A STUDY BY
CCJJ

CRIMINAL JUSTICE REFORM & CRIME RATES

-A COMPARATIVE ANALYSIS OF THE UNITED STATES

2022

LINK TO INTERACTIVE REPORT

Overview: Since the early 2000's, 40 US states have passed criminal justice reform legislation, often formally called the Justice Reinvestment Initiative (JRI). These reforms, while varying by state, aim to improve system performance while controlling costs.

Research Question: Critics of justice reform initiatives often argue that the "softer" policies in these reforms may negatively impact public safety, with recent concerns around upticks in violent crime. **As such, we analyze the relationship between criminal justice reform legislation and crime rates.**

Data & Method: We use publicly available data on crime rates between 2000 and 2020 from the FBI uniform crime report to compare states that have passed justice reform legislation to states that have yet to pass such reform. Specifically, we use a simple staggered difference-in-difference approach to study the aggregate effect of these reforms on property, violent, and homicide specific crime rates.

Results: We find no statistical evidence that criminal justice reform legislation has *caused* increases in property, violent, or homicide crime rates when comparing as a group, justice reform states to non-reform states.

Study Limitations: Crime rates have been shown to be influenced by many factors, which are often unique to each state, county and city. Hence, these findings should be interpreted with caution and should be seen as "insights" to the complex nature that make up trends in crime.

A TIMELINE OF STATES THAT HAVE PASSED JRI

2004 Connecticut

2007 Kansas, Nevada, Texas

2008 Arizona, Pennsylvania, Rhode Island, Vermont

2009 Illinois, Wisconsin

2010 Michigan, New Hampshire, South Carolina

2011 Alabama, Arkansas, Kentucky, Louisiana, North Carolina, Ohio

2012 Deleware, Georgia, Hawaii, Missouri, Oklahoma

2013 Indiana, Oregon, South Dakota, West Virginia

2014 Idaho, Mississippi

2015 Nebraska, Utah

2016 Alaska, Maryland

2017 Montana, North Dakota

2018 Massachusetts

2019 New Mexico, Wyoming

2021 Tennessee

WHERE WE ARE NOW

Reform legislation has now reached as many as 40 states across the United States.

As the nation was facing a rise in the prison population, Utah was experiencing one too but at a rate that was six times faster than the national average with an 18 percent increase between 2004 and 2014. This growth coupled with the startling fact that the vast majority of prison admissions were for non-violent offenses along with the high failure rates of probation and parole supervision were the catalyst of change in Utah's criminal justice system. This change process took on the form of the Justice Reinvestment Initiative, or better known to many as "JRI".

Through a collaborative partnership with the Pew Charitable Trusts and various criminal justice stakeholders throughout Utah, a data-driven process was undertaken with an emphasis on directing resources toward more cost-effective safety strategies, reducing recidivism rates, controlling prison population, and holding individuals accountable. These efforts became House Bill 348, passed during Utah's 2015 General Session. Similar reform initiatives have now reached as many as 40 states across the United States.

