

“Intra Household Heterogeneity and Targeting”

"Using a dataset from a supermarket loyalty program in which we observe the specific individuals in a household making brand choices in a category on each shopping trip, we study differences in purchase behaviors within and across households. We develop a choice model that recovers utility parameters from individuals' choices while allowing for the behavior of individuals from the same household to be correlated via a Bayesian hierarchy. Compared to treating each individual as an independent "household" we find that our modeling approach is better at recovering the utility parameters corresponding to each household member's brand choices especially when we observe few purchase occasions from each of them. The improvement stems from using the household information as a prior for the individual. For our focal category, coffee, we find that the within-household heterogeneity in estimated brand intercepts and (to a lesser extent) price sensitivities is about 50% of the across household heterogeneity in these parameters. However, with promotion sensitivities we find within-household heterogeneity to be as large as the across household heterogeneity. We then use these estimated utility parameters to compare the expected profitability of promotions targeted at the individual rather than at the household level and find substantial improvements in returns to supermarket promotions. To assess the generalizability of our results we provide empirical results from five product categories."