IDB
Inter-American
Development Bank

Closing Knowledge Gaps: Toward Evidence-Based Crime Prevention Policies in Latin America and the Caribbean

Institutions for
Development Sector

Institutional Capacity
of the State Division

TECHNICAL
NOTE Nº
IDB-TN-848

Laura Jaitman
Roberto Guerrero Compeán

October 2015

Closing Knowledge Gaps: Toward Evidence-Based Crime Prevention Policies in Latin America and the Caribbean

Laura Jaitman
Roberto Guerrero Compeán

October 2015

IDB
Inter-American
Development Bank

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Jaitman, Laura.
Closing knowledge gaps: toward evidence-based crime prevention policies in Latin America and the Caribbean / Laura Jaitman, Roberto Guerrero Compeán.
p. cm. — (IDB Technical Note ; 848)
Includes bibliographic references.
1. Crime prevention—Latin America. 2. Crime prevention—Caribbean Area.
3. Public safety—Latin America. 4. Public safety—Caribbean Area. I. Guerrero Compeán, Roberto. II. Inter-American Development Bank. Institutional Capacity of State Division. III. Title. IV. Series.
IDB-TN-848

http://www.iadb.org

Contact: Laura Jaitman, ljaitman@iadb.org
Roberto Guerrero Compeán, rguerrero@iadb.org

ABSTRACT*

This publication identifies the main areas of research that the Citizen Security and Justice Cluster of the Inter-American Development Bank (IDB) will undertake in the next four years. The Latin American and Caribbean (LAC) region is the most violent region in the world. Crime and violence are the population's key concerns. Crime, however, has been a consistently understudied field in the region. While most of the knowledge originates from the United Kingdom and the United States, the issues that arise in LAC compels the research community to produce evidence on the cause of the high prevalence of crime in the region and on what models are effective to reduce and prevent crime. For more than 15 years, the IDB has been a major partner to the region's countries, providing technical and financial support for crime prevention interventions. The expertise of the IDB and its presence in most LAC countries are comparative advantages to advocate a comprehensive research agenda.

JEL Codes: C93, D04, K14, K42

Keywords: citizen security, evidence-based policies, impact evaluation

* This document is based on the Citizen Security Sector Framework Document, approved by the IDB in June 2014.

TABLE OF CONTENTS

ABBREVIATIONS

APAC	Association for the Protection and Assistance of Prisoners (Associação de Proteção e Assitência aos Condenados
CCTV	Close-circuit television
COPS	Community Oriented Policing Services
ICHR	Inter-American Commission of Human Rights
IDB	Inter-American Development Bank
HEINU	European Institute for Crime Prevention and Control
IGESP	Program of Integration and Management in Public Safety (Programa Integração da Gestão em Segurança Pública), Brazil
ILANUD	United Nations Latin American Institute for the Prevention of Crime and the Treatment of Offenders
LAC	Latin America and the Caribbean
LPR	License plate readers
POP	Problem-oriented policing
PSN	Project Safe Neighborhood, Chicago
SES	Standardized Regional System of Indicators for Citizen Security and Violence Prevention
UNODC	United Nations Office on Drugs and Crime

PREFACE

The last decade has been exceptional for Latin America and the Caribbean (LAC). Between 2004 and 2014, most of the economies of the region experienced annual growth rates close to 4 percent. Such rapid growth, which was unprecedented after World War II, was the result of high levels of investment and trade as well as a decline in unemployment and financial stability. LAC citizens are healthier and more educated than ever. The Millennium Development Goal of halving, between 1990 and 2015, the proportion of people living on less than $1.25 a day was attained in 2008, seven years in advance.

The last decade was also exceptional because crime and violence levels in LAC became disproportionately high—so high that they are now considered to be at epidemic levels by the World Health Organization (WHO). Throughout the last decade, with a homicide rate of over 20 per 100,000 population, LAC established itself as the most murderous place on Earth, with violence levels continuing to intensify in some countries. Even though the region is home to less than 9 percent of the world population, it accounts for 33 percent of the world's homicides. On average, 6 out of 10 robberies in LAC, which are on the rise, are violent. Our criminal justice systems fail to be effective: fewer than 10 percent of homicides in the region are resolved. Incarceration rates have soared and, as a result, LAC prisons have become the most overcrowded of the world, with inmate populations more than doubling their designated capacity.

