Statistics/Data Analysis

```
      name:  <unnamed>
       log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/results_1_
> ibl_mi100_linear_100919.smcl
  log type:  smcl
 opened on:   9 Oct 2019, 21:38:43

1 .
2 . ** -------------------------------------------------
3 . ** MIXED-EFFECTS LINEAR MODELS PT 1: RACE & POVERTY -> IBL
4 . ** -------------------------------------------------
5 .
6 . * Sequence of models:
7 . * 0. controls only
8 . * 1. school poverty
9 . * 2. school race
10. * 3. school district poverty
11. * 4. school district race
12.
13.
14. * 0. controls only
15. mi xeq 1 / 5: mixed inquiry_full_log primary middle high lnage lnstudents urban pctp
  > dfs || cmoname: ,

  m=1 data:
  -> mixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || cmonam
  > e: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  4520.6808
  Iteration 1:   log likelihood =  4520.6808

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      5,881
  Group variable: cmoname                         Number of groups  =        378

                                                  Obs per group:
                                                                min =          1
                                                                avg =       15.6
                                                                max =      3,800

                                                  Wald chi2(7)      =      80.09
  Log likelihood =  4520.6808                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0006581	.0039212	0.17	0.867	-.0070273	.0083434
middle	-.0177095	.005861	-3.02	0.003	-.0291969	-.0062221
high	-.0130374	.0046998	-2.77	0.006	-.0222488	-.003826
lnage	-.0039606	.0016172	-2.45	0.014	-.0071303	-.0007909
lnstudents	.0092941	.001689	5.50	0.000	.0059838	.0126043
urban	.0012498	.0030707	0.41	0.684	-.0047686	.0072683
pctpdfs	.1205208	.031947	3.77	0.000	.0579058	.1831357
_cons	.0633826	.011546	5.49	0.000	.0407528	.0860124

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058104	.000654	.0046602	.0072446
var(Residual)	.0117272	.0002228	.0112986	.0121721

LR test vs. linear model: chibar2(01) = **680.00** Prob >= chibar2 = **0.0000**

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4520.6808**
Iteration 1: log likelihood = **4520.6808**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**7**) = **80.09**
Log likelihood = **4520.6808** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	**.0006581**	**.0039212**	**0.17**	**0.867**	**-.0070273**	**.0083434**
middle	**-.0177095**	**.005861**	**-3.02**	**0.003**	**-.0291969**	**-.0062221**
high	**-.0130374**	**.0046998**	**-2.77**	**0.006**	**-.0222488**	**-.003826**
lnage	**-.0039606**	**.0016172**	**-2.45**	**0.014**	**-.0071303**	**-.0007909**
lnstudents	**.0092941**	**.001689**	**5.50**	**0.000**	**.0059838**	**.0126043**
urban	**.0012498**	**.0030707**	**0.41**	**0.684**	**-.0047686**	**.0072683**
pctpdfs	**.1205208**	**.031947**	**3.77**	**0.000**	**.0579058**	**.1831357**
_cons	**.0633826**	**.011546**	**5.49**	**0.000**	**.0407528**	**.0860124**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0058104**	**.000654**	**.0046602**	**.0072446**
var(Residual)	**.0117272**	**.0002228**	**.0112986**	**.0121721**

LR test vs. linear model: chibar2(01) = **680.00** Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || cmonam**
> e: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4520.6808**
Iteration 1: log likelihood = **4520.6808**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**7**) = **80.09**
Log likelihood = **4520.6808** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0006581	.0039212	0.17	0.867	-.0070273	.0083434
middle	-.0177095	.005861	-3.02	0.003	-.0291969	-.0062221
high	-.0130374	.0046998	-2.77	0.006	-.0222488	-.003826
lnage	-.0039606	.0016172	-2.45	0.014	-.0071303	-.0007909
lnstudents	.0092941	.001689	5.50	0.000	.0059838	.0126043
urban	.0012498	.0030707	0.41	0.684	-.0047686	.0072683
pctpdfs	.1205208	.031947	3.77	0.000	.0579058	.1831357
_cons	.0633826	.011546	5.49	0.000	.0407528	.0860124

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058104	.000654	.0046602	.0072446
var(Residual)	.0117272	.0002228	.0112986	.0121721

LR test vs. linear model: chibar2(01) = **680.00** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || cmonam**
> e: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4520.6808**
Iteration 1: log likelihood = **4520.6808**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**7**) = **80.09**
Log likelihood = **4520.6808** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	.0006581	.0039212	0.17	0.867	-.0070273	.0083434
middle	-.0177095	.005861	-3.02	0.003	-.0291969	-.0062221
high	-.0130374	.0046998	-2.77	0.006	-.0222488	-.003826
lnage	-.0039606	.0016172	-2.45	0.014	-.0071303	-.0007909
lnstudents	.0092941	.001689	5.50	0.000	.0059838	.0126043
urban	.0012498	.0030707	0.41	0.684	-.0047686	.0072683
pctpdfs	.1205208	.031947	3.77	0.000	.0579058	.1831357
_cons	.0633826	.011546	5.49	0.000	.0407528	.0860124

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058104	.000654	.0046602	.0072446
var(Residual)	.0117272	.0002228	.0112986	.0121721

LR test vs. linear model: chibar2(01) = **680.00** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || cmonam**
> e: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4520.6808**
Iteration 1: log likelihood = **4520.6808**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**7**) = **80.09**
Log likelihood = **4520.6808** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
primary	**.0006581**	**.0039212**	**0.17**	**0.867**	**-.0070273**	**.0083434**
middle	**-.0177095**	**.005861**	**-3.02**	**0.003**	**-.0291969**	**-.0062221**
high	**-.0130374**	**.0046998**	**-2.77**	**0.006**	**-.0222488**	**-.003826**
lnage	**-.0039606**	**.0016172**	**-2.45**	**0.014**	**-.0071303**	**-.0007909**
lnstudents	**.0092941**	**.001689**	**5.50**	**0.000**	**.0059838**	**.0126043**
urban	**.0012498**	**.0030707**	**0.41**	**0.684**	**-.0047686**	**.0072683**
pctpdfs	**.1205208**	**.031947**	**3.77**	**0.000**	**.0579058**	**.1831357**
_cons	**.0633826**	**.011546**	**5.49**	**0.000**	**.0407528**	**.0860124**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0058104**	**.000654**	**.0046602**	**.0072446**
var(Residual)	**.0117272**	**.0002228**	**.0112986**	**.0121721**

LR test vs. linear model: chibar2(01) = **680.00** Prob >= chibar2 = **0.0000**

16. mi est, dots post: mixed inquiry_full_log primary middle high lnage lnstudents urban
> pctpdfs || cmoname: ,

Imputations (**100**):
.....10.....20.....30.....40.....50.....60.....70.....
> ..80.....90.....100 done

Multiple-imputation estimates — Imputations = **100**
Mixed-effects ML regression — Number of obs = **5,881**

Group variable: **cmoname** — Number of groups = **378**
Obs per group:
min = **1**
avg = **15.6**
max = **3,800**
Average RVI = **0.0000**
Largest FMI = **0.0000**
DF adjustment: **Large sample** — DF: min = **.**
avg = **.**
max = **.**
Model F test: **Equal FMI** — F(7, .) = **11.44**
Prob > F = **0.0000**

inquiry_full_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
primary	.0006581	.0039212	0.17	0.867	-.0070273	.0083434
middle	-.0177095	.005861	-3.02	0.003	-.0291969	-.0062221
high	-.0130374	.0046998	-2.77	0.006	-.0222488	-.003826
lnage	-.0039606	.0016172	-2.45	0.014	-.0071303	-.0007909
lnstudents	.0092941	.001689	5.50	0.000	.0059838	.0126043
urban	.0012498	.0030707	0.41	0.684	-.0047686	.0072683
pctpdfs	.1205208	.031947	3.77	0.000	.0579058	.1831357
_cons	.0633826	.011546	5.49	0.000	.0407528	.0860124

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.0762261	.0042898	.0682654	.0851152
sd(Residual)	.1082923	.0010286	.1062949	.1103272

```
17. * estat ic
18. * fitstat
19. * ereturn list
20. est store ibl0

21. est save "models/1a_ibl_controls_mi100_linear.ster", replace
  (note: file models/1a_ibl_controls_mi100_linear.ster not found)
  file models/1a_ibl_controls_mi100_linear.ster could not be opened
  r(603);

  end of do-file

  r(603);

22. estat ic
  likelihood information not found in last estimation results
  r(321);

23. fitstat
  -fitstat- does not work with the last model estimated.

