



## The Effect of Mass Incarceration on Criminality in Colombia

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### Abstract

This study surveyed the literature on the expected and unexpected effects of incarceration before (*deterrence*), during (*incapacitation*), and after (*after-effects*) prison confinement occurs, through a selective search that favored the analysis of studies with an empirical focus in the national and comparative literature. Then, based on data provided by the National Penitentiary and Prison Institute (INPEC by its acronym in Spanish) and the National Police, the research evaluated the effect that mass incarceration for homicides, kidnappings, theft, and personal injuries had on Colombian criminality between 1994 and 2018 (a time in which the inmate population increased fourfold). The regression results suggested that incarceration decreased the number of homicides and kidnappings but increased theft and personal injuries. At the end, the article presents the theoretical developments that could explain those statistical results and makes recommendations for the strategic use of imprisonment and its deterrent potential in Colombia.

### Keywords

Colombia; comparative criminology; criminalization; prison; functions of punishment; mass incarceration.

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*To address different forms of violence, different approaches are required. There is no universal anti-violence strategy; what works in addressing one form of violence may not work with another.*

Thomas Abt (2019)

## **Introduction**

The “passion to punish” has existed from the onset of human societies (Fassin 2017). As to why we punish in a penal sense (with the state’s legal legitimacy), criminology manuals cite atonement, reparations, social utility, remediation, crime prevention, and resocialization, as well as other reasons, according to the function of punishment from a philosophical perspective (Banks 2004; Gardner 2007, 103).

However, the cumulus of empirical evidence about imprisonment effects in comparative experience puts various beliefs to the test regarding the usefulness of such measures in reducing crime. More specifically, the deterrent effect of prison seems more a derivative of the “certainty” of punishment (its *imminence*) than of its “severity” or duration, which are the two components that determine the effectiveness of incarceration (Durlauf and Nagin 2011, 16; Nagin 2013).

Nowadays, mass incarceration seems in crisis as the state’s unique response to crime. Incarceration should be used strategically according to its ability to reduce criminal behavior and work in parallel with other measures that focus on neutralizing the structural causes of criminality. There is conclusive evidence about the failure of repression and solitary confinement as the only means to deal with social conflict (Alexander 2012; Clear and Frost 2015; Gilliard 2018; Roodman 2017; Simpson 1934), which has made countries double their efforts in the prevention of crime and implement different “smart on crime strategies” that have proved more cost-effective in preventing violence (Abt, 2019). Further, there is strong evidence that social structures and inequalities are critical factors in criminalization, suggesting that criminal activity can be prevented by improving social conditions (Mundia et al. 2016).

This research examined the increase in rates of mass incarceration, both in Colombia and globally. It then analyzed the causes of global crime reduction and reviewed the literature on the effects of prison confinement before, during, and after incarceration. Subsequently, the study evaluated the effect of the continual increase of prisoners in Colombia on the incidence of homicides, kidnappings, theft, and personal injuries between 1994 and 2018. Finally, the research presents some conclusions and public policy recommendations for the strategic use of imprisonment in Colombia.

## **The Global Increase of Incarceration and the Surge of Prisoners in Colombia**

The greatest progress made in terms of penal punishment from the eighteenth to the nineteenth century was the transition from torture (inflicting bodily injuries that were visible to cause public shame) to solitary confinement, which did not consist of corporal punishment but rather isolation as a rehabilitation method—if not in practice, at least on a discursive level (Foucault 1975).

Prison confinement as the state’s main response to crime indeed represented significant progress in humanitarian terms concerning the cruel punishments of the past, though abolitionists have argued that imprisonment can inflict more pain than corporal punishments (Carrier and Piché 2015; Golash 2005; Mathiesen 2006) and some have even found merit in conflict resolution systems that use mild corporal punishment as a means of “purification,” as practiced by indigenous jurisdictions in Latin America (Borja 2001). However, the global prison population has been increasing over the last half-century, without clear evidence that prison is an effective tool to reduce crime.

The United States (US) is the global leader in incarceration, both in absolute and relative terms (Raphael and Stoll 2013). In 2017, the US had 2,217,000 prisoners: the equivalent of 698 inmates for every 100,000

inhabitants (Walmsley 2017). This imprisonment rate was nine times higher than in Germany, eight times higher than in Italy, five times higher than in the United Kingdom, and 15 times higher than in Japan (Cullen 2018). Even though the US only has approximately 5% of the global population, it has 21% of the world's prisoners. One out of every 37 adults in the country (2.7% of the US adult population) is under some form of prison supervision (NAACP 2015), and every 90 seconds, one person is sentenced to a state or federal prison, totaling about 420,000 people per year (Harding 2019).

This trend of incarcerating increasing numbers of people can be observed elsewhere. During the 2000s, the number of prisoners in the Americas (excluding the US) increased by 108%, in Asia by 29%, in Africa by 15%, and in Oceania by 59%. In Brazil, the number of prisoners increased by 115%, totaling more than half a million people. In Turkey, the increase was 145% (Fassin 2017; Walmsley 2017).

Latin America and the Caribbean also recorded an increase in penal punishment. Between 2002 and 2014, the prison population doubled for 17 countries in the region, totaling 1.2 million prisoners. The annual growth rate for the prison population was 8%, approximately six times the growth rate of the general population (1.3%). If this growth rate continues, the region will have 3.4 million inmates by 2030, at an additional public cost for prisons of US\$13 billion compared to 2014 (Domínguez 2018; Izquierdo, Pessino and Vuletin 2018, 255).

One of the factors that has determined the growth in incarceration rates is the implementation of more drastic sentences. Longer sentences have been driven in part by political parties responding to public opinion that crime is best fought by punitive sentencing. British criminologist Bottoms (1995, 40) has been credited with introducing the term “punitive populism”<sup>1</sup> to describe the rise in “politicians who use what they believe to be the generally penal stance of the public to their own advantage” by “implementing penal measures that calm alleged citizen anxieties” to gain electoral benefits (Aguilar 2018, 96). Although incarceration rates vary between countries and respond to different degrees of adherence by politicians and public opinion to punitive populism, there is a global trend toward incarceration as a preferred crime-fighting policy.