The cost of crime and the fear of crime, in both the economic and social dimensions, is soaring, posing a threat to the development process of towns, cities, and even entire countries: it affects the behavior of individuals, constrains the investment decision of firms, erodes the trust in institutions responsible for ensuring safety, and distorts the allocation of public and private resources. The region's limited institutional capacity for crime reduction and prevention further exacerbates this problem. This is the reason why the Inter-American Development Bank (IDB) has actively promoted comprehensive interventions for reducing and preventing crime and violence and delivering safety, security, and justice in 26 countries for almost two decades. According to victimization surveys, one in four LAC citizens now considers public security the most important problem in their countries. Aware of the situation, many governments have sought assistance to improve the effectiveness and efficiency of their citizen security policies. The IDB's involvement in citizen security and justice has thus justifiably intensified. Unlike other development disciplines, like education or health, where there is a robust body of literature and a broader consensus of what works in LAC, crime remains a consistently understudied area.

Nonetheless, by doing an exhaustive review of the academic literature on crime, we have found that research has increased in intensity and quality over the past two decades, party as a result of the vigorous application of experimental and quasi-experimental methodologies. In this context, however, many important questions are unsettled. The Citizen Security and Justice (CSJ) cluster within the Institutional Capacity of the State Division (ICS) at the IDB has placed particular

emphasis on the development and application of research to guide its policy design process. Of course, the most violent region in the world needs citizen security knowledge production the most. More specifically, CSJ supports a development practice based on scientific evaluation. This is so because not only does it help the institution assess the impact of its own interventions, but it also provides solid evidence that its work does in fact improve the many dimensions of citizen security.

This document provides an in-depth analysis of the state of the art in citizen security research, not only to identify critical knowledge gaps in the literature—ones that the IDB will endeavor to close over the next few years—but also to contribute to the dissemination of evidence-based crime reduction and prevention strategies, providing a solid starting point to take stock of what we know and what the priorities for future research should be.

We acknowledge that the IDB is well positioned to facilitate such a learning process. To this end, CSJ's research agenda, by being closely linked to its operational agenda, ensures rigorous analysis that considers idiosyncratic complexities and accounts for practical constraints, thus enabling innovative and effective policymaking, making our analytic work of the highest standards. Furthermore, CSJ is committed to strengthening its knowledge generation and dissemination capacity by promoting impact evaluations of promising interventions related to crime and violence, catalyzing academic cooperation, and stimulating dialogue between regions and countries to build capacity in the region. With this technical note, we contribute to these goals.

I thank the authors, Laura Jaitman and Roberto Guerrero Compeán, for their leadership and diligence in consolidating the IDB's Citizen Security and Justice Research agenda, as well as Rogelio Granguillhome, Victoria Anauati, and Andrea Fariña, for their excellent research assistance. This document is the product of analysis and productive discussions that culminated in the First IDB Crime Prevention Roundtable, held in Washington, DC in April 2015. I am grateful to Thomas Abt (Harvard University), Jorge Agüero (University of Connecticut), Rafael Di Tella (Harvard University), Cynthia Lum (George Mason University), Stephen Machin (University College London, London School of Economics), Marco Manacorda (Queen Mary University), Emily Owens (University of Pennsylvania), Rachel Santos (Florida Atlantic University), Ernesto Schargrodsky (Universidad Di Tella), and Rodrigo Soares (São Paulo School of Economics, Fundação Getúlio Vargas) for their valuable input and feedback to our cluster's research work during and after this event. I especially thank Sebastian Galiani (University of Maryland, J-PAL) for his guidance in writing this document. Last but not least, I thank my colleagues at the IDB, Beatriz Abizanda, Dino Caprirolo, Mauricio García, Phil Keefer, Santiago Levy, Lina Marmolejo, Andrew Morrison, Norma Peña, Andrés Restrepo, César Rivera, Ana Maria Rodriguez, Carlos Santiso, Carlos Scartascini, Rodrigo Serrano, Carina Solmirano, Jean-Eric Theinhardt, and Karelia Villa for their extremely detailed and useful comments.