24. ereturn list

  scalars:
              e(small) =  0
           e(nrgroups) =  1
               e(ll_c) =  .
               e(k_rs) =  2
                  e(N) =  5881
               e(df_c) =  .
               e(k_rc) =  0
                 e(rc) =  0
                  e(k) =  10
              e(k_res) =  0
          e(converged) =  1
          e(se_failed) =  0
                e(k_r) =  2
                 e(ll) =  .
             e(mecmd) =  0
            e(chi2_c) =  .
                 e(ic) =  1
           e(nostderr) =  0
               e(df_m) =  .
                  e(p) =  .
                e(p_c) =  .
                e(k_f) =  8
               e(rank) =  .
               e(chi2) =  .
         e(_dfnote_mi) =  1
         e(mcerror_mi) =  0
```

```
          e(N_min_mi) =  5881
          e(N_max_mi) =  5881
        e(cilevel_mi) =  95
          e(k_exp_mi) =  0
       e(reparm_rc_mi) =  .
      e(k_eq_model_mi) =  3
          e(caller_mi) =  15.1
          e(df_min_mi) =  .
          e(df_avg_mi) =  .
          e(df_max_mi) =  .
        e(fmi_max_mi) =  0
        e(rvi_avg_mi) =  0
              e(p_mi) =  1.31801492967e-14
           e(ufmi_mi) =  0
       e(rvi_avg_F_mi) =  0
              e(F_mi) =  11.44200196486363
          e(df_m_mi) =  7
          e(df_r_mi) =  .
          e(df_c_mi) =  .
             e(N_mi) =  5881
             e(M_mi) =  100
      e(esampvary_mi) =  0

macros:
                e(cmd) : "mixed"
        e(rstructure) : "independent"
        e(rstructlab) : "Independent"
             e(iccok) : "ok"
             e(redim) : "1"
          e(optmetric) : "matsqrt"
  e(datasignaturevars) : "inquiry_full_log primary middle high lnage lnstudents urban
> pc.."
           e(vartypes) : "Identity"
              e(title) : "Mixed-effects ML regression"
          e(stripe_se) : "inquiry_full_log:primary inquiry_full_log:middle inquiry_ful
> l_.."
           e(chi2type) : "Wald"
          e(ml_method) : "d0"
             e(depvar) : "inquiry_full_log"
                e(opt) : "moptimize"
          e(crittype) : "log likelihood"
            e(revars) : "_cons"
             e(ivars) : "cmoname"
            e(method) : "ML"
         e(technique) : "nr"
           e(cmdline) : "mixed inquiry_full_log primary middle high lnage lnstudents
> ur.."
      e(datasignature) : "5881:9:4198825010:113231440"
               e(m_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
           e(m_est_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
              e(rc_mi) : "0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
> 0 .."
       e(dfadjust_mi) : "Large sample"
       e(modeltest_mi) : "Equal FMI"
           e(title_mi) : "Multiple-imputation estimates"
          e(prefix_mi) : "mi estimate"
             e(cmd_mi) : "mixed"
            e(ecmd_mi) : "mixed"
                 e(mi) : "mi"
         e(cmdline_mi) : "mi estimate , dots post: mixed inquiry_full_log primary midd
> le.."
       e(_sortseed_mi) : "1427711305XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
    e(_sortseedcmd_mi) : "1116579609XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
          e(properties) : "b V"
```

matrices:

e(b) :	**1 x 10**
e(V) :	**10 x 10**
e(b_sd) :	**1 x 10**
e(noomit) :	**1 x 8**
e(b_pclass) :	**1 x 10**
e(g_min) :	**1 x 1**
e(se_sd) :	**1 x 10**
e(g_max) :	**1 x 1**
e(g_avg) :	**1 x 1**
e(N_g) :	**1 x 1**
e(V_sd) :	**10 x 10**
e(re_mi) :	**1 x 10**
e(fmi_mi) :	**1 x 10**
e(pise_mi) :	**1 x 10**
e(rvi_mi) :	**1 x 10**
e(df_mi) :	**1 x 10**
e(W_mi) :	**10 x 10**
e(B_mi) :	**10 x 10**
e(V_mi) :	**10 x 10**
e(b_mi) :	**1 x 10**
e(N_g_mi) :	**1 x 1**
e(g_min_mi) :	**1 x 1**
e(g_avg_mi) :	**1 x 1**
e(g_max_mi) :	**1 x 1**

```
25. do "/90days/jhaber/STATATMP/SD09282.000000"

26. est save "model_estimates/1a_ibl_controls_mi100_linear.ster", replace
  (note: file model_estimates/1a_ibl_controls_mi100_linear.ster not found)
  file model_estimates/1a_ibl_controls_mi100_linear.ster saved

27. outreg2 using "tables/1a_ibl_controls_mi100_linear.rtf", replace word label onecol a
  > ddstat(Log-Likelihood, e(ll), chi-square test, r(chi2), F-test, 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), C
  > ommon Core of Data 2015-16 (NCES 2018), and the author's data collection.") ///
  > title("TABLE 2", "Mixed Effects Models: Effects of Poverty & Race on IBL Emphasis")
  > ///
  > ctitle("M0: Controls only")
  (note: file tables/1a_ibl_controls_mi100_linear.rtf not found)
  file tables/1a_ibl_controls_mi100_linear.rtf could not be opened
  r(603);

  end of do-file

  r(603);

28. do "/90days/jhaber/STATATMP/SD09282.000000"

29. est save "model_estimates/1a_ibl_controls_mi100_linear.ster", replace
  file model_estimates/1a_ibl_controls_mi100_linear.ster saved

30. outreg2 using "tables/1a_ibl_controls_mi100_linear.rtf", replace word label onecol a
  > ddstat(Log-Likelihood, e(ll), chi-square test, r(chi2), F-test, 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), C
  > ommon Core of Data 2015-16 (NCES 2018), and the author's data collection.") ///
  > title("TABLE 2", "Mixed Effects Models: Effects of Poverty & Race on IBL Emphasis")
  > ///
  > ctitle("M0: Controls only")
  (note: file tables/1a_ibl_controls_mi100_linear.rtf not found)
  tables/1a_ibl_controls_mi100_linear.rtf
  seeout
```

```
31.
  end of do-file

32. seeout using tables/1a_ibl_controls_mi100_linear.txt, label
  1a_ibl_controls_mi100_linear.txt"'" invalid name
  r(198);

33. seeout using tables/1a_ibl_controls_mi100_linear.rtf, label
  1a_ibl_controls_mi100_linear.rtf"'" invalid name
  r(198);

34. do "/90days/jhaber/STATATMP/SD09282.000000"

35. * 1. school poverty
36. mi xeq 1 / 5: mixed inquiry_full_log povertyschool primary middle high lnage lnstude
  > nts urban pctpdfs || cmoname: ,

  m=1 data:
  -> mixed inquiry_full_log povertyschool primary middle high lnage lnstudents urban pct
  > pdfs || cmoname: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  4597.8483
  Iteration 1:   log likelihood =  4597.8483

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      5,881
  Group variable: cmoname                         Number of groups  =        378

                                                  Obs per group:
                                                                min =          1
                                                                avg =       15.6
                                                                max =      3,800

                                                  Wald chi2(8)      =     238.62
  Log likelihood =  4597.8483                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-.0006092	.0000487	-12.51	0.000	-.0007047	-.0005138
primary	.0001196	.0038694	0.03	0.975	-.0074644	.0077036
middle	-.0156299	.0057857	-2.70	0.007	-.0269697	-.00429
high	-.013472	.0046378	-2.90	0.004	-.022562	-.004382
lnage	-.0036059	.0015962	-2.26	0.024	-.0067344	-.0004774
lnstudents	.0079959	.0016699	4.79	0.000	.0047229	.0112689
urban	.0089887	.0030924	2.91	0.004	.0029278	.0150497
pctpdfs	.1177769	.0315249	3.74	0.000	.0559892	.1795645
_cons	.1037391	.0118657	8.74	0.000	.0804827	.1269954

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058675	.0006542	.0047157	.0073005
var(Residual)	.0114065	.0002167	.0109895	.0118392

```
  LR test vs. linear model: chibar2(01) = 676.88        Prob >= chibar2 = 0.0000

  m=2 data:
  -> mixed inquiry_full_log povertyschool primary middle high lnage lnstudents urban pct
  > pdfs || cmoname: ,

  Performing EM optimization:
```

```
Performing gradient-based optimization:

Iteration 0:   log likelihood =   4594.905
Iteration 1:   log likelihood =   4594.905

Computing standard errors:

Mixed-effects ML regression                     Number of obs     =      5,881
Group variable: cmoname                         Number of groups  =        378

                                                Obs per group:
                                                              min =          1
                                                              avg =       15.6
                                                              max =      3,800

                                                Wald chi2(8)      =     232.49
Log likelihood =   4594.905                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-.0005959	.0000486	-12.27	0.000	-.0006911	-.0005006
primary	-.0001137	.0038717	-0.03	0.977	-.0077021	.0074747
middle	-.0158524	.0057883	-2.74	0.006	-.0271973	-.0045075
high	-.0135111	.0046402	-2.91	0.004	-.0226058	-.0044164
lnage	-.0035904	.001597	-2.25	0.025	-.0067206	-.0004603
lnstudents	.008067	.0016706	4.83	0.000	.0047927	.0113412
urban	.0090318	.0030971	2.92	0.004	.0029615	.0151021
pctpdfs	.118619	.0315407	3.76	0.000	.0568003	.1804377
_cons	.1024721	.0118593	8.64	0.000	.0792282	.1257159

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058611	.0006535	.0047106	.0072926
var(Residual)	.0114189	.000217	.0110015	.0118521

