

INVESTING IN PEOPLE OR PRISONS?
THE IMPACT OF STATE INVESTMENTS ON INCARCERATION RATES

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ABSTRACT

Criminal justice reform efforts have traditionally focused on changing elements of the criminal justice system such as sentencing reform. However, there is less of a focus on reducing interaction with the criminal justice system at the front end. The demographic and social characteristics of incarcerated individuals shows that the United States incarcerates more people of color, those with lower levels of educational attainment, and those with poor economic outcomes in comparison to the general public. This indicates that those who encounter the justice system often lacked educational and economic opportunities prior to their incarceration. Because the state is responsible for educating and promoting economic security of its citizens, there is a failure of the public system to meaningfully invest in people. If state's provided education and public welfare supports, then they may be able to reduce the likelihood that someone becomes incarcerated. This research paper will look at what impact state investments on education and public welfare programs have on incarceration rates.

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INTRODUCTION

The United States incarcerates its own people at a higher rate than any other developed country. While the U.S. makes up about 4.4 percent of the world's population, we are responsible for housing over 20 percent of the world's incarcerated population. About 655 out of 100,000 people are incarcerated in the United States. In comparison, this rate is 366 in Russia, 118 in China, and 78 in Germany.¹ Furthermore, it is well documented that racial minorities are much more likely to be incarcerated than white people in the United States. Black people are about five times as likely to be incarcerated as white people while Hispanic individuals are almost twice as likely to be incarcerated than white people.² In addition, incarcerated individuals are more likely to come from communities lacking economic and educational opportunities prior to their incarceration.³

Research shows that much of the racial disparities in the U.S. justice system can be explained by the legacy of racism from slavery to mass incarceration that is imbedded into U.S. criminal justice policy. Criminal justice reform has traditionally addressed the problem of mass incarceration through reducing disparities through eliminating sentencing disparities and advocating for more equitable police practices. However, there has been less of a focus on addressing the root causes of interaction with the criminal justice system. For example, addressing the economic and educational characteristics of incarcerated individuals may lead to a reduction in high rates of incarceration on the front end. Because incarcerated individuals are more likely to have lacked economic and educational opportunities prior to their incarceration,

¹ World Prison Brief, Institute for Crime & Justice Policy Research, "Highest to Lowest – Prison Population Rate," https://www.prisonstudies.org/highest-to-lowest/prison_population_rate?field_region_taxonomy_tid=All

² The Sentencing Project, "Criminal Justice Facts," <https://www.sentencingproject.org/criminal-justice-facts/>

³ National Center for Education Statistics, Digest of Education Statistics, 2015 (NCES 2016-014), Chapter 3, U.S. Department of Education 2016. <https://nces.ed.gov/fastfacts/display.asp?id=98>

policymakers may be able to reduce incarceration rates by investing in education and other antipoverty programs. This paper will look at the impact of public investments in education and social services on incarceration rates.

The criminal justice system unjustly targets low-income people and people of color, perpetuating racial and social inequality. For the betterment of society, it is the state's responsibility to reduce inequality. It is also the state's responsibility to educate its citizens and ensure economic sufficiency. Under the assumption that states can impact economic mobility through investments in education and social services, greater funding for education and social services may lead to lower rates of incarceration. I hypothesize that states that have greater levels of investment in education and social programs will have lower incarceration rates. However, it is important to note the demonstrable role that race plays in the criminal justice system and in educational and economic disparities. Intentionally controlling for race and discussing its role throughout is paramount to any analysis that is drawn.

Databases that this research uses are the National Corrections Reporting Program to synthesize data on state incarceration rates. This database also has information on racial/ethnic characteristics of incarcerated individuals. Data from the Centers on Disease Control's Vital Statistics System Data contains information on state demographics. In addition, the Census of Governments annual survey of state and local government finances are used for state expenditure data, while state population data is drawn from the American Community Survey (ACS).

LITERATURE REVIEW

Much research has been done examining the relationship between rates of incarceration and social factors such as education and employment. This body of research provides evidence that economic stability and education can impact incarceration rates. However, there is also significant research on the relationship between race and incarceration that is independent of the relationship between race and education and employment levels. For example, there are racial disparities in incarceration rates, educational attainment, and employment. While incarcerated individuals are more likely to be people of color, they are also more likely to have lower levels of educational attainment and employment outcomes than non-incarcerated individuals.

However, research also shows that education and employment rates are impacted by state spending in education and social services. While the existing research shows how education, employment and race are all factors in determining incarceration rates, it does not explicitly show how state spending on education and social services can impact incarceration rates. This paper seeks to fill that gap and make a link between state investments in education and social services and incarceration rates.

Racial disparities in incarceration

Racial minorities are “overrepresented in delinquency, offending, victimization, and at all stages of the criminal justice process from arrest to pretrial detention, sentencing, and confinement,”⁴ which drives racial disparities in incarceration. According to the Bureau of Justice Statistics, 35 percent of individuals incarcerated in state facilities are white, 38 percent are Black, and 21 percent are Hispanic.⁵ Compared to the general population, 62 percent are white, 13

⁴ Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*, 2007, American Sociological Association.

⁵ Carson, E. A., *Prisoners in 2014*, 2015. Bureau of Justice Statistics.

percent are Black, and 17 percent are Hispanic. This indicates that Black people are over five times more likely to be incarcerated than white people and Hispanic people are incarcerated at 1.4 times the rate of white people.⁶

Many researchers argue that this is largely due to racial discrimination that is “pervasive and deeply rooted throughout the criminal justice system.”⁷ However, there are disparities in crime rates among certain communities leading researchers to conclude “that the social science research overall shows that racial discrimination does occur in some stages of justice processing, some of the time, and in some places, and that small differences in treatment accumulate across the criminal justice system and over time, resulting in larger racially different outcomes.”⁸ For example, while research shows that African Americans are more likely to be arrested and sentenced more severely for the same crimes as whites,⁹ there is also evidence that African American communities are involved in violent crimes at higher rates than their white counterparts.¹⁰ Similarly, however, researchers note that white collar crime, including drug crime, is disproportionately committed by whites and is often unpunished, ultimately leading to increased disparities in the criminal justice system.¹¹ Studies show that there are a variety of factors that impact racial disparities in criminal justice involvement including law enforcement practices, past convictions, and punitive sentencing policies.¹²

⁶ Nellis, Ashley, *The Color of Justice: Racial and Ethnic Disparity in State Prisons*, The Sentencing Project, June 14, 2016, <https://www.sentencingproject.org/publications/color-of-justice-racial-and-ethnic-disparity-in-state-prisons/>.

