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THE GROWTH, SCOPE, AND SPATIAL DISTRIBUTION OF PEOPLE WITH FELONY RECORDS IN THE UNITED STATES, 1948 TO 2010

ABSTRACT

The steep rise in U.S. criminal punishment in recent decades has spurred scholarship on the collateral consequences of imprisonment for individuals, families and communities. While several excellent studies have estimated the number of people who have been incarcerated and the collateral consequences they face, far less is known about the size and scope of the total U.S. population with felony convictions beyond prison walls, including those who serve their sentences on probation or in jail. This article develops state-level estimates based on demographic life tables and extends previous national estimates of the number of people with felony convictions to 2010. We estimate that 3 percent of the total U.S. adult population and 15 percent of the African American adult male population has ever been to prison; people with felony convictions comprise 8 percent of all adults and 33 percent of the African American adult male population. We discuss the far-reaching consequences of the spatial concentration and immense growth of these groups since 1980.
Social scientists have a better understanding of the geography and demography of incarceration than of felony conviction more broadly. We are only beginning to compile basic information about the population of formerly incarcerated people now living and working in their home communities (Western 2006; Pettit 2012). Most of the growth in U.S. correctional supervision has been among non-incarcerated probationers and parolees who are supervised in their communities (see Appendix Figure 1) (Phelps 2017). Both populations are increasingly important as states enact criminal justice reforms that shift from incarceration to community supervision for at least some offenses (Phelps 2013).

This article builds on previous national estimates of people formerly incarcerated and people formerly under felony correctional supervision by extending these estimates to 2010 and compiling the first-ever state-level estimates of these populations from 1980 to 2010 ¹ (Uggen, Manza, and Thompson 2006). While the U.S. Department of Justice has long provided detailed information on people currently under criminal justice supervision, there are no existing data sources for state-level former prison or felony supervision populations.

Given the historic increase in criminal punishment, these numbers have broad implications for both science and public policy. Contact with the criminal justice system incurs substantial social and demographic consequences, including restrictions on employment, housing, voting, and welfare receipt, as well as long-term effects on

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¹ The terms felon and prisoner refer to conviction and incarceration status rather than criminal behavior. These estimates are thus a reflection of a rising punishment rate, even as crime rates have declined (see, e.g., Uggen and McElrath 2014).
physical and mental health (Ewald and Uggen 2012; Massoglia 2008; Schnittker and John 2007). Because these effects are concentrated racially and geographically (Clear 2007; Pettit 2012; Western 2006), we present estimates by race (African American) and use GIS visualization techniques to illustrate the variation across space and time in these populations.

This article thus contributes to understanding the demographic and geographic distribution of populations with past prison and felony supervision experience in the United States. These estimates offer a more comprehensive view of the reach of the criminal justice system across space, time, and race than those focused on only one stage (e.g., arrest) or experience (e.g., incarceration) in the U.S. criminal justice system. The estimates presented here complement prior estimates of people with prison experience (e.g., Pettit 2012) but also include the large number of people who have not served time yet suffer many of the same consequences of a felony conviction. Our estimates provide essential data for social scientists and policy makers interested in the broader social and institutional impacts of these populations.

THE DEMOGRAPHY AND GEOGRAPHY OF PUNISHMENT

Recent studies detail the size and scope of particular populations with substantial contact with the criminal justice system. Becky Pettit’s work (2012; see also Pettit and Western 2004) shows large racial disparities in the likelihood of entering prison and documents the implications for black-white disparities in labor market, economic, and educational outcomes. Christopher Wildeman (2009) has done the same for racial disparities among children in the likelihood of experiencing parental incarceration (see also Sykes and Pettit 2014). Brame and colleagues (2012, 2014) estimate the likelihood
of experiencing arrest, noting that almost half of all black men will be arrested prior to the age of 23.

People with any kind of criminal history experience wide-ranging penalties and disruptions in their lives, especially given the widespread availability of criminal background information (Lageson 2016; Uggen et al. 2014). Nevertheless, people convicted of felonies face more substantial and frequently permanent consequences (Travis 2005; Ewald and Uggen 2012; Uggen and Stewart 2015). A felony is a broad categorization, encompassing everything from marijuana possession to homicide. Historically “felony” has been used to distinguish certain “high crimes” or “grave offenses” from less serious, misdemeanor offenses. In the United States, felonies are typically punishable by more than one year in prison, while misdemeanors garner less severe sanctions such as shorter jail sentences, fines, or both. Not everyone with a felony conviction goes to prison, however, and many more will serve time in jail or on probation. Indeed, changes in sentencing constitute one reason for the recent decline in the size of the prison population.

As David Garland (2001a) has noted, mass incarceration in the United States is not simply defined by the imprisonment of large numbers of people, but by the “systematic imprisonment of whole groups of the population” (p. 2). Moreover, such concentration applies not only to people in prison but also to millions of non-incarcerated people with felony convictions (Phelps 2013). People with felony records are set apart not only by the stigma and collateral consequences that come with a criminal conviction but also by its extreme concentration by sex, race, and socioeconomic status. Current prison and community corrections populations are overwhelmingly male – 93 percent of prisoners, 89 percent of parolees, and 76 percent
of probationers (Bonczar and Maruschak 2013; Carson and Golinelli 2013). Recent estimates show that 30 percent of black males have been arrested by age 18 (vs. 22 percent for white males) (Brame et al. 2014). This grows to 49 percent by age 23, meaning that virtually half of all black men have been arrested at least once by the time they reach young adulthood (vs. about 38 percent of white males) (Brame et al. 2014).

Bruce Western and Becky Pettit have shown that incarceration has become a routine life event for low-skill black men, more common than serving in the military or earning a college degree (Pettit and Western 2004; Western 2006). The cumulative risk of imprisonment for black men ages 20-34 without a high school degree stands at 68 percent, as compared to 21 percent of black men with a high school degree and 28 percent for white men without a high school degree (Pettit 2012).