```
LR test vs. linear model: chibar2(01) = 678.03        Prob >= chibar2 = 0.0000

m=3 data:
-> mixed inquiry_full_log povertyschool primary middle high lnage lnstudents urban pct
> pdfs || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =  4596.9505
Iteration 1:   log likelihood =  4596.9505

Computing standard errors:

Mixed-effects ML regression                     Number of obs     =      5,881
Group variable: cmoname                         Number of groups  =        378

                                                Obs per group:
                                                              min =          1
                                                              avg =       15.6
                                                              max =      3,800

                                                Wald chi2(8)      =     236.76
Log likelihood =  4596.9505                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-.0006055	.0000487	-12.44	0.000	-.0007009	-.00051
primary	.0001666	.0038699	0.04	0.966	-.0074183	.0077515
middle	-.0157279	.0057863	-2.72	0.007	-.0270689	-.0043869
high	-.0131076	.0046384	-2.83	0.005	-.0221986	-.0040166
lnage	-.0037807	.0015962	-2.37	0.018	-.0069092	-.0006521
lnstudents	.0082617	.001669	4.95	0.000	.0049905	.0115329
urban	.0089969	.0030936	2.91	0.004	.0029335	.0150603
pctpdfs	.1184326	.0315289	3.76	0.000	.0566371	.180228
_cons	.1021561	.0118403	8.63	0.000	.0789496	.1253627

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058872	.0006559	.0047324	.0073239
var(Residual)	.0114085	.0002168	.0109914	.0118414

LR test vs. linear model: chibar2(01) = **677.91** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiry_full_log povertyschool primary middle high lnage lnstudents urban pct**
> pdfs || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4591.9319**
Iteration 1: log likelihood = **4591.9319**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **226.32**
Log likelihood = **4591.9319** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	-.0005836	.0000486	-12.01	0.000	-.0006788	-.0004884
primary	.0000643	.0038734	0.02	0.987	-.0075275	.007656
middle	-.0155177	.005792	-2.68	0.007	-.0268698	-.0041656
high	-.0133299	.0046424	-2.87	0.004	-.0224289	-.0042309
lnage	-.0036607	.0015977	-2.29	0.022	-.0067922	-.0005292
lnstudents	.0083013	.0016704	4.97	0.000	.0050273	.0115753
urban	.0086859	.0030954	2.81	0.005	.0026189	.0147528
pctpdfs	.1174839	.0315568	3.72	0.000	.0556338	.1793341
_cons	.1004004	.0118384	8.48	0.000	.0771975	.1236032

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058814	.0006556	.0047271	.0073176
var(Residual)	.0114293	.0002172	.0110115	.0118629

LR test vs. linear model: chibar2(01) = **678.29** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiry_full_log povertyschool primary middle high lnage lnstudents urban pct**
> pdfs || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4593.3627**
Iteration 1: log likelihood = **4593.3627**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **229.29**
Log likelihood = **4593.3627** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertyschool	**-.0005902**	**.0000486**	**-12.14**	**0.000**	**-.0006856**	**-.0004949**
primary	**-.0000144**	**.0038726**	**-0.00**	**0.997**	**-.0076045**	**.0075758**
middle	**-.0154559**	**.0057908**	**-2.67**	**0.008**	**-.0268056**	**-.0041062**
high	**-.0135167**	**.0046414**	**-2.91**	**0.004**	**-.0226137**	**-.0044196**
lnage	**-.0035328**	**.0015976**	**-2.21**	**0.027**	**-.0066639**	**-.0004016**
lnstudents	**.0082148**	**.0016704**	**4.92**	**0.000**	**.0049409**	**.0114886**
urban	**.0087419**	**.0030944**	**2.83**	**0.005**	**.0026769**	**.0148069**
pctpdfs	**.1168108**	**.0315499**	**3.70**	**0.000**	**.0549742**	**.1786474**
_cons	**.1012482**	**.0118448**	**8.55**	**0.000**	**.0780327**	**.1244637**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity var(_cons)	**.0058681**	**.000655**	**.0047151**	**.007303**
var(Residual)	**.0114245**	**.0002171**	**.0110069**	**.011858**

LR test vs. linear model: chibar2(01) = **675.25** Prob >= chibar2 = **0.0000**

37. mi est, dots post: mixed inquiry_full_log povertyschool primary middle high lnage ln
> students urban pctpdfs || cmoname: ,

Imputations (**100**):
.....10.....20.....30.....40.....50.....60.....70.....
> ..80.....90.....100 done

Multiple-imputation estimates — Imputations = **100**
Mixed-effects ML regression — Number of obs = **5,881**

Group variable: **cmoname** — Number of groups = **378**
Obs per group:
min = **1**
avg = **15.6**
max = **3,800**
Average RVI = **0.0075**
Largest FMI = **0.0609**
DF adjustment: **Large sample** — DF: min = **26,723.81**
avg = **3.23e+07**
max = **1.30e+08**
Model F test: **Equal FMI** — F(**8**, **8.4e+06**) = **29.44**
Prob > F = **0.0000**

inquiry_full_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
povertyschool	-.0006066	.0000502	-12.09	0.000	-.0007049	-.0005082
primary	.0000247	.003873	0.01	0.995	-.0075663	.0076157
middle	-.0155744	.0057906	-2.69	0.007	-.0269238	-.004225
high	-.013344	.0046418	-2.87	0.004	-.0224417	-.0042462
lnage	-.003661	.0015982	-2.29	0.022	-.0067934	-.0005286
lnstudents	.008141	.0016727	4.87	0.000	.0048625	.0114195
urban	.008953	.0030987	2.89	0.004	.0028796	.0150264
pctpdfs	.1170921	.0315451	3.71	0.000	.0552647	.1789194
_cons	.102804	.0119065	8.63	0.000	.0794675	.1261404

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.076703	.0042749	.0687659	.0855563
sd(Residual)	.1068019	.0010165	.1048282	.1088129

