

Regression on Dummy Variables

□ Not one predictor (x-variable) per factor (breed) but an additional predictor per level

□ Factor breed

Levels	Predictor	
Angus	x_1	b_1
Limousin	x_2	b_2
Simmental	x_3	b_3

In matrix-vector notation additional columns in X-matrix

↓
unknowns

$$\text{Animal 1: } y_{11} = b_0 + 1 \cdot b_1 + 0 \cdot b_2 + 0 \cdot b_3 + e_{11}$$

$$\text{Animal 2: } y_{21} = b_0 + 1 \cdot b_1 + 0 \cdot b_2 + 0 \cdot b_3 + e_{21}$$

$$3: y_{33} = b_0 + 0 \cdot b_1 + 0 \cdot b_2 + 1 \cdot b_3 + e_{33}$$

$$10: y_{102} = b_0 + 0 \cdot b_1 + 1 \cdot b_2 + 0 \cdot b_3 + e_{102}$$

In Matrix-Vector Notation

$\begin{bmatrix} y_{11} \\ y_{21} \\ y_{33} \\ y_{102} \end{bmatrix}$ $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ Group animals according to