Scholars have also chronicled the spatial concentration of incarceration and correctional supervision (Clear 2007; Justice Mapping Center 2010; Travis 2005; Muller and Wildeman 2016). Exposure to the criminal justice system varies both within and across the states. Each state operates its own separate systems of incarceration and supervision, a fact which can be obscured by national level analyses. While national correctional populations have declined in recent years (Kaeble, Glaze, Tsoutis and Minton 2016), individual states vary, with some experiencing increases and others decreases in either incarceration or community supervision. For example, between 2013 and 2014 Missouri’s community supervision population fell by 7 percent but Washington’s grew by 5 percent (Kaeble, Maruschak, and Bonczar 2015). Likewise, California’s Public Safety Realignment (PSR) significantly impacted not only the decline in California’s prison population in 2012 but also the entire nation due to the size of its correctional system (Carson and Golinelli 2013). These geographic differences have
significant consequences not just for current correctional populations but also for former populations, as we will show in this analysis.

Variation in punishment rates by state is attributable to differences in economics, crime rates, demographics, politics, and sentencing laws (Barker 2006; Beckett and Western 2001; Greenberg and West 2001; Jacobs and Helms 2001; Lynch 2010; Stucky, Heimer, and Lang 2005). State incarceration rates vary in part due to differences in criminal justice processing, including exposure to police surveillance (Beckett, Nyrop and Pfingst 2006; Tonry 1996), rates of conviction (Bridges and Steen 1998), and sentencing patterns (Steffensmeier, Ulmer and Kramer 1998). States vary widely in the use of imprisonment versus community supervision (Phelps 2017). Some states incarcerate at lower rates but sentence a substantial number of people to probation (e.g. Minnesota), while others incarcerate at high rates and have high rates of community supervision (e.g. Louisiana) (Phelps 2017). Criminologists are increasingly calling for a broad shift of resources away from incarceration (National Research Council 2014) and toward law enforcement (Durlauf and Nagin 2011) and communities (Clear and Frost 2014), however, states have continued to implement widely varying criminal justice policies, particularly in the extent to which they emphasize law enforcement, incarceration, and community supervision (Barker 2006; Phelps 2017).

To explain these preferences, punishment scholars point to the neoconservative politics of late modernity (Garland 2001b), a “new penology” to manage high-risk populations (Feeley and Simon 1992), public sentiment (Tonry 2004), the use of criminal justice and welfare institutions to tie post-industrial workers to precarious wage labor (Wacquant 2012), and elite desires to maintain dominance in the face of racial threat (Behrens, Uggen, and Manza 2003). The empirical literature increasingly

To illustrate the great geographic variation in rates of punishment, the maps in Figure 1 show the percentage of adults currently in prison and under supervision for felony convictions in 2010 by state and race.

[Figure 1 about here]

By applying the same color scheme and scale, these maps reveal startling race differences in correctional supervision. As of 2010, most states had less than 1 percent of all adults in prison, with the exception of Louisiana and Alaska, as shown in the top-left panel. The picture changes dramatically when examining the same map for African American adults (top-right panel). In numerous states, between 2.5 and 5 percent of the adult African American population was currently incarcerated in 2010. A few states with low baseline African American populations in the Midwest and Northeast had more than 4 percent of adult African Americans incarcerated.²

² We do not present estimates for changes in Hispanic ethnicity, as less historical demographic information is available on the ethnicity of people in prison or under felony supervision (for 2010 rates, see Shannon and Uggen 2014).
Sizeable racial differences are also apparent in total felony supervision. The bottom-left panel of Figure 1 shows that only six states had less than 1 percent of their adult population under felony supervision in 2010, while seven states had over 2.5 percent under such supervision. As with incarceration, a dramatically higher percentage of African American adults in most states were under felony correctional supervision. The bottom-right panel shows that by 2010, the rate exceeded 5 percent of African American adults in 24 states and no state had less than 2.5 percent of its adult African American population under supervision for felony convictions. States such as Oregon, Rhode Island, and Wisconsin had rates exceeding 8 percent.

These percentages are also shaped by state differences in total and race-specific baseline populations. Both the numerator (correctional population) and denominator (state population) affect these rates. For example, Minnesota’s low incarceration numerator is driven by policies favoring probation over prison (Phelps 2017), which result in relatively high rates of total correctional supervision. The denominator is simultaneously impacted by shifts in population composition. In Minnesota’s case, the population designated African American has grown over time due to immigrating from Africa, particularly Somalia. Neither the numerator nor the denominator in these rates is static, and each is responsive to distinct state-level processes and population changes.

These maps illustrate the geographic variation in current correctional populations by state. This is an important consideration, as much research addresses the likelihood of incarceration and its personal and collateral consequences (Wakefield and Uggen 2010). But what about the millions of people who have passed through the criminal justice system and completed their sentences? Although often viewed as social isolates, people formerly under felony supervision are embedded in every facet of social
life, as neighbors, partners, parents, employees, and citizens, yet little is known about their whereabouts or fortunes. Although social scientists have done much to reveal the hidden damage of incarceration, available data often obscure the much broader population of people with felony records – and what happens to them when they are no longer under supervision.

There is good reason to believe that the aggregate presence and relative size of populations with felony records have spillover effects on social institutions and processes, especially in communities of color (Schnittker, Massoglia, Uggen 2011; Wakefield and Uggen 2010). A population of this size – 16 million nationwide as of 2004 (Uggen, Manza and Thompson 2006) – can be expected to affect labor markets, politics, health care, education, and institutional functioning more generally. But despite intensive surveillance while under correctional control (e.g., head counts in prison, electronic monitoring in the community), this population tends to be forgotten post-sentence (Pettit 2012). People convicted of felonies are living, working, paying taxes, or otherwise getting by throughout U.S. society, but the overall extent and geographic distribution of this population remains unknown. Our estimates provide a significant first step in filling this gap by providing scholars with an important social indicator to consider in analyses of phenomena ranging from political participation to family functioning, economic conditions, and public health.

