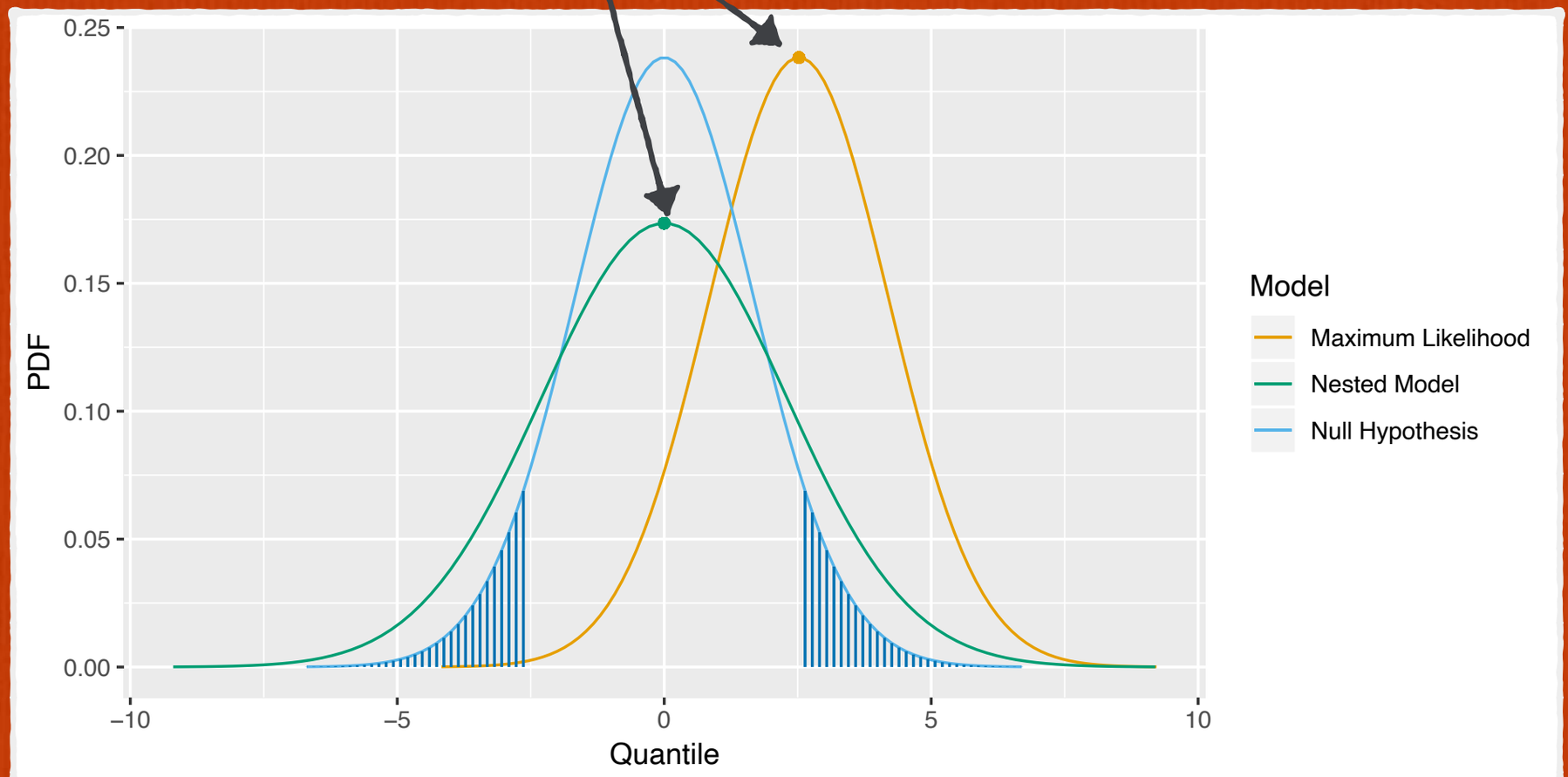
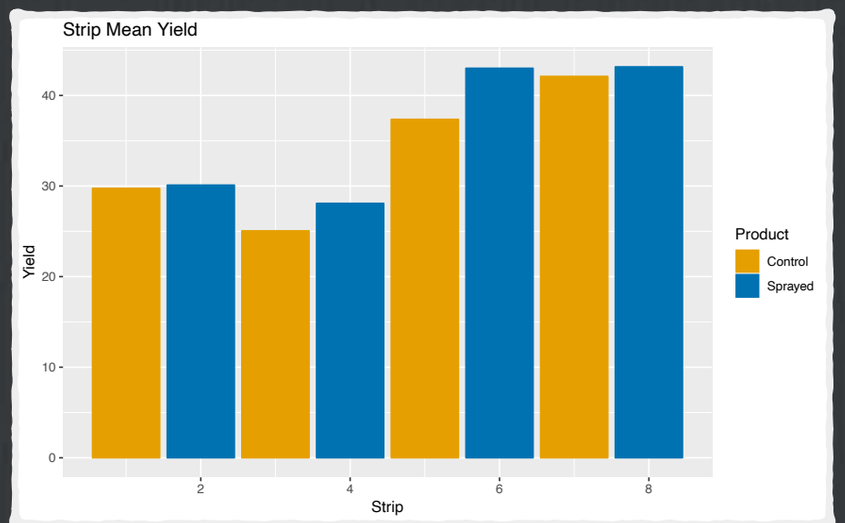
$$\frac{\mathscr{L}_0\left(\mu_0 = 0, \hat{\sigma}_0^2 = 5.26\right)}{\mathscr{L}\left(\hat{\mu} = 2.52, \hat{\sigma}^2 = 2.83\right)}$$