Nathalie Alvarado
Coordinator, Citizen Security and Justice Cluster
Inter-American Development Bank

1 INTRODUCTION

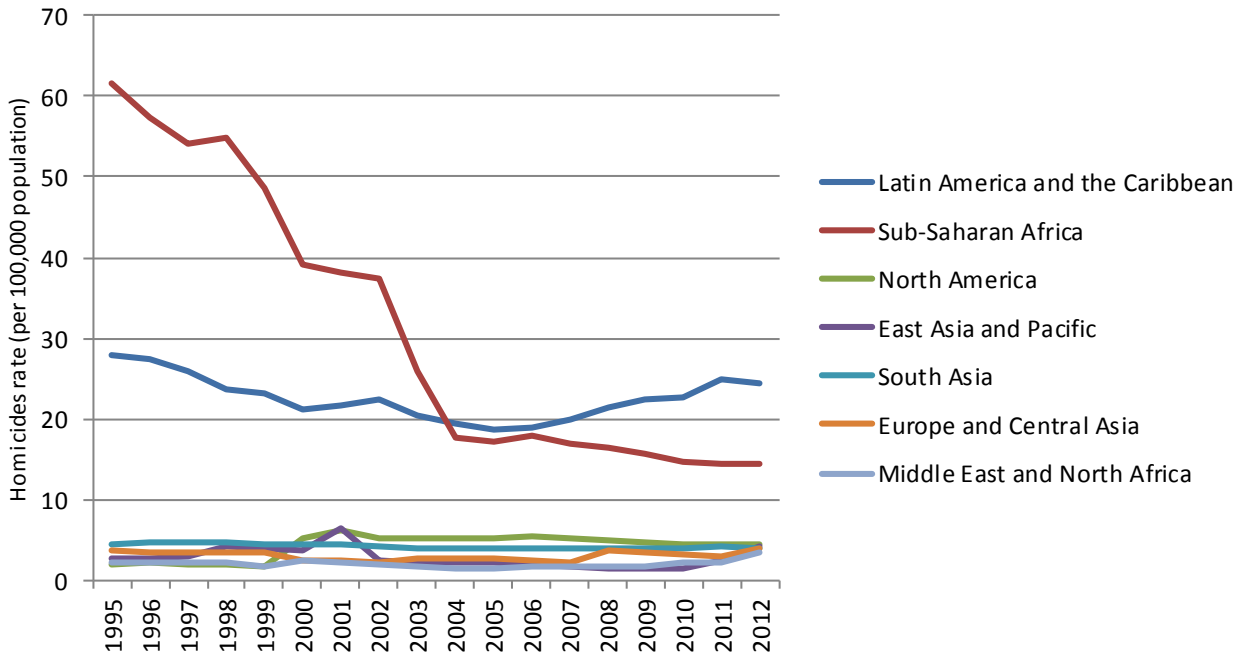
Nogales, Sonora (Mexico) is only 15 minutes' drive from Nogales, Arizona (United States), but they are a world apart. Bordering each other, the two cities are well-known and are often compared by policymakers, because in spite of their shared geography and history, the two are strikingly different in virtually all aspects of their economic and social development. This is particularly true with regard to crime and violence. In 2014, the homicide rate in Nogales, Sonora, was close to 30 per 100,000 population, a 30 percent increase from the previous year. In contrast, no murders were reported in Nogales, Arizona, during 2013 or 2014, and only three homicides have been recorded since 2001. In 2013, the most recent year for which disaggregated crime data are available, 57 motor-vehicle thefts and 94 burglaries occurred in Nogales, Arizona, while 458 motor-vehicle thefts and 288 burglaries took place in Nogales, Sonora. The theft rate in Nogales, Sonora, at 558 incidents per 100,000 population, is 23 times higher than that of Nogales, Arizona (FBI, 2014; SESNSP, 2015).

