Bailing out the Unemployment Rate: The Impact of Cash Bail Reform on Unemployment

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Maggie Morrison
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The Impact of Cash Bail Reform on Unemployment

Maggie Morrison

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Economics

Abstract

This study seeks to discern the relationship between New Jersey's monetary bail reform implemented on January 1st, 2017 and their unemployment rate. The Criminal Justice Reform Act changed New Jersey's pretrial policies to essentially eliminate the use of monetary bail and instead favor risk-based assessments when deciding whether a defendant should be jailed before trial. To find the impact of this reform, a differences-in-differences linear regression is performed using panel data on the county level. This study utilizes variables that have explanatory power regarding the unemployment rate to further isolate the effect of bail reform on the unemployment rate. The results find that the presence of New Jersey's bail reform has a significant impact on the unemployment rate, decreasing the unemployment rate by .65%, which is approximately 10% of New Jersey's average unemployment rate.

Keywords: (Bail Reform, Cash Bail Reform, Monetary Bail Reform, Unemployment Rates, Robustness Testing, Racial Discrimination, Judicial Inequality, Poverty Traps)

JEL Codes: (C23, H76, I38, J15, J16, J71, J78, J88, K14, R23)

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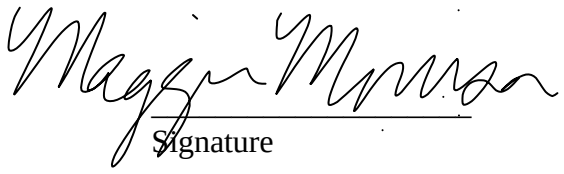

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Acknowledgements

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1. Introduction

In the American justice system, defendants post bail to be released from jail while they await trial. Judges determine the monetary amount at which to set bail based on several factors, such as the danger the defendant poses to the community and the likelihood that the defendant will appear for their court dates. While cash bail may have been created to protect communities, its consequences have been inequitable and racist.

Almost 2 million Americans today are in jail or prison; this number has increased 500% since 1970 (*Mass Incarceration*). This increase is a direct result of the monetary bail system: the number of convicted people in the jail population has remained relatively stable, while the number of unconvicted people in jail has skyrocketed (*Mass Incarceration*). This means that hundreds of thousands of people are in jail while still being technically innocent. Many of these people do not pay bail because they cannot afford it (*U.S. Commission on Civil Rights Releases Report: The Civil Rights Implications of Cash Bail*). This has created a two-tiered justice system between those who can afford to post bail and those who cannot. Those who cannot remain detained while they await trial. Awaiting trial behind bars often leads people to miss work and sometimes lose their employment (Smith, 2022). This is one aspect of how monetary bail perpetuates poverty traps in the judicial system.

The monetary bail system exacerbates existing disparities in the justice system while also harming the financial outcomes of individuals, which ultimately harms the financial outcomes for the jurisdictions that uphold cash bail policies. In 2013, a study found that 12% of New Jersey's jail population (1,500 people) could not afford a bail of $2,500 dollars and that the average defendant awaiting trial, the majority of whom were Black or Latino, had been awaiting

trial for 314 days (Murdock & Kessler, 2023). This stark statistic was the impetus for New Jersey policymakers to seriously address the issue of cash bail (Murdock & Kessler, 2023). In 2014, a bipartisan majority of New Jersey's state legislature approved reforms to bail policies that essentially eliminated the use of cash bail (Murdock & Kessler, 2023). The new bail system, signed into law in 2017 by Republican Governor Chris Christie, utilizes a risk assessment tool which considers a variety of factors, such as defendants' risk of fleeing and their risk of recidivism (Murdock & Kessler, 2023). New Jersey's bipartisan reform has been largely successful; in the two years following bail reform, pretrial populations decreased by almost 45% (Rayman, 2019). One year after the enactment of New Jersey's bail reform, pretrial populations fell to 8,482 people (6,524 fewer people than pre-bail reform) and has remained around that number since then (Murdock & Kessler, 2023). In just the first year after its implementation, bail reform saved the state $68 million in jailing costs from a reduction in the pretrial population (Murdock & Kessler, 2023).

In addition to reducing barriers to justice based on wealth, cash bail reform has secondary implications for New Jersey's economy. As fewer people are detained, fewer people will lose their employment, housing, and even custody while awaiting trial. The impacts of bail reform may even extend to preschool enrollment rates and personal savings rates since families no longer need to quickly put together large monetary sums to pay bail. This study focuses on the economic consequences of bail reform through the lens of the unemployment rate. This is because detainees losing their employment due to an inability to post bail is the first step in the judicial process where the system perpetuates a poverty trap for low-income people. It is also important to analyze how bail reform's impacts differ by race to contribute to existing literature demonstrating the racial biases in the justice system. By analyzing the differential employment

impacts of cash bail reform, this paper can demonstrate what value cash bail reform has in terms of increasing equality.

This study focuses on the relationship between monetary bail reform and unemployment rates in New Jersey and seeks to add to the limited literature on this topic. The first objective of this paper is to analyze the effect of cash bail reform on the unemployment rate in New Jersey. This study uses Massachusetts, which did not experience New Jersey's elimination of cash bail, as a control group. The second objective is to analyze the differential impacts of this relationship based on race. Then, this paper reflects on the implications of this relationship on future policy-making decisions.

2. Literature Review

Proponents of cash bail claim that cash bail functions as a mechanism to incentivize defendants to appear for future court dates, that cash bail reduces recidivism, and that bail reform increases violent crime (Weiskopff, 1984). The principal function of cash bail is to encourage defendants to return for future court dates (Weiskopff, 1984). However, research shows that monetary bail does not decrease the likelihood that a defendant will fail to appear for court dates (Ouss & Stevenson, 2022). In Philadelphia, cash bail reform did not impact failure to appear rates (Ouss & Stevenson, 2022). Research from Orange County, California found that among non-violent felony defendants, those released on monetary bail were significantly more likely to fail to appear than similarly situated defendants released on supervision without the stipulation of cash bail (Barno et al., 2020). Thus, the main defense of cash bail, that it incentivizes defendants to appear for court dates, is demonstrably false.

Regarding the second purpose of cash bail, that it reduces recidivism, studies find that pretrial detention actually increases recidivism (Heaton, 2022). Critics of bail reform assert that bail reform allows more defendants to await trial outside of jail, thereby increasing a defendant's opportunity to commit another crime which increases the likelihood of recidivism. Conversely, proponents of bail reform claim that because monetary bail increases the likelihood of conviction and incarceration has a criminogenic effect, pretrial detention increases recidivism. Research shows that the rates of rearrest of defendants released pretrial were the same before and after Philadelphia enacted a No-Cash Bail Policy whereby the District Attorney did not seek monetary bail for certain low-level crimes (Ouss & Stevenson, 2023). Additional research finds that defendants who are detained pretrial are more likely to commit crimes in the future, suggesting there is a criminogenic effect to being detained (Heaton et. al, 2018). Furthermore, defendants who were held in jail during the entire pretrial period are 1.3 times more likely to be arrested on a new charge in the future than defendants who were released pretrial, regardless of a defendant's demographics or previous incarceration history (Digard & Swavola, 2019). Therefore, the data suggests that pretrial detention does not reduce recidivism and thus that argument is ineffective in defending cash bail.

Critics of cash bail reform also claim that in many jurisdictions cash bail reform has led to an increase in violent crime rates (Preston, 2022). In 2017, the year after cash bail reform was enacted, New Jersey's violent crime rate decreased by 5%, whereas America's violent crime rate only decreased by 1% (Murdock & Kessler, 2023). One challenge to analyzing the effect of bail reform on crime rates has been the national crime surge post-COVID (Murdock & Kessler, 2023). Many bail reform programs were instituted around the same time as the onset of the COVID-19 pandemic, which makes it difficult to accurately isolate the impact of bail reform on

violent crime. While there is no evidence for a national pattern between bail reform and violent crime, synthetic control methods find that cash bail reforms in New York did not cause an increase in violent crimes (Wu & McDowall, 2023). The existing literature finds that there is not a causal relationship between cash bail reform and violent crime rates, though this area would benefit from additional research, especially as the distance from the onset of COVID-19 increases (Murdock & Kessler, 2023).