DATA AND METHODS

There are many complications and challenges in producing these estimates. The underlying data are often incomplete, racial categorizations and reporting have changed significantly in recent decades, and states vary in recidivism, mortality, mobility, and
other factors that can affect the estimates we compile. We seek to overcome these challenges using the best available data and reasonable assumptions by social scientific standards. It is important to make clear, however, that the figures we present are estimates based on models rather than a census-like enumeration of these populations. To address sources of potential error and uncertainty, we present state-specific ranges, rather than point estimates in the appendix tables. The online version of this article provides point estimates for each state and year in a downloadable data file.

To estimate the size of these populations nationally and at the state-level, we draw data from annual series gathered by the United States Department of Justice (DOJ) that provide year-end headcounts of the number of individuals exiting and entering correctional control. Specifically, we take each year’s reported number of prison releases (conditional and unconditional) and reported number of people entering felony probation and jail to compute annual cohorts of people with felony supervision experience. States vary in consistency of reporting over the time period. Where data are missing for particular states or years, we assumed stability and applied a linear interpolation between years. See the methodological appendix for more details on data sources and procedures.

We begin following these groups in 1948 since this is the earliest year for which detailed data are available on releases from supervision. As a result, our estimates are actually for people released 1948 or later. Historical data on race and sex are typically reported for prison populations but difficult to obtain for other correctional populations. This data limitation necessitated some interpolation in our estimation procedures. Prior to the mid-1970s, we used race and sex data for prison to estimate the race and sex
distributions in the jail, probation, and parole populations, as detailed in the methodological appendix.

With these data we compiled multiple-decrement demographic life tables for the period 1948-2010 to determine the number of people released from felony supervision lost to recidivism (and therefore already included in annual head counts), mortality, mobility, and deportation each year. Each release cohort is thus reduced each successive year and added to each new cohort of releases. This allows us to compute the number of people with felony convictions who are no longer under criminal justice supervision each year. As detailed below and in the appendix, we took several steps so as not to overestimate the number of people with past felony supervision in the population.

Recidivism

Because our estimates are most sensitive to our assumptions about recidivism, we took several approaches to produce upper and lower bounds for these numbers. Given the poor quality or absence of state- and race-specific recidivism rates, especially for non-incarcerated correctional populations, we made a number of simplifying assumptions in obtaining these estimates. To reflect the uncertainty around these estimation procedures, we present ranges for our state-level estimates in light of alternative assumptions regarding state-specific recidivism rates.

Based on large-scale national recidivism studies of prison releasees and probationers, our models assume that most people released from prison will be reincarcerated and a smaller percentage of people released from probation and jail will

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3 Because we use de-identified aggregate data, factors such as aliases are unlikely to significantly affect our estimates. State releasee information is based on a simple count of the number of people leaving supervision, without regard to individual releasees’ names or identities. Our estimates thus model death and recidivism for the total release cohort rather than tracking individuals who may have multiple names or records within the system.
cycle back through the criminal justice system (U.S. Department of Justice 1989; 1992). For prisoners and parolees, we use a reincarceration rate of 18.6% at one year, 32.8% at two years, 41.4% at 3 years (U.S. Department of Justice 1989; 1992). Although rearrest rates have increased over time, the overall reconviction and reincarceration rates used for this study are much more stable (Langan and Levin 2002, p. 11). For probationers and jail inmates, the corresponding three-year failure rate is 36%.

To extend the analysis to subsequent years, we calculated a trend line using the ratio of increases provided by Hoffman and Stone-Meierhoefer (1980) on federal prisoners. By year 10, we estimate a 59.4% recidivism rate among released prisoners and parolees, which increases to 65.9% by year 62 (the longest observation period in this analysis). Because these estimates are higher than most long-term recidivism studies, they are likely to yield conservative estimates of the population with past felony supervision. We apply the same trend line to the 3-year probation and jail recidivism rate of 36%; by year 62, the recidivism rate is 57.3%.

We begin by applying these recidivism rates to all populations under felony supervision at the national and state levels. Because these initial estimates may slightly overestimate “surviving” groups in states with high recidivism rates while underestimating those with lower recidivism rates we relax this assumption in sub-analyses that assume variation by race and state, as detailed in the methodological appendix.

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4 A recent report from the Bureau of Justice Statistics using data on prisoners released in 2005 in 30 states found a 17.5% reincarceration rate at one year, 28.8% at two years, and 36.2% at three years (Durose, Cooper, and Snyder 2014). We apply the slightly higher rate from previous studies so that our estimates are more conservative.
**Mortality**

We calculate mortality based on the expected number of deaths for African American males at the median age of release for each year obtained from the National Corrections Reporting Program (U.S. Bureau of Prisons 1948-2004), multiplied by a factor of 1.46 to reflect the higher death rates observed among releasees in prior research (U.S. Department of Justice 1989). Using the African American death rate ensures that our estimates are conservative given that this group experiences higher mortality than the total population.

**Mobility**

After adjusting the estimates for recidivism and mortality, we further calculate the effect of inter-state mobility on our state-level numbers. We obtained annual average net migration rates (expressed as an annual percentage lost or gained) by state from U.S. Census sources (U.S. Bureau of the Census 1953; 1963; 1973; 1984; 2003; 2006; 2010) and apply them to the estimate for each state in each year. If the state experienced a net mobility loss we simply subtract the number lost to mobility from the total estimate for that year. If a state experienced a net mobility gain in a given year, we further reduce the number gained for recidivism and death and add the remainder to the total estimate for that state and year.

