Justice-involved Individuals in the Labor Market since the Great Recession

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Abstract

We examine how individuals convicted of a felony or released from prison fared in the labor market during and after the Great Recession. Using data from 13 states in the Criminal Justice Administrative Records System (CJARS) linked at the person-level with Census Bureau records on race and ethnicity and IRS W-2 individual information returns, we measure the employment and earnings of cohorts with focal criminal justice events before, during, and after the recession. These justice-involved cohorts experienced significant declines in employment and earnings during and immediately after the recession. Outcomes improved significantly during the long recovery, but average outcomes for these groups are still far below the outcomes for a reference group that has not graduated from high school. We study how those outcomes correlate with industry-specific local economic performance. All-sector growth is not strongly associated with the growth in outcomes for the justice-involved, but expansions in the construction and other services sectors are.

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[‡]Any views expressed are those of the author(s) and not necessarily those of the U.S. Census Bureau. Results were approved for release by the Census Bureau's Disclosure Review Board, authorization number CBDRB-FY21-ERD002-008 (approved 11/25/2020).

1 Introduction

The Great Recession caused an historic slowdown in the U.S. labor market. It has since been followed by an historically long economic expansion. And while the unemployment rate has mostly recovered from its peak, the employment-to-population ratio has improved much less (Card and Mas 2016). This suggests that a significant proportion of the working-age population has withdrawn from the labor force. In this paper, we examine the labor market outcomes of a particularly marginalized population—individuals who have been convicted of a felony or have served time in prison. Employment is a critical element of reintegration and criminal desistance for these groups (Uggen 2000; Uggen and Wakefield 2008). The potential for recidivism magnifies the social costs of nonemployment and labor market withdrawal.

Using newly assembled criminal justice administrative data linked at the person-level with IRS W-2 information returns, we construct a set of cohorts with justice involvement around the time of the Great Recession and follow their annual employment and earnings through the recovery. While these groups did experience some improvement in outcomes through the recovery, their average outcomes remain far below even those of a reference cohort of individuals who have not graduated from high school. We further examine the local labor markets in which these justice-involved cohorts participate, and find that these groups have greater improvement in employment and earnings when the construction and other services sectors are growing in their local commuting zones.

2 Data

To link the justice-involved population with socioeconomic data and outcomes, we use data from the Criminal Justice Administrative Records System (CJARS) project (Finlay and Mueller-Smith 2020). CJARS is a nationally integrated repository of data following individuals through the criminal justice system. CJARS currently has statewide coverage of at least the state court system or the state department of corrections in thirteen states that represent more than 40 percent of the U.S.

population: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Using the Protected Identification Key (PIK) available in the Federal Statistical Research Data Center network, we integrate CJARS at the person level with two non-crime datasets: (1) the Census Numident file to identify place of birth and demographic characteristics, and (2) IRS W-2 information returns to measure employment and earnings over time.

Our analysis focuses on annual employment rates and average earnings by cohort from 2006 to 2018, measured from the income data on the IRS W-2 forms. Annual measurement reflect the annual filing of W-2 forms. Employment in a year is defined as having at least one W-2 return in that year and earnings are defined correspondingly as the sum of the income on all W-2 filings for a person in a year. One advantage of using W-2 returns over 1040 returns is that the returns are not a function of tax filing behavior, which is particularly relevant for our population of interest. Labor market measures derived from W-2 forms exclude, however, any income generated that does not involve a formal employer (i.e., informal work, contracting, and self-employment).

Throughout the paper, we examine two focal criminal justice caseload populations: individuals who were convicted of a felony, and individuals who were released from prison. These non-mutually exclusive populations were chosen both because they represent serious contact with the criminal justice system and also because they have the highest degree of data coverage in the CJARS project. There are several implications of these cohort definitions. First, the felony conviction cohorts will contain a greater mix of low- and high-severity cases compared to the prison cohorts, and many (but not all) will be incarcerated in prison immediately following their conviction. Second, the prison exit cohorts will be older on average than the felony conviction cohorts, and will be by definition unconstrained by incapacitation initially (at least until parole is revoked or a new offense is committed).

3 Characteristics of the justice-involved before, during, and after the Great Recession

Research indicates that economic opportunity has a causal impact on criminal activity (e.g., Raphael and Winter-Ebmer (2001), Uggen and Wakefield (2008), and Yang (2017)). Such behavioral responses to the Great Recession may introduce bias into our cohort-specific analysis presented in the next section. As such, we first document the demographic and criminal justice characteristics of the justice-involved population before, during, and after the Great Recession to gauge the extent of this potential bias.

We use the NBER Business Cycle Dating Committee (2020) dates of December 2007 through June 2009 for the Great Recession period. Similarly long 19-month periods are used for before and after the Great Recession (May 2006–November 2007 and July 2009–January 2011). Tables 1 and 2 show descriptive statistics for cohorts with focal criminal justice events in these three periods. Individuals may have multiple criminal justice events, so these cohorts are not mutually exclusive.

The number of individuals in each cohort and the offense composition across cohorts is relatively stable. There was modest growth in the number of felony convictions over time, while prison releases shrunk modestly, a pattern that is in line U.S. prison populations that have been declining since 2008 (Kaeble and Glaze 2016). The share of violent, property, and DUI convictions increased across the cohorts, while drug offense convictions decreased.

It is common to have preexisting and subsequent involvement in the criminal justice system across cohort periods. There is roughly a one quarter sample overlap across the consecutive felony conviction cohorts, while the corresponding estimate for those released from prison is around six to seven percent. Fewer individuals convicted during the Great Recession entered prison, which may reflect more lenient sentencing during this period of economic uncertainty.

Each successive cohort of those convicted of felonies or released from prison is, on average, born one year later reflecting the widely acknowledged relationship between age and criminal activity. Individuals exiting prison are roughly two years older compared to the conviction cohorts,

which reflects the fact that they have both completed their sentence and have progressed further in their criminal careers. Overall though the average age at event per cohort is in the mid to late twenties.

