Statistics/Data Analysis

```
      name:  <unnamed>
       log:  /hdir/0/jhaber/Projects/charter_data/stats_team/logs/results_1_ibl_mi100_linear_042919.
  log type:  smcl
 opened on:  29 Apr 2019, 12:58:09

1 . ** ------------------------------------------------------
2 . ** MIXED-EFFECTS NBREG MODELS PT 1: RACE & POVERTY -> IBL
3 . ** ------------------------------------------------------
4 .
5 . * Sequence of models:
6 . * 0. controls only
7 . * 1. school poverty
8 . * 2. school race
9 . * 3. school district poverty
10. * 4. school district race
11.
12.
13. * 0. controls only
14. mi est, dots post: mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname

  Imputations (100):
    .........10.........20.........30.........40.........50--Break--
  r(1);

  end of do-file

  --Break--
  r(1);

15. do "/90days/jhaber/STATATMP/SD10630.000000"

16. * 0. controls only
17. mi xeq 1/ 5: mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , co

  m=1 data:
  -> mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unstructur
  Note: single-variable random-effects specification in cmoname equation; covariance structure set to

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  23984.351
  Iteration 1:   log likelihood =  23984.351

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      6,259
  Group variable: cmoname                         Number of groups  =        391

                                                  Obs per group:
                                                                min =          1
                                                                avg =       16.0
                                                                max =      3,989

                                                  Wald chi2(7)      =     135.23
  Log likelihood =  23984.351                     Prob > chi2       =     0.0000
```

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0003899	.0001785	2.18	0.029	.0000401	.0007397
middle	-.0006957	.0002639	-2.64	0.008	-.001213	-.0001785
high	-.0004731	.0002139	-2.21	0.027	-.0008924	-.0000538
lnage	-.0001701	.0000734	-2.32	0.021	-.000314	-.0000262
lnstudents	-.0007249	.0000763	-9.50	0.000	-.0008744	-.0005754
urban	.0001436	.000139	1.03	0.301	-.0001288	.0004161
pctpdfs	-.0013927	.0014729	-0.95	0.344	-.0042796	.0014941
_cons	.0102128	.0005232	19.52	0.000	.0091872	.0112383

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000127	1.43e-06	.0000101	.0000158
var(Residual)	.0000256	4.73e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **599.08** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unstructur**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23984.351**
Iteration 1: log likelihood = **23984.351**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **6,259**
Group variable: **cmoname** — Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**7**) = **135.23**
Log likelihood = **23984.351** — Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0003899	.0001785	2.18	0.029	.0000401	.0007397
middle	-.0006957	.0002639	-2.64	0.008	-.001213	-.0001785
high	-.0004731	.0002139	-2.21	0.027	-.0008924	-.0000538
lnage	-.0001701	.0000734	-2.32	0.021	-.000314	-.0000262
lnstudents	-.0007249	.0000763	-9.50	0.000	-.0008744	-.0005754
urban	.0001436	.000139	1.03	0.301	-.0001288	.0004161
pctpdfs	-.0013927	.0014729	-0.95	0.344	-.0042796	.0014941
_cons	.0102128	.0005232	19.52	0.000	.0091872	.0112383

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000127	1.43e-06	.0000101	.0000158
var(Residual)	.0000256	4.73e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **599.08** Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unstructur**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23984.351**
Iteration 1: log likelihood = **23984.351**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(7) = 135.23
Log likelihood = **23984.351** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0003899	.0001785	2.18	0.029	.0000401	.0007397
middle	-.0006957	.0002639	-2.64	0.008	-.001213	-.0001785
high	-.0004731	.0002139	-2.21	0.027	-.0008924	-.0000538
lnage	-.0001701	.0000734	-2.32	0.021	-.000314	-.0000262
lnstudents	-.0007249	.0000763	-9.50	0.000	-.0008744	-.0005754
urban	.0001436	.000139	1.03	0.301	-.0001288	.0004161
pctpdfs	-.0013927	.0014729	-0.95	0.344	-.0042796	.0014941
_cons	.0102128	.0005232	19.52	0.000	.0091872	.0112383

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000127	1.43e-06	.0000101	.0000158
var(Residual)	.0000256	4.73e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **599.08** — Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unstructur**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23984.351**
Iteration 1: log likelihood = **23984.351**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(7) = 135.23
Log likelihood = **23984.351** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0003899	.0001785	2.18	0.029	.0000401	.0007397
middle	-.0006957	.0002639	-2.64	0.008	-.001213	-.0001785
high	-.0004731	.0002139	-2.21	0.027	-.0008924	-.0000538
lnage	-.0001701	.0000734	-2.32	0.021	-.000314	-.0000262
lnstudents	-.0007249	.0000763	-9.50	0.000	-.0008744	-.0005754
urban	.0001436	.000139	1.03	0.301	-.0001288	.0004161
pctpdfs	-.0013927	.0014729	-0.95	0.344	-.0042796	.0014941
_cons	.0102128	.0005232	19.52	0.000	.0091872	.0112383

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000127	1.43e-06	.0000101	.0000158
var(Residual)	.0000256	4.73e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **599.08** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unstructur**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23984.351**
Iteration 1: log likelihood = **23984.351**