⁷ Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*

⁸ Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*

⁹ Nellis, Ashley, *The Color of Justice: Racial and Ethnic Disparity in State Prisons*

¹⁰ Nellis, Ashley, Greene, Judy, Mauer, Marc, *Reducing Racial Disparity in the Criminal Justice System*, The Sentencing Project, <https://www.sentencingproject.org/wp-content/uploads/2016/01/Reducing-Racial-Disparity-in-the-Criminal-Justice-System-A-Manual-for-Practitioners-and-Policymakers.pdf>

¹¹ Ibid.

¹² Ibid.

For example, police activity is higher in communities of color leading to higher rates of arrests in those communities. Research shows that white, Black and Latinx people use and sell illegal drugs at similar rates with whites using at slightly higher rates.¹³ However, people of color make up the majority of drug arrests. In some states, this disparity results in Black men being incarcerated twenty to fifty times the rate of white men for drug related offenses.¹⁴

Researchers from The Sentencing Project write, “Claims that racial disparities in the criminal justice system reflect disparate minority offending in crime are incomplete. If law-enforcement resources are heavily focused in poor neighborhoods, if the public safety strategy consists mostly of arrest and prosecution, and if there are insufficient economic, educational, and social service resources, racial disparities in criminal justice outcomes are inevitable.”¹⁵ It is therefore important to note the intersection of race, education and employment that impact disparate incarceration rates.

Intersection of race and education and employment

Research shows that concentrated poverty in communities of color impacts incarceration rates and contribute to racial disparities in education and economic outcomes. Studies show that “communities that are racially segregated and have high concentrations of poverty and unemployment...experience higher levels of crime and violence.”¹⁶ Racial segregation through discriminatory housing policies and practices have led to increased poverty in black communities that create some of the social conditions that lead to crime.¹⁷

¹³ Alexander, Michelle, *The New Jim Crow*, New Press, 2010.

¹⁴ Ibid.

¹⁵ Nellis, Ashley, Greene, Judy, Mauer, Marc, *Reducing Racial Disparity in the Criminal Justice System*

¹⁶ Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*

¹⁷ Massey, Douglas, *Segregation and Violent Crime in Urban America*, Russel Sage Foundation.

Policies driven by segregation, redlining, evictions and exclusion since the end of the Civil War have resulted in an incredible racial attainment gap, particularly among Black and white Americans. According to the U.S. Department of Education, only 24 percent of Black Americans and 17 percent of Hispanic Americans have a bachelor's degree or higher, compared to 38 percent of white Americans.¹⁸ Despite passage of the Civil Rights Act, disparities persist and racial minorities face disparities in wages and employment. Overall, Black workers are twice as likely to be unemployed as white workers and have experienced higher rates of unemployment since the Civil War.¹⁹ On average, Black workers also earn 27.5 percent less than white workers.²⁰ While discrimination can explain some of the gap, some of the racial attainment gap can be explained by public policy choices that excluded Black Americans and the legacy of slavery. Bertocchi and Dimico write that “the racial gap in attainment between Blacks and whites has been persistently determined by the initial gap, determined by slavery.” They also find that the initial racial gap in education has impacted income growth since slavery.²¹

The impact of mass incarceration on racial minorities also drives attainment gaps and exasperates inequality. Western and Pettit write, “the social and economic penalties that flow from incarceration are accrued by those who already have the weakest economic opportunities. Mass incarceration thus deepens disadvantage and forecloses mobility to the most marginal in society...carceral inequalities are intergenerational, affecting not just those who go to prison and

¹⁸ National Center for Education Statistics, Digest of Education Statistics, 2015 (NCES 2016-014), Chapter 3, U.S. Department of Education 2016. <https://nces.ed.gov/fastfacts/display.asp?id=98>

¹⁹ Williams, Jhacova, Wilson, Valerie, “Black workers endure persistent racial disparities in employment outcomes,” Economic Policy Institute, August 27, 2019, <https://www.epi.org/publication/labor-day-2019-racial-disparities-in-employment/>

²⁰ Gould, Elise, “Stark black—white divide in wages is widening further,” Economic Policy Institute, February 27, 2019, <https://www.epi.org/blog/stark-black-white-divide-in-wages-is-widening-further/>

²¹ Bertocchi, Graziella, Dimico, Arcangelo, *The racial gap in education and the legacy of slavery*, Journal of Comparative Economics, November 2012, <https://doi.org/10.1016/j.jce.2012.04.001>

jail but their families and children, too.”²² Because state policy choices have impacted racial segregation and attainment gaps that often lead to incarceration, it is no surprise that incarcerated individuals are more likely to be racial minorities *and* have lower levels of educational attainment and employment outcomes prior to their incarceration.²³

Education and employment characteristics of incarcerated individuals prior to incarceration

As education is positively correlated with earnings and employment, incarcerated individuals lack both educational opportunities and high-quality employment opportunities prior to incarceration.²⁴ Across all races and for men and women, incarcerated individuals in 2014 had a median annual income that was 41% less than non-incarcerated people of similar ages prior to their incarceration.²⁵ Furthermore, according to a Department of Education report, 30 percent of incarcerated individuals do not have a high school diploma compared to just 14 percent of nonincarcerated adults. Only six percent of incarcerated individuals have a postsecondary credential compared to 37 percent of nonincarcerated adults.²⁶

While low levels of educational attainment and lower levels of income are true among all incarcerated individuals, “disparities of race, class, gender, and age have produced extraordinary rates of incarceration among young African American men with little schooling.”²⁷ Western and Pettit find that the growth in incarceration rates over the last 50 years has primarily grown among

²² Western, Bruce; Pettit, Becky, *Incarceration & Social inequality*, American Academy of Arts & Sciences, 2010, https://www.mitpressjournals-org.proxy.library.georgetown.edu/doi/pdf/10.1162/DAED_a_00019

²³ Ibid.