Following broader demographic trends, non-Hispanic Whites are a decreasing share of the conviction and prison release cohorts over time. The largest increases are observed for those with other or missing race/ethnicity. Hispanics are an increasing share of the conviction cohorts as well, but to a lesser extent.

Overall, the conviction and prison cohorts appear relatively stable, with relatively less selection occurring among released prisoners where endogenous crime responses to changing economic opportunity are one step removed due to the duration of one's prison term. There are clear age differences across cohorts, however, which should suggest level differences when looking at employment outcomes across cohorts in a given calendar year.

[Table 1 about here.]

[Table 2 about here.]

4 Long-term labor market outcomes of individuals involved with the criminal justice system around the time of the Great Recession

By linking together CJARS data with individual earnings measures from IRS W-2 filings, we can track employment and earnings after focal criminal justice events. Figures 1 and 2 plot the annual employment and earnings for a set of cohorts split by the year of felony conviction or prison release. Figure 1 shows the trends for the felony conviction cohort; Figure 2 shows the trends for those released from prison. For each cohort, we start the plot in the year of the focal event. Income has been inflated to 2019 dollars using the CPI-All Urban series.

For context, we estimate outcomes for a comparable cohort of American Community Survey respondents. We select all individuals from the 2006–2018 ACS PUMS who were between 22 and 31 years of age in 2008 and lived in the 13 CJARS states. For the subsample with completed

schooling less than high school graduation, we estimate the probability of employment and the average wage income for each year.[1] The ACS employment question measures whether the respondent is currently employed in any arrangement at the time of the survey, whereas our measure of employment covers any W-2-reporting employment within a calendar year. These series are plotted in solid black lines on the appropriate panels in Figures 1 and 2.

The most prominent feature of Figures 1 and 2 is that, except for the pre-recession employment of the very earliest cohorts, the labor market outcomes of the justice-involved cohorts are far below those of the ACS reference cohort of individuals who *have not graduated from high school*. The gap is approximately 10 percentage points in employment probability and $5,000 in annual income.

Upon initial release from prison, there is a temporary bump in employment and earnings. This is likely related to conditional release requirements imposed on individuals in most parole programs, for which the consequences of noncompliance are significant. The uptick is smaller or non-existent for later cohorts, likely a consequence of the recession eliminating employment opportunities for this population. Since the cohorts eventually converge on similar long-term outcomes, however, it does not appear that these transitional jobs are influential in determining later outcomes for released cohorts. This would be consistent with growing evidence of the long-term inefficacy of many post-release work programs (Redcross et al. 2011; Cook et al. 2015).

Employment levels are higher for prison exit cohorts than for felony conviction cohorts, but income is lower. This divergence is likely a consequence of the most negatively selected portion of the felony conviction cohorts being incarcerated after conviction, and thereby incapacitated from participating in the labor market. The prison exit cohorts are, on average, negatively selected relative to the felony conviction cohorts, so that their wages are lower conditional on employment, which is not constrained by institutionalization.

The justice-involved have low levels of educational attainment and work experience, as well as health and mental health problems including drug use, which make them difficult to employ (Petersilia 2003; Visher, Debus, and Yahner 2008). In our W-2 data for both felony conviction

[1] These data come from the Integrated Public Use Microdata Series (Ruggles et al. 2020). We use person weights to estimate the cohort-level labor market outcomes.

and prison release cohorts, there appears to be convergence across cohorts to an upper bound on the probability of employment a few years after the focal events. Whereas in the ACS reference cohort there are slow but steady improvements in employment and earnings, between 2015 and 2018 in the justice-involved cohorts, there is a flattening and then a decline in both outcomes. This apparent maxing out of employment and income warrants further study.

For both felony conviction and prison release cohorts, there is a steady difference between annual earnings based on the year of the focal event. These cohorts differ in age and these gaps are consistent with average differences in accumulated job experience. Individuals who are able to find employment seem to participate in human capital accumulation, although the rate of accumulation does appear to be slower than that for the ACS cohort.

[Figure 1 about here.]

[Figure 2 about here.]

5 How local economic recovery affects the employment and income of the justice-involved

To better understand when and how the justice-involved reintegrate successfully into the labor market, it is necessary to study them in the context of the jobs available in their local labor markets. In the years since the Great Recession, there has been substantial variation across regions in the strength of recovery in local labor markets (Piskorski and Seru 2018).

To measure how economic recovery by industry might affect reintegration, we use annualized data from the Quarterly Census of Employment and Wages (QCEW) to measure growth in the per capita employment rate and the per capita wage bill, for all sectors combined and for three major sectors separately. We focus on three sectors: construction (NAICS 23), manufacturing (NAICS 31-33), and other services (NAICS 81).[2] "Other services" are services not related to

[2]Some employment and wage statistics in the QCEW are suppressed to protect the confidential information of businesses. This does not affect our all-sector measures. But in some counties in the commuting zones we study, there

trade, transportation, utilities, information, financial activities, professional services, education, health, or hospitality. It includes, for example, automotive repair shops, barber shops, parking lot firms, laundry services, and religious organizations. We include the construction sector because it was particularly affected by the Great Recession (Aum, Lee, and Shin 2017). There is evidence that increases in manufacturing and construction jobs at the time of prison release is associated with lower recidivism (Schnepel 2016). And in other work, we have found that the construction sector and the other services sector play important roles in the labor market participation of the justice involved (Finlay, Mueller-Smith, and Street 2020).

We construct two justice-involved cohorts: those with felony convictions between 2006 and 2008 and those with prison exits in the same period. For each cohort, we measure the growth of their employment rates and average income from 2009/2010 to 2017/2018. To reduce noise, we pool outcomes from the years 2009 and 2010 and from the years 2017 and 2018. We calculate the employment and income growth rates for the CJARS and QCEW data by commuting zone.[3]

Figures 3, 4, 5, and 6 show the relationships between local economic performance and labor market performance of the justice-involved in the chosen commuting zones. Figures 3 and 4 examine the felony conviction cohort, while Figures 5 and 6 show the patterns for the prison release cohort. Figures 3 and 5 show the employment relationships; Figures 4 and 6 show the same for income. In each figure, Panel A shows the scatter plots for all sectors combined; Panel B for the construction sector; Panel C for the manufacturing sector; and Panel D for the other services sector. The size of the markers is proportional to the commuting zone population in 2018. In each scatter plot, the ordinary least squares best fit line is shown with the estimated slope and the R^2.

