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POLI 381

Data Project: Conditioning

Are elections becoming more competitive or less competitive?

Introduction

In this project, we will explore if education levels have an influence on the relationship between electoral competitiveness and electoral turnout for US Presidential elections. One may theorize that, as the population becomes more educated, their desire to participate in electoral processes would increase. The more educated someone is, the more likely they are able to recognize issues presidential candidates address, assess their ideologies, identify the competitive nature of elections, and participate in voting to express their preferences on who governs the country.

However, academia is not consistent regarding education's exact relationship with voter turnout. For example, Kim notes that "scholars have argued that increases in educational attainment over the past few decades have occurred simultaneously with either decreasing or unchanging voter turnout in the United States". This suggests no strong or consistent correlation between education and turnout according to various studies. Given that presidential elections tend to have a higher voter turnout than other types of elections within the US, this effect (if any) of education on turnout should be easier to identify than for other elections simply due to the greater sample of data points available.

Data and Measures

The data for education levels of US citizens and their respective electoral turnouts at elections comes from the Census Bureau's Current Population Survey, November Voting and Registration Supplement (CPS). The US Elections Project took this monthly data and made annual aggregates available on their website as a Google Sheet (*Voter turnout demographics*). They acknowledge the tendency of pollsters to overreport their political participation and employ Overreport Bias Correction methods to cater for this. Though not explicitly detailed, the corrected data was used for this project with the expectation that it is more reliable than the uncorrected data. Only data for years of Presidential elections between 1988 and 2016 were selected, as this is the timespan that the CPS data had in common with the competitiveness and turnout data created in the Correlation analysis. There were four education levels present in the dataset: "High School Grad", "Less Than High School", "Post-Grad", and "Some College to College Grad". For each election year, the education levels were ranked on a scale of 1 (most common) to 4 (least common) based on the percentage of the population that attained this level. For example, in a given election year "High School Grad" might be the most common education level of citizens while in the next election year "Some College to College Grad" might be the most common level attained. This data was then combined with the competitiveness and turnout data created in the Correlation analysis.

Fluctuations in Education

Figure 1 shows trends in the education levels of US citizens, specifically during presidential election years. Some College to College Grad remains the most common level of education that citizens have between 1988 and 2016. The least common level switches from Post-Grad to Less than Highschool after 1996 and remains consistent to 2016. If the hypothesis that education affects turnout is true, we may expect some slight increase in voter turnout after 1996 as well.
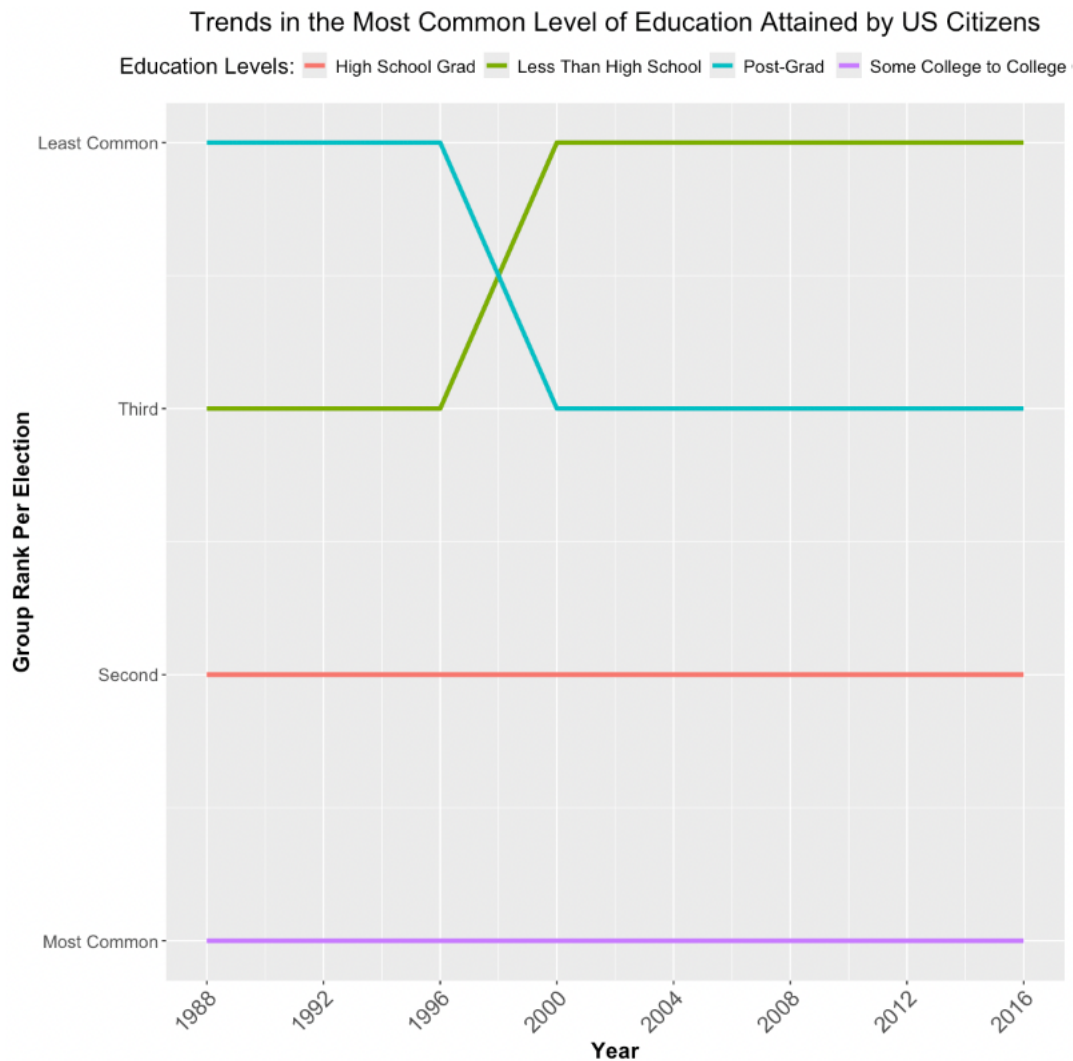
Trends in the Most Common Level of Education Attained by US Citizens