38. est store ibl1

39. ereturn list

scalars:

```
              e(small) =  0
          e(nrgroups) =  1
              e(ll_c) =  .
              e(k_rs) =  2
                 e(N) =  5881
              e(df_c) =  .
              e(k_rc) =  0
                e(rc) =  0
                 e(k) =  11
             e(k_res) =  0
          e(converged) =  1
          e(se_failed) =  0
                e(k_r) =  2
                e(ll) =  .
             e(mecmd) =  0
            e(chi2_c) =  .
                e(ic) =  1
           e(nostderr) =  0
              e(df_m) =  .
                 e(p) =  .
               e(p_c) =  .
               e(k_f) =  9
              e(rank) =  .
              e(chi2) =  .
        e(_dfnote_mi) =  0
        e(mcerror_mi) =  0
          e(N_min_mi) =  5881
          e(N_max_mi) =  5881
        e(cilevel_mi) =  95
          e(k_exp_mi) =  0
       e(reparm_rc_mi) =  .
      e(k_eq_model_mi) =  3
          e(caller_mi) =  15.1
          e(df_min_mi) =  26723.80524929722
          e(df_avg_mi) =  32292244.16591078
          e(df_max_mi) =  129645884.5871551
        e(fmi_max_mi) =  .0609353918109879
        e(rvi_avg_mi) =  .007528119582272
              e(p_mi) =  2.02340598178e-46
           e(ufmi_mi) =  0
       e(rvi_avg_F_mi) =  .0097296132427967
              e(F_mi) =  29.43883564034724
           e(df_m_mi) =  8
           e(df_r_mi) =  8444432.404595319
```

```
           e(df_c_mi) =  .
              e(N_mi) =  5881
              e(M_mi) =  100
       e(esampvary_mi) =  0

macros:
               e(cmd) : "mixed"
         e(rstructure) : "independent"
         e(rstructlab) : "Independent"
              e(iccok) : "ok"
              e(redim) : "1"
          e(optmetric) : "matsqrt"
  e(datasignaturevars) : "inquiry_full_log povertyschool primary middle high lnage lns
> tu.."
           e(vartypes) : "Identity"
              e(title) : "Mixed-effects ML regression"
          e(stripe_se) : "inquiry_full_log:povertyschool inquiry_full_log:primary inqu
> ir.."
           e(chi2type) : "Wald"
          e(ml_method) : "d0"
             e(depvar) : "inquiry_full_log"
                e(opt) : "moptimize"
           e(crittype) : "log likelihood"
             e(revars) : "_cons"
              e(ivars) : "cmoname"
             e(method) : "ML"
          e(technique) : "nr"
            e(cmdline) : "mixed inquiry_full_log povertyschool primary middle high lna
> ge.."
       e(names_vvl_mi) : "datasignature"
       e(names_vvs_mi) : "p chi2_c ll ll_c p_c chi2"
       e(names_vvm_mi) : "b_sd se_sd V_sd"
              e(m_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
          e(m_est_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
             e(rc_mi) : "0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
> 0 .."
        e(dfadjust_mi) : "Large sample"
       e(modeltest_mi) : "Equal FMI"
           e(title_mi) : "Multiple-imputation estimates"
          e(prefix_mi) : "mi estimate"
             e(cmd_mi) : "mixed"
            e(ecmd_mi) : "mixed"
                e(mi) : "mi"
         e(cmdline_mi) : "mi estimate , dots post: mixed inquiry_full_log povertyschoo
> l .."
       e(_sortseed_mi) : "1275007049XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
    e(_sortseedcmd_mi) : "504234521XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa12
> 01.."
         e(properties) : "b V"

matrices:
                  e(b) :  1 x 11
                  e(V) :  11 x 11
              e(b_sd) :  1 x 1
            e(noomit) :  1 x 9
           e(b_pclass) :  1 x 11
              e(g_min) :  1 x 1
              e(se_sd) :  1 x 1
              e(g_max) :  1 x 1
              e(g_avg) :  1 x 1
                e(N_g) :  1 x 1
               e(V_sd) :  1 x 1
              e(re_mi) :  1 x 11
             e(fmi_mi) :  1 x 11
            e(pise_mi) :  1 x 11
             e(rvi_mi) :  1 x 11
              e(df_mi) :  1 x 11
               e(W_mi) :  11 x 11
               e(B_mi) :  11 x 11
```

```
              e(V_mi) :  11 x 11
              e(b_mi) :  1 x 11
            e(N_g_mi) :  1 x 1
          e(g_min_mi) :  1 x 1
          e(g_avg_mi) :  1 x 1
          e(g_max_mi) :  1 x 1

40. est save "model_estimates/1b_ibl_povsch_mi100_linear.ster", replace
  (note: file model_estimates/1b_ibl_povsch_mi100_linear.ster not found)
  file model_estimates/1b_ibl_povsch_mi100_linear.ster saved

41. outreg2 using "tables/1b_ibl_povsch_mi100_linear.rtf", replace word label onecol add
  > stat(Log-Likelihood, e(ll), chi-square test, r(chi2), F-test, e(p), Prob > F, r(p),
  > R-squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > ctitle("M1: School poverty")
  (note: file tables/1b_ibl_povsch_mi100_linear.rtf not found)
  tables/1b_ibl_povsch_mi100_linear.rtf
  seeout

42.
43. * 2. school race
44. mi xeq 1 / 5: mixed inquiry_full_log pocschoolprop primary middle high lnage lnstude
  > nts urban pctpdfs || cmoname: ,

  m=1 data:
  -> mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents urban pct
  > pdfs || cmoname: ,

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  4611.8993
  Iteration 1:   log likelihood =  4611.8993

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      5,881
  Group variable: cmoname                         Number of groups  =        378

                                                  Obs per group:
                                                                min =          1
                                                                avg =       15.6
                                                                max =      3,800

                                                  Wald chi2(8)      =     267.90
  Log likelihood =  4611.8993                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	-.0729936	.0053622	-13.61	0.000	-.0835034	-.0624838
primary	.0058069	.0038791	1.50	0.134	-.001796	.0134098
middle	-.0091039	.005805	-1.57	0.117	-.0204816	.0022737
high	-.0074173	.0046457	-1.60	0.110	-.0165227	.0016881
lnage	-.0060564	.0015997	-3.79	0.000	-.0091918	-.0029211
lnstudents	.012545	.00168	7.47	0.000	.0092523	.0158377
urban	.0193178	.0033018	5.85	0.000	.0128464	.0257891
pctpdfs	.1191963	.0314542	3.79	0.000	.0575472	.1808453
_cons	.0881406	.0115175	7.65	0.000	.0655666	.1107145

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0056747**	**.0006386**	**.0045515**	**.0070751**
var(Residual)	**.0113655**	**.0002159**	**.0109501**	**.0117968**

LR test vs. linear model: chibar2(01) = **655.41** Prob >= chibar2 = **0.0000**

m=2 data:
-> **mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents urban pct**
> pdfs || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4611.8993**
Iteration 1: log likelihood = **4611.8993**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **267.90**
Log likelihood = **4611.8993** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	**-.0729936**	**.0053622**	**-13.61**	**0.000**	**-.0835034**	**-.0624838**
