Contraste tratamento

$\theta_1 = 0$ para $\theta = \alpha, \beta$.

$$X = \begin{array}{c} \begin{array}{cccccccccccc} \mu & \alpha_1 & \alpha_2 & \alpha_3 & \beta_1 & \beta_2 & \gamma_{11} & \gamma_{21} & \gamma_{31} & \gamma_{12} & \gamma_{22} & \gamma_{32} \end{array} \\ \left[\begin{array}{cccccccccccc} 1 & 1 & . & . & 1 & . & 1 & . & . & . & . & . \\ 1 & . & 1 & . & 1 & . & . & 1 & . & . & . & . \\ 1 & . & . & 1 & 1 & . & . & . & 1 & . & . & . \\ 1 & 1 & . & . & . & 1 & . & . & . & 1 & . & . \\ 1 & . & 1 & . & . & 1 & . & . & . & . & 1 & . \\ 1 & . & . & 1 & . & 1 & . & . & . & . & . & 1 \end{array}\right] \end{array} \Rightarrow X = \begin{array}{c} \begin{array}{cccccc} \mu & \alpha_2 & \alpha_3 & \beta_2 & \gamma_{22} & \gamma_{32} \end{array} \\ \left[\begin{array}{cccccc} 1 & . & . & . & . & . \\ 1 & 1 & . & . & . & . \\ 1 & . & 1 & . & . & . \\ 1 & . & . & 1 & . & . \\ 1 & 1 & . & 1 & 1 & . \\ 1 & . & 1 & 1 & . & 1 \end{array}\right] \end{array}$$

$\alpha_1 = 0$ $\quad \beta_1 = 0$

X_μ

$X_{\mu:\alpha}$

$X_{\mu:\beta}$

$X_{\mu:\gamma}$

Contraste soma zero

$\theta_k = -\sum_{i=1}^{k-1} \theta_i$ para $\theta = \alpha, \beta$ e k é o número de níveis.

$$X = \begin{array}{c} \begin{array}{cccccccccccc} \mu & \alpha_1 & \alpha_2 & \alpha_3 & \beta_1 & \beta_2 & \gamma_{11} & \gamma_{21} & \gamma_{31} & \gamma_{12} & \gamma_{22} & \gamma_{32} \end{array} \\ \left[\begin{array}{cccccccccccc} 1 & 1 & . & . & 1 & . & 1 & . & . & . & . & . \\ 1 & . & 1 & . & 1 & . & . & 1 & . & . & . & . \\ 1 & . & . & 1 & 1 & . & . & . & 1 & . & . & . \\ 1 & 1 & . & . & . & 1 & . & . & . & 1 & . & . \\ 1 & . & 1 & . & . & 1 & . & . & . & . & 1 & . \\ 1 & . & . & 1 & . & 1 & . & . & . & . & . & 1 \end{array}\right] \end{array} \Rightarrow X = \begin{array}{c} \begin{array}{cccccc} \mu & \alpha_1 & \alpha_2 & \beta_1 & \gamma_{11} & \gamma_{21} \end{array} \\ \left[\begin{array}{cccccc} 1 & 1 & . & 1 & 1 & . \\ 1 & . & 1 & 1 & . & 1 \\ 1 & -1 & -1 & 1 & -1 & -1 \\ 1 & 1 & . & -1 & -1 & . \\ 1 & . & 1 & -1 & . & -1 \\ 1 & -1 & -1 & -1 & 1 & 1 \end{array}\right] \end{array}$$

$\beta_2 = -\beta_1$

$\alpha_3 = -(\alpha_1 + \alpha_2)$

X_μ

$X_{\mu:\alpha}$

$X_{\mu:\beta}$

$X_{\mu:\gamma}$

Contraste de Helmert

$(u-1)\theta_u = -\sum_{i=1}^{u-1} \theta_i$ para $\theta = \alpha, \beta$ sendo $u = 2, \ldots, k$ e k é o número de níveis.

$$X = \begin{array}{c} \begin{array}{cccccccccccc} \mu & \alpha_1 & \alpha_2 & \alpha_3 & \beta_1 & \beta_2 & \gamma_{11} & \gamma_{21} & \gamma_{31} & \gamma_{12} & \gamma_{22} & \gamma_{32} \end{array} \\ \left[\begin{array}{cccccccccccc} 1 & 1 & . & . & 1 & . & 1 & . & . & . & . & . \\ 1 & . & 1 & . & 1 & . & . & 1 & . & . & . & . \\ 1 & . & . & 1 & 1 & . & . & . & 1 & . & . & . \\ 1 & 1 & . & . & . & 1 & . & . & . & 1 & . & . \\ 1 & . & 1 & . & . & 1 & . & . & . & . & 1 & . \\ 1 & . & . & 1 & . & 1 & . & . & . & . & . & 1 \end{array}\right] \end{array} \Rightarrow X = \begin{array}{c} \begin{array}{cccccc} \mu & \alpha_1 & \alpha_2 & \beta_1 & \gamma_{11} & \gamma_{21} \end{array} \\ \left[\begin{array}{cccccc} 1 & -1 & -1 & -1 & 1 & 1 \\ 1 & 1 & -1 & -1 & -1 & 1 \\ 1 & . & 2 & -1 & . & -2 \\ 1 & -1 & -1 & 1 & -1 & -1 \\ 1 & 1 & -1 & 1 & 1 & -1 \\ 1 & . & 2 & 1 & . & 2 \end{array}\right] \end{array}$$

$-\beta_1 = \beta_2$

$-(\alpha_1 + \alpha_2) = 2\alpha_3$

$-\alpha_1 = \alpha_2$

X_μ

$X_{\mu:\alpha}$

$X_{\mu:\beta}$

$X_{\mu:\gamma}$