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The changing socioeconomic composition of the Finnish prison population

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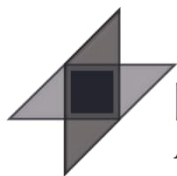
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Research Article

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The changing socioeconomic composition of the Finnish prison population

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Abstract

BACKGROUND

Although prison inmates are known to be disadvantaged in multiple ways, we know less about changes in the socioeconomic backgrounds of prisoners over time. We examine these changes in a period characterized by a decreasing prisoner rate, the introduction of community service, and strong macroeconomic fluctuations.

OBJECTIVE

We analyze changes in the socioeconomic backgrounds of individuals imprisoned between 1988–2019. We provide comparisons with community sanctions and the non-convicted general population, and examine the same developments in subgroups of the imprisoned.

METHOD

Using total population register data, we examine annual changes across different groups in the measures of employment, receipt of social assistance, income, and education.

RESULTS

Our results show that the employment rates of individuals sent to prison declined heavily during the economic depression of the 1990s and have sunk to much lower levels since. This development is partly explained by some short-term prisoners being diverted to community service. The results are largely similar to other measures of socioeconomic

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status and different subgroups; the declining educational level of recidivist offenders especially stands out.

CONCLUSIONS

The Finnish prison population has grown increasingly detached from the labor market and generally more disadvantaged over time.

CONTRIBUTION

We provide new evidence on changes in the socioeconomic composition of the Finnish prison population. These results are important for prison policy and rehabilitation efforts that seek to improve prisoners' employability.

1. Introduction

Several studies (Nilsson 2003; Skardhamar 2003) show that criminal offenders who are imprisoned are often socially disadvantaged and have disrupted labor market careers (Sugie 2018). Furthermore, they exhibit high rates of mental health (Fazel et al. 2016) and substance use problems (Fazel, Yoon, and Hayes. 2017) and lack educational qualifications (Eikeland 2009). While these findings are likely to apply to prison populations worldwide, the strength of these associations seems to vary. A recent study (Aaltonen et al. 2017) comparing employment trajectories of individuals imprisoned for the first time in four Nordic countries shows that Finnish first-timers have clearly worse labor market attachment, both before and after release, than their counterparts in Denmark, Norway, and Sweden. This is despite the fact that prison rates in the countries were rather similar (Institute for Crime and Justice Policy Research 2021) during the period, and the national unemployment rate was only slightly higher in Finland. This finding, combined with a much higher post-release mortality rate (Aaltonen et al. 2017), suggests that Finnish inmates are a particularly disadvantaged group.

Aaltonen et al. (2017) do not provide conclusive answers to why Finnish first-timers fare worse than their Nordic counterparts, but suggest that the causes of the discrepancy may lie in differential selection to incarceration and the labor market conditions that inmates face. One difficulty in understanding the Finnish divergence from other Nordic countries – or global patterns – is that we do not know much about changes in prisoners' socioeconomic backgrounds over time in Finland or elsewhere. Some studies (Joukamaa et al. 2010) and media reports (Yle 2007; Kähkönen 2016) have suggested that the

Finnish prison population has grown increasingly disadvantaged over time, but the issue has not been studied systematically.

While studies using individual-level data on the criminal careers of multiple birth cohorts have started to emerge (Sivertsson, Nilsson, and Bäckman 2020), a comprehensive picture of changes in the socioeconomic backgrounds of imprisoned individuals is lacking. Such knowledge on the prison population is essential for prison services and criminal policy. The possibility of labor market integration after release depends on prior work experience and education (Cook et al. 2015), which is why prison regimes and rehabilitation efforts should respond to changes in incoming prisoners' characteristics.

The aim of this study is to address this gap and provide new evidence of these changes during 1988–2019 using total population data from Finnish registers, which include both criminal convictions and socioeconomic measures on an annual basis. We start the article by describing the most important changes in Finnish criminal policy during our observation period. Our analysis focuses on changes in the pre-incarceration trends of employment, income, social assistance receipt, and education among all individuals imprisoned during a given year. All trends are compared with the development of the same measures in the general population and among subgroups of offenders given community sentences. We pay particular attention to the role of community service as an alternative to imprisonment, as its introduction in Finland in the 1990s effectively removed a subset of convicted offenders from the prison population. In our analysis we examine the characteristics of this subset by means of complier analysis (Marbach and Hangartner 2020).

2. Background

2.1 Prison rates, convictions, and the introduction of community service

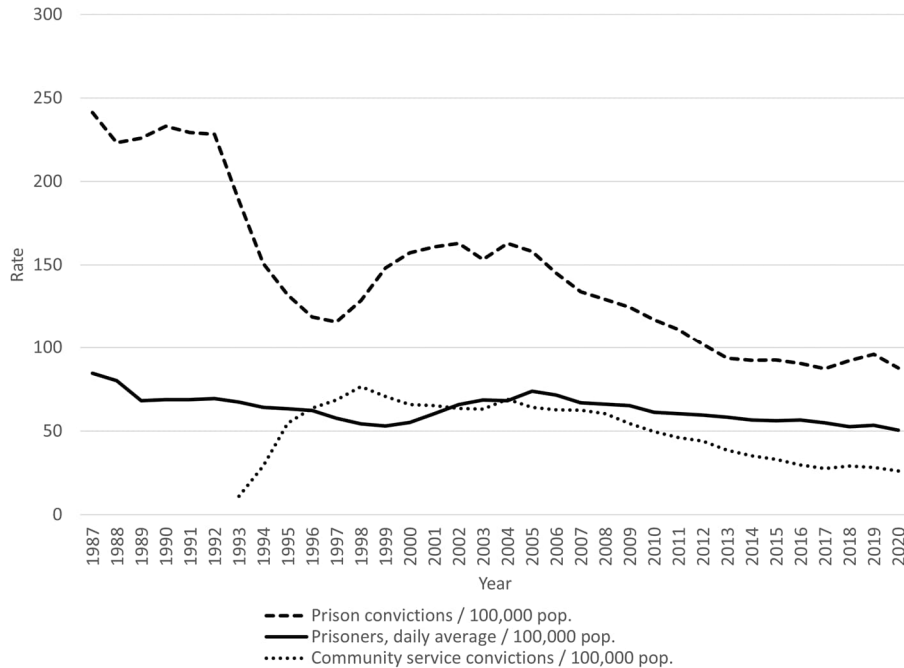
The national prison rate is not a straightforward measure of criminality in a society, since penal policy and the criminal justice system affect it in complex ways (von Hofer 2003; for an overview of changes in the prison rates of European countries see Dünkel 2017). Therefore, changes in crime rates or sentencing that should logically increase or decrease the prison rate may not do so (Dünkel 2017). At the same time, period effects resulting from policy changes may create long-term path dependencies which affect prison rates long after the policy has ended. Shen et al. (2020) show that cohorts that came of age during the 1990s' 'crime–punishment wave' in North Carolina still contribute to higher

prison rates because they receive harsher sentences due to their prior convictions (see also Neil and Sampson 2021). For this reason, examining the causes of changes in the composition of the prison population is complicated, and changes in penal policy, the criminal justice system, and criminal behavior need to be considered when trying to separate ‘system effects’ from behavioral change (McAra and McVie 2019). In the following, we detail some important policy changes in Finland that may have impacted selection to imprisonment.