We first note that there is real variation in the recovery by commuting zone. At the level of all sectors combined, per capita employment growth ranges between 100 and 120 percent, and per capita wage bill growth ranges between 120 and 145 percent. The Great Recession had a

are suppressed cells for the sectors we examine: construction, manufacturing, and other services. For these sectors, we use only the balanced set of counties to construct commuting zone-level measures of economic recovery.

[3]We retain commuting zones completely contained within CJARS states, with populations greater than 526,283 in 2010 and greater than 533,705 in 2018, and with CJARS cell sizes larger than 200. The population thresholds are required by the Census Bureau for statistics not infused with differentially private noise.

particularly severe impact on the construction sector (Aum, Lee, and Shin 2017), and the variation in construction sector recovery across commuting zones shows the challenges the sector has had. Per capita construction employment growth ranges between 85 and 160 percent, and per capita construction wage bill growth ranges between 115 and 205 percent. With the manufacturing and other services sector, we see moderate growth in per capita employment and the per capita wage bill that places these sectors between all sector growth and the construction sector growth.

Turning to the relationship between overall local economic recovery and the growth in outcomes for our focal cohorts, we see that in none of the figures does variation in all-sector growth rates explain much variation in growth rates for the justice-involved cohorts ($\hat{\beta}$s range between 0.52 and 2.13, but all R^2s range from 0.01 to 0.09). This reflects the narrower distribution of growth rates for the overall recovery than for the sector-specific recovery measures.

There is more variation in growth rates for the construction sector than for any of the others, which reflects the housing market-related nature of the Great Recession (Aum, Lee, and Shin 2017). Variation in construction industry growth explains a significant amount of the variation in the growth of labor market outcomes for the justice-involved. Local construction sector growth is particularly associated with growth in employment and income for the prison-release cohort. The slope of the relationship for employment growth after prison release is close to one with an R^2 of 0.45. For income, the slope is 1.41 with an R^2 of 0.42.

For the felony conviction cohort, local growth in the other services sector is strongly associated with growth in employment and earnings. The slope for employment growth after felony conviction is 2.14 with an R^2 of 0.36. For income the slope is 3.35 with an R^2 of 0.39. This sector includes firms with low skill requirements (e.g., parking lot management and laundry services) or where training can occur on the job (e.g., automotive repair shops and barber shops). Future research should try to identify where the justice-involved are finding high-quality job matches in this sector, and which of these positions are more likely to lead to human capital development.

Although the presence of manufacturing jobs in local labor markets have been found to reduce recidivism (Schnepel 2016), we do not find evidence that manufacturing sector growth is

correlated with improvement in labor market outcomes for the justice-involved. Across cohorts and outcomes, $\hat{\beta}$s range from 0.10 to 1.00 with R^2s between 0.00 and 0.14. The only moderately strong association was found between manufacturing sector growth and income growth for individuals released from prison.

The takeaway from these figures is that overall labor market conditions are not the best predictors of reintegration after felony conviction or prison release. These individuals have a particular set of skills and face a particular set of challenges to employment that make finding work easier in particular industries (Yang 2017). And in areas where those industries are thriving, these justice-involved populations have better labor market outcomes.

[Figure 3 about here.]

[Figure 4 about here.]

[Figure 5 about here.]

[Figure 6 about here.]

6 Conclusion

Work is an important part of the reintegration process of those who have been convicted of felonies or released from prison. These individuals already face a host of challenges in seeking employment: gaps in job histories, poorly developed skills, health and mental health problems, and stigma from potential employers. The historic labor market disruptions of the Great Recession exacerbated every one of these challenges.

In this paper, we have linked newly integrated and harmonized criminal justice microdata with tax records on employment and earnings to document how the Great Recession affected labor market outcomes for individuals convicted of felonies or released from prison around the time of the recession. These cohorts did experience moderate growth in employment and earnings through the historically long recovery. Despite those improvements, average outcomes remain far below

those of a comparably low-skill reference group. We observe a plateauing of employment and earnings later in the study period, and understanding this slow down in improvements should be studied further.

We also document how sector-specific local labor market performance is a significant predictor of employment and earnings growth for the justice-involved. Our focal cohorts have more labor market improvement when the local construction sector and the other services sector are growing, while manufacturing growth was not strongly associated with improvement in labor market outcomes. Drilling down into the other services firms and occupations available to the justice-involved is an area of future research.

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Table 1: Characteristics of those with a felony conviction immediately before, during, and after the Great Recession, individuals born in 13 CJARS states

	Felony conviction		
Demographics	before GR 5/06–11/07	during GR 12/07–6/09	after GR 7/09–1/11
Average year of birth	1981	1982	1983
% male	82.2	82.1	82.4
% female	17.6	17.9	17.9
% White, non-Hispanic	40.0	37.6	36.0
% Black, non-Hispanic	38.6	38.4	36.5
% Asian/PI, non-Hispanic	0.5	0.5	0.4
% Hispanic	15.9	16.1	17.1
% AIAN	1.1	1.1	1.1
% Other/missing race/ethnicity	3.8	6.3	8.8
Criminal justice characteristics			
% violent offense conviction	21.1	21.8	23.1
% property offense conviction	34.3	35.0	36.0
% drug offense conviction	35.9	34.2	32.1
% DUI offense conviction	3.1	3.2	3.6
% public order offense conviction	20.0	20.0	20.5
% felony conviction before GR	100.0	24.5	18.9
% felony conviction during GR	25.1	100.0	24.9
% felony conviction after GR	19.7	25.3	100.0
% prison entry before GR	24.3	5.2	5.4
% prison entry during GR	10.8	21.8	4.8
% prison entry after GR	8.1	11.6	23.8
% prison release before GR	11.1	6.6	6.0
% prison release during GR	14.6	10.0	6.0
% prison release after GR	9.5	12.6	9.6
N	185,000	190,000	193,000

