



```

name: <unnamed>
log: /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/nesting_mi
> _linear_101019.smcl
log type: smcl
opened on: 12 Oct 2019, 08:05:35

```

```

1 . ** -----
2 . ** CHECK NESTING IN EACH MODEL
3 . ** -----
4 .
5 . ** NESTING IN MIXED-EFFECTS LINEAR MODELS PT 1: RACE & POVERTY -> IBL
6 .
7 . * Check nesting without crossed random effects (less accurate):
8 . mi xeq 1 / 5: quietly mixed inquiry_full_log primary middle high age students urban
> pctpdfs || state: || cmoname: || geodistrict: , nolog cov(unstructured) ; estat ic ;
> estat icc

```

m=1 data:

```

-> quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || st
> ate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic

```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	4512.219	12	-9000.438	-8920.484

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
geodistrict cmoname state	state	.0159953	.012545	.0033969	.0719465
	cmoname state	.2847338	.0256958	.2371465	.3376438
	cmoname state	.3837629	.0228346	.3400986	.4293854

m=2 data:

```

-> quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || st
> ate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic

```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	4512.219	12	-9000.438	-8920.484

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
geodistrict cmoname state	state	.0159953	.012545	.0033969	.0719465
	cmoname state	.2847338	.0256958	.2371465	.3376438
	cmoname state	.3837629	.0228346	.3400986	.4293854

m=3 data:

```
-> quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || st
> ate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	4512.219	12	-9000.438	-8920.484

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.0159953	.012545	.0033969	.0719465
	cmoname state	.2847338	.0256958	.2371465	.3376438
geodistrict	cmoname state	.3837629	.0228346	.3400986	.4293854

m=4 data:

```
-> quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || st
> ate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	4512.219	12	-9000.438	-8920.484

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.0159953	.012545	.0033969	.0719465
	cmoname state	.2847338	.0256958	.2371465	.3376438
geodistrict	cmoname state	.3837629	.0228346	.3400986	.4293854

m=5 data:

```
-> quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || st
> ate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	4512.219	12	-9000.438	-8920.484

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.0159953	.012545	.0033969	.0719465
	cmoname state	.2847338	.0256958	.2371465	.3376438
geodistrict	cmoname state	.3837629	.0228346	.3400986	.4293854

```

9 .
10. * Compare rho for full IBL dictionary (50 terms) from each of five imputations, using
> g mixed linear models:
11. mi xeq 1 / 5: quietly xtmixed inquiry_full_log primary middle high lnage lnstudents
> urban pctpdfs || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
> ; xtmrho

```

```

m=1 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: **_all state geodistrict**

```

level 1
Intraclass correlation (ICC): rho1 = 0.32182

```

```

level 2
Intraclass correlation (ICC): rho2 = 0.03716

```

```

level 3
Intraclass correlation (ICC): rho3 = 0.09079

```

```

m=2 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: **_all state geodistrict**

```

level 1
Intraclass correlation (ICC): rho1 = 0.32182

```

```

level 2
Intraclass correlation (ICC): rho2 = 0.03716

```

```

level 3
Intraclass correlation (ICC): rho3 = 0.09079

```

```

m=3 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: **_all state geodistrict**

```

level 1
Intraclass correlation (ICC): rho1 = 0.32182

```

```

level 2
Intraclass correlation (ICC): rho2 = 0.03716

```

level 3
Intraclass correlation (ICC): $\rho_{03} = 0.09079$

m=4 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho

Levels: _all state geodistrict

level 1
Intraclass correlation (ICC): $\rho_{01} = 0.32182$

level 2
Intraclass correlation (ICC): $\rho_{02} = 0.03716$

level 3
Intraclass correlation (ICC): $\rho_{03} = 0.09079$

m=5 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho

Levels: _all state geodistrict

level 1
Intraclass correlation (ICC): $\rho_{01} = 0.32182$

level 2
Intraclass correlation (ICC): $\rho_{02} = 0.03716$

level 3
Intraclass correlation (ICC): $\rho_{03} = 0.09079$

12. mi xeq 1 / 5: quietly xtmixed inquiry_full_log primary middle high lnage lnstudents
> urban pctpdfs || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
> ; xtmrho

m=1 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho

Levels: _all cmoname geodistrict

level 1
Intraclass correlation (ICC): $\rho_{01} = 0.03612$

level 2
Intraclass correlation (ICC): $\rho_{02} = 0.30510$

level 3
Intraclass correlation (ICC): $\rho_{03} = 0.08713$

```

m=2 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: _all cmoname geodistrict