Computing standard errors:

Mixed-effects ML regression Number of obs = **6,259**
Group variable: **cmoname** Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**7**) = **135.23**
Log likelihood = **23984.351** Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0003899	.0001785	2.18	0.029	.0000401	.0007397
middle	-.0006957	.0002639	-2.64	0.008	-.001213	-.0001785
high	-.0004731	.0002139	-2.21	0.027	-.0008924	-.0000538
lnage	-.0001701	.0000734	-2.32	0.021	-.000314	-.0000262
lnstudents	-.0007249	.0000763	-9.50	0.000	-.0008744	-.0005754
urban	.0001436	.000139	1.03	0.301	-.0001288	.0004161
pctpdfs	-.0013927	.0014729	-0.95	0.344	-.0042796	.0014941
_cons	.0102128	.0005232	19.52	0.000	.0091872	.0112383

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000127	1.43e-06	.0000101	.0000158
var(Residual)	.0000256	4.73e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **599.08** Prob >= chibar2 = **0.0000**

18. mi est, dots post: mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname

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: **cmoname**

Number of groups = **391**
Obs per group:
min = **1**
avg = **16.0**
max = **3,989**
Average RVI = **0.0000**
Largest FMI = **0.0000**

DF adjustment: **Large sample**

DF: min = **2.31e+64**
avg = **2.31e+64**
max = **.**

Model F test: **Equal FMI**

F(**7, 2.9e+66**) = **19.32**
Prob > F = **0.0000**

inquiryprop	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
primary	.0003899	.0001785	2.18	0.029	.0000401	.0007397
middle	-.0006957	.0002639	-2.64	0.008	-.001213	-.0001785
high	-.0004731	.0002139	-2.21	0.027	-.0008924	-.0000538
lnage	-.0001701	.0000734	-2.32	0.021	-.000314	-.0000262
lnstudents	-.0007249	.0000763	-9.50	0.000	-.0008744	-.0005754
urban	.0001436	.000139	1.03	0.301	-.0001288	.0004161
pctpdfs	-.0013927	.0014729	-0.95	0.344	-.0042796	.0014941
_cons	.0102128	.0005232	19.52	0.000	.0091872	.0112383

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.0035574	.0002009	.0031845	.0039738
sd(Residual)	.005064	.0000467	.0049734	.0051563

19. * estat ic
20. * fitstat
21. * ereturn list
22. est store ibl0

23. est save "models/1a_ibl_controls_mi100_linear.ster", replace
file models/1a_ibl_controls_mi100_linear.ster saved

24. outreg2 using "tables/1a_ibl_controls_mi100_linear.rtf", replace word label onecol addstat(Log-Lik
> 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
> ection.") ///
> title("TABLE 2", "Mixed Effects Models: Effects of Poverty & Race on IBL Emphasis") ///
> ctitle("M0: Controls only")
tables/1a_ibl_controls_mi100_linear.rtf
seeout

25. mi xeq 1: quietly mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname:

m=1 data:
-> **quietly mixed inquiryprop primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(un**
-> **estat ic**

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	23984.35	10	-47948.7	-47881.28

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

-> **estat icc**

Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf.	Interval]
cmoname	.3304225	.0256688	.2821806	.3825169

```
26.
27. * 1. school poverty
28. mi xeq 1 / 5: mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpdfs |

  m=1 data:
  -> mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpdfs || cmoname: ,
  Note: single-variable random-effects specification in cmoname equation; covariance structure set to

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  23991.432
  Iteration 1:   log likelihood =  23991.432

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      6,259
  Group variable: cmoname                         Number of groups  =        391

                                                  Obs per group:
                                                                min =          1
                                                                avg =       16.0
                                                                max =      3,989

                                                  Wald chi2(8)      =     149.70
  Log likelihood =  23991.432                     Prob > chi2       =     0.0000
```

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-8.42e-06	2.24e-06	-3.77	0.000	-.0000128	-4.04e-06
primary	.000386	.0001783	2.17	0.030	.0000366	.0007354
middle	-.0006661	.0002637	-2.53	0.012	-.001183	-.0001492
high	-.0004711	.0002137	-2.20	0.027	-.0008899	-.0000522
lnage	-.0001657	.0000733	-2.26	0.024	-.0003095	-.000022
lnstudents	-.0007391	.0000763	-9.69	0.000	-.0008886	-.0005896
urban	.0002516	.0001418	1.77	0.076	-.0000263	.0005295
pctpdfs	-.0014267	.0014713	-0.97	0.332	-.0043104	.0014569
_cons	.0107486	.0005416	19.85	0.000	.009687	.0118101

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.71e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = 599.98 Prob >= chibar2 = 0.0000

```
  m=2 data:
  -> mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpdfs || cmoname: ,
  Note: single-variable random-effects specification in cmoname equation; covariance structure set to

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  23991.793
  Iteration 1:   log likelihood =  23991.793

  Computing standard errors:
```

