

Spatial Analysis of Incarceration in the United States

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INTRODUCTION

The United States has the largest number of incarcerated people in the world. The number has increased dramatically since the mid-1970s and now constitutes 2.3 million people in any given day, followed by China (1.6 million) and Brazil (673 thousand). While the United States accounts only for 5% of the world population, it has 25% of the World's incarcerated people. According to the Prison Policy Institute, American criminal justice system has a large network of 1,719 state prisons, 109 federal prisons, 1, 772 juvenile correction facilities, 3,163 local jails, and 80 Indian Country jails as well as numerous military prisons, immigration detention facilities, civil commitment centers, and prisons in the U.S. territories. Mass incarceration matters not only because it is financially costly but also because it negatively affects the social fabric of American society: it has produced massive social inequality that is invisible (institutionalized population lie outside the official economic accounts of poverty and unemployment); cumulative (negative consequences of incarceration are born by those already in great economic and social disadvantage); intergenerational (the penalties bestowed on parents have repercussions for their children) (Western and Pettit 2010). Contemporary research on incarceration has traditionally centered either on a state level data, especially on state level prison population; or on large cities, as incarceration is viewed as a largely urban phenomenon. Having this information in mind, my research explored two questions:

Q1: What is a spatial context of mass incarceration in the United States beyond state-level data? While employing state as a unit of analysis clarifies the trends of imprisonment, it is not sufficient as local judges and prosecutors are principal decision-makers.

Q2: Is there a geographic component to a racial dimension of incarceration? Current trends predict that about one third of black males born in 2001 will be incarcerated in a state or federal prison in their lifetime, while only 6% of white males will face the same circumstances (Bonczar 2003); spatial analysis would help to understand the phenomenon better.

DATA AND METHODOLOGY

The research project relies on several sources of data, including U.S. Department of Justice Bureau of Justice Statistics (BJS), Vera Institute of Justice, and Prison Policy Initiative. The research faced multiple obstacles with accessing data. While the Bureau of Justice Statistics provides data on an aggregate state level, there are no official statistical numbers on county-level incarceration. Thus, the Vera Institute constructed Incarceration Trends dataset that includes county level incarceration rates incorporating several sources, including BJS, National Corrections Reporting Program, as well as data collected directly from state departments of correction. Finally, Prison Policy Initiative's dataset on racial disparities of mass incarceration also relies on the combination of different datasets from 2010 U.S. Census.

Figure 1 provides rates of incarceration per 100,000 residents across U.S. states in 2016 and relies on BJS data. Incarceration is defined as being confined in prison or local jail.

Figure 2 relies on the dataset constructed by Vera Institute of Justice to find levels of incarceration across counties per 100, 000 residents. Incarcerated population is defined as a combination of jailed population (including individuals held under federal and other authorities) and prison population (individual sentenced to state prison authority aggregated by county). Essentially, the figure excludes federal prisons, that hold only about 9.6% of the entire confined population; this might provide insights on criminal justice on a local level. It is important to mention that some of the states and counties were missing data, especially on state prison population. Consequently, some counties might reflect only local jails and would bias the results substantially.

