CAMBRIDGE
UNIVERSITY PRESS

ORIGINAL ARTICLE

Redistricting and Incarceration: Examining the Electoral Consequences of New York's Prohibition on Prison Gerrymandering

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Abstract

During the most recent round of redistricting, many states have enacted a number of reforms to their mapmaking practices. One reform that has received increased attention in recent years is a ban on prison gerrymandering—the practice of counting incarcerated individuals in prisons instead of their home addresses. Eleven states drew districts while counting incarcerated persons in their homes after the 2020 Census. Though substantial research has investigated redistricting practices, far less attention has been paid to empirically examining the effect of prison gerrymandering on elections. We seek to fill this void by evaluating the effect of New York's ban on prison gerrymandering on state legislative elections between 2002 and 2020. We find that altering how the prison population is counted, indeed, altered the electoral dynamics across the state.

Introduction

With the release of the 2020 United States Census to states, congressional and state legislative boundaries were redrawn shortly thereafter. The choices made while creating these district lines have direct effects on representation and election outcomes, with the potential to shape the partisan composition and policy outcomes at all levels of government. Importantly, the rules and institutions in place for redistricting, which can vary greatly across states, also play a considerable role.

Gerrymandering, or the partisan manipulation of the redistricting process, routinely attracts attention as states begin preparing for the next round of mapmaking. Attempts to reform the process and combat gerrymandering have been increasingly salient and visible in recent years. For decades, plans have been challenged on racial

gerrymandering grounds.[1] More recently, multiple state maps drawn by both Democrats and Republicans were challenged on partisan grounds.[2] One challenge was successful at the Pennsylvania Supreme Court, but similar cases in Wisconsin and Maryland fell short at the United States Supreme Court. As a result, many states have sought to combat gerrymandering by reforming the process via the state legislature, or more commonly, through popular initiatives. For example, in 2018, five states passed initiatives or amendments that changed the rules around the redistricting process with the goal of minimizing or outright eliminating partisan influence on the redistricting process.[3]

Although there is considerable research on racial and partisan gerrymandering (Engstrom 2006; Fraga 2016; Hayes and McKee 2012; Lublin 1997; Murphy and Yoshinaka 2009; Tufte 1973, to name a few), comparatively less is known about prison-based gerrymandering. By this, we are referring to the practice of counting the incarcerated individuals housed in prisons toward a district's population, even as their last known address is outside of the district and they cannot participate in elections (with the exception of Maine and Vermont). Increasing our understanding of this is important as incarcerated citizens across the United States are uniquely positioned in terms of how we understand representative democracy. While incarcerated, citizens with felony convictions are counted in the Census based on the address at which they reside (the prison) as opposed to the community to which they resided at the time of arrest, which is also the community they will more than likely return to upon release. Once convicted and sentenced to prison, individuals are, on average, incarcerated more than 100 miles away from their homes. Only about 36% of incarcerated persons reside in prisons less than 100 miles from their previous address (Bureau of Justice Statistics 2004). Using a process that counts individuals where they are incarcerated as opposed to their home community creates districts that meet the legal population requirements on paper, but, in practice, have a markedly lower population of citizens who can participate in elections and contribute to their representation.

In order to combat this, as of this writing, 11 states have passed legislation that prohibits mapmakers from counting incarcerated persons at their prison address and instead counts them at their last known residence. New York and Maryland are the only two states that have drawn maps under this new prohibition. Nine other states (California, Colorado, Connecticut, Delaware, Illinois, Nevada, New Jersey, Virginia, and Washington) will draw maps counting incarcerated persons at their home addresses for the first time in the 2020 redistricting cycle (with the exception of Illinois, where implementation will take place in the 2030 cycle). Given the increase in states adopting this practice, we believe it is critically important to understand how this change will influence state legislative elections. Specifically, we ask the following

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[1]See, for example, *Virginia House of Delegates v. Bethune-Hill* (587 US—2019) and *Abbott v. Perez* (585 US—2018).

[2]See, for example, *Gill v. Whitford* (585 US—2018), *Benisek v. Lamone* (585 US—2018), and *Common Cause v. Rucho* (588 US—2019).

[3]These five states include Michigan, Colorado, Utah, Missouri, and Ohio. Though the process in Missouri and Ohio is different than the commissions created in the other three states, the goal of all five changes was to reduce the amount of partisanship in the redistricting process. Additionally, several other states, including Arkansas, Oklahoma, Virginia, are considering similar changes prior to the 2021 mapmaking process. For more on this, see Williamson (2020).

question: *What effect does the elimination of prison gerrymandering have on election outcomes in state legislative districts?*

To date, we believe we are the first to systematically examine the electoral consequences of prison gerrymandering reform. We begin with a discussion of the electoral dynamics of prison gerrymandering, as well as our theoretical expectations. We then turn to a discussion of the prohibition on prison gerrymandering in New York. Next, we discuss our data and methods before empirically examining the relationship between the prison population and state legislative election results. We find that changing how incarcerated persons are counted within the state has statistically significant effects on the partisan vote share and level of competition in these races. Finally, we conclude with a discussion of how these results can improve our understanding of elections as well as inform future reform efforts.