primary	**.0058069**	**.0038791**	**1.50**	**0.134**	**-.001796**	**.0134098**
middle	**-.0091039**	**.005805**	**-1.57**	**0.117**	**-.0204816**	**.0022737**
high	**-.0074173**	**.0046457**	**-1.60**	**0.110**	**-.0165227**	**.0016881**
lnage	**-.0060564**	**.0015997**	**-3.79**	**0.000**	**-.0091918**	**-.0029211**
lnstudents	**.012545**	**.00168**	**7.47**	**0.000**	**.0092523**	**.0158377**
urban	**.0193178**	**.0033018**	**5.85**	**0.000**	**.0128464**	**.0257891**
pctpdfs	**.1191963**	**.0314542**	**3.79**	**0.000**	**.0575472**	**.1808453**
_cons	**.0881406**	**.0115175**	**7.65**	**0.000**	**.0655666**	**.1107145**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0056747**	**.0006386**	**.0045515**	**.0070751**
var(Residual)	**.0113655**	**.0002159**	**.0109501**	**.0117968**

LR test vs. linear model: chibar2(01) = **655.41** Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents urban pct**
> pdfs || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4611.8993**
Iteration 1: log likelihood = **4611.8993**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **267.90**
Log likelihood = **4611.8993** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	**-.0729936**	**.0053622**	**-13.61**	**0.000**	**-.0835034**	**-.0624838**
primary	**.0058069**	**.0038791**	**1.50**	**0.134**	**-.001796**	**.0134098**
middle	**-.0091039**	**.005805**	**-1.57**	**0.117**	**-.0204816**	**.0022737**
high	**-.0074173**	**.0046457**	**-1.60**	**0.110**	**-.0165227**	**.0016881**
lnage	**-.0060564**	**.0015997**	**-3.79**	**0.000**	**-.0091918**	**-.0029211**
lnstudents	**.012545**	**.00168**	**7.47**	**0.000**	**.0092523**	**.0158377**
urban	**.0193178**	**.0033018**	**5.85**	**0.000**	**.0128464**	**.0257891**
pctpdfs	**.1191963**	**.0314542**	**3.79**	**0.000**	**.0575472**	**.1808453**
_cons	**.0881406**	**.0115175**	**7.65**	**0.000**	**.0655666**	**.1107145**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity var(_cons)	**.0056747**	**.0006386**	**.0045515**	**.0070751**
var(Residual)	**.0113655**	**.0002159**	**.0109501**	**.0117968**

LR test vs. linear model: chibar2(01) = **655.41** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents urban pct**
> pdfs || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4611.8993**
Iteration 1: log likelihood = **4611.8993**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **267.90**
Log likelihood = **4611.8993** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	**-.0729936**	**.0053622**	**-13.61**	**0.000**	**-.0835034**	**-.0624838**
primary	**.0058069**	**.0038791**	**1.50**	**0.134**	**-.001796**	**.0134098**
middle	**-.0091039**	**.005805**	**-1.57**	**0.117**	**-.0204816**	**.0022737**
high	**-.0074173**	**.0046457**	**-1.60**	**0.110**	**-.0165227**	**.0016881**
lnage	**-.0060564**	**.0015997**	**-3.79**	**0.000**	**-.0091918**	**-.0029211**
lnstudents	**.012545**	**.00168**	**7.47**	**0.000**	**.0092523**	**.0158377**
urban	**.0193178**	**.0033018**	**5.85**	**0.000**	**.0128464**	**.0257891**
pctpdfs	**.1191963**	**.0314542**	**3.79**	**0.000**	**.0575472**	**.1808453**
_cons	**.0881406**	**.0115175**	**7.65**	**0.000**	**.0655666**	**.1107145**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0056747**	**.0006386**	**.0045515**	**.0070751**
var(Residual)	**.0113655**	**.0002159**	**.0109501**	**.0117968**

LR test vs. linear model: chibar2(01) = **655.41** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents urban pct > pdfs || cmoname: ,**

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4611.8993**
Iteration 1: log likelihood = **4611.8993**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **267.90**
Log likelihood = **4611.8993** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocschoolprop	**-.0729936**	**.0053622**	**-13.61**	**0.000**	**-.0835034**	**-.0624838**
primary	**.0058069**	**.0038791**	**1.50**	**0.134**	**-.001796**	**.0134098**
middle	**-.0091039**	**.005805**	**-1.57**	**0.117**	**-.0204816**	**.0022737**
high	**-.0074173**	**.0046457**	**-1.60**	**0.110**	**-.0165227**	**.0016881**
lnage	**-.0060564**	**.0015997**	**-3.79**	**0.000**	**-.0091918**	**-.0029211**
lnstudents	**.012545**	**.00168**	**7.47**	**0.000**	**.0092523**	**.0158377**
urban	**.0193178**	**.0033018**	**5.85**	**0.000**	**.0128464**	**.0257891**
pctpdfs	**.1191963**	**.0314542**	**3.79**	**0.000**	**.0575472**	**.1808453**
_cons	**.0881406**	**.0115175**	**7.65**	**0.000**	**.0655666**	**.1107145**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0056747**	**.0006386**	**.0045515**	**.0070751**
var(Residual)	**.0113655**	**.0002159**	**.0109501**	**.0117968**

LR test vs. linear model: chibar2(01) = **655.41** Prob >= chibar2 = **0.0000**

45. mi est, dots post: mixed inquiry_full_log pocschoolprop primary middle high lnage ln > students urban pctpdfs || cmoname: ,

Imputations (**100**):
.....10.....20.....30.....40.....50.....60.....70..... > ..80.....90.....100 done

Multiple-imputation estimates — Imputations = **100**
Mixed-effects ML regression — Number of obs = **5,881**

Group variable: **cmoname**

DF adjustment: **Large sample**

Model F test: **Equal FMI**

Number of groups	=	**378**
Obs per group:		
min	=	**1**
avg	=	**15.6**
max	=	**3,800**
Average RVI	=	**0.0000**
Largest FMI	=	**0.0000**
DF: min	=	**.**
avg	=	**.**
max	=	**.**
F(8, .)	=	**33.49**
Prob > F	=	**0.0000**

inquiry_full_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pocschoolprop	**-.0729936**	**.0053622**	**-13.61**	**0.000**	**-.0835034**	**-.0624838**
primary	**.0058069**	**.0038791**	**1.50**	**0.134**	**-.001796**	**.0134098**
middle	**-.0091039**	**.005805**	**-1.57**	**0.117**	**-.0204816**	**.0022737**
high	**-.0074173**	**.0046457**	**-1.60**	**0.110**	**-.0165227**	**.0016881**
lnage	**-.0060564**	**.0015997**	**-3.79**	**0.000**	**-.0091918**	**-.0029211**
lnstudents	**.012545**	**.00168**	**7.47**	**0.000**	**.0092523**	**.0158377**
urban	**.0193178**	**.0033018**	**5.85**	**0.000**	**.0128464**	**.0257891**
pctpdfs	**.1191963**	**.0314542**	**3.79**	**0.000**	**.0575472**	**.1808453**
_cons	**.0881406**	**.0115175**	**7.65**	**0.000**	**.0655666**	**.1107145**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity sd(_cons)	**.0753306**	**.0042386**	**.0674648**	**.0841134**
sd(Residual)	**.1066093**	**.0010128**	**.1046427**	**.1086129**

46. est store ibl2

47. ereturn list

scalars:

e(small)	**0**
e(nrgroups)	**1**
e(ll_c)	**.**
e(k_rs)	**2**
e(N)	**5881**
e(df_c)	**.**
e(k_rc)	**0**
e(rc)	**0**
e(k)	**11**
e(k_res)	**0**
e(converged)	**1**
e(se_failed)	**0**
e(k_r)	**2**
e(ll)	**.**
e(mecmd)	**0**
e(chi2_c)	**.**
e(ic)	**1**
e(nostderr)	**0**
e(df_m)	**.**
e(p)	**.**
e(p_c)	**.**
e(k_f)	**9**
e(rank)	**.**
e(chi2)	**.**
e(_dfnote_mi)	**1**
e(mcerror_mi)	**0**
e(N_min_mi)	**5881**
e(N_max_mi)	**5881**
e(cilevel_mi)	**95**
e(k_exp_mi)	**0**
e(reparm_rc_mi)	**.**