```

level 1
Intraclass correlation (ICC): rho1 = 0.03612

```

```

level 2
Intraclass correlation (ICC): rho2 = 0.30510

```

```

level 3
Intraclass correlation (ICC): rho3 = 0.08713

```

```

m=3 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: _all cmoname geodistrict

```

level 1
Intraclass correlation (ICC): rho1 = 0.03612

```

```

level 2
Intraclass correlation (ICC): rho2 = 0.30510

```

```

level 3
Intraclass correlation (ICC): rho3 = 0.08713

```

```

m=4 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: _all cmoname geodistrict

```

level 1
Intraclass correlation (ICC): rho1 = 0.03612

```

```

level 2
Intraclass correlation (ICC): rho2 = 0.30510

```

```

level 3
Intraclass correlation (ICC): rho3 = 0.08713

```

```

m=5 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho

```

Levels: _all cmoname geodistrict

```

level 1
Intraclass correlation (ICC): rho1 = 0.03612

```

```
level 2
Intraclass correlation (ICC): rho2 = 0.30510
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.08713
```

```
13. * Comparing different model parameters. These should all be the same (CMO x state wi
> th district nested therein):
14. mi xeq 1: quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urba
> n pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured
> ) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_full_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.33409
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.09488
```

```
15. mi xeq 1: quietly xtmixed inquiry_full_log povertyschoolprop primary middle high lna
> ge lnstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolo
> g cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_full_log povertyschoolprop primary middle high lnage lnstud
> ents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(uns
> tructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.34547
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.08316
```

```
16. mi xeq 1: quietly xtmixed inquiry_full_log pocschoolprop primary middle high lnage l
> nstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog co
> v(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_full_log pocschoolprop primary middle high lnage lnstudents
> urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstruc
> tured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.33843
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.09167
```

```
17. mi xeq 1: quietly xtmixed inquiry_full_log povertysd primary middle high lnage linstu
> dents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(un
> structured) ; xtmrho
```

```
m=1 data:
```

```
-> quietly xtmixed inquiry_full_log povertysd primary middle high lnage linstudents urb
> an pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructure
> d)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
```

```
Intraclass correlation (ICC): rho1 = 0.33901
```

```
level 2
```

```
Intraclass correlation (ICC): rho2 = 0.08310
```

```
18. mi xeq 1: quietly xtmixed inquiry_full_log pocsd primary middle high lnage linstudent
> s urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstru
> ctured) ; xtmrho
```

```
m=1 data:
```

```
-> quietly xtmixed inquiry_full_log pocsd primary middle high lnage linstudents urban p
> ctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
```

```
Intraclass correlation (ICC): rho1 = 0.33346
```

```
level 2
```

```
Intraclass correlation (ICC): rho2 = 0.09212
```

```
19.
20. * Check against other measures of IBL
```

```
21.
22. * Seed dictionary (5 terms)
```

```
23. mi xeq 1: quietly xtmixed inquiry_seed_log primary middle high lnage linstudents urba
> n pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured
> ) ; xtmrho
```

```
m=1 data:
```

```
-> quietly xtmixed inquiry_seed_log primary middle high lnage linstudents urban pctpdfs
> || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
```

```
Intraclass correlation (ICC): rho1 = 0.19628
```

```
level 2
```

```
Intraclass correlation (ICC): rho2 = 0.04540
```

```
24. mi xeq 1: quietly xtmixed inquiry_seed_log primary middle high lnage lnstudents urba
> n pctpdfs || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured) ; xt
> mrho
```

```
m=1 data:
-> quietly xtmixed inquiry_seed_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all state geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.18982
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.03285
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.04408
```