Prison Gerrymandering and the Electoral Environment

Recent news reports have highlighted some of the most prominent distortions brought on by prison gerrymandering. For example, Wang and Devarajan (2019) provide examples across the country where the incarcerated population exceeds the nonincarcerated population in state districts.[4] There is scant empirical research on the effects of prison gerrymandering on election outcomes as extant research largely focuses on the effects of the practice on representation. Legal scholarship has argued that prison gerrymandering distorts representation in such a way that it violates the principle of one person, one vote (Drake 2011; Ho 2011; Skocpol 2017). In more empirical work, Remster and Kramer (2018) find that prison gerrymandering in Pennsylvania shifts political power from urban districts to more rural ones, which disproportionately disadvantages non-White communities. Similarly, Walker et al. (2016, 416) find that prison gerrymandering "distorts noncorrectional spending." More directly related to our study, Kelly (2012) demonstrates that mapmakers appear to utilize the nonvoting prison population to create a partisan advantage. Relatedly, Eason (2017) documents the proliferation of prisons over the last 50 years and highlights that much of this growth has taken place in rural areas. Additionally, Jacobson (2015, 861) contends that "Republicans enjoy a long-standing structural advantage in the distribution of partisans across districts." In short, his work highlights how Republican voters are more efficiently distributed across rural areas, whereas Democratic voters are typically concentrated in more urban regions within states. Taken together, these works illustrate that the growth of prisons is not random, and therefore the decision of how to count those incarcerated within prisons will necessarily have partisan implications, which in turn impacts the electoral environment.[5] A logical extension of this line of work would suggest that eliminating the practice of counting incarcerated people in prisons would alter the electoral environment across the state.

With this in mind, we theorize that prison gerrymandering is one way in which rural areas can meet population requirements without having to be connected to less

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[4]For example, the population of the third District in Grafton Village, Ohio, is 6,636. But 4,045 of those residents are incarcerated, accounting for over 60% of the total population.

[5]Meredith and Morse (2014) suggest that when registering, those with felony convictions overwhelmingly register as Democrats.

Republican-friendly metropolitan areas, thus influencing the partisan composition of districts. Indeed, this idea is not without precedent as previous research demonstrates how changes to line-drawing practices can influence the electoral environment. With respect to redistricting reform more broadly, Carson and Crespin (2004) and Carson, Crespin, and Williamson (2014) show that allowing nonlegislative bodies to create district boundaries increases competition in US House elections. Furthermore, Edwards et al. (2017) find that independent commissions draw more compact districts and better adhere to traditional redistricting practices (such as respect for existing boundaries), which also bears consequences for who runs and ultimately wins elections. Williamson (2019) further demonstrates that states employing commissions witness greater numbers of quality challengers and open seats as well as fewer uncontested elections. Taken together, these works illustrate the numerous ways that different redistricting practices can alter the electoral landscape. Given that prison gerrymandering is one tool that mapmakers can use to manipulate a district's composition, prohibiting the practice should necessarily induce significantly different results in subsequent election cycles.

Though typically not included in the literature on redistricting—but relevant to our discussion here—is the relationship between race, incarceration, and representation and the effects that they can have on the electoral environment. Imprisonment has long been used as a tool to reduce political power and prohibit Black Americans from fully accessing the rights of representation and participation. Following the end of the Civil War, former confederate states began to codify felony disenfranchisement in their state constitutions; specifically including disenfranchising offenses that Black Americans were more likely to be charged with and convicted of, such as petty larceny, vagrancy, and miscegenation (Keyssar 2000). The disproportionate incarceration of Black Americans continued into the Civil Rights Era and was further exacerbated by the expansion of the use of imprisonment for various classes of felonies, increased incarceration for drug and sex offenses, and criminal justice policies that increased the probability of incarceration and extended prison sentences (Zimring 2010). One of the many consequences of these policies is the disproportionate hyperincarceration of Black Americans (Wacquant 2010). Incarceration that, in most states, results in the loss of voting rights (Bowers and Preuhs 2009; McLeod, White, and Gavin 2003).

Although there have been reforms to criminal justice systems and policies across the United States, Black Americans continue to be overrepresented in the incarcerated population. While Black Americans comprise 13.5% of the population in the United States (US Census Bureau 2019), they are 38.1% of the incarcerated prison population (Federal Bureau of Prisons 2020).[6] Given the racial disproportionality in US prisons, and the intersection between political party identification and racial demographics, the practice of prison gerrymandering is particularly detrimental for the representative power of largely Black communities. Citizens from these

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[6]Data on ethnicity is not reported to the Bureau of Justice Statistics, nor is it provided in the state department of corrections' individual annual reports for four states (Alabama, Maryland, Montana, and Vermont). This, coupled with the unreliability of ethnicity data in some states, may result in understated racial/ethnic disparities in those states. In instances of absent information on ethnicity, Hispanics may be incorrectly counted in the white prison population. Consequently, the white rate of incarceration would therefore appear higher, and the black/white and Hispanic/white ratios of disparity would be lower than is the case (Nellis 2016).

communities, once convicted of felonies, are not only ineligible to vote, but when they are counted at the address of incarceration (as opposed to their address prior to incarceration) for legislative redistricting, representation is further diluted and redistributed to other regions of the state.

This disproportionate incarceration is an important aspect of understanding prison gerrymandering. If partisans and prisons were randomly distributed throughout a state and prisons housed a representative subset of the state's population, then the decision between counting incarcerated individuals as residents of the prison or as residents of their home community would be largely inconsequential. However, this is not the case. As we have pointed out, prisons are disproportionately located in rural, largely White, and Republican-leaning areas while simultaneously housing largely non-White, Democratic-leaning populations. Additionally, rural areas typically support Republican candidates for office, and urban areas lean toward the Democratic Party. Therefore, a number of rural districts are able to meet population requirements by counting residents who generally are not representative of the district. Without the ability to engage in this practice, though, rural districts must expand geographically in order to encapsulate the appropriate number of residents. Though this may not impact every district containing a prison, it can create a ripple effect that forces other rural areas to sprawl into metropolitan areas, which can introduce greater partisan heterogeneity. Conversely, compact, urban-based districts can theoretically be drawn even more compactly using the home address of incarcerated individuals. The net effect should be a shift in the electoral dynamics within most districts. In short, prison gerrymandering essentially reverses the effect of partisan geographic sorting for districts where a prison is physically located and the districts where most incarcerated individuals previously resided. This has the potential to produce election outcomes that are not reflective of the underlying partisan preferences of the state.