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 150.43
Log likelihood = **23991.793** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-8.61e-06	2.23e-06	-3.86	0.000	-.000013	-4.24e-06
primary	.0003858	.0001783	2.16	0.030	.0000364	.0007352
middle	-.0006649	.0002637	-2.52	0.012	-.0011817	-.000148
high	-.0004711	.0002137	-2.20	0.027	-.0008899	-.0000523
lnage	-.0001661	.0000733	-2.27	0.023	-.0003098	-.0000224
lnstudents	-.0007366	.0000762	-9.66	0.000	-.000886	-.0005871
urban	.0002489	.0001415	1.76	0.079	-.0000285	.0005262
pctpdfs	-.0014733	.0014713	-1.00	0.317	-.004357	.0014105
_cons	.010749	.0005407	19.88	0.000	.0096893	.0118088

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.71e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **599.59** — Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpdfs || cmoname: ,**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23990.749**
Iteration 1: log likelihood = **23990.749**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 148.30
Log likelihood = **23990.749** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-7.98e-06	2.23e-06	-3.58	0.000	-.0000123	-3.61e-06
primary	.000381	.0001783	2.14	0.033	.0000315	.0007304
middle	-.00067	.0002637	-2.54	0.011	-.0011869	-.0001531
high	-.0004738	.0002137	-2.22	0.027	-.0008927	-.000055
lnage	-.0001654	.0000733	-2.26	0.024	-.0003092	-.0000217
lnstudents	-.000737	.0000763	-9.66	0.000	-.0008865	-.0005875
urban	.0002461	.0001418	1.74	0.083	-.0000318	.000524
pctpdfs	-.0014325	.0014715	-0.97	0.330	-.0043166	.0014515
_cons	.0107129	.000541	19.80	0.000	.0096526	.0117732

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **599.23** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpdfs || cmoname: ,**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23992.928**
Iteration 1: log likelihood = **23992.928**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **6,259**
Group variable: **cmoname** — Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**8**) = **152.76**
Log likelihood = **23992.928** — Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-9.25e-06	2.23e-06	-4.14	0.000	-.0000136	-4.88e-06
primary	.0003817	.0001782	2.14	0.032	.0000324	.0007311
middle	-.0006662	.0002636	-2.53	0.012	-.0011829	-.0001495
high	-.0004736	.0002136	-2.22	0.027	-.0008924	-.0000549
lnage	-.0001658	.0000733	-2.26	0.024	-.0003095	-.0000221
lnstudents	-.000739	.0000762	-9.69	0.000	-.0008885	-.0005896
urban	.000261	.0001417	1.84	0.065	-.0000167	.0005387
pctpdfs	-.0014588	.001471	-0.99	0.321	-.004342	.0014243
_cons	.010796	.000541	19.95	0.000	.0097356	.0118565

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.71e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **600.32** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpdfs || cmoname: ,**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23993.872**
Iteration 1: log likelihood = **23993.872**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 154.69
Log likelihood = 23993.872 — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-9.72e-06	2.23e-06	-4.37	0.000	-.0000141	-5.36e-06
primary	.0003825	.0001782	2.15	0.032	.0000332	.0007318
middle	-.0006642	.0002636	-2.52	0.012	-.0011808	-.0001476
high	-.0004753	.0002136	-2.23	0.026	-.000894	-.0000566
lnage	-.0001666	.0000733	-2.27	0.023	-.0003103	-.000023
lnstudents	-.0007396	.0000762	-9.70	0.000	-.000889	-.0005902
urban	.0002682	.0001417	1.89	0.058	-9.53e-06	.0005459
pctpdfs	-.0014491	.0014708	-0.99	0.324	-.0043317	.0014336
_cons	.0108219	.0005407	20.02	0.000	.0097623	.0118816

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.71e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = 599.77 — Prob >= chibar2 = 0.0000

29. mi est, dots post: mixed inquiryprop povertyschool 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: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Average RVI = 0.0067
Largest FMI = 0.0674

DF adjustment: **Large sample** — DF: min = 21,851.35
avg = 3.77e+09
max = 1.79e+10

Model F test: **Equal FMI** — F(8, 9.5e+06) = 18.77
Prob > F = 0.0000

inquiryprop	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
povertyschool	-8.91e-06	2.31e-06	-3.86	0.000	-.0000134	-4.38e-06
primary	.000384	.0001783	2.15	0.031	.0000346	.0007334
middle	-.0006641	.0002637	-2.52	0.012	-.0011809	-.0001472
high	-.000473	.0002137	-2.21	0.027	-.0008918	-.0000542
lnage	-.0001658	.0000733	-2.26	0.024	-.0003096	-.0000221
lnstudents	-.0007389	.0000763	-9.69	0.000	-.0008884	-.0005894
urban	.0002567	.0001419	1.81	0.070	-.0000215	.0005348
pctpdfs	-.00144	.0014712	-0.98	0.328	-.0043235	.0014435
_cons	.0107743	.0005424	19.86	0.000	.0097111	.0118375

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	**.003547**	**.0002002**	**.0031756**	**.0039619**
sd(Residual)	**.0050579**	**.0000466**	**.0049673**	**.00515**

```
30. est store ibl1

31. est save "models/1b_ibl_povsch_mi100_linear.ster", replace
  file models/1b_ibl_povsch_mi100_linear.ster saved

32. outreg2 using "tables/1b_ibl_povsch_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: School poverty")
  tables/1b_ibl_povsch_mi100_linear.rtf
  seeout

33. mi xeq 1: quietly mixed inquiryprop povertyschool primary middle high lnage lnstudents urban pctpd
  > icc

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

  Akaike's information criterion and Bayesian information criterion
```