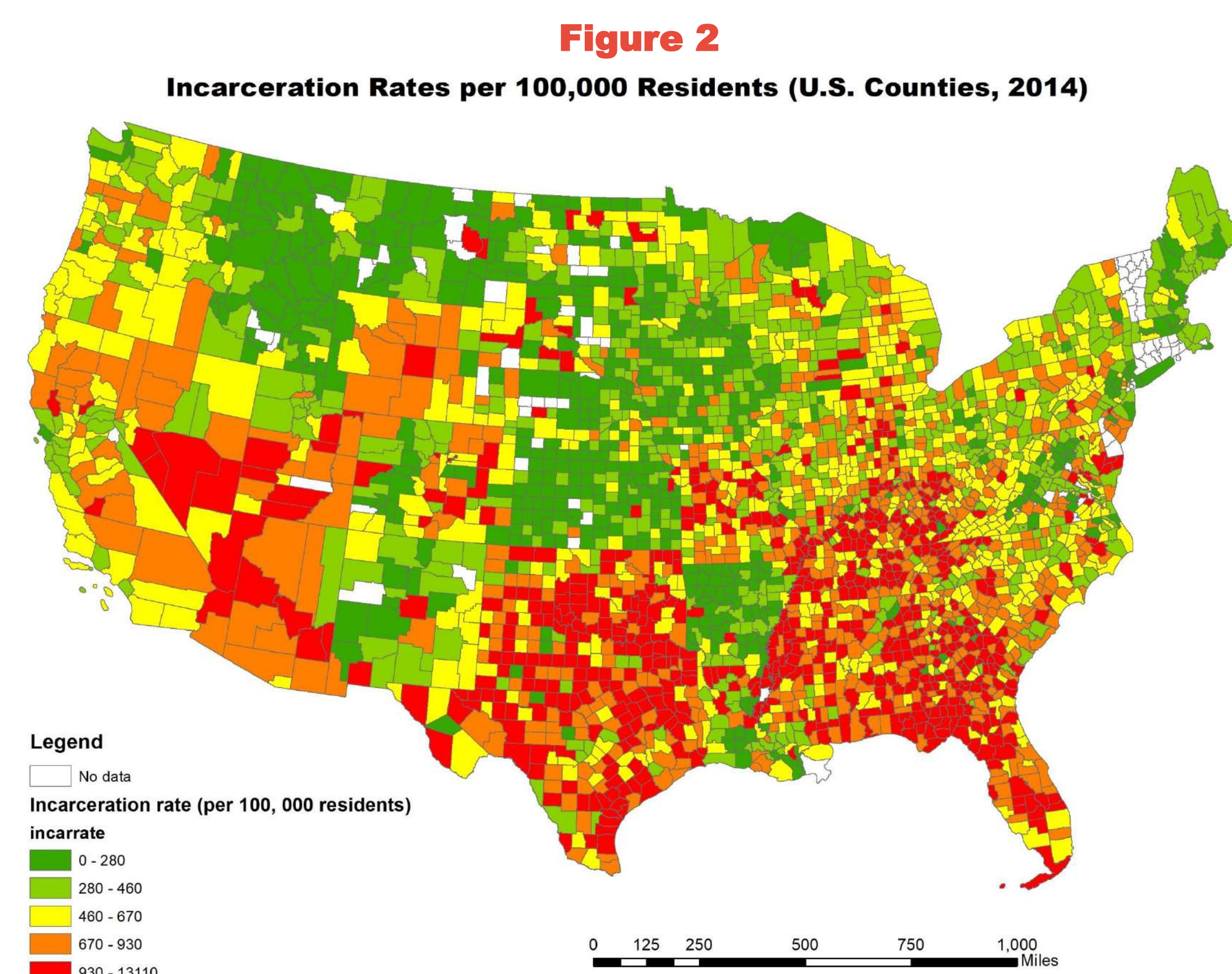
