

(3)

- Type 2: Repeated observations in Response

▷ Example: Breed on body weight

▷ Typical case for repeated observations

▷ Statistical analysis

- Linear mixed effects model (LME)

- In R: `lmer()` - function from package `lme4`

- Regression
ordinary

$$y = Xb + e \quad \text{with} \quad \text{var}(e) = I \cdot \sigma_e^2$$
$$\hat{b} = (X^T X)^{-1} X^T y$$

• General: $y = Xb + e$ with $\text{var}(e) = V \cdot \sigma_e^2$

• Cholesky decomposition of V : $V = R^T \cdot R$

"equivalent of square root": $16 = 4 \cdot 4 \rightarrow \sqrt{16} = \pm 4$

• Transformation of response: $y^* = R^{-1} y$