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	**6,259**	**.**	**23991.43**	**11**	**-47960.86**	**-47886.7**

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

  Residual intraclass correlation
```

Level	ICC	Std. Err.	[95% Conf.	Interval]
cmoname	**.3298664**	**.0256206**	**.2817187**	**.3818683**

```
34.
35. * 2. school race
36. mi xeq 1 / 5: mixed inquiryprop pocschoolprop primary middle high lnage lnstudents urban pctpdfs |

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

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  24016.662
  Iteration 1:   log likelihood =  24016.662

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      6,259
  Group variable: cmoname                         Number of groups  =        391

                                                  Obs per group:
                                                                min =          1
                                                                avg =       16.0
                                                                max =      3,989
```

Wald chi2(8) = 201.48
Log likelihood = 24016.662 Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	-.0019789	.0002454	-8.06	0.000	-.00246	-.0014979
primary	.000527	.0001784	2.95	0.003	.0001773	.0008766
middle	-.0004644	.0002641	-1.76	0.079	-.0009821	.0000533
high	-.0003272	.0002136	-1.53	0.126	-.0007459	.0000914
lnage	-.000227	.0000734	-3.09	0.002	-.0003708	-.0000831
lnstudents	-.000637	.0000767	-8.31	0.000	-.0007873	-.0004868
urban	.0006221	.0001505	4.13	0.000	.0003271	.0009172
pctpdfs	-.0014535	.0014656	-0.99	0.321	-.0043261	.0014191
_cons	.0109028	.0005269	20.69	0.000	.0098702	.0119354

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity var(_cons)	.0000122	1.39e-06	9.78e-06	.0000153
var(Residual)	.0000254	4.68e-07	.0000245	.0000263

LR test vs. linear model: chibar2(01) = 574.68 Prob >= chibar2 = 0.0000

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = 24016.662
Iteration 1: log likelihood = 24016.662

Computing standard errors:

Mixed-effects ML regression Number of obs = 6,259
Group variable: **cmoname** Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 201.48
Log likelihood = 24016.662 Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	-.0019789	.0002454	-8.06	0.000	-.00246	-.0014979
primary	.000527	.0001784	2.95	0.003	.0001773	.0008766
middle	-.0004644	.0002641	-1.76	0.079	-.0009821	.0000533
high	-.0003272	.0002136	-1.53	0.126	-.0007459	.0000914
lnage	-.000227	.0000734	-3.09	0.002	-.0003708	-.0000831
lnstudents	-.000637	.0000767	-8.31	0.000	-.0007873	-.0004868
urban	.0006221	.0001505	4.13	0.000	.0003271	.0009172
pctpdfs	-.0014535	.0014656	-0.99	0.321	-.0043261	.0014191
_cons	.0109028	.0005269	20.69	0.000	.0098702	.0119354

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0000122**	**1.39e-06**	**9.78e-06**	**.0000153**
var(Residual)	**.0000254**	**4.68e-07**	**.0000245**	**.0000263**

LR test vs. linear model: chibar2(01) = **574.68** Prob >= chibar2 = **0.0000**

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **24016.662**
Iteration 1: log likelihood = **24016.662**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **6,259**
Group variable: **cmoname** — Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**8**) = **201.48**
Log likelihood = **24016.662** — Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	-.0019789	.0002454	-8.06	0.000	-.00246	-.0014979
primary	.000527	.0001784	2.95	0.003	.0001773	.0008766
middle	-.0004644	.0002641	-1.76	0.079	-.0009821	.0000533
high	-.0003272	.0002136	-1.53	0.126	-.0007459	.0000914
lnage	-.000227	.0000734	-3.09	0.002	-.0003708	-.0000831
lnstudents	-.000637	.0000767	-8.31	0.000	-.0007873	-.0004868
urban	.0006221	.0001505	4.13	0.000	.0003271	.0009172
pctpdfs	-.0014535	.0014656	-0.99	0.321	-.0043261	.0014191
_cons	.0109028	.0005269	20.69	0.000	.0098702	.0119354

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0000122**	**1.39e-06**	**9.78e-06**	**.0000153**
var(Residual)	**.0000254**	**4.68e-07**	**.0000245**	**.0000263**

LR test vs. linear model: chibar2(01) = **574.68** Prob >= chibar2 = **0.0000**

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **24016.662**
Iteration 1: log likelihood = **24016.662**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 201.48
Log likelihood = **24016.662** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	-.0019789	.0002454	-8.06	0.000	-.00246	-.0014979
primary	.000527	.0001784	2.95	0.003	.0001773	.0008766
middle	-.0004644	.0002641	-1.76	0.079	-.0009821	.0000533
high	-.0003272	.0002136	-1.53	0.126	-.0007459	.0000914
lnage	-.000227	.0000734	-3.09	0.002	-.0003708	-.0000831
lnstudents	-.000637	.0000767	-8.31	0.000	-.0007873	-.0004868
urban	.0006221	.0001505	4.13	0.000	.0003271	.0009172
pctpdfs	-.0014535	.0014656	-0.99	0.321	-.0043261	.0014191
_cons	.0109028	.0005269	20.69	0.000	.0098702	.0119354

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000122	1.39e-06	9.78e-06	.0000153
var(Residual)	.0000254	4.68e-07	.0000245	.0000263

LR test vs. linear model: chibar2(01) = **574.68** — Prob >= chibar2 = **0.0000**

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **24016.662**
Iteration 1: log likelihood = **24016.662**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 201.48
Log likelihood = **24016.662** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	-.0019789	.0002454	-8.06	0.000	-.00246	-.0014979
primary	.000527	.0001784	2.95	0.003	.0001773	.0008766
middle	-.0004644	.0002641	-1.76	0.079	-.0009821	.0000533
high	-.0003272	.0002136	-1.53	0.126	-.0007459	.0000914
lnage	-.000227	.0000734	-3.09	0.002	-.0003708	-.0000831
lnstudents	-.000637	.0000767	-8.31	0.000	-.0007873	-.0004868
urban	.0006221	.0001505	4.13	0.000	.0003271	.0009172
pctpdfs	-.0014535	.0014656	-0.99	0.321	-.0043261	.0014191
_cons	.0109028	.0005269	20.69	0.000	.0098702	.0119354

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0000122**	**1.39e-06**	**9.78e-06**	**.0000153**
var(Residual)	**.0000254**	**4.68e-07**	**.0000245**	**.0000263**

LR test vs. linear model: chibar2(01) = **574.68** Prob >= chibar2 = **0.0000**

37. mi est, dots post: mixed inquiryprop pocschoolprop 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: **cmoname**		Number of groups	= **391**
		Obs per group:	
		min	= **1**
		avg	= **16.0**
		max	= **3,989**
		Average RVI	= **0.0000**
		Largest FMI	= **0.0000**
DF adjustment: **Large sample**		DF: min	= **1.60e+57**
		avg	= **1.19e+61**
		max	= **.**
Model F test: **Equal FMI**		F(**8, 9.0e+63**)	= **25.18**
		Prob > F	= **0.0000**

inquiryprop	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pocschoolprop	**-.0019789**	**.0002454**	**-8.06**	**0.000**	**-.00246**	**-.0014979**
primary	**.000527**	**.0001784**	**2.95**	**0.003**	**.0001773**	**.0008766**
middle	**-.0004644**	**.0002641**	**-1.76**	**0.079**	**-.0009821**	**.0000533**
high	**-.0003272**	**.0002136**	**-1.53**	**0.126**	**-.0007459**	**.0000914**
lnage	**-.000227**	**.0000734**	**-3.09**	**0.002**	**-.0003708**	**-.0000831**
lnstudents	**-.000637**	**.0000767**	**-8.31**	**0.000**	**-.0007873**	**-.0004868**
urban	**.0006221**	**.0001505**	**4.13**	**0.000**	**.0003271**	**.0009172**
pctpdfs	**-.0014535**	**.0014656**	**-0.99**	**0.321**	**-.0043261**	**.0014191**
_cons	**.0109028**	**.0005269**	**20.69**	**0.000**	**.0098702**	**.0119354**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	**.0034958**	**.0001988**	**.0031271**	**.0039079**
sd(Residual)	**.0050404**	**.0000464**	**.0049502**	**.0051322**

38. est store ibl2

39. est save "models/1c_ibl_pocsch_mi100_linear.ster", replace
file models/1c_ibl_pocsch_mi100_linear.ster saved