2.1 Impacts of Cash Bail on Justice

Racial bias distorts justice when judges unfairly use race as a determinant on whether to condition bail on a monetary basis and at what amount to set bail. Research shows Black defendants are 3.6% more likely to be assigned monetary bail than White defendants (Arnold et al., 2018). Additionally, Black defendants assigned monetary bail are on average assigned a bail amount $9,923 dollars greater than their White counterparts who are assigned monetary bail (Arnold et al., 2018). Nationally, compared to White men assigned monetary bail, Black men assigned monetary bail pay 34% more and Latino men pay 19% more (Gibson et. al, 2022). The monetary bail system is another step of the judicial process that compounds racial disparities in the justice system.

The disparate effects of the monetary bail system further compound when impacts of pretrial incarceration are considered. Pretrial release decreases the likelihood of conviction, primarily because those who are released pretrial are less likely to plead guilty than those who are detained pretrial (Dobbie et. al, 2018). Defendants who are detained pretrial are 25% more likely to plead guilty than defendants in comparable circumstances who are released pretrial (Heaton et. al, 2017). They are also 43% more likely to be sentenced to jail than their counterparts who are released before trial (Heaton et. al, 2017). Additionally, those who are

detained pretrial are assigned jail sentences that are more than twice as long as the average jail sentence (Heaton et. al, 2018). Cash bail has significant negative outcomes for an individual's case which holds long-term consequences when one considers the effects of a criminal record on future employment outcomes.

Pretrial detention has economic impacts that last years beyond the conclusion of an individual case. Research finds that being detained in jail pretrial causes defendants to lose, on average, $29,000 in the form of earnings and social benefits over the course of their life (Dobbie et. al, 2018). Up to $80.91 billion dollars of earnings per year could be lost due to defendants being detained pretrial (Dobbie & Yang, 2021). Beyond a reduction in productivity and revenue, society also suffers economically from the cost to taxpayers of detaining high numbers of defendants pretrial (Murdock & Kessler, 2023). Furthermore, society suffers from the effects on children in areas with high pretrial detention rates: children growing up in areas with high pretrial detention rates are significantly less likely to have class mobility than those growing up in areas with lower pretrial detention rates (Dobbie & Yang, 2021). The consequences of pretrial detention, even if detainees are never convicted, are severe not only for the individual detainee but in terms of the costs to society.

2.2 Impacts of Cash Bail on Employment

For many, pretrial detention also means losing employment. Pretrial detention can harm defendants even if they are not ultimately convicted of a crime because the stigma surrounding arrest discourages defendants from seeking formal employment (Dobbie et. al, 2018). Furthermore, defendants who were released pretrial are 9.4% more likely to have formal employment three to four years after the bail hearing than those who were detained pretrial (Dobbie et al., 2018). Among Black people in New Jersey in their prime working age, the New

Jersey bail reform increased the probability of employment by 4.2 to 6.8 percent (Kim & Koh, 2021). Among a randomized sample of defendants who were detained pretrial, 40% missed work and 18% lost their jobs (Smith, 2022). The act of being detained pretrial, even if it does not result in a conviction, leads to material losses for detainees.

Those assigned monetary bail are more likely to be convicted of their crime and, on average, spend a longer time in jail (Heaton et. al, 2018). Because Black people are more likely to be assigned monetary bail in the first place and likely to be assigned a more expensive and thus unaffordable bail than White people, the monetary bail system compounds existing racial disparities (Arnold et al., 2018). The barriers to employment once a person has a criminal record are substantial, and those barriers are differentially impactful based on race and gender, with Black men being the most negatively impacted (Pager et al., 2009). In addition to the legal obstacles faced by ex-convicts, there are social stigmas that discourage employers from hiring ex-convicts, and this effect is most pronounced for Black men (Pager et al., 2009). Research finds that it is significantly harder for Black men to obtain an interview or formal employment than for White men, even with identical resumes and criminal backgrounds (Pager et al., 2009). Given this, the monetary bail system's secondary effects exacerbate racial disparities in employment.

2.3 The Rise of Bail Reform

Due to the multitude of ways an inability to pay bail can derail a defendant's life and the racist, classist consequences of the system, many jurisdictions are seeking to reform monetary bail. Beyond cash bail reform, other methods have been investigated in terms of their effect on failure to appear rates. Behavioral nudges, like text message reminders, could reduce the likelihood that a defendant would fail to appear for a court date (Fishbane et al., 2020). Other

innovative means to reduce failure to appear rates in Minnesota and Oklahoma involve Court Rides, which aim to reduce transportation barriers to court appearances (McCoy et al., 2021).

Some jurisdictions have instituted risk assessment approaches for judges to follow when deciding to release or detain a defendant. This transition to a more objective decision-making mechanism for judges has dramatically reduced the use of monetary bail in jurisdictions that follow this practice (Murdock & Kessler, 2023). Reforms in states like New Jersey and New York have essentially eliminated the use of monetary bail and have led to significant reductions in the pretrial prison population (Murdock & Kessler, 2023). Other states have investigated their bail reform practices but have not taken the step to abolish or practically eliminate the use of cash bail. Massachusetts, for example passed a Criminal Justice Reform Act in 2018 which acknowledged the issues of cash bail but did not considerably alter its bail-setting practices.

3. Theory and Methodology

This paper analyzes quantitative data to study the significance of a multitude of variables that impact the unemployment rates on a county level. To test for variable significance, a difference-in-difference regression model is run on cross-sectional data to estimate the effect of policy reform (cash bail reform) on the unemployment rate, while including other independent variables as explanatory variables. Then, this study will analyze the difference in degree of impact cash bail reform had on the unemployment rates for White populations, Black populations, and Latino populations. Through differential impacts to the unemployment rate, I can analyze how cash bail's impacts differed in their severity for different races which will

provide policy guidance to other jurisdictions that aspire to increase the equality in their judicial system.

I hypothesize that the main mechanism through which cash bail reform impacts unemployment rates is through a decrease in the number of defendants in pretrial detention due to an inability to pay. Bail reform allows these defendants to maintain their current employment by awaiting trial outside jail. If this is the correct mechanism for how bail reform impacts the unemployment rate, then there is a maximum effect that bail reform can have on the unemployment rate. In New Jersey's pretrial population before reform, 5,000 people were detained solely due to an inability to pay (Hanna, 2023). Given that approximately 18% of those detained pretrial will lose their employment (Smith, 2022), the maximum effect bail reform could have on the unemployment rate is a decrease of .55% and in the average post-reform year it could have an effect of -.42% on the unemployment rate. However, the actual observed effect is larger, at -.65% effect on the unemployment rate. This means that there are other mechanisms through which the unemployment rate is impacted by bail reform beyond decreasing the number of people who are in jail pretrial because of an inability to post bail.

I hypothesize that the difference in the expected and actual effect of bail reform is caused by a reduction in the prevalence of negative outcomes associated with pretrial detention. Bail reform in Harris County, Texas resulted in a 15% reduction in guilty pleas and a 15% reduction in the conviction rate and a 17% reduction in the probability that a sentence will include jail time (Heaton, 2022). Because pretrial detention is associated with outcomes such as guilty pleas and longer sentences, cash bail reform will have long-term impacts on the number of people incarcerated (Heaton, 2022). This will also decrease the number of people seeking employment who must overcome stigmas surrounding their criminal record. I hypothesize that this will

increase the access that many defendants have to the job market and thus decrease the unemployment rate. Finally, I hypothesize that because the impacts of monetary bail disproportionately affect Black and Latino people, the impacts of cash bail reform will differentially impact unemployment rates by race.

This study uses county-level data to observe the impacts of cash bail reform on unemployment rates. The advantage of county-level data is it clarifies how jurisdictions similar to counties included in the study should anticipate cash bail reform to impact their unemployment rates. This makes this paper particularly relevant for policy advice in jurisdictions that are demographically and economically similar to New Jersey and considering cash bail reform. County-level data is limited in its ability to predict the outcome on a particular individual in a jurisdiction that enacts cash bail reform. Due to privacy reasons, however, there is a lack of access to microeconomic data on the employment outcomes of individuals assigned or not assigned cash bail. Therefore, this study uses data on the county level, which is useful to policymakers who consider the impacts of policies on entire counties when creating legislation to address social issues.