Finland is an interesting case for studying changes in the composition of the prison population as it has seen substantial changes in criminal policy, particularly in the use of imprisonment as a sanction. As documented by Lappi-Seppälä (2000, 2012), in the 1950s the prison rate in Finland was high by European standards, but had declined to Scandinavian levels by the late 1980s. Lappi-Seppälä (2000: 37) argues that this decline did not happen organically, but was instead a result of “conscious, long-term and systematic” criminal policy. This period of liberal reform ended in the early 1990s, to be followed by 10–15 years of punitive sentencing reforms (Lappi-Seppälä 2013). More recent reforms have included both liberal and repressive (Lappi-Seppälä 2012) elements, as some reforms have explicitly sought to lower the prison rate, while others have increased the severity of sanctions.

Despite several sentencing reforms, the changes in the numbers of prisoners during our period of observation have been rather modest. After a decline during the 1990s, the average daily number of prisoners increased between 2000 and 2005 but has since declined again (Figure 1). Although prisoner numbers partly mirror the trends of new prison sentences, the magnitude of the changes in ‘stock’ and ‘flow’ does not provide an exact match. During the 1980s the number of persons sentenced to prison fluctuated between 10,000 and 12,000 but decreased within a few years to around 6,000 in 1995. After this the number of prison convictions increased again, only to decrease to around 5,000 new convictions during the last years of observation. In other words, there have been greater changes in the rate of new convictions than the more stable daily number of prisoners would suggest.

Figure 1: Population-adjusted rates of prison convictions and average daily number of prisoners 1987–2020, Finland



Source: Criminal Sanctions Agency (2021), Institute of Criminology and Legal Policy (2021)

Publicly available conviction statistics show that a substantial part of the decrease in prison convictions in the early 1990s (Figure 1) was driven by a decline in drunken driving and theft and was also partly explained by similarly decreasing numbers of police-reported crime (Statistics Finland 2021a). Another major reason for the rapid decline was the introduction of community service as a new alternative sanction. After a local trial period starting in 1991, community service was expanded to a nationwide trial in April 1994, which meant that individuals previously sentenced to a maximum of 8 months’ imprisonment could now serve their sentence in community service. Community service initially became a very popular alternative sanction, especially for aggravated drunken driving, and during the peak year of 1997 (when the trial period ended and community service became a permanent sentencing alternative), 46% of prison sentences shorter than

8 months were converted to community service (Leinonen, Linderborg, and Vepsäläinen 2020). This proportion has since declined to about one-third, and currently the average daily number of individuals in community service is slightly over 1,000 (Criminal Sanctions Agency 2021).

The impact of community service on the socioeconomic composition of the remaining prison population depends on the characteristics of the individuals who are diverted to this alternative sanction. Prior to sentencing, Prison and Probation Services assess the defendant's suitability for community service and prepare a pre-sentence report, which examines factors such as prior offending and substance use problems and also considers labor market attachment and educational background as additional criteria. Given these eligibility requirements, it is no surprise that the individuals in community service tend to be better-off than those sentenced to prison in Finland (Danielsson and Aaltonen 2017). Based on prior evidence (Sirén and Savolainen 2013; Skardhamar 2013; Andersen 2024), there is reason to assume that removing those eligible for community service from the prison population from the mid-1990s onwards altered its socioeconomic composition, but the magnitude of this change has remained unexplored.

The impact of Finnish implementation of other alternative sanctions is likely to be more limited. Suspended prison sentences were available as a sentencing option throughout our period of observation and are the most common non-monetary sanction. The 'monitoring sentence,' a form of front-door electronic monitoring, is a relatively new sanction in Finland that so far has been used fairly infrequently (Leinonen, Linderborg, and Vepsäläinen 2020). Juvenile punishment, a sanction specifically tailored for 15–17-year-old offenders, has remained a fringe sentencing option since its national adoption in 2005 (Statistics Finland 2021b). The more common sentencing choice for young offenders below the age of 21 is a suspended prison sentence combined with supervision.

2.2 Prior research on changes in prisoners' backgrounds

An increasing number of studies have sought to decompose the drop in crime observed in several Western countries over the past decades (Andersen et al. 2016; Sivertsson, Nilsson, and Bäckman 2020). Although most of these studies focus on either adolescent offending or general conviction measures rather than incarceration, they provide an interesting backdrop to the present study. Decomposing temporal trends by childhood income, a Swedish study (Bäckman et al. 2020) shows that crime rates at ages 15–24 decreased among men in all income groups during 1990–2017, but in relative terms the decrease was less among youth from poor families. Property crimes and violence

decreased in all income groups, whereas drug crimes became more prevalent. Discussing developments in youth justice contact, McAra and McVie (2019) suggest that the effects of a combination of crime displacement (from physical to virtual) and cultural dissonance (law enforcement still focuses on street-based crimes in deprived communities) have led to a situation where the convicted youth offenders appear more marginalized than before.

Individual-level research on trends in both prisoners' pre-incarceration background and post-release outcomes other than recidivism is scarce. Most published annual statistics in Finland are based on data collected by the Prison and Probation Services, and include measures such as recidivism, incarceration length, main offences, and number of prior prison terms. These statistics show, for instance, that the number of prisoners with foreign nationalities started increasing in the late 1990s and that the share of women has slowly increased but is still less than 10% (Criminal Sanctions Agency 2021).

The best available evidence on longer-term changes in prisoner backgrounds comes from prisoner health studies conducted in 1985, 1992, and 2006. The results indicate that between 1985 and 2006, employment rates prior to prison decreased from 34% to 21% among male inmates, and from 33% to 12% among female inmates. Mental disorders have also become more common, while in 2006 the share with drug dependence had increased to 58% among men and 60% among women (Joukamaa et al. 2010). A more recent study (Jüriloo, Pesonen, and Lauerma 2017) shows that during 2005–2016 the number of prisoners with psychotic disorders clearly increased.

Regarding overall contextual changes, the employment rates have fluctuated rather strongly during our observation period. Finland experienced a severe economic depression in the early 1990s, with unemployment rates increasing rapidly from 3.5% to 16.5% (Gorodnichenko, Mendoza, and Tesar 2012). In particular, the number of long-term unemployed rose dramatically (Kiander 2001). Yet, these aggregate changes in employment rates mask considerable heterogeneity among population segments. Kalenius (2014) shows that the recession affected employment most among those with only basic education. After the 1990s' depression the employment rates of young adults with no secondary education fell to much lower levels than those of the higher-educated (Kalenius 2014). Although the 2008 financial crisis hit the global economy hard, its impact on employment rates in Finland was relatively modest. However, like in the 1990s' depression, the numbers of long-term unemployed started increasing again, their number tripling between 2008 and 2016 (Statistics Finland 2021c). These macro-level developments most likely affected the convicted population as well (Nilsson, Bäckman, and Estrada 2013), but the magnitude of these changes remains unknown.

