GSERM 2022: "Analyzing Panel Data"

Homework Exercise
June 7, 2022

Introduction and Data

We'll examine a question that has been a perennial favorite of social scientists in the United States: The effectiveness of the death penalty in reducing violent crime, especially murder. In some (but not all) states in the U.S., individuals convicted of first-degree murder can be sentenced to death. Proponents of the imposition of the death penalty have long argued that the possibility of receiving the death penalty serves as a deterrent to individuals who are contemplating committing murder. Opponents note that most murders are "crimes of passion," and that it is unlikely that the threat of the death penalty would deter them.

For this exercise, we have data on 49 states in the U.S. (Nebraska is, inexplicably, omitted) over ten years (1985-1994) ($NT = 490$). The main "dependent" variable, `MurderPer100K`, is the state's annual murder rate per 100,000 population. Our main predictor of interest, `DeathPenalty`, is coded 1 if the state had a death penalty statute during that year and 0 otherwise. In addition, I've included a range of other variables:

- `Population` is the state's population, in thousands of residents;

- `UrbanPct` is the percentage of that state's population that lives in urban areas;

- `AvgEducation` is the average number of years of formal education for adults living in that state;

- `SchoolSpendEq` is an index of equity in educational spending, where higher values indicate greater equity. A score of 100 indicates complete equity (that is, all local school districts spend exactly the same amount per pupil). This is a cross sectional variable, measured in 1997; i.e., it does not vary over time.[1]

- `CitizenIdeol`: A measure of mass-level political ideology. Specifically, this is Berry, Ringquist, Fording, and Hansson?s *citizen ideology* measure. It is measured on a 0-100 scale, with higher values representing higher levels of left/liberalism among the mass public.[2]

- `EliteIdeol`: A measure similar to `CitizenIdeol`, but measured on political elites. It is measured on a 0-100 scale, with higher values representing higher levels of left/liberalism among the state's political elites. The source is the same.

- `AvgIdeol` is the average of the two preceding ideology variables for that state/year.

The data were assembled from a variety of sources by Prof. Stephanie Lindquist of Arizona State University. These are variables that have been chosen as potential influences on a state's likelihood of having the death penalty. The data are available on the course Github repository (in the folder labeled "Exercises").

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[1] Source: Quality Counts: A Report Card on the Condition of Public Education in the 50 States. 1997. Washington, D.C.: Education Week/Pew Charitable Trusts.

[2] For information on how this variable was calculated, see: Berry, William D., Evan J. Ringquist, Richard C. Fording, and Russell L Hanson. 1998. "Measuring Citizen and Government Ideology in the American States, 1960-93." *American Journal of Political Science* 42:327-348.

Exercise

Your assignment is straightforward: examine the relationship between the death penalty and murder rates in the states, controlling for other confounding variables for which you have data, and using the tools that we have learned so far (that is, unit-effects models). Write up your findings in a short (300-400 word) essay, and include any relevant tables and/or figures. You should *not* add any additional variables to the data; nor need you use every variable included in your analyses. Some suggestions:

1. Don't forget to discuss your findings in substantive terms.

2. Be sure to justify your modeling choices.

3. Consider implementing diagnostics and tests as part of #2.

This exercise is due on or before Friday, June 10, 2022 at 23:59 CET (17:59 ET). Please submit your written homework exercise, along with any code you used to conduct your analyses, via email to zorn@psu.edu.