STata
Statistics/Data Analysis

_____

```
      name:  <unnamed>
       log:  /hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/nesting_mi
> _linear_102419.smcl
  log type:  smcl
 opened on:  24 Oct 2019, 16:07:45
```

```
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), do both CMO x state
> and state x CMO:
8 . mi xeq 1: quietly mixed inquiry_full_log primary middle high age students urban pctp
> dfs || state: || cmoname: || geodistrict: , nolog cov(unstructured) ; estat ic ; est
> at 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]	
state	.0159953	.012545	.0033969	.0719465
cmoname|state	.2847338	.0256958	.2371465	.3376438
geodistrict|cmoname|state	.3837629	.0228346	.3400986	.4293854

```
9 . mi xeq 1: quietly mixed inquiry_full_log primary middle high age students urban pctp
> dfs || cmoname: || state: || geodistrict: , nolog cov(unstructured) ; estat ic ; est
> at icc
```

```
m=1 data:
-> quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || cm
> oname: || state: || 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	.	4555.361	12	-9086.721	-9006.767

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

Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
cmoname	.2834526	.0300957	.2283203	.3459297
state|cmoname	.3210967	.0271069	.2704279	.3763617
geodistrict|state|cmoname	.4096411	.0244301	.362751	.458234

10. mi xeq 1: quietly mixed inquiry_full_log primary middle high age students urban pctp
  > dfs || state: || 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: || 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	.	4252.593	11	-8483.186	-8409.894

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

  Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	.0438761	.0160561	.0212138	.088558
geodistrict|state	.1714772	.0210248	.1340932	.2166754

11. mi xeq 1: quietly mixed inquiry_full_log primary middle high age students urban pctp
  > dfs || geodistrict: , nolog cov(unstructured) ; estat ic ; estat icc

  m=1 data:
  -> **quietly mixed inquiry_full_log primary middle high age students urban pctpdfs || ge**
  > odistrict: , nolog cov(unstructured)
  -> **estat ic**

  Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	4229.508	10	-8439.017	-8372.388

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

  Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
geodistrict	.1606949	.0177647	.1288435	.1986251

```
 12. * Compare rho for full IBL dictionary (50 terms) from each of five imputations, do b
   > oth CMO x state and state x CMO:
 13. mi xeq 1 / 3: 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): **rho3 = 0.09079**

```
14. mi xeq 1 / 3: 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):   **rho1 = 0.03612**

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

level **3**
Intraclass correlation (ICC):   **rho3 = 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**

15. * Compare different model parameters. These should all be the same (CMO x state with
  > district nested therein):
16. 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**

17. mi xeq 1 / 3: quietly xtmixed inquiry_full_log povertyschoolprop primary middle high
  > lnage lnstudents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: ,
  > nolog 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**

  m=2 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 = 0.34361**

  level **2**
  Intraclass correlation (ICC): **rho2 = 0.08433**

  m=3 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 = 0.34590**

```
    level 2
    Intraclass correlation  (ICC):  rho2 = 0.08381


 18. mi xeq 1 / 3: quietly xtmixed inquiry_full_log pocschoolprop 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 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



    m=2 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



    m=3 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
```

19. mi xeq 1 / 3: quietly xtmixed inquiry_full_log povertysd 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 povertysd primary middle high lnage lnstudents 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**

    m=2 data:
    -> **quietly xtmixed inquiry_full_log povertysd primary middle high lnage lnstudents 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 = 0.33859**

    level **2**
    Intraclass correlation (ICC): **rho2 = 0.08310**

    m=3 data:
    -> **quietly xtmixed inquiry_full_log povertysd primary middle high lnage lnstudents 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 = 0.33896**

    level **2**
    Intraclass correlation (ICC): **rho2 = 0.08307**

20. mi xeq 1 / 3: quietly xtmixed inquiry_full_log pocsd primary middle high lnage lnstu
    > dents urban pctpdfs || _all:R.cmoname || _all:R.state || geodistrict: , nolog cov(un
    > structured) ; xtmrho

    m=1 data:
    -> **quietly xtmixed inquiry_full_log pocsd primary middle high lnage lnstudents 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**