A number of states have taken steps to address this issue, New York being one of the first. Although New York has one of the lowest incarceration rates per capita, its large population means that it still houses tens of thousands incarcerated persons—more than most other states (Bureau of Justice Statistics 2018).[7] Incarcerated individuals are mostly housed in the rural areas of the state, and, for many years, incarcerated individuals were counted in these rural districts. Indeed, as the Prison Policy Initiative points out, this practice enabled the New York State Senate to add a seat in the upstate region. Furthermore, without this practice "seven state senate districts would have to be redrawn, causing line changes throughout the state."[8]

In 2010, however, the New York state legislature enacted a bill, containing a provision referred to as Part XX that required incarcerated individuals to be counted in their home districts as opposed to the districts where the prison is located. The reform meant that tens of thousands of individuals across the state would be reallocated from largely rural voting districts to more urban ones. Some argue that the numbers of incarcerated persons were small enough to not exert any meaningful influence. Another argument in opposition centers around the Census Act of 1790, which established the concept of "usual residence." The Act would allow states to

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[7]In New York, Black Americans comprise 53% of the incarcerated population (prison and jail), but are only 16% of the total population (U.S. Census 2010, Summary File 1). In 2018, Black Americans were 48% of those sentenced to prison; while comprising 15% of the population in New York.

[8]Prison Policy Initiative. "The Problem." https://www.prisonersofthecensus.org/impact.html.

count individuals where they lived and slept most often as opposed to their legal residence (US Census Bureau 2020). As such, Part XX was challenged shortly after its passage, but was upheld after being ruled constitutional by the New York Supreme Court in 2011. The plaintiffs briefly considered an appeal but eventually withdrew it in 2012. Despite the contentious debate during this time, any opposition has been relatively silent since then.

In order to test the effects of Part XX, we conceive of the electoral environment as the level of partisan support and competition within each district. We are specifically interested in the two-party vote share, the proportion of uncontested elections, and the average margin of victory. Given the preceding discussion, we test the following hypotheses:

H_1: Eliminating prison gerrymandering will result in larger vote shares for Democratic candidates.

Here, between the aforementioned effects of different redistricting practices on election outcomes, the partisan differences between rural and urban residents, the disproportionate incarceration of non-White citizens, we expect that the ban on prison gerrymandering will produce a substantial enough shift in the partisan composition of districts and participation within those districts to see a marked shift in the Democratic vote share after the implementation of Part XX.

H_2: Eliminating prison gerrymandering will result in fewer uncontested races.

Second, Carson, Engstrom, and Roberts (2006, 283) find that "entry decisions and electoral outcomes are affected by redistricting." Therefore, altering the composition of districts should alter the entry calculation for challengers. Specifically, by redistributing the population of incarcerated individuals, mapmakers create new opportunities for challengers by incorporating new communities as well as potentially altering the partisan makeup of the district.

H_3: Eliminating prison gerrymandering will result in narrower margins of victory.

Finally, without artificially satisfying population requirements, mapmakers will be forced to introduce more uncertainty in election outcomes. For both H_2 and H_3, the prohibition of prison gerrymandering means mapmakers will potentially need to connect rural and larger metropolitan areas in ways that could produce more partisan heterogeneity and therefore slimmer margins of victory for winning candidates.

Descriptive Analysis

In order to assess the effect of this new practice, we begin with a descriptive evaluation. Figure 1 shows the distribution of the incarcerated population across state legislative districts under the 2002 map (prior to the ban on prison gerrymandering) and the 2012 map (after the ban on prison gerrymandering).[9]

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[9]These data were collected from the Prison Policy Initiative reports. https://www.prisonpolicy.org/importing/.

New York State Assembly Districts
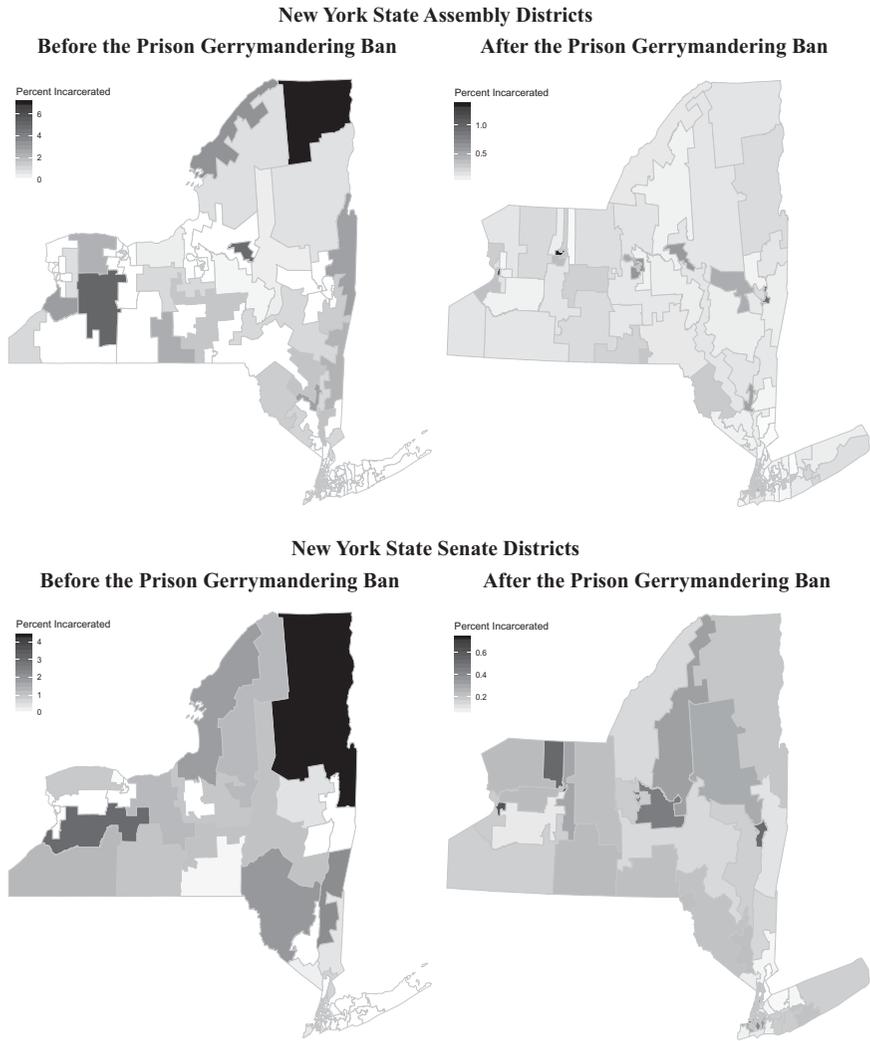
Figure 1. Percentage of incarcerated persons New York state assembly districts.

