- Vector y : observations
- Vector $\beta = \begin{bmatrix} herd_1 \\ herd_2 \end{bmatrix}$
- vector $u = \begin{bmatrix} u_1 \\ \vdots \\ u_q \end{bmatrix}$
- vector $e = \begin{bmatrix} e_1 \\ \vdots \\ e_N \end{bmatrix}$
- Matrices X and Z : design matrices
- Model : $y = X\beta + Zu + e$

$$\underset{y}{\begin{bmatrix} 2.61 \\ 2.31 \\ \vdots \\ 3.16 \end{bmatrix}} = \underset{X}{\begin{bmatrix} 1 & 0 \\ 1 & 0 \\ 1 & 0 \\ 1 & 0 \\ 0 & 1 \\ 0 & 1 \\ 0 & 1 \\ 0 & 1 \end{bmatrix}} \cdot \underset{\beta}{\begin{bmatrix} herd_1 \\ herd_2 \end{bmatrix}} + \underset{Z}{\begin{bmatrix} & \end{bmatrix}} \begin{bmatrix} u_1 \\ \end{bmatrix}$$

herd1 herd2