

# POL 682: Advanced Quantitative Methods

## Problem Set 2

**Directions** Please access the public opinion data and in some software program (I don't care which), answer the questions/estimate the models that are given below. The data are available at:

[http://www.u.arizona.edu/~bsjones/pol682\\_F04.html](http://www.u.arizona.edu/~bsjones/pol682_F04.html)

To help, here is some information on the data set:

**imm2:** This is a 5-point Likert scale measuring attitudes toward immigrations. The following questions was asked of respondents: "Do you think the number of immigrants from foreign countries who are permitted to come to the U.S. to live should be increased a little, increased a lot, decreased a little, decreased a lot, or left the same as it is now?" The variable is scored as:

1. Decreased a lot
2. Decreased a little
3. Same
4. Increased a little
5. Increased a lot

**biling:** This is a 3-point unordered variable measuring attitudes toward bilingual education. The following survey question was asked to respondent: "Which one of the following three statements best describes how you feel?"

1. All classes should be conducted only in English so that children have to learn English right from the start.
2. Children who don't know English should have classes in their native language just for a year or two until they learn English.
3. There should be one set of classes in English and another set in Spanish or other languages all the way through high school so that children can keep their native languages and culture if they choose.

**ideo:** This is a 7-point scale measuring respondent ideology. It is scored as:

- 1. Extremely Conservative
- .66. Conservative
- .33. Somewhat Conservative
- 0 Neither Conservative Nor Liberal
- .33. Somewhat Liberal
- .66. Liberal
- 1. Extremely Liberal.

**hispthrm**: This is a 101-point feeling thermometer rating of Hispanics. The scale is scored such that a “0” denotes maximum unfavorable evaluations toward the group and “1” denotes maximum favorable evaluations toward the group.

**Ihigh** and **Icoll**: These dummy variables measure the respondent’s education level. (1 if high-school only; 0 otherwise; 1 if college; 0 otherwise).

Using these variables, please answer the following questions. For problems 1–5, use the “immigration levels” question. For questions 6– use the “bilingual education” levels question.

1. Fit an ordinal logit model using the covariates: ideology, Hispanic feeling thermometer, and the two education indicator variables. Please interpret each coefficient including the cut-point parameters. (15 points)
2. Compute the marginal and cumulative probabilities for each of the following scenarios: 1) a college graduate who is extremely liberal and rates Hispanics at a “90” on the feeling thermometer, and 2) a non-high-school graduate who is extremely conservative and rates Hispanics at a “40” on the feeling thermometer. (10 points)
3. Please answer question 2 again but this time using the results from an ordinal probit model. (10 points)
4. Please test the proportional odds assumption found in your ordinal logit model. Can you reject the null hypothesis that the proportional odds assumption holds? (Use  $p = .10$  as the threshold; note that if you use Stata, you will need to access the `gologit` and `omodel` ado files. Typing `net search gologit` and `net search omodel` will aid you in downloading these files.) Briefly, what are the implications for your model if the proportionality does not hold? (8 points)
5. Reestimate your model using a generalized ordinal logit estimator. Please interpret your results and compute the probabilities for scenario 1 from question 2. (20 points)
6. Now estimate a multinomial logit model using the bilingual education variable as the dependent variable. Interpret each of the coefficients. (15 points)
7. Compute the probabilities for each response option using scenario 1 from question 2. (10 points)
8. Using the Hausman specification test, does the IIA property seem to hold in this model? Why or why not? (10 points)