

Transformations:

Quite often, effects (and errors too) are multiplicative, i.e.,

$$Y_{ij} \approx \mu \cdot \alpha_i \cdot \beta_j; \mu, \alpha_i, \beta_j > 0$$

↳ factorial model would need interaction term.

However,

$$\log(Y_{ij}) \approx \underbrace{\log(\mu)}_{\tilde{\mu}} + \underbrace{\log(\alpha_i)}_{\tilde{\alpha}_i} + \underbrace{\log(\beta_j)}_{\tilde{\beta}_j}$$

⇒ main effects model will work well.

⇒ interaction is often a question of the scale of the response!