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

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1** = **0.33328**

    level **2**
    Intraclass correlation (ICC): **rho2** = **0.09213**

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

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1** = **0.33335**

    level **2**
    Intraclass correlation (ICC): **rho2** = **0.09210**

 21.
 22. * Check against other measures of IBL
 23.
 24. * Seed dictionary (5 terms)
 25. mi xeq 1: quietly xtmixed inquiry_seed_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_seed_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** = **0.19628**

    level **2**
    Intraclass correlation (ICC): **rho2** = **0.04540**

```
26. 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**

```
27. 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**

```
28. * Narrow dictionary (20 terms)
29. 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**

```
30. 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**


```
31. 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**


```
32. * Full dictionary without "hands-on" (49 terms)
33. 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**

```
34. 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**

```
35. 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**

```
36.
37.
38. ** NESTING IN MIXED-EFFECTS LINEAR MODELS PT 2: IBL, ACADEMICS -> POVERTY
39.
40. * Check nesting without crossed random effects (less accurate), do both CMO x state
  > and state x CMO:
41. mi xeq 1: quietly mixed povertyschoolprop primary middle high age students urban pct
  > pdfs || state: || cmoname: || geodistrict: , nolog cov(unstructured) ; estat ic ; es
  > tat 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

42. mi xeq 1: quietly mixed povertyschoolprop primary middle high age students urban pct
   > pdfs || cmoname: || state: || geodistrict: , nolog cov(unstructured) ; estat ic ; es
   > tat icc

  m=1 data:
  -> **quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || c**
  > **moname: || state: || 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	.	-564.2507	12	1152.501	1232.456

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

Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
cmoname	.162875	.0460379	.0912243	.2738446
state|cmoname	.3442906	.0298833	.2882961	.4049723
geodistrict|state|cmoname	.5456251	.020671	.5048976	.585751

43. mi xeq 1: quietly mixed povertyschoolprop primary middle high age students urban pct
   > pdfs || state: || geodistrict: , nolog cov(unstructured) ; estat ic ; estat icc

  m=1 data:
  -> **quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || s**
  > **tate: || 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	.	-510.2802	11	1042.56	1115.852

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

Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	.1288461	.0337161	.0758629	.2104082
geodistrict|state	.4077021	.0264122	.3571292	.4603087

44. mi xeq 1: quietly mixed povertyschoolprop primary middle high age students urban pct
   > pdfs || geodistrict: , nolog cov(unstructured) ; estat ic ; estat icc

   m=1 data:
   -> **quietly mixed povertyschoolprop primary middle high age students urban pctpdfs || g**
   > eodistrict: , nolog cov(unstructured)
   -> **estat ic**

   Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	-589.2015	10	1198.403	1265.032

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

   Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
geodistrict	.3816351	.0175804	.3478226	.4166346

45. * Compare rho from each of five imputations, do both CMO x state and state x CMO:
46. mi xeq 1 / 3: quietly xtmixed povertyschoolprop primary middle high lnage lnstudents
   > urban || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured) ; xtmrh
   > o

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

   Levels: **_all state geodistrict**

   level **1**
   Intraclass correlation (ICC): **rho1 = 0.14403**

   level **2**
   Intraclass correlation (ICC): **rho2 = 0.11841**

   level **3**
   Intraclass correlation (ICC): **rho3 = 0.23227**

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

   Levels: **_all state geodistrict**

   level **1**
   Intraclass correlation (ICC): **rho1 = 0.14713**

   level **2**
   Intraclass correlation (ICC): **rho2 = 0.11660**

     level **3**
     Intraclass correlation (ICC): **rho3** = **0.24398**

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