```
      e(k_eq_model_mi) =  3
          e(caller_mi) =  15.1
          e(df_min_mi) =  .
          e(df_avg_mi) =  .
          e(df_max_mi) =  .
         e(fmi_max_mi) =  0
         e(rvi_avg_mi) =  0
               e(p_mi) =  2.74688474447e-53
           e(ufmi_mi) =  0
       e(rvi_avg_F_mi) =  0
               e(F_mi) =  33.48741346643668
            e(df_m_mi) =  8
            e(df_r_mi) =  .
            e(df_c_mi) =  .
               e(N_mi) =  5881
               e(M_mi) =  100
       e(esampvary_mi) =  0

macros:
                  e(cmd) : "mixed"
           e(rstructure) : "independent"
           e(rstructlab) : "Independent"
                e(iccok) : "ok"
                e(redim) : "1"
            e(optmetric) : "matsqrt"
  e(datasignaturevars) : "inquiry_full_log pocschoolprop primary middle high lnage lns
> tu.."
             e(vartypes) : "Identity"
                e(title) : "Mixed-effects ML regression"
            e(stripe_se) : "inquiry_full_log:pocschoolprop inquiry_full_log:primary inqu
> ir.."
             e(chi2type) : "Wald"
            e(ml_method) : "d0"
               e(depvar) : "inquiry_full_log"
                  e(opt) : "moptimize"
             e(crittype) : "log likelihood"
               e(revars) : "_cons"
                e(ivars) : "cmoname"
               e(method) : "ML"
            e(technique) : "nr"
              e(cmdline) : "mixed inquiry_full_log pocschoolprop primary middle high lna
> ge.."
       e(datasignature) : "5881:10:3555716835:2909986617"
                  e(m_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
             e(m_est_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
                 e(rc_mi) : "0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
> 0 .."
          e(dfadjust_mi) : "Large sample"
         e(modeltest_mi) : "Equal FMI"
             e(title_mi) : "Multiple-imputation estimates"
            e(prefix_mi) : "mi estimate"
               e(cmd_mi) : "mixed"
              e(ecmd_mi) : "mixed"
                   e(mi) : "mi"
          e(cmdline_mi) : "mi estimate , dots post: mixed inquiry_full_log pocschoolpro
> p .."
        e(_sortseed_mi) : "84201XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1201b6
> 9a.."
      e(_sortseedcmd_mi) : "2114702521XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
           e(properties) : "b V"
```

matrices:

e(b) :	**1 x 11**
e(V) :	**11 x 11**
e(b_sd) :	**1 x 11**
e(noomit) :	**1 x 9**
e(b_pclass) :	**1 x 11**
e(g_min) :	**1 x 1**
e(se_sd) :	**1 x 11**
e(g_max) :	**1 x 1**
e(g_avg) :	**1 x 1**
e(N_g) :	**1 x 1**
e(V_sd) :	**11 x 11**
e(re_mi) :	**1 x 11**
e(fmi_mi) :	**1 x 11**
e(pise_mi) :	**1 x 11**
e(rvi_mi) :	**1 x 11**
e(df_mi) :	**1 x 11**
e(W_mi) :	**11 x 11**
e(B_mi) :	**11 x 11**
e(V_mi) :	**11 x 11**
e(b_mi) :	**1 x 11**
e(N_g_mi) :	**1 x 1**
e(g_min_mi) :	**1 x 1**
e(g_avg_mi) :	**1 x 1**
e(g_max_mi) :	**1 x 1**

48. est save "model_estimates/1c_ibl_pocsch_mi100_linear.ster", replace
(note: file model_estimates/1c_ibl_pocsch_mi100_linear.ster not found)
file model_estimates/1c_ibl_pocsch_mi100_linear.ster saved

49. outreg2 using "tables/1c_ibl_pocsch_mi100_linear.rtf", replace word label onecol add
> stat(Log-Likelihood, e(ll), chi-square test, r(chi2), F-test, e(p), Prob > F, r(p),
> R-squared, e(r2)) ///
> alpha(.001, .01, .05) symbol(***, **, *) ///
> ctitle("M2: School race")
(note: file tables/1c_ibl_pocsch_mi100_linear.rtf not found)
tables/1c_ibl_pocsch_mi100_linear.rtf
seeout

50.
51. * 3. school district poverty
52. mi xeq 1 / 5: mixed inquiry_full_log povertysd primary middle high lnage lnstudents
> urban pctpdfs || cmoname: ,

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4563.8821**
Iteration 1: log likelihood = **4563.8821**

Computing standard errors:

Mixed-effects ML regression		Number of obs	= **5,881**
Group variable: **cmoname**		Number of groups	= **378**
		Obs per group:	
		min	= **1**
		avg	= **15.6**
		max	= **3,800**
		Wald chi2(**8**)	= **168.31**
Log likelihood = **4563.8821**		Prob > chi2	= **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.2046286	.0219254	-9.33	0.000	-.2476015	-.1616557
primary	.0002983	.003892	0.08	0.939	-.0073299	.0079265
middle	-.0183388	.0058177	-3.15	0.002	-.0297412	-.0069363
high	-.0121162	.0046658	-2.60	0.009	-.0212611	-.0029714
lnage	-.0037953	.0016053	-2.36	0.018	-.0069417	-.0006489
lnstudents	.0097054	.001677	5.79	0.000	.0064185	.0129923
urban	.0119969	.0032577	3.68	0.000	.0056119	.018382
pctpdfs	.1186741	.0317088	3.74	0.000	.0565259	.1808223
_cons	.0867461	.0117493	7.38	0.000	.0637179	.1097742

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058872	.0006554	.0047332	.0073226
var(Residual)	.0115429	.0002193	.0111211	.0119808

LR test vs. linear model: chibar2(01) = **705.96** Prob >= chibar2 = **0.0000**

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4564.4156**
Iteration 1: log likelihood = **4564.4156**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **169.41**
Log likelihood = **4564.4156** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.2059503	.0219308	-9.39	0.000	-.2489339	-.1629666
primary	.0003063	.0038916	0.08	0.937	-.0073212	.0079338
middle	-.0182287	.005817	-3.13	0.002	-.0296298	-.0068275
high	-.0121839	.0046652	-2.61	0.009	-.0213276	-.0030402
lnage	-.0037741	.0016052	-2.35	0.019	-.0069203	-.000628
lnstudents	.0096603	.0016767	5.76	0.000	.0063739	.0129467
urban	.0120985	.0032588	3.71	0.000	.0057114	.0184856
pctpdfs	.1185216	.031706	3.74	0.000	.056379	.1806642
_cons	.0871169	.0117537	7.41	0.000	.0640801	.1101536

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058886	.0006554	.0047345	.007324
var(Residual)	.0115406	.0002192	.0111189	.0119784

LR test vs. linear model: chibar2(01) = **706.52** Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs**
> || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4564.775**
Iteration 1: log likelihood = **4564.775**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **170.15**
Log likelihood = **4564.775** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	**-.206809**	**.0219319**	**-9.43**	**0.000**	**-.2497947**	**-.1638234**
primary	**.000347**	**.0038914**	**0.09**	**0.929**	**-.0072799**	**.0079739**
middle	**-.0182868**	**.0058167**	**-3.14**	**0.002**	**-.0296873**	**-.0068862**
high	**-.0121893**	**.0046649**	**-2.61**	**0.009**	**-.0213324**	**-.0030462**
lnage	**-.0037751**	**.0016051**	**-2.35**	**0.019**	**-.0069211**	**-.0006292**
lnstudents	**.009684**	**.0016767**	**5.78**	**0.000**	**.0063977**	**.0129702**
urban	**.0121265**	**.003258**	**3.72**	**0.000**	**.005741**	**.0185121**
pctpdfs	**.11848**	**.0317041**	**3.74**	**0.000**	**.056341**	**.1806189**
_cons	**.0870306**	**.0117486**	**7.41**	**0.000**	**.0640037**	**.1100574**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity var(_cons)	**.0058863**	**.0006551**	**.0047327**	**.0073211**
var(Residual)	**.0115393**	**.0002192**	**.0111176**	**.011977**

LR test vs. linear model: chibar2(01) = **707.18** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs**
> || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4564.6823**
Iteration 1: log likelihood = **4564.6823**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **169.96**
Log likelihood = **4564.6823** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.2066721	.0219407	-9.42	0.000	-.2496751	-.163669
primary	.0003141	.0038915	0.08	0.936	-.007313	.0079412
middle	-.0183429	.0058169	-3.15	0.002	-.0297438	-.006942
high	-.0122065	.004665	-2.62	0.009	-.0213497	-.0030633
lnage	-.0037973	.0016051	-2.37	0.018	-.0069432	-.0006513
lnstudents	.0096967	.0016768	5.78	0.000	.0064103	.012983
urban	.0121275	.0032585	3.72	0.000	.0057409	.0185141
pctpdfs	.1186977	.0317045	3.74	0.000	.056558	.1808375
_cons	.0869951	.0117484	7.40	0.000	.0639686	.1100215

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058851	.000655	.0047316	.0073197
var(Residual)	.0115398	.0002192	.0111181	.0119775

LR test vs. linear model: chibar2(01) = **707.02** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiry_full_log povertysd primary middle high lnage lnstudents urban pctpdfs**
> || cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4564.1711**
Iteration 1: log likelihood = **4564.1711**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **168.91**
Log likelihood = **4564.1711** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
povertysd	-.2051214	.0219049	-9.36	0.000	-.2480543	-.1621885
primary	.0002711	.0038919	0.07	0.944	-.0073568	.007899
middle	-.0182893	.0058174	-3.14	0.002	-.0296911	-.0068875
high	-.0122121	.0046654	-2.62	0.009	-.0213561	-.003068
lnage	-.0037909	.0016053	-2.36	0.018	-.0069371	-.0006446
lnstudents	.0096921	.0016769	5.78	0.000	.0064054	.0129788
urban	.0120473	.0032582	3.70	0.000	.0056615	.0184332
pctpdfs	.1184973	.0317075	3.74	0.000	.0563517	.1806429
_cons	.0868923	.0117498	7.40	0.000	.0638631	.1099215

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0058823	.0006549	.004729	.0073167
var(Residual)	.0115421	.0002192	.0111203	.0119799

LR test vs. linear model: chibar2(01) = **705.82** Prob >= chibar2 = **0.0000**

```
53. mi est, dots post: mixed inquiry_full_log povertysd primary middle high lnage lnstud
  > ents urban pctpdfs || cmoname: ,

  Imputations (100):
    .........10.........20.........30.........40.........50.........60.........70.......
  > ..80.........90.........100 done

  Multiple-imputation estimates                   Imputations       =        100
  Mixed-effects ML regression                     Number of obs     =      5,881

  Group variable: cmoname                         Number of groups  =        378
                                                  Obs per group:
                                                               min =          1
                                                               avg =       15.6
                                                               max =      3,800
                                                  Average RVI       =     0.0005
                                                  Largest FMI       =     0.0044
  DF adjustment:   Large sample                   DF:     min       = 5205099.99
                                                          avg       =   6.89e+10
                                                          max       =   6.40e+11
  Model F test:       Equal FMI                   F(   8, 2.2e+09)  =      21.02
                                                  Prob > F          =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
povertysd	-.2046209	.0219747	-9.31	0.000	-.2476905	-.1615512
primary	.0003095	.0038921	0.08	0.937	-.0073189	.0079379
middle	-.0182845	.0058178	-3.14	0.002	-.0296872	-.0068818
high	-.0121909	.0046658	-2.61	0.009	-.0213358	-.003046
lnage	-.003784	.0016054	-2.36	0.018	-.0069306	-.0006375
lnstudents	.009684	.001677	5.77	0.000	.0063971	.0129709
urban	.0120195	.0032596	3.69	0.000	.0056307	.0184083
pctpdfs	.1185931	.0317091	3.74	0.000	.0564444	.1807418
_cons	.0868209	.0117525	7.39	0.000	.0637865	.1098553

