Opioid project strategy outline

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1 Topic

We want to address the problem that a high number of opioids are prescribed in the United States. This development induces severe consequences like more overdose deaths and opioid addicts over the last twenty years.

2 Project Question

In this project we want to answer the following two specific questions:

- What is the effect of opioid drug prescription regulations on the volume of opioids prescribed?
- What is the effect of opioid drug prescription regulations on drug overdose deaths?

For that, we will analyze three policies implemented on the state level in Washington, Texas, and Florida which came into effect between 2007 and 2012.

3 Project Hypothesis

We hypothesize that the answers to the two project questions are:

- Opioid drug prescription regulations decrease the volume of opioids prescribed.
- Opioid drug prescriptions regulations increase drug overdose deaths in the short to medium run as opioid addicts substitute prescription opioids with more dangerous non-prescription opioids.

4 Model Results

In the final report, the graphics below will be presented separately for two different policy interventions in Florida and Washington. In addition, similar graphics will be generated using drug

overdose mortality per capita on the y-axis. For that, three policies in Florida, Washington, and Texas will be analyzed. All graphics will include standard error bands.
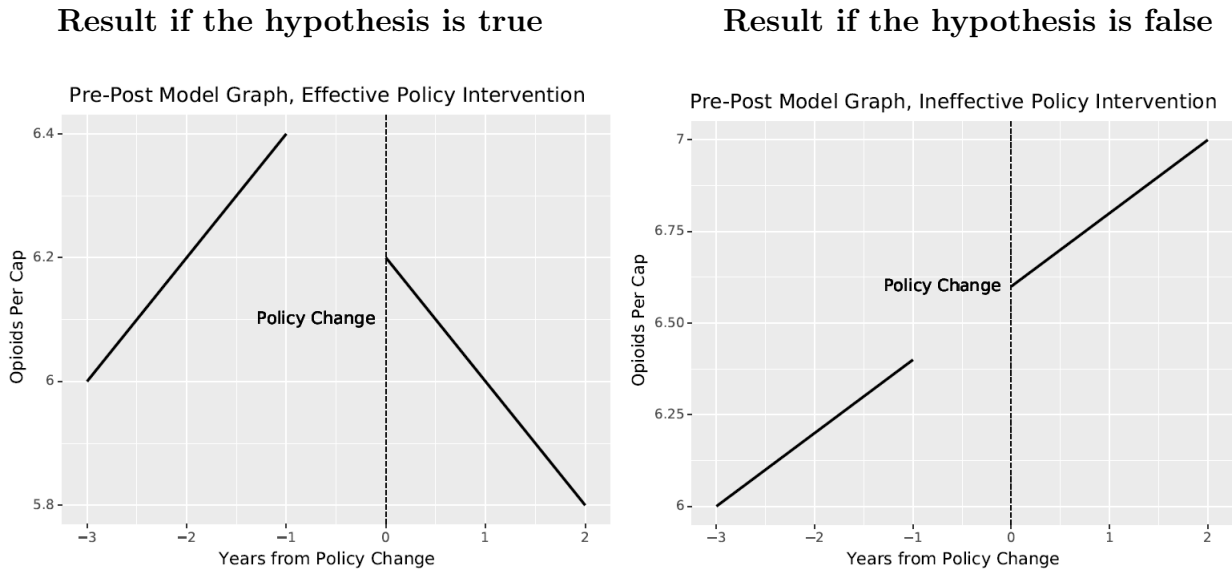
Result if the hypothesis is true   **Result if the hypothesis is false**

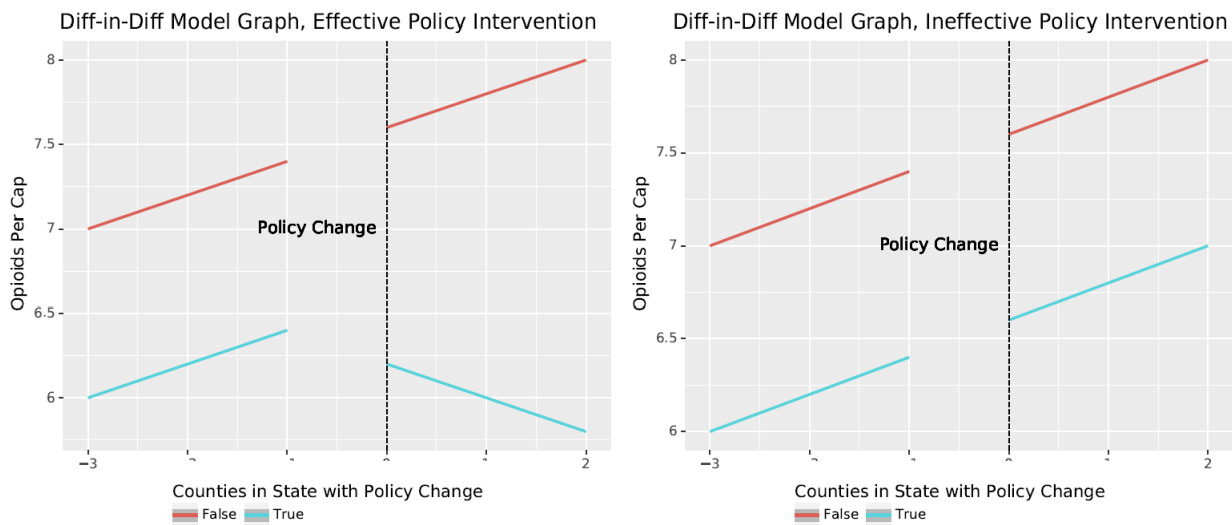Figure 1: Potential model results pre-post comparison

Figure 2: Potential model results difference-in-difference comparison

5   Final Variables Required

A single row in the final data set will contain one observation for one county for one year. All data should be available before and after the policy intervention to conduct the pre-post comparison

(Florida February 2010, Texas January 2007, Washington January 2012). For the difference-in-difference approach data is required for both, US counties which are affected by the policy intervention and for those which are unaffected. The following variables are required in the final data set to conduct the analysis:

- Opioid drug prescriptions per capita per county per year
  - Absolute opioid drug prescriptions per county per year
  - County population size per year
- Drug overdose mortality numbers per capita per county per year
  - Absolute drug overdose mortality numbers per county per year
  - County population size per year
- Binary variable which indicates whether the observation is in a state with a policy change (for difference-in-difference)
- County FIPS code
- Year

6 Data Sources

The above described required variables can be obtained by using the following data sources:

- Drug overdose death data by the US Vital Statistics records
- Prescription opioid drug shipments by the Washington Post
- FIPS codes based on a file by the US census
- US census population data

All these data sets need at least a location name (to infer the county) and a temporal unit (to infer the year). The data sets will be merged based on the county FIPS codes and the year. FIPS codes are already included in the population data set and the US Vital Statistics records. Based on the county and state name, FIPS codes will be merged with the prescription opioid drug shipment data. Besides that, the raw data must be aggregated on the county-year level so that the data is available for our preferred unit of observation.

7 Task Assignment

Step	Writes initial code	Reviews code
Import data	Fabian	Zhanyi
Clean and aggregate data	Fabian	Zhanyi
Merge data	Zhanyi & Chenxi	Fabian
Analyze data	Zhanyi & Chenxi	Xiaoquan
Create graphs	Chenxi & Xiaoquan	Xiaoquan
Report(e.g. motivation, conclusion)	Xiaoquan	Chenxi