The Spillover Effects of Releasing Offenders: Evidence from Ecuador

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1 Introduction

Incarceration remains one of the most widely used policies to punish criminals and deter potential offenders. In 2024, over 10 million people were imprisoned globally, a trend that has steadily increased over the past decade (Fair & Walmsley, 2024). Typically, evaluations about the effectiveness of imprisonment focus on its impact on offenders, balancing the gains in crime reduction through incapacitation and direct deterrence, against the potential risk of increased recidivism.[1] However, the effects of incarceration extend beyond those who are imprisoned, influencing non-incarcerated individuals as well. Imprisoning someone may reduce the criminal activity of their associates and family members while generating a general deterrence effect on society.[2]

Moreover, incarceration can potentially create spillover effects following an offender's release. Released offenders can impact local criminal behavior through at least two mechanisms. First, they may directly transfer their prison experiences to their social connections. Previous studies have documented criminogenic effects among peers in schools, families, and prisons (Billings & Hoekstra, 2024; Billings & Schnepel, 2022; Billings, Deming, & Rockoff, 2014; Billings, Deming, & Ross, 2019; Stevenson, 2017; Drago & Galbiati, 2012; Bayer, Hjalmarsson, & Pozen, 2009; Patacchini & Zenou, 2012; Ludwig & Kling, 2007; Kling, Ludwig, & Katz, 2005; Ludwig, Duncan, & Hirschfield, 2001). Second, reintegrating offenders into society can alter social norms. This reintegration can affect the prominence of gangs, change perceptions of the risks and rewards associated with criminal activity, and introduce new criminal role

[1] Recent studies isolating incapacitation effects include those by Barbarino and Mastrobuoni (2014); Buonanno and Raphael (2013); Owens (2009). Refer to Chalfin and McCrary (2017) for a literature review on criminal deterrence. Papers estimating the impact of incarceration on future recidivism include Bhuller, Dahl, Løken, and Mogstad (2020); Mueller-Smith (2015); Loeffler (2013); Green and Winik (2010); Kling (2006).

[2] For effects on both criminal networks and family members see Bhuller, Dahl, Løken, and Mogstad (2018). For incarceration spillovers on children refer to Norris, Pecenco, and Weaver (2021); Bhuller, Dahl, Loken, and Mogstad (2018); Dobbie, Grönqvist, Niknami, Palme, and Priks (2018); Wildeman and Andersen (2017). For effects on criminal networks see Philippe (2017); Lindquist and Zenou (2014).

models (Helfgott, 2015; Morenoff & Harding, 2014; Petersilia, 2000; Sutherland, Cressey, & Luckenbill, 1992).

This paper investigates whether recently released offenders influence the criminal behavior of individuals in the neighborhoods they rejoin in Ecuador. Almost all incarcerated individuals will eventually return to their communities; however, their effect on that community is uncertain. The direction of the effect will depend on the convict's prison experience and the institutional characteristics of the neighborhood they rejoin. For example, if incarceration enhances an offender's criminal skills, it could increase criminal spillovers. Conversely, successful rehabilitation could reduce overall crime.

The literature has examined the effects of incarceration on crime from two perspectives: focusing either on the behavior of released offenders or on aggregate crime rates following prison releases. The first approach compares criminal outcomes between incarcerated and marginally non-incarcerated individuals, with most studies concentrating on developed countries. The findings are mixed: some studies suggest that time in prison, when focused on rehabilitation, reduces reoffense rates (Bhuller et al., 2020), others indicate that imprisonment may lead to higher recidivism (Mueller-Smith, 2015; Aizer & Doyle, 2015), and papers which find no effect (Loeffler, 2013; Green & Winik, 2010). The second body of work looks at the question of how prison releases affect overall crime rates. Most studies present correlational evidence of a positive relationship between aggregate crime (at national or regional levels) and the number of releases (Roodman, 2020; Hipp & Yates, 2009; Raphael & Stoll, 2004; Clear, Rose, Waring, & Scully, 2003). Buonanno and Raphael (2013) stands out within this area. They use a regression-in-discontinuity design to find that the national crime rate increased immediately after the 2006 Italian collective pardon.

A limitation of this literature is that it gives little information about the effects on non-incarcerated individuals. The first strand focuses solely on former offenders, and the second cannot disentangle whether the increase in crime results from higher recidivism or broader contagion effects. This paper fills this gap by focusing on the criminal behavior of non-released offenders, providing evidence of incarceration's broader societal impacts beyond those affected by imprisonment.

Estimating the spillover effects of released offenders presents two key challenges: data availability and the non-random selection of offenders' residences across neighborhoods. The task requires detailed data, including information on the residence and criminal activity of all individuals living in a neighborhood, not just those with criminal backgrounds. Additionally, offenders' location upon release is not random. Former convicts decide where to reside, often returning to poorer areas with high crime rates (Harding, Morenoff, & Herbert, 2013). As a result, a simple OLS comparison between neighborhoods with and without recently released offenders would lead to biased estimates.