²⁴ Western, Bruce; Kleykamp, Meredith; Rosenfeld, Jake, *Did Falling Wages and Employment Increase U.S. Imprisonment?*, Princeton University, January 2005, https://www.russellsage.org/sites/all/files/u4/Kleykamp,%20Rosenfeld,%20%26%20Western_Falling%20Wages.pdf

²⁵ Rabuy, Bernadette; Kopf Daniel, *Prisons of Poverty: Uncovering the pre-incarceration incomes of the imprisoned*, Prison Policy Institute, July 9, 2015. <https://www.prisonpolicy.org/reports/income.html>

²⁶ Highlights from the U.S. PIAAC Survey of Incarcerated Adults: Their Skills, Work Experience, Education and Training, Program for the International Assessment of Adult Competencies: 2014, National Center for Education Statistics, U.S. Department of Education, <https://nces.ed.gov/pubs2016/2016040.pdf>.

²⁷ Western, Bruce; Pettit, Becky, *Incarceration & Social inequality*

those who dropped out of high school. For African American men, 37 percent of those who dropped out of high school were incarcerated in 2008. In comparison, about 12 percent of white men who dropped out of high school were incarcerated at the same time.²⁸

Furthermore, Looney and Turner find that only 49 percent of prime-age men were employed three years prior to their incarceration. For those that were employed, their median earnings were only \$6,250 with only 13 percent earning more than \$15,000.²⁹ This tracks with research from Lageson and Uggen that find that quality, legal employment leads to reduced crime.³⁰

Kleykamp, Rosenfeld and Western find the increase in educational inequality in incarceration was consistent with falling wages and earnings. They find that if weekly earnings and employment rates among non-college educated Black and white men from the 1980s had persisted through the late 1990s, then prison admission rates would have been 15 to 25 percent lower for this cohort.³¹

State spending on education and social services

Over the last 50 years while spending for corrections has increased, state spending on education and social services have decreased.³² Corrections spending increased dramatically beginning in the mid-1980s, and if that level of spending were adjusted to 2013 dollars, states

²⁸ Ibid.

²⁹ Looney, Adam; Turner, Nicholas, *Work and opportunity before and after incarceration*, The Brookings Institution, March 2018, https://www.brookings.edu/wp-content/uploads/2018/03/es_20180314_looneyincarceration_final.pdf

³⁰ Lageson, Sarah; Uggen, Christopher, *How Work Affects Crime—And Crime Affects Work—Over the Life Course*, Handbook of Life-Course Criminology: Emerging Trends and Directions for Future Research, 2013, http://users.soc.umn.edu/~uggen/Lageson_Uggen_Handbook_12.pdf

³¹ Western, Bruce; Kleykamp, Meredith; Rosenfeld, Jake, *Did Falling Wages and Employment Increase U.S. Imprisonment?*

³² Mitchell, Michael; Leachman, Michael, *Changing Priorities: State Criminal Justice Reforms and Investments in Education*, Center on Budget and Policy Priorities, October 2014, <https://www.cbpp.org/research/changing-priorities-state-criminal-justice-reforms-and-investments-in-education>

would have an estimated \$28 billion more each year.³³ Much of this divestment has impacted the quality of education in high poverty neighborhoods, which are also predominately minority communities and communities impacted by mass incarceration.³⁴

Increased spending on corrections led to states spending an average of 70 percent of general funds on higher education to just 53 percent in 2000.³⁵ States are also spending less per student for K-12 schools than they were before the Great Recession in 2008, while maintaining spending on corrections. In fact, the states with the deepest funding cuts since the recession are among those with the highest incarceration rates.³⁶

Furthermore, funding for social service programs has greatly diminished over time, largely after the Clinton administration's welfare reform policies in the 1990s. Among federal resources distributed to the states, according to the Center on Budget and Policy Priorities, funding for all major housing, health and social service block grants have fallen by 26 percent since they first began.³⁷ This is especially true for workforce development programs despite the economic incentive for skills development among low-income individuals.³⁸ The federal job training block grant has fallen 69 percent since its inception in 1982.³⁹ Holzer writes that job training programs for low-income youth and adults are cost effective and are an effective antipoverty strategy.⁴⁰ Similarly to cuts in education, cuts to workforce development programs

³³ Ibid.

³⁴ Ibid.

³⁵ Justice Policy Institute, *Cellblocks or Classrooms?*, September 2002,

http://www.justicepolicy.org/uploads/justicepolicy/documents/02-09_rep_cellblocksclassrooms_bb-ac.pdf

³⁶ ³⁶ Mitchell, Michael; Leachman, Michael, *Changing Priorities: State Criminal Justice Reforms and Investments in Education*

³⁷ Shapiro, Isaac; et al., *Funding for Housing, Health, and Social Services Block Grants Has Fallen Markedly Over Time*, Center on Budget and Policy Priorities, March 2016, <https://www.cbpp.org/research/federal-budget/funding-for-housing-health-and-social-services-block-grants-has-fallen>

³⁸ Holzer, Harry, *Workforce Development as an Antipoverty Strategy: What Do We Know? What Should We Do?*, Urban Institute and IZA, October 2008, <http://ftp.iza.org/dp3776.pdf>

³⁹ Shapiro, Isaac; et al., *Funding for Housing, Health, and Social Services Block Grants Has Fallen Markedly Over Time*