FIGURE 1: MAP OF CRIMINAL JUSTICE REFORM LEGISLATION BY STATE AND BY YEAR: 2004:2021

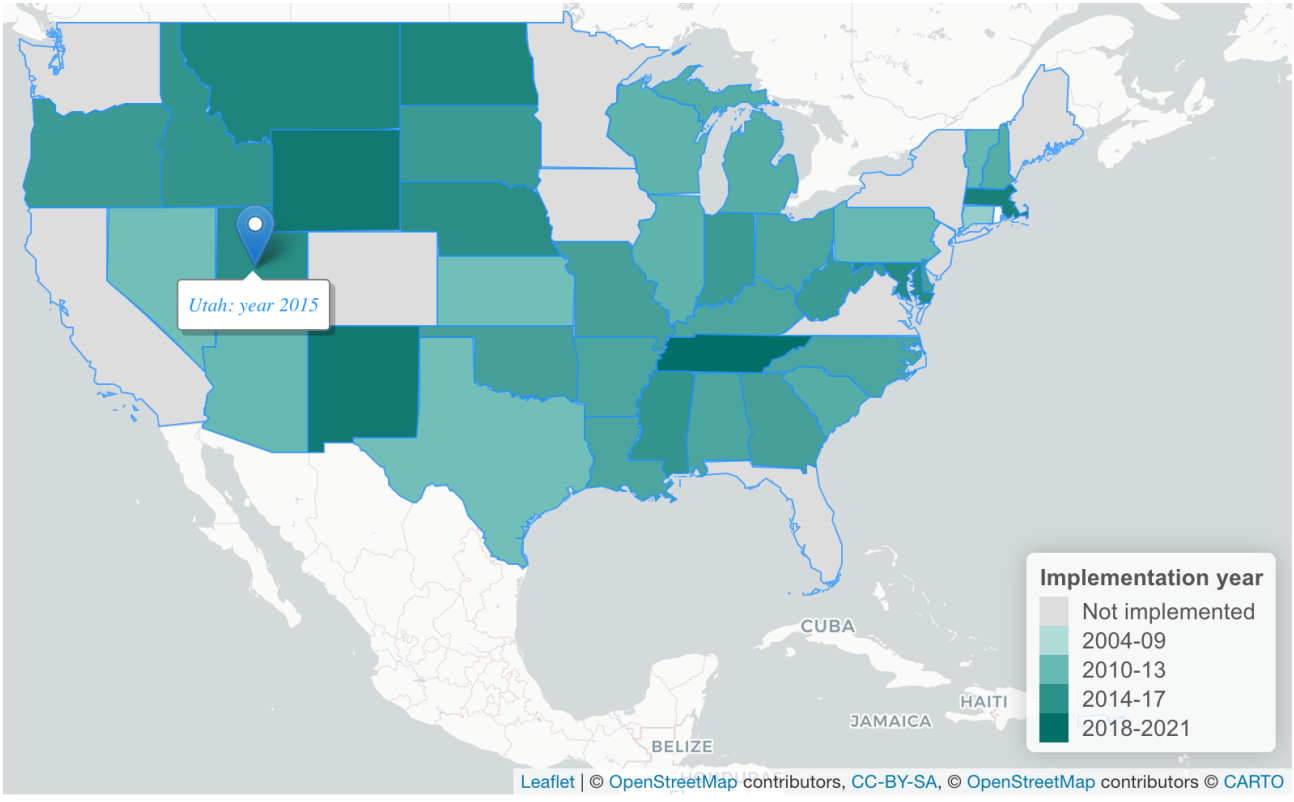


Figure 1 shows the timeline of justice reform implementation by year and by state. As seen by the different color blocks, Utah is among middle to late adopters of justice reform legislation, with Connecticut being the first adopter in 2004 and New Mexico and Wyoming adopting reform legislation in 2019.

While Utah has its own unique challenges, the complex factors that drive crime and recidivism can be shared across the nation.[1] JRI was and still is an ongoing framework that utilizes data while leveraging impacted stakeholder expertise to design and implement comprehensive approaches to addressing these complex factors. For instance, the problem of substance misuse is universal and previous research has demonstrated that the theory of deterrence through imprisonment does not ultimately reduce substance use.[2] Thus, one of the goals of criminal justice reform in Utah was to decrease the practice of incarcerating individuals for drug offenses and expand opportunities for substance use and mental health treatment.[3]

With many reform changes going into effect in 2015 and subsequent years, stakeholders and communities across Utah have raised concern that recent increase in crimes, particularly violent and homicide crimes, are due to JRI policy changes.[4]

As such, we pose the question if these reforms have had an adverse effect on public safety, looking specifically at the relationship between criminal justice reform legislation and crime rates.

DATA

We use publicly available data on crime rates by type and state between 2000 and 2020 from the FBI Uniform Crime Report.[5] We utilize the violent dataset which reflect the most serious offense in a case and are captured in the descending hierarchy order of homicide, rape, robbery, and aggravated assault.[6] Similarly, property crimes are composed of arson, burglary, larceny/theft & motor vehicle theft crimes per 100,000 population while homicide crime rates are specific to such serious crimes.