The top two panels show the changes within the assembly, and the bottom two panels show changes within the senate. Darker shades of gray denote a relatively greater percentage of incarcerated persons within each district. From this, we can see large variations across the state, with as much as 5%–7% of a district's population being comprised of incarcerated individuals. Indeed, this proportion was large enough that a number of districts would not have met minimum population requirements otherwise. However, after the change was implemented, we see a much more even distribution across districts. Under this map, every district had some proportion of its population comprised of incarcerated persons, but the greatest proportion was comparatively much lower at 1.35%.

The bottom panels depict the same distribution across state senate districts. With the left panel, we again see some districts with large enough proportions of incarcerated individuals that they would not have met minimum population requirements without them. However, under the more recent map on the right, no district had more than 0.75% of its population comprised of incarcerated persons. Taken together, these maps show considerable variation across time, which is likely to impact the electoral environment across the state.

In addition to highlighting the geographic shifts, we also assess the distribution of incarcerated individuals across different demographic categories. Even considering the substantial geographic evolution depicted above, we should not expect to see a change in the electoral environment if incarcerated individuals are randomly distributed across categories. Furthermore, previous research has demonstrated different voting preferences across factors such as race (Hutchings and Valentino 2004), income (Brooks and Brady 1999), and education (Gallego 2010). In order to do so, we examine data provided by the New York State Legislative Task Force on Demographic Research and Reapportionment.

We present four scatterplots before and after the adoption of Part XX. The first depicts the percentage of incarcerated individuals against the percentage of the district identifying as white. In the left panel of Figure 2, we see that the prison population is disproportionately counted in overwhelming White districts between 2002 and 2010. Indeed, the correlation between these two measures is 0.307 in the first panel and −0.514 in the second. This demonstrates a substantial evolution in where incarcerated individuals are counted.

Next, in Figure 3, we examine the relationship between the percentage of incarcerated individuals and the median income within districts. Again, we see the
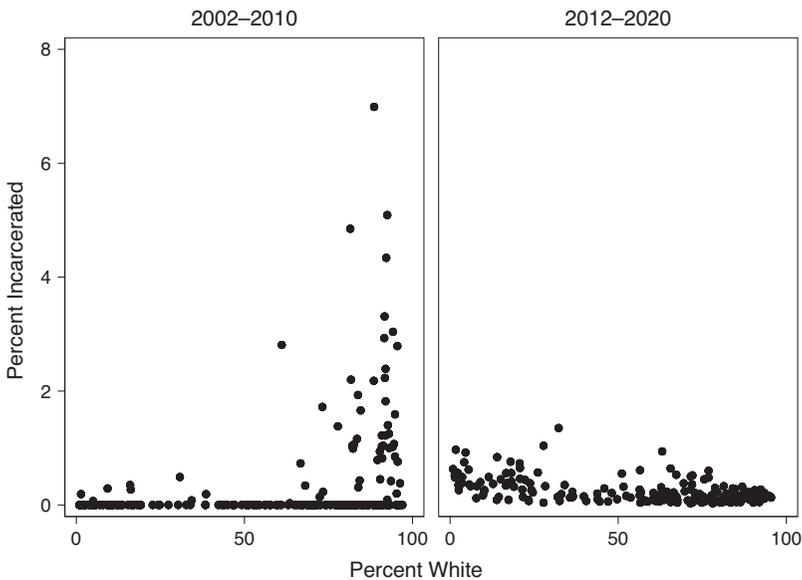