⁴⁰ Holzer, Harry, *Workforce Development as an Antipoverty Strategy: What Do We Know? What Should We Do?*

have primarily hurt already disadvantaged communities that are disproportionately impacted by the criminal justice system.⁴¹

Impact of state spending on education and public welfare on incarceration rates

As discussed above, the current research shows that cuts to education and social service programs occurred while spending for corrections increased. However, the impact of these cuts on incarceration have not been explored. State spending on education can increase high school graduation rates, college attendance, and close racial attainment gaps.⁴² Similarly, investments in workforce development programs can increase employment and earnings among disadvantaged communities.⁴³ Spending on social programs writ large also empirically reduce poverty. For example, in 2018, social programs such as social security, supplemental security income, housing subsidies and unemployment insurance kept over 40 million Americans out of poverty.⁴⁴

Since incarceration has largely impacted communities of color and those with low levels of educational attainment and low levels of economic opportunity, funding changes may have impacted incarceration rates. This research will explore the impact of this funding on incarceration rates and suggest that state investments in education and social programs is a crucial component to reversing mass incarceration.

⁴¹ Ibid.

⁴² Mitchell, Michael; Leachman, Michael, *Changing Priorities: State Criminal Justice Reforms and Investments in Education*

⁴³ Holzer, Harry, *Workforce Development as an Antipoverty Strategy: What Do We Know? What Should We Do?*

⁴⁴ Wolfe, Julia; Blair, Hunter, "Government programs kept tens of millions out of poverty in 2018," Economic Policy Institute, September 11, 2019, <https://www.epi.org/blog/government-programs-keep-tens-of-millions-out-of-poverty/>

DATA AND METHODS

Data

To measure state expenditures on education and social services, this research will use the U.S. Census Bureau's Annual Survey of State and Local Government Finances. The survey collects data on state and local revenue and expenditures. Data is collected from all 50 states through mail canvass, Internet collection, and central collection from state sources. For purposes of this study, the variables that will be used are state spending on education and public welfare.

Education expenditures are broad and include higher education, elementary and secondary education spending. The Bureau does not disaggregate data on specific social service programs, so this research will use existing data on public welfare spending, that include public welfare and employment security. Because the total number does not reflect the population size, this research will divide the total expenditures by the state population to get a state per capita spending amount. Data is collected every year. This research will utilize data from 1992 to 2016. For data on incarceration rates, the Bureau of Justice Statistics at the Department of Justice provides an enumeration of people in state and federal prisons and collects data on key characteristics of the nation's prison population through the National Corrections Reporting Program. This dataset includes information from 1978 to 2016 and the survey is administered to all 50 states. This dataset provides information on state prison populations at the county level and provides estimates on race and gender. This research will synthesize state incarceration rates for each state across multiple years. This research will look across multiple years to see if there is a consistent effect across different years. The total number of incarcerated individuals will be divided by a state's population and multiplied by 100,000 to get a state's incarceration rates per 100,000 for purposes of comparison.

Demographic data will also be collected from the Centers on Disease Control National Vital Statistics System Data. This dataset is collected by the National Center for Health Statistics at the CDC, providing population estimates at the county level from 1970 to 2017. The population estimates are broken down by age, gender and race. This research will use this data to create demographic variables by state and year. Demographic variables used are percent of state residents that identify as Black and percent of residents that identify as Latinx.

Additional demographic data was compiled from the American Community Survey. These variables include Data on demographic variables include state-level data for percent of population above 25 years old that has graduated high school or higher, percent of the state population below the federal poverty income threshold and the state unemployment rate. Data from the American Community Survey is collected annually.

Methods

The question for this research proposal is what impact state spending on education and employment has on incarceration rates. Because individuals who are incarcerated lack education and employment opportunities prior to their incarceration, state investment in education and social services and income maintenance may be able to reduce incarceration rates. However, there are several confounding factors that will need to be controlled for. For example, race plays a significant role in access to education and employment as well as incarceration. To control for confounding variables, state level fixed effects will be used to control for variables that do not vary over time but vary across states.

Individuals who did not complete high school are more likely to be incarcerated than those who completed high school. Completing high school also will impact an individual's ability to receive a job. Furthermore, research shows that incarcerated individuals are often

unemployed and/or working very low-wage jobs prior to incarceration. State spending on public welfare should impact an individual's employment outcomes.

Data shows that the average age of first incarceration was 32 years in 2013 and individuals typically begin high school at fourteen years of age. State investment on education at this point in an individual's life can impact the likelihood an individual completes high school. Therefore, this study will look at state investments 18 years prior to data for state incarceration rates. For example, a state's incarceration rate in 2016 will be compared with per capita state spending in 1998.

The data will be combined to include a state's incarceration rate and per capita spending on education and public welfare. Eleven states reported missing data causing the sample size to be limited to 39 states. This is further explained in the results section. The dependent variable will be a state's incarceration rate and the key independent variables will be state per capita spending on education and state per capita spending on public welfare. Additional independent variables include demographic variables of race/ethnicity of a state's total population, percent of population below the federal poverty income threshold, percent of the population that has a high school diploma or its equivalent, income per capita, education, and percent foreign born, and a lag variable of one-year prior for the expenditure variables. State-level fixed effects will control for all possible unobserved confounding variables that vary between states but remain constant over time.

Table 1: List of variables

Variable Name	Variable Type	Proposed Relationship
Prison population rate	Dependent	N/A
State spending on education	Independent	-
State spending on public welfare	Independent	-
Percent high school graduate or higher	Independent	-
Percent below poverty	Independent	+
Percent Black population	Independent	+
Percent Latinx	Independent	+
Unemployment rate	Independent	+

The expected relationship is that states that spend more per capita on education and public welfare will have lower incarceration rates than states that spend less, controlling for all variables that vary between states but remain constant over time. It also is expected that states with a higher percentage of Black and Latinx residents, higher rates of poverty and unemployment may experience higher incarceration rates. States with higher levels of educational attainment are expected to have lower incarceration rates.