Colombia has not been an exception to this trend of more prisoners and longer prison terms during the last three decades. Between 2000 and 2016, the country's prison population doubled from 51,518 to 118,532 inmates, representing a shift in incarceration rate from 128 to 243 inmates for every 100,000 inhabitants (see Table 1). However, if 1986 (the year with the least recorded prisoners) was taken as the starting point, the prison population in Colombia more than quadrupled in 32 years, rising from 24,983 prisoners in 1986 to 118,513 prisoners by the end of 2018 (see Table 1).

An exploration of penal changes over the last decades inevitably must consider the growing relevance of non-citizens for the criminal justice system. This shift, partly nurtured by the increasingly widespread effects of international mobility phenomena, is being felt across many regions of Europe and elsewhere. The penal system, until recently, prevalently targeted destitute segments of the national (male) population involved in illegal markets. Over the last decades, non-citizen groups, often rank-and-file workforce for illegal economies, have increasingly replaced those more integrated segments of the population as targets of the criminal justice apparatus (Melossi 2015).

**Table 1: Growth rate of prisoners in Colombia, 1974–2018<sup>2</sup>**

Year	Colombian population	Persons incarcerated	Persons incarcerated per 100,000 inhabitants
1974 <sup>a</sup>	22,653,044	47,313	209
1975	23,324,669	43,709	187
1976	24,019,677	42,507	177
1977	24,735,394	34,184	138
1978	25,472,437	35,043	138
1979	26,231,445	34,017	130
1980	27,013,061	32,549	120
1981	27,817,970	28,680	103
1982	28,646,865	26,942	94
1983	29,500,459	27,445	93
1984	30,379,485	27,618	91
1985 <sup>b</sup>	31,284,703	27,767	89
1986	32,216,902	24,983	78
1987	32,920,712	27,280	83
1988	33,531,945	27,358	82
1989	34,154,517	31,077	91
1990	34,788,655	32,387	93
1991	35,434,566	26,450	75
1992	36,092,470	27,316	76
1993 <sup>c</sup>	36,207,108	29,114	80
1994	36,853,905	29,343	80
1995	37,472,184	33,258	89
1996	38,068,050	39,676	104
1997	38,635,691	42,028	109
1998	39,184,456	44,398	113
1999	39,730,798	45,064	113
2000	40,295,563	51,518	128
2001	40,813,541	49,302	121
2002	41,328,824	52,936	128
2003	41,848,959	62,277	149
2004	42,368,489	68,020	161
2005 <sup>d</sup>	42,888,592	66,829	156
2006	43,405,956	60,021	138
2007	43,926,929	63,603	145
2008	44,451,147	69,979	157
2009	44,978,832	75,992	169
2010	45,509,584	84,444	186
2011	46,044,601	100,451	218
2012	46,581,823	113,884	244
2013	47,121,089	120,032	255
2014	47,661,787	113,623	238

Year	Colombian population	Persons incarcerated	Persons incarcerated per 100,000 inhabitants
2015	48,203,405	120,444	250
2016	48,747,708	118,532	243
2017	49,291,609	114,750	233
2018	49,834,240	118,513	238

*Notes:* The source for the data is INPEC. The cutoff for each year is on December 31. Calculations are based on the National Administrative Department of Statistics (DANE by its acronym in Spanish) population census. The population data for the years between the census dates are projections.

<sup>a</sup> Census of October 24, 1973

<sup>b</sup> Census of October 15, 1985

<sup>c</sup> Census of October 24, 1993

<sup>d</sup> Census of May 22, 2005

### **The Worldwide Reduction of Crime and the Effects of Prison Confinement**

Parallel to the increase in prisoners over the past three decades, global crime—understood as the amount of criminal activity reported to authorities—has been experiencing a gradual decrease. It is calculated that global homicide rates have fallen by more than 50% since the 1990s (Roser 2016; Tonry 2014; Tseloni et al. 2010).

A superficial analysis could conclude that the reduction in crime is mainly due to the increase in the prison population since the confinement of criminals would prevent them from committing more crimes. However, the causal link between a high number of prisoners and a low crime rate is not easy to establish for two main reasons.

The first reason is that the global reduction of crime can be attributed to multiple factors aside from the mere increase in inmate numbers and its incapacitating effect. The factors that cause global crime reduction are diverse, as listed below.

#### ***The Legalization of Abortion***

The syllogism that explains this finding is simple: children born to women who wanted an abortion but were unable to have one tend to have harder and unhappier lives. Thus, these children grow up more susceptible to criminal activity. The investigation that made this finding in the US (Donohue and Levitt 2001; Levitt 2004) was later successfully replicated in Romanian (Pop-Eleches, 2006, 2010) and Canadian (Sen 2007) cases. A more recent work by Donohue and Levitt (2019) found that the reduced crime rates in the US since 1990, amounting to 45 out of 50 percentage points, were attributable to respecting a woman’s choice to have an abortion as a result of its legalization.

#### ***The Increase in the Footprint of the Police Force and the Focusing of Police Activity***

Evidence indicates that crime disproportionately concentrates in certain areas, with certain people (both offenders and victims), and with certain high-risk behavior (Abt 2017, 2019). Hence, the more focused the police activity is in areas of high crime risk, the greater the effectiveness of the crime-reducing actions.

Regarding location, it has been established that half the crimes in Latin American cities are concentrated in 3% to 7.5% of the street segments (Jaitman and Ajzenman 2016). When police surveillance ceased to be random and reactive to emergencies and instead became proactive, strategic, and focused in areas with a higher crime rate, measurable reductions in the crime rate were obtained. Strategies that are highly effective in reducing crime are the eradication of crime focal points, as well as the surveillance of criminal hotspots as a priority (Braga, Papachristos and Hureau 2014; Collazos et al. 2019).