We further use publicly available reports to establish if and what year a particular state has passed reform legislation. Figures 2-4 show aggregate property, violent and homicide crime rates between 2000 and 2020 by group. The group labeled “JRI” are states that have passed justice reform legislation while the group labeled “Non_JRI” are states that have yet to pass such reform. We also show Utah specific trend among these alone.

FIGURE 2: TRENDS IN PROPERTY CRIME RATES BY JUSTICE REFORM INVOLVEMENT AND UTAH ALONE: 1990:2020

FIGURE 3: TRENDS IN VIOLENT CRIME RATES BY JUSTICE REFORM INVOLVEMENT AND UTAH ALONE: 1990:2020

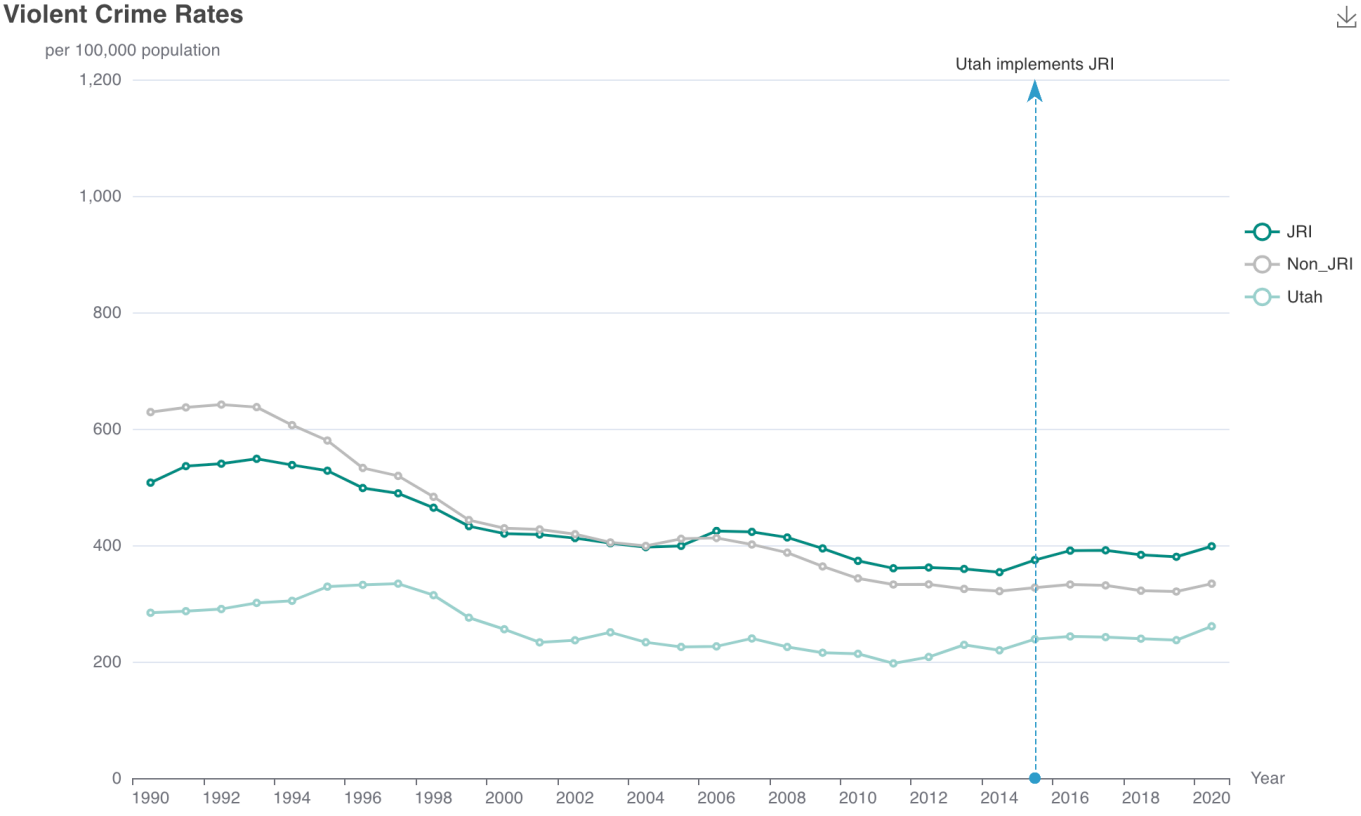
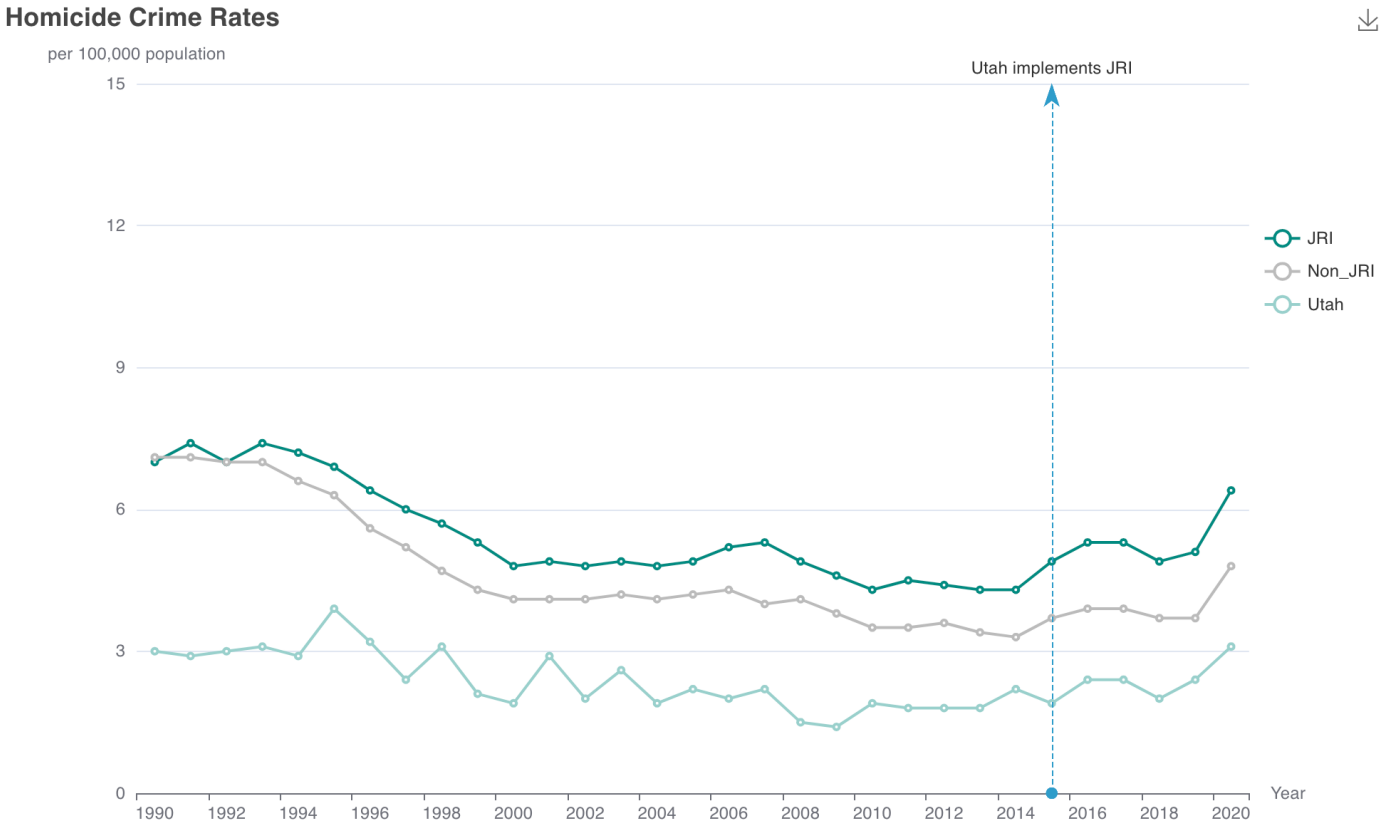


