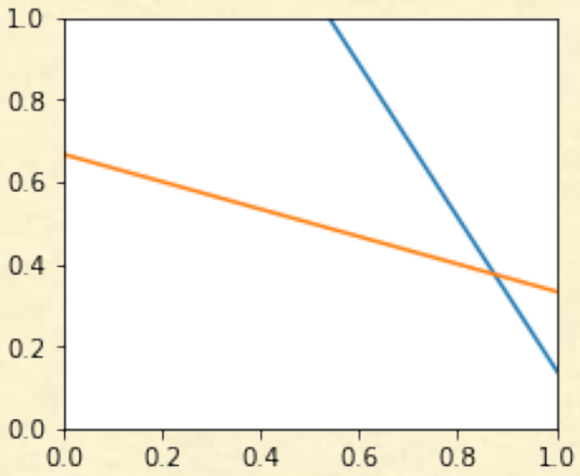
KING'S ECOLOGICAL INFERENCE

precinct 1: 70% Dem, 30% Rep, 65% Black, 35% White
precinct 2: 50% Dem, 50% Rep, 25% Black, 75% White

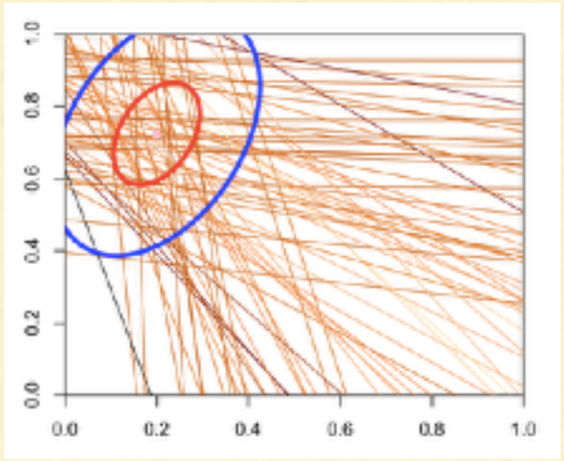
.7 = .65b11 + .35b12

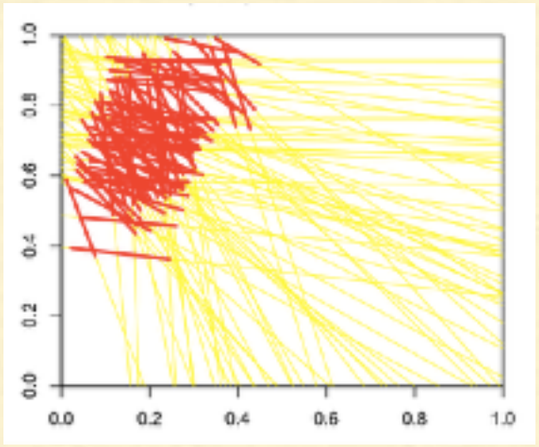
.5 = .25b11 + .75b12

b12

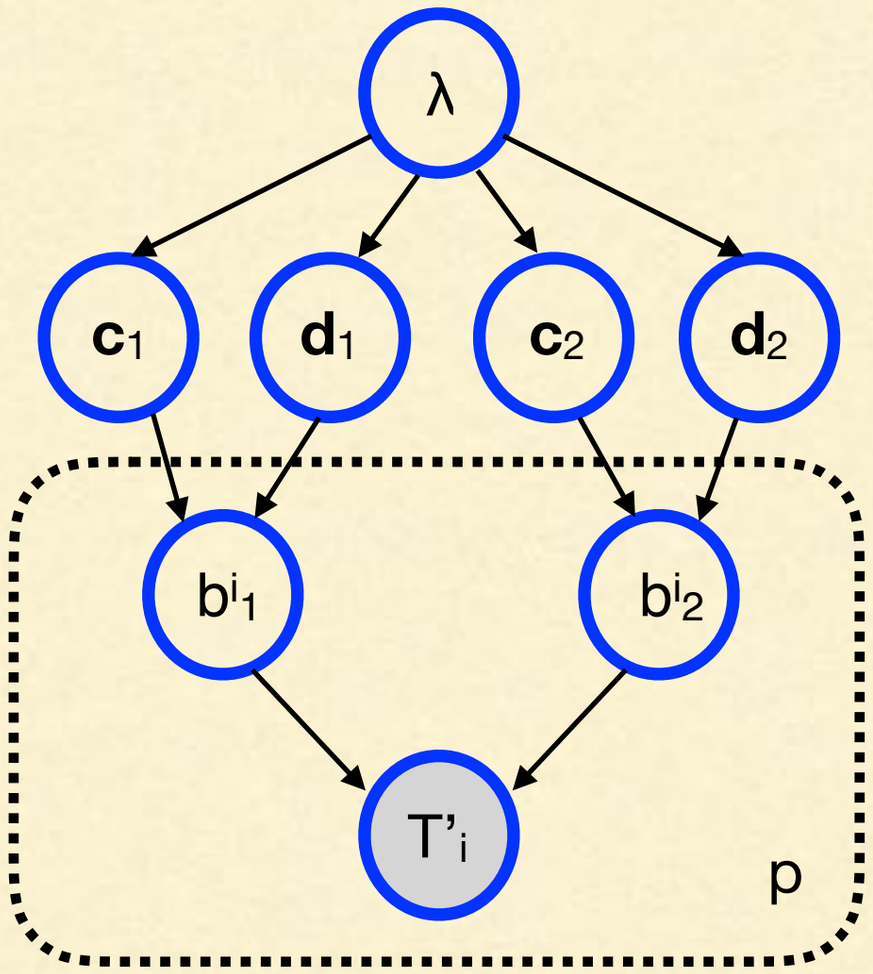


b11





A HIERARCHICAL BAYESIAN APPROACH - THE MODEL



$c_1 \sim$ Exponential(λ)
$d_1 \sim$ Exponential(λ)
$c_2 \sim$ Exponential(λ)
$d_2 \sim$ Exponential(λ)

$b^i_1 \mid c_1, d_1 \sim$ Beta(c_1, d_1) i.i.d.
$b^i_2 \mid c_2, d_2 \sim$ Beta(c_2, d_2) i.i.d.

$\theta_i = X_i\, b^i_1 + (1 - X_i) b_{2i}$
$T'_i \mid b^i_1\ b^i_2, X_i \sim$ Binomial(N_i, θ_i)

King, Rosen, and Tanner