     Levels: **_all state geodistrict**

     level **1**
     Intraclass correlation (ICC): **rho1** = **0.14850**

     level **2**
     Intraclass correlation (ICC): **rho2** = **0.11761**

     level **3**
     Intraclass correlation (ICC): **rho3** = **0.23954**

 47. mi xeq 1 / 3: quietly xtmixed povertyschoolprop primary middle high lnage lnstudents
    > urban || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured) ; xtmrh
    > o

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

     Levels: **_all cmoname geodistrict**

     level **1**
     Intraclass correlation (ICC): **rho1** = **0.15634**

     level **2**
     Intraclass correlation (ICC): **rho2** = **0.16516**

     level **3**
     Intraclass correlation (ICC): **rho3** = **0.19885**

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

     Levels: **_all cmoname geodistrict**

     level **1**
     Intraclass correlation (ICC): **rho1** = **0.15307**

     level **2**
     Intraclass correlation (ICC): **rho2** = **0.16847**

     level **3**
     Intraclass correlation (ICC): **rho3** = **0.20297**

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

    Levels: **_all cmoname geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1 = 0.15205**

    level **2**
    Intraclass correlation (ICC): **rho2 = 0.17066**

    level **3**
    Intraclass correlation (ICC): **rho3 = 0.20397**

 48. * Compare different model parameters. These should all be the same (CMO x state with
   > district nested therein):
 49. mi xeq 1: quietly xtmixed povertyschoolprop inquiry_full_log 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 povertyschoolprop inquiry_full_log 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 = 0.17679**

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

 50. mi xeq 1 / 3: quietly xtmixed povertyschoolprop readall14 mathall14 primary middle h
   > igh lnage lnstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state
   > || geodistrict: , nolog cov(unstructured) ; xtmrho

    m=1 data:
    -> **quietly xtmixed povertyschoolprop readall14 mathall14 primary middle high lnage lns**
    > tudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistri
    > ct: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1 = 0.19370**

    level **2**
    Intraclass correlation (ICC): **rho2 = 0.19615**

    m=2 data:
    -> **quietly xtmixed povertyschoolprop readall14 mathall14 primary middle high lnage lns**
    > tudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistri
    > ct: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC):   **rho1** = **0.19246**

    level **2**
    Intraclass correlation (ICC):   **rho2** = **0.20782**

    m=3 data:
    -> **quietly xtmixed povertyschoolprop readall14 mathall14 primary middle high lnage lns**
    > tudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistri
    > ct: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC):   **rho1** = **0.20230**

    level **2**
    Intraclass correlation (ICC):   **rho2** = **0.20225**

 51. mi xeq 1 / 3: quietly xtmixed povertyschoolprop inquiry_full_log readall14 mathall14
    > primary middle high lnage lnstudents urban readlevel14 mathlevel14 || _all:R.cmonam
    > e || _all:R.state || geodistrict: , nolog cov(unstructured) ; xtmrho

    m=1 data:
    -> **quietly xtmixed povertyschoolprop inquiry_full_log readall14 mathall14 primary midd**
    > le high lnage lnstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.s
    > tate || geodistrict: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC):   **rho1** = **0.20036**

    level **2**
    Intraclass correlation (ICC):   **rho2** = **0.18947**

    m=2 data:
    -> **quietly xtmixed povertyschoolprop inquiry_full_log readall14 mathall14 primary midd**
    > le high lnage lnstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.s
    > tate || geodistrict: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC):   **rho1** = **0.19700**

    level **2**
    Intraclass correlation (ICC):   **rho2** = **0.20253**

    m=3 data:
    -> **quietly xtmixed povertyschoolprop inquiry_full_log readall14 mathall14 primary midd**
    > le high lnage lnstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.s
    > tate || geodistrict: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

      level **1**
      Intraclass correlation (ICC): **rho1 = 0.20888**

      level **2**
      Intraclass correlation (ICC): **rho2 = 0.19617**