Regarding people, approximately 10% of the population commits 66% of the crimes (Martínez et al. 2017); crimes are mostly committed by youths between the ages of 15 and 24. Antisocial behaviors such as the possession of firearms (*a fortiori* if they are illegal), excessive alcohol consumption, as well as the proximity to groups or gangs that commit crimes have proved to be highly conducive to continuing the criminal cycle. In addition, focusing police activity on “frequent offenders” is an effective way to prevent recidivism. The probability of a person committing a crime significantly increases when the legal system has previously prosecuted them. Therefore, identifying people with a high risk of recidivism is strategic in preventing repeat offenses by implementing both repressive and resocialization measures (Doleac 2019).

### ***The Implementation of Crime Prevention Programs for Children and Youth***

The volume of literature on this topic is growing (Abt, Blattman and Magaloni 2018; Sorenson and Dodge 2016; Heller et al. 2017) and supports the theory that criminals are “made,” meaning that delinquency is usually the consequence of social disadvantage in the youngest and most vulnerable populations. To prevent young people and adolescents from entering or falling back into incipient criminal lifestyles, it is advisable to promote structural changes in social conditions. It is also important to implement preventative interventions that change antisocial mindsets and increase prosocial behaviors, using programs that incorporate cognitive-behavioral and multisystemic therapies. To prevent crime as a result of dangerous behavior, the World Health Organization (WHO 2013) recommended implementing violence prevention programs that promote healthy, stable relationships between children and their guardians; develop cognitive, emotional, interpersonal, and social abilities in children and adolescents; restrict the availability and excessive consumption of alcohol; limit access to lethal weapons such as firearms, knives, and poisons; foment gender equality to prevent violence against women; encourage changes in social and cultural norms that prevent violence; and implement programs to identify, care for, and help victims.

### ***The Reduction of Poverty***

The idea behind this finding is that economic instability leads to more crimes, particularly crimes against property. Imran et al. (2018) found a statistically significant relationship between poverty and crime against patrimony in the US between 1965 and 2016. In India, there is a causal link between crime and poverty attributed to trade and climate change. Iyer and Topalova (2014) proved that drastic reductions in import tariffs and sudden variations in rainfall, which increased relative poverty in rural India during the 1990s, also increased violent crimes and crimes against property. Bharadwaj (2014) showed that in India, vulnerable people living below the poverty line engaged in criminal activities as a survival strategy. The study estimated that a 10% increase in per capita spending on education produced a 9.2% to 11.2% decrease in crimes against property. In Pakistan, Anwar, Arshed, and Anwar (2017) also evaluated the negative influence of poverty and other socioeconomic indicators on the aggregate crime rate between 1973 and 2014.

### ***The Reduction of Inequality***

Although there is little conclusive evidence to suggest that inequality always leads to higher crime rates, some case studies have shown this association. Enamorado et al. (2014) showed the causal effect of income inequality on crime by analyzing the war against drug cartels in Mexico. Between 2006 and 2012, a one-point increase in the Gini index meant an increase of more than 10 drug-related homicides per 100,000 inhabitants across 2,000 Mexican municipalities. In contrast, before 2005, no significant effects were observed. The explanation for why this effect happened during the Mexican war on drugs and not before is that the cost of crime decreased during this period because of the proliferation of gangs. These gangs facilitated access to the know-how and logistics necessary for committing crimes, thereby lowering the marginal cost of criminal behavior. According to the authors, this change, combined with growing inequality, would have increased the expected net gain of crimes after 2005.

### ***The Reduction of Unemployment***

The influence of the labor market on crime is based on the premise that people who are not part of the legal economy end up part of the illegal economy in order to survive, committing crimes against property especially. The evidence supporting this relationship between unemployment and crime is vast and based on over a hundred papers (Mustard 2010). Yamada, Yamada, and Kang (1993), for example, showed that since 1970, a link has existed between unemployment rates in men and crime in the seven main crime categories of the US.

### ***The Reduction of Global Violence***

The reduction in global violence is, in the words of Pinker (2012), “the most important thing that has ever happened in human history,” meaning that human beings today are less violent (they physically harm and kill less) than in the past. The general decline in global violence can be observed in the longitudinal comparative study of the global homicide rate (Roser 2016). According to Pinker (2012) it can be explained by five “historical forces”: the birth and consolidation of the modern state, the development of commerce, the rise of feminism, the rise of cosmopolitanism due to globalization, and the more frequent application of scientific knowledge and rationality to human affairs.

### ***The Strengthening and Expansion of Democracy***

Democracy is a powerful, social, world-pacifying technology. The evidence supporting this conclusion comes from a body of thought known as the “theory of democratic peace.” This theory has two dimensions: a democratic interstate peace, which analyzes the relationship of decreased violence between democratic states that are rarely at war with each other; and internal democratic peace, which shows that the use of illegitimate force by the government on its citizens (known as “repression”) tends to occur less in democracies than in autocracies (Flórez 2015, 138–153).

### ***The Demographic Changes***

During the decades following World War 2, the baby boom significantly increased the population of 15- to 24-year-olds (the age range where people commit the most crimes). After the baby boom, the boomers then aged, and the overall crime rate declined.

Of course, this list of explanatory variables for crime reduction found in the literature is not exhaustive, but it does provide an overview of the multicausal complexity of the criminal phenomenon.

The second reason why the causal link between more prisoners and lower crime rates is difficult to establish is that prison sentences have ambiguous effects on crime, both positive and negative. The effects of prison sentences on crime are usually classified in specialized literature according to the moment they occur: *before*, *during*, and *after* incarceration. Before imprisonment, the threat of a harsh sentence is expected to deter potential criminals from committing crimes (*deterrent effect*) because of the economic rationale behind criminal behavior: the higher the cost of committing a crime, the less incentive for a potential offender to do so (Becker 1968).

