

## PLSC 504 - Topics in Political Methodology

### Exercise Seven

November 2, 2020

#### Introduction

This exercise is focused on measurement / multivariate models, specifically those dealing with principal components / factor analysis and cluster analysis. For this week, there is no simulation-based component to the exercise.

#### Data Analysis

We're going to reconsider a classic (and, some would say, dated) measure from comparative and international politics: [the "POLITY" scale](#). Since the 1970s, the POLITY project has coded "the authority characteristics of states in the world system for purposes of comparative, quantitative analysis." The current version of POLITY is POLITY5, and contains annual data on institutional characteristics of countries in the world from 1800-2018.

By far the most commonly-used component of the POLITY data is the "revised combined POLITY score," sometimes denoted `polity2`, which is widely used as a summary measure of the extent to which a particular country is autocratic, democratic, or somewhere in between.<sup>1</sup> That measure – which ranges from -10 to 10 – is a combined index of nine components, each of which measures some aspect of the degree of national-level political-institutional accountability in that country in that year. Details about the components – and the calculation of `polity2` itself – are available in the [codebook](#), but in essence the score is an additive index of nine ordinal-level indicators:

- XRREG – Regulation of Chief Executive Recruitment
- XRCOMP – Competitiveness of Executive Recruitment
- XROPEN – Openness of Executive Recruitment
- XCONST – Executive Constraints (Decision Rules)
- PARREG – Regulation of Participation
- PARCOMP – The Competitiveness of Participation
- EXREC – Executive Recruitment
- EXCONST – Executive Constraints
- POLCOMP – Political Competition

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<sup>1</sup>While `polity2` has arguably been replaced by [more nuanced measures](#) as an indicator of the level of democracy in a country, it remains very widely used as a summary measure. This is true despite the fact that its creators have made clear that they think it's probably a terrible thing to do. See pp. 16-17 in the POLITY5 [codebook](#) for details.

Your assignment is to use the techniques we discussed on October 28 to build a better POLITY score. Your general goal is to combine the nine components into one or more indices of the degree of institutional democracy / autocracy of each country in each year in the data. The data themselves are available in the “Exercises” folder on the course [github repository](#), and include the nine POLITY components, as well as country codes / names and year indicators and the aggregated `polity2` score.

Specifically, you should:

1. First, *choose a single year of data* (perhaps the year you were born, or some other year that holds significance to you) and conduct a cluster analysis of the countries in the data that year, using the nine POLITY component variables. Briefly discuss the patterns that emerge.
2. Next, using *all years* in the data, assess the extent to which the various components / indicators “hang together” – that is, whether they seem to be related to the same underlying construct or constructs.
3. Using what you learned in (2), create an alternative summary measure (or measures) that aggregate the information in the nine POLITY components. Discuss the substantive / practical meaning of that measure or measures.
4. Finally, assess the extent and degree to which your new measure(s) are related to the “classic” `polity2` score.

This homework is due *electronically* (in the usual fashion) by 5:00 p.m. EST on **Friday, November 13, 2020**, and is worth the usual 50 points.