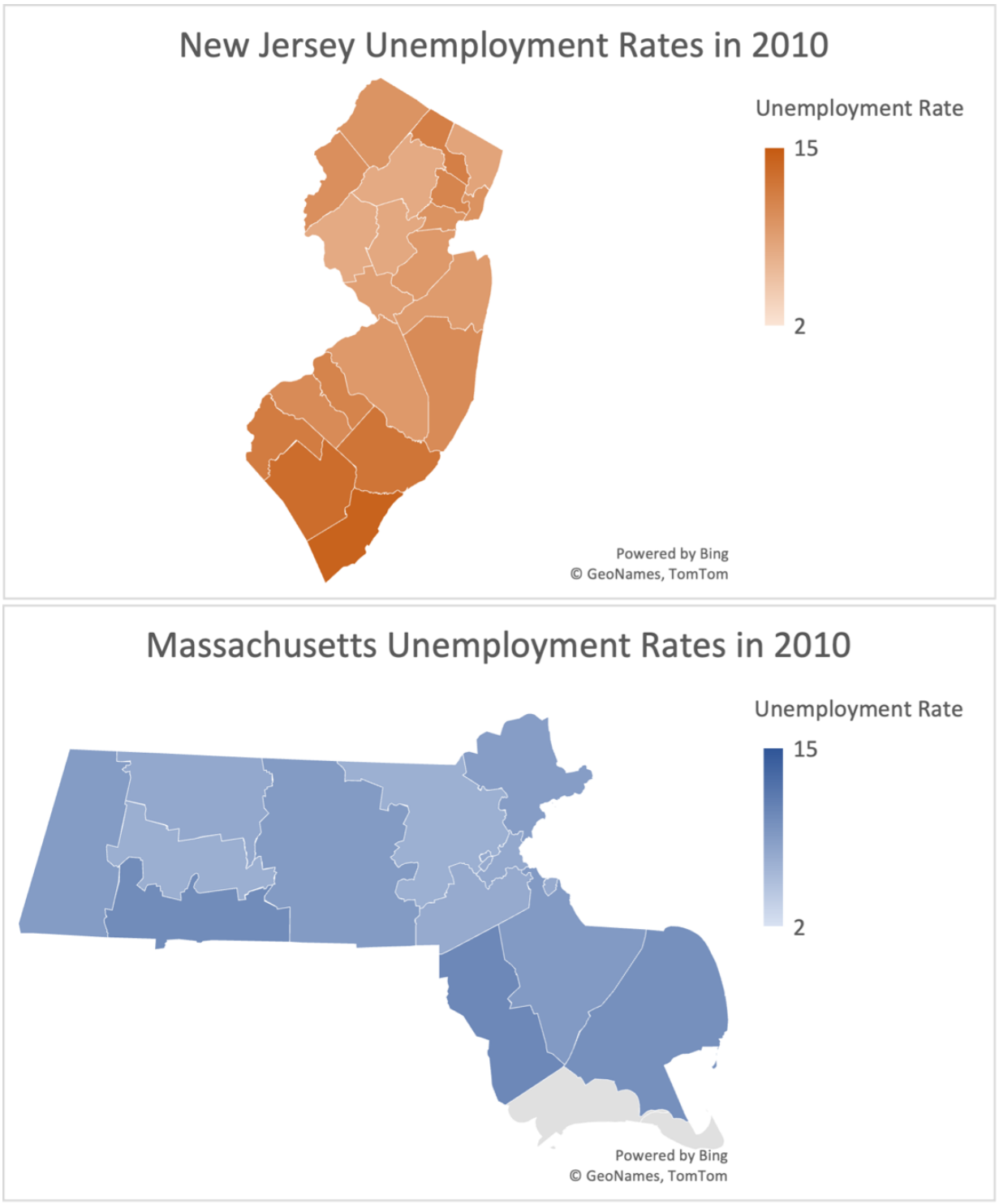
A question exists of whether unemployment rates and cash bail reform in New Jersey are subject to an endogeneity effect. I hypothesize that bail reform impacts the unemployment rate in the aforementioned ways. However, it is possible that bail reform and unemployment rates were both impacted by changing political attitudes in New Jersey that are not captured in this model. These attitudes may have made policymakers more amenable to implementing other policies that altered the unemployment rates. Therefore, there is a risk that the bail reform variable picks up on some of the impacts of other more accepting social attitudes that caused different policy changes. To control for this, I use Massachusetts, a progressive and liberal state, as a control

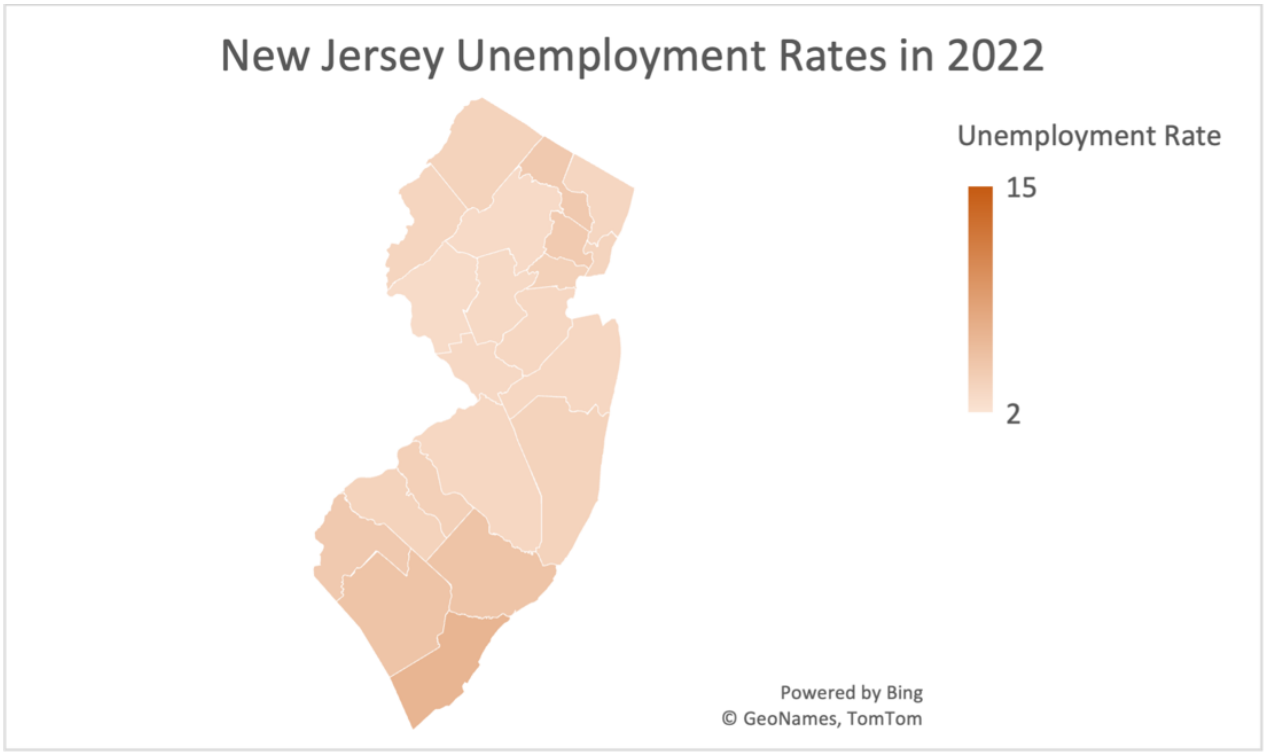
group. Massachusetts, like New Jersey, experienced a wave of progressive criminal justice reform, however, they fell short regarding bail reform issues. Using Massachusetts, a state with progressive beliefs and a similar economy and social attitude, allows this study to concentrate on the impact of New Jersey's bail reform specifically on the unemployment rate. Future research may benefit from the use of an endogenous treatment model to address the question of an endogeneity effect.