The deterrent effect, though mild, has been empirically proven in various papers. Helland and Tabarrok (2007) found that increasing sentence duration by 10% in California reduced crime by 1%. Abrams (2012) evaluated the deterrent effect for crimes involving firearms in the most populous US cities between 1965 and 2002. This study estimated that armed robbery and assaults fell by an average of 5% during the first three years following additional sentencing (*add-ons*) for the use of a firearm. (Conversely, increasing the minimum sentence did not have a statistically significant effect on crime.) However, Roodman (2017), in the most exhaustive review on the dissuasive effects of sentencing<sup>3</sup>, reported that the weak results of these two studies and others on the subject are questionable because these studies incorporated distinct interpretations of the data and, at times, were not replicable in other contexts.

Mastrobuoni and Rivers (2016) exploited the quasi-experiment provided by the collective pardon law implemented in Italy in July 2006, which led to the early release of around 20,000 inmates (more than a third of the Italian prison population). Thanks to this law, prisoners with less than three years of their sentence left were immediately freed on the condition that if they reoffended, the prison time pardoned in the past would be added to their new sentence. The main conclusion of the study by Mastrobuoni and Rivers was that the deterrent effect of further sentencing worked best during the early years of the sentence and depended on the value that the convict placed on the future, which in turn was influenced by variables such as age, education, type of crime and nationality. Older, less educated, and immigrant prisoners were less likely to be deterred by longer sentences since they cared less about the future, whereas offenders who committed drug-related crimes and organized prostitution were more likely to be deterred.

Rose and Shem-Tov (2018) calculated that, in North Carolina, one year of prison reduced the probability that the offender would commit future assaults, crimes against property, and drug trafficking by 38%, 24%, and 20%, respectively, within the first three years of the original sentencing. This means that imprisonment does incapacitate offenders, but its effect diminishes with time, the longer the individual remains behind bars.

Secondly, as inmates cannot commit crimes outside the prison during their detention, an *incapacitation effect* is expected. There is evidence of this effect on property crimes (despite the new opportunities that imprisonment also creates for crime *within* the prison).

Certainly, imprisonment “incapacitates” criminals while they are isolated. Roodman (2017, 8) estimated that the release of prisoners convicted for misdemeanors (nonviolent or nonsexual offenses) in California after the application of “realignment” in 2011<sup>4</sup> resulted in each year of unapplied prison sentencing causing an increase of 6.7% in crimes against property (burglary, general theft, and motor vehicle theft). The work of Lofstrom and Raphael (2016), also about the 2011 Californian reform, concurred.

A similar result was found by the research of Domínguez, Lofstrom, and Raphael (2019) on Proposition 47 in California, a piece of legislation popularly passed on November 4, 2014, which reclassified some drug-related offenses and nonviolent theft as misdemeanors, causing a reduction of 7,600 prisoners (9% of the prison population). This study found that the reform did not have any influence on violent crimes, but it did increase crimes against property by between 5% and 7%. Bird et al. (2018) arrived at the same conclusions.

Finally, there are the *after-effects* of having been in prison. The price for maintaining criminals incarcerated is high due to the criminogenic effect of confinement. First, as prisons are generally hostile environments, they do more to psychologically damage inmates than rehabilitate them (Haney 2001; Hogenboom 2018; Jarret 2018; Meijers et al. 2018). Second, a convict in prison creates ties with other criminals that continue upon release and strengthen criminal networks (Lessing 2017; Skarbek 2016). Third, the condition of being an ex-convict also produces a stigma that hinders the process of reintegration into society, particularly for finding employment (Dobbie, Goldin and Yang 2018; Mueller-Smith 2015<sup>5</sup>). All of these factors can increase the proclivity of the former prisoner to recidivism (Nagin, Cullen and Jonson 2009).

Various studies have shown that in the US, more prison years result in more crime after prison or a lack of deterrent effect (Chen and Shapiro 2007; Gaes and Camp 2009; Loeffler 2013; Nagin and Snodgrass 2013). Green and Winik (2010), for example, calculated that for drug-related crimes in Washington DC, offenders who received longer sentences (due to being processed by stricter judges) had a higher probability of being arrested again upon leaving prison in the first four years following release than those who received shorter sentences. Such results indicated that, at least for drug-related crimes, longer sentences do not have a deterrent effect on future criminal behavior but rather the opposite consequence.

Mears et al. (2016) analyzed data from 90,423 freed prisoners in Florida and concluded that longer prison terms initially increased recidivism, but after approximately a year they diminished it, and after approximately two years they had no effect at all. The work of Rose and Shem-Tov (2018), suggestively titled “Does incarceration increase crime?” arrived at the painful conclusion that, even though incarceration temporarily disables offenders by isolating them from society, it can also negatively influence their criminal behavior following release. Further, as incarceration has modest deterrent effects that diminish with time, the authors concluded that an analysis of cost-benefits suggested that “the benefit of reducing crime by lengthening sentences (through incapacitation and behavioral channels) is outweighed by the large fiscal costs of incarceration.”

Harding et al. (2019) evaluated how prison sentences affect future violent crime. They compared people sentenced to prison to those serving probation in Michigan from 2003 to 2006 (111,110 observations). These individuals were monitored until 2015 to detect later convictions for violent crimes. The study found that sending someone to prison did not affect the probability that they would be convicted for a new violent crime in the five years following their release compared with those sentenced to probation. In other words, prison confinement had no long-term preventative effect on violence beyond a less severe and more cost-effective sentence such as probation. However, incarceration did have an effect in the short-term during the time the offenders were in prison, albeit a weaker effect than expected. Preventing someone who was previously convicted of a violent crime from committing a new violent crime within five years of release required the incarceration of 16 such individuals.

A good summary of the effects of prison time is that “incarceration’s ‘before’ effect is mild or zero while the ‘after’ cancels out the ‘during’” (Roodman 2017, 8). The threat of going to prison operates as a deterrent mechanism to crime because of the *imminence* (certainty and promptness) of the punishment, rather than its severity (Nagin 2013), which in the case of imprisonment corresponds to the duration of the sentence. Therefore, when used reasonably, incarceration can prevent crime due to its deterrent and incapacitation effects. However, “its indiscriminate use can lead to situations such as that of the United States, where it is estimated that the marginal impact of incarceration on crime prevention is not significant” (Izquierdo, Pessino and Vuletin 2018, 251–255).