Figure 2. Distribution of incarcerated individuals relative to district percentage White.
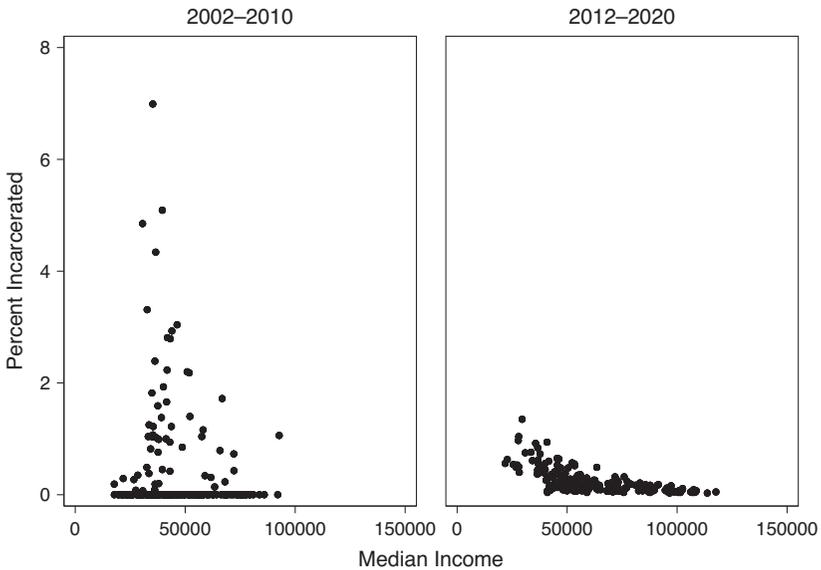
Figure 3. Distribution of incarcerated individuals relative to district median income.

incarcerated population is distributed quite differently between the two panels. From 2002 to 2010, the correlation between the percentage of incarcerated persons in a district and that district's median income is −0.10, but in the latter period, from 2012 to 2020 that same correlation is −0.608. Again, this represents a substantial change in the characteristics of districts where those who are incarcerated are counted.

Next, in Figure 4, we present the relationship between the prison population and educational attainment within districts. Measuring educational attainment through the percentage of the district holding a bachelor's degree, we see a similar dynamic to the one presented in Figure 3. Incarcerated individuals are disproportionately counted as residents of districts with lower levels of education prior to the enactment of Part XX. Though the evolution between these two variables is less pronounced than what is seen in the previous figures, the correlations still shift from −0.196 in the earlier period to −0.435 in the latter.

Finally, we present the difference in Democratic vote share across the percentage of the district that is incarcerated.[10] If prisons were randomly, or at least representatively, distributed throughout the state, we might not expect to see differences in vote shares emerge as a result of this policy change. Also, if the incarcerated population was representative of the state population as a whole, we again might not expect to see any discernible shifts in partisan vote shares after the implementation of this new policy. However, as previously discussed, we know neither of these things are true. Prisons are disproportionately located in more rural areas of the state, and incarcerated individuals are disproportionately non-White. As such,

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[10]For races featuring only one candidate, we follow the practice of previous works and impute values of 75% for the winning party and 25% for the losing party.
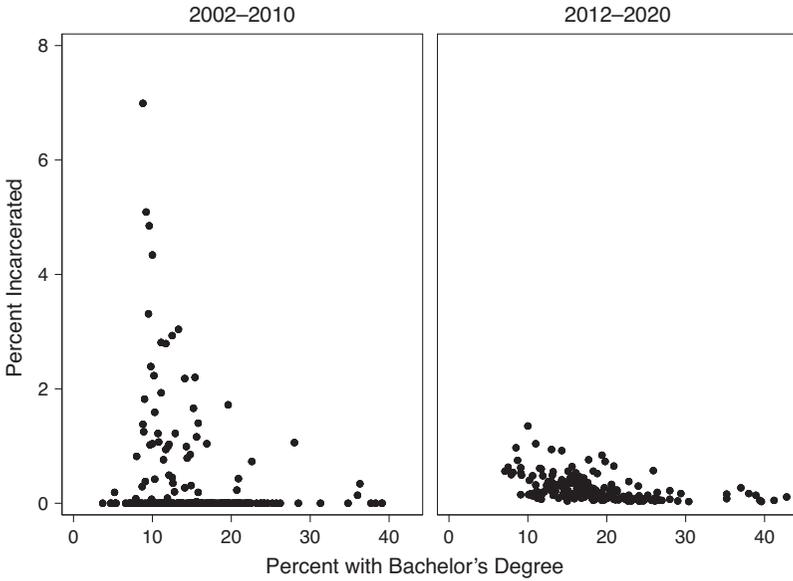
Figure 4. Distribution of incarcerated individuals relative to district percentage bachelor's degree.
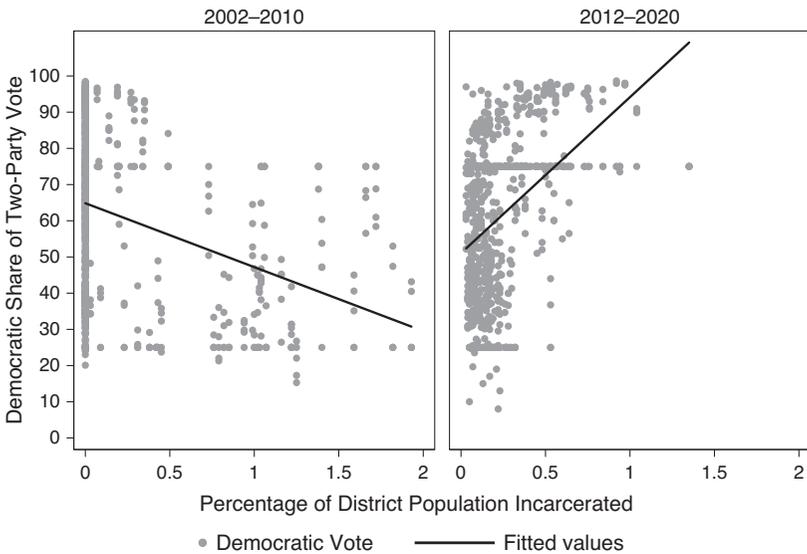

Figure 5. Distribution of incarcerated individuals relative to district democratic vote share.

we should expect Part XX to result in the prison population being positively associated with the Republican vote share from 2002 to 2010 and positively associated with the Democratic vote share from 2012 to 2020. That is precisely what is seen in Figure 5. The correlation in the left panel is −0.323 and 0.366 is the right—a sizable shift.