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5 Little is known about how mobility patterns of this population might differ from the population as a whole. Available evidence suggests that at least 95 percent of former prison inmates remain in the same state post-release (LaVigne and Kachnowski 2003; LaVigne and Mamalian 2003; LaVigne and Thompson 2003; Watson et al. 2004). Given that this population faces significant socioeconomic challenges as a result of criminal conviction (see e.g. Wakefield & Uggen 2010), there is little reason to believe that people with felony records are more mobile than the general population. If they are less mobile than the population as a whole, our estimates will remain conservative.

6 After calculating mobility-adjusted estimates for each state and year, we found that the resulting national totals for both populations were inflated by 2 percent over national totals without mobility adjustments. This is because we add in mobility gains each year and reduce those gains for recidivism and mortality but not subsequent mobility losses. To compensate for this inflation, we adjust each state’s estimate by a factor of .98 in each year. This is a reasonable
Deportation

One particular form of mobility relevant to our estimates, especially in more recent years, is deportation for felony conviction. To adjust for losses due to deportation we again made several simplifying assumptions given lack of state- and race-specific data over our full time period. We gathered annual data on the total number of deportations for criminal behavior nationally and deducted them from our annual estimates using a moving 50-year window. As detailed in the methodological appendix, we took several steps to ensure that we are counting only felony-level offenses and only those deported for the first time. Nationally, we assume that the majority of deportees are male (Golash-Boza 2015), multiplying the total number of deportees in each year by .9 to obtain male rates.

To estimate the number of people deported for felonies in each state and year we calculate the percentage of all noncitizens incarcerated in each state in 2010 as reported by the Bureau of Justice Statistics (Guerino, Harrison, and Sabol 2012). We then applied these state-specific percentages to the national number of felony deportations in each year in order to distribute them across the states. Because data on noncitizens in prison are not available annually we assume stability in these state-level percentages over time. For African American estimates we adjust the national and state-specific numbers by applying the percentage of the foreign born population that is black in each jurisdiction as obtained from the decennial U.S. Census.

assumption since between 2 and 3 percent of the U.S. population moved from one state to another annually from 1980 to 2010, with the percentage declining just below 2 percent in more recent years (U.S. Census Bureau 2013).
As is evident, it is challenging to produce reliable age-, race-, or sex-specific estimates given existing data limitations and the complexity of modeling inter-state mobility. Our estimates are especially sensitive to changes in the recidivism rate (though less sensitive to changes in mortality or mobility rates). As a result, we present ranges for our state-level estimates and urge caution in interpreting these model-based estimates, despite the great care we have taken in producing them.

_Spatial analysis_

With the fully adjusted state-level estimates in hand, we use GIS techniques to map changes in these populations as a percentage of each state’s adult population over time. We also perform spatial clustering analyses to detect areas of the country with significantly higher concentrations of people with past prison and felony supervision experience. Moran’s $I$ is the most commonly used statistic for detecting spatial clustering (Cliff and Ord 1973; Cressie 1993; Haining 1990), providing a summary, global measure of whether the null hypothesis of spatial randomness can be rejected. A significant coefficient indicates the presence of spatial dependence. Moran’s $I$ can be compared to a Pearson product-moment correlation with a feasible range of -1 to +1. Put simply, rather than calculating the correlation between two variables, as with the Pearson’s $r$, the Moran’s $I$ statistic estimates the correlation between the same variable in two geographic areas.\(^7\)

\(^7\) Integral to this calculation is the specification of a spatial weights matrix in order to explicitly account for the spatial arrangement of the data. This determines the “neighborhood” for each observation. Weights matrices can be determined based on distance (e.g. from one state centroid to another) or by contiguity (shared borders). Contiguity matrices can be established at higher or lower orders (e.g. first, second, third) and vary in the neighbors included (e.g. rook, queen). For example, a first-order queen contiguity matrix takes into account adjacent neighbors in all directions at the first level out from the state in question.
Moran’s $I$ can be expressed as follows:

$$I_x = \left( \frac{n}{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij}} \right) \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} (x_i - \bar{x})(x_j - \bar{x})}{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij} \sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2 \sum_{j=1}^{n} (x_j - \bar{x})^2}}$$

where $x$ is the value for state $i$ and neighbor $j$ and $w$ denotes a spatial weights matrix, in this analysis determined by first-order queen contiguity.

This global measure, while informative, does not reveal where “hot spots” – local variation in the overall spatial pattern – might be. Local Indicators of Spatial Autocorrelation (LISA) provides a way to examine such “hot spots” by decomposing Moran’s $I$ into the contribution made by each individual observation (Anselin 1995). LISA statistics identify which locations contribute more than their expected share to Moran’s $I$ (Anselin 1995) and can be expressed as follows:

$$I_i = z_i \sum_j w_{ij} z_j$$

where $z_i$ and $z_j$ are deviations from the mean and $j \in J_i$.

RESULTS

National-Level Estimates

As Table 1 shows, there were about 2.4 million adults in prison and on parole in the United States in 2010 (Glaze and Bonczar 2011; Guerino et al. 2012). Based on our life table estimates, there are an additional 4.9 million formerly incarcerated adults, for a total of 7.3 million adults who have ever been incarcerated. As shown in the top panel of Figure 2, this number has grown considerably over time, particularly as incarceration rates increased dramatically in the 1970s and 1980s. As people were released in subsequent years, the number of people with prison records also rose steeply.
Table 1 further breaks out these estimates of current, ex-, and total (current plus ex-) populations by sex and race. In line with previous research (Western 2006; Pettit 2012), we find that African American men are represented in the population of people with prison records at rates much higher than men overall. In 1980, nearly 6 percent of the adult male African American population had been to prison at some point (total prison/parole), compared to just under 2 percent of all adult men. By 2010, 15 percent of African American adult males had spent time in prison, versus 5.6 percent of all adult males.