FIGURE 4 - TRENDS IN HOMICIDE CRIME RATES BY JUSTICE REFORM INVOLVEMENT AND UTAH ALONE: 1990:2020



As seen in these figures, property crime rates have been on the decline for the three respective groups for the past two decades with Utah showing an increase between 2019 and 2020.

On the contrary violent crime rates, while declining in the early 2000s, have been on a slow increase starting around 2010, with all 3 groups showing an increase between 2019 and 2020. It should be emphasized that some fluctuations have occurred throughout this time period.

Homicide crime rates, while declining since the early 90s (and fluctuating as these numbers are small in size), increased for all groups between 2019 and 2020 (first year of the Covid-19 pandemic).

Indeed, at a closer look, fluctuations in these rates occur naturally through time and as such, caution should be taken before interpreting stand alone data points as an upward/downward trend.

THE "DID" FRAMEWORK

The difference-in-difference (DID) statistical method is often used to study policy and program effects that have a time element.

In broad strokes, the DID framework compares the performance of a treatment and a control group (or groups) before and after a new policy or program is introduced with the treatment group being the group who was affected by the new policy. As such, the DID method is able to estimate a "treatment effect" while accounting for general time effects, or trends that would have occurred without the new implementation of the policy by using the group that was not exposed to the new policy as the "control".

When only two periods exists, the DID treatment effect is derived by taking the difference in the outcome of interest at time 1 (prior to the policy) between the treated and the untreated, and subtracting that difference by the average difference in the measure of interest at time 2 (after the new policy was implemented) When a policy is implemented at different points in time, a staggered DID approach is often used. This can allow for the “yet to be treated” units to act as a control until they enroll in the new policy or program. For the present study, we argue that the DID approach, specifically the staggered kind has advantages over other methods, in particular, relying on descriptive statistics alone.[7]

Here, we utilize the “did package” available in the R statistical environment. On an aggregate level, the “treatment group” consists of states that have passed criminal justice reform legislation between 2004 and 2019. We then use the states that have yet to engage in formal justice reform legislation as a “control group” until they pass reform legislation in addition to the states that as of 2020 have not passed criminal justice reform legislation.[8] Specifically, we group states that have passed reform at a similar time period to increase the sample size for each group.

Our staggered enrollment approach allows us to use the “have yet to pass legislation group” as a control for those that have passed the legislation. This allows us to study the effect of criminal justice reform on our outcomes of interest: property, violent and homicide crimes. We use either the year of actual reform legislation or allow one to two years after official legislation has passed to account for the “after”, or “with reform” time period. The reasoning behind allowing a lagged approach is that rolling out broad policy packages takes time and hence effects are not seen until some time period afterwards while ensuring a sufficient sample size for each group.

Figures 5 and 6 show the aggregate average treatment effect on the three outcomes of interest by justice reform involvement.[9] The error bars indicate statistical significance (or lack thereof) at the 5 percent testing level. When the upper or lower end of these bars are of opposite signs (one is positive and one is negative) then our treatment effect is not considered statistically significant. In other words, we cannot say that the estimate is different from zero, or have "no effect".

As seen in the figure, all error bars are in opposite sign direction, indicating that no statistical significance is reached.

Specifically, property crime shows a treatment effect of an average, 106 reduced property crimes per 100,000 population (for justice reform states) but its upper and lower estimates contain the value zero. Violent and homicide specific crimes show a positive sign, implying an increase in these crime rates for justice reform states (a 2.9 and 0.3 per 100,000 pop increase respectively) However neither estimates reaches statistical significance. Findings for our homicide specific estimate is further seen in Figure 6, with again, the DID estimate showing a small positive effect but lacks statistical support.