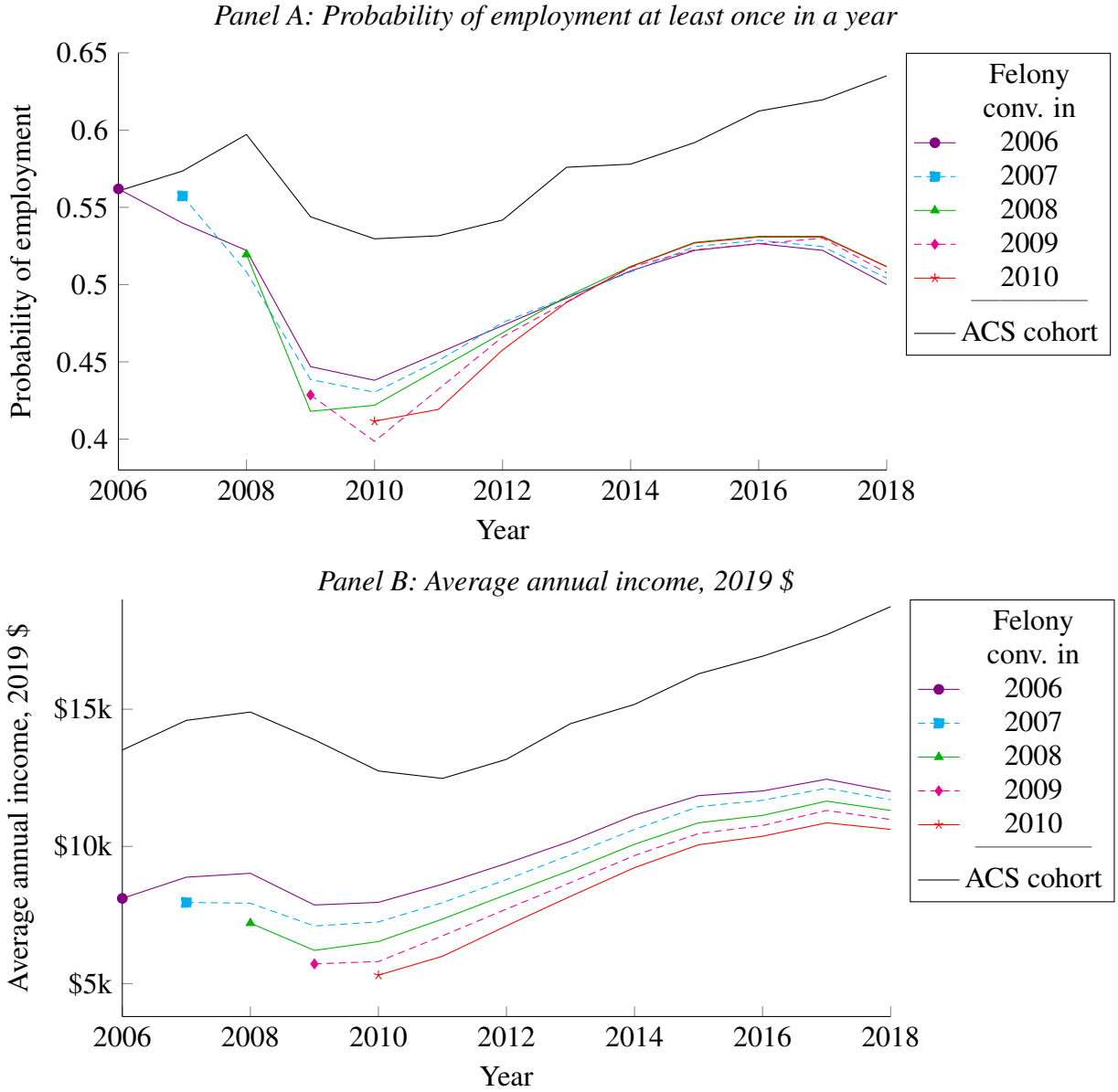
Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure sex and place of birth) and the Title 13 "bestrace" file (to measure race and ethnicity). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. The three cohorts are not mutually exclusive. All of the criminal justice characteristics are calculated from the CJARS data. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Table 2: Characteristics of those released from prison immediately before, during, and after the Great Recession, individuals born in 13 CJARS states

	Released from prison		
	before GR	during GR	after GR
Demographics	5/06–11/07	12/07–6/09	7/09–1/11
Average year of birth	1979	1980	1981
% male	87.3	86.4	87.3
% female	13.1	13.1	12.5
% White, non-Hispanic	36.4	35.5	34.3
% Black, non-Hispanic	42.7	42.7	42.2
% Asian/PI, non-Hispanic	0.5	0.5	0.5
% Hispanic	17.1	17.3	16.9
% AIAN	1.1	1.3	1.3
% Other/missing race/ethnicity	2.3	2.8	4.9
Criminal justice characteristics			
% felony conviction before GR	37.3	49.1	34.3
% felony conviction during GR	22.7	34.5	47.1
% felony conviction after GR	20.9	20.9	36.3
% prison entry before GR	38.2	40.0	17.6
% prison entry during GR	13.5	33.6	36.3
% prison entry after GR	11.6	12.5	36.3
% prison release before GR	100.0	7.5	9.6
% prison release during GR	7.5	100.0	5.9
% prison release after GR	8.9	5.5	100.0
N	55,000	55,000	51,000