3. Current study

The main aim of this study is to discover whether the Finnish prison population is becoming increasingly disadvantaged over time and, if so, when the key changes took place. Using total population register-linkage data, we examine this question by comparing individuals sentenced to prison during different years, using several different measures of pre-incarceration social disadvantage. We provide comparisons with individuals given community sanctions (community service and suspended sentences) and the general population and examine the same developments among different subgroups of prisoners. Finally, we draw inspiration from the approach used by Fallesen (2020) to examine the characteristics of offenders who were sentenced to community service instead of prison after the new sanction was made available in the whole country. The specific research questions are:

- 1) How have the pre-incarceration socioeconomic backgrounds of individuals sent to prison between 1988–2019 changed and how do they compare to the general population and people given community sentences?
- 2) Among the individuals sentenced to prison, do these developments vary by conviction length, recidivism, age, or gender?
- 3) What are the characteristics of the offenders who were diverted to community service after the introduction of this new sentence?

4. Data and variables

The study is based on annually updated register-linkage data on all individuals residing in Finland between 1987 and 2019. The data consists of sociodemographic information from Statistics Finland (1987–2019) and all convictions in district courts in 1977–2019. More detailed descriptions of the data and inclusion criteria are outlined below, and descriptive statistics on annual numbers of individuals in different subgroups are presented in the Appendix (Tables A-1 and A-2).

4.1 Measures

The key sociodemographic variables used in the analyses are employment, income, social assistance receipt, and education, which are examined with annual measures. Information on employment is derived from the main type of activity (Statistics Finland's composite measure for economic activity based on multiple registers) during the previous year, from which a binary indicator was created, separating the employed from the rest. Income is measured as personal income subject to state taxation during the given year and adjusted for inflation. Social assistance receipt is defined as having received any social assistance, a last-resort form of financial assistance in Finland. Education is measured with a binary variable indicating that the person has no secondary education.

Data on conviction histories are based on information on all convictions in district courts during 1977–2019, from which we extract information on sentence type and sentence length. We include prison sentences, community service, and suspended prison sentences, but exclude fines. Sentence length determines what types of sanction are available. Sentences shorter than 8 months can be converted to community service (8-month prison sentence equals 240 hours of community service), whereas prison sentences less than 24 months can become suspended sentences, i.e., conditional sentences that can be converted to imprisonment in case of recidivism during the operational period. Despite this, community service is considered the more severe sanction of the two. A sentence longer than 24 months always leads to imprisonment. We thus divide prison conviction length into three categories: less than 8 months, 8–24 months, and over 24 months.

The prison sentence variable is a binary measure indicating at least one prison conviction during the observation year, and we created similar measures for community service and suspended sentences. We adopted a hierarchical approach, where those sentenced to both prison and community service or a suspended sentence were defined as prisoners, and those to community service and suspended sentences as community service. In addition, we constructed a variable combining the prison sentence variable with the community service variable. This variable identifies all individuals sentenced to either prison or community service. Repeat imprisonment is defined as having prison sentences in the 10 years prior to the current sentence. The 10-year criterion was adopted to ensure symmetrical measurement for all years, given that conviction histories can only be measured from 1977 onwards.

4.2 Analysis

Our primary analysis examines annual changes in the pre-sentencing (t_{-1}) socioeconomic characteristics of individuals convicted to prison. The year variable measures the year of conviction, and the analyses include all individuals aged 16–64 between 1988 and 2019. The shares of employed persons, social assistance recipients, persons without secondary education, and mean income are presented separately for individuals sentenced to prison, individuals sentenced to community service, the combined category of individuals sentenced to either community service or prison, and individuals sentenced to suspended sentences. All plots also include corresponding shares among the non-convicted. The analysis excludes all individuals not resident in Finland at the end of the preceding year and/or during the year of interest.

Although prison convictions are our main focus, throughout the analysis we pay particular attention to community service. First, if we want to compare labor market outcomes over time, we need to account for the fact that from 1991 an increasing proportion of individuals who would have been sentenced to prison under the old scheme were now sentenced to community service instead. By comparing the prison-sentenced with the combined group we can examine the role of community service reform in altering the prison population. This is especially important in evaluating the impact of the 1990s' recession, which led to historically high unemployment rates that co-occurred with the adoption and expansion of community service. Second, by comparing individuals sentenced to community service or prison, we also gain insight into how much these groups differ and whether their difference has grown over time. We also include a comparison group of individuals given suspended sentences. This group enables us to examine trends in our socioeconomic measures among a larger group of offenders that remained fairly stable in size over the period of observation.

As a sensitivity analysis, we additionally evaluate 5-year (at $t_0 - t_{-4}$) measures of employment, education, social assistance receipt, and income. This analysis provides a longer-term estimate of socioeconomic outcomes that should be less affected by annual fluctuations. We first identify individuals aged 15–64 at any point between 1987–2018. We take the first observation in the data as the baseline for each individual and follow everyone up to 2018 or migration or death. We exclude individuals with less than five observations in the data. For each individual and observation year we calculate a 5-year rolling sum of years unemployed, years on social assistance, education, and mean income. From these measures, means are calculated for each group of interest. Note that, due to the design, the results are limited to the years 1991–2018 and ages 19–64.

Next, we examine subgroups of prisoners in more detail. First, we break down the imprisoned group by sentence length. Given that the community service reform affected convictions shorter than 8 months, we would expect to see greater changes among shorter sentences, whereas this reform should not affect the composition of longer sentences. Second, we conduct separate analysis of the first-time imprisoned and compare them to recidivists. The estimates of social factors for first-timers should not be affected by being in prison directly affecting these outcomes. Third, we examine the socioeconomic backgrounds of prisoners by gender and age.

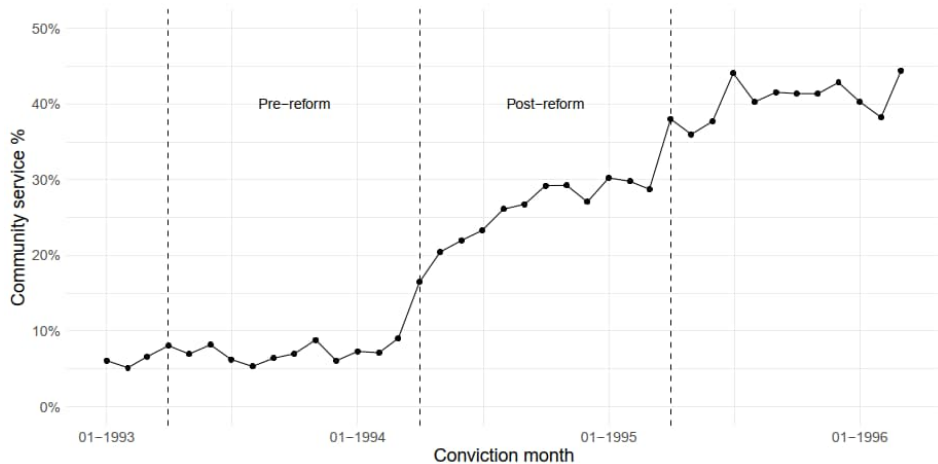
As the final part of the analysis, we take a closer look at the effect of the community service reform on the prison population. We use an approach developed in the context of instrumental variable estimation to examine the characteristics of ‘reform-shifters’ whose treatment status (community service vs. prison) was affected by the reform under study, and compare these to ‘always-takers’ and ‘never-takers’ whose treatment was not affected by the reform (see Fallesen 2020 for application in demography). The pool of potentially eligible individuals thus consists of three groups. Reform-shifters are the group who were convicted to prison before the reform and to community service afterwards. Never-takers are the group who were convicted to prison both before and after the reform, whereas always-takers were convicted to community service both before and after the reform that expanded the use of community service. We assume that no ‘defiers’ (convicted to community service before and to prison after the reform) exist (Marbach and Hangartner 2020). While these terms are slightly misleading when the treatments are non-voluntary criminal sanctions, we use them for the sake of consistency with prior research utilizing similar methods to identify sample means of covariates in these three groups.