Unfortunately, Nogales, Sonora, is not an exception in the region. According to the latest United Nations Office on Drugs and Crime (UNODC) estimates for 2014 (UNODC, 2014), the total number of murders worldwide was 437,000 in 2012—equivalent to a worldwide homicide rate of 6.2 per 100,000 population. LAC is home to less than 9 percent of the world's population, yet the region accounts for 33 percent of global homicides, making it the region with the most murders worldwide, with Africa trailing at 31 percent. Asia ranks third with 28 percent of homicides, distantly followed by Europe and North America, representing only 5 percent and 3 percent of the total, respectively, and Oceania that accounts for less than 0.3 percent. Indeed, with regional homicide rates of over 20 per 100,000 population—more than three times the world average—Latin America and Southern Africa are the most dangerous places (Figure 1).

While violence levels are significantly low in many areas of the world, and in other dangerous regions such as Sub-Saharan Africa it continues to decrease, LAC is the only region where violence remains elevated and, based on 2005 data, it is rising rapidly. Furthermore, violence levels are so high in most LAC countries that its spread is equated to that of an epidemic by international standards (Figure 2).

An ever further endemic problem is theft. Although the data are less reliable in terms of comparability and are more dated than those

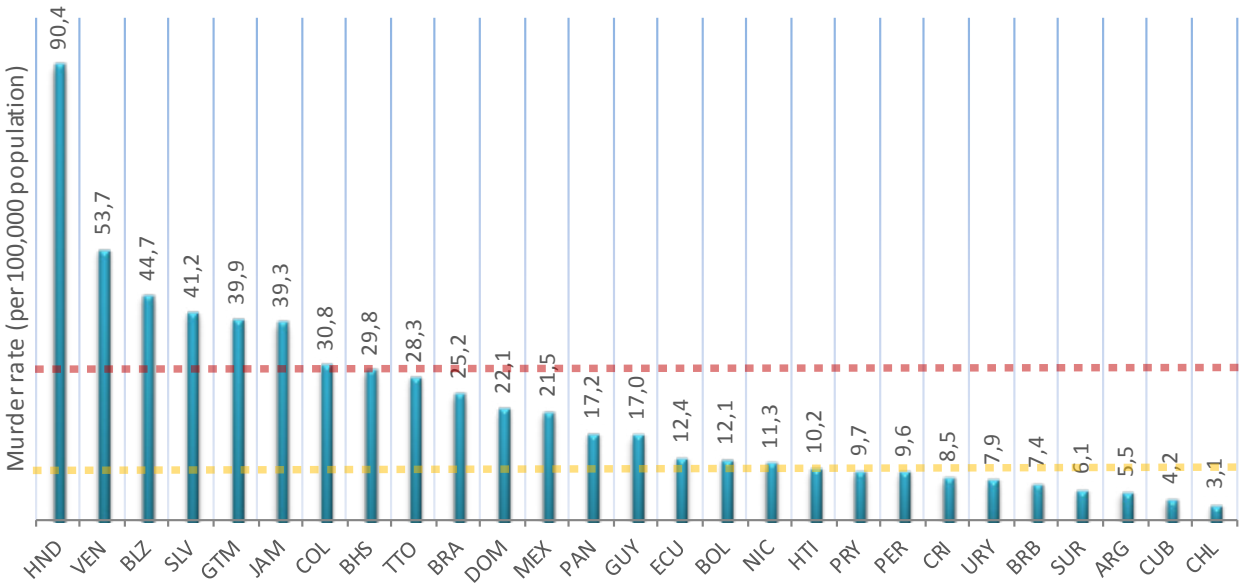
Figure 1. Intentional Homicides, 1995–2012



Source: Jaitman and Guerrero Compeán (2015).

Median rates per 100,000 population.