Empirical Model

This research will begin with regressing state incarceration rates in 2016 on state expenditure data from 1998 including the other independent variables listed above. This research will also create panel data to incorporate state and time fixed effects to control for variables that are constant across states but vary over time, and variables that are constant over time but vary across states.

The proposed empirical model is to do three multiple regression models. The first model will be regression model with time and state fixed effects isolating the key independent variables of state spending on education and state spending on public welfare:

$$\text{Incarceration rate} = \beta_0 + \beta_1 \text{eduspending} + \beta_2 \text{publicwelfarespending} + \beta_3 \text{percentblack} + \text{StateEffects} + \text{TimeFixedEffects} + U_i$$

The second model will incorporate all independent variables and state and time fixed effects: $\text{Incarceration rate} = \beta_0 + \beta_1 \text{eduspending} + \beta_2 \text{publicwelfarespending} + \beta_3 \text{percentblack} + \beta_4 \text{percentlatinx} + \beta_5 \text{percenthighschoolgrad} + \beta_6 \text{percentbelowpoverty} + \beta_7 \text{unemploymentrate} + \text{StateEffects} + \text{TimeFixedEffects} + U_i$

The third model will be a multiple regression without state and time fixed effects and include all independent variables:

$$\text{Incarceration rate} = \beta_0 + \beta_1 \text{eduspending} + \beta_2 \text{publicwelfarespending} + \beta_3 \text{percentblack} + \beta_4 \text{percentlatinx} + \beta_5 \text{percenthighschoolgrad} + \beta_6 \text{percentbelowpoverty} + \beta_7 \text{unemploymentrate} + U_i$$

EMPIRICAL RESULTS

To understand the impact of state investments on education and public welfare had on incarceration rates, I constructed a historical dataset of state incarceration rates, public spending, and state demographic characteristics.

State data on incarceration rates and demographic data was compiled from the Incarceration Trends Dataset from the Vera Institute of Justice. For prison population rates, the dataset was collected from the National Corrections Reporting Program, which provides detailed individual-level data on the prison population by year aggregated at the county level, as well as population estimates by race and gender. County demographic data, including racial demographics by age, was compiled by the Vera Institute of Justice from the Centers on Disease Control National Vital Statistics System Data. I summed total prison population by state and divided by the total population ages 16-64 to determine a state's prison population rate.

Eleven states, Alaska, Arkansas, Connecticut, Delaware, Idaho, Kansas, Louisiana, Montana, New Mexico, Vermont, and Wyoming had missing and/or incomplete data in the dataset for the years of 2010 to 2016 due to counties not reporting their admissions figures in those years, so they were omitted from the study. The states omitted did not significantly alter the diversity of states geographically, politically or demographically included in the dataset.

State spending on education and public welfare was captured from the Census of Governments annual survey of state and local government finances from 1992 to 2016. Total numbers were in thousands of dollars and were divided by total state population to get a per capita spending amount. Because the impact of state spending on education and public welfare would be delayed by an estimated 18 years, a variable was created to represent this lag. For

example, state per capita spending in 1992 was matched with a state's incarceration rate in 2010. This restricted the sample to the seven years from 2010 to 2016.

Furthermore, state educational attainment, poverty and unemployment data from the American Community Survey was added to the dataset. State data on the percent of the population that had graduated high school or more, the percentage of the state below the poverty income threshold and state unemployment rates were included for the corresponding years.

To test the hypothesis that states that spend more on education and public welfare will have lower incarceration rates, I used three separate regression models: a multiple regression model with state and time fixed effects isolating state spending on education and public welfare; a multiple regression model with all key independent variables and controlling for fixed effects, and a multiple regression model with all key independent variables but does not include controls for fixed effects.

Descriptive results

Across 39 states and 7 years from 2010 to 2016, there are a total of 273 observations in this dataset. The table below describes the key dependent variable, followed by the key independent variables.

Table 2: Description statistics of variables used in the regression models

VARIABLE NAME	DESCRIPTION	MEAN	STANDARD DEVIATION	MINIMUM	MAXIMUM
PRISON POPULATION RATE	State's total prison population per 100,000 people	561.9	246.6	187.9	1143.6
EDUCATION SPENDING	Per capita state spending on education. Includes higher education and elementary and secondary education. In thousands of dollars.	\$0.94	0.2	0.4	1.6
PUBLIC WELFARE SPENDING	Per capita state spending on public welfare. Includes cash assistance and vendor payments. In thousands of dollars.	\$0.66	0.2	0.3	1.5
PERCENT HIGH SCHOOL GRADUATE OR HIGHER	Percent of state population above 25 years old who has graduated high school (or received its equivalent) or received education beyond high school.	87.84%	3.1	80.7	92.9
PERCENT BELOW POVERTY	Percentage of the state below the federal poverty measure.	14.80%	3.0	7.3	24.2
PERCENT BLACK	Percent of state residents between 15 and 64 that identify as Black.	11.52%	0.1	1.1	38.9
PERCENT LATINX	Percent of state residents between 15 and 64 that identify as Latinx	10.94%	0.1	1.2	38.9
UNEMPLOYMENT RATE	State unemployment rate for individuals age 16 and up.	8.01%	2.4	2.6	15.1

The state prison population rates are per 100,000 people in the sample. The average state prison population rate of 561.89 per 100,000 people is below the 2018 national incarceration rate

of 698.⁴⁵ However, the national rate includes individuals incarcerated in jails and federal prisons, while this dataset is limited to those in state prisons. Therefore, this analysis does not account for those incarcerated in federal facilities or those who are awaiting trial in state and local jails, which will be important to understand when comparing analysis on incarceration rates.

In terms of state investments, states in the sample spent about \$940 per person on education per year and \$660 on public welfare per person per year. Because per capita state education and public welfare spending is in thousands of dollars, a one-unit change in public education and public welfare spending is equal to a state investing one thousand more dollars per person. This must be understood while interpreting the results as it will require a significant investment from the public sector to impact incarceration rates. The average state population in the dataset is over 7.5 million, indicating that a one-unit increase in spending would be equivalent to a state spending an additional \$7.5 billion. In total dollars, the median state in the dataset spends about \$10 billion per year on education and about \$8.4 billion on public welfare. For comparison, states in the dataset spent an average of \$11.7 billion on corrections or about \$1,433 per person.