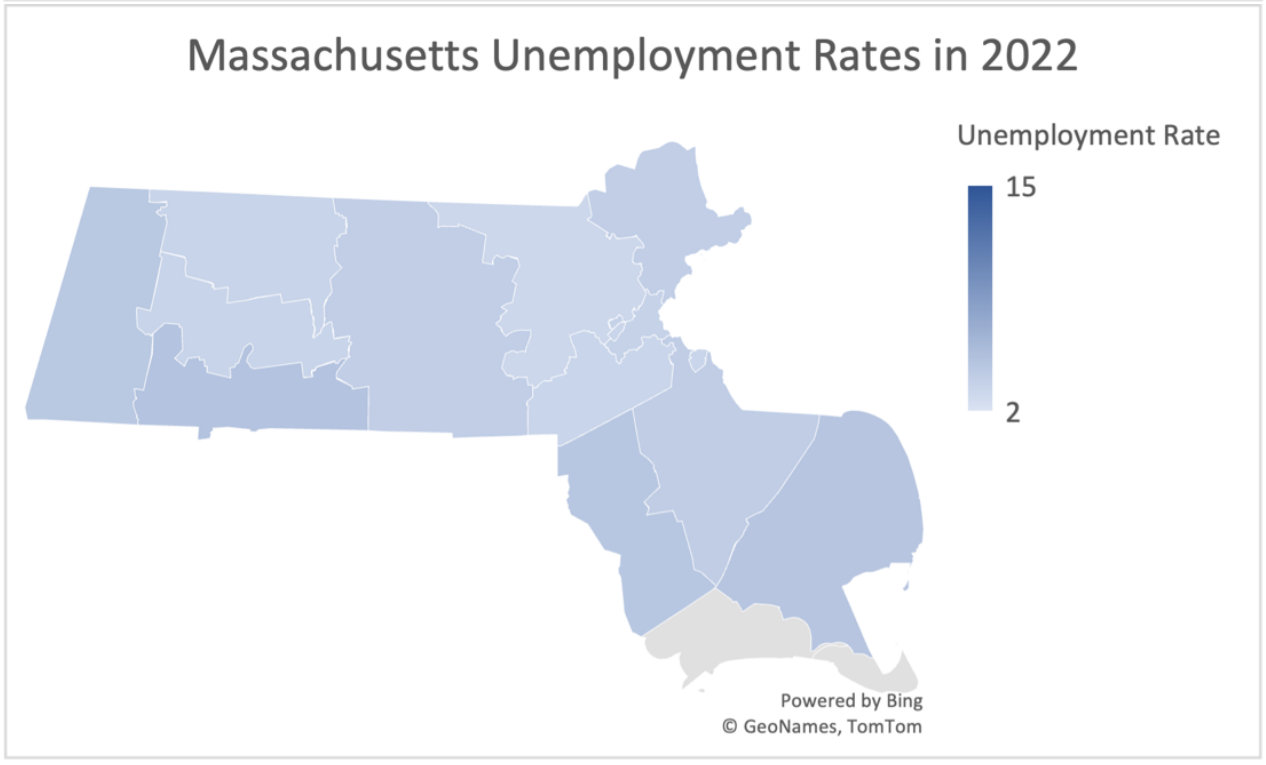
This model uses data from 12 control counties in Massachusetts and 21 treatment counties that experienced bail reform in New Jersey. This amounts to 396 observations spanning 2010 to 2022. New Jersey's bail reform was implemented on January 1st, 2017. This means 7 of the observed years are pre-bail reform and 5 are post-bail reform years. The model uses a robust standard error which adjusts for the 33 clusters observed due to the nature of county-level panel data. In New Jersey, each county in the state is analyzed, while in Massachusetts Dukes County and Nantucket County are dropped due to a lack of data on these counties in the US Census Bureau.

3.1 Employment Data

Graph 1: Unemployment Rates in New Jersey and Massachusetts



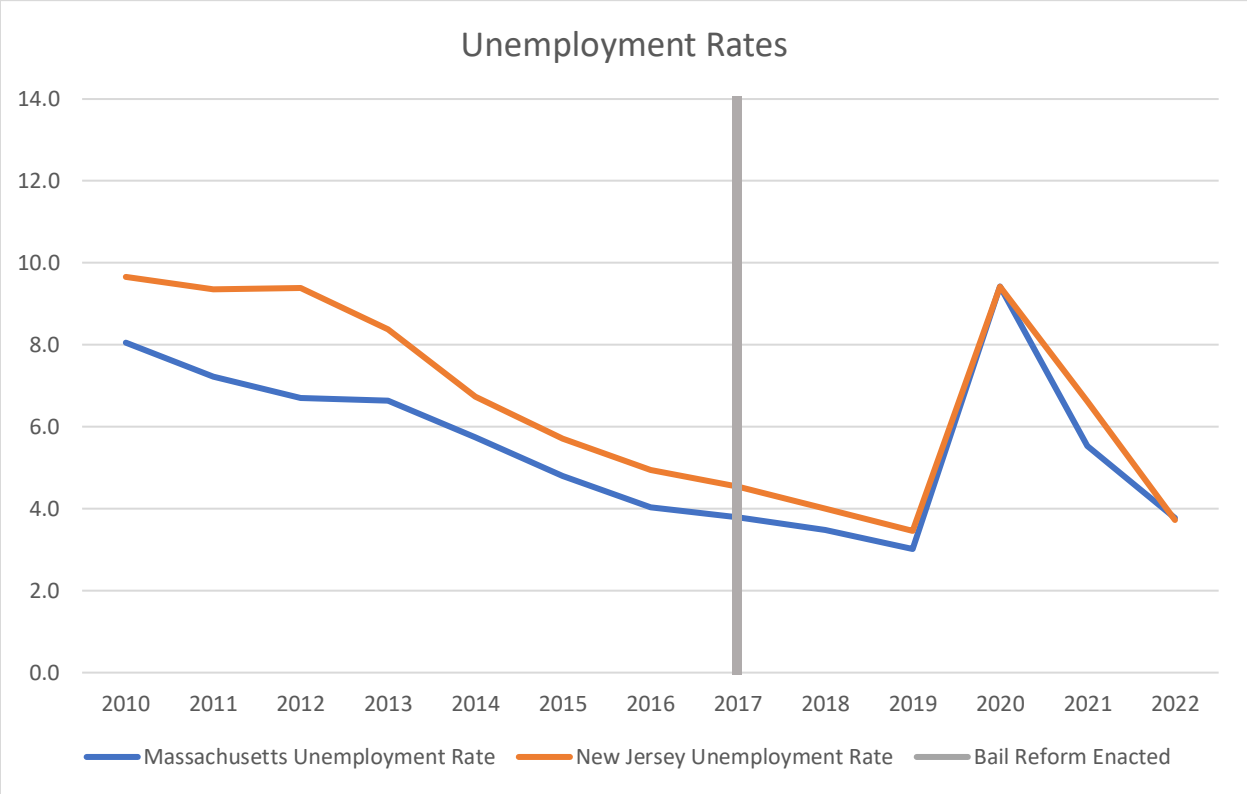




Source: Federal Reserve of Economic Data.

This study tracks yearly data obtained from the US Census Bureau and the Federal Reserve of Economic Data on the county level from 2010 to 2022. The lowest unemployment rate for any county analyzed in this study was 2.4% in Middlesex County, MA in 2019. The lowest unemployment rate in New Jersey was 2.7% in Hunterdon County, NJ in 2019. At the lower end of the unemployment rate, New Jersey and Massachusetts experience similar unemployment rates. The highest unemployment in either state was in Atlantic County, NJ, which experienced an unemployment rate of 17.1% in 2020. The highest unemployment rate in Massachusetts was 10.9% in Hampden County, also in 2020. At the higher end of the unemployment rate, New Jersey has a much higher peak unemployment rate than Massachusetts. In an ideal model, both the minimum and maximum unemployment rates in Massachusetts and New Jersey would be as close to identical as possible. With a low standard deviation at 2.69%, the two states tend to have similar unemployment rates and similar trends in unemployment rates. The average unemployment rate in New Jersey from 2010 to 2022 was 6.95%, while the average unemployment rate in Massachusetts during this period was 5.78%. The average unemployment rate across both states is 6.1% and the median unemployment rate is 6.1%. From the period of 2010 to 2022, counties in New Jersey and Massachusetts experienced similar trends in the unemployment rate which makes Massachusetts a valuable state to use as a control in this differences-in-differences regression with the unemployment rate as the dependent variable.