Fallesen (2020) used Abadie’s (2003) Kappa-weighting scheme to study which married couples were more likely to divorce after divorce laws were made less restrictive in Denmark. We use the method developed by Marbach and Hangartner (2020) to obtain similar estimates of means of background variables in the aforementioned three groups. It is impossible to actually detect who the reform-shifters are, but by using information about ‘observable’ never-takers (those not sentenced to community service after the reform) and ‘observable’ always-takers (those sentenced to community service before the reform) we can estimate covariate means for these groups. When we weight these two means and subtract these from the covariate means of the entire sample, the covariate means for reform-shifters can be calculated (Marbach and Hangartner 2020).

The analysis focuses on the reform (April 1, 1994) that broadened the use of community service from a limited local pilot to a nationwide trial. In the analysis, we first select a group of offenders eligible for community service on the basis of their sentence

length; that is, prison sentences ≤ 8 months. The binary instrumental variable is coded 0 for convictions during the 12 months preceding the reform (April 1993–March 1994) and 1 for convictions in the 12 months following the reform (April 1994–March 1995). The ‘treatment’ variable is also binary, coded 0 if the sentence was prison and 1 if it was community service. Figure 2 shows that directly after the reform (April 1994) the use of community service as a sanction roughly doubled and at the end of the post-reform period around 30% of eligible offenders were sentenced to community service instead of prison. In total, the share of community service convictions was 7.3% in the pre-period and 26.5% in the post-period.

Figure 2: Share of community service sanctions pre- and post-reform (% of all prison sentences ≤ 8 months)



We focus on the 1994 reform for two reasons. First, this reform had the strongest and most abrupt impact on the use of community service. Second, for complier analysis to be informative we need background variable X to be independent of the instrument, which in this application means that we want the pool of eligible sanctions and individuals to be as similar as possible both before and after the reform. If there are strong temporal trends in the data (e.g., major changes in the employment rate), the reform effect becomes difficult to separate from such trends. We start the analysis by presenting covariate means (crime type, conviction length, and the four socioeconomic measures measured at the end of the year preceding conviction) from pre- and post-reform samples

that indicate no major changes over the 2-year observation window. The 1991 reform would have been more problematic due to the small number of convictions and recession effects confounding the analysis. We used the Stata package *ivdesc* (Marbach and Hangartner 2020) to run these models.

5. Results

5.1 Employment, social assistance, education, and income before conviction

Figure 3 presents results on the four outcomes among different groups of convicted persons and the non-convicted general population during the years 1988–2019. Starting with the measure of employment, the impact of the early 1990s' economic depression on employment is clearly visible in all groups, but the decrease in employment rates is more pronounced among the convicted. In 1988, 46% of those sentenced to prison were employed during the year preceding conviction, but by 1994 the proportion had declined to below 10%. Among the non-convicted the decline was also substantial, around 17 percentage points. Among those given suspended sentences the proportion of employed declined by over 30 percentage points, but still remained around three times higher than among those sentenced to prison.

After the nadir in 1994–1995, the pre-sentence employment rates slowly increased up until 2008, reaching 18%. In the same year, the percentage employed reached almost 70% in the general population and slightly over 50% in the suspended sentence group. After the global financial crisis in 2008 the pre-sentence employment rates of those sentenced to prison started to decline once more.

Overall, the differences in employment rates between conviction types are consistent over time. When comparing the trends over time of those sentenced to community service vs. prison, the employment rates in the community service group are typically around twice as high, and among the prison-sentenced almost reach the levels observed in the late 1980s. Despite the fact that the community service group compares favorably to the prison-sentenced, the labor market attachment of individuals sentenced to community service is still far weaker than that of the general population or those given suspended sentences.

Figure 3: Pre-sentencing (t-1) socioeconomic outcomes of 16–64-year-olds convicted to different sanctions during 1988–2019

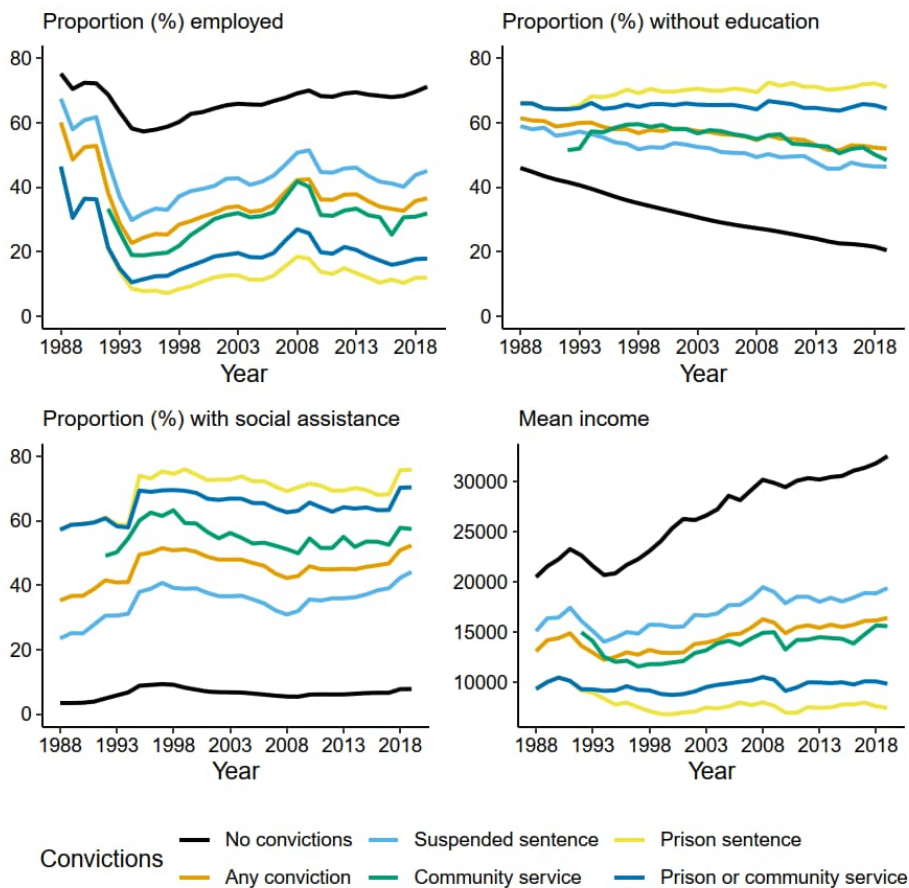


Figure 3 also shows the first indications of how the gradual introduction of community service from 1991 affected the socioeconomic composition of the incarcerated population. Community service was in widespread use by 1994, which in turn resulted in a decrease in the proportion incarcerated (see Figures 1–2 and Appendix

Table A-1). Because this substantial change in sentencing coincides with the worst years of the recession, it somewhat exaggerates the impact of the recession on the incarcerated, or at least makes the recovery from recession seem worse than it was. To some extent, this can also be observed from the combined ‘prison or community service’ trend, assuming that all those sentenced to community service would have been sentenced to prison under the old sentencing rules. The combined group generally has an around 4–9 percentage points higher rate of pre-conviction employment than the imprisoned group.

