

Multiple Estimators for Longitudinal Data

Multilevel Models, Random Effects, Fixed Effects, and Correlated Random Effects

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All estimators use *essentially* the same equation:

$$y_{it} = \beta_0 + \beta_1 x_{it} + \beta_2 z_{it} + u_{0i} + e_{it} \quad (1)$$

💡 Within and Between Variation

Some estimators divide x_{it} into a *within* component $(x_{it} - \bar{x}_i)$, and a *between* $(\bar{x}_i - \bar{x})$ component.

Multilevel Models estimate Equation 1. Both *within* and *between* variation is included in the estimates of β .

Random Effects Models estimate Equation 1. Both *within* and *between* variation is included in the estimates of β .

Between Effects Models (rarely used) estimate Equation 1. Only *between* variation is included in the estimates of β .

Fixed Effects Models estimate Equation 1. Only *within* variation is included in the estimates of β .

Correlated Random Effects Models estimate Equation 1. Separate β parameters are provided for *within* and *between* variation.