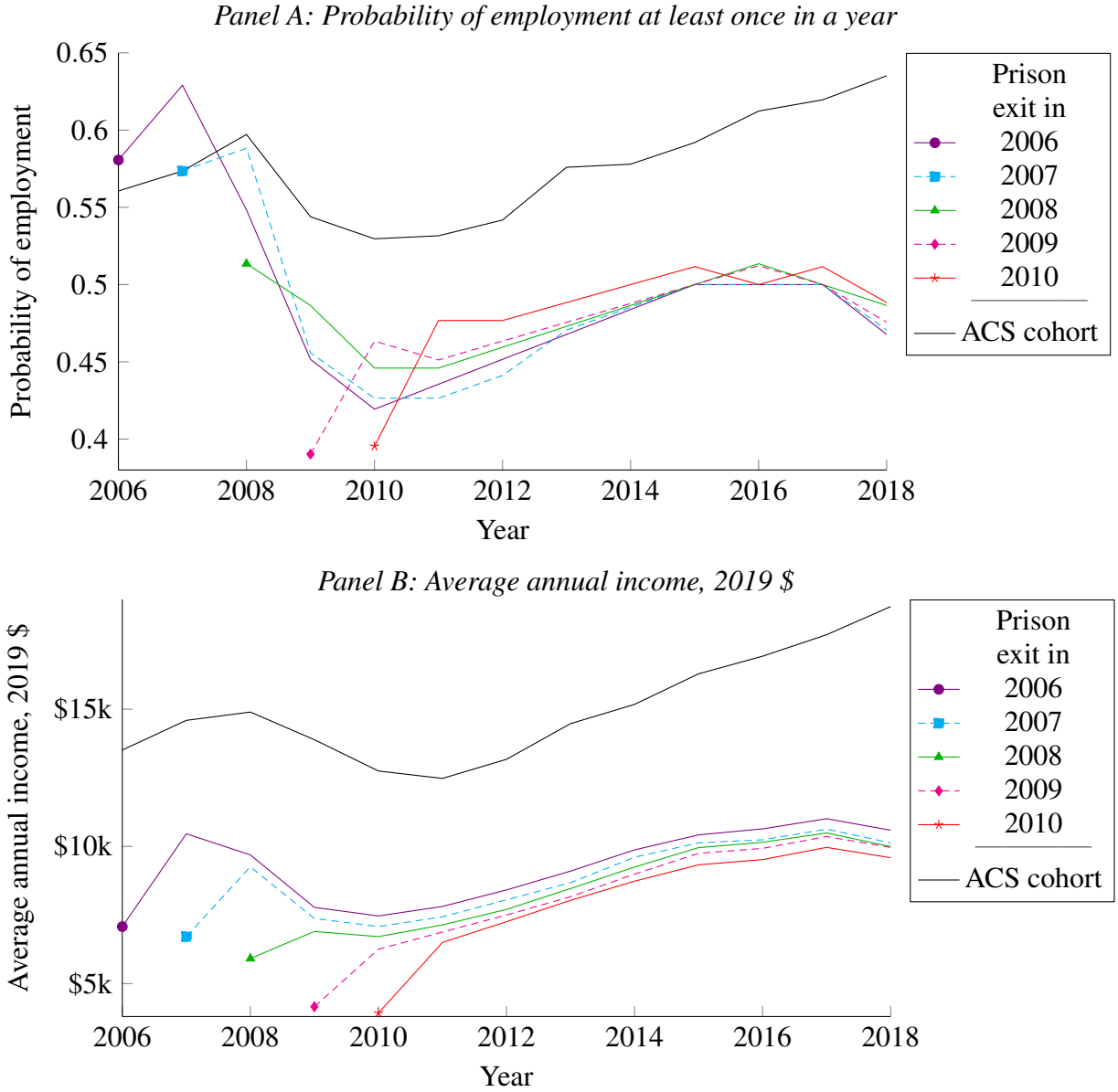
Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure sex and place of birth) and the Title 13 "bestrace" file (to measure race and ethnicity). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. The three cohorts are not mutually exclusive. All of the criminal justice characteristics are calculated from the CJARS data. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Figure 1: Probability of employment and average income, individuals born in 13 CJARS states, by year-of-felony-conviction cohort, by year



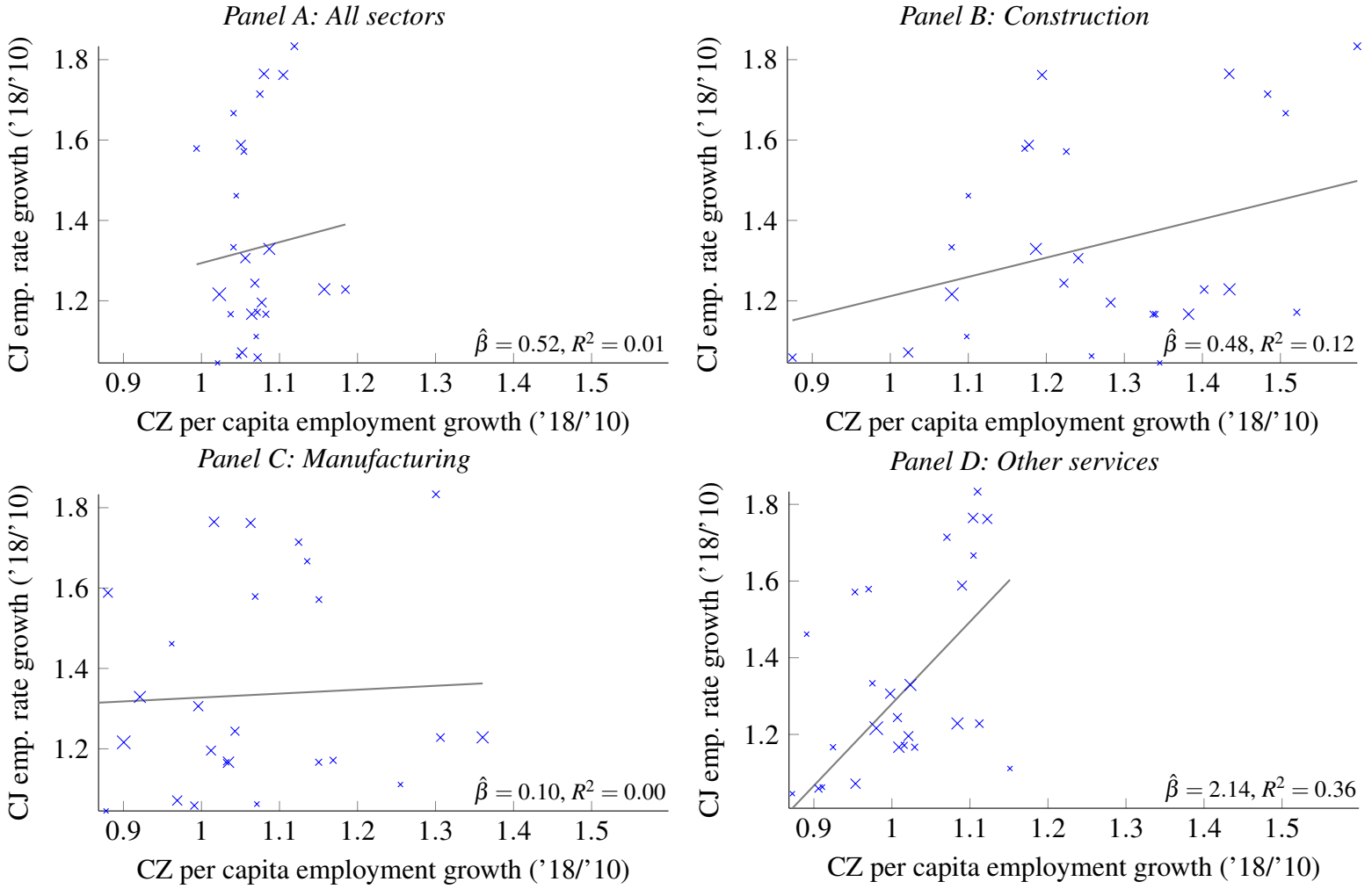
Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure place of birth) and to IRS W-2 information returns (to measure employment and income). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Employment in a year is defined as having at least one W-2 return in that year. Income in a year is defined as the sum of wages on all W-2 returns for that year. Income has been inflated to 2019 dollars using the CPI-All Urban series. Cohorts are defined based on whether an individual was convicted of at least one felony in a year, for years 2005–2009. These cohorts are not mutually exclusive. In Panel A, the employment rate is calculated for each cohort-year cell. In Panel B, average income is calculated for each cohort-year cell. Measures in each series start the year after the focal cohort year. The solid black line shows outcomes from a reference ACS cohort of respondents aged between 22 and 31 years of age in 2008. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Figure 2: Probability of employment and average income, individuals born in 13 CJARS states, by year-of-prison-release cohort, by year