```
40. outreg2 using "tables/1c_ibl_pocsch_mi100_linear.rtf", replace word label onecol addstat(Log-Likel
  > , Prob > F, r(p), R-squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > ctitle("M2: School race")
  tables/1c_ibl_pocsch_mi100_linear.rtf
  seeout

41. mi xeq 1: quietly mixed inquiryprop pocschoolprop primary middle high lnage lnstudents urban pctpd
  > icc

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

  Akaike's information criterion and Bayesian information criterion
```

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	24016.66	11	-48011.32	-47937.16

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

  Residual intraclass correlation
```

Level	ICC	Std. Err.	[95% Conf.	Interval]
cmoname	.3247843	.0256073	.2767314	.3768339

```
42.
43. * 3. school district poverty
44. mi xeq 1 / 5: mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs || cm

  m=1 data:
  -> mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(
  Note: single-variable random-effects specification in cmoname equation; covariance structure set to

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  23990.409
  Iteration 1:   log likelihood =  23990.409

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      6,259
  Group variable: cmoname                         Number of groups  =        391

                                                  Obs per group:
                                                                min =          1
                                                                avg =       16.0
                                                                max =      3,989

                                                  Wald chi2(8)      =     147.58
  Log likelihood =  23990.409                     Prob > chi2       =     0.0000
```

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.0035087	.0010073	-3.48	0.000	-.0054829	-.0015344
primary	.0003827	.0001783	2.15	0.032	.0000332	.0007322
middle	-.0007082	.0002637	-2.69	0.007	-.001225	-.0001914
high	-.0004605	.0002138	-2.15	0.031	-.0008795	-.0000416
lnage	-.0001676	.0000733	-2.29	0.022	-.0003114	-.0000239
lnstudents	-.0007169	.0000762	-9.40	0.000	-.0008663	-.0005674
urban	.0003254	.0001484	2.19	0.028	.0000346	.0006162
pctpdfs	-.001426	.0014716	-0.97	0.333	-.0043103	.0014583
_cons	.0106084	.0005348	19.84	0.000	.0095603	.0116565