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.0767314	.0042708	.0688011	.0855757
sd(Residual)	.1074379	.0010205	.1054563	.1094567

```
54. est store ibl3

55. ereturn list

  scalars:
              e(small) =  0
           e(nrgroups) =  1
               e(ll_c) =  .
               e(k_rs) =  2
                  e(N) =  5881
               e(df_c) =  .
               e(k_rc) =  0
                 e(rc) =  0
                  e(k) =  11
              e(k_res) =  0
          e(converged) =  1
          e(se_failed) =  0
                e(k_r) =  2
                 e(ll) =  .
             e(mecmd) =  0
            e(chi2_c) =  .
                e(ic) =  1
           e(nostderr) =  0
               e(df_m) =  .
                  e(p) =  .
                e(p_c) =  .
```

```
                e(k_f) =  9
              e(rank) =  .
              e(chi2) =  .
         e(_dfnote_mi) =  0
         e(mcerror_mi) =  0
           e(N_min_mi) =  5881
           e(N_max_mi) =  5881
         e(cilevel_mi) =  95
           e(k_exp_mi) =  0
       e(reparm_rc_mi) =  .
      e(k_eq_model_mi) =  3
          e(caller_mi) =  15.1
          e(df_min_mi) =  5205099.994373791
          e(df_avg_mi) =  68893528544.44423
          e(df_max_mi) =  639698649526.5858
         e(fmi_max_mi) =  .0043615529923041
         e(rvi_avg_mi) =  .0004646047047638
               e(p_mi) =  3.08132686558e-32
            e(ufmi_mi) =  0
       e(rvi_avg_F_mi) =  .0006033086347678
               e(F_mi) =  21.02435340359162
            e(df_m_mi) =  8
            e(df_r_mi) =  2156632523.994565
            e(df_c_mi) =  .
               e(N_mi) =  5881
               e(M_mi) =  100
       e(esampvary_mi) =  0

macros:
                e(cmd) : "mixed"
         e(rstructure) : "independent"
         e(rstructlab) : "Independent"
              e(iccok) : "ok"
              e(redim) : "1"
          e(optmetric) : "matsqrt"
  e(datasignaturevars) : "inquiry_full_log povertysd primary middle high lnage lnstude
> nt.."
           e(vartypes) : "Identity"
              e(title) : "Mixed-effects ML regression"
          e(stripe_se) : "inquiry_full_log:povertysd inquiry_full_log:primary inquiry_
> fu.."
           e(chi2type) : "Wald"
          e(ml_method) : "d0"
             e(depvar) : "inquiry_full_log"
                e(opt) : "moptimize"
           e(crittype) : "log likelihood"
             e(revars) : "_cons"
              e(ivars) : "cmoname"
            e(method) : "ML"
          e(technique) : "nr"
            e(cmdline) : "mixed inquiry_full_log povertysd primary middle high lnage l
> ns.."
       e(names_vvl_mi) : "datasignature"
       e(names_vvs_mi) : "p chi2_c ll ll_c p_c chi2"
       e(names_vvm_mi) : "b_sd se_sd V_sd"
               e(m_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
           e(m_est_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
              e(rc_mi) : "0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
> 0 .."
        e(dfadjust_mi) : "Large sample"
       e(modeltest_mi) : "Equal FMI"
           e(title_mi) : "Multiple-imputation estimates"
          e(prefix_mi) : "mi estimate"
             e(cmd_mi) : "mixed"
            e(ecmd_mi) : "mixed"
                 e(mi) : "mi"
         e(cmdline_mi) : "mi estimate , dots post: mixed inquiry_full_log povertysd pr
> im.."
       e(_sortseed_mi) : "1931396489XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
```

```
    e(_sortseedcmd_mi) : "1802902361XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
          e(properties) : "b V"

  matrices:
                    e(b) :  1 x 11
                    e(V) :  11 x 11
                e(b_sd) :  1 x 1
              e(noomit) :  1 x 9
            e(b_pclass) :  1 x 11
               e(g_min) :  1 x 1
               e(se_sd) :  1 x 1
               e(g_max) :  1 x 1
               e(g_avg) :  1 x 1
                 e(N_g) :  1 x 1
               e(V_sd) :  1 x 1
              e(re_mi) :  1 x 11
             e(fmi_mi) :  1 x 11
            e(pise_mi) :  1 x 11
             e(rvi_mi) :  1 x 11
              e(df_mi) :  1 x 11
               e(W_mi) :  11 x 11
               e(B_mi) :  11 x 11
               e(V_mi) :  11 x 11
               e(b_mi) :  1 x 11
             e(N_g_mi) :  1 x 1
           e(g_min_mi) :  1 x 1
           e(g_avg_mi) :  1 x 1
           e(g_max_mi) :  1 x 1

56. est save "model_estimates/1d_ibl_povsd_mi100_linear.ster", replace
  (note: file model_estimates/1d_ibl_povsd_mi100_linear.ster not found)
  file model_estimates/1d_ibl_povsd_mi100_linear.ster saved

57. outreg2 using "tables/1d_ibl_povsd_mi100_linear.rtf", replace word label onecol adds
  > tat(Log-Likelihood, e(ll), chi-square test, r(chi2), F-test, e(p), Prob > F, r(p), R
  > -squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > ctitle("M3: School district poverty")
  (note: file tables/1d_ibl_povsd_mi100_linear.rtf not found)
  tables/1d_ibl_povsd_mi100_linear.rtf
  seeout

58.
59. * 4. school district race
60. mi xeq 1 / 5: mixed inquiry_full_log pocsd primary middle high lnage lnstudents urba
  > n pctpdfs || cmoname: ,

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

  Performing EM optimization:

  Performing gradient-based optimization:

  Iteration 0:   log likelihood =  4526.9363
  Iteration 1:   log likelihood =  4526.9363

  Computing standard errors:

  Mixed-effects ML regression                     Number of obs     =      5,881
  Group variable: cmoname                         Number of groups  =        378

                                                  Obs per group:
                                                               min =          1
                                                               avg =       15.6
                                                               max =      3,800

                                                  Wald chi2(8)      =      92.80
  Log likelihood =  4526.9363                     Prob > chi2       =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0305514	.0086327	-3.54	0.000	-.0474711	-.0136317
primary	.0014506	.0039235	0.37	0.712	-.0062393	.0091405
middle	-.0163403	.0058677	-2.78	0.005	-.0278408	-.0048397
high	-.0124899	.0046974	-2.66	0.008	-.0216966	-.0032832
lnage	-.0044123	.0016206	-2.72	0.006	-.0075885	-.001236
lnstudents	.0103188	.0017118	6.03	0.000	.0069637	.0136739
urban	.0057511	.0033208	1.73	0.083	-.0007575	.0122597
pctpdfs	.1191747	.0319158	3.73	0.000	.0566209	.1817285
_cons	.0664424	.0115644	5.75	0.000	.0437765	.0891083

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0057829	.0006523	.0046359	.0072136
var(Residual)	.0117036	.0002223	.0112758	.0121476

LR test vs. linear model: chibar2(01) = **666.83** Prob >= chibar2 = **0.0000**

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

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4526.8771**
Iteration 1: log likelihood = **4526.8771**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **92.67**
Log likelihood = **4526.8771** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0303657	.0086212	-3.52	0.000	-.047263	-.0134684
primary	.0014687	.0039239	0.37	0.708	-.0062219	.0091594
middle	-.0163287	.0058681	-2.78	0.005	-.0278299	-.0048274
high	-.0125234	.0046971	-2.67	0.008	-.0217297	-.0033172
lnage	-.0044241	.0016209	-2.73	0.006	-.007601	-.0012473
lnstudents	.0103062	.0017115	6.02	0.000	.0069518	.0136606
urban	.0057367	.0033215	1.73	0.084	-.0007734	.0122468
pctpdfs	.1191781	.031916	3.73	0.000	.0566238	.1817323
_cons	.0664962	.0115664	5.75	0.000	.0438265	.089166

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0057865	.0006526	.004639	.0072179
var(Residual)	.0117035	.0002223	.0112757	.0121475

LR test vs. linear model: chibar2(01) = **667.51** Prob >= chibar2 = **0.0000**

m=3 data:
-> **mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||**
> cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4526.953**
Iteration 1: log likelihood = **4526.953**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **92.83**
Log likelihood = **4526.953** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	**-.0306302**	**.0086434**	**-3.54**	**0.000**	**-.0475711**	**-.0136894**
primary	**.0014685**	**.0039237**	**0.37**	**0.708**	**-.0062219**	**.0091589**
middle	**-.0163042**	**.0058683**	**-2.78**	**0.005**	**-.0278059**	**-.0048024**
high	**-.0125168**	**.0046971**	**-2.66**	**0.008**	**-.021723**	**-.0033106**
lnage	**-.0044066**	**.0016204**	**-2.72**	**0.007**	**-.0075826**	**-.0012307**
lnstudents	**.0103199**	**.0017118**	**6.03**	**0.000**	**.0069648**	**.0136749**
urban	**.0057675**	**.0033219**	**1.74**	**0.083**	**-.0007433**	**.0122783**
pctpdfs	**.1190478**	**.0319161**	**3.73**	**0.000**	**.0564933**	**.1816023**
_cons	**.0664386**	**.0115643**	**5.75**	**0.000**	**.0437731**	**.0891042**

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	**.0057831**	**.0006523**	**.0046361**	**.0072138**
var(Residual)	**.0117035**	**.0002223**	**.0112757**	**.0121475**

LR test vs. linear model: chibar2(01) = **667.05** Prob >= chibar2 = **0.0000**

m=4 data:
-> **mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||**
> cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4526.907**
Iteration 1: log likelihood = **4526.907**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **92.74**
Log likelihood = **4526.907** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0304871	.0086348	-3.53	0.000	-.0474109	-.0135633
primary	.0014668	.0039238	0.37	0.709	-.0062236	.0091573
middle	-.0163166	.0058682	-2.78	0.005	-.0278181	-.004815
high	-.0125192	.0046972	-2.67	0.008	-.0217255	-.003313
lnage	-.0044175	.0016207	-2.73	0.006	-.007594	-.001241
lnstudents	.0103205	.001712	6.03	0.000	.006965	.013676
urban	.0057615	.0033231	1.73	0.083	-.0007516	.0122746
pctpdfs	.1190962	.0319162	3.73	0.000	.0565416	.1816508
_cons	.0664063	.011564	5.74	0.000	.0437412	.0890713

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0057842	.0006524	.004637	.0072152
var(Residual)	.0117036	.0002223	.0112758	.0121476

LR test vs. linear model: chibar2(01) = **667.31** Prob >= chibar2 = **0.0000**

m=5 data:
-> **mixed inquiry_full_log pocsd primary middle high lnage lnstudents urban pctpdfs ||**
> cmoname: ,

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = **4526.7727**
Iteration 1: log likelihood = **4526.7727**

Computing standard errors:

Mixed-effects ML regression — Number of obs = **5,881**
Group variable: **cmoname** — Number of groups = **378**

Obs per group:
min = **1**
avg = **15.6**
max = **3,800**

Wald chi2(**8**) = **92.46**
Log likelihood = **4526.7727** — Prob > chi2 = **0.0000**

inquiry_full_log	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
pocsd	-.0301578	.0086352	-3.49	0.000	-.0470826	-.0132331
primary	.0014568	.0039239	0.37	0.710	-.0062339	.0091474
middle	-.0163423	.0058682	-2.78	0.005	-.0278438	-.0048409
high	-.0125299	.0046972	-2.67	0.008	-.0217363	-.0033235
lnage	-.0044134	.0016208	-2.72	0.006	-.00759	-.0012368
lnstudents	.0103034	.0017118	6.02	0.000	.0069484	.0136584
urban	.0057074	.0033226	1.72	0.086	-.0008048	.0122195
pctpdfs	.1191139	.031917	3.73	0.000	.0565577	.1816701
_cons	.0664266	.0115651	5.74	0.000	.0437594	.0890938

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
var(_cons)	.0057816	.0006522	.0046347	.0072122
var(Residual)	.0117043	.0002224	.0112765	.0121484

LR test vs. linear model: chibar2(01) = **666.64** Prob >= chibar2 = **0.0000**