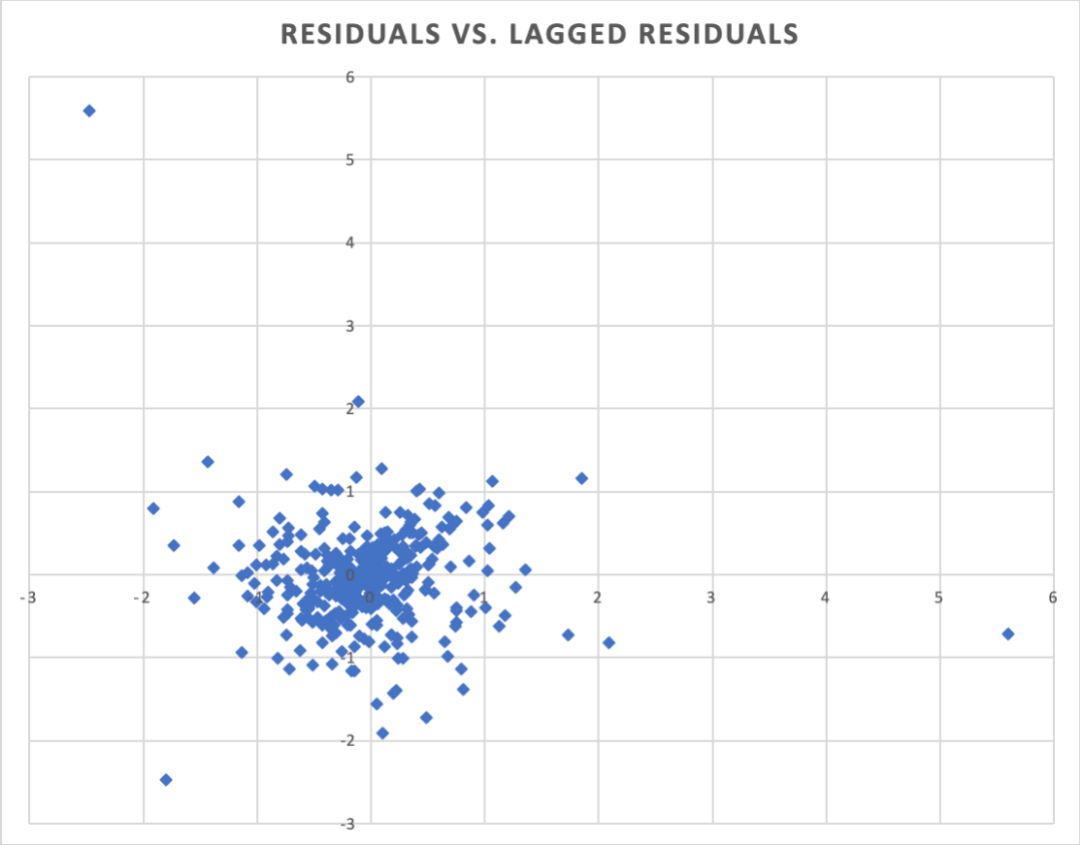
Graph 2: Unemployment Rates over Time



Source: Federal Reserve of Economic Data.

According to the Bureau of Labor Statistics, 19.7% of people who were unemployed in 2022 were also unemployed in 2021. This is evidence that autocorrelation exists in the data for the unemployment rate. For this reason, a lagged variable of the unemployment rate in the previous period is used to explain the current unemployment rate. I utilize a lag period of one year to resolve the issue of autocorrelation. To test the appropriateness of this lag period, a regression is run to see if the last period's residuals have predictive power over the current period's residuals. Because last year's residuals do not have significance related to this year's residuals, including a lag eliminates issues of autocorrelation from the unemployment data.

Graph 3: Autocorrelation Test



The labor force participation rate data comes from the US Census Bureau, and it measures the percent of people in a county that are above 16 years of age and seeking employment. The data for labor force participation rates are slightly skewed left. The lowest recorded labor force participation rate in this period was 55.3% from Cumberland County, NJ in 2013. The highest labor force participation rate was 72% in Hunterdon County, NJ in 2012. The average labor force participation rate was 65.5% and the median was 66.4%. The standard county deviates from this average by 3.52%. It's important to note that New Jersey experiences greater fluctuation in the labor force participation rate over this period than Massachusetts. For the purposes of a differences-in-differences model, it would benefit the model if both

Massachusetts and New Jersey had identical trends in all explanatory variables. However, due to the near impossibility of this naturally occurring between states, some variability is acceptable, and the two states' labor force participation rates are similar enough to be valuable in a differences-in-differences regression.

3.2 Education Data

The percent of people in a county who obtained a bachelor's degree or higher was also measured using yearly data from 2010 to 2022. The most educated county was Somerset, New Jersey in 2022, where 59.4% of residents held a bachelor's degree or higher. In Massachusetts, the most educated county was Middlesex, MA where 59.1% of residents in 2022 held a bachelor's degree or higher. The county with the lowest percentage of residents holding a bachelor's degree or higher was Salem, New Jersey in 2012 at 10.4%. The least educated county in Massachusetts was Bristol, MA in 2010 at 13.3%. The average percent of the population in any county holding a bachelor's degree or higher was 36.73% and the median was 36.2%. New Jersey and Massachusetts are very similar in terms of the percent of each county that has a bachelor's degree or higher which benefits the results of this model.

The data for preschool enrollment is found by using the percent of 4-year-olds enrolled in school using data from the US Census Bureau. The average percent of 4-year-olds enrolled in school across both states is 60%. The median percent of children enrolled in school is 61.1%. The minimum in this data comes from Franklin County, MA in 2012 where 23% of 4-year-olds were enrolled in school. The maximum comes from Hampshire County, MA in 2019 where 86.7% of 4-year-olds were enrolled in preschool. The standard deviation for preschool enrollment is 8.33%. Since some children may be too old or young for their grade, this data is not an exact substitute for the percent of children enrolled in preschool. However, because it

accounts for the standard age in which children in these states are enrolled in preschool it is a close approximation for the preschool enrollment rate in these counties.

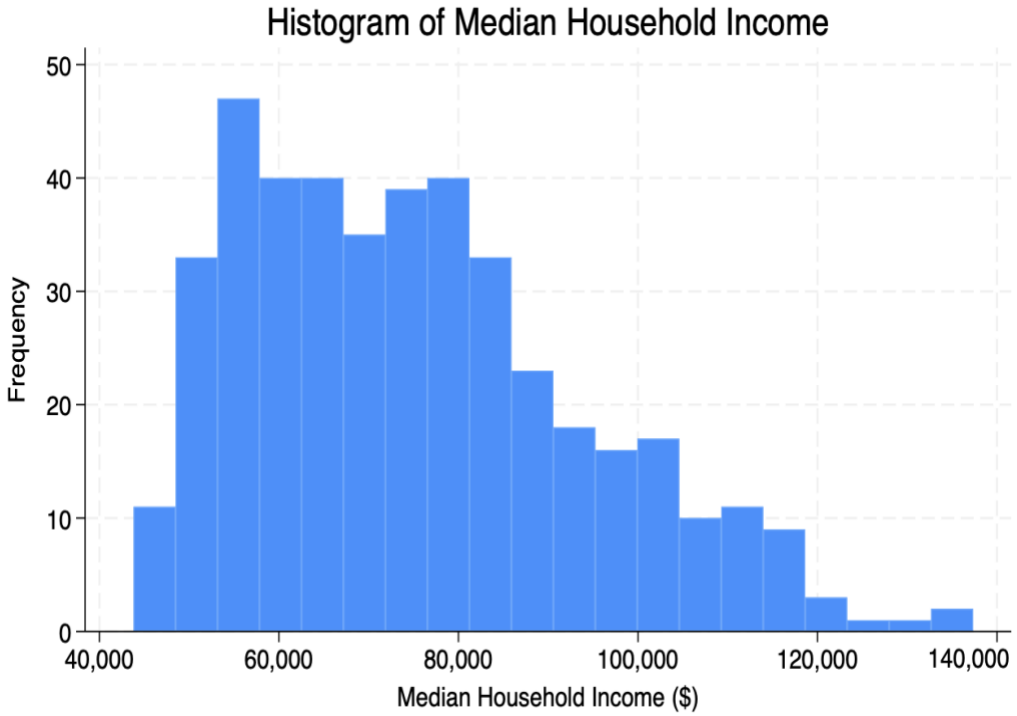
The data for percent of a county that are only high school graduates is measured by the US Census Bureau by accounting for the percent of the population above 25 years of age that holds a high school diploma or its equivalent but does not hold a master's degree or higher. The lowest percentage of a county where the population 25 and over holds a high school diploma or its equivalent but not a master's degree is 16.2% in 2022 in Hunterdon County, NJ. The highest percent of the population 25 and over that holds a high school diploma but not a master's degree is 47.4% from 2010 in Cumberland County, NJ. The standard deviation from the mean is 5.43%. One flaw from this data is that it only accounts for the population 25 and over that holds a high school diploma but not a master's degree and does not include those under 25 who do not intend to obtain a master's degree. Therefore, this data does not account for the full impact of having a high school diploma and not a master's degree on the unemployment rate. There is low variation between the two states in this data which makes it a helpful variable to include in this differences-in-differences model.

