Application Section

Joshua Derenski

Overview

The Influence of Voting Policies on Voter Turnout

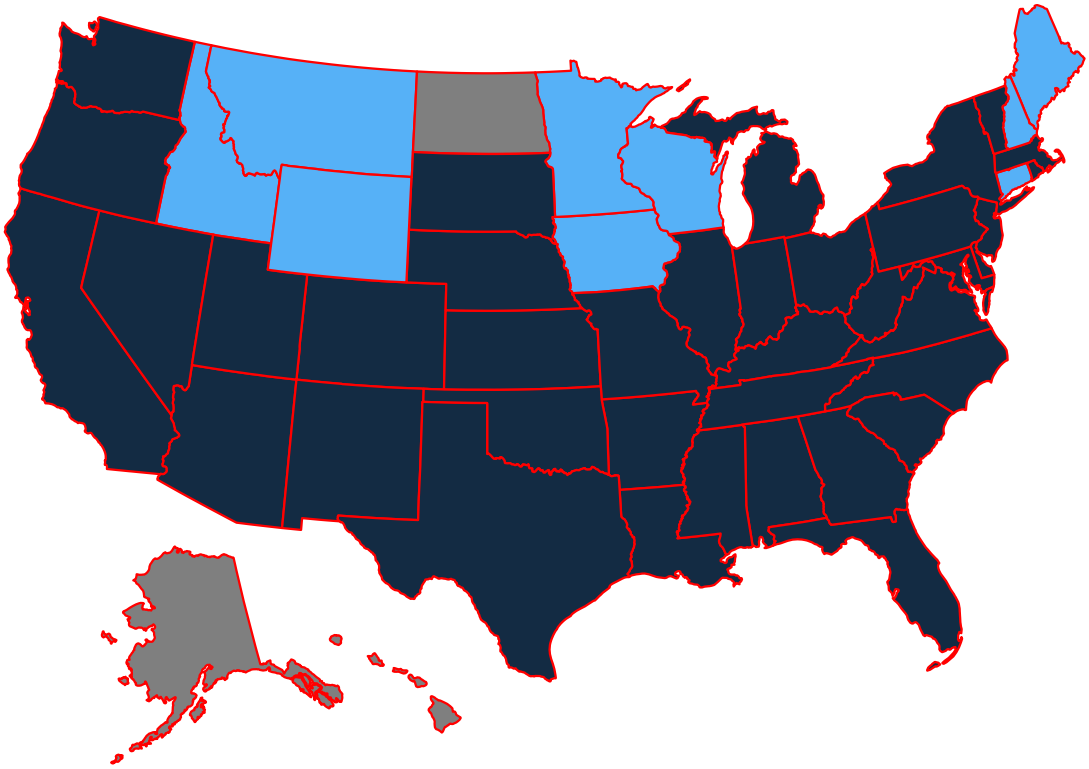
Voter turnout is an incredibly important topic in the United States, especially considering the relatively low voter turnout in the US. The potential causes of this low turnout are many, and the proposed remedies range from mild outreach to compulsory voting (cite compulsory article). Federal legislation such as the Voting Rights Act, the National Voter Registration Act, and state-level initiatives such as voting by mail and election day registration have all been attempts to encourage people to vote and ultimately increase voter turnout. At the same time, there are concerns that things such as voter id laws may discourage people, particularly those in vulnerable groups, from voting. However, such an effect is expected to be only marginal at worst (Cite Voter Id Article).

In light of the above, one may wish to examine the efficacy of initiatives meant to encourage voter turnout. In particular, we will investigate the effect of election day registration on voter turnout. The data we have available to us comes from 47 United states, taken at 4-year intervals from 1920 to 2012. For each state and year we have voter turnout, and the policies present in that state (whether residents can vote by mail, if they can register to vote on election day, and whether they can register to vote via their state's Department of Motor Vehicles).

In assessing the effect of election day registration on turnout, an immediate probem arises: Most states do not allow for election-day registration. In addition, the states that do allow for this are not representative of all states in the United States.

One unique aspect of this data is the treatment adoption schedule: it follows a staggered adoption. We handle this by doing the following:

1. Apply our method with no averaging, this will allow us to get initial estimates of effect sizes.
2. We average according to time from initial treatment (e.g. all effects corresponding to first treatment period for each subject get averaged).



From the plot, we can see that all the states that have election-day registration are in the northern parts of the US. These regions are demographically distinct from other parts of the country, and as such we need to control for this if we are going to estimate the effect of this policy on voter turnout. Our method will be useful here, as we can treat these underlying demographic features as unit-specific factors and account for them in effect size estimation. We will apply the methods from the simulation section to estimate the effects of this policy on voter turnout, and assess the performance of these methods by seeing how well each can impute untreated cells. To do this, we treat some untreated cells as "treated" and leave them out of the analysis. We then use each method to estimate these cells, and compare these estimates to their true values.