Turning to other socioeconomic measures, the overall picture of differences by conviction type are consistent with the results for employment. However, changes in the early 1990s are less pronounced for the measure of mean income. This may indicate that many of the jobs held by future inmates in the late 1980s were temporary, part-time, or low-paying. The mean income of prison convicts declined in the earliest observed years, then stagnated at low levels, and did not change much in the 2000s. This finding of stability in the 2000s also applies to the combined group (community service or prison), whereas individuals given community service and suspended sentences experienced some improvement after the recession, and a stagnation after 2008. Developments in the mean income of all convicted groups lag behind those of the non-convicted general population. Social assistance receipt rates of the prison-sentenced show a much clearer impact of the early 1990s’ recession compared to income: a substantial increase was followed by a very slow and modest decline. However, social assistance receipt is not a complete mirror image of employment rates. The 2008 financial crisis is mainly visible among those given suspended sentences, and less so among those given stricter sentences.

The results for education perhaps show the strongest contrast between developments in the non-convicted general population and the convicted. In the general population the proportion with only basic education declined from 46% to 21% during 1988–2019, whereas among prison convicts the share with only basic education actually increased after the start of the follow-up. This share was 66% in 1988 and 71% in 2019. When comparing this trend to the combined group (community service or prison), it is likely that the selection effect brought about by the adoption of community service caused the initial decline in the education level of the imprisoned, but since then there has been very little change. The educational level of those sentenced to community service and suspended sentences has improved over time, but is still far below that of the general population.

We also examined 5-year averages of the same socioeconomic measures preceding conviction (Appendix Figure A-1). Previous-year measures could be more sensitive to pre-trial custody and crime resulting in job termination, and overall such measures are more affected by annual fluctuations. However, the conclusions based on the 5-year

measures are essentially the same as those above. Five-year employment rates among the incarcerated dropped after the early 1990s and the income difference between them and the non-convicted general population grew over time. Overall, the 5-year measures show considerable stability in most pre-conviction measures for the prison-convicted.

5.2 Socioeconomic backgrounds of prisoner subgroups

The analyses above examined prisoners as a single group, which might yet mask important heterogeneity in the developments over time. In Figures 4 and 5 we have disaggregated the trends in all 4 outcomes according to first-timer status (vs. recidivists), conviction length, gender, and age (under or over 30).

As expected, the pre-conviction employment rates of first-timers and recidivists are very different. This is likely partly explained by direct incapacitation effects. However, the pre-conviction employment rates of first-timers are also fairly low. The income trends of the two groups differ somewhat: the levels among the recidivists stagnated after the 1990s' recession, whereas the incomes of the first-timers increased somewhat in the early 2000s. Social assistance receipt rates developed fairly similarly, albeit at different levels. The decreasing level of education seen before appears to apply mainly to recidivists: the educational level of the first-timers is fairly stable over time.

Imprisonment length is associated with socioeconomic background in a somewhat unexpected way, in that those convicted to longer sentences generally appear less disadvantaged prior to conviction. For example, those serving shorter sentences have lower rates of employment, and differences between these groups are fairly consistent over time. A similar pattern applies to income, social assistance receipt, and also education, as those serving the longest sentences appear to be slightly better off prior to their conviction. These findings are probably partly related to different types of crime, and also to recidivism patterns. Many repeat offenders serve short sentences for less serious crimes.

Turning to gender-stratified analysis, the employment rates of female prisoners are somewhat lower than those of male prisoners and, interestingly, even before the 2008 financial crisis, female employment rates did not clearly increase as they did for men. The same applies to mean income; however, gender differences are generally smaller, including for social assistance receipt. The educational level of female prisoners is lower than that of men, which underscores the greater level of disadvantage among female prisoners compared to all women.

Figure 4: Pre-sentencing (t-1) socioeconomic outcomes of persons convicted to prison by sentence length and recidivism status

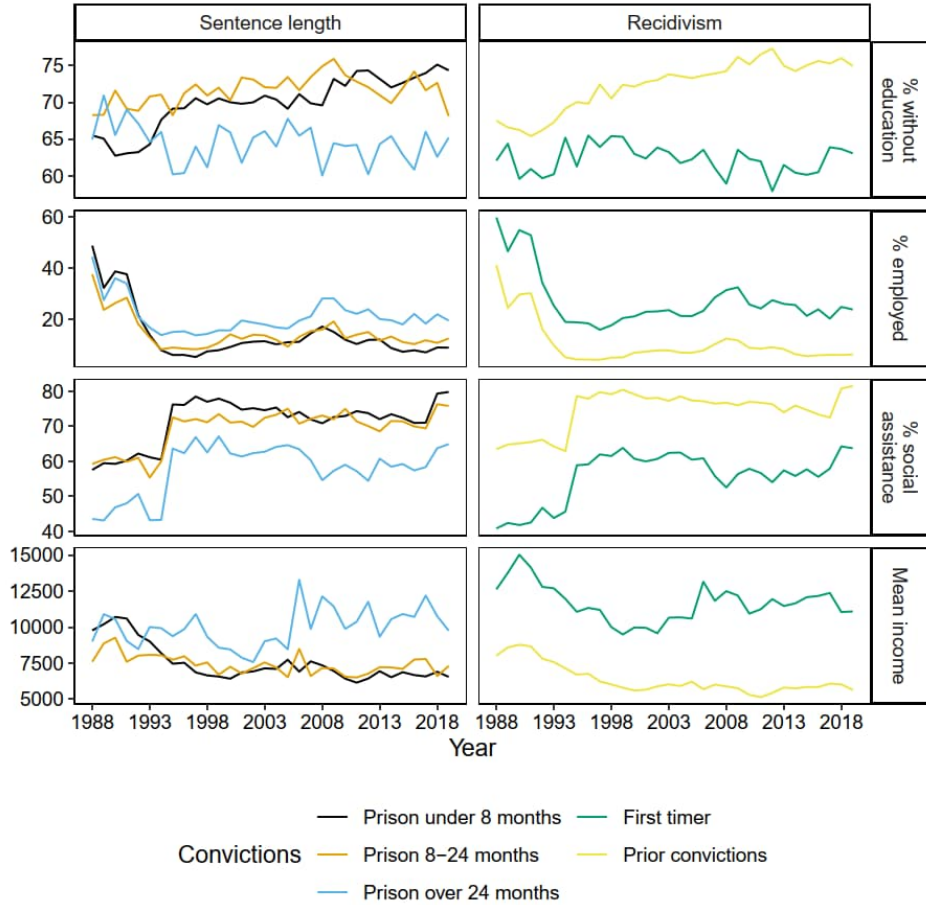
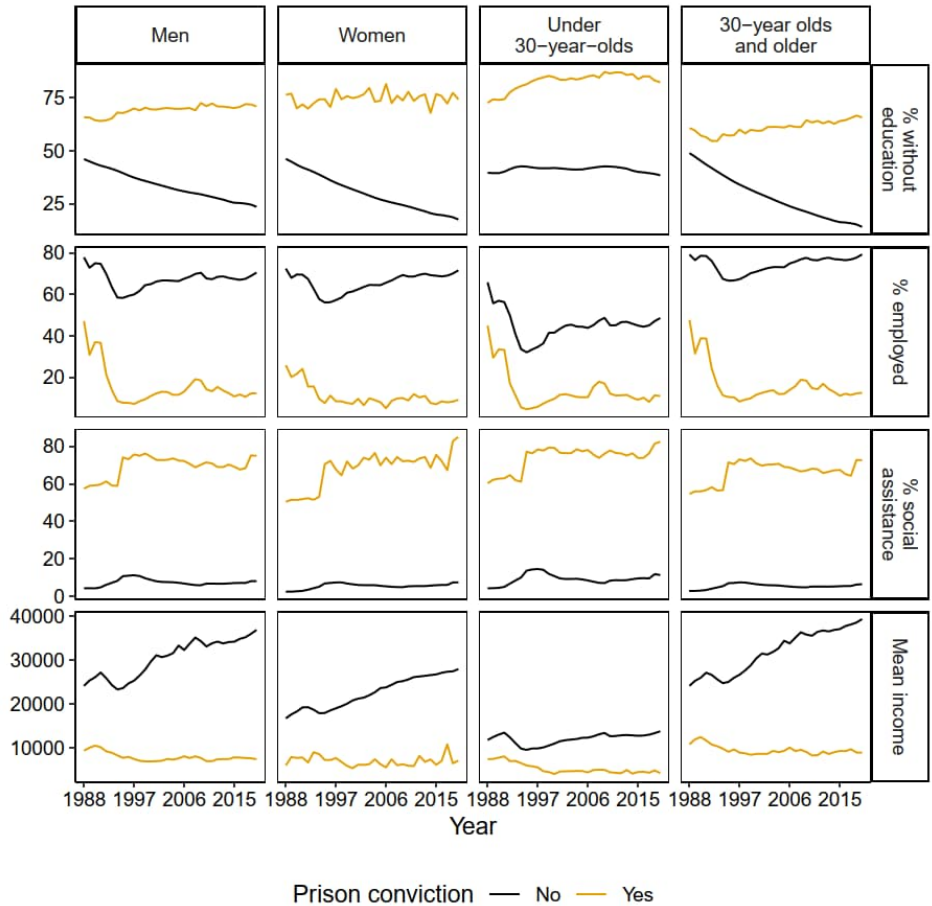