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000125	1.42e-06	.00001	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **598.52** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23990.625**
Iteration 1: log likelihood = **23990.625**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **6,259**
Group variable: **cmoname** — Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**8**) = **148.02**
Log likelihood = **23990.625** — Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.0035704	.0010072	-3.54	0.000	-.0055444	-.0015963
primary	.0003825	.0001783	2.14	0.032	.000033	.000732
middle	-.000708	.0002637	-2.69	0.007	-.0012247	-.0001912
high	-.0004607	.0002138	-2.16	0.031	-.0008796	-.0000417
lnage	-.0001676	.0000733	-2.29	0.022	-.0003114	-.0000239
lnstudents	-.0007173	.0000762	-9.41	0.000	-.0008667	-.0005679
urban	.0003288	.0001484	2.22	0.027	.0000379	.0006196
pctpdfs	-.0014268	.0014715	-0.97	0.332	-.0043109	.0014574
_cons	.0106181	.0005349	19.85	0.000	.0095697	.0116664

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000125	1.42e-06	.00001	.0000156
var(Residual)	.0000256	4.72e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **598.32** Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23990.942**
Iteration 1: log likelihood = **23990.942**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 148.67
Log likelihood = **23990.942** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.0036526	.0010053	-3.63	0.000	-.0056229	-.0016823
primary	.000383	.0001783	2.15	0.032	.0000335	.0007324
middle	-.0007087	.0002636	-2.69	0.007	-.0012254	-.0001919
high	-.000461	.0002137	-2.16	0.031	-.0008799	-.000042
lnage	-.0001676	.0000733	-2.29	0.022	-.0003113	-.0000239
lnstudents	-.0007172	.0000762	-9.41	0.000	-.0008666	-.0005678
urban	.0003331	.0001484	2.25	0.025	.0000423	.0006239
pctpdfs	-.0014259	.0014715	-0.97	0.333	-.00431	.0014581
_cons	.0106284	.0005349	19.87	0.000	.0095801	.0116767

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000125	1.42e-06	.00001	.0000156
var(Residual)	.0000256	4.72e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **598.32** — Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23990.566**
Iteration 1: log likelihood = **23990.566**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 147.90
Log likelihood = **23990.566** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.0035533	.0010071	-3.53	0.000	-.0055272	-.0015794
primary	.0003833	.0001783	2.15	0.032	.0000338	.0007328
middle	-.0007079	.0002637	-2.68	0.007	-.0012247	-.0001911
high	-.0004606	.0002138	-2.15	0.031	-.0008795	-.0000416
lnage	-.000168	.0000733	-2.29	0.022	-.0003118	-.0000243
lnstudents	-.0007169	.0000762	-9.40	0.000	-.0008663	-.0005675
urban	.0003275	.0001483	2.21	0.027	.0000367	.0006182
pctpdfs	-.0014278	.0014716	-0.97	0.332	-.004312	.0014564
_cons	.0106138	.0005348	19.85	0.000	.0095657	.0116619

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000125	1.42e-06	.00001	.0000156
var(Residual)	.0000256	4.72e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **598.36** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23990.8**
Iteration 1: log likelihood = **23990.8**

Computing standard errors:

Mixed-effects ML regression Number of obs = **6,259**
Group variable: **cmoname** Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**8**) = **148.38**
Log likelihood = **23990.8** Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.0036141	.0010056	-3.59	0.000	-.005585	-.0016432
primary	.0003836	.0001783	2.15	0.031	.0000342	.0007331
middle	-.000708	.0002636	-2.69	0.007	-.0012248	-.0001913
high	-.0004597	.0002138	-2.15	0.032	-.0008786	-.0000407
lnage	-.0001677	.0000733	-2.29	0.022	-.0003114	-.0000239
lnstudents	-.0007167	.0000762	-9.40	0.000	-.0008662	-.0005673
urban	.00033	.0001483	2.23	0.026	.0000394	.0006205
pctpdfs	-.0014263	.0014715	-0.97	0.332	-.0043104	.0014578
_cons	.0106202	.0005347	19.86	0.000	.0095723	.0116681

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000125	1.42e-06	.00001	.0000156
var(Residual)	.0000256	4.72e-07	.0000247	.0000265