Taken together, we conclude that between 2002 and 2010, incarcerated individuals were counted in substantially different districts than they were between 2012 and 2020; districts that prior to Part XX were overwhelmingly white and on the lower end of the economic and education spectrum. Though suggestive, this provides us with reason to believe that altering where incarcerated individuals are counted altered not only the demographic composition of legislative districts, but also the electoral environment in state legislative races.

Data and Methods

Before turning to our more sophisticated empirical analysis, we discuss the feasibility of using New York as a pilot study of sorts in order to improve our understanding of what may happen in other states following the next round of redistricting. First, New York and Maryland are the only two states that have drawn maps under the prohibition on prison gerrymandering. Maryland, however, is one of only 10 states electing legislators from multimember districts. This practice makes measuring election outcomes more complicated in Maryland and makes New York more representative of other states. New York allows the state legislature to draw its maps, which is the most common method used throughout the country (Carson, Crespin, and Williamson 2014). This provides a fair amount of generalizability to our results, even though we only analyze one state. Additionally, the New York state legislature seats 150 in its lower chamber and 63 in the upper chamber. Each legislator must stand for reelection every two years, and we analyze two decades worth of outcomes. This provides us with great enough sample size to conduct a robust analysis. Furthermore, New York employed the same practice regarding the creation of district boundaries in both 2000 and 2010, with the greatest exception being the adoption of Part XX. Collectively, we believe this makes New York a useful means of understanding how prison gerrymandering reform can impact election outcomes.

In order to more rigorously evaluate the effect of the change in how incarcerated persons are counted toward district populations, we collected data from all 150 New York State Assembly and 63 New York State Senate elections in each year between 2002 and 2020. As previously mentioned, we focus on three facets of the electoral environment to test our hypotheses. The first of these is the share of the vote won by the Democratic candidate in a given district election. The second is a dichotomous measure of uncontested elections. (If only one candidate participated in the race, it is coded 1 and 0 otherwise.) The third is the margin of victory across all elections. All of the elections-related variables were coded from the New York State Board of Elections.

In what follows, we use an estimation strategy similar that to that outlined by Friedman and Holden (2009) and Seabrook (2017). We include a linear time trend as well as an indicator variable coded 0 for elections taking place between 2002 and

2010 and 1 for elections taking place between 2012 and 2020. This allow us to pool our data while also isolating the impact of the redistricting reform on our variables of interest.

Our models include a number of control variables as well. The first of these is *Percent Incarcerated.* This measure captures the percentage of the district population that is comprised of incarcerated persons.[11] Prior to 2010, incarcerated persons were counted as residents within the prisons, so only districts physically housing incarcerated persons had a percentage above zero. The overwhelming majority of districts therefore did not have any incarcerated persons. However, of those districts that did house prisons, incarcerated individuals made up an average of 0.31% of the district's population, and as much as 7%. After 2010, incarcerated individuals were counted at their last known community addresses, which resulted in all districts having their populations comprised by some number of incarcerated persons. However, the diffusion led to an average of only 0.24% of the district's population being made up of incarcerated individuals, with a maximum of 1.35%. This variable was obtained from Wagner (2002).

Our main variable of interest is an interaction between the percent incarcerated variable and the post-Part XX indicator variable. A significant coefficient for this interaction term would provide evidence in support of our hypotheses that the change in where incarcerated individuals are counted altered the electoral environment in New York state legislative races.

Next, we include *Percent White.* This variable is the percentage of the legislative district identifying as white as collected by the New York State Legislative Task Force on Demographic Research and Reapportionment. This allows us to control for the demographics of the districts in order to ensure that our variable of interest (incarcerated residents) is not just a proxy for movement from rural to urban districts. This variable ranges from less than 1% to 97%, with an average of around 60%.

We also include two indicator variables—*Incumbent* and *Senate.* The former is coded 1 if the race features the incumbent representative from that district and 0 otherwise. Incumbents generally fare better than their challenger counterparts (Jacobson and Carson 2020). As such, we expect them to win by larger margins and face less competition, irrespective of the redistricting plan in place. The latter is coded 1 for state senate elections and 0 for state assembly elections. A significant coefficient would indicate differences between elections to the different chambers. The larger geographic size and population of senate districts could result in a diminished effect of the incarcerated person's population.[12]

Results

The results of our estimations are presented in the following tables. Our unit of measurement is state legislative districts, and the models include all New York State Assembly and Senate elections from 2002 to 2020, which produces a sample size of 2,125 races. In the first model (Table 1), we use the Democratic two-party vote share

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[11]This measure does not include jails, as they are much smaller and greater in number as most towns have their own. Importantly, many of those housed in jails are pretrial and therefore still possess the right the vote. This makes them substantively distinct from our population of interest.

[12]Descriptive statistics for all of the variables employed are presented in Table A.1.

Table 1. OLS regression estimates of democratic vote share

	Coefficient
	(Rob. Std. Err)
Post-part XX	−2.377
	(1.672)
Percent incarcerated	**−1.958**
	(0.659)
Post-part XX*	**6.581**
Percent incarcerated	**(2.786)**
Percent White	**−0.475**
	(0.015)
Incumbent	**31.747**
	(1.024)
Senate	**−4.933**
	(0.858)
Time trend	0.118
	(0.137)
Intercept	159.405
	(275.003)
N	2,125
R^2	0.699

Note. Bolded entries are significant at $p < 0.05$.