Figure 5: Pre-sentencing (t-1) socioeconomic outcomes of persons convicted to prison by gender and age



Finally, the results disaggregated by age show some interesting differences. The rising level of education in the general population is driven by the older cohorts, while among under-30 year olds there is less educational divergence between the prison-convicted and the others. On the other hand, pre-conviction employment rates among

older and younger convicts are almost identical, and differences in social assistance receipt rates are also small. Older convicts typically have somewhat higher income prior to conviction, but their difference to non-convicts of similar age has grown over time, whereas among younger offenders the difference is more stable.

5.3 The effect of community service on the prison population

Finally, we return to the question of community service in more detail. In Table 1 we present results of complier analysis comparing 12-month periods before and after the nationwide adoption of community service. The columns titled ‘Sample balance’ show the means and standard deviations of variables that measure features of the conviction and socioeconomic characteristics of the convicted individuals. Overall, the means of all the variables appear fairly similar in the two periods, suggesting that complier analysis can provide valid estimates of who the 1994 reform removed from the prison population. The stability of the conviction-specific variables also suggests that there was no substantial net-widening (expansion of the use of a new sanction alternative to lesser offences that previously led to milder sanctions), that could have, for example, resulted from judges using prison sentences more than before to make more individuals eligible for the new sanction alternative (Andersen, Hyatt, and Telle 2020). The balance statistics also suggest that these results are not biased by the impact of the recession, as employment rates are almost identical in the two 12-month periods.

Turning to the actual results of the complier analysis, the estimation gives expected results (Andersen 2024). We focus on the difference between reform-shifters and never-takers (= always-imprisoned). First, we see that reform-shifters (19% of the sample) were mostly convicted of traffic crimes (66%), which is very different from those given a prison sentence (26%). The shares of violent and property offences give the opposite picture. We also see that reform-shifters were given shorter sentences and were convicted of fewer offences in the same conviction. They were also slightly older than the prison-convicted, whereas the genders are equally represented in both groups. Reform-shifters are clearly better off across all four socioeconomic measures. Nineteen percent (vs. 6%) were employed in the year preceding conviction, 56% (vs. 71%) had no secondary education, 51% (vs. 67%) received social assistance, and their mean income was 7,400 euros (vs. 5,000 euros).

Table 1: Complier analysis of community service reform. Means of background variables for those convicted to community service instead of prison (reform-shifters)

Covariate	Sample balance				Group characteristics				
	Pre-reform		Post-reform		Reform-shifter	Full sample	Always CS	Never CS	
	Mean	SD	Mean	SD	Mean	SE	Mean	Mean	Mean
Traffic crime	0.37	0.48	0.36	0.48	0.66	0.02	0.37	0.69	0.26***
Violent crime	0.07	0.26	0.08	0.26	0.04	0.01	0.07	0.04	0.08**
Property crime	0.40	0.49	0.39	0.49	0.22	0.004	0.40	0.19	0.46***
Conviction length	3.39	1.86	3.46	1.89	2.44	0.16	3.26	2.91**	3.50***
Crime count	3.24	3.49	3.27	3.58	2.94	0.08	3.43	3.23**	3.57***
Female	0.03	0.18	0.03	0.18	0.03	0.01	0.03	0.06**	0.03
Age	32.0	9.5	31.9	9.8	34.0	0.4	31.96	33.4	31.30***
No education	0.67	0.47	0.68	0.47	0.56	0.02	0.67	0.58	0.71***
Employed	0.10	0.30	0.09	0.29	0.19	0.01	0.10	0.19	0.06***
Income	5,725	5,383	5,848	6,205	7,440	243	5,784	8,919**	5,040***
Social assistance	0.62	0.49	0.64	0.48	0.51	0.02	0.63	0.56	0.67***
N	7924		7374						
Estimated proportion					0.19		0.07		0.74

Notes: * Statistical significance of difference between Reform-shifters vs Always/Never CS

*** p<0.001, ** p<=0.01, * p<=0.05

CS = community service

6. Discussion

The present study set out to examine how pre-incarceration levels of employment, income, social assistance receipt, and education have changed during the last three decades in Finland among individuals sentenced to prison. The key motivation for the study was the prior finding that in Finland first-time prisoners appear more detached from the labor market than their Scandinavian counterparts (Aaltonen et al. 2017), and also there was very little research evidence on how and if the socioeconomic background of convicts changes over time.