```
52.
53.
54. ** NESTING IN MIXED-EFFECTS LINEAR MODELS PT 3: IBL, ACADEMICS -> RACE
55.
56. * Check nesting without crossed random effects (less accurate), do both CMO x state
  > and state x CMO:
57. mi xeq 1: quietly mixed pocschoolprop primary middle high age students urban pctpdfs
  >  || state: || cmoname: || geodistrict: , nolog cov(unstructured) ; estat ic ; estat
  > icc
```

  m=1 data:
  -> **quietly mixed pocschoolprop primary middle high age students urban pctpdfs || state**
  > : || 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**	.	**592.2259**	**12**	**-1160.452**	**-1080.498**

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

  Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	**.2716667**	**.0602367**	**.1703902**	**.4038374**
cmoname|state	**.4282638**	**.0477304**	**.3382725**	**.5232645**
geodistrict|cmoname|state	**.7212228**	**.0239964**	**.6718613**	**.7657479**

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

  m=1 data:
  -> **quietly mixed pocschoolprop primary middle high age students urban pctpdfs || cmona**
  > me: || state: || 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**	.	**592.3917**	**12**	**-1160.783**	**-1080.829**

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

  Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
cmoname	.1515173	.0291066	.1027997	.2177199
state|cmoname	.318421	.0255344	.2705891	.3704145
geodistrict|state|cmoname	.6662408	.0145591	.6371242	.6941427

59. mi xeq 1: quietly mixed pocschoolprop primary middle high age students urban pctpdfs
    > || state: || geodistrict: , nolog cov(unstructured) ; estat ic ; estat icc

   m=1 data:
   -> **quietly mixed pocschoolprop primary middle high age students urban pctpdfs || state**
   > : || 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	.	648.7768	11	-1275.554	-1202.262

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

   Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
state	.2974459	.0548596	.2019708	.4146057
geodistrict|state	.6863258	.0256977	.6339134	.7343786

60. mi xeq 1: quietly mixed pocschoolprop primary middle high age students urban pctpdfs
    > || geodistrict: , nolog cov(unstructured) ; estat ic ; estat icc

   m=1 data:
   -> **quietly mixed pocschoolprop primary middle high age students urban pctpdfs || geodi**
   > strict: , nolog cov(unstructured)
   -> **estat ic**

   Akaike's information criterion and Bayesian information criterion

Model	Obs	ll(null)	ll(model)	df	AIC	BIC
.	5,784	.	429.65	10	-839.2999	-772.6714

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

   Residual intraclass correlation

Level	ICC	Std. Err.	[95% Conf. Interval]	
geodistrict	.6543263	.0129382	.6285488	.6792277

```
 61. * Compare rho from each of five imputations, do both CMO x state and state x CMO:
 62. mi xeq 1 / 3: quietly xtmixed pocschoolprop primary middle high lnage lnstudents urb
   > an || _all:R.cmoname || state: || geodistrict: , nolog cov(unstructured) ; xtmrho
```

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

Levels: **_all state geodistrict**

level **1**
Intraclass correlation (ICC): **rho1 = 0.10219**

level **2**
Intraclass correlation (ICC): **rho2 = 0.27115**

level **3**
Intraclass correlation (ICC): **rho3 = 0.35292**

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

Levels: **_all state geodistrict**

level **1**
Intraclass correlation (ICC): **rho1 = 0.10219**

level **2**
Intraclass correlation (ICC): **rho2 = 0.27115**

level **3**
Intraclass correlation (ICC): **rho3 = 0.35292**

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

Levels: **_all state geodistrict**

level **1**
Intraclass correlation (ICC): **rho1 = 0.10219**

level **2**
Intraclass correlation (ICC): **rho2 = 0.27115**

level **3**
Intraclass correlation (ICC): **rho3 = 0.35292**

```
63. mi xeq 1 / 3: quietly xtmixed pocschoolprop primary middle high lnage lnstudents urb
  > an || _all:R.state || cmoname: || geodistrict: , nolog cov(unstructured) ; xtmrho
```

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

Levels: **_all cmoname geodistrict**

level **1**
Intraclass correlation (ICC):   **rho1 = 0.25939**

level **2**
Intraclass correlation (ICC):   **rho2 = 0.15412**

level **3**
Intraclass correlation (ICC):   **rho3 = 0.29943**

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

Levels: **_all cmoname geodistrict**

level **1**
Intraclass correlation (ICC):   **rho1 = 0.25939**

level **2**
Intraclass correlation (ICC):   **rho2 = 0.15412**

level **3**
Intraclass correlation (ICC):   **rho3 = 0.29943**

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

Levels: **_all cmoname geodistrict**

level **1**
Intraclass correlation (ICC):   **rho1 = 0.25939**

level **2**
Intraclass correlation (ICC):   **rho2 = 0.15412**

level **3**
Intraclass correlation (ICC):   **rho3 = 0.29943**

