Conjoint Analysis

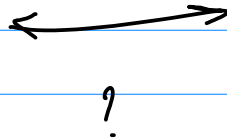| Rest. 1	Rest. 2
P1	P2
P1	D2
R1	R2
T1	T2

$$\longleftrightarrow$$

?

Basic Model :

$$U(X) = \sum_{i=1}^{m} \sum_{j=1}^{k_i} \alpha_{ij} X_{ij}$$

α_{ij} — part-worth contribution

       ith   characteristic

       jth   level

X_{ij} — $0, 1$

$$I_i = \{ \max(\alpha_{ij}) - \min(\alpha_{ij}) \} \text{ for each } j$$

$$W_i = \frac{I_i}{\sum_{i=1}^{m} I_i} \quad , \quad s.t. \sum W_i = 1$$

What for?

1) Relative Importance of attributes

2) Estimate market share of
   a brand that differ
   in attribute level

3) Determinining compositing
   of the most preferred brand

4) Market segmentation
   based on similar preferences
   for attribute level

Attributes

Type	Loc.	Price	#
1	3	1	9
2	2	3	1
3	2	3	2
			⋮

$$U = \overset{4,2}{\beta_0} + \overset{1}{\beta_1 X_{T=1}} + \overset{-0,3}{\beta_2 X_{T=2}} +$$

$$+ \overset{1}{\beta_3 \cdot X_{L=1}} + \overset{0,7}{\beta_4 X_{L=2}} +$$

$$+ \overset{2,3}{\beta_5 X_{P=1}} + \overset{1,3}{\beta_5 X_{P=2}}$$

$$\alpha_{11} - \alpha_{13} = \hat{\beta_1}$$
$$\alpha_{12} - \alpha_{13} = \hat{\beta_2} \quad \Big\} \Rightarrow$$
$$\alpha_{11} + \alpha_{12} + \alpha_{13} = 0$$

$$\alpha_{11} = 0,8$$
$$\alpha_{12} = -0,5$$
$$\alpha_{13} = -0,2$$

$$\Big\{ \; U = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

$$U = \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 \cdot (1 - X_1 - X_2)$$

$$I_T = 0.8 - (-0.5) = 1.3$$

$$I_L = 0.4 - (-0.5) = 0.9$$

$$I_p = 1.1 - (-1.2) = 2.3$$

$\left.\begin{array}{c} \\ \\ \end{array}\right\} 4.5$

$$W_T = \frac{1.3}{4.5} \approx 28\%$$

$$W_L = \ldots \approx 21\%$$

$$W_p = \ldots \approx 50\%$$