

## Assignment 2

### Ordered outcomes

Assume you have data containing a dependent variable ("Y") with 4 ordered categories. A covariate ("X") is continuous.

1. What happens if you analyze your data using a linear model estimated using OLS?
2. Write down the expression to predict  $P(Y = 3|X)$  from an ordered logit model.

### Social insurance

The file `socialInsurance.dat` contains data on Americans' preferred levels of social insurance spending. The data are in tab-delimited format and are a random sample of 1000 cases taken from ISSP 1996. The dependent variable `spend` is created by summing indicator variables for respondents preferring "more" or "much more" spending on health and unemployment insurance. It is a 3-valued vector indicating that (0) a respondent opposes more spending, (1) prefers more spending in one of both areas, (2) prefers more spending in both areas. A basic set of individual covariates is described below:

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<code>spend</code>	0=none, 1=one, 2=both
<code>female</code>	1 if female
<code>eduyrs</code>	Years of schooling
<code>age</code>	Age [in years]
<code>conserv</code>	1 if self identified as conservative

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1. Set up an ordinal model for spending preferences (include a sensible set of covariates).
2. Check your model by comparing predicted to observed probabilities.
3. Calculate and plot predictions for the probability of preferring more spending on both unemployment and health (i.e.,  $P(y_i = 2)$ ) as a function of increasing education, holding all else constant.
4. Calculate first differences in predicted probabilities (for all three possible outcomes) of being ideologically conservative, holding all else constant