```
64. * Compare different model parameters. These should all be the same (CMO x state with
  >  district nested therein):
65. 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 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** = **0.14288**

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


```
66. mi xeq 1 / 3 : quietly xtmixed pocschoolprop readall14 mathall14 primary middle high
  >  lnage lnstudents urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state ||
  >  geodistrict: , nolog cov(unstructured) ; xtmrho
```

  m=1 data:
  -> **quietly xtmixed pocschoolprop readall14 mathall14 primary middle high lnage lnstude**
  > nts urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistrict:
  > , nolog cov(unstructured)
  -> **xtmrho**

  Levels: **_all _all geodistrict**

  level **1**
  Intraclass correlation (ICC):   **rho1** = **0.16571**

  level **2**
  Intraclass correlation (ICC):   **rho2** = **0.48270**

  m=2 data:
  -> **quietly xtmixed pocschoolprop readall14 mathall14 primary middle high lnage lnstude**
  > nts urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistrict:
  > , nolog cov(unstructured)
  -> **xtmrho**

  Levels: **_all _all geodistrict**

  level **1**
  Intraclass correlation (ICC):   **rho1** = **0.16170**

  level **2**
  Intraclass correlation (ICC):   **rho2** = **0.48505**

  m=3 data:
  -> **quietly xtmixed pocschoolprop readall14 mathall14 primary middle high lnage lnstude**
  > nts urban readlevel14 mathlevel14 || _all:R.cmoname || _all:R.state || geodistrict:
  > , nolog cov(unstructured)
  -> **xtmrho**

  Levels: **_all _all geodistrict**

  level **1**
  Intraclass correlation (ICC):   **rho1** = **0.16268**

     level **2**
     Intraclass correlation (ICC): **rho2** = **0.48240**

67. mi xeq 1 / 3: quietly xtmixed pocschoolprop inquiry_full_log readall14 mathall14 pri
    > mary middle high lnage lnstudents urban readlevel14 mathlevel14 pctpdfs || _all:R.cm
    > oname || _all:R.state || geodistrict: , nolog cov(unstructured) ; xtmrho

    m=1 data:
    -> **quietly xtmixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle h**
    > igh lnage lnstudents urban readlevel14 mathlevel14 pctpdfs || _all:R.cmoname || _all
    > :R.state || geodistrict: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1** = **0.16459**

    level **2**
    Intraclass correlation (ICC): **rho2** = **0.48710**

    m=2 data:
    -> **quietly xtmixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle h**
    > igh lnage lnstudents urban readlevel14 mathlevel14 pctpdfs || _all:R.cmoname || _all
    > :R.state || geodistrict: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1** = **0.16044**

    level **2**
    Intraclass correlation (ICC): **rho2** = **0.48963**

    m=3 data:
    -> **quietly xtmixed pocschoolprop inquiry_full_log readall14 mathall14 primary middle h**
    > igh lnage lnstudents urban readlevel14 mathlevel14 pctpdfs || _all:R.cmoname || _all
    > :R.state || geodistrict: , nolog cov(unstructured)
    -> **xtmrho**

    Levels: **_all _all geodistrict**

    level **1**
    Intraclass correlation (ICC): **rho1** = **0.16151**

    level **2**
    Intraclass correlation (ICC): **rho2** = **0.48687**

68.
69. log close
          name: **<unnamed>**
           log: **/hdir/0/jhaber/Projects/charter_data/sorting-schools-2019/logs/nesting_mi**
    > _linear_102419.smcl
      log type: **smcl**
     closed on: **24 Oct 2019, 21:22:00**
    ───