Regression results

To determine the effect of state spending on education and public welfare on prison population rates, I estimated three separate regressions. The first regression isolated state spending on education and public welfare in an entity and time fixed effect model. The second isolated all variables in an entity and time fixed effect model, while the third was an ordinary least squared multiple regression without entity and time fixed effects. The results follow in Table 3:

⁴⁵ Prison Policy Initiative, U.S. incarceration rate compare to that of other founding NATO members https://www.prisonpolicy.org/graphs/NATO_US_2018.html

Table 3: Results from regression of prison population rates per 100,000 people

	(1)	(2)	(3)
EDUCATION SPENDING	-218.98* (105.48)	-383.19* (119.50)	-202.62* (34.26)
PUBLIC WELFARE SPENDING	-225.67** (136.67)	-269.13** (137.31)	-473.40* (34.29)
PERCENT HIGH SCHOOL GRADUATE OR HIGHER		-25.46 (19.78)	-1.61 (4.57)
PERCENT BELOW POVERTY		-4.833 (16.71)	51.21* (4.09)
PERCENT BLACK		134.24* (428.79)	502.38* (87.88)
PERCENT LATINX		-478.61** (256.95)	348.84* (88.27)
UNEMPLOYMENT RATE		-32.07* (13.35)	-17.11* (3.99)
CONSTANT	901.8611* (118.18)	3,030.76* (2294.332)	1597.28* (497.12)
R²	0.1711	0.1472	0.7975
N	273	273	273

*P<.05

**P<.10

Standard error of the estimated coefficient is reported in parentheses below the estimate

- (1) Time and entity fixed effects regression with education spending and public welfare spending.
- (2) Time and entity fixed effects regression with all dependent variables
- (3) Multiple OLS regression

In the multiple regression model, there is a statistically significant relationship between state spending on education, public welfare, state percent below poverty, state percent Black, state percent Latinx, and the unemployment rate at the 0.05 significance level. The R² statistic of 0.7975 indicates that these variables explain approximately 80 percent of the variation in state prison population rates.

In this model, both state education spending and public welfare spending is associated with a negative relationship with state incarceration rates. This implies that increases in spending on

education and public welfare is associated with decreases in the state's incarceration rates. In terms of education spending, a one-unit increase in state education spending (\$1,000 per person) is associated with decrease of about 202 people in a state's prison population rate per 100,000 people. In terms of public welfare, the same increase is associated with a 473 person decrease in a state's prison population rate per 100,000 people.

Furthermore, in this multiple regression model, the percent below poverty, percent Black and percent Latinx are all associated with a positive increase in a state's incarceration rate. This is consistent with research on states incarcerating individuals that are poor and people of color. This cohort of people often experience high unemployment rates compared to the counterparts. However, unexpectedly, this model indicates that a percentage increase in a state's unemployment rate is associated with a slight decrease in a state's prison population rate.

The entity and time fixed effects models yielded similar results; however, the R^2 statistic decreased significantly to 0.14 when including all variables and 0.17 when isolating state spending. This is likely due to controlling for time-trends in the data. Further analysis is needed to understand the cause of this decrease. However, when time and fixed effects are used to control for unmeasured variables that differ between states and across time, we still find statistically significant results of the key variables that state spending on education and public welfare are associated with a decrease in a state's prison population rate.

The first entity and time fixed effect model isolating state spending on education and public welfare shows that a one-unit increase in education spending is associated with an estimated 219 person decrease in a state's incarceration rate. In terms of public welfare spending, this same increase is associated with a 226 person decrease, however, this is significant at the 0.10 level.

In the second entity and time fixed effect model with all key independent variables, education and public welfare spending continue to show a negative relationship with state incarceration rates. Additionally, the racial demographic variables show a positive relationship. However, the coefficient for percent of population that is Latinx changes from positive to negative between this model and the third multiple regression model. This could be the result of controlling for fixed effects, though more research is needed to determine the definitive cause. Similar to the multiple regression model, this model shows that unemployment is negatively associated with a state's incarceration rate. However, the percent below poverty measure is no longer statistically significant in this model.

The results of the all three regression analyses indicates there is a statistically significant relationship at the 0.05 significance level that state education spending has a negative relationship with prison population rates. At the 0.10 significance level, state spending on public welfare also has a negative relationship with state prison population rates. This suggests that what states choose to invest in now, has an impact on how much of their population is in prison in about 18 years. For example, analysis from the multiple regression model suggests that if a state chose to spend \$1,000 per person on education and public welfare, their prison population rate per 100,000 people would decrease by about 675 people, all else equal in the model. This would effectively eliminate mass incarceration.

However, this requires a significant investment that may not yield results for nearly two decades down the road. State's would have to spend, on average, an additional \$15 billion on education and public welfare per year to see a decrease in their prison population rate in 18 years. This model also raises questions about the disproportionate impact of the criminal justice

system on Black and Latinx people as states with higher percentages of racial minorities are associated with higher incarceration rates.

DISCUSSION

This thesis sought to provide a macro level analysis of the public sector's role in advancing mass incarceration. Building on research that finds that people from marginalized communities are more likely to be incarcerated, this thesis provides evidence that mass incarceration is a systemic failure, rather than the result of individual actions and behaviors.

The key research question analyzed was what impact state investment on education and public welfare has on state incarceration rates. Using multiple regression analysis with state level data from 39 states across seven years, there is quantitative support suggesting that states that invest more in education and public welfare have lower incarceration rates, holding all other variables in the model constant. This has serious policy implications for policymakers who wish to eliminate wasteful spending on the criminal justice system and meaningfully invest in the wellbeing of their constituents. However, there are several limitations in this study and avenues for future research.