The top panel of Figure 3 expresses these changes as a percentage of the U.S. adult population since 1948 and highlights the disparity in incarceration between African American and non-African American populations. While both groups have experienced substantial increases, the absolute rates and the rate of growth have been higher for African Americans. People with prison experience have grown significantly as a percentage of the non-African American adult population (right axis) since the 1980s, reaching 2.3% in 2010, compared to approximately 1% in 1980. But for African-Americans, the percent of adults who are currently or formerly incarcerated has more than tripled from 3% in 1980 to about 10% in 2010 (left axis).

These estimates are generally comparable to those obtained by other researchers applying different demographic techniques. Bonczar (2003) estimated that in 2001, 3% of adults, 5% of adult males, and 17% of African American adult males had been to prison. Pettit and Western (2004) found that black men born between 1945 and 1949
had an 11% chance of imprisonment, relative to a 21% for the cohort of black men born between 1965 and 1969. These figures are generally congruent with our overall estimate that 15 percent of black men had experienced imprisonment by 2010. This consistency with earlier research provides an important check on our approach, which we next apply to the much broader class of people with felony convictions.

Although imprisonment is a serious consequence, most people with felony convictions never enter prison but instead serve their sentences in jail or on probation in the community. Many of the collateral consequences of punishment – most notably for the labor market, housing, and access to public supports – flow not from incarceration experiences but from the application of a widely known and publicly disseminated felony label (Uggen and Stewart 2015). We estimate the total number of people with felony convictions by extending the life table analysis to include felony probation and jail supervision each year.

As Table 2 shows, there were 4.5 million people currently serving jail or probation sentences for felony convictions in 2010 (Glaze and Bonczar 2011; Guerino et al. 2012). Our estimates show that there are a further 14.5 million people with past felony convictions in the population, which sums to a total of 19 million people in 2010. The bottom panel of Figure 2 displays the growth in the total number of people who have ever been under felony supervision since 1948. Probationers have lower recidivism rates than prisoners, such that a smaller percentage of former probationers are removed from the pool each year. This results in a more rapid accumulation in the population and a higher ratio of people with felony convictions to people under current felony supervision relative to the ratio of people formerly incarcerated to current prisoners.

[Table 2 about here]
We also represent the population with a felony conviction as a percentage of the U.S. adult population by race in the bottom panel of Figure 3. The total number of non-African Americans with felony convictions has grown from 2.5% of the adult population in 1980 to over 6% in 2010 (right axis). For African Americans, people with felony convictions have tripled, from 7.6% of adults in 1980 to about 23% in 2010 (left axis).

Table 2 further shows the breakdown of current, former, and total populations with felony convictions by race and sex. Once again, differences are stark between African American and total adult males. Already in 1980, about 13 percent of adult African American males had a current or past felony conviction, as compared to 5 percent of the total male population. By 2010, one-third (33 percent) of adult African American males had a felony conviction, versus about 13 percent of all adult males.

*State-Level Estimates*

While national numbers provide an overall picture, these totals obscure important state-level variation in criminal punishment. To illustrate this variation, the maps in Figure 4 show the percentage of total and African American adult populations in each of these groups for 1980 and 2010 using our lower bound estimates. Tables displaying these estimates in detail and for additional years (1990 and 2000) are located in the appendix. The appendix tables include upper and lower bounds for these numbers based on our alternative assumptions regarding recidivism described in the methodological appendix. The lower bound assumes a 25 percent higher recidivism rate than the national average. The upper bound is the highest number we obtained for each state from applying either state-specific or national recidivism rates. In all cases, the percentages are derived using the relevant estimate as the numerator and the state’s
population over 18 years of age as the denominator for total and African American populations. The maps in Figures 4 and 5 use the more conservative lower bound so as not to overstate each state’s estimate.

[Figure 4 about here]

The top-left panel of Figure 4 shows that less than 2 percent of adults in most U.S. states had spent time in prison as of 1980. In fact, most states had less than 1 percent of adults with prison experience; only Maryland had rates of people formerly incarcerated between 1 and 2 percent. States with the lowest rates (less than .5 percent) include several in the upper Midwest, like North Dakota and Minnesota, a handful in the Northeast, such as Massachusetts and Vermont, and a few in the West, including Arizona and California. The picture changes substantially by 2010, as the bottom-left panel of Figure 4 demonstrates. By 2010, no states had rates of formerly incarcerated adults less than 1 percent in 2010. Moreover, in 18 states more than 2 percent of the adult population had spent time in state prisons. States with more than 3 percent of the adult population with prison records include Alaska, California, and Louisiana.

The two right-hand panels of Figure 4 depicting the percentage of formerly incarcerated African Americans are more startling. While overall rates in 1980 were relatively uniform and low, this is not the case for African American adults. As the top-right panel shows, 24 states had African American rates of former prisoners in excess of 2 percent in 1980. In four states more than 4 percent of adult African Americans had been to prison by 1980. Such states often have low baseline African American populations. For example, according to our life table estimates, New Mexico had about 1,000 formerly incarcerated African American adults in 1980 and a state population of 15,300 adult African Americans (6.5 percent). When compared to states such as Texas,
which had a greater absolute number of African Americans with prison records in 1980 (about 20,000 by our estimates) but also a much higher baseline population (1.1 million adult African Americans), states such as New Mexico stand out in terms of racial disparity. By 2010, rates of formerly incarcerated African Americans (lower-right panel) had climbed even higher with only seven states having rates under 4 percent of the adult population. Thirty states had rates of at least 5 percent of the adult population and fifteen had rates greater than 7 percent. California leads the nation with about 12 percent of African American adults having a prison record (see Appendix Table 4).