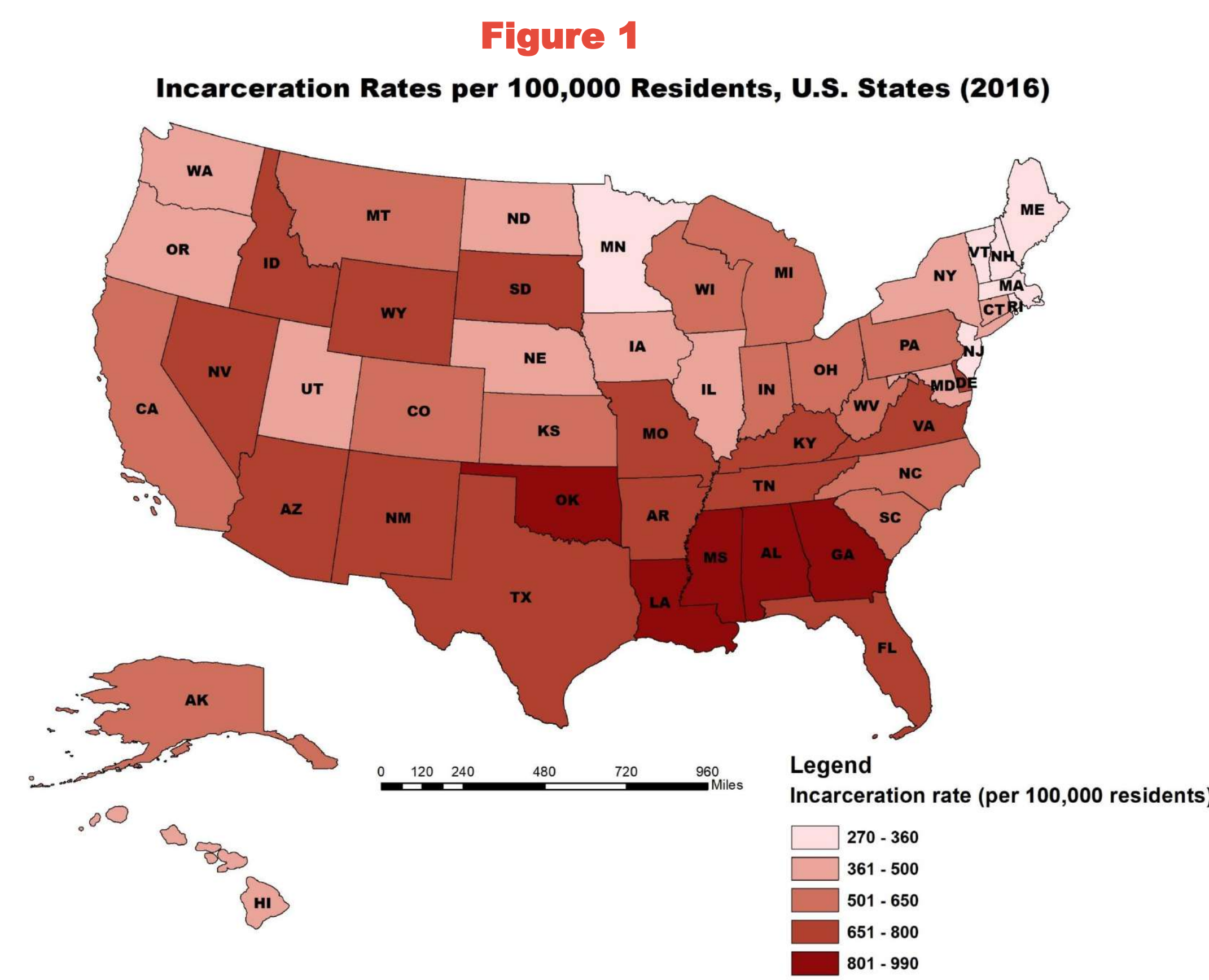