Education Levels: — High School Grad — Less Than High School — Post-Grad — Some College to College

Figure 1: Changes in the most common education levels amongst US citizens

Source: *Voter turnout demographics*.

Conditioning Competitiveness and Turnout on Education

In order to examine if there is truly a relationship between education and our X and Y variables, a linear regression model was created. The response variable was electoral competitiveness, and the input variables were turnout and education. Education was a factor variable with the four previously mentioned levels. To explore if the level of education affected the relationship between competitiveness and turnout, education was used as an interactive term. **Figure 2** shows the estimated coefficients and p-values (amongst other values) for this interactive linear regression model. The `intercept` term represents electoral competitiveness, while `turnout_scaled` represented turnout for each election, and `group_pct` represented the factor variable education. The p-values for all input variables were significantly higher than the standard threshold of $p = 0.05$, indicating that the results of the model were not statistically significant. This means that while the model reports an effect of the input variables

3

on the response variable, this is effect is also very likely to be observed even if there were no real relationship between variables.

A tibble: 4 × 5

term	estimate	std.error	statistic	p.value
<chr>	<dbl>	<dbl>	<dbl>	<dbl>
(Intercept)	6.993381e-01	0.220940733	3.165274686	0.003717295
turnout_scaled	-2.241637e-01	0.196106035	-1.143074088	0.262687603
group_pct	-1.873106e-05	0.007456140	-0.002512166	0.998013397
turnout_scaled:group_pct	1.107456e-05	0.006602984	0.001677205	0.998673677

Figure 2: Results of an interactive linear regression model.

Formula: competitiveness ~ turnout_scaled * group_pct

What this implies for this study is that there is not enough evidence to say there is a real relationship between our variables. As such, we cannot conclude with certainty that education has an impact on the turnout or competitiveness for US Presidential elections.

References

Kim Y. (2023). Absolutely Relative: How Education Shapes Voter Turnout in the United States. *Social indicators research*, 1–23. Advance online publication. https://doi.org/10.1007/s11205-023-03146-1

Voter turnout demographics. US Elections Project. (n.d.). https://www.electproject.org/election-data/voter-turnout-demographics