In short, an analysis of the available evidence on the deterrent effect of prison sentences suggests three conclusions: i) increasing prison sentences (already quite long in most cases) has a deterrent effect that is modest at best, if it exists at all; ii) increasing police presence so that criminals feel at higher risk of being caught has a substantially increased deterrent effect than incarcerating criminals for long periods; iii) comparing other punishments that do not involve incarceration, such as probation (also known as “specific deterrence”), with prison sentences suggests that prison does not prevent recidivism but rather the contrary, having a criminogenic effect derived from incarceration (Durlauf and Nagin 2011).

Ultimately, the myth that mass incarceration for long periods helps to reduce crime is falling apart (Lufkin 2018), giving rise to the need to promote four new types of crime-fighting policies: i) changing the social conditions that breed crime; ii) preventing crime through interventions at an early age in high-risk populations; iii) employing measures with proven and intense deterrent effects such as the threat of being caught by the police, focusing more on the *certainty* of punishment—and, therefore, in the reduction of impunity—than on the *severity* thereof; iv) creating more humane prisons that work as rehabilitation centers, facilitating the process of social reintegration of individuals upon release instead of destroying them psychologically and socially, as occurs in conventional prisons.

### **The Effect of Mass Incarceration on Colombian Criminality**

Has keeping more people in prison contributed to reduced criminality in Colombia? Incarceration advocates expect that increased prison sentencing will deter potential offenders and incapacitate them when they are incarcerated.

Various studies have evaluated the effects of prison on crime. Levitt (1996) estimated that the reduction of one prisoner is associated with the commission of 15 more crimes a year in the US. However, he also warned that the simultaneity bias between both variables (increases in the prison population are likely to reduce the number of crimes, but it is also evident that increases in crime will also be translated into larger prison populations) is the biggest obstacle for the analysis of regression because it can lead to a dramatic underestimation of the true magnitude of the effect prison has on crime. For this reason, as an instrumental variable to isolate the effect of prison, he used the judicial processes initiated by prison overcrowding in 12 federal states of the US that had reduced the growth of the prison population with respect to the rest of the country. In these 12 states, the effect of incarceration on crime could be more accurately calculated and was two to three times greater than in previous estimates.

In subsequent work, Levitt (1998) estimated that the effect of arrest rates on crime was empirically greater by way of deterrence than incapacitation, particularly for crimes against property. This finding suggested that it is more effective to invest in resources to deter the potential criminal, particularly through progressive punitive policies such as “three strikes,”<sup>6</sup> according to the author<sup>7</sup>, than by keeping people incarcerated for long periods.

Lynch (1999) observed the variation of the aggregate incarceration and crime rates for every 100,000 inhabitants in every federal state in the US<sup>8</sup> between 1972 and 1993 to evaluate the effect of prison on crime. During this period, while the prison population steadily grew by 265%, the number of crimes committed grew by 32%. The correlation analysis showed that although the relationship between the two variables was inverse (more prisoners, less crime), it was not statistically significant, which indicated that there was no certainty that changes in incarceration would affect crime rates.

A similar exercise was performed by Jaramillo and Maya (2017) to measure the effect of prison population size on the general crime rate in Colombia between 1994 and 2014. They found a statistically significant direct relationship between both variables, such that an increase of one person in the prison population corresponded to an increase of 0.035 in the number of crimes committed. Based on these data, the authors concluded that “in Colombia, prisons have no deterrent effect. Contrarily, they encourage new crimes by creating new criminals from unfortunate situations, placing them where they will be in contact with other criminals.”

DeFina and Arvanites (2002) improved the methodology by using aggregated data on the incarceration and crime rates between 1971 and 1998 in the 50 states of the US and Washington DC, running different regressions in each state for seven different crimes. They found that incarceration had a significant effect on reducing the crime rate for just three of the seven considered crimes: larceny, burglary, and car theft. Homicide was not significantly affected by the incarceration rate, corroborating previous research (Becci 1999; Marvel and Moody 1994). DeFina and Arvanites (2002) concluded that it is misleading to speak of “the” effect of incarceration on any crime because the effects vary depending on the type of crime and conditions—especially economic conditions—of the context. In some cases, incarceration had a statistically significant positive effect on crime rates; in others, it had a statistically significant negative effect; and in others, there was no effect that was statistically significant.

This research evaluated the effect of an increased prison population on Colombian crime rates in the last 25 years (1994–2018). A probabilistic linear regression model was used in which the dependent variable was the crime rate per 100,000 inhabitants disaggregated for four crimes: homicide, theft, personal injury, and kidnapping. The explicative variable was the proportion of the prison population incarcerated each year for the same crimes adjusted for demographic growth (prisoners for each crime for every 100,000 inhabitants). To mitigate the possible effect of the simultaneity between the two variables, the explanatory variable (percentage of prisoners) was temporarily delayed and compared with the dependent variable (crime rate in question) in the following year.<sup>9</sup> It should be recognized that the problem of simultaneity of the two variables can also be solved by using an exogenous instrumental variable that allows for the