FIGURE 5: THE DIFFERENCE-IN-DIFFERENCE TREATMENT EFFECT FOR OUR 3 OUTCOMES OF INTEREST WITH ERROR BANDS (95% CI)

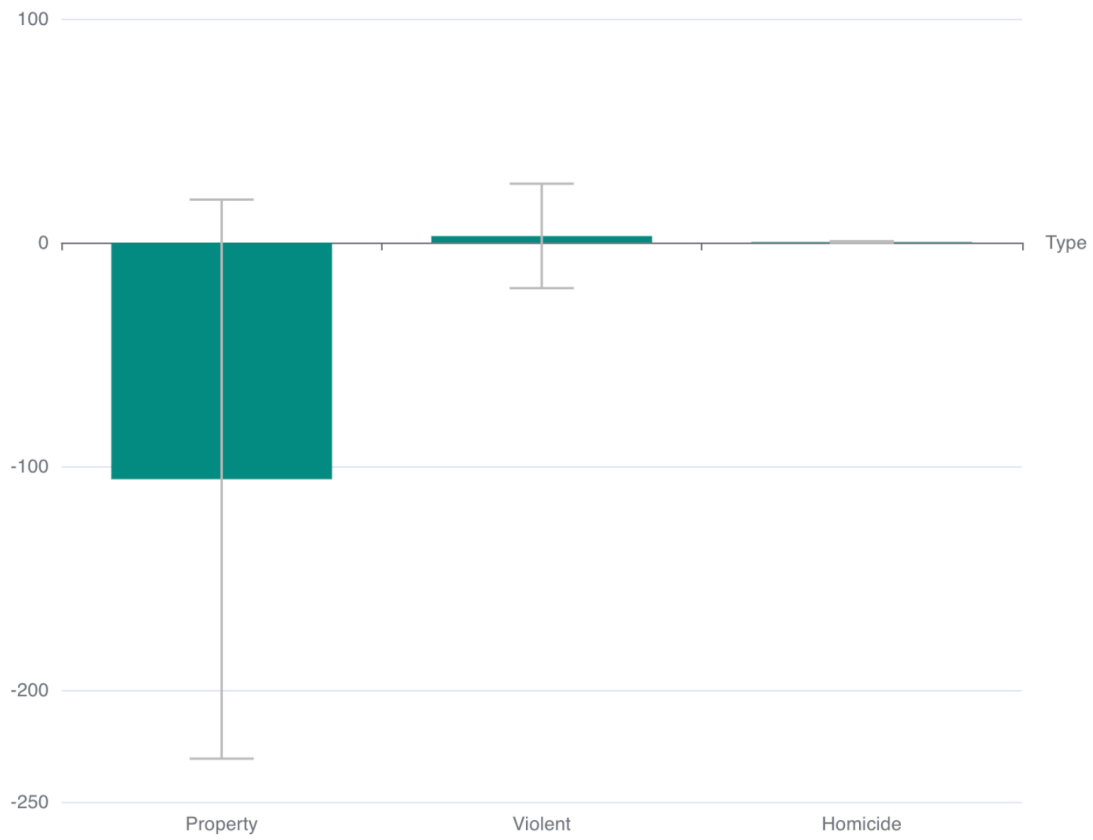
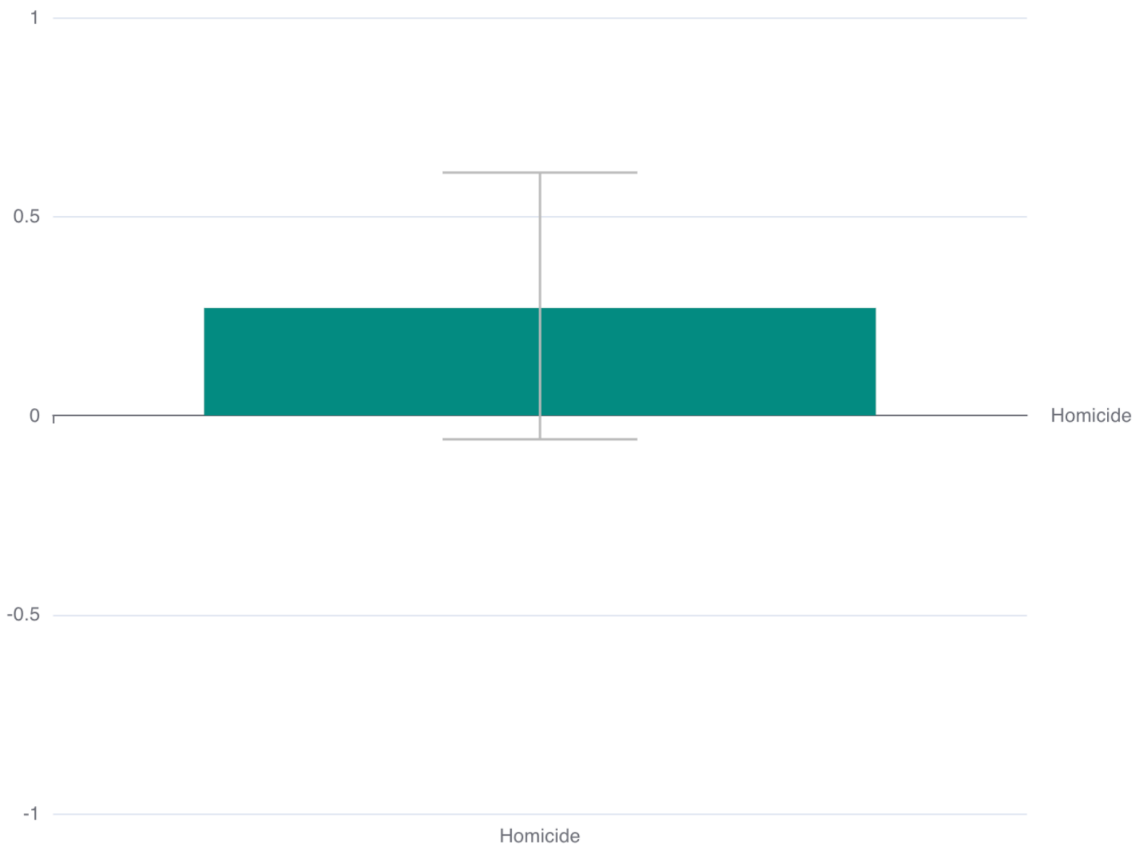