Figure 2. Intentional Homicides by Country, 2012 *(or latest year available)*

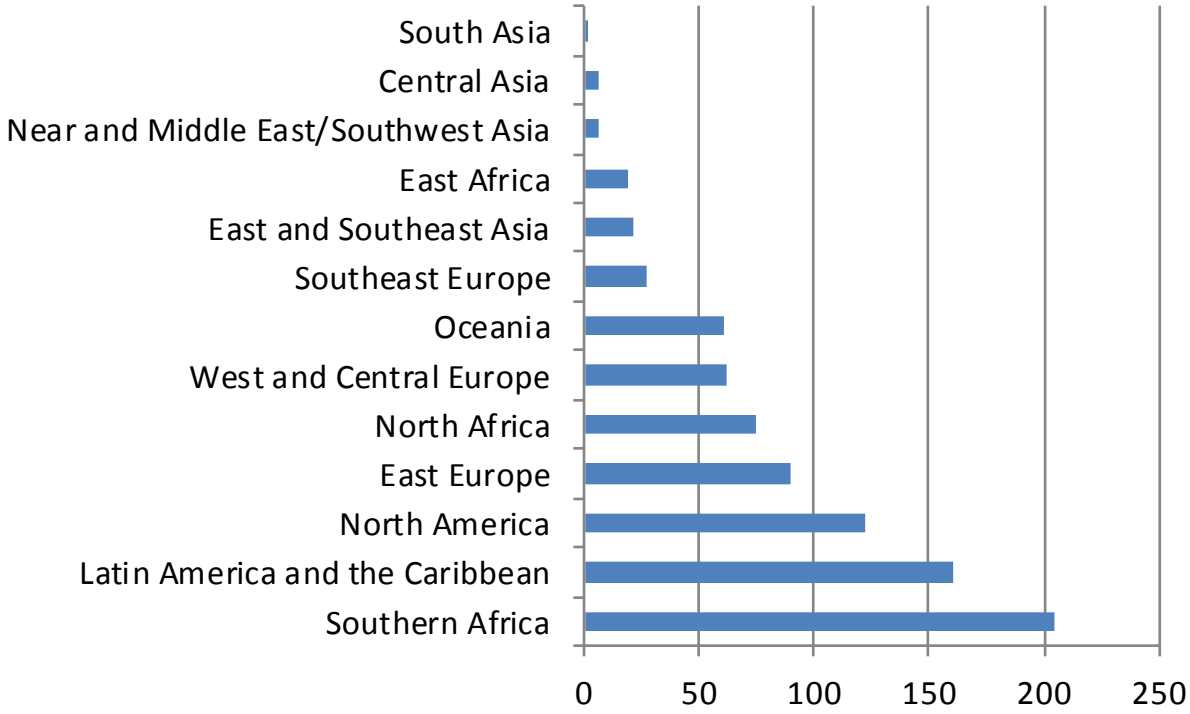


Source: Jaitman (2015).

Notes: Median rates per 100,000 population. The yellow line indicates an epidemic level of violence; the red line indicates a civil conflict level of violence. Country codes: HND (Honduras), VEN (Venezuela), BLZ (Belize), SLV (El Salvador), GTM (Guatemala), JAM (Jamaica), COL (Colombia), BHS (Bahamas), TTO (Trinidad and Tobago), BRA (Brazil), DOM (Dominican Republic), MEX (Mexico), PAN (Panama), GUY (Guyana), ECU (Ecuador), BOL (Bolivia), NIC (Nicaragua), HTI (Haiti), PRY (Paraguay), PER (Peru), CRI (Costa Rica), URY (Uruguay), BRB (Barbados), SUR (Suriname), ARG (Argentina), CUB (Cuba), CHL (Chile).

of homicides, it is clear that the occurrence of this crime is disproportionately common in Latin America (Figure 3). The data reveal that in less than a decade, the robbery rate in many LAC countries has dramatically increased (see Table 1). Equally disturbing is the fact that, on average, 6 out of 10 robberies in LAC are classified as violent (UNDP, 2013).

Figure 3. Robberies, 2006 *(or latest year available)*



Source: Authors' elaboration, based on HEUNI and UNODC (2010).
Note: Median rates per 100,000 population.