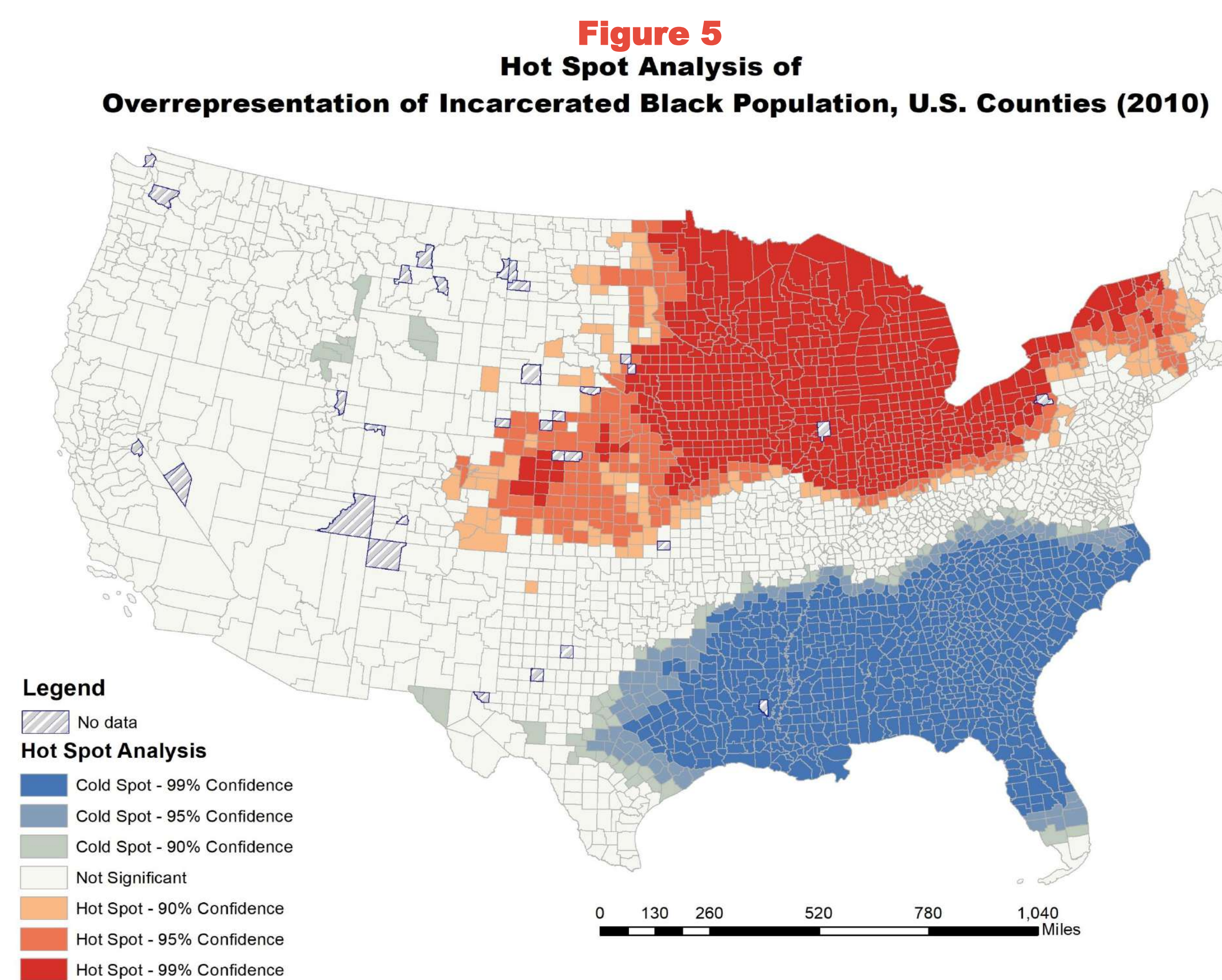
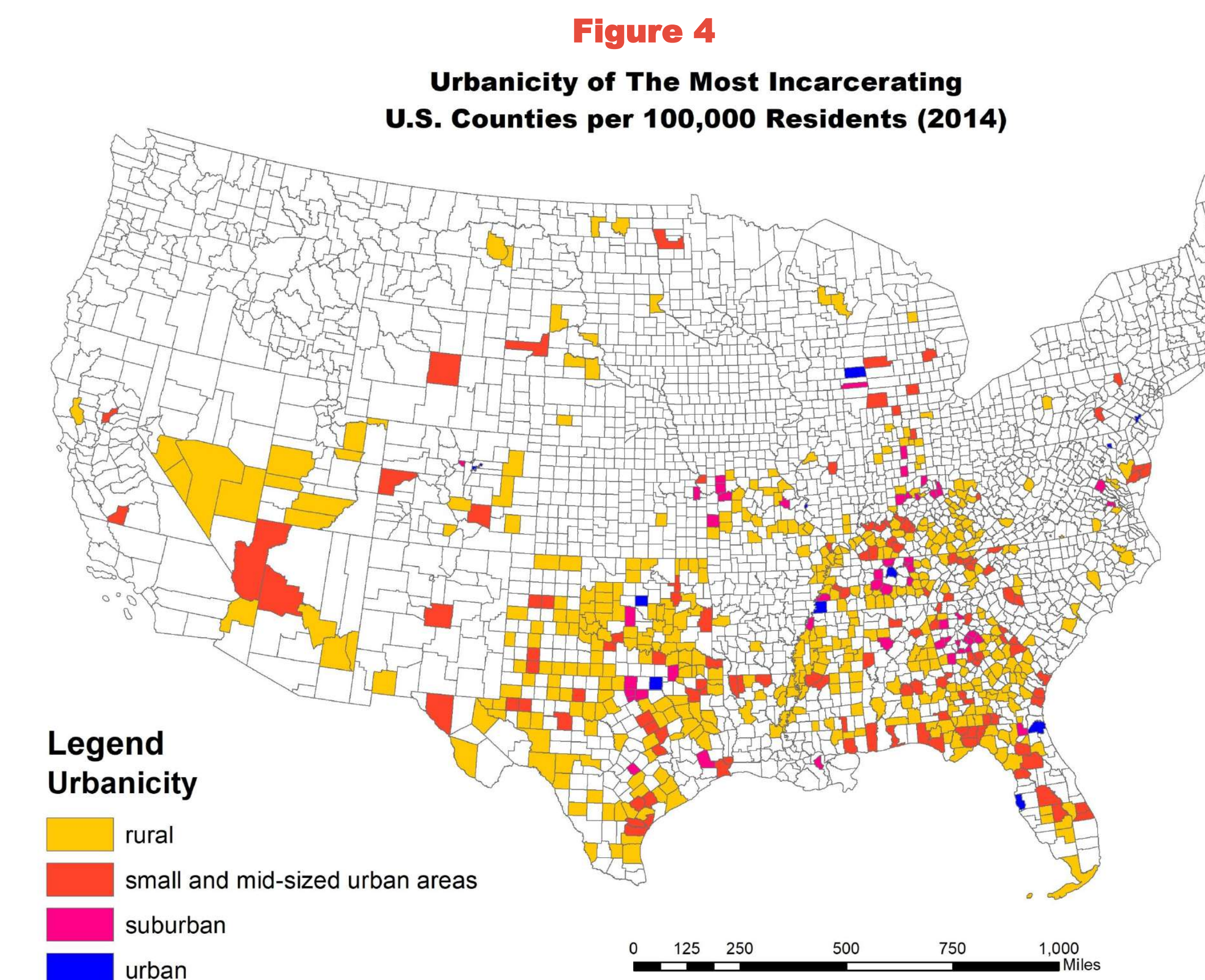