3.3 Demographic Data

The median household income was measured using yearly data from the Federal Reserve of Economic Research. The highest median household income was in 2022 in Hunterdon County, NJ at $137,334. The highest median household income in MA was $118,494 in Middlesex County in 2022. The median household income between the two states was $75,203 and the average was also $75,203. The standard deviation of median household income is $18,954. Testing the normality of the data for median household income using a skewness and kurtosis test finds evidence to reject the null hypothesis, which is that the data are normally

distributed. The data is skewed right due to some counties' high median household income, as mentioned above. This skew is typical of demographic data where there is a lower boundary, as there is with household income since there is a minimum amount of income families need to be able to live. This is evident in a histogram of median household income, where the tail is dragged out by certain counties with above average median household income. This non-normal distribution also appears in the histogram of median household income in the US, meaning that this income distribution is representative of the country's income distribution. The data itself, however, is not representative of national median household income since both New Jersey and Massachusetts have higher median household incomes in the observed years than the national average. This makes the results related to median household income in this regression less easily extrapolated to other regions, particularly those with lower median household incomes.

Graph 4: Histogram of Median Household Income



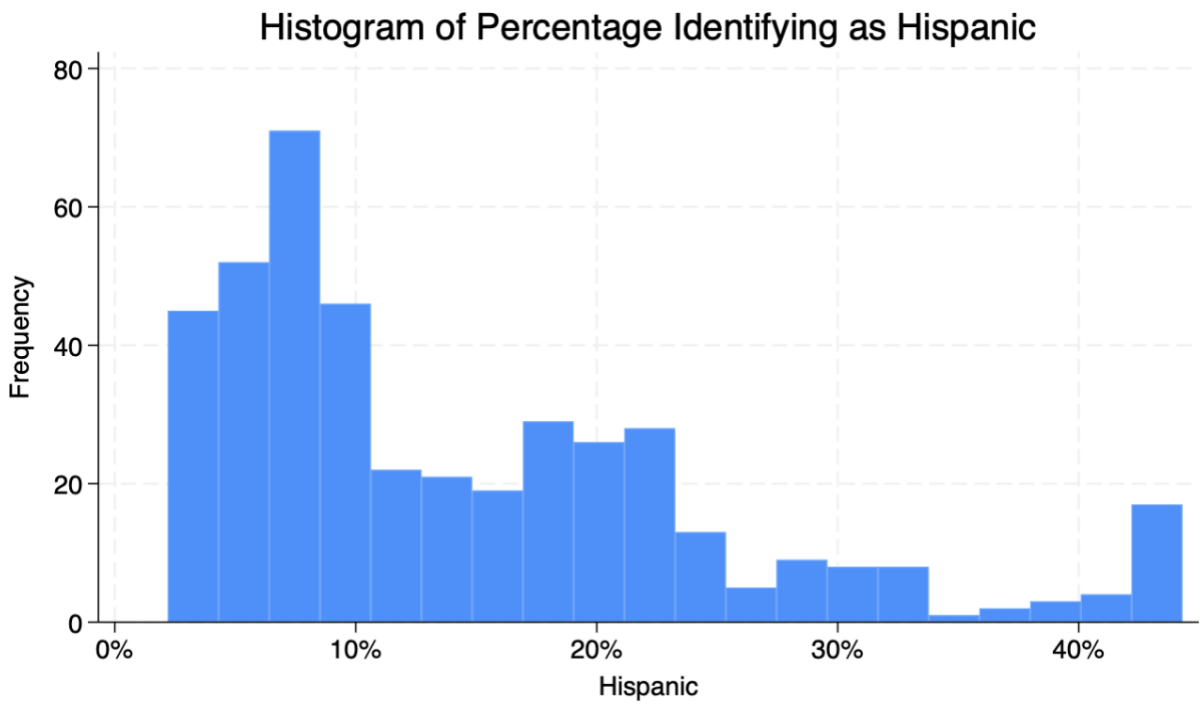
Source: US Census Bureau.

The sex ratio, measured by the US Census Bureau, is the number of males per 100 females. This means that if the sex ratio were perfectly even it would be 100, which was recorded only once in this dataset, in Hudson County, NJ in 2022. The average ratio for any county measured in this study was 95.28. In some counties, however, the number of males was greater than the number of females. The highest sex ratio was 107.7 in 2010 in Cumberland, NJ. Interestingly, the sex ratio never exceeded 100 in any county in Massachusetts during this period. The highest sex ratio in Massachusetts was 99 in Worcester County in 2022. The standard deviation of the sex ratio was 3.12. The sex ratio data is not perfectly identical between New Jersey and Massachusetts, but the low standard deviation show that the two states experience similar sex ratios which make the sex ratio a valuable variable to include in the model.

The data that measures the percent of a county that identifies as Hispanic comes from the US Census Bureau. The average percent of the population in these counties that identifies as Hispanic is 14.55% and the median is 10.7%. The lowest percent of a county that identifies as Hispanic occurs in 2010 in Barnstable County, MA at 2.2%. The highest percent of a county that identifies as Hispanic occurs in 2022 in Passaic County, NJ at 44.3%. The standard deviation from the mean is 10.34%. The data is skewed right, with most counties having less than 11% of their population that identifies as Hispanic, but a few counties that have over 40% of their population identifying as Hispanic pull the tail of the data to the right. According to the US Census, 18.9% of the US identifies as Hispanic. This means that New Jersey and Massachusetts Hispanic rates are not reflective of national diversity, though the distribution of percentage identifying as Hispanic has similar skewness to the national distribution of this data. Therefore,

this model has less predictive ability for states which have higher percentages of their population identifying as Hispanic.

Graph 5: Histogram of Percentage Identifying as Hispanic



Source: US Census Bureau.

The variable that measures the percent of a county that identifies as Black comes from US Census Bureau data which measures the percent of the population that identifies as Black or as Black in combination with another race or races. The lowest percent of a county's population that identifies as Black alone or in combination with other races is 1.9% in Franklin County, MA in 2012. The highest percent of a county that identifies as Black alone or in combination with other races is 43.7% in Essex County, NJ in 2010. The average percent of a county that identifies as Black is 11.48% and the standard deviation from this mean is 8.64%. The data for the percent of the population that identifies as black is skewed right since most counties have very small

populations that identify as Black, while a few counties have a high percent that identify as Black and are far above the median. Since the distribution of this data is non-normal, the results of this model cannot be taken to mean that if a county has the same percent of people identifying as Black as the average of this study that they will experience the exact same results from bail reform.