Our main findings show that the most marked changes in prisoners' backgrounds took place during the 1990s' economic depression. Since then, the labor market attachment of the prison population has been much weaker. Before the economic downturn almost 50% of individuals sentenced to prison were employed in the year prior to conviction, whereas during the 2000s this proportion fluctuated at a much lower level, never surpassing 20%. In percentage point terms, the gap with the non-convicted general

population has remained rather stable since the 1990s' recession. Although the introduction of community service slightly inflates the impact of the recession by altering selection to imprisonment, the impact of changes in prisoners' employment rates during the early 1990s are so pronounced that they are difficult to explain by other means. The findings mirror those found in Sweden (Nilsson, Bäckman, and Estrada 2013), a country that experienced a recession during the same period. Little has changed since the rapid changes in prisoners' socioeconomic backgrounds at the turn of the 1980s and 1990s, especially in terms of mean income and social assistance receipt. Employment rates usually follow macroeconomic developments, but the rates among prisoners have remained low even during economic booms.

These patterns are generally similar among different subgroups of prisoners. The differences between men and women are consistent over time, with men having slightly better labor market attachment and higher education than women. Age-graded results show that prisoner backgrounds do not differ much by age, but the relative difference with non-convicts depends strongly on age. As we have included all individuals given a prison sentence in the analyses, the most important subgroup are the first-timers, among whom prior incapacitation (not begin able to work due to being in prison) should not affect the results. Trends of employment and social assistance receipt are similar among first-timers and recidivists, but declining educational level is observed among recidivists only. Similarly, improvements in mean income prior to the 2008 financial crisis only apply to first-timers. Based on this evidence, it seems that recidivists may have become an increasingly selected group over time.

Another important factor to consider when interpreting the results is the decreasing prison rate. Table A-1 in the Appendix shows that the share of the general population given a prison sentence was almost 60% lower in 2019 than in 1988, and there was an almost linear decrease in the number convicted after 2005. It would be reasonable to assume that the prison population would become more selected during a period of declining numbers, and this in turn could explain why Finnish inmates appear so marginalized. Our results clearly indicate that community service implementation undoubtedly changed the composition of the prison population, but it is more difficult to say if the general decrease in the numbers convicted after the early 2000s had a similar impact. On this evidence it seems safer to assume that a declining prison rate does not necessarily lead to a more socioeconomically disadvantaged prison population but most likely depends on the causes and components of the decline (e.g., whether new sanctions are introduced or the crime distribution among the convictions clearly changes). These questions cannot be answered in this paper but clearly warrant future examination.

Although our analyses focus on inmates' socioeconomic characteristics prior to incarceration, it is important to consider the implications of our findings for prisoner reintegration. Existing evidence shows that higher demand for labor in construction and manufacturing (Schnepel 2018) at the time of release reduces recidivism, while Yang (2017) suggests that recidivism is higher among prisoners released during economic downturns. Our results suggest that the employment prospects of present-day Finnish prisoners are bleak. The employment rates of those with basic education have been decreasing in recent years, and the pre-incarceration employment rates of those given prison sentences are almost as low as they were during the severe recession of the 1990s.

Existing Finnish studies show fairly stable post-release outcomes during the 2000s. Tyni (2020) analyzes 5-year recidivism rates of prisoners released during 2000–2012 and find that the proportion convicted of any new crime fell from 82% to 75% during this time. Another study (Aaltonen et al. 2021) finds no clear trend in the proportion homeless (around one-fourth after release) among inmates released between 2000–2015. Although these findings do not directly address socioeconomic patterns, they suggest that post-release outcomes have remained fairly stable in the 21st century, and new approaches to improving post-release outcomes are needed.

6.1 Methodological considerations

Any labor market analysis with register data is challenged by the exclusion of informal work and the fact that analyses can only include individuals resident in Finland. This means that foreign inmates who do not have Finnish personal identification numbers were not included in this study. However, among those sentenced to prison the proportion of foreign nationals is still below 10% (Statistics Finland 2021b), and only a subset of them lacks a Finnish PIN. More generally, analyzing temporal trends with register data can be susceptible to bias resulting from changing definitions, legislation, and data recorded in information systems. Although there have been several criminal law reforms (Lappi-Seppälä 2013) during the observation period that may impact our results, the examined community service reform is clearly the most influential. The fact that we used several socioeconomic measures increases our confidence in the robustness of the results.

One difficulty in examining prisoners' socioeconomic backgrounds with a measure that is valid over time is that these variables are affected by macroeconomic trends. When there is considerable temporal variability in employment and income, we cannot easily use such variables to measure latent 'employability' or human capital. Although the case of Finland is interesting precisely because we have seen significant changes in labor

market conditions, these changes challenge any attempt to assess whether selection to imprisonment with respect to latent characteristics has changed. Our complier analysis provides clear evidence that the community service reform favored those in better socioeconomic positions, mirroring similar results from Denmark (Andersen 2024). However, it is important to stress that these results do not necessarily indicate direct discrimination based on socioeconomic position but could instead be a consequence of a risk reduction strategy in sentencing that indirectly affects the equality of treatment (Andersen 2024).

When it comes to the effect of recessions, it is possible that cutbacks to police resources affect the detection of crimes. Such mechanisms may partly explain why the numbers of some police-reported crimes especially decreased in the early 1990s. As mentioned before, the potential effects of economic downturns on the criminal justice system are not limited to unemployment-induced behavioral change but may be channeled through various pathways, including institutional responses and public debate. Likewise, it would be erroneous to attribute all changes in demand for labor to the recession, as many changes (e.g., shift from manufacturing to services) might have just taken place more gradually without it.

Our main interest was in pre-incarceration socioeconomic measures, while an equally interesting analysis could have focused on post-release outcomes and their change over time. The current data does not include exact information on prison terms and release dates, so conducting such analyses would have required additional data collection and would have been limited to a shorter follow-up due to shorter data coverage. It would clearly be interesting to also extend the current analyses to recidivism outcomes and to assess the impact of the changing socioeconomic composition of the prison population on post-release life in general.

6.2 Conclusions

Our analysis shows that the labor market attachment of Finnish inmates is currently very poor. Prior register-based analyses in the Nordic countries mainly covers a cross-section of outcomes during the 21st century, and we were able to extend these analyses back to the late 1980s and examine multiple socioeconomic measures. This extended timeframe allowed us to detect the large abrupt impact that the severe economic depression of the early 1990s had on the labor market attachment of the incarcerated population, and also how the introduction of community service impacted the socioeconomic composition. Since then, the changes have been more modest, and during the 2000s prisoner

backgrounds appear more stable. Nevertheless, our results underline that economic crises do not affect all population groups equally (Nilsson, Bäckman, and Estrada 2013).

Regarding prisons as contexts, there is a need to assess if and how the change documented in this study has impacted prison rehabilitation practices, interactions, and cultures. Based on earlier media reports (YLE 2007), in-prison work programs have been adjusted to better correspond with declining prisoner skills, but the issue has not been systematically studied in Finland or elsewhere. Prior research on recidivism in juvenile institutions shows a considerable effect of peers' criminality (Bayer, Hjarmarsson, and Pozen 2009), but it remains unclear whether serving time with inmates with poor attachment to the labor market has the same effect.

It has been suggested that the shrinking population in (youth) criminal justice systems increasingly consists of individuals from vulnerable and marginalized backgrounds (McAra and McVie 2019), but empirical evidence for this hypothesis is still scarce. We have sought to provide new evidence for these discussions by examining such changes in the Finnish context. To understand how the prison rate affects such "concentration" (McAra and McVie 2019), we need comparative research on changes in prisoners' backgrounds from countries where the criminal policy developments have been different. This would clarify if the Finnish findings are idiosyncratic or indicative of more universal developments in prison populations.

