A minimal example

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First Section

First Frame

Hello, world! TEX

$\alpha^2 + \beta^2 = \sqrt{a}^3$

Multiple prevalence surveys

Sample n_i individuals,observe Y_i positives,$i = 1, 2, \cdots, m$

$$Y_i \sim \mathrm{Bin}(n_i, p_i)$$

Extra-binomial variation

Sample n_i individuals,observe Y_i positives,$i = 1, 2, \cdots, m$

$$Y_i|d_i, U_i \sim \mathrm{Bin}(n_i, p_i) \quad \log\{p_i/(1-p_i)\} = d_i'\beta + U_i \quad U_i \sim N(0, \tau^2)$$

notations: Spatial Generalized Linear Mixed Models (SGLMM)

- Latent spatially correlated process
  Stationary Gaussian Process: $S(x) \sim \mathrm{SGP}\{0, \sigma^2, \rho(u)\}$
  correlation function: e.g. $\rho(u) = \exp(-|u|/\phi)$
- Linear prediction (regression model)
  $d(x) =$ covariates at location x
  Linear prediction: $\eta(x) = d(x)'\beta + S(x)$
  Link function: logit $p(x) = \log\{\eta(x)/[1-\eta(x)]\}$
- Conditional distribution for positive proportion Y_i/n_i
  $Y_i|S(\cdot) \sim \mathrm{Bin}(n_i, p(x_i))$ (binomial sampling)