Haas School of Business
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Marketing Strategy
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Brief Note on Conjoint Analysis

In class we mentioned a conjoint analysis model based on rank. Considering attributes with just two levels, we could have a dummy variable D_j per attribute j that takes the value of 1 for one level, and the value of zero for the other level. A product with certain characteristics would then be described by the zeros and ones taken by D_j. After observing the ranking R from a consumer (or group of consumers) we could then have a "very rough" estimate of the weights for each attribute by running the regression

$$R = \alpha_0 + \Sigma\ \alpha_j\ D_j$$

of R on the variables D_j.

This basic model could have several variations or extensions:

Heterogeneity: We could allow the α's to be different across consumers.

Functional form: Several extensions of the functional form are possible. We could have monotonic transformations of R, f(R), on the left hand side of the regression above, or non-additive combinations of the right hand side variables, or interactions between the dummy variables.

Ranking information: We could use the ranking information literally by just noting that ranking between two alternatives just means that one alternative is better than another. That is, there may be "latent utilities" (latent because they are not observable) for each product configuration, $U = \alpha_0 + \Sigma\ \alpha_j\ D_j$, and we just know that if product i is preferred to product k, then $U_i > U_k$. Given the D_j variables and the distribution assumptions on the α's, we would then have a probability of U_i being greater than U_j. Then, given the choices of the consumer, we could then maximize the probability of the different choices (rankings) made by the consumer.

More than two levels of an attribute: If an attribute has n levels we need n-1 dummy variables. For example, consider an attribute with three levels, levels a, b, and c. Then, in order to consider all the possible levels of this attribute we could have two dummy variables, D^a and D^b. D^a would take the value of one for level a and zero otherwise. D^b would take the value of one for level b and zero otherwise. Then, for level a we would have $D^a=1$ and $D^b=0$, for level b we would have $D^a=0$ and $D^b=1$, and for level c we would have $D^a=D^b=0$. This way, all possible levels would be considered, without any assumed structure between levels.