Multinomial Choices

Data Description

We consider the data “margarine" in the library, which is Household Panel Data on Margarine Purchases. We provide some descriptive evidence on the data.

- Average and dispersion in product characteristics.
- Market share, and market share by product characteristics.
- Mapping between observed attributes and choices.

First Model - Conditional Logit Model

We are interested in the effect of price on demand. Propose a model specification.

- Write the likelihood and optimize the model.
- Interpret the coefficient on price.

Second Model – Multinomial Logit Model

We are interested in the effect of family income on demand. Propose a model specification.

- Write the likelihood and optimize the model.
- Interpret the coefficient on family.

Marginal Effects

Compute and interpret the marginal effects for the first and second models.

Check IIA Property

In this section, we are interested in testing the properties of IIA. We consider the mixed logit setting.

- We are still interested in the effect of price and family income. Write and optimize the likelihood of the mixed logit. Denote by β^f the estimated coefficients.
- Consider an alternative specification, where we remove data from one choice. Estimate this model as well and denote by β^r the estimated parameters.
- Compute the test statistics:

$$MTT = -2[L_r(\beta^f) - L_r(\beta^r)] \sim \mathcal{X}^2(\| \beta^r)$$

- Conclude on IIA.