```
25. mi xeq 1: quietly xtmixed inquiry_seed_log primary middle high lnage lnstudents urba
> n pctpdfs || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured) ; xt
> mrho
```

```
m=1 data:
-> quietly xtmixed inquiry_seed_log primary middle high lnage lnstudents urban pctpdfs
> || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all cmoname geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.03372
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.16920
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.03938
```

```
26. * Narrow dictionary (20 terms)
```

```
27. mi xeq 1: quietly xtmixed inquiry_narrow_log primary middle high lnage lnstudents ur
> ban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructur
> ed) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_narrow_log primary middle high lnage lnstudents urban pctpd
> fs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all _all geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.28748
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.08883
```



```
28. mi xeq 1: quietly xtmixed inquiry_narrow_log primary middle high lnage lnstudents ur
> ban pctpdfs || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured) ;
> xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_narrow_log primary middle high lnage lnstudents urban pctpd
> fs || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all state geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.27577
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.04103
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.08542
```

```
29. mi xeq 1: quietly xtmixed inquiry_narrow_log primary middle high lnage lnstudents ur
> ban pctpdfs || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured) ;
> xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_narrow_log primary middle high lnage lnstudents urban pctpd
> fs || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all cmoname geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.03879
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.25614
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.07984
```

```
30. * Full dictionary without "hands-on" (49 terms)
```

```
31. mi xeq 1: quietly xtmixed inquiry_full_nohands_log primary middle high lnage lnstude
> nts urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unst
> ructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_full_nohands_log primary middle high lnage lnstudents urban
> pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all _all geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.33180
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.09286
```

```
32. mi xeq 1: quietly xtmixed inquiry_full_nohands_log primary middle high lnage lnstude
> nts urban pctpdfs || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructur
> ed) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_full_nohands_log primary middle high lnage lnstudents urban
> pctpdfs || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all state geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.31733
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.04415
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.08813
```

```
33. mi xeq 1: quietly xtmixed inquiry_full_nohands_log primary middle high lnage lnstude
> nts urban pctpdfs || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructur
> ed) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed inquiry_full_nohands_log primary middle high lnage lnstudents urban
> pctpdfs || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: **_all cmoname geodistrict**

```
level 1
Intraclass correlation (ICC): rho1 = 0.04270
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.29695
```

```
level 3
Intraclass correlation (ICC): rho3 = 0.08891
```

34.

35.

36. ** NESTING IN MIXED-EFFECTS LINEAR MODELS PT 2: IBL, ACADEMICS -> POVERTY

37.

38. * Check nesting without crossed random effects (less accurate):

```
39. mi xeq 1 / 5: quietly mixed povertyschoolprop primary middle high age students urban
> pctpdfs || state: || cmoname: || geodistrict: , nolog cov(unstructured) ; estat ic
> ; estat icc
```

```
m=1 data:
-> quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || s
> tate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-499.2627	12	1022.525	1102.48

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.1836822	.0428259	.113912	.2825591
	cmoname state	.33706	.0392621	.2648705	.4177439
geodistrict	cmoname state	.5309485	.0283939	.4751437	.58599

m=2 data:

```
-> quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || s
> tate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-501.4039	12	1026.808	1106.762

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> estat icc

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.1792987	.041856	.1111938	.2761564
	cmoname state	.3353298	.0386714	.2642023	.4148108
geodistrict	cmoname state	.5338084	.0277877	.4791592	.5876581

m=3 data:

```
-> quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || s
> tate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-485.3356	12	994.6711	1074.625

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> estat icc

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.183572	.0425831	.1141322	.2818197
	cmoname state	.3399882	.039011	.2681392	.4200399
geodistrict	cmoname state	.5374522	.0279806	.4823795	.591626

m=4 data:

```
-> quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || s
> tate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-496.8943	12	1017.789	1097.743

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> **estat icc**

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.1853563	.0428885	.115356	.2841884
	cmoname state	.3458604	.0389728	.2739022	.4256411
geodistrict	cmoname state	.5374826	.0281573	.4820615	.5919927

m=5 data:

```
-> quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || s
> tate: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-475.8409	12	975.6819	1055.636

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> **estat icc**

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.1809781	.0426732	.1116499	.2797964
	cmoname state	.3412347	.0389864	.2693906	.4211933
geodistrict	cmoname state	.540953	.0277746	.4862435	.5946927

40.