Suicide Rates in Japan During the Lost Score

Suicide is a particularly personal topic, the severity of which varies greatly by country. There are many factors that can lead to a person's decision to attempt suicide, some of which relate to economic cycles (unemployment study). For example, it has been observed that male suicide rates increase substantially during periods of economic upheaval (soviet union study, Japan study). A country where this is particularly prevalent is the case of Japan. During the early 1990s, after a period of rapid economic expansion, Japan's economic growth severely slowed, the result of a large housing bubble and poor government policy (cite a study on the Lost Decade). During the following period, referred to as the "lost decade" suicide rates increased markedly, especially for males. This period of economic recession continued into the 2000s, making the Lost decade a "Lost Score" (lost 20 years). Suicide rates continued to soar during this period.

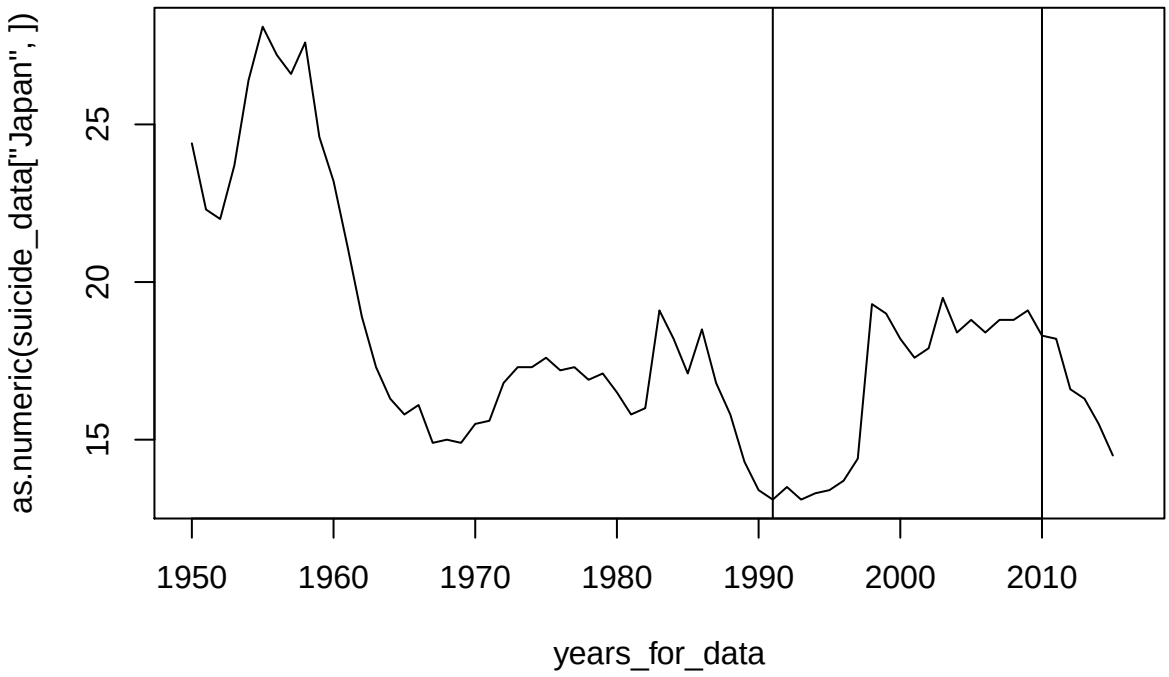
What makes Japan a unique country, not comparable to other countries during this time period is the culture's unique view towards suicide, and the extreme privacy with which this subject is regarded. As such, this country was very uniquely impacted by this economic recession. If one then wishes to estimate the associated increase in the suicide rate during this recession one must take a causal inference approach: our treatment and control groups are not directly comparable. We will examine this perspective here, comparing the estimates of suicide rate increase provided by different methods, and attempting to measure the performance of each method on this data by treating untreated cells as "treated" and then imputing their values.

Our Data

The data we have at our disposal are yearly suicide rates for 104 countries between the years 1950 and 2014. Some countries have complete records (Japan is one of thee countries), while records for others are very sparse (South Korea, for example, did not start recording suicide rates until 2006). We also have access to gender-specific rates. Due to the sparsity of many records, we will need to preprocess this data before we use analyze it. Here is an overview of this preprocessing:

1. We will remove countries with very few recorded values, particularly if there are very few recorded values during the Lost Score (1991-2010).
2. For the remaining countries, we will impute missing values, while excluding Japan from the imputation process. That way, there is no information leakage during this step.

Once we have obtained this partially imputed data, we will treat this like our complete control panel and add Japan back in, so we can estimate the untreated counterfactual for Japan during the lost decade. By "untreated counterfactual" we mean: "what would Japan's yearly suicide rate have been during the time of the Lost Score had the Lost Score not happened?"


as.numeric(suicide_data["Japan",])
15
20
25
1950
1960
1970
1980
1990
2000
2010
years_for_data