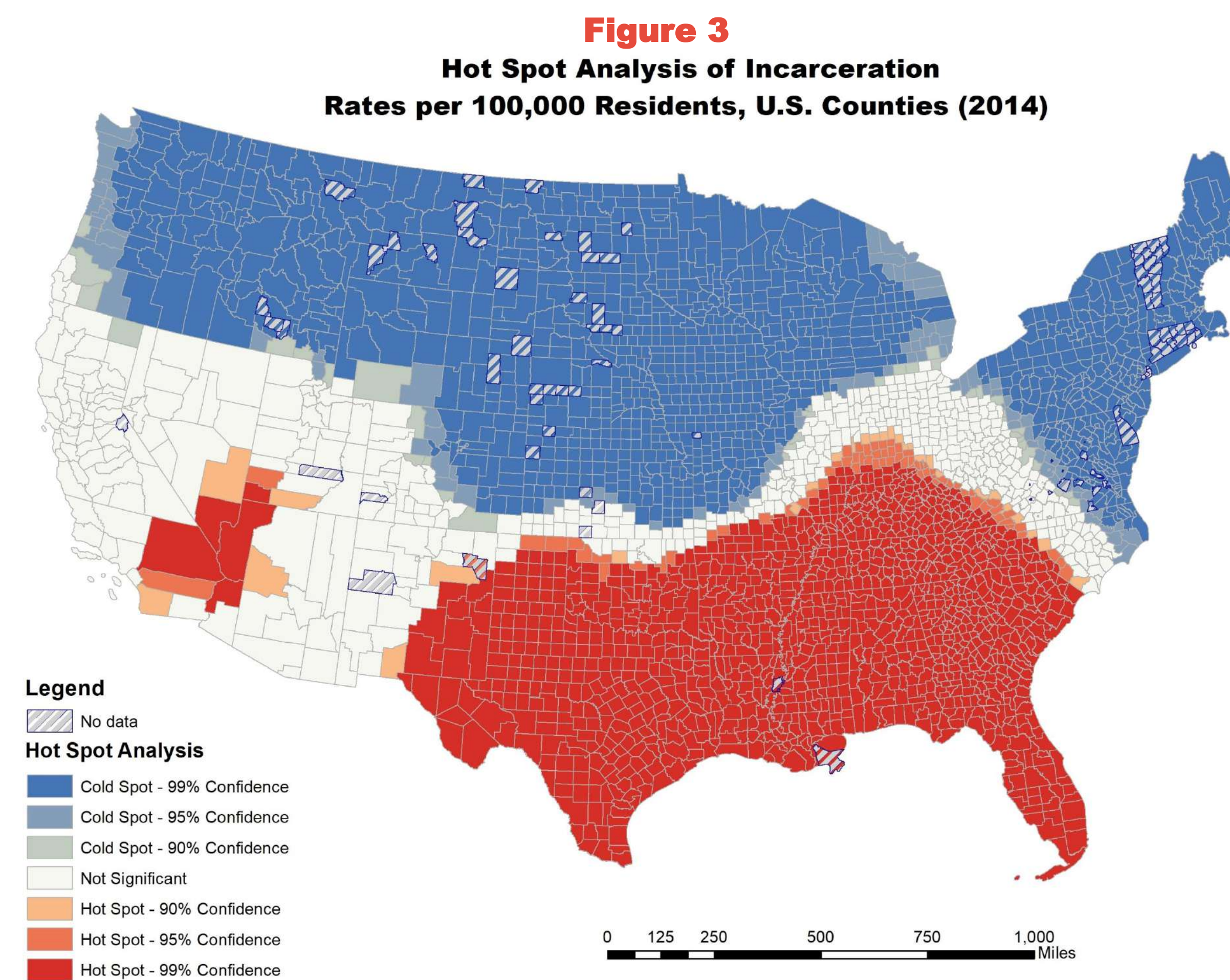
Figure 3 illustrates a hotspot analysis to identify any clustering of mass incarceration on a county level.