```
41. mi xeq 1 / 5: quietly xtmixed povertyschoolprop primary middle high lnage lnstudents
> urban || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured) ;
> xtmrho
```

m=1 data:

```
-> quietly xtmixed povertyschoolprop primary middle high lnage lnstudents urban || _al
> l:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: _all _all geodistrict

level 1

Intraclass correlation (ICC): rho1 = 0.16336

level 2

Intraclass correlation (ICC): rho2 = 0.26020

m=2 data:

```
-> quietly xtmixed povertyschoolprop primary middle high lnage lnstudents urban || _al
> l:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: _all _all geodistrict

```
level 1
Intraclass correlation (ICC): rho1 = 0.16646
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.27363
```

```
m=3 data:
-> quietly xtmixed povertyschoolprop primary middle high lnage lnstudents urban || _al
> 1:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.16817
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.26945
```

```
m=4 data:
-> quietly xtmixed povertyschoolprop primary middle high lnage lnstudents urban || _al
> 1:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.17778
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.25801
```

```
m=5 data:
-> quietly xtmixed povertyschoolprop primary middle high lnage lnstudents urban || _al
> 1:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.16972
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.26693
```

```
42. mi xeq 1: quietly xtmixed povertyschoolprop inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed povertyschoolprop inquiry_full_log primary middle high lnage lnstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured) ; xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.17679
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.24766
```

```
43. mi xeq 1: quietly xtmixed povertyschoolprop readall15 mathall15 primary middle high
> lnage lnstudents urban readlevel15 mathlevel15 || _all:R.cmoname || _all:R.state ||
> geodistrict: , nolog cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed povertyschoolprop readall15 mathall15 primary middle high lnage lns
> tudents urban readlevel15 mathlevel15 || _all:R.cmoname || _all:R.state || geodistri
> ct: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.19761
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.19675
```

```
44. mi xeq 1: quietly xtmixed povertyschoolprop inquiry_full_log readall15 mathall15 pri
> mary middle high lnage lnstudents urban readlevel15 mathlevel15 || _all:R.cmoname ||
> _all:R.state || geodistrict: , nolog cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed povertyschoolprop inquiry_full_log readall15 mathall15 primary midd
> le high lnage lnstudents urban readlevel15 mathlevel15 || _all:R.cmoname || _all:R.s
> tate || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.20236
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.19096
```

```
45.
46.
47. ** NESTING IN MIXED-EFFECTS LINEAR MODELS PT 3: IBL, ACADEMICS -> RACE
48.
49. * Check nesting without crossed random effects (less accurate):
50. mi xeq 1 / 5: quietly mixed pocschoolcount primary middle high age students urban pc
> tpdfs || state: || cmoname: || geodistrict: , nolog cov(unstructured) ; estat ic ; e
> stat icc
```

```
m=1 data:
-> quietly mixed pocschoolcount primary middle high age students urban pctpdfs || stat
> e: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-38130.83	12	76285.65	76365.61

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

```
-> estat icc
```

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.3870607	.064589	.2702652	.5184688
	cmoname state	.8191842	.0202541	.7760553	.8555531
geodistrict	cmoname state	.8445798	.0174179	.8073113	.8757496

m=2 data:

```
-> quietly mixed pocschoolcount primary middle high age students urban pctpdfs || stat
> e: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-38130.83	12	76285.65	76365.61

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> estat icc

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.3870607	.064589	.2702652	.5184688
	cmoname state	.8191842	.0202541	.7760553	.8555531
geodistrict	cmoname state	.8445798	.0174179	.8073113	.8757496

m=3 data:

```
-> quietly mixed pocschoolcount primary middle high age students urban pctpdfs || stat
> e: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-38130.83	12	76285.65	76365.61