FIGURE 6: A CLOSER LOOK: THE DIFFERENCE-IN-DIFFERENCE TREATMENT EFFECT FOR HOMICIDE WITH ERROR BANDS (95% CI)



SENSITIVITY ANALYSIS

Sensitivity analysis is a statistical tool to assess how "sensitive" or on the flipside, how "robust" statistical results are to small changes in how parameters or groups are specified. In our analysis, of primary importance is to assess how different sets of group membership affects our three different outcomes. As such, we perform sensitivity analysis amongst group membership to see how sensitive different groupings are to our results.

Again, the groups here are the year (lagged) a particular state underwent reform. These analyses showed that some of the results were sensitive to group assignments. As an example, we find that allowing for a longer lagged period after legislation has passed, leads to statistical results amongst our property crime estimate. Recommendations on how to overcome these "fragile" results are discussed in the following section.

STUDY LIMITATIONS & FUTURE WORK

Crime rates have been shown to be influenced by many factors, including income, employment indicators, drug use, law enforcement activity and gun laws, which were not controlled for here. Indeed, while the DID method has shown to effectively control for general time effects, accounting for variables known to be linked to crime, including household income, employment indicators would be beneficial.

Additionally, our sample is on the smaller side which led to aggregate reporting only. Increasing the sample size to a more granular unit of analysis, including at the county, city, and/or municipality level would increase the robustness of these results and allow for examining within group differences, including, state specific outcomes. Lastly, Covid-19 brought drastic changes in law enforcement practices and jail bookings in Utah and the nation as a whole starting in March of 2020 which makes trends too early to detect.

Policies that make up criminal justice reform legislation have so far been targeted towards lower level crimes such as a reduction in penalty for certain drug possession only offenses, with Utah being one of the states that this policy change pertained to. Hence, examining drug specific and lower level theft crimes would be valuable in order to understand if these reforms have had an impact on public safety as it relates to these more targeted crimes.

CONCLUSION

Adopted by 40 US states, criminal justice reform legislation aims to improve outcomes while lessening the cost borne by the criminal justice system. Through the use of a difference-in-difference approach, we find no statistical evidence that criminal justice reform legislation has *caused* increases in crime rates, when the outcome of interest is property, violent, or homicide crime rates. We find some variations when looking at specific years of implementation, which may be evaluated further with more granular data. These findings should be interpreted with caution and should be seen as insights to the complex nature that make up crime rates.

TAKEAWAY

Successful criminal justice reform implementation requires ongoing data evaluations and collaborations both *within* and *across* systems. This includes criminal justice entities, areas of substance use & mental health, employment, housing, and other social arenas known to impact outcomes for criminal justice populations.

1. These factors include for example: age, gender, criminal history, substance misuse, mental health, antisocial peers, employment instability, marital status, and socioeconomic status. See Bonta & Andrew (2007) Risk-Need-Responsivity Model for Offender Assessment and Rehabilitation for a full review.
2. See here for more information on the lack of relationship between incarceration and future drug use.
3. For more information about justice reform efforts in Utah, please visit this link.
4. It is important to note these reforms have emphasized policy changes to lower level offenses and there is no direct policy change that can be attributed to violent offenses.
5. Because not all law enforcement agencies provide data for complete reporting periods, the FBI includes estimated crime numbers in these presentations. For agencies supplying 3 to 11 months of data, the national UCR Program estimates for the missing data by following a standard estimation procedure using the data provided. For agencies that supplied less than 3 months of data, the FBI computes estimates by using the known crime figures of similar areas within a state and assigning the same proportion of crime volumes to nonreporting and/or partially reporting agencies. The estimation process considers the following: population size covered by the agency; type of jurisdiction, e.g., police department versus sheriff's office; and geographic location.
6. These data represent reported crime, and is not an exhaustive report of all crime that may have occurred in a given state and time period.
7. The approach has a few critical assumptions, in particular, the assumption that the treatment and control group(s) follow the parallel assumptions, discussed in detail here.
8. Note that Tennessee who passed its reform in 2021 will be coded as a state that has not implemented reform for the time period considered here.
9. Functions in R's did package estimates individual and aggregate group effects. However, under circumstances with smaller group sizes, it is recommended to limit reporting to aggregate effects only. Discussions on this are available here under the section "Small Group Sizes".
10. Please visit this link for an in-depth discussion of these factors.
11. A report on trends in local jail populations during Covid-19 is available here.

1. Fredriksson, A. & Magalhães de Oliveira, G. (2019). Impact evaluation using Difference-in-Differences. Available here.
2. Harvard Injury Control Research Center: Homicide. Harvard School of Public Health. Available here.
3. Justice Center. Council of State Government. Available here.
4. Justice Reinvestment Initiative. Bureau of Justice Assistance. Available here.
5. Justice Reinvestment Initiative. Crime and Justice Institute. Available here.
6. Justice Reinvestment initiative. Vera Institute of Justice. Available here.
7. Justice Reinvestment Report (2014). Commission on Criminal & Juvenile Justice. Available here.
8. Past States. Council on State Governments. Available here.
9. Publications. Urban Institute. Available here.
10. Pelletier, E., Peterson, B., & King, R. (2017). Assessing the Impact of South Carolina's Parole and Probation Reforms. Available here.
11. What the data says (and doesn't say) about crime in the United States. Pew Research Center. Available here.