

Table 1: List of growth model equations, error distributions, and parameters

	Equation			Error Distribution	Parameters
	Deterministic	Stochastic			
Mean	$y_t =$	\bar{y}	$+$	ϵ_t	$\{\bar{y}, \sigma\}$
Linear Change Model	$y_t =$	$\beta_0 + \beta_1(\text{time})_t$	$+$	$\epsilon_t \sim N(0, \sigma^2)$	$\{\beta_0, \beta_1, \sigma\}$
“Fixed-Effects” Model (see notes)	$y_{ti} =$	$\beta_0 + \beta_1(\text{time})_{ti} + \delta_i$	$+$	$\epsilon_t \sim N(0, \sigma^2)$	$\{\beta_0, \beta_1, \delta_i, \sigma\}$
Random Intercepts Model	$y_{ti} =$	$\gamma_{00} + \gamma_{10}(\text{time})_{ti}$	$+$	$\epsilon_{ti} \sim N(0, \sigma^2)$ $\rho_{0i} \sim N(0, \tau_{00})$	$\{\gamma_{00}, \gamma_{10}, \tau_{00}, \sigma\}$
Random Slopes Model	$y_{ti} =$	$\gamma_{00} + \gamma_{10}(\text{time})_{ti}$	$+$	$\epsilon_{ti} \sim N(0, \sigma^2)$ $\rho_{1i} \sim N(0, \tau_{11})$	$\{\gamma_{00}, \gamma_{10}, \tau_{11}, \sigma\}$
Random Intercepts and Slopes Model	$y_{ti} =$	$\gamma_{00} + \gamma_{10}(\text{time})_{ti}$	$+$	$\epsilon_{ti} \sim N(0, \sigma^2)$ $\rho \sim MVN\left(0, \begin{bmatrix} \tau_{00} & \\ & \tau_{11} \end{bmatrix}\right)$	$\{\gamma_{00}, \gamma_{10}, \tau_{00}, \tau_{11}, \tau_{10}, \sigma\}$
Latent Class Growth Analysis (LCGA) Model (see notes)	$y_{ti c=k} =$	$\gamma_{0k} + \gamma_{1k}(\text{time})_{ti}$	$+$	$\epsilon_{ti} \sim N(0, \sigma^2)$ $\pi_{i(c=k)} \sim \frac{\exp\{\eta_{ci}\}}{\sum_{k=1}^K \exp\{\eta_{ik}\}}$	$\{\sigma\}$ and $\{\gamma_{0k}, \gamma_{1k}, \pi_{i(c=k)}\}$ for each k
Growth Mixture Model	$y_{ti c=k} =$	$\gamma_{0k} + \gamma_{1k}(\text{time})_{ti}$	$+$	$\epsilon_{ti} \sim N(0, \sigma^2)$ $\rho \sim MVN\left(0, \begin{bmatrix} \tau_{00} & \\ & \tau_{11} \end{bmatrix}\right)$ $\pi_{i(c=k)} \sim \frac{\exp\{\eta_{ci}\}}{\sum_{k=1}^K \exp\{\eta_{ik}\}}$	$\{\sigma\}$ and $\{\gamma_{0k}, \gamma_{1k}, \tau_{00}, \tau_{11}, \tau_{01}, \pi_{i(c=k)}\}$ for each k

Notes: The “Fixed-Effects” Model refers to the econometric description of a model that accounts for variation across higher-level entities by including an indicator for $N-1$ entities represented in the equation by δ_i (therefore, δ_i has $N-1$ parameters); it *does not* refer to the “fixed” portion (i.e., deterministic component) of the growth models above. In the Latent Class Growth Analysis Model and Growth Mixture Model, η_{ik} represents the log-odds of membership in class k being drawn using the convention that η_{iK} , the log-odds of the reference category K , equal 0.