Lab 4 Exercise:
Multidimensional Scaling

Legislative professionalism – a construct that is an amalgamation of state legislatures' capacity, resources, session length, and general scope – has long been measured via additive indexes (i.e., summated rating scales) of various sorts. Such measures, like the Squire Index, assume unidimensionality, monotonically non-decreasing item response functions, and equal weight to all components. Bowen and Greene (2014)[1] question these assumptions. They use a host of indicators frequently utilized in the construction of summated rating scales of legislative professionalism to construct measures of dissimilarity between states and estimate a metric multidimensional scaling model.

Open the "Legislative Professionalism.dta" dataset, which is a modified version of the Bowen and Greene (2014) replication file. First, create a summated rating scale of the three measures listed below. Then, attempt to replicate Figure 4 on page 288 of the article (note that you won't be able to exactly replicate the analysis because you only have access to the 2014 data).

In the course of carrying out these tasks, consider the specific questions outlined below:

1. Does the three-item summated rating scale meet the assumptions of the summated rating model? Is it reliable?

2. What is the appropriate number of dimensions for the dissimilarity data according to an MDS analysis?

3. How closely related are the summated rating scale, MDS solution, and Squire Index? What are the major differences (examining relationships graphically may help)?

4. Which representation of legislative professionalism is "best"? Make an argument!

5. Bowen and Greene (2014) conclude: "We find enough commonality and enough variation between professionalism components to support a range of measurement strategies like the use of unidimensional indices (such as the Squire Index), disaggregating the components and analyzing their effects individually, or formulating multidimensional measures. Scholars should take care to choose the appropriate measure of the concept that best fits the causal relationships under examination." Do you agree with this assessment? Why (not)?

---

[1]Bowen, Daniel C. and Zachary Greene. 2014. "Should We Measure Professionalism with an Index? A Note on Theory and Practice in State Legislative Professionalism Research." *State Politics and Policy Quarterly* 14(3): 277–296.

Variable coding/wording for Bowen and Greene (2014) dataset

- `slength`: session length (regular sessions), in legislative days

- `salary_real`: biennial legislator salary, in thousands of 2010 dollars

- `expend`: legislative expenditures per legislator, in thousands of 2010 dollars

- `state`: state name

- `stateabv`: state abbreviation

- `squire15`: Squire Index for 2015 data