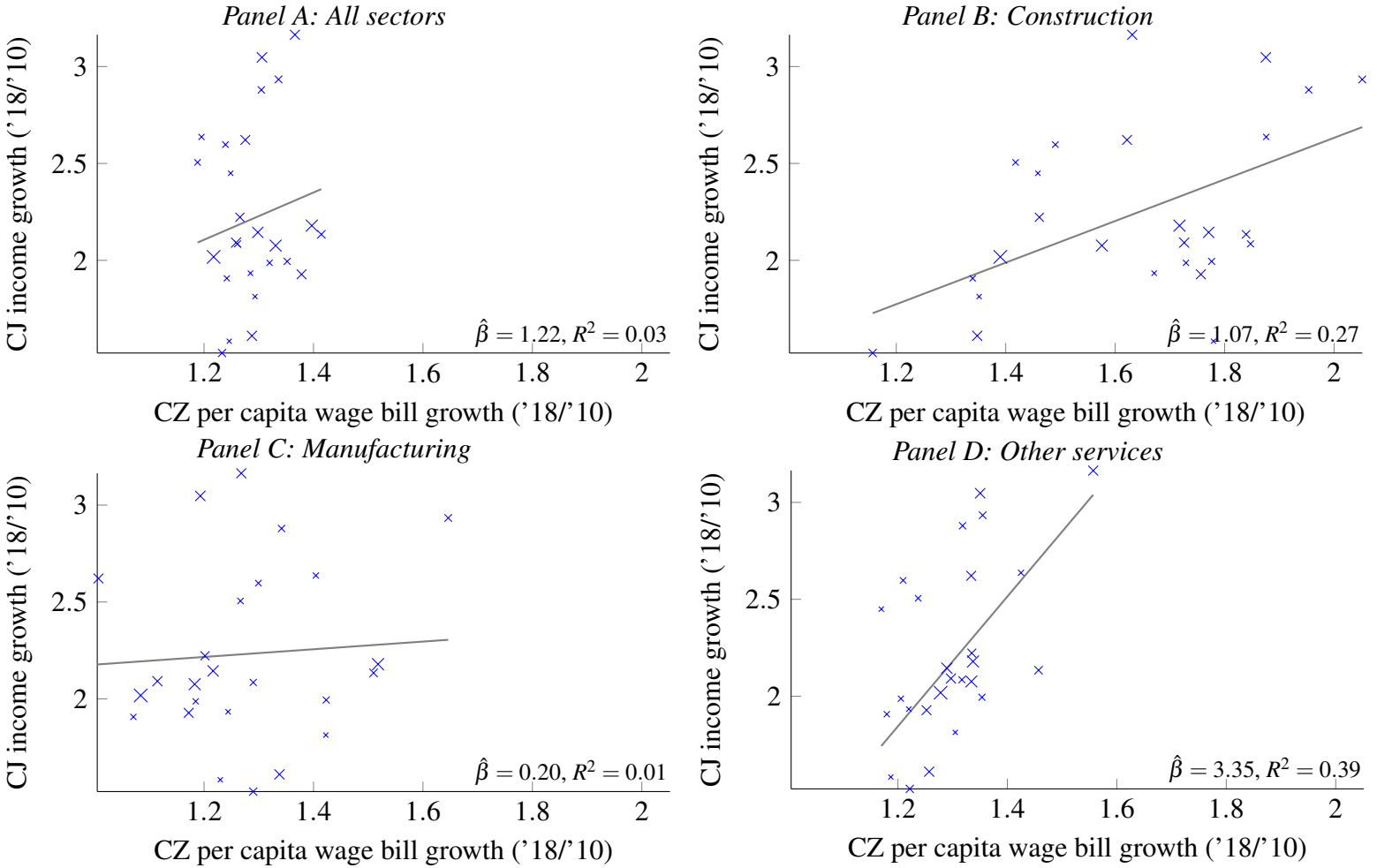
Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure place of birth) and to IRS W-2 information returns (to measure employment and income). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Employment in a year is defined as having at least one W-2 return in that year. Income in a year is defined as the sum of wages on all W-2 returns for that year. Income has been inflated to 2019 dollars using the CPI-All Urban series. Cohorts are defined based on whether an individual was released from prison at least once in a year, for years 2005–2009. These cohorts are not mutually exclusive. In Panel A, the employment rate is calculated for each cohort-year cell. In Panel B, average income is calculated for each cohort-year cell. Measures in each series start the year after the focal cohort year. The solid black line shows outcomes from a reference ACS cohort of respondents aged between 22 and 31 years of age in 2008. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Figure 3: Relationship between employment rate growth of those convicted of a felony from 2006–2008 and local per capita sectoral employment growth, selected commuting zones in 13 CJARS states, 2010–2018