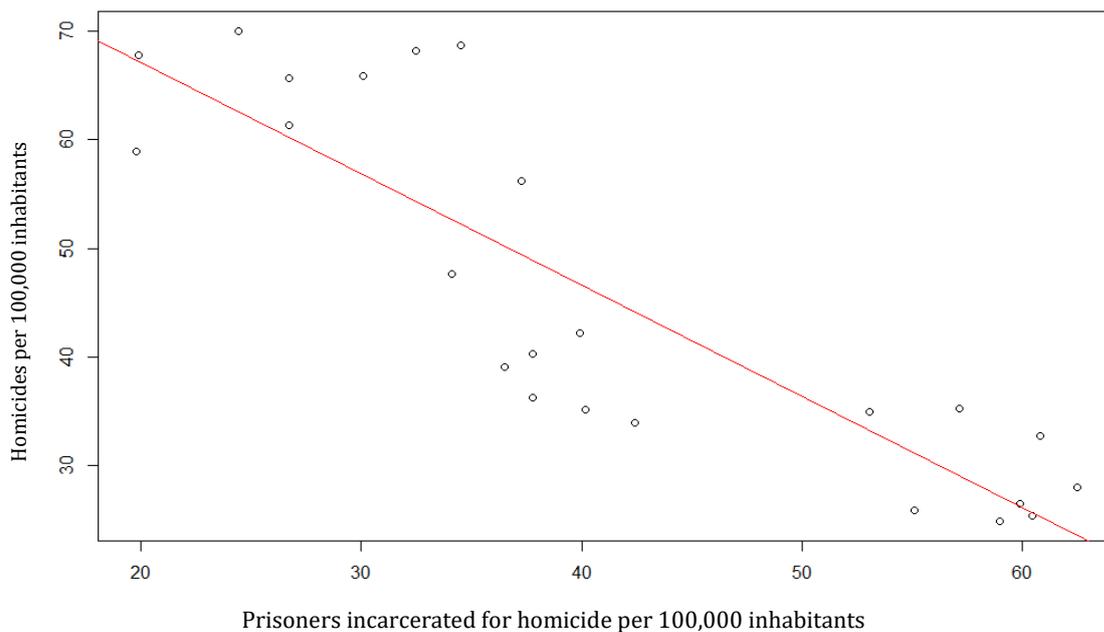
isolation of the explanatory variable’s effect (Ullah, Akhtar and Zaefarian 2018). However, we lacked the data necessary to apply that statistical strategy to this research (see Table 2).

**Table 2: Results of one-year lag regressions and correlation analysis**

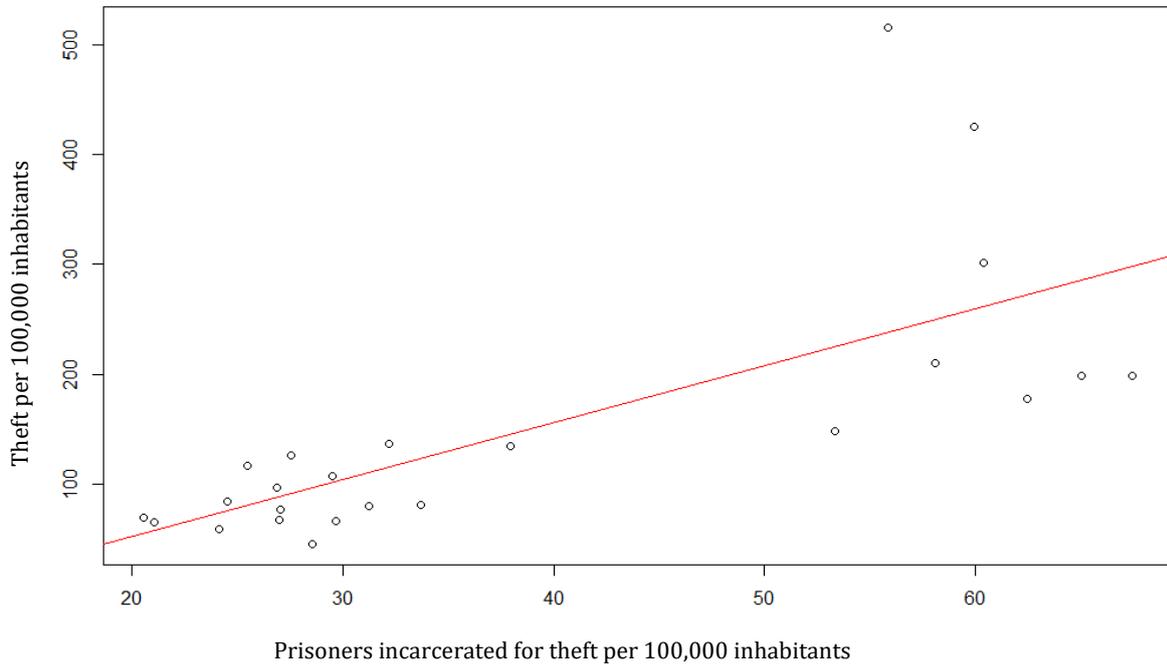
Statistics	Homicide	Theft	Personal injury	Kidnapping
Correlation ratio	-0.8677236	0.7202963	0.5155873	-0.7295229
Determination ratio ( $R^2$ )	0.7417	0.4970	0.2325	0.5109
Significance ( $P$ value)	$4.00 \times 10^{-08}$ **	$7.21 \times 10^{-05}$ **	$9.92 \times 10^{-03}$ *	$5.23 \times 10^{-05}$ **
Standard error (dispersion)	0.1251	1.067	7.339	0.1395
Number of observations	24	24	24	24

Notes: \* $P \leq 0.01$ ; \*\* $P \leq 0.001$ .

