

Homework: 11/30/2011.

Data on 1500 purchases of canned lite tuna are in the file *tunafish.dat*. These are available in Stata format at <http://www.principlesofeconometrics.com/poe4/data/stata/tunafish.dta>. There are four brands of tuna (Starkist - water, Starkist - oil, Chicken of the Sea - water, Chicken of the Sea - oil). The A.C. Nielsen data were made available through the University of Chicago's Graduate School of Business. The data file *tunafish_small.dat* is a smaller dataset with 250 purchases. The data are in "stacked" format with 4 datalines per purchase, one for each tuna brand. The consumer choice is indicated by the indicator variable *CHOICE*. Relevant variables are *NETPRICE* = price minus coupon value, if used; *DISPLAY* = 1 if product is on display, *FEATURE* = 1 if item is featured, and *INCOME* = household income.

- (a) What is the primary variable-type distinction between the *NETPRICE* and *INCOME*.
- (b) What is the sample percentage of purchases for each brand? What do you observe about consumer preferences for these product choices?
- (c) Using the conditional logit model, write the probability of choosing each brand using as explanatory variables *NETPRICE*, *DISPLAY*, and *FEATURE*, plus an alternative specific constant using Starkist packed in water as the base category.
- (d) Estimate the model specified in part (c).
- (e) For the model in (d) find the marginal effect of *NETPRICE* on the probability of choice of each brand, using for all brands *DISPLAY* = *FEATURE* = 0. Do these marginal effects have the signs you anticipate? Are the marginal effects statistically significant?
- (f) Add the variable *INCOME* to the model specified in (c). Perform a likelihood ratio test of its significance.
- (g) For the model in (f) find the marginal effect of *NETPRICE* on the probability of choice of each brand, using for all brands *DISPLAY* = *FEATURE* = 0 and *INCOME* = 30.