```
61. mi est, dots post: mixed inquiry_full_log pocsd primary middle high lnage lnstudents
  >  urban pctpdfs || cmoname: ,

  Imputations (100):
    .........10.........20.........30.........40.........50.........60.........70.......
  > ..80.........90.........100 done

  Multiple-imputation estimates                   Imputations       =        100
  Mixed-effects ML regression                     Number of obs     =      5,881

  Group variable: cmoname                         Number of groups  =        378
                                                  Obs per group:
                                                               min =          1
                                                               avg =       15.6
                                                               max =      3,800
                                                  Average RVI       =     0.0004
                                                  Largest FMI       =     0.0039
  DF adjustment:   Large sample                   DF:     min       = 6561116.60
                                                          avg       =   1.44e+12
                                                          max       =   1.43e+13
  Model F test:       Equal FMI                   F(   8, 3.2e+09)  =      11.55
                                                  Prob > F          =     0.0000
```

inquiry_full_log	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pocsd	-.0301279	.0086482	-3.48	0.000	-.0470781	-.0131777
primary	.0014477	.0039238	0.37	0.712	-.0062428	.0091381
middle	-.0163295	.0058685	-2.78	0.005	-.0278316	-.0048274
high	-.0125247	.0046973	-2.67	0.008	-.0217313	-.0033182
lnage	-.0044031	.0016206	-2.72	0.007	-.0075793	-.0012268
lnstudents	.010302	.0017118	6.02	0.000	.0069469	.0136572
urban	.0057031	.0033233	1.72	0.086	-.0008104	.0122167
pctpdfs	.1191314	.0319169	3.73	0.000	.0565754	.1816874
_cons	.0664019	.0115652	5.74	0.000	.0437345	.0890692

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
cmoname: Identity				
sd(_cons)	.0760604	.0042891	.0681018	.0849491
sd(Residual)	.1081853	.0010277	.1061897	.1102183

```
62. est store ibl4

63. ereturn list

  scalars:
              e(small) =  0
           e(nrgroups) =  1
               e(ll_c) =  .
               e(k_rs) =  2
                  e(N) =  5881
               e(df_c) =  .
               e(k_rc) =  0
                 e(rc) =  0
                  e(k) =  11
              e(k_res) =  0
          e(converged) =  1
          e(se_failed) =  0
                e(k_r) =  2
                 e(ll) =  .
              e(mecmd) =  0
            e(chi2_c) =  .
                e(ic) =  1
           e(nostderr) =  0
               e(df_m) =  .
                  e(p) =  .
                e(p_c) =  .
```

```
                e(k_f) =  9
               e(rank) =  .
               e(chi2) =  .
         e(_dfnote_mi) =  0
         e(mcerror_mi) =  0
           e(N_min_mi) =  5881
           e(N_max_mi) =  5881
         e(cilevel_mi) =  95
           e(k_exp_mi) =  0
       e(reparm_rc_mi) =  .
      e(k_eq_model_mi) =  3
          e(caller_mi) =  15.1
          e(df_min_mi) =  6561116.597366409
          e(df_avg_mi) =  1439231732329.428
          e(df_max_mi) =  14332529084874.79
         e(fmi_max_mi) =  .0038847463417842
         e(rvi_avg_mi) =  .0003657336675691
               e(p_mi) =  1.51086702309e-16
            e(ufmi_mi) =  0
       e(rvi_avg_F_mi) =  .0004969626430912
               e(F_mi) =  11.5503911626296
            e(df_m_mi) =  8
            e(df_r_mi) =  3177716807.558824
            e(df_c_mi) =  .
               e(N_mi) =  5881
               e(M_mi) =  100
       e(esampvary_mi) =  0

macros:
                e(cmd) : "mixed"
         e(rstructure) : "independent"
         e(rstructlab) : "Independent"
              e(iccok) : "ok"
              e(redim) : "1"
          e(optmetric) : "matsqrt"
  e(datasignaturevars) : "inquiry_full_log pocsd primary middle high lnage lnstudents
> ur.."
           e(vartypes) : "Identity"
              e(title) : "Mixed-effects ML regression"
          e(stripe_se) : "inquiry_full_log:pocsd inquiry_full_log:primary inquiry_full
> _l.."
           e(chi2type) : "Wald"
          e(ml_method) : "d0"
             e(depvar) : "inquiry_full_log"
                e(opt) : "moptimize"
           e(crittype) : "log likelihood"
             e(revars) : "_cons"
              e(ivars) : "cmoname"
            e(method) : "ML"
          e(technique) : "nr"
            e(cmdline) : "mixed inquiry_full_log pocsd primary middle high lnage lnstu
> de.."
       e(names_vvl_mi) : "datasignature"
       e(names_vvs_mi) : "p chi2_c ll ll_c p_c chi2"
       e(names_vvm_mi) : "b_sd se_sd V_sd"
               e(m_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
          e(m_est_mi) : "1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
> 24.."
              e(rc_mi) : "0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
> 0 .."
        e(dfadjust_mi) : "Large sample"
       e(modeltest_mi) : "Equal FMI"
           e(title_mi) : "Multiple-imputation estimates"
          e(prefix_mi) : "mi estimate"
             e(cmd_mi) : "mixed"
            e(ecmd_mi) : "mixed"
                 e(mi) : "mi"
         e(cmdline_mi) : "mi estimate , dots post: mixed inquiry_full_log pocsd primar
> y .."
      e(_sortseed_mi) : "451806761XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa12
> 01.."
```

```
    e(_sortseedcmd_mi) : "1584098809XZA112210f4b16c1cb10507a1f38cb440c40003c9a83566fa1
> 20.."
         e(properties) : "b V"

  matrices:
                  e(b) :  1 x 11
                  e(V) :  11 x 11
              e(b_sd) :  1 x 1
            e(noomit) :  1 x 9
          e(b_pclass) :  1 x 11
             e(g_min) :  1 x 1
             e(se_sd) :  1 x 1
             e(g_max) :  1 x 1
             e(g_avg) :  1 x 1
               e(N_g) :  1 x 1
              e(V_sd) :  1 x 1
             e(re_mi) :  1 x 11
            e(fmi_mi) :  1 x 11
           e(pise_mi) :  1 x 11
            e(rvi_mi) :  1 x 11
             e(df_mi) :  1 x 11
              e(W_mi) :  11 x 11
              e(B_mi) :  11 x 11
              e(V_mi) :  11 x 11
              e(b_mi) :  1 x 11
            e(N_g_mi) :  1 x 1
          e(g_min_mi) :  1 x 1
          e(g_avg_mi) :  1 x 1
          e(g_max_mi) :  1 x 1

64. est save "model_estimates/1e_ibl_pocsd_mi100_linear.ster", replace
  (note: file model_estimates/1e_ibl_pocsd_mi100_linear.ster not found)
  file model_estimates/1e_ibl_pocsd_mi100_linear.ster saved

65. outreg2 using "tables/1e_ibl_pocsd_mi100_linear.rtf", replace word label onecol adds
  > tat(Log-Likelihood, e(ll), chi-square test, r(chi2), F-test, e(p), Prob > F, r(p), R
  > -squared, e(r2)) ///
  > alpha(.001, .01, .05) symbol(***, **, *) ///
  > ctitle("M4: School district race")
  (note: file tables/1e_ibl_pocsd_mi100_linear.rtf not found)
  tables/1e_ibl_pocsd_mi100_linear.rtf
  seeout

66.
67. log close
        name:  <unnamed>
         log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/results_1_
> ibl_mi100_linear_100919.smcl
    log type:  smcl
   closed on:   9 Oct 2019, 22:06:48
  ---------------------------------------------------------------------------------------
```