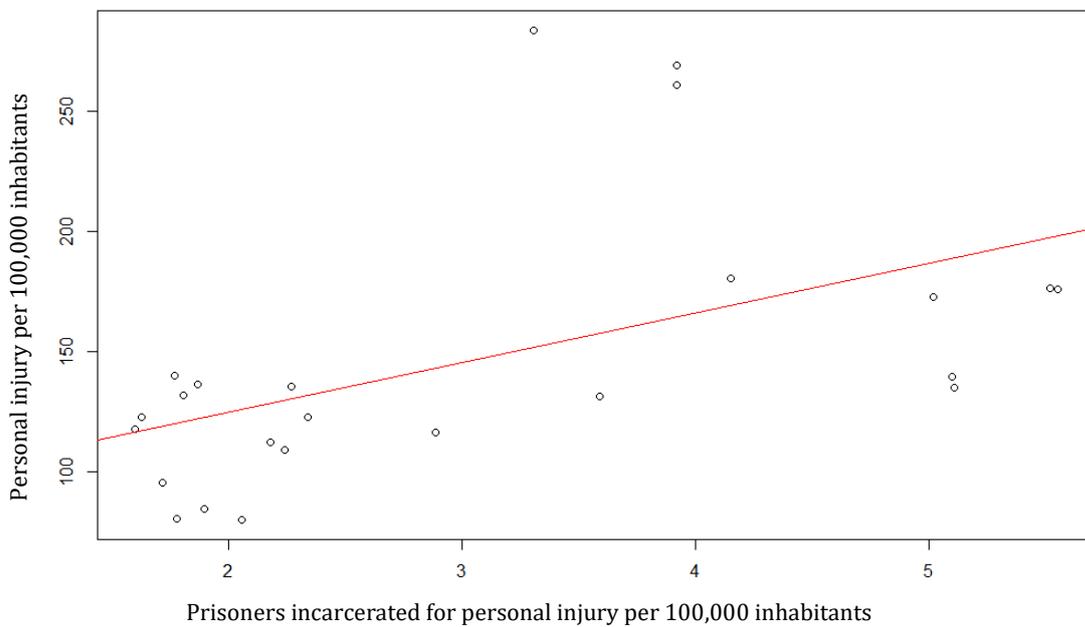
In Figures 1 to 4, the level of dispersion in the regressions for each crime is presented, illustrating the robustness of the causal link that could be inferred between incarceration and crime in Colombia. The data on the composition of the prison population was provided by INPEC, and the information about crime was obtained from the Statistical, Criminal, Contraventional and Operational Information System of the National Police (SIEDCO by its acronym in Spanish).<sup>10</sup>



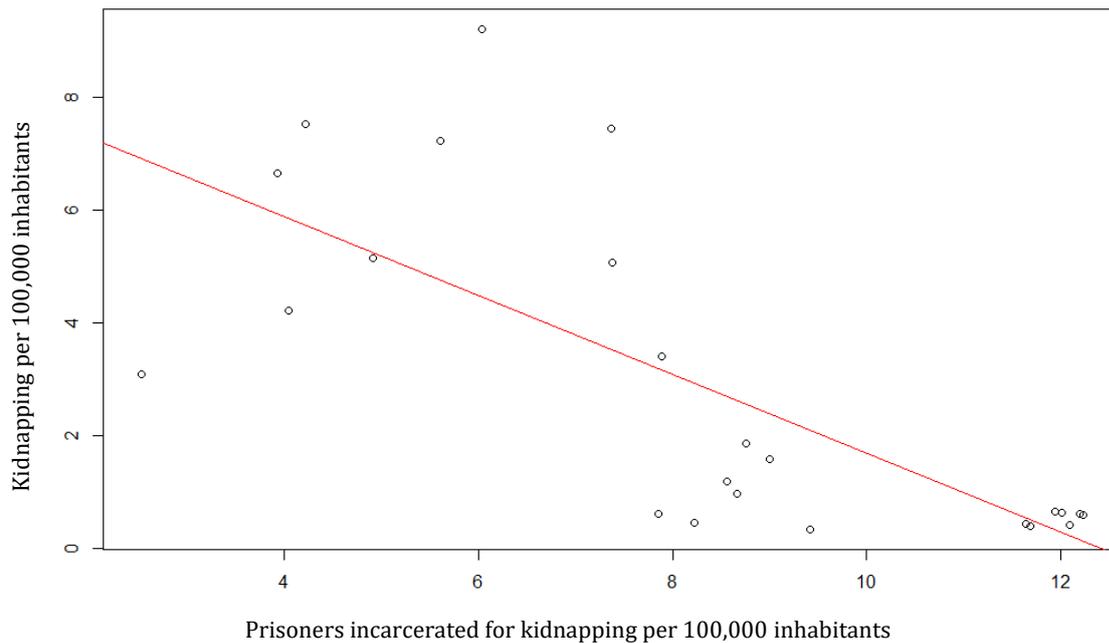
**Figure 1: Homicide**



**Figure 2: Theft**



**Figure 3: Personal injury**



**Figure 4: Kidnapping**

The correlation analysis indicated that the negative variation of the crime rate with respect to the incarceration rate was only present in crimes of homicide and kidnapping. In contrast, for theft and personal injury, the variation was positive (incarcerating more people for these crimes was associated with an increase in this type of crime). These results indicate that the deterrent and incapacitation effects of prison sentences were only associated with homicides and kidnappings since imprisoning more people for theft and personal injuries did not reduce the incidence of those crimes but instead increased it.

The regression analysis showed that the negative correlation between incarceration rate and crime rate was statistically significant for homicides and kidnappings (see Table 2 and Figures 1 and 4), supporting the hypothesis that incarceration has a deterrent effect and an incapacitating effect on these crimes. There was also a statistically significant relationship between incarceration rate and theft (see Table 2 and Figure 2), and incarceration rate and personal injury (see Table 2 and Figure 3), but the correlation in each case was positive and opposite to that expected: incarcerating more people for these crimes led to more crimes of this nature being committed.

The explanation for the reduced effect of prison on homicides and kidnappings could lie in the professionalization of these crimes in the country. In Colombia, most homicides are ordered by organized crime and executed by professional hitmen. In 2018 alone, as reported by the Attorney General’s Office<sup>11</sup>, of the 12,457 homicides committed, 54.65% (6,808 of the total) resulted from disputes between criminal organizations and were executed by hired assassins. As for kidnappings, because of their complexity, these crimes also demand organizational structure. The professional nature of homicides and kidnappings could account for why incarcerating hitmen, and kidnappers results in a reduction of these crimes.