Turning to the broader felony conviction criterion in Figure 5, the two left-hand panels display the percent of all adults in each state with felony convictions in 1980 (top) and 2010 (bottom). By 1980, less than 2 percent of the adult population in most states (33) had a felony record. Thirteen states had adult felony conviction rates between 2 and 3 percent. In Alabama, California, Colorado, and Oklahoma about 3 percent of the adult population had spent time under felony supervision. As of 2010, rates had risen such that only one state had less than 2 percent of the adult population with a felony record (see bottom-left panel). Twenty-six states had rates between 2 and 5 percent. In 22 states between 5 and 10 percent of the adult population had experienced prior felony supervision. In Florida at least 10 percent of the total adult population had spent time under felony correctional supervision by 2010.

As with our prison estimates, Figure 5 demonstrates that the magnitude of felony supervision rates is much higher for African American than for all adults. Already in 1980 (top right), more than 10 percent of the adult African American population in four states had been under felony supervision at some point in their lives (Arizona,
Massachusetts, New Hampshire, and New Mexico). By 2010 (bottom right), only 16 states had less than 10 percent of adult African Americans with past felony supervision. By 2010, all but one state (Maine) had a felony conviction rate of at least 5 percent of adult African Americans. Rates in 18 states fall between 10 and 14 percent, while eleven states boast rates of 15 to 19 percent. Most strikingly, rates in five states exceeded 20 percent, meaning that one in five African American adults in these states had at some point been under felony supervision (California, Florida, Indiana, Massachusetts, and Washington). In California and Indiana, we estimate that at least one in four of all adult African Americans had a felony conviction history. While it may seem implausible that over 20 percent of the African American adult population has a felony conviction history in such states, recall that at least 5 percent of the African American population is currently under felony supervision in these states.

How are we to interpret this differential exposure to criminal justice contact? Where state rates are higher, a greater share of the population will be subject to the formal and informal collateral consequences of felony conviction. As noted above, these include denial of public benefits, housing, labor market discrimination, and social exclusion more generally. In short, as the percentage of people with felony records rises in a state, the justice system and its after-effects become ever more central in the lives of individual citizens and their communities.

**Space-Time Trends**

Building on the maps presented above, the results of our spatial clustering analyses reveal several significant patterns over space and time. The top panel of Figure 6 displays Moran’s $I$ coefficients by decade for rates of people with prison records by
race using our more conservative lower bound estimates.\(^8\) We find significant spatial autocorrelation in our estimates for the total adult population in all years except 2010. This indicates that there are significant clusters of states with similarly higher or lower proportions of adults with prison records. LISA analyses (not shown, available by request) show a significant cluster of states with high rates in the south over the full time period, with a significant cluster of low rates in the northeast in the earlier years.

[Figure 6 about here]
These patterns align with states that typically have the highest and lowest incarceration rates in the nation. For example, Louisiana and Mississippi have the two highest incarceration rates as of 2012 (893 and 717 per 100,000, respectively), while Maine (145), Rhode Island (190), and Massachusetts (200) are among the lowest (Carson and Golinelli 2013).

The trend line in spatial clustering for formerly incarcerated African American adults shows a similar pattern to overall rates, though the magnitude of the coefficients are higher and significant in all decades. We find significant clusters of high African American rates in the West at the first three time points but this clustering shifts toward the Midwest by 2010, as revealed by LISA analysis (not shown) and evident in Figure 4. Six of the 12 states rates above 8 percent are located in the Midwest in 2010 (Illinois, Indiana, Kansas, Ohio, South Dakota, and Wisconsin). These clusters are likely driven in part by low baseline populations of African Americans in some states. LISA analysis also shows significant clusters of low African American rates in the southeast and northeast.

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\(^8\) We also tested these results excluding states with especially high rates (e.g. California and Florida) as well as states with less than 10,000 African Americans in the total population with similar results.
Although a direct comparison is confounded by differences in methods, this pattern is in line with Muller and Wildeman’s (2016) findings that the cumulative risk of incarceration for African Americans is highest in the Midwest but lower in the south and northeast.

The drop in magnitude of the Moran’s I coefficients over time may be due to the fact that the rate of African Americans with prison records exceeded 5 percent of the adult population in most states by 2010. This does not imply that the concentration of people who have been to prison has diminished at lower geographic scales (e.g. neighborhoods). Rather, formerly low incarceration states have begun to catch up with historically high incarceration states in the concentration of formerly incarcerated African Americans.

Unlike the rate for people with prison records, the decennial Moran’s I for total rates of people with felony records are low in magnitude and never significant, as shown in the bottom panel of Figure 6. The Moran’s I trend for African Americans with felony convictions shows a peak in 1990 with a drop in magnitude and significance as of 2000. LISA analysis (not shown) reveals a significant cluster of low rates among African Americans in the southeast in 1980 and 1990 and a significant cluster of high rates in the west in 1990. As with prison experience, high rates of African Americans with felony records are widespread across the nation by 2010, which is reflected in a non-significant Moran’s I coefficient. This lack of significant spatial clustering in later decades may reflect states’ diverse paths in expanding the use of probation over this time period that

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9 We caution against a direct comparison between our paper and Muller and Wildeman’s (2016) due to differences in methods and the outcome of interest. Muller and Wildeman (2016) use point in time projection and our analysis uses release cohorts over a much longer time period. As Muller and Wildeman note on p. 1505 of their article these methodological differences hinder drawing direct comparisons between the two types of analyses. In addition, Muller and Wildeman estimate risk of incarceration only while we estimate felony convictions with or without a sentence of incarceration.
did not necessarily follow the same patterns as the growth in incarceration and are difficult to predict (Phelps 2017). This also highlights an important difference between our analysis, which includes all felony convictions, and Muller and Wildeman (2016), which focuses exclusively on incarceration. Some states, like Minnesota, have remarkably low incarceration rates but much higher felony probation rates. Our analysis suggests that the same patterns of concentration by region and race that are apparent for risk of imprisonment likely do not hold for the risk of felony conviction more broadly. The difference in these patterns underscores the need to better understand the prevalence and patterns in felony supervision beyond incarceration.

