**OPIOID FINAL PROJECT**

**Backward Design Template**

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**Group 5**

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**1. Topic**

The primary problem is the significant increase in opioid addiction and overdose deaths in the United States, largely driven by the over-prescription of opioids. Stakeholders, including public health officials and policymakers, are looking for effective interventions to curb the prescription rates of opioids and reduce associated mortality rates.

**2. Project Question**

The project aims to answer the following question: What is the effect of opioid prescription regulations implemented in specific states on (a) the volume of opioids prescribed and (b) drug overdose deaths

**3. Project Hypothesis**

[1] The hypothesis for this project is that opioid prescription regulations will lead to a reduction in the volume of opioids prescribed. [2] However, there may be an unintended effect on drug overdose deaths, as individuals who are already addicted might turn to illegal opioids, resulting in an increase in overdose mortality rates.

**4. Model results**

**Pre-post analysis** helps us compare the results before and after the policy implementation in the states of Washington and Florida

**If the hypothesis is true**

Pre-Post: Washington

Years from Policy Change

**Volume of opioid**

Pre-Post: Florida

Years from Policy Change

**Volume of opioid**

Years from Policy Change

**Deaths**

Years from Policy Change

**Deaths**

**Interpretation for the pre-post analysis:**

After post-policy implementation, we will observe a decrease in opioid prescriptions and an increase in overdose mortality in the treated states (Florida and Washington). Otherwise, the hypothesis will be false.

**Difference-in-difference analysis** assesses the impact of the policy by comparing changes in opioid prescriptions and overdose mortality rates before and after the policy implementation between the treated states and a control state (USA) with similar pre-policy trends.

**If the hypothesis is true**

Difference in Difference: Washington vs Counties in State without policy change

Difference in Difference: Florida vs Nationwide

**Opioid Volume Per Cap**

Years from policy change

**Number of deaths per …**

**Opioid Volume Per Cap**

Years from policy change

Years from policy change

Years from policy change

**Number of deaths per …**

False

True

Counties in State with policy change

**Interpretation for the difference-in-difference analysis:**

After post-policy implementation, the treated states should show a larger decrease in prescriptions and larger increase in mortality than control states, indicating a negative effect of the policies. Otherwise, the hypothesis will be false.

**5. Final Variables Required**

**Opioid Prescription Volume**: The total quantity of prescribed opioids each state and year.

**Overdose Deaths**: The number of drug overdose deaths, specifically those involving opioids, in each state and year.

**Policy Intervention Status**: A binary variable indicating whether the state had implemented opioid prescription regulations by a certain date.

**Time Period**: Year and month indicators to facilitate time-series analysis.

⁠**County and state identifiers** (FIPS codes for merging datasets)

⁠**Population of the counties** at a year level.

**6. Data Sources**

Population data : U.S population change data(United States Census Bureau)

Opioid Prescription Data: DEA data from the Washington Post FOIA request (2006-2014) with county-level shipment information

Overdose Mortality Data: US Vital Statistics summary (2003-2015) with county-level data on drug-related deaths.

**7. Division of Labor**

**Data Sourcing Population Data:** Yirang, Tursunai

**Data Transformations for merging:** Yirang, Tursunai

**Data Cleaning**

- Opioid Shipment : Ilseop, Ramil

- Overdose Death : Ilseop, Ramil

**Data Management of Parquet Files and Data :** Ilseop, Yirang

**Selection of Comparable Strategy and Criteria :** Ilseop, Yirang

**Data Analysis**

- Washington : Ramil, Tursunai

- Florida : Ramil, Tursunai