Table 1. Robbery Rate Recorded by Police, 2005–12

Country	2005	2012	Change
Saint Vincent and the Grenadines (+)	67.1	155.5	132%
Grenada	43.7	84.4	93%
Jamaica (*+)	74.5	140.7	89%
Colombia	94.1	173.2	84%
Costa Rica (+)	492.7	853.3	73%
Panama	155.9	264.0	69%
Barbados	120.6	196.0	62%
Uruguay	291.7	454.0	56%
Paraguay (*)	149.6	224.4	50%

Bolivia	91.6	137.3	50%
Mexico	465.9	618.0	33%
Nicaragua (+)	391.9	488.3	25%
Chile	397.1	467.6	18%
El Salvador	80.0	87.7	10%
Brazil (*)	475.7	493.1	4%
Trinidad and Tobago	375.3	331.7	-12%
Belize (+)	245.3	141.3	-42%
Bahamas (+)	NA	100.7	NA
Guatemala	86.7	NA	NA
Honduras	NA	226.6	NA
Argentina	919.4	NA	NA
Ecuador	345.7	NA	NA
Peru	164.5	NA	NA

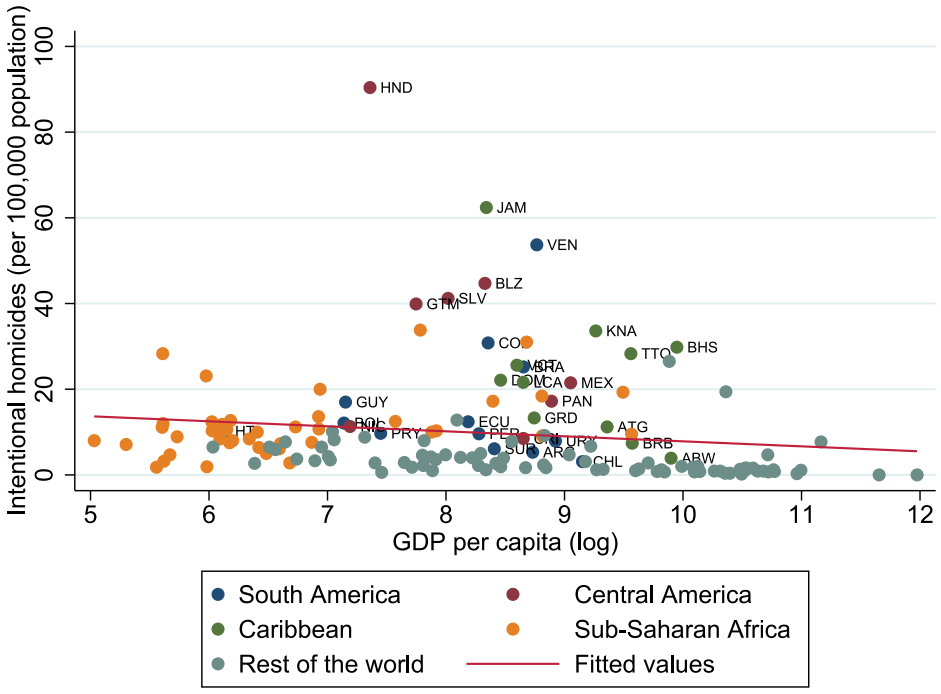
Source: Authors' elaboration, based on UNODC (2015).
Note: (*) Data for 2006; (+) Data for 2011.

Clearly, the LAC region has seen more than its fair share of violence. The exceptionalism in the region is that its relative development has not done much to improve the safety and security of its citizens.[1] Figure 4 illustrates the relationship between the rate of homicide and gross domestic product per capita. Most LAC countries lie well above the regression line, which indicates that the region is far more dangerous than it should be for its level of income. This is also true for other types of violence, such as motor-vehicle theft (see Figure 5). Furthermore, this regional anomaly is also reflected from another vantage point in Figure 6; that is, even though the poverty rate in most LAC countries is relatively low, violence levels are surprisingly high.

[1] The concept of citizen security first gained prominence in the region during the 1990s, when LAC countries transitioned to democracy. It was considered an alternative to the concept of public security. The term originally referred to the physical security of persons and goods, but increasingly, it has become synonymous with activities that also focus on addressing the interrelated issues of reducing crime and violence, improving citizen safety, and increasing a sense of citizenship. The Inter-American Commission of Human Rights (