Table 2. Logit regression estimates of uncontested elections

	Coefficient
	(Rob. Std. Err)
Post-part XX	**0.667**
	(0.208)
Percent incarcerated	**0.210**
	(0.072)
Post-part XX*	0.419
Percent incarcerated	(0.348)
Percent White	**−0.008**
	(0.002)
Incumbent	**1.130**
	(0.162)
Senate	−0.126
	(0.103)
Time trend	**−0.044**
	(0.017)
Intercept	**87.658**
	(33.253)
N	2,125
Log-likelihood	−1,306.926

Note. Bolded entries are significant at $p < 0.05$.

in each election as our dependent variable. This model includes uncontested races, with the Democratic vote share coded as 0 or 100. In Appendix Table A2, we impute values of 25 and 75 and reach the same substantive conclusions. As expected, after Part XX was adopted, increased proportions of incarcerated individuals within a district were positively associated with Democratic vote shares. Therefore, as hypothesized, padding the population total of rural districts with nonvoting citizens

experiencing incarceration systematically skewed the partisan vote shares across the state to the disadvantage of Democratic candidates. Furthermore, after controlling for other factors that influence the vote share within districts, we see that Part XX produced election outcomes more consistent with what would be expected from a state largely dominated by the Democratic Party.

In the second model (Table 2), we estimate a logistic regression predicting uncontested elections. For these models, a positive coefficient denotes an increased probability of a contest featuring only one candidate. Contrary to our expectations, though, we see that Part XX did not have a significant effect on the number of uncontested elections. However, state legislative elections are often one-candidate affairs (Squire 2000), and more than one-third of the elections in our dataset are uncontested races. Moreover, it is important to remember that gerrymandering does not necessarily decrease competition. Indeed, gerrymandering can be used to create competitive electoral environments where we should not expect to see them. Given New York's status as a Democratic stronghold that consistently offers around 60% of its vote to each Democratic presidential candidate over the last 25 years, this finding is likely the result of election outcomes moving more in line with expectations.

Finally, we estimate an OLS model to predict the margin of victory (Table 3). Similar to the results presented in Table 2, we see that the average margin of victory increased significantly after the implementation of Part XX. This makes intuitive sense for both Democratic and Republican candidates. By counting incarcerated individuals at their home addresses, which are disproportionately in more urban areas, Democratic-leaning districts can more easily meet their population requirements without having to sprawl into suburban or rural areas that may be more Republican-leaning. Similarly, not having to devote suburban and rural areas to Democratic-leaning districts facilitates the creation of more uniformly Republican-friendly districts. Therefore, it seems that the passage and implementation of Part XX

Table 3. OLS regression estimates of margin of victory

	Coefficient
	(Rob. Std. Err)
Post-part XX	**6.154**
	(2.958)
Percent incarcerated	**3.400**
	(1.223)
Post-part XX*	**19.262**
Percent incarcerated	**(4.127)**
Percent White	**−0.525**
	(0.020)
Incumbent	**18.244**
	(1.716)
Senate	**−4.619**
	(1.501)
Time trend	**−1.041**
	(0.236)
Intercept	**2,164.71**
	(474.141)
N	2,125
R^2	0.271

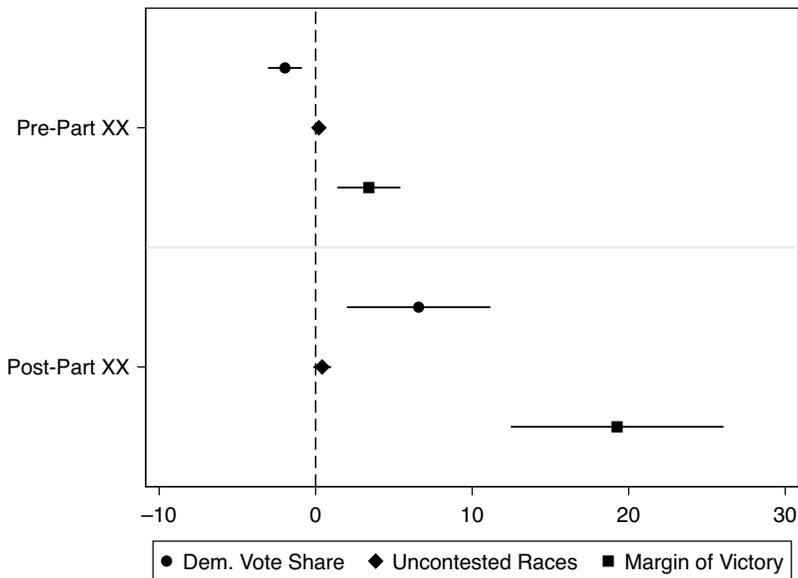*Note.* Bolded entries are significant at *p* < 0.05.

Figure 6. Effect of prison population on election outcomes.

brought election results more in line with what we would expect given geographic sorting and the partisan composition of New York.

Across all three models, the control variables perform as expected as well. Incumbent candidates are more likely to run unopposed and typically win by larger margins. The racial composition of districts has a significant effect on the election outcome, but the magnitude of the effect is relatively small, all else equal. Given the most common home addresses within the state, the percent incarcerated variable is associated with greater numbers of uncontested elections and higher margins of victory. Finally, given their larger size and the inherent increased diversity therein, state senate elections typically see narrower margins of victory, although there does not appear to be any relationship between chamber and the probability of witnessing unopposed races.

These findings are summarized in the coefficient plot in Figure 6. Though incumbency is still the predominant factor in explaining election outcomes, district composition is also a strong determinant of who runs and ultimately wins a seat in the state legislature. Moreover, district composition looks substantively different depending on the redistricting rules in place. In short, the results presented here provide evidence in support of the argument that Part XX altered the dynamics of state legislative elections in New York. Importantly, the election results appear to more accurately reflect the partisanship of the state.