This paper addresses these challenges in the context of Ecuador's prison system. First, I constructed a novel and unique dataset that tracks the residence, arrests, and prison releases of all Ecuadorians aged 18 and older. This dataset was built by extracting information from over two million public documents detailing all penal cases in Ecuador from 2016 to 2022. Additionally, I combined this data with confidential records on the neighborhood of residence

for all Ecuadorian nationals from 2002 to 2021. The final dataset provides monthly level information on individual arrests and place of residence at the neighborhood level, linking them to the neighborhoods of origin of released offenders.[3]

Then, to estimate the causal effects, I use a mass pardon in a matched event-study design. In February 2022, the Ecuadorian president pardoned individuals who were convicted because of robbery, theft, or fraud and had served at least 40% of their sentence. Within a month, the pardon increased the number of released offenders returning to a neighborhood by 31% and the number of neighborhoods that received a former convict by 26%. I leverage the extensive margin variation to compare the probability of arrest for individuals in neighborhoods that received released offenders because of the mass pardon with those in matched, non-treated neighborhoods.

The release of offenders generates criminal spillovers in the neighborhoods where they return. On average, within six months of the pardon, the probability of arrest for individuals living in neighborhoods that received a released offender increased by 0.005 percentage points (6.8% relative to the mean). The response is not immediate, with statistically significant effects appearing four months after the pardon. The effect represents a monthly elasticity of releases-to-arrest of 0.1, meaning that for every additional release per 1,000 residents, the arrest rate per 1,000 inhabitants (excluding recidivism) increases by 0.4.

The effect of the pardon on arrests is observed among individuals regardless of their prior criminal history. Specifically, the release of an offender led to a 9.8% increase in the probability of arrest for people with previous criminal experience. In contrast, the likelihood of arrest rose by 5.2% for individuals with no prior arrests. Importantly, these effects are not specific to the mass pardon but rather reflect the broader impact of former offenders in their communities. A comparison between individuals living in neighborhoods that received a pardoned offender and those in neighborhoods that received a non-pardoned offender reveals no statistically significant differences between these groups at the 1% level.

This result highlights the negative consequences of incarceration. Research on developing countries, especially in Latin America, has shown that imprisonment can increase former inmates' criminal involvement (Escobar, Tobón, & Vanegas-Arias, 2023; Munyo & Rossi, 2015; Di Tella & Schargrodsky, 2013). Challenges such as limited access to rehabilitation programs, inadequate prison conditions, overcrowding, and an environment dominated by gangs and violence hinder positive social reintegration (Blattman, Duncan, Lessing, & Tobón, 2024; Tobón, 2022). The Ecuadorian prison system exhibits similar issues, potentially exacerbating rather than mitigating inmates' criminal tendencies. In line with this argument, I found that a longer duration of imprisonment (i.e., more time served) tends to amplify spillover effects, with the impact being 1.7 times greater than the main effect.

Beyond the experience of incarceration, the connection between released offenders and the neighborhoods they rejoin may also explain the observed results. The evidence points to a direct criminal contagion effect. Specifically, the probability of being arrested alongside a released offender increased by 48% (relative to the mean) in neighborhoods affected by the

[3]To the best of my knowledge, this is the only dataset with this level of detail available in a developing country.

pardon. Additionally, the likelihood of arresting a band of criminals in these neighborhoods rose by 15% (relative to the mean). To further explore the role of connections, I examined interactions between released offenders and their family members and criminal networks within the neighborhood. Utilizing the Spanish naming structure to link released offenders with potential family members through shared last names, I found that individuals sharing a last name with a released offender experienced an 15% increase in their probability of arrest (relative to the mean). However, there is no evidence of spillover effects extending between criminal networks. These findings suggest that released offenders primarily influence their immediate social networks, particularly family members, to engage in criminal activities.

Two studies within the criminal peer effects literature are closely related to this result. Billings and Schnepel (2022) found that former inmates are less likely to reoffend if a higher proportion of their criminal peers remain incarcerated during their reintegration. Similarly, Kirk (2015) examined reoffense rates among parolees and found a negative association with the concentration of other parolees in their neighborhoods. In contrast to these findings, this study reveals that released offenders do not significantly impact broader criminal networks. Instead, family members are affected by the presence of released offenders.

Overall, the findings indicate that the impact of incarceration on crime may be more substantial than previously understood. A back-of-the-envelope calculation suggests that spillovers from released offenders could account for roughly one-third of all recorded arrests in the year following the pardon. Thus, failing to consider these spillovers could lead to an underestimation of the criminogenic effects of incarceration.

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