DISCUSSION

These estimates are the first attempt to provide state-level demographic information about people with felony convictions in the United States, a population defined by incomplete citizenship and the temporary or permanent suspension of many rights and privileges. Because we currently have so little state-level information on this group, we have emphasized this new descriptive evidence. A logical next step in this line of research will be to develop explanatory models to predict changes in the rate of people with felony records and the differing paths taken by the states during the mass incarceration era. Our estimates are also well-suited to estimating the cumulative risk of having a felony conviction. Although criminal justice data series have improved over the 1980-2010 period, some significant gaps remain. The success of subsequent work will depend critically on developing greater consistency and completeness in state reports, particularly regarding race and ethnicity. For example, we currently lack the data needed to develop sound estimates of the rate of felony convictions among Latinos.
Despite these caveats, our life table estimates and spatial analyses show that the development of the population with felony convictions since 1980 has been one of widespread, racialized growth. While our analysis cannot provide a critical test of competing punishment theories, these results are in many ways consistent with theories based on neo-conservatism, conflict, and group threat (Garland 2001b; Behrens, Uggen, and Manza 2003; Wacqaunt 2012). As our estimates demonstrate, African American populations in many states are now heavily burdened by the social consequences of felony conviction. Nationwide, 3 percent of all adults and 10 percent of African American adults are currently or were once in prison but rates range from 1 percent in Maine to 12 percent in California. Moreover, 15 percent of adult African American men have been to prison. These estimates square with other national studies on imprisonment, though they are somewhat lower than those for cohorts coming of age during the incarceration boom. For example, Pettit (2012) estimates that 28 percent of African American men in recent cohorts will have entered prison by age 30-34.

These disparities continue when we turn to the broader felony criterion. Nationwide, about 8 percent of all adults have had a felony conviction, but about 23 percent of African American adults share the same distinction. A staggering 33 percent of African American adult males have a felony conviction. Depending on the state, between 1 in 10 and 1 in 3 African American adults are confronting the daily reality of limited citizenship rights, diminished job prospects, and stigmatization. Communities and families in which people with prison experience and felony records live are also taxed by the material and social consequences of criminal punishment (National Research Council 2014; Wakefield and Uggen 2010). In Ferguson, Missouri, for example, the U.S. Department of Justice (2015) concluded that police and court officials
systematically discriminated against black residents and imposed excessive fines and forfeitures that deepened distrust of the criminal justice system. Ferguson is no aberration, as we identify five states in which the percent of adult African Americans with felony convictions exceed 20 percent.

Given this pervasive, racialized growth, many phenomena of interest to social scientists are surely affected. Our estimates are critical in this regard since until now estimates of the presence and variability in this population over time and across space were not available. Regardless of whether one has been incarcerated, a felony conviction clearly affects life chances. While we have focused on state differences it is important to bear in mind the high rate and growth of the aggregate U.S. population with felony convictions. Even social institutions and processes that would appear far removed from the criminal justice system may be impacted, including health care, politics, and the labor market (Johnson and Raphael 2009; Uggen and Manza 2002; Western and Beckett 1999).

These impacts undoubtedly vary by state depending on the relative presence of this population. For example, using similar estimates in states where people with felony convictions are barred from voting, Uggen and Manza (2002) demonstrate that disenfranchisement rates can impact elections by diminishing the electoral power of minority groups, the results of which affect a state’s – and the nation’s – population as a whole. Likewise, U.S. states with higher rates of people with prison records experience lower access to and quality of healthcare, even for those who have never been incarcerated (Schnittker, Uggen, Shannon, and McElrath 2015). It is likely that similar spillover effects impact a great range of social institutions, making these estimates an important tool for social scientists and policy makers alike.
Although these model-based estimates remain less definitive than would census-based counts, they represent an important step toward providing reliable data for social scientists and policy makers on people with past prison and felony supervision experience. This work thus complements other research with regard to imprisonment (Pettit 2012), arrest (Brame et al. 2014), family concentration (Turney 2014; Wildeman 2009), and neighborhood clustering (Kirk 2008). With significant changes in sentencing laws underway (Clear and Frost 2014), including shifts from incarceration to community corrections, the size as well as the geographic and demographic distribution of this population is all the more important to measure and understand.

The United States’ decades-long “grand experiment” with mass incarceration may be at a crossroads (Clear and Frost 2014), but at current rates of decline, some estimate it would take 80 years to return to 1980 levels nationwide (Mauer 2013). Any such declines will unfold differentially across states, just as the rise in criminal punishment was driven by state-specific law and policy preferences. Although current incarceration rates have declined slightly, the number of people formerly incarcerated will likely continue to rise for decades as people are released. If, as some predict (Clear and Frost 2014), states significantly reduce prison populations through early release procedures, the rise in people formerly incarcerated will likely be accelerated, at least in the short term. If legal changes result in fewer people sentenced to prison, this population will gradually decline over the long term. Moreover, although incarceration levels are stabilizing or decreasing, the broader population of those with felony records will likely continue to grow as states turn to community supervision as an alternative to incarceration. We thus expect the variation in the spatial and racial distributions of this
population to remain a crucial demographic phenomenon for social scientists and policymakers to understand.
<table>
<thead>
<tr>
<th>Prison Recidivism Rates</th>
<th>Probation Failure Rates</th>
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<tr>
<td><strong>High</strong></td>
<td><strong>Median</strong></td>
</tr>
<tr>
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<td>AL</td>
</tr>
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<td>CO</td>
</tr>
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<td>HI</td>
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<tr>
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<td>NJ</td>
</tr>
<tr>
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<td>NY</td>
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<td>OR</td>
</tr>
<tr>
<td>VT</td>
<td>SC</td>
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Appendix Figure 1 - Correctional Populations in the United States, 1980-2011

- Probation (58%)
- Jail (11%)
- Prison (21%)
- Parole (11%)
REFERENCES
The Criterion and Follow-up Issues.” *Journal of Criminal Justice* 8:53-60.