LR test vs. linear model: chibar2(01) = **598.21** Prob >= chibar2 = **0.0000**

```
45. mi est, dots post: mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs

  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: cmoname                         Number of groups  =        391
                                                  Obs per group:
                                                               min =          1
                                                               avg =       16.0
                                                               max =      3,989
                                                  Average RVI       =     0.0011
                                                  Largest FMI       =     0.0124
  DF adjustment:   Large sample                   DF:     min       = 646,789.97
                                                          avg       =   3.36e+12
                                                          max       =   3.24e+13
  Model F test:       Equal FMI                   F(   8, 3.2e+08)  =      18.38
                                                  Prob > F          =     0.0000
```

inquiryprop	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
povertysd	-.0034623	.0010133	-3.42	0.001	-.0054483	-.0014763
primary	.0003829	.0001783	2.15	0.032	.0000334	.0007324
middle	-.0007085	.0002637	-2.69	0.007	-.0012253	-.0001918
high	-.0004609	.0002138	-2.16	0.031	-.0008799	-.0000419
lnage	-.0001681	.0000733	-2.29	0.022	-.0003118	-.0000243
lnstudents	-.0007172	.0000762	-9.41	0.000	-.0008666	-.0005678
urban	.0003228	.0001485	2.17	0.030	.0000318	.0006138
pctpdfs	-.0014239	.0014716	-0.97	0.333	-.0043083	.0014604
_cons	.0106049	.000535	19.82	0.000	.0095563	.0116535

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity sd(_cons)	.0035412	.0002004	.0031695	.0039565
sd(Residual)	.00506	.0000466	.0049694	.0051522

```
46. est store ibl3

47. est save "models/1d_ibl_povsd_mi100_linear.ster", replace
  file models/1d_ibl_povsd_mi100_linear.ster saved

48. outreg2 using "tables/1d_ibl_povsd_mi100_linear.rtf", replace word label onecol addstat(Log-Likeli
  >  Prob > F, r(p), R-squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > ctitle("M3: School district poverty")
  tables/1d_ibl_povsd_mi100_linear.rtf
  seeout

49. mi xeq 1: quietly mixed inquiryprop povertysd primary middle high lnage lnstudents urban pctpdfs |

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

  Akaike's information criterion and Bayesian information criterion
```

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	23990.41	11	-47958.82	-47884.66

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

Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf.	Interval]
cmoname	.328822	.0256441	.2806466	.3808885

```
50.
51. * 4. school district race
52. mi xeq 1 / 5: mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmonam

  m=1 data:
  -> mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unst
  Note: single-variable random-effects specification in cmoname equation; covariance structure set to

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  23987.916
  Iteration 1:   log likelihood =  23987.916

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      6,259
  Group variable: cmoname                         Number of groups  =        391

                                                  Obs per group:
                                                                min =          1
                                                                avg =       16.0
                                                                max =      3,989

                                                  Wald chi2(8)      =     142.49
  Log likelihood =  23987.916                     Prob > chi2       =     0.0000
```

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0010423	.0003902	-2.67	0.008	-.001807	-.0002776
primary	.0004174	.0001787	2.34	0.019	.0000672	.0007676
middle	-.0006506	.0002643	-2.46	0.014	-.0011686	-.0001326
high	-.0004571	.0002139	-2.14	0.033	-.0008763	-.0000379
lnage	-.0001851	.0000736	-2.52	0.012	-.0003293	-.0000409
lnstudents	-.0006903	.0000773	-8.93	0.000	-.0008418	-.0005387
urban	.0002946	.00015	1.96	0.050	5.87e-07	.0005886
pctpdfs	-.001439	.0014722	-0.98	0.328	-.0043245	.0014465
_cons	.0103214	.0005244	19.68	0.000	.0092937	.0113491

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = 598.63 Prob >= chibar2 = 0.0000

```
  m=2 data:
  -> mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unst
  Note: single-variable random-effects specification in cmoname equation; covariance structure set to

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  23988.771
  Iteration 1:   log likelihood =  23988.771
```

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 144.23
Log likelihood = **23988.771** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0011629	.0003909	-2.97	0.003	-.0019291	-.0003968
primary	.0004201	.0001786	2.35	0.019	.00007	.0007703
middle	-.0006453	.0002643	-2.44	0.015	-.0011632	-.0001273
high	-.0004552	.0002139	-2.13	0.033	-.0008744	-.000036
lnage	-.0001868	.0000736	-2.54	0.011	-.000331	-.0000426
lnstudents	-.0006864	.0000773	-8.88	0.000	-.0008379	-.0005349
urban	.0003114	.0001499	2.08	0.038	.0000175	.0006053
pctpdfs	-.0014455	.001472	-0.98	0.326	-.0043306	.0014397
_cons	.0103348	.0005243	19.71	0.000	.0093072	.0113624

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **598.75** — Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unst**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23988.695**
Iteration 1: log likelihood = **23988.695**

Computing standard errors:

Mixed-effects ML regression — Number of obs = 6,259
Group variable: **cmoname** — Number of groups = 391

Obs per group:
min = 1
avg = 16.0
max = 3,989

Wald chi2(8) = 144.08
Log likelihood = **23988.695** — Prob > chi2 = 0.0000

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0011519	.0003906	-2.95	0.003	-.0019174	-.0003864
primary	.0004203	.0001787	2.35	0.019	.0000701	.0007704
middle	-.0006462	.0002643	-2.45	0.014	-.0011641	-.0001283
high	-.0004554	.0002139	-2.13	0.033	-.0008746	-.0000363
lnage	-.0001867	.0000736	-2.54	0.011	-.0003309	-.0000425
lnstudents	-.0006868	.0000773	-8.88	0.000	-.0008383	-.0005352
urban	.0003099	.0001499	2.07	0.039	.000016	.0006038
pctpdfs	-.0014443	.0014721	-0.98	0.327	-.0043295	.0014409
_cons	.010333	.0005243	19.71	0.000	.0093054	.0113606

