.8154
```

Computing standard errors:

Mixed-effects ML regression   Number of obs   =   6,259

Group Variable	No. of Groups	Observations per Group		
		Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

Wald chi2(**12**)   =   1329.32
Log likelihood = **1284.8154**   Prob > chi2   =   0.0000

pocschoolprop	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
inquiryprop	-2.669877	.4414919	-6.05	0.000	-3.535185	-1.804569
readall	-.3403987	.018054	-18.85	0.000	-.3757839	-.3050136
mathall	-.065599	.0177589	-3.69	0.000	-.1004059	-.0307922
primary	.0547288	.0064256	8.52	0.000	.0421349	.0673228
middle	.0776959	.0093111	8.34	0.000	.0594465	.0959454
high	.0569674	.0077226	7.38	0.000	.0418314	.0721035
lnage	-.0087517	.0026984	-3.24	0.001	-.0140404	-.003463
lnstudents	.015274	.0032658	4.68	0.000	.0088731	.0216749
urban	.085372	.0079516	10.74	0.000	.0697871	.1009568
pctpdfs	.0668947	.0554499	1.21	0.228	-.0417852	.1755746
readlevel	.0003815	.000541	0.71	0.481	-.0006788	.0014418
mathlevel	-.0012635	.0005248	-2.41	0.016	-.002292	-.0002349
_cons	.5839856	.0364064	16.04	0.000	.5126304	.6553408

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
var(_cons)	.0332555	.0082804	.0204136	.0541762
geodistrict: Identity				
var(_cons)	.0357261	.0019709	.0320647	.0398056
var(Residual)	.0275123	.0005688	.0264197	.0286501

LR test vs. linear model: chi2(**2**) = 3944.41   Prob > chi2 = **0.0000**

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

37. mi est, dots post: mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstu
    > geodistrict: , cov(unstructured)

   Imputations (**100**):
         ....10.........20.........30.........40.........50.........60.........70.........80.........9

   Multiple-imputation estimates   Imputations   =   **100**
   Mixed-effects ML regression   Number of obs =   **6,259**

   _____
Group Variable	No. of Groups	Observations per Group Minimum	Average	Maximum
state	43	2	145.6	1,125
geodistrict	1,537	1	4.1	278

                                              Average RVI   =   0.0849
                                              Largest FMI   =   0.2678
   DF adjustment: **Large sample**   DF: min   =   1,391.64
                                                     avg   = 1378016.30
                                                     max   =   1.76e+07
   Model F test: **Equal FMI**   F(12,120870.1) =   99.13
                                              Prob > F   =   0.0000

pocschoolprop	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
inquiryprop	-2.661569	.4459713	-5.97	0.000	-3.535661	-1.787477
readall	-.3423924	.0211061	-16.22	0.000	-.3837957	-.3009892
mathall	-.0619504	.0207248	-2.99	0.003	-.1026049	-.021296
primary	.0554033	.0064803	8.55	0.000	.0427022	.0681044
middle	.0778991	.0094179	8.27	0.000	.0594403	.0963579
high	.0558004	.0078617	7.10	0.000	.0403916	.0712092
lnage	-.0092052	.0027286	-3.37	0.001	-.0145532	-.0038571
lnstudents	.0171862	.0034972	4.91	0.000	.010331	.0240414
urban	.0849285	.0079982	10.62	0.000	.0692522	.1006048
pctpdfs	.0545472	.0560364	0.97	0.330	-.0552828	.1643771
readlevel	.001086	.000647	1.68	0.093	-.0001831	.0023552
mathlevel	-.0016531	.0006257	-2.64	0.008	-.0028804	-.0004257
_cons	.5738294	.0372253	15.42	0.000	.5008681	.6467907

Random-effects Parameters	Estimate	Std. Err.	[95% Conf. Interval]	
state: Identity				
sd(_cons)	.1824739	.0227509	.1429133	.2329856
geodistrict: Identity				
sd(_cons)	.1892492	.0052392	.1792542	.1998016
sd(Residual)	.1659366	.0017423	.1625567	.1693868

38. est store poc3

39. est save "models/3d_schpoc_full_mi100_linear.ster", replace
    file models/3d_schpoc_full_mi100_linear.ster saved

40. outreg2 using "tables/3d_schpoc_full_mi100_linear.rtf", replace word label onecol addstat(Log-Like
>), Prob > F, r(p), R-squared, e(r2)) ///
> alpha(.001, .01, .05) symbol(***, **, *) ///
> ctitle("M3: Fully specified")
<u>tables/3d_schpoc_full_mi100_linear.rtf</u>
<u>seeout</u>

41. mi xeq 1: quietly mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstud
> geodistrict: , cov(unstructured); estat ic; estat icc

m=1 data:
-> **quietly mixed pocschoolprop inquiryprop readall mathall primary middle high lnage lnstudents urba**
> **ct: , cov(unstructured)**
-> **estat ic**

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	**6,259**	.	**1282.417**	**16**	**-2532.835**	**-2424.966**

Note: N=Obs used in calculating BIC; see **<u>[R] BIC note</u>**.
-> **estat icc**

Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	**.3466602**	**.0568072**	**.2450206**	**.4645206**
geodistrict|state	**.7154437**	**.0256927**	**.6625369**	**.7630227**

42.
43. log close
name: **<unnamed>**
log: **/hdir/0/jhaber/Projects/charter_data/stats_team/logs/results_3_schpoc_mi100_linear_0429**
log type: **smcl**
closed on: **29 Apr 2019, 14:27:56**