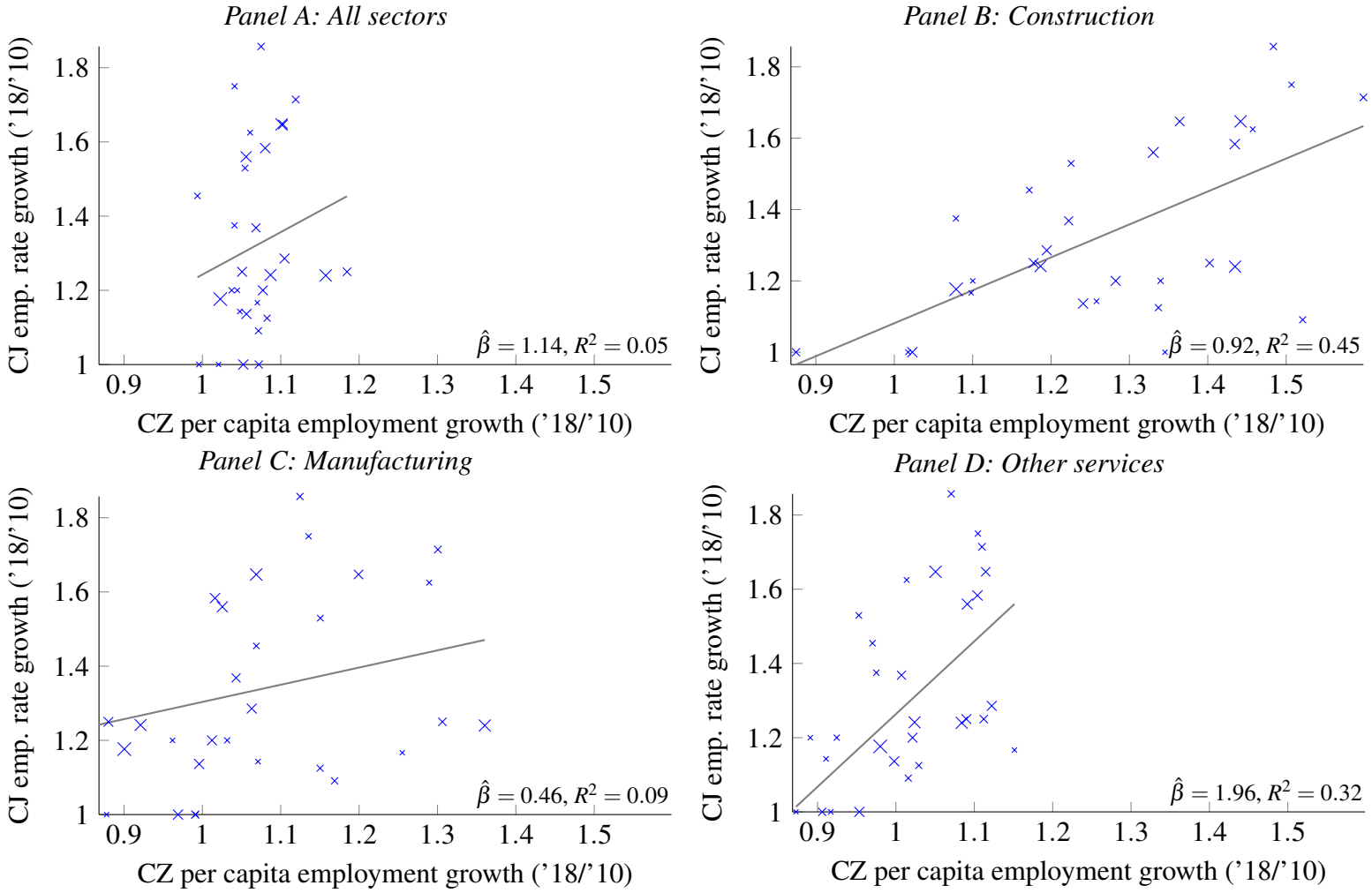
Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure place of birth) and to IRS W-2 information returns (to measure employment). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Employment in a year is defined as having at least one W-2 return in that year. For a cohort defined as having at least one felony conviction between 2006 and 2008, the growth rate of the employment rate is calculated for pooled employment status for 2017–2018 relative to pooled employment status for 2009–2010. Each point represents the growth rate for cohort members from a particular commuting zone. Only commuting zones completely contained within the CJARS states, with populations greater than 526,283 in 2010 and greater than 533,705 in 2018, and with CJARS cell sizes larger than 200 are included. Marker sizes are proportional to commuting zone population in 2018. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Figure 4: Relationship between income growth of those convicted of a felony from 2006–2008 and local per capita sectoral wage bill growth, selected commuting zones in 13 CJARS states, 2010–2018



