

$$p_z \sim \text{BAB}(N_z, \hat{\rho}_z) \quad (1a)$$

$$\hat{\rho}_z = \text{mean}(d_i \in \mathbb{d}_z) \quad (1b)$$

$$d_i = D_i (f_i + s_i (1 + g_i)) \quad (1c)$$

$$D_i \sim \text{Exp}(1/\bar{D}) \quad (1d)$$

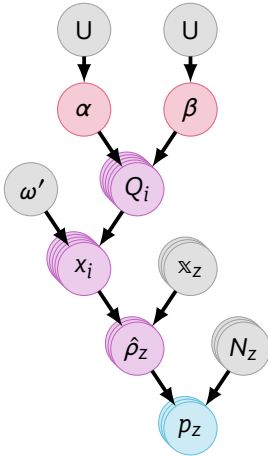
$$f_i \sim \text{Unif}(0, 1) \quad (1e)$$

$$s_i \sim \text{Pois}(\bar{s}) \quad (1f)$$

$$g_i \sim \text{Exp}(1/\bar{g}) \quad (1g)$$

$$\phi \sim \text{BAB}(N, 1 - e^{-\bar{s}}) \quad (1h)$$

a: Duration selling sex



$$p_z \sim \text{BAB}(N_z, \hat{\rho}_z) \quad (2a)$$

$$\hat{\rho}_z = \text{mean}(x_i \in \mathbb{x}_z) \quad (2b)$$

$$x_i \sim \text{Pois}(Q_i \omega')$$

$$Q_i \sim \text{Gamma}(\alpha, \beta) \quad (2d)$$

b: Rates of partnership change

Guide: gray: fixed variable/distribution, red: target, purple: intermediate, blue: observed. Variables: p_z : proportion of population, N_z : effective sample size, $\hat{\rho}_z$: empirically estimated p_z mean, \mathbb{d}_z : range of reported durations selling sex, d_i : reported duration at survey, D_i : total (eventual) duration, f_i : censoring fraction, s_i : number of times stopped selling sex, g_i : relative gap length, \bar{D} : true D mean, \bar{s} : true s mean, \bar{g} : true g mean, ϕ : proportion who stopped selling sex at least once, \mathbb{x}_z : range of reported partner numbers, x_i : reported partner numbers, Q_i : partnership change rate, ω' : effective recall period, α, β : parameters of Q_i distribution. Distributions: U: uniform / uninformative, BAB: beta approximation of binomial distribution.