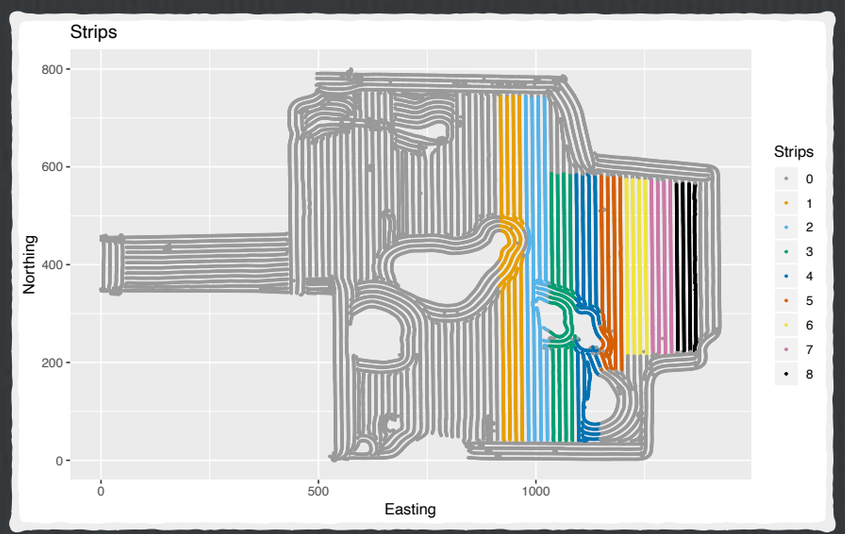


Probability vs Likelihood

The likelihood ratio is a measure of the relative likelihood of two hypothesis

Likelihood Ratio (Naive)





- We state two hypothesis:

$$H_1 : y_{ij} = \mu + \rho_j + e_{ij}$$

$$H_2 : y_{ij} = \mu + \rho_j + \tau_i + e_{ij}$$

- The linear models are then

$$H_1 : y = X\beta_1; \beta_1 = \{\mu, \rho_1, \ldots, \rho_m\}$$

$$H_2 : y = X\beta_2; \beta_2 = \{\mu, \rho_1, \ldots, \rho_m, \tau_i\}$$

- or

$$\beta_1 = \beta_2 \,|\, \tau = 0$$