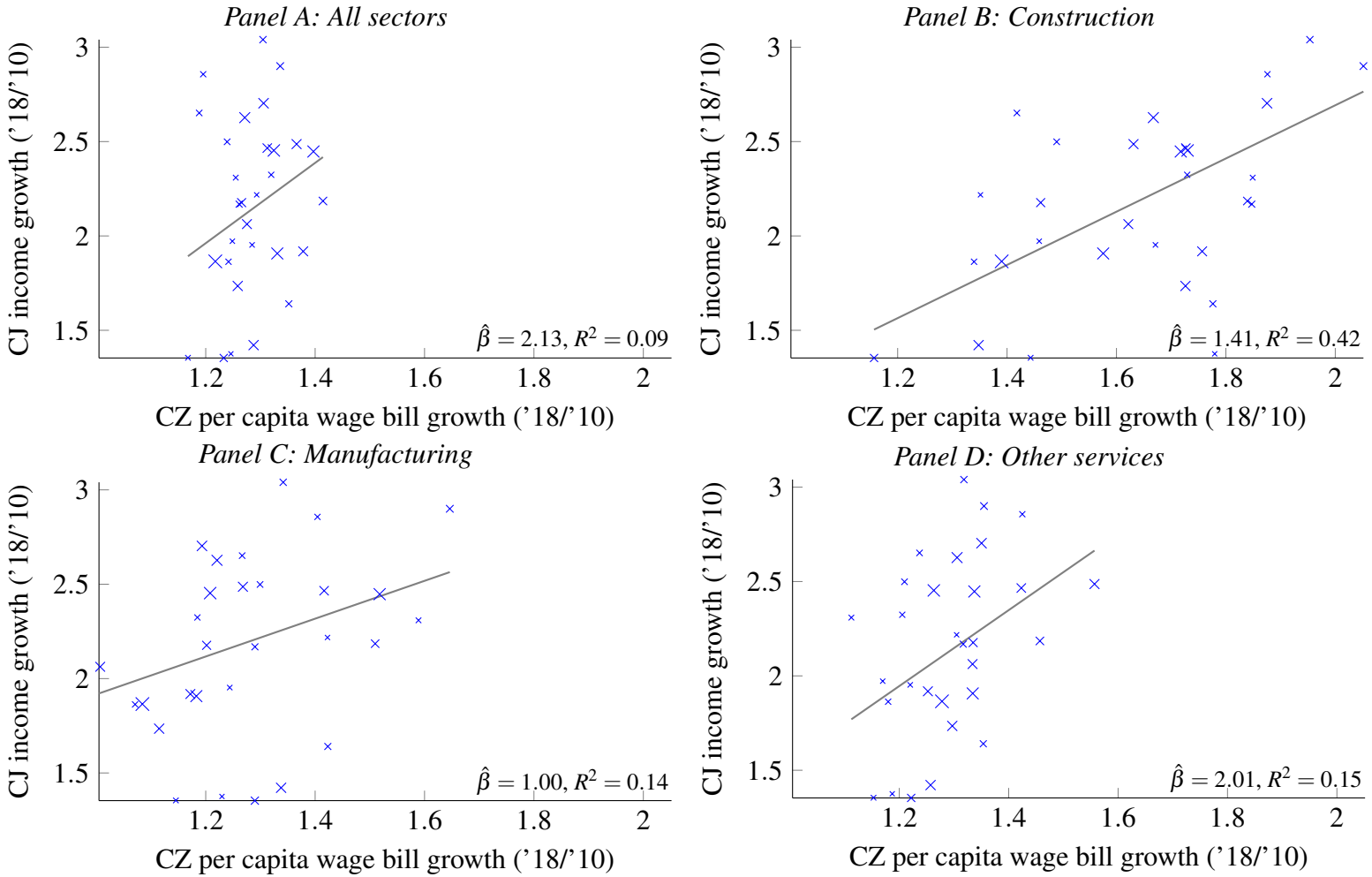
Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure place of birth) and to IRS W-2 information returns (to measure income). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Income in a year is defined as the sum of wages on all W-2 returns for that year. Income has been inflated to 2019 dollars using the CPI-All Urban series. For a cohort defined as having at least one felony conviction between 2006 and 2008, the growth rate of average income is calculated for pooled income for 2017–2018 relative to pooled income for 2009–2010. Each point represents the growth rate for cohort members from a particular commuting zone. Only commuting zones completely contained within the CJARS states, with populations greater than 526,283 in 2010 and greater than 533,705 in 2018, and with CJARS cell sizes larger than 200 are included. Marker sizes are proportional to commuting zone population in 2018. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Figure 5: Relationship between employment rate growth of those released from prison from 2006–2008 and local per capita sectoral employment growth, selected commuting zones in 13 CJARS states, 2010–2018



Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure place of birth) and to IRS W-2 information returns (to measure employment). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Employment in a year is defined as having at least one W-2 return in that year. For a cohort defined as having at least one felony conviction between 2006 and 2008, the growth rate of the employment rate is calculated for pooled employment status for 2017–2018 relative to pooled employment status for 2009–2010. Each point represents the growth rate for cohort members from a particular commuting zone. Only commuting zones completely contained within the CJARS states, with populations greater than 526,283 in 2010 and greater than 533,705 in 2018, and with CJARS cell sizes larger than 200 are included. Marker sizes are proportional to commuting zone population in 2018. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.

Figure 6: Relationship between income growth of those released from prison from 2006–2008 and local per capita sectoral wage bill growth, selected commuting zones in 13 CJARS states, 2010–2018



Notes: Authors' calculations from CJARS data linked via Census-assigned PIK to the Census Numident (to measure place of birth) and to IRS W-2 information returns (to measure income). The cohorts consist of all individuals born in the following CJARS states: Arizona, Florida, Michigan, Minnesota, Nebraska, New Jersey, North Carolina, North Dakota, Oregon, Pennsylvania, Texas, Washington, and Wisconsin. Income in a year is defined as the sum of wages on all W-2 returns for that year. Income has been inflated to 2019 dollars using the CPI-All Urban series. For a cohort defined as having at least one felony conviction between 2006 and 2008, the growth rate of average income is calculated for pooled income for 2017–2018 relative to pooled income for 2009–2010. Each point represents the growth rate for cohort members from a particular commuting zone. Only commuting zones completely contained within the CJARS states, with populations greater than 526,283 in 2010 and greater than 533,705 in 2018, and with CJARS cell sizes larger than 200 are included. Marker sizes are proportional to commuting zone population in 2018. All figures have been rounded according to Census Bureau DRB rules. All results were approved for release by the Census Bureau, authorization number CBDRB-FY21-ERD002-008.