Previous research

This thesis supports previous research in racial disparities in incarceration and education and employment characteristics of incarcerated individuals. This research expands on the literature by suggesting that state spending choices have an impact on incarceration rates, giving policymakers more information on possible solutions.

The demographics of the prison population show that Black people are five times more likely than white people to be incarcerated while Hispanic people are incarcerated at 1.4 times the rate of white people. Researchers argue that this is partly due to racial discrimination in the criminal justice system,⁴⁶ as well as due to the lack of economic, educational and social service

⁴⁶ Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*, 2007, American Sociological Association.

resources in communities of color.⁴⁷ The results of this thesis support these findings as the models provide statistically significant evidence that the percentage of a state's residents who are Black or Latinx are positively associated with increases in incarceration rates, while state spending on education and public welfare is negatively associated with state incarceration rates. These findings also support research suggesting that concentrated poverty in communities of color may lead to greater incarceration rates⁴⁸ as the percentage of the state's residents below the poverty line was also positively associated with a state's incarceration rate.

This thesis also supports socioeconomic and educational attainment data on incarcerated individuals. Prior research finds that the growth of incarceration has largely been among those who have not graduated high school,⁴⁹ while the majority of individuals were either unemployed or earning wages below the poverty level prior to their incarceration.⁵⁰ Under the assumption that state investments in education improve graduation rates and spending on public welfare reduces poverty and unemployment, this research suggests shifting the responsibility onto states to invest more in these systems.

Policy implications

Policymakers have historically responded to increases in crime with tougher punishments and greater spending on law enforcement and prisons. This has led to an incredibly expensive criminal justice system that targets racial minorities and poor people. These solutions fail to address the racial discrimination documented in the criminal justice system and also fails to address the root causes of crime that many researchers have documented to be poverty and lack of educational opportunity.

⁴⁷ Nellis, Ashley, Greene, Judy, Mauer, Marc, *Reducing Racial Disparity in the Criminal Justice System*

⁴⁸ Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*

⁴⁹ Western, Bruce; Pettit, Becky, *Incarceration & Social inequality*

⁵⁰ Looney, Adam; Turner, Nicholas, *Work and opportunity before and after incarceration*

While state and local spending for education has doubled over the last three decades, state and local expenditures for corrections has quadrupled over that same time.⁵¹ Research shows that if states had maintained funding for corrections, they would have an estimated \$28 billion more to spend each year.⁵² This thesis research suggests that spending \$1,000 more per person on education and public welfare is associated with the reduction of a state's incarceration rate per 100,000 people by an estimated 202 people and 473 people, respectively. This translates to states increasing spending on education and public welfare by an average of \$15.2 billion per year to significantly reduce mass incarceration. Had states spent increases in correctional spending on education and public welfare, our country may not be the leader in incarceration rates among developed nations.

However, because states did not choose to make these investments in the past, it does not mean that policymakers shouldn't begin to shift or change their priorities now. While this research suggests that investments in education and public welfare may not significantly impact incarceration rates for nearly two decades, the investment would have profound implications on the social and economic wellbeing of millions of our nation's most vulnerable individuals. Investing in education and antipoverty measures may dismantle the root causes of incarceration, providing long term benefits to our nation.

This research also provides support for ensuring incarcerated individuals have access to educational programming while they are incarcerated. Research shows that for many who are incarcerated, they have not ever received quality educational services. This indicates that prisons

⁵¹ Stephanie Stullich, Ivy Morgan, and Oliver Schak, *State and Local Expenditures on Corrections and Education*, U.S. Department of Education, July 2016, <https://www2.ed.gov/rschstat/eval/other/expenditures-corrections-education/brief.pdf>

⁵² Mitchell, Michael; Leachman, Michael, *Changing Priorities: State Criminal Justice Reforms and Investments in Education*, Center on Budget and Policy Priorities, October 2014, <https://www.cbpp.org/research/changing-priorities-state-criminal-justice-reforms-and-investments-in-education>

should focus more on rehabilitating individuals, rather than punishing them. States that failed to invest adequately in education prior to one's incarceration must make efforts to invest in education during incarceration.

Limitations and future research

While this research suggests that mass incarceration could be virtually eliminated through investments in education and public welfare, there are no states in the sample with no prison population. In addition, the increase in incarceration is largely driven by sentencing laws that require a minimum time served for certain offenses and laws that keep people in prison longer. Investments in education and public welfare spending will need to be made alongside more traditional criminal justice reforms. Furthermore, investments in education and public welfare will not alone reduce the racial bias of the criminal justice system. Specific attention must be paid to eliminating racial disparities in incarceration.

While this research looked specifically at state prison incarceration rates, the criminal justice system also includes individuals in jails, federal facilities, and individuals on probation and parole.⁵³ Individuals incarcerated in jails are often held before they have been convicted and are largely made up of low-income individuals who cannot afford to pay money bail.⁵⁴ Further research that includes this data may provide additional insight on if state investments can reduce jail incarceration.

⁵³ Wendy Sawyer and Peter Wagner, *Mass Incarceration: The Whole Pie*, Prison Policy Institute, March 2020, https://www.prisonpolicy.org/reports/pie2020.html?c=pie&gclid=EAIaIQobChMIwdaryeu_6AIVGm6GCh2uRQ9aEAAAYASAAEgKdtfD_BwE

⁵⁴ Bernadette Rabuy and Daniel Kopf, *Detaining the Poor: How money bail perpetuates an endless cycle of poverty and jail time*, Prison Policy Institute, May 2016, <https://www.prisonpolicy.org/reports/incomejails.html>

CONCLUSION

This thesis examined the impact of state education and public welfare expenditures on state incarceration rates. The goal was to better understand how providing education and social services to people can have long term benefits, including reducing incarceration rates. This research also sought to shift the narrative that individual actions and behaviors are responsible for mass incarceration and provide evidence that mass incarceration is a result of states failing to meaningfully invest in people.