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **598.69** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unst**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23988.484**
Iteration 1: log likelihood = **23988.484**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **6,259**
Group variable: **cmoname** — Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**8**) = **143.65**
Log likelihood = **23988.484** — Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0011234	.0003905	-2.88	0.004	-.0018888	-.000358
primary	.0004197	.0001787	2.35	0.019	.0000695	.0007698
middle	-.0006465	.0002643	-2.45	0.014	-.0011645	-.0001285
high	-.0004556	.0002139	-2.13	0.033	-.0008748	-.0000363
lnage	-.0001863	.0000736	-2.53	0.011	-.0003305	-.000042
lnstudents	-.000688	.0000773	-8.90	0.000	-.0008395	-.0005365
urban	.0003058	.0001499	2.04	0.041	.0000119	.0005997
pctpdfs	-.0014444	.0014721	-0.98	0.327	-.0043297	.0014409
_cons	.0103315	.0005243	19.70	0.000	.0093038	.0113592

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **598.59** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmoname: , cov(unst**
Note: single-variable random-effects specification in cmoname equation; covariance structure set to

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **23988.633**
Iteration 1: log likelihood = **23988.633**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **6,259**
Group variable: **cmoname** — Number of groups = **391**

Obs per group:
min = **1**
avg = **16.0**
max = **3,989**

Wald chi2(**8**) = **143.95**
Log likelihood = **23988.633** — Prob > chi2 = **0.0000**

inquiryprop	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0011432	.0003904	-2.93	0.003	-.0019085	-.000378
primary	.000421	.0001787	2.36	0.018	.0000708	.0007712
middle	-.0006467	.0002643	-2.45	0.014	-.0011646	-.0001288
high	-.0004545	.0002139	-2.13	0.034	-.0008738	-.0000353
lnage	-.0001868	.0000736	-2.54	0.011	-.000331	-.0000426
lnstudents	-.0006868	.0000773	-8.88	0.000	-.0008384	-.0005353
urban	.0003081	.0001499	2.06	0.040	.0000144	.0006018
pctpdfs	-.0014442	.0014721	-0.98	0.327	-.0043294	.001441
_cons	.0103309	.0005243	19.71	0.000	.0093034	.0113585

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0000126	1.42e-06	.0000101	.0000157
var(Residual)	.0000256	4.72e-07	.0000247	.0000266

LR test vs. linear model: chibar2(01) = **598.79** — Prob >= chibar2 = **0.0000**

53. mi est, dots post: mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || c

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: **cmoname** — Number of groups = **391**
Obs per group:
min = **1**
avg = **16.0**
max = **3,989**
Average RVI = **0.0015**
Largest FMI = **0.0159**
DF adjustment: **Large sample** — DF: min = **391,306.23**
avg = **1.03e+12**
max = **9.56e+12**
Model F test: **Equal FMI** — F(**8, 1.9e+08**) = **17.90**
Prob > F = **0.0000**

inquiryprop	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pocsd	-.001111	.0003938	-2.82	0.005	-.0018827	-.0003392
primary	.0004191	.0001787	2.35	0.019	.000069	.0007693
middle	-.0006481	.0002643	-2.45	0.014	-.001166	-.0001301
high	-.0004558	.0002139	-2.13	0.033	-.000875	-.0000365
lnage	-.0001863	.0000736	-2.53	0.011	-.0003305	-.0000421
lnstudents	-.000688	.0000773	-8.90	0.000	-.0008396	-.0005364
urban	.0003039	.0001501	2.02	0.043	9.67e-06	.000598
pctpdfs	-.0014421	.0014721	-0.98	0.327	-.0043274	.0014432
_cons	.0103289	.0005244	19.70	0.000	.0093012	.0113566

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.0035451	.0002006	.003173	.0039608
sd(Residual)	.0050613	.0000466	.0049707	.0051535

```
54. est store ibl4

55. est save "models/1e_ibl_pocsd_mi100_linear.ster", replace
  file models/1e_ibl_pocsd_mi100_linear.ster saved

56. outreg2 using "tables/1e_ibl_pocsd_mi100_linear.rtf", replace word label onecol addstat(Log-Likeli
  >  Prob > F, r(p), R-squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > ctitle("M4: School district race")
  tables/1e_ibl_pocsd_mi100_linear.rtf
  seeout

57. mi xeq 1: quietly mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cm

  m=1 data:
  -> quietly mixed inquiryprop pocsd primary middle high lnage lnstudents urban pctpdfs || cmoname: ,
  -> estat ic

  Akaike's information criterion and Bayesian information criterion
```

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	6,259	.	23987.92	11	-47953.83	-47879.67

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

  Residual intraclass correlation
```

Level	ICC	Std. Err.	[95% Conf.	Interval]
cmoname	.3291317	.0256575	.280928	.3812215

```
58.
59. log close
       name:  <unnamed>
        log:  /hdir/0/jhaber/Projects/charter_data/stats_team/logs/results_1_ibl_mi100_linear_042919.
   log type:  smcl
  closed on:  29 Apr 2019, 13:25:01
```