3.4 Model

This study primarily focuses on the presence of New Jersey's bail reform to explain any difference in the typical differences between unemployment rates in New Jersey and Massachusetts. New Jersey's bail reform reduced the amount of people awaiting trial in jail, which results in fewer people losing their employment due to pretrial incarceration. There are other variables that influence the unemployment rate which this model includes to isolate the effect of bail reform. One factor that I propose influences the unemployment rate is last year's unemployment rate due to the existence of long-term unemployment. Another variable measures what percent of a county has a high school diploma but not a master's degree or above, and another variable measures what percent of a county has a bachelor's degree or above. One variable estimates the preschool enrollment rate of a county. The literature also shows that there are impacts on the unemployment rate based on the labor participation rate. Thus, another variable measures the labor force participation rates by county. There is also a variable to measure the sex ratio of a county to account for gender discrimination in the workforce. Another two variables account for demographic characteristics: the percent of a county that identifies as Black and the percent that identifies as Hispanic. Thus, the model takes on the form of the following equation:

Equation 1: Differences-in-Differences Regression

$$Unemployment\ Rate = \beta_0 + \beta_1 Bail\ Reform + \beta_2 Bachelor's\ Degree + \beta_3 High\ School\ Diploma + \beta_4 Preschool\ Enrollment + \beta_5 Median\ Household\ Income + \beta_6 Sex\ Ratio + \beta_7 Labor\ Force\ Participation\ Rate + \beta_8 Hispanic + \beta_9 Black + \beta_{10} Unemployment\ in\ the\ Previous\ Period + e$$

This study tracks data from 33 counties across 12 years and therefore is cross-sectional data, tracking counties across time. Therefore, it was important to test the stationarity of the data for the dependent variable, the unemployment rate. A Levin-Lin-Chu test for stationarity provided enough evidence to strongly reject the null hypothesis, which is that the data has a unit root. Therefore, I accept the alternate hypothesis, which is that the panel data is stationary.

A test to find correlation between the explanatory variables finds multicollinearity, particularly related to the variables describing education levels. The variable measuring what percent of a county has graduated high school and the median income of that county is correlated at a level of .61. Median income is also correlated with the percent of a county that has a bachelor's degree or higher at a level of .77. The percent of a county that has a high school diploma but not higher is negatively correlated with the percent of a county that has a bachelor's degree or higher at -.81. Multicollinearity negatively effects a model and can cause variables to become drastically more significant when variables they are correlated with are omitted from the model. Therefore, I test for the danger of multicollinearity by omitting one variable pertaining to educational attainment in and leaving the other education variables. The other education variables become more significant when another education variable is pulled, but not

significantly so. Eliminating an education variable also does not alter which variables have significance in this model. Therefore, all the education variables remain in the model.

One issue with this data is that many of these variables are not normally distributed. This, however, is understandable when considering that many of the variables measured are demographic variables. This data is not randomized and represents the real world, where it would be unlikely to see normal distributions in categories like the percent of a population that identifies as Hispanic. This model was also tested for a non-normality of errors by plotting the residuals against the normal distribution of the residuals and found very minor non-normality of errors.

Due to the nature of this panel data where each variable is observed over time, the model has a risk of autocorrelation. This model solves autocorrelation of errors by including a lagged variable of the unemployment rate to explain the current unemployment rate. While this reduces the number of observations, and therefore has deleterious effects on the predictive power of the model, it allows the residuals of the model to be independent. A regression of the residuals on the residuals from the previous period finds a t-Value of .22. The probability of obtaining the t-Value this regression finds is 82.9% which is high enough to accept the null hypothesis that the impact of one residual on the next residual is zero. Thus, the problem of autocorrelation in the data is eliminated and each observation can be seen as discrete.

In a more perfect model, my model would account for other variables that have explanatory power regarding the unemployment rate. Some of these variables include the long-term birth rate, immigration flows, and wage growth. This model would also include variables that may be correlated with the included variables to better specify the exact effects of the included variables. For example, including the state of a business cycle may be correlated with

the labor force participation rate and would be valuable to include. Due to a lack of available data on a county-level, these variables are omitted.

4. Results and Analysis

My results, like other studies, found that when using a control group to discern the effect of New Jersey's bail reform on New Jersey's unemployment rate, bail reform had a significant impact on the unemployment rate. The t-Value of -5.05 this regression received indicates a high significance in the difference between control and treatment groups. It also indicates that in the treatment groups the unemployment rates are lower than in the control groups. The model found that the presence of bail reform reduced the unemployment rate by an average treatment effect on the treated (ATET) of .65%, which is approximately 10% of New Jersey's unemployment rate over the observed period. Average treatment effect on the treated measure the average effect of bail reform on the treated counties, where the treated counties are New Jersey counties that experienced bail reform, as opposed to the counties that are not treated, which are the counties in Massachusetts.

Table 1: Regression Results

Unemployment Rate	Coefficient	Std. Error	T Value	P>t
Bail Reform ATET	-0.654	0.130	-5.050	0.000***
Controls				
Bachelor's Degree	0.030	0.008	3.760	0.001***
HS Diploma	-0.030	0.008	-3.790	0.001***
Preschool Enrollment	0.014	0.006	2.270	0.030**
Median Income	0.000	0.000	1.450	0.156
Sex Ratio	0.002	0.044	0.040	0.968
Labor Force Participation Rate	0.034	0.044	0.760	0.450
Hispanic	0.038	0.055	0.700	0.489
Black	0.125	0.057	2.200	0.035**
Lag	0.360	0.126	2.860	0.007**
Year				
2012	0.198	0.122	1.620	0.114
2013	-0.737	0.121	-6.070	0.000***
2014	-1.973	0.193	-10.230	0.000***
2015	-2.531	0.342	-7.400	0.000***
2016	-3.120	0.502	-6.220	0.000***
2017	-2.878	0.573	-5.020	0.000***
2018	-3.372	0.659	-5.120	0.000***
2019	-3.853	0.737	-5.230	0.000***
2020	2.411	0.658	3.670	0.001***
2021	-3.126	0.436	-7.180	0.000***
2022	-4.627	0.585	-7.910	0.000***
_cons	-0.956	5.319	-0.180	0.858

Note: ATET estimate adjusted for covariates, panel effects, and time effects.

Educational attainment was also found to be statistically significant in predicting the unemployment rates in a county. The percent of a county that has a bachelor's degree or higher was statistically significant at the .001 significance level. The coefficient was .03, meaning that in areas where 1% more of the population has a bachelor's degree or higher, the unemployment rate is higher by .03%. This relationship may exist for several reasons, one of which being those with bachelor's degrees or higher may have to wait longer periods between jobs than less educated workers due to job availability. Additionally, more highly educated workers may have a greater reserve of wages that allow them to afford unemployment for longer periods. Preschool enrollment rates were statistically significant and higher preschool enrollment rates were correlated with a higher unemployment rate, with a coefficient of .01. The percent of a county that has a high school diploma but not a master's degree or higher is also significant at the .001 significance level, and had a coefficient of -.03, meaning that counties with a higher percentage of people who had a high school diploma but not a college education had lower unemployment rates. This further contributes to the evidence that in Massachusetts and New Jersey, counties with greater populations of less educated workers had lower unemployment rates.

The only demographic characteristic that was found to be significant was the variable that measured the percent of a county that identified as Black alone or Black in combination with another race or races, at the .05 significance level. This variable has a .12 coefficient with the unemployment rate, meaning a higher value on the variable measuring the percent of a county that is Black results in higher unemployment rates. This is likely due to discrimination in hiring that leads to greater difficulty in obtaining a job for people who identify as Black, and thus longer periods of unemployment compared to people who identify as White. This aligns with data from the Bureau of Labor Statistics, which finds that unemployed Black and Asian people

experience longer periods of unemployment than do White or Hispanic people. It is interesting, therefore, that my study finds no significant relationship between the percent of a county that identifies as Hispanic and the unemployment rate.

The lagged variable of the unemployment rate also had significant predicting power in this model at the .007 significance level. The positive coefficient associated with this variable means that a high unemployment period in the last period is associated with a high unemployment rate in the current period. This is likely caused by long term unemployment, where the same people are unemployed for over 12 months and thus are accounted for in both years' unemployment rate counts.