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> estat icc

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.3870607	.064589	.2702652	.5184688
	cmoname state	.8191842	.0202541	.7760553	.8555531
geodistrict	cmoname state	.8445798	.0174179	.8073113	.8757496

m=4 data:

```
-> quietly mixed pocschoolcount primary middle high age students urban pctpdfs || stat
> e: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-38130.83	12	76285.65	76365.61

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> estat icc

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.3870607	.064589	.2702652	.5184688
	cmoname state	.8191842	.0202541	.7760553	.8555531
geodistrict	cmoname state	.8445798	.0174179	.8073113	.8757496

m=5 data:

```
-> quietly mixed pocschoolcount primary middle high age students urban pctpdfs || stat
> e: || cmoname: || geodistrict: , nolog cov(unstructured)
-> estat ic
```

Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-38130.83	12	76285.65	76365.61

Note: N=Obs used in calculating BIC; see [\[R\] BIC note](#).

-> estat icc

Residual intraclass correlation

	Level	ICC	Std. Err.	[95% Conf. Interval]	
	state	.3870607	.064589	.2702652	.5184688
	cmoname state	.8191842	.0202541	.7760553	.8555531
geodistrict	cmoname state	.8445798	.0174179	.8073113	.8757496

51.

```
52. mi xeq 1 / 5: quietly xtmixed pocschoolprop primary middle high lnage lnstudents urb
> an || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstructured) ; xtm
> rho
```

m=1 data:

```
-> quietly xtmixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.
> cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: _all _all geodistrict

level 1

Intraclass correlation (ICC): rho1 = 0.13952

level 2

Intraclass correlation (ICC): rho2 = 0.48431

m=2 data:

```
-> quietly xtmixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.
> cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

Levels: _all _all geodistrict


```
level 1
Intraclass correlation (ICC): rho1 = 0.13952
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48431
```

```
m=3 data:
-> quietly xtmixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.
> cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.13952
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48431
```

```
m=4 data:
-> quietly xtmixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.
> cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.13952
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48431
```

```
m=5 data:
-> quietly xtmixed pocschoolprop primary middle high lnage lnstudents urban || _all:R.
> cmoname || _all:R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.13952
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48431
```

```
53. mi xeq 1: quietly xtmixed pocschoolprop inquiry_full_log prop primary middle high ln
> age lnstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nol
> og cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed pocschoolprop inquiry_full_log prop primary middle high lnage lnstu
> dents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(un
> structured)
variable prop not found
r(111);
```

```
end of do-file
```

```
r(111);
```

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

```
55. mi xeq 1: quietly xtmixed pocschoolprop inquiry_full_log primary middle high lnage l
> nstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog co
> v(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed pocschoolprop inquiry_full_log primary middle high lnage lstudents
> urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(unstruc
> tured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.14288
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48664
```

```
56. mi xeq 1: quietly xtmixed pocschoolprop readall15 mathall15 primary middle high lnag
> e lstudents urban readlevel15 mathlevel15 || _all:R.cmoname || _all:R.state || geod
> istrict: , nolog cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed pocschoolprop readall15 mathall15 primary middle high lnage lstudent
> s urban readlevel15 mathlevel15 || _all:R.cmoname || _all:R.state || geodistrict:
> , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.16432
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48180
```

```
57. mi xeq 1: quietly xtmixed pocschoolprop inquiry_full_log readall15 mathall15 primary
> middle high lnage lstudents urban readlevel15 mathlevel15 pctpdfs || _all:R.cmonam
> e || _all:R.state || geodistrict: , nolog cov(unstructured) ; xtmrho
```

```
m=1 data:
-> quietly xtmixed pocschoolprop inquiry_full_log readall15 mathall15 primary middle h
> igh lnage lstudents urban readlevel15 mathlevel15 pctpdfs || _all:R.cmoname || _all
> :R.state || geodistrict: , nolog cov(unstructured)
-> xtmrho
```

```
Levels: _all _all geodistrict
```

```
level 1
Intraclass correlation (ICC): rho1 = 0.16179
```

```
level 2
Intraclass correlation (ICC): rho2 = 0.48747
```

```
58.  
59. log close  
    name: <unnamed>  
    log: /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/nesting_mi  
> _linear_101019.smcl  
    log type: smcl  
closed on: 15 Oct 2019, 10:46:32
```