Through quantitative analysis of a panel data set of 39 states across seven years, this thesis suggests a significant relationship between state investment on education and public welfare and state incarceration rates. These findings contribute to the existing literature showing that people from marginalized backgrounds are more likely to be incarcerated. However, this research places responsibility on the state for failing to provide resources to its people that ultimately leads them to incarceration.

Based on the findings, policymakers have a moral and fiscal imperative to shift investments from corrections to more productive areas in education and public welfare. We know that the criminal justice system unjustly targets poor people and people of color and creates a devastating cycle of poverty for those impacted. It is also incredibly expensive and immoral to continue locking people up with no real solution for ending this cycle. Ensuring people have the necessary resources to succeed can reverse decades of debilitating policies that restrict the promise of our nation.

BIBLIOGRAPHY

- Alexander, Michelle, *The New Jim Crow*, New Press, 2010.
- Bertocchi, Graziella, Dimico, Arcangelo, *The racial gap in education and the legacy of slavery*, Journal of Comparative Economics, November 2012, <https://doi.org/10.1016/j.jce.2012.04.001>
- Carson, E. A., *Prisoners in 2014*, 2015. Bureau of Justice Statistics.
- Gould, Elise, “Stark black—white divide in wages is widening further,” Economic Policy Institute, February 27, 2019, <https://www.epi.org/blog/stark-black-white-divide-in-wages-is-widening-further/>
- Highlights from the U.S. PIAAC Survey of Incarcerated Adults: Their Skills, Work Experience, Education and Training, Program for the International Assessment of Adult Competencies: 2014, National Center for Education Statistics, U.S. Department of Education, <https://nces.ed.gov/pubs2016/2016040.pdf>.
- Holzer, Harry, *Workforce Development as an Antipoverty Strategy: What Do We Know? What Should We Do?*, Urban Institute and IZA, October 2008, <http://ftp.iza.org/dp3776.pdf>
- Justice Policy Institute, *Cellblocks or Classrooms?*, September 2002, http://www.justicepolicy.org/uploads/justicepolicy/documents/02-09_rep_cellblockclassrooms_bb-ac.pdf
- Lageson, Sarah; Uggen, Christopher, *How Work Affects Crime—And Crime Affects Work—Over the Life Course*, Handbook of Life-Course Criminology: Emerging Trends and Directions for Future Research, 2013, http://users.soc.umn.edu/~uggen/Lageson_Uggen_Handbook_12.pdf
- Looney, Adam; Turner, Nicholas, *Work and opportunity before and after incarceration*, The Brookings Institution, March 2018, https://www.brookings.edu/wp-content/uploads/2018/03/es_20180314_looneyincarceration_final.pdf
- Massey, Douglas, *Segregation and Violent Crime in Urban America*, Russel Sage Foundation.
- Mitchell, Michael; Leachman, Michael, *Changing Priorities: State Criminal Justice Reforms and Investments in Education*, Center on Budget and Policy Priorities, October 2014, <https://www.cbpp.org/research/changing-priorities-state-criminal-justice-reforms-and-investments-in-education>
- National Center for Education Statistics, Digest of Education Statistics, 2015 (NCES 2016-014), Chapter 3, U.S. Department of Education 2016. <https://nces.ed.gov/fastfacts/display.asp?id=98>
- Nellis, Ashley, Greene, Judy, Mauer, Marc, *Reducing Racial Disparity in the Criminal Justice System*, The Sentencing Project, <https://www.sentencingproject.org/wp-content/uploads/2016/01/Reducing-Racial-Disparity-in-the-Criminal-Justice-System-A-Manual-for-Practitioners-and-Policymakers.pdf>

Nellis, Ashley, *The Color of Justice: Racial and Ethnic Disparity in State Prisons*, The Sentencing Project, June 14, 2016, <https://www.sentencingproject.org/publications/color-of-justice-racial-and-ethnic-disparity-in-state-prisons/>.

Rabuy, Bernadette; Kopf Daniel, *Prisons of Poverty: Uncovering the pre-incarceration incomes of the imprisoned*, Prison Policy Institute, July 9, 2015. <https://www.prisonpolicy.org/reports/income.html>

Rosich, Katherine J. Race, *Ethnicity, and the Criminal Justice System*, 2007, American Sociological Association.

Shapiro, Isaac; et al., *Funding for Housing, Health, and Social Services Block Grants Has Fallen Markedly Over Time*, Center on Budget and Policy Priorities, March 2016, <https://www.cbpp.org/research/federal-budget/funding-for-housing-health-and-social-services-block-grants-has-fallen>

The Sentencing Project, “Criminal Justice Facts,” <https://www.sentencingproject.org/criminal-justice-facts/>

Western, Bruce; Kleykamp, Meredith; Rosenfeld, Jake, *Did Falling Wages and Employment Increase U.S. Imprisonment?*, Princeton University, January 2005, https://www.russellsage.org/sites/all/files/u4/Kleykamp,%20Rosenfeld,%20%26%20Western_Falling%20Wages.pdf

Western, Bruce; Pettit, Becky, *Incarceration & Social inequality*, American Academy of Arts & Sciences, 2010, https://www.mitpressjournals-org.proxy.library.georgetown.edu/doi/pdf/10.1162/DAED_a_00019

Williams, Jhacova, Wilson, Valerie, “Black workers endure persistent racial disparities in employment outcomes,” Economic Policy Institute, August 27, 2019, <https://www.epi.org/publication/labor-day-2019-racial-disparities-in-employment/>

Wolfe, Julia; Blair, Hunter, “Government programs kept tens of millions out of poverty in 2018,” Economic Policy Institute, September 11, 2019, <https://www.epi.org/blog/government-programs-keep-tens-of-millions-out-of-poverty/>

World Prison Brief, Institute for Crime & Justice Policy Research, “Highest to Lowest – Prison Population Rate,” https://www.prisonstudies.org/highest-to-lowest/prison_population_rate?field_region_taxonomy_tid=All