Mauer, M. 2013. “Can We Wait 88 Years to End Mass Incarceration?” *Huffington*


Government Printing Office.


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**Table 1 – Estimated U.S. Population with Prison Records by Year and Race**

<table>
<thead>
<tr>
<th></th>
<th>Current Prison or</th>
<th>Ex-Prison or Parole</th>
<th>Total Prison or Parole</th>
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52
<table>
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<th>Year</th>
<th>Total</th>
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<th>Total</th>
<th>Black</th>
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<td></td>
<td>1990</td>
<td></td>
<td>2000</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>551,857</td>
<td>225,375</td>
<td>996,290</td>
<td>299,435</td>
<td>1,548,147</td>
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<td>.34</td>
<td>.65</td>
<td>.34</td>
<td>.65</td>
<td>.34</td>
<td>.65</td>
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<tr>
<td>% adult male pop.</td>
<td>1.31</td>
<td>2.51</td>
<td>1.31</td>
<td>2.51</td>
<td>1.31</td>
<td>2.51</td>
</tr>
<tr>
<td></td>
<td>1,305,326</td>
<td>640,120</td>
<td>1,671,217</td>
<td>581,337</td>
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<td>.70</td>
<td>1.37</td>
<td>.70</td>
<td>1.37</td>
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<td>% adult male pop.</td>
<td>3.05</td>
<td>5.95</td>
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<td>5.95</td>
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<td>5.95</td>
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<tr>
<td></td>
<td>2,107,419</td>
<td>928,645</td>
<td>3,088,214</td>
<td>1,303,328</td>
<td>5,195,633</td>
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<tr>
<td>% adult pop.</td>
<td>1.02</td>
<td>1.95</td>
<td>1.02</td>
<td>1.95</td>
<td>1.02</td>
<td>1.95</td>
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<tr>
<td>% adult male pop.</td>
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<td>7.14</td>
<td>3.77</td>
<td>7.14</td>
<td>3.77</td>
<td>7.14</td>
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<tr>
<td></td>
<td>2,392,589</td>
<td>915,864</td>
<td>4,912,321</td>
<td>1,956,864</td>
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<tr>
<td>% adult pop.</td>
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<td>1.86</td>
<td>1.02</td>
<td>1.86</td>
<td>1.02</td>
<td>1.86</td>
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<tr>
<td>% adult male pop.</td>
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<td>4.88</td>
<td>3.12</td>
<td>4.88</td>
<td>3.12</td>
<td>4.88</td>
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<tr>
<td>Year</td>
<td>Current Felons</td>
<td>Ex-Felons</td>
<td>Total Felons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
<td>-----------</td>
<td>--------------</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>Black</td>
<td>Total</td>
<td>Black</td>
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<tr>
<td>1980</td>
<td>1,058,073</td>
<td>368,042</td>
<td>3,918,100</td>
<td>942,682</td>
<td>4,976,173</td>
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<td>% adult pop.</td>
<td>.64</td>
<td>2.13</td>
<td>2.38</td>
<td>5.46</td>
<td>3.03</td>
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<tr>
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<td>% adult male pop.</td>
<td>1.17</td>
<td>3.93</td>
<td>4.07</td>
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<tr>
<td>1990</td>
<td>2,335,791</td>
<td>988,524</td>
<td>6,033,157</td>
<td>1,871,726</td>
<td>8,368,948</td>
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<td>% adult pop.</td>
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<td>4.71</td>
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<td>15.58</td>
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<td>2000</td>
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<td>11.81</td>
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<td>24.90</td>
<td>10.86</td>
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<td>2010</td>
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<td>1,552,493</td>
<td>14,474,204</td>
<td>5,329,716</td>
<td>19,022,636</td>
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<td></td>
<td>% adult pop.</td>
<td>1.94</td>
<td>5.28</td>
<td>6.17</td>
<td>18.14</td>
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<td>% adult male pop.</td>
<td>3.26</td>
<td>7.86</td>
<td>9.55</td>
<td>25.15</td>
<td>12.81</td>
</tr>
</tbody>
</table>
Figure 1 – U.S. Current Correctional Populations as Percent of Adult Population by State and Race, 2010

Total

African American

Current Prisoners

Current Felons

Percent of the Adult Population

<.50

.50-.99

1.00-2.49

2.50-4.99

8.00+

5.00-7.99

Percent of the Adult Population
Figure 2 – Growth of U.S. Population with Prison and Felony Records, 1948-2010
Figure 3 – Percent of U.S. Adult Population with Prison and Felony Records by Race, 1948-2010

Note: VAP signifies the voting age population (18 and older).
Figure 4 – Percent of U.S. Adult Population with Prison Records by State and Race, 1980 & 2010

Total

African American

1980

2010

Percent of the Adult Population

<0.50 0.50-1.99 2.00-3.99 4.00-6.99 10.00+ 7.00-9.99

Total African American
Figure 5 – Percent of U.S. Adult Population with Felony Records by State and Race, 1980-2010

- Total
- African American
Figure 6 – Moran’s I for Rates of Prison and Felony Records by Race

Ex-Prisoners  African American Ex-Prisoners

Ex-Felons  African American Ex-Felons