Figure 4 takes the highest quintile of counties according to the incarceration rates (628 counties) and illustrates their urbanicity to test if mass incarceration on a local level has a rural vs. urban factor.

Figure 5 shows a hotspot analysis of overrepresentation of incarcerated black population. It is built on the dataset from Prison Policy Initiative that shows the racial geography of incarceration. Overrepresentation is defined as the portion of black incarcerated population divided by the portion of black population in a county. If black population made up 30% of incarcerated people in a county where black population constitutes 60% of population, the overrepresentation ratio would be equal to 0.5.

REFERENCES

- Alexander, Michelle. "The New Jim Crow." *Ohio St. J. Crim. L.* 9 (2011): 7.
- Bonczar, Thomas P. *Prevalence of Imprisonment in the US Population, 1974-2001*. Washington, DC: US Department of Justice, Office of Justice Programs, 2003.
- Western, Bruce, and Becky Pettit. "Incarceration & social inequality." *Daedalus* 139, no. 3 (2010): 8-19.
- Data Sources:
1. U.S. Department of Justice Bureau of Justice Statistics (BJS)
 2. Vera Institute of Justice
 3. Prison Policy Institute
 4. National Corrections Reporting Program
 5. 2010 U.S. Census



FINDINGS

Figure 1. Looking at the map, it is possible to see a broad context of incarceration in the United States. The five states with highest incarceration ratio in 2016 are Oklahoma (990), Louisiana (970), Mississippi (960), Georgia (880), and Alabama (840), all geographically situated in the South.

Figure 2. As can be seen from Figure 2, the state level information is not enough, as there is a wide distribution of incarceration rates on a county level. Furthermore, state aggregated data might provide distortions due to incorporation of federal prisons into accounting. It is worth noting, however, that because some of state prison information is missing, we can see states with consistently low rates of incarceration throughout counties. This states include but not limited to Montana, Idaho, Kansas, South Dakota, Arkansas. **Figure 3** builds on this, and illustrates a hotspot analysis, suggesting that Southern states as well as some counties in South West represent a hot spot of incarceration, reflective of the state pattern in **Figure 1**. We should take these results with caution as they might simply indicate better reporting systems in place in some regions. Nonetheless, these figures illustrate the need of more research attention to incarceration on a local level due to large cross-county disparities.

Figure 4 attempts to explain this unequal cross-county distribution looking at the urbanicity of the most incarcerating counties. Just by looking at the map, one can see an overwhelming representation of rural communities. Out of 628 counties, they represent about 69.3% (435). They are followed by small and mid-sized urban counties (126), suburban (56), and urban counties (11). While a lot of attention has been given to urban incarceration, further research is need to explain this phenomena of rural on a county-level.

Finally, **Figure 5** attempted to fathom if there is a geographic component of massive incarceration with regards to race. As can be seen, a hotspot analysis suggests that there is an overrepresentation of black population in Midwest counties, while Southern counties represent of a cold spot. It is especially interesting to compare this map to **Figure 3**: despite the fact that counties in Midwest have on average lower levels of incarceration, the incarcerated black population is overrepresented in them. This is significant in at least two ways. First, there might be issues with diversification of prison/jail staff in areas where black people in prison are overrepresented. It might further exacerbate unequal power dynamics between the incarcerated and their guards. Second, as 2020 U.S. Census continues to count incarcerated as residents of a particular county (rather than their home county), there are perverse incentives for political actors to engage in gerrymandering (in the Midwest) to gain unfair political advantage and influence, like overrepresentation in the Electoral College.

IMPLICATIONS AND CONCLUSION

Research. While most of the current studies focus on the state-level analysis, there needs to be more attention to county level incarceration. Furthermore, more studies that would explain a wide distribution of counties with regards to rate of incarceration are necessary, especially if they would also conduct a comparative analysis between different states to see if there is any difference. Finally, looking at the type of offenses that are prevalent on a county level would illuminate if mass incarceration is primarily driven by the War on Drugs that started in the 1970s (Alexander, 2011), a conventional wisdom, or there are other local factor contributing to it.

Policy. Although the criminal justice reform has become a prominent issue for policymakers right now, most of the reform plans are concentrated on a federal level. Looking at a wide distribution of rates across counties, it seems that federal reform alone would not be enough. State and local officials on the ground have to drive and advocate for criminal justice reforms on a county level. Additionally, as critical data is necessary for further research and more effective policies, BJS needs to collect regular data on incarceration in counties. Finally, more efforts to diversity prison/jail staff and push the U.S. Bureau of Census to alter its definition of residency are urgently necessary.