Conversely, the rate of theft and personal injuries did not diminish with increases in inmate numbers; instead, they surged. Different arguments could explain this phenomenon. First, the well-known criminological theory of “labeling” maintains that prison stigmatizes convicts before society and themselves by putting them in contact with other criminals in the hostile prison environment (Silva 2011, 324). Consequently, incarceration professionalizes criminals in their incipient prison life because prisons

are too often “crime schools” rather than rehabilitation centers. The “disorganization theory” also suggests that incarceration could increase crime by weakening mechanisms of informal social control over criminal activity: social control as exercised by individuals, families, and communities over people who are not yet incarcerated. Rose and Clear (1998, 441) warned that imprisoning people may well “exacerbate the problems that lead to crime in the first place.” However, without further evidence, the results of the regression analysis simply suggested that the causal factors of theft and personal injury, that is, the causal dynamics of these crimes, could not be counteracted by incarceration, and not necessarily that incarceration itself is a determining causal factor of these crimes, as the “theory of labeling” proposes.

Second, the frequency in which theft and personal injuries are committed in Colombia is also determined by variables other than those considered in our regression model. Notably, as discussed *supra*, there is evidence that crimes against property respond to economic factors such as increases in unemployment, poverty, and inequality. For this reason, the state achieves little to nothing by incarcerating thieves if the economy does not offer them legal means of subsistence and social mobility. In turn, personal injury could also be interpreted as a “less professionalized” crime than homicide and kidnapping insofar as it occurs as a consequence of episodes of violence exacerbated by the effect of alcohol or other drugs, especially in public places such as discotheques and stadiums. In these cases, the wrongdoers are casual offenders rather than professional criminals. A strategic approach that could reduce the incidence of personal injuries (without resorting to incarceration) could include preventing fights and their triggers (especially alcohol consumption), forcing offenders to compensate their victims financially, and allowing the offenders to remain economically active so they can pay for the damage instead of confining them to a prison.

One prisoner costs the Colombian State around 18,157,194 pesos a year<sup>12</sup> according to the calculations of INPEC.<sup>13</sup> This cost analysis did not take into account the additional cost of isolating a person who, if free, could be economically productive. Nor did it consider the progressive psychological damage due to the inhumane conditions of confinement caused by prison overcrowding (which, as of June 30, 2019, reached 52.3%) and the stigma ex-convicts will carry upon release that will make it difficult for them to find employment and rebuild their life.

## **Conclusions and Recommendations**

The main conclusion that emerges from this research is that not all crimes respond in the same way to prison sentences. For this reason, the use of incarceration should be strategic in terms of the criminological context and the results obtained for each type of crime.

For instance, while homicide rates in the US did not respond to incarceration (Becsi 1999; DeFina and Arvanites 2002; Marvell and Moody 1994), in Colombia, likely because murder is professionalized, confining murderers had a measurable effect on reducing homicides. Similar results were observed with kidnapping—a crime typically committed by organized crime gangs—which was reduced when professional kidnappers were isolated.

In contrast, in the Colombian context, the rates of theft and personal injuries did not appear to respond to incarcerating offenders for these crimes. These crimes are less frequently committed by criminal organizations, and their main causes (as in the case of theft) could be economic factors such as poverty, inequality, and unemployment. Personal injury is more a product of occasion than professionalization and occurs when individuals are exposed to dangerous situations and behaviors, such as excessive alcohol consumption at parties.

Therefore, it would be useful to explore the application of alternatives to prison that are less onerous for the state and taxpayers, such as probation, for crimes including theft and personal injury that fail to respond to incarceration. Prison sentences, because of their enormous cost, should be reserved for the most serious and violent crimes, for which sentencing has proven effective in reducing crime.

For a more rigorous evaluation of the effect of mass incarceration on crime in Colombia, as well as a complete strategic analysis, more data are needed. The characterization of the Colombian prison population by INPEC only began in 1994. In future, data spanning more years and including a greater number of observations will allow for a more robust evaluation.

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- <sup>1</sup> According to Flórez (2014), “measures of harsher punishment or the creation of new penal types are considered punitive populism when they are not effective in reducing crime but are promoted merely for satisfying the repressive demands of public opinion.” It should be added that the effectiveness of such policies can only be measured by empirical impact evaluations.
- <sup>2</sup> This information was obtained from a reply to a petition for information; date of reply from INPEC July 19, 2019.
- <sup>3</sup> Two previous reviews of the literature on the subject can be found in Durlauf and Nagin (2011) and Nagin (2013).
- <sup>4</sup> “Realignment” led to the release of 34,000 prisoners, causing a 20% reduction in California’s prison population, but created an increase of 10,000 prisoners in county jails (Domínguez et al. 2019, 2).
- <sup>5</sup> Both studies dealt with the American case. For contrary evidence in Norway, where prison sentences did exhibit a deterrent and resocializing effect, read Bhuller et al. (2016). <http://www.kriminalomsorgen.no/information-in-english.265199.no.html>
- <sup>6</sup> The three strikes policy established a progressively aggravated punishment and provided that a third crime committed by the same offender was punishable by life in prison or another severe punishment.
- <sup>7</sup> For arguments and evidence against the dissuasive effectivity of the laws of three strikes read Vitiello (2002) and Zimring, Hawkins, and Kamin (2003). Nagin (2013, 5) considered that the anti-crime effect of the three strikes laws was obtained exclusively through incapacitation.
- <sup>8</sup> The study did not consider the population of federal prisons or crimes on a federal level.
- <sup>9</sup> The same statistical strategy was used in the work of Marvell and Moody (1994).
- <sup>10</sup> The criminal statistics from the National Police are publicly accessible at the following link: <https://www.policia.gov.co/grupo-información-criminalidad/estadistica-delictiva>
- <sup>11</sup> Entity’s criminal census. Data published by the newspaper *El Tiempo* (2019) on January 13, 2019: <https://www.eltiempo.com/justicia/delitos/indice-de-homicidios-crece-en-colombia-en-el-2018-313930>
- <sup>12</sup> This is approximately US\$5,000.
- <sup>13</sup> Information obtained from a reply to a petition for information on July 19, 2019.

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