Discussion and Conclusion

By disallowing mapmakers from counting those who are currently incarcerated as residents of the districts housing the prison, New York altered the demographic and partisan electoral environment for candidates to state assembly and state senate seats.

Specifically, following the adoption of Part XX, the distribution of incarcerated persons more accurately reflects their home geography around the state and is no longer associated with high concentrations in rural areas or a Republican advantage. Furthermore, by counting incarcerated persons at their last known address, the population of incarcerated persons is no longer being used as a partisan tool to induce certain electoral outcomes and is now more closely associated with the electoral dynamics one might expect to see from their home districts.

With new maps created after the latest round of redistricting, the geospatial nature of these results provides us with a sense of what can be expected from other states that have implemented this reform or are considering doing so in the future. Even in a state as populous as New York, the decision of how to count the 50,000–70,000 incarcerated persons can serve to drastically alter the electoral environment and our understanding of elections within that state. Furthermore, these results shed light on what relationships may be obscured in other states with large prison populations in rural areas like Texas and Georgia.

Additionally, it is important to note that implementing any reform is likely to have partisan consequences, as well as other potential unforeseen or unintended consequences. However, it is important to differentiate between partisan-motivated reforms and reforms with partisan consequences. Furthermore, it also should be noted that the effect seen here is likely to be even greater at lower levels of government, where the prison population previously accounted for even greater portions of the district population. However, this particular reform was intended to improve representation and increase fairness in elections. Providing better representation to constituents *where they live* is of particular import in light of the results presented by Mummolo and Nall (2017, 59), who find that "Americans forgo the opportunity to move to more politically compatible communities."

Our study is the first, to our knowledge, to systematically examine the effect of prison gerrymandering reform on state legislative elections. More work will need to be done, however, to more fully understand this dynamic. Specifically, the results presented here may or may not hold in more competitive states or states with different redistricting criteria. Furthermore, it remains to be seen how large a role geographic sorting plays. Lastly, the US has, at times, seen politicians go to great lengths to maintain positions of power. Simultaneously, mapmaking technologies have become increasingly sophisticated. Therefore, over time, we may witness more concerted efforts at crafting districts in such a way that undermines the constraints imposed by reform efforts like New York's Part XX. Future research will therefore need to assess the durability of these changes over time.

Future research should also consider how the prohibition of prison gerrymandering impacts those adjacent to, but not directly impacted by, the practice. For example, King and Erickson (2016) find that Black Americans who live in states with larger populations of legally disenfranchised citizens are themselves less likely to vote. Beaulieu, Price, and King (2018) find that for Black Americans, felony disenfranchisement laws work to demobilize legally enfranchised citizens, by decreasing individuals' probabilities of turning out to vote as they know more people with felony convictions, and reside in states with stricter laws regarding felony disenfranchisement. Burch (2014) demonstrates that individuals who live in neighborhoods with high concentrations of incarceration and supervision are less likely to be engaged in most political activities, including volunteering, registering, and voting. Lee, Porter, and Comfort (2014) find that not only does contact with the criminal justice system

affect the political participation of the incarcerated, but also their families, especially their parents and children. The children of incarcerated individuals have markedly lower levels of trust in government and, as adults, are less likely to be registered to vote, less likely to have voted in the last presidential election, and less likely to engage in community service (53).[13] The removal of the right to vote for citizens with felony convictions also has the potential to affect election outcomes (Burch 2011, 2012; Uggen and Manza 2002) and the political participation—and subsequent recidivism —of those individuals with felony convictions (Manza and Uggen 2004). Taken together, the incarcerated population is unrepresentative of the state's overall demographics, and these individuals, as well as those close to them, are negatively impact in terms of both participation and representation. These effects are exacerbated by, or perhaps even derivative of, prison gerrymandering.

As additional states adopt this practice, it will be important to further investigate this effect to improve our understanding of prison gerrymandering, as well as redistricting and electoral reform more broadly. Furthermore, in this analysis, we have demonstrated that counting incarcerated persons at home has an effect on the Democratic candidate's vote share and uncontested races. Although not the explicit focus of our research, given the intersection between party affiliation and race in the United States, these findings have the potential to change the electoral environment in which many Black Americans are represented. Moving forward, investigations around prison-gerrymandering reform should seek to determine what effects counting incarcerated persons in their home communities has on political representation as well as access to governmental and other resources.

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[13]Similar findings are reported by Anoll and Israel-Trummel (2019).

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Appendix

Table A.1 Descriptive statistics

Variable	Mean	Std. dev.	Min.	Max.
Democratic vote	64.292	32.410	0	100
Uncontested elections	0.341	0.474	0	1
Margin of victory	60.927	36.133	0.020	100
Percent incarcerated	0.306	0.691	0	6.99
Percent White	59.912	30.776	0.900	97
Incumbent contested	0.857	0.350	0	1
State senate	0.294	0.456	0	1

Table A.2 OLS regression estimates of imputed democratic vote share

	Coefficient
	(Rob. Std. Err)
Post-part XX	−**2.840**
	(1.030)
Percent incarcerated	−**1.474**
	(0.346)
Post-part XX*	**6.266**
Percent incarcerated	**(1.775)**
Percent White	−**0.364**
	(0.011)
Incumbent	**21.085**
	(0.683)
Senate	−**3.590**
	(0.545)
Time trend	0.055
	(0.085)
Intercept	−37.963
	(171.342)
N	2,125
R^2	0.755

Note. Bolded entries are significant at $p < 0.05$.

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