Introduction to Multilevel model

Gebretsadik Shibre

Talking points

- What is MLM?

- When to use it?

- Implications of MLM for social epidemiology

- Modeling MLM and interpretation of outputs

When to use MLM?

- Clustered/nested data

e.g:

= Patients within HF

= Repeated observations

✓Independence?

✓Nuisance vs interesting problem

✓Checked by ICC

When to use MLM?

- Interested in variation/variability

- # of clusters?

Consequences of ignoring hierarchical data

- Underestimation VS. overestimation of SE?

= Inflated type 1 error

How to improve interpretability of MLM outputs?

- Centering

= grand-mean centering

= group-mean centering

Implications of MLM models

- Health disparity

= contextual phenomenon

= context-specific policy

MLM on HDSS data

- Observations are nested within a person

- Persons are nested within communities

- 3 level MLM

MLM on HDSS data: interpretation

- Variance

- ICC= between variance/total variance

- Proportional change in variance (PCV)

 = variance in null-variance in adjusted/variance in null

Any questions?