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Appendix

Figure A-1: Five-year ($t_4 - t_0$) pre-sentencing socioeconomic outcomes of 19–64 year olds, 1991–2017

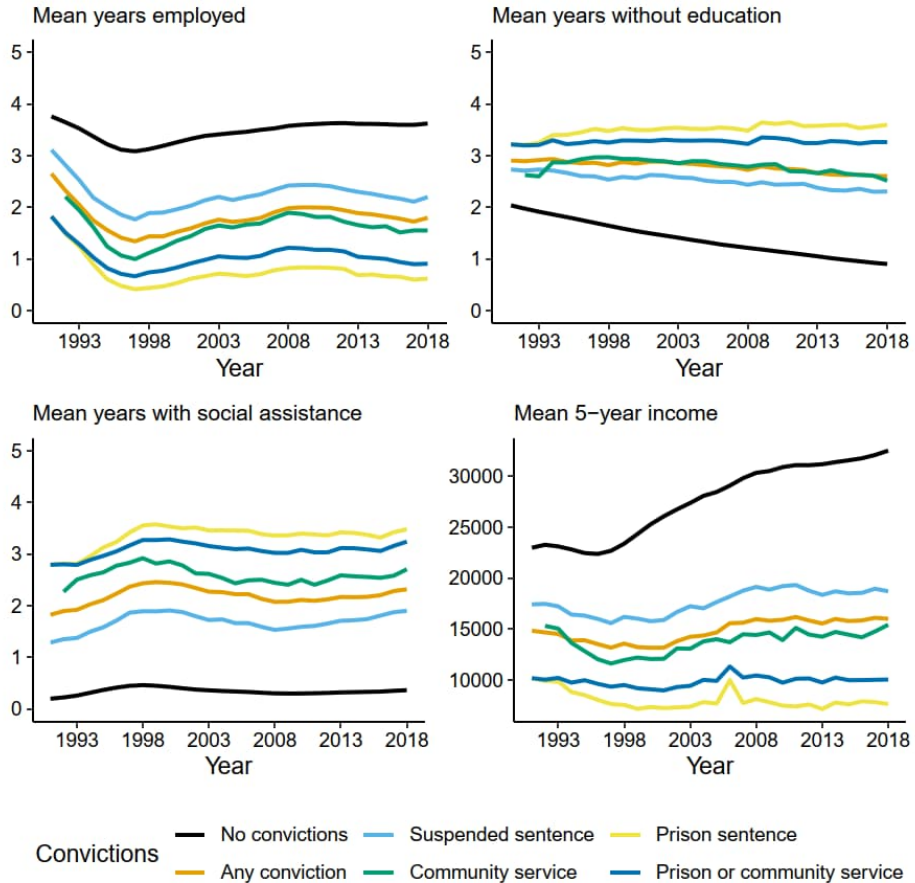


Table A-1: Number of individuals by different types of sentence and year

Year	No convictions	Any conviction	Suspended sentence	Community service	Prison	Prison or community service
1988	3,257,972	20,768	13,523		7,245	7,245
1989	3,257,978	21,104	13,875		7,229	7,229
1990	3,263,084	22,103	14,503		7,600	7,600
1991	3,275,935	21,048	13,709		7,339	7,339
1992	3,293,815	20,635	13,129	165	7,341	7,506
1993	3,306,918	19,026	11,984	452	6,590	7,042
1994	3,316,464	17,768	11,218	1,227	5,323	6,550
1995	3,320,568	18,726	11,854	2,294	4,578	6,872
1996	3,327,735	18,177	11,373	2,658	4,146	6,804
1997	3,338,090	18,053	11,277	2,895	3,881	6,776
1998	3,353,085	18,060	11,140	3,061	3,859	6,920
1999	3,366,466	17,650	10,540	2,851	4,259	7,110
2000	3,373,045	18,768	11,597	2,668	4,503	7,171
2001	3,380,914	19,433	11,987	2,672	4,774	7,446
2002	3,386,558	20,021	12,418	2,619	4,984	7,603
2003	3,388,883	20,256	12,642	2,718	4,896	7,614
2004	3,389,999	21,530	13,516	2,909	5,105	8,014
2005	3,403,947	21,144	13,155	2,786	5,203	7,989
2006	3,403,424	20,518	12,830	2,754	4,934	7,688
2007	3,422,849	20,457	13,071	2,735	4,651	7,386
2008	3,435,354	20,209	12,997	2,627	4,585	7,212
2009	3,447,433	19,477	12,671	2,408	4,398	6,806
2010	3,444,658	18,472	12,148	2,186	4,138	6,324
2011	3,430,857	17,974	11,941	2,100	3,933	6,033
2012	3,415,327	17,366	11,560	2,132	3,674	5,806
2013	3,400,941	16,500	11,179	1,915	3,406	5,321
2014	3,385,133	16,075	10,993	1,772	3,310	5,082
2015	3,372,127	15,638	10,690	1,676	3,272	4,948
2016	3,359,058	14,920	10,262	1,517	3,141	4,658
2017	3,347,643	14,336	9,792	1,418	3,126	4,544
2018	3,333,398	14,665	10,148	1,383	3,134	4,517
2019	3,322,544	14,397	9,892	1,336	3,169	4,505

Note: Suspended sentences only include those without prison sentences or community service during the same year and those sentenced to community service only include those not sentenced to prison

Table A-2: Number of individuals by sentence length and first-timer status

Year	Sentence length under 8 months	Sentence length 8–24 months	Sentence length over 24 months	First-timer (No prior prison sentences in the past 10 years)	Recidivist (At least 1 prior prison sentence in the past 10 years)
1988	5,434	1,446	365	2,009	5,236
1989	5,506	1,310	413	1,962	5,267
1990	5,826	1,356	418	2,021	5,579
1991	5,935	975	429	1,940	5,399
1992	5,492	1,191	651	1,964	5,377
1993	4,967	1,123	500	1,742	4,848
1994	3,691	1,112	520	1,310	4,013
1995	2,910	1,178	490	1,087	3,491
1996	2,428	1,203	515	1,072	3,074
1997	2,313	1,096	472	984	2,897
1998	2,712	784	363	1,029	2,830
1999	2,959	868	432	1,159	3,100
2000	3,188	875	440	1,213	3,290
2001	3,259	984	531	1,432	3,342
2002	3,390	1,071	523	1,560	3,424
2003	3,304	1,020	572	1,493	3,403
2004	3,498	1,038	569	1,542	3,563
2005	3,469	1,126	608	1,597	3,606
2006	3,358	1,023	553	1,498	3,436
2007	3,036	1,020	595	1,340	3,311
2008	2,953	1,004	628	1,439	3,146
2009	2,842	926	630	1,281	3,117
2010	2,630	932	576	1,199	2,939
2011	2,366	927	640	1,149	2,784
2012	2,089	909	676	1,162	2,512
2013	2,003	837	566	963	2,443
2014	1,877	797	636	960	2,350
2015	1,814	798	660	996	2,276
2016	1,716	783	641	957	2,184
2017	1,834	677	615	925	2,201
2018	1,846	684	604	971	2,163
2019	1,833	646	690	1,026	2,143