## Analysis

We have opioid shipment data for Florida only and opioid overdose death data for Florida, Washington, and Texas. As such, the measured metrics are shipment and overdose death for Florida and only overdose death for Washington and Texas. To investigate the effect of opioid drug prescription regulations on the volume of opioid shipment and drug overdose deaths, we employed two methodologies. First, we compared the trend of shipment / mortality before and after the regulations went into effect – this method is known as a pre-post comparison. Next, we looked at the change in trend of the metrics before and after the regulations and compared it with the change in trend of similar counties – this method is known as difference-in-difference.

### High-Level Explanation of Methodologies

The pre-post comparison provides a straightforward way to visualize the effect of the regulations of opioid. Using this method, one can easily discern changes in trends before and after the regulations went into effect. However, it does not provide context for such observed changes in trends. For instance, it is unclear if changes in trends were due to the regulations or something else that happened to occur at the same time.

In comparison, the difference-in-difference selects similar counties from other states to act as the “control group”. Similar counties were selected in a way that their trends of shipment / mortality before the regulations were similar to those of Florida, Washington, or Texas. We assume that if the regulations had not been implemented in those three states, their trends of shipment / mortality would have followed the same path as those of the control group. By comparing the trends of the three states with the trends of the control groups after the regulations, we can get closer to measuring the true effect of the regulations.

### Time Period

Regulations in each state went into effect in different years, and the data we accessed cover different time periods. As such, the pre- and post-periods for each analysis are different.

We have laid out the pre- and post-periods for each analysis below to clarify the time periods of each analysis.

| State | Analysis | Regulation Date | Pre-Period | Post-Period |

|------------ |----------------------- |----------------- |------------- |------------- |

| Florida | Opioid Shipment | February, 2010 | 2006 - 2009 | 2010 - 2012 |

| Florida | Opioid Overdose Death | February, 2010 | 2003 - 2009 | 2010 - 2015 |

| Texas | Opioid Overdose Death | January, 2007 | 2003 - 2006 | 2007 - 2015 |

| Washington | Opioid Overdose Death | January, 2012 | 2003 - 2011 | 2012 - 2015 |