Finally, the time variables from 2013 to 2022 were significant and had a strong predictive power on the unemployment rate of that period. All time variables, except for 2020, had negative coefficients, meaning they were associated with decreasing unemployment rates. This likely demonstrates these economies recovering from the 2008 Great Recession. 2020 is the only exception to this recovery period. The variable of 2020 has a positive relationship to the unemployment rate, meaning unemployment rates increased in these counties in 2020. This is likely due to the economy adjusting to the COVID-19 pandemic.

4.1 Robustness Testing

To test the strength of this model, this study engages in robustness testing to analyze what types of counties these results will be especially valuable for. This study analyzes the differential impact of bail reform based on race. To accomplish this, the study compares how impactful bail reform is on the unemployment rate in counties that have a disproportionate percentage of the population identifying as Black (more than 10.5%), as Hispanic (more than 14.5%), or as white

and non-Hispanic (less than 6% Black and less than 8.25% Hispanic). This study finds that there is a differential impact based on race.

Equation 2: Robustness Test

$$Unemployment\ Rate = \beta_0 + \beta_1 Bail\ Reform + \beta_2 Bachelor's\ Degree + \beta_3 High\ School\ Diploma + \beta_4 Preschool\ Enrollment + \beta_5 Median\ Household\ Income + \beta_6 Sex\ Ratio + \beta_7 Labor\ Force\ Participation\ Rate + \beta_8 Hispanic + \beta_9 Black + \beta_{10} Unemployment\ in\ the\ Previous\ Period + \beta_{11} Black*Bail\ Reform\ Present + \beta_{12} Hispanic*Bail\ Reform\ Present + \beta_{12} White\ and\ non\text{-}Hispanic*Bail\ Reform\ Present + e$$

This study uses interaction terms between the counties that overrepresent a certain race and the presence of bail reform. By using interaction terms, this study finds that counties are differentially impacted by bail reform due to race. Overall, the inclusion of interaction terms increases the coefficient of bail reform on unemployment rate from -.65 to -.95. This means that by allowing the regression to account for how bail reform differentially impacts counties based on race the ATET of bail reform on counties increases, proving that there is a differential impact based on race. The only interaction term that has statistical significance is the term representing counties where Hispanic populations are overrepresented and where bail reform is present. This term finds a positive correlation, meaning that bail reform does not reduce unemployment, but rather increases it, in counties where Hispanic populations are overrepresented. This finding suggests that bail reform alone is not sufficient to address the social inequalities Hispanic populations face in obtaining employment.

Table 2: Robust Regression Results

Unemployment Rate	Coefficient	Std. Error	T Value	P>t
Bail Reform ATET	-0.946	0.270	-3.500	0.001***
Controls				
Bachelor's Degree	0.032	0.009	3.770	0.001***
HS Diploma	-0.027	0.008	-3.290	0.002***
Preschool Enrollment	0.016	0.006	2.510	0.017**
Median Income	0.000	0.000	1.380	0.176
Sex Ratio	0.006	0.041	0.140	0.893
Labor Force Participation Rate	0.045	0.043	1.050	0.303
Hispanic	0.072	0.054	1.320	0.196
Black	0.159	0.065	2.420	0.021**
Lag	0.300	0.119	2.510	0.017**
Black*Bail	-0.202	0.177	-1.140	0.262
Hispanic*Bail	0.656	0.237	2.760	0.009***
White*Bail	0.207	0.236	0.870	0.388
Year				
2012	0.175	0.122	1.440	0.161
2013	-0.797	0.120	-6.620	0.000***
2014	-2.077	0.200	-10.400	0.000***
2015	-2.732	0.340	-8.030	0.000***
2016	-3.387	0.496	-6.830	0.000***
2017	-3.166	0.571	-5.540	0.000***
2018	-3.695	0.660	-5.600	0.000***
2019	-4.219	0.744	-5.670	0.000***
2020	2.030	0.651	3.120	0.004***
2021	-3.178	0.453	-7.010	0.000***
2022	-4.886	0.621	-7.870	0.000***
_cons	-2.425	4.366	-0.560	0.583

Note: ATET estimate adjusted for covariates

Interestingly, the interaction terms for counties that overrepresent White and Black populations did not yield significant results. While there is a difference in the effects of bail reform on counties that overrepresent White and non-Hispanic populations and Black populations, these results are not significant and thus cannot be reliably used to conclusively state the effects of bail reform on these counties. For this reason, it will be necessary for future research to analyze the differential impacts of bail reform based on counties that overrepresent Black and White populations. To accomplish this, future studies would benefit from having access to data from more counties that would demonstrate greater racial diversity.

5. Conclusion

This study confirms that bail reform has a significant impact on the unemployment rate. The existence of bail reform decreased unemployment in counties by .65%, which is a significant reduction considering the unemployment rate in the United States is typically between 3 and 4 percent. States or counties that are interested in decreasing their unemployment rate should look to New Jersey's bail reform as an example of how effective, bipartisan bail reform can change employment outcomes.

Using the ATET of .65%, I calculate that since 2017 bail reform has allowed 10,857 individuals to stay employed. Assuming that each of these individuals would have been unemployed without the reform and would have filed for the minimum amount of unemployment relief at $169.80 for 26 weeks, New Jersey as a state saved $47.9 million in unemployment benefits since 2017. Assuming each of these individuals would have been unemployed without the reform and would have filed for the maximum amount of unemployment relief at $830 for 26

weeks, New Jersey saved just over $234 million in unemployment relief since 2017 because of bail reform. Prison populations remained relatively stable post-bail reform, so if the cost of prison conditions remained stable and New Jersey saved $68 million per year in pretrial detention costs since 2017 (Murdock & Kessler, 2023), this amounts to $408 million in savings. Thus, bail reform saved New Jersey between $455 million and $642 million in spending from a reduction in prison costs and unemployment benefits. For reference, the universal K-12 school lunch that New Jersey is considering funding would cost $518.9 million for 5 years (Flammia, 2023). Beyond savings, New Jersey likely also accrued a significant amount of earnings from tax revenues on earned income from people who would have been unemployed without the presence of bail reform.

While this study produced important results, there were some limitations in my model. One limitation was the small number of counties utilized in this study: 12 in the control group (MA) and 21 in the treatment group (NJ). Using a greater number of states, and therefore counties, in the control group would create more reliable results. Another limitation of my study was the absence of a variable to measure the impacts of shocks such as recessions and pandemics that greatly impact the unemployment rate. Due to a lack of available data, I did not include a variable to measure these effects. Shocks such as these certainly impact the unemployment rate and a study that found a way to include these shocks would aid this area of research. Although this was a limitation, the data included partially accounted for these effects due to the time-specific indicators included in the regression. Furthermore, the effect of national shocks like these likely effected New Jersey and Massachusetts almost identically after controlling for all the other variables that this model did include.

The remaining questions surround the replicability of New Jersey's bail reform. New Jersey's bail reform was successful not just because of the content of the reform, but because it had bipartisan support. Actors in the legal system accepted and actively supported the reform (Murdock & Kessler, 2023). If the success of the bail reform was caused by the culture in New Jersey, it may not be easily replicated simply by passing bail reform like New Jersey's reform in other locations. However, I believe the results from this study could be a possible way to change attitudes towards bail reform and therefore increase the likelihood that actors in other local governments would take on the attitudes that were responsible for New Jersey's reform. This study finds that bail reform leads to positive economic outcomes between $455 million and $642 million dollars saved through reducing the unemployment rate. This, combined with the existing negative effects of cash bail, should be enough evidence to persuade other states of the benefits that stem from cash bail reform.

In a time where many critics of New Jersey's bail reform are calling for it to be repealed, this paper offers evidence that bail reform has overwhelmingly positive outcomes for the communities that implement it. If opponents of bail reform are unconvinced by economic arguments, then I return to the moral argument at the crux of bail reform. Cash bail perpetuates an unfair justice system. In New Jersey, a 19-year-old was held for six months, consequently losing his job, before being released (Dabruzzo, 2019). Under New Jersey's new cash bail reform, this man could have kept his job and continued to contribute to New Jersey's economy. More importantly, this man should not have been denied freedom based on an inability to pay. It is morally unacceptable that our legal system, a supposed defender of equality, continues to utilize cash bail, which is a fundamentally racist and unfair practice. Our law is predicated on fairness, and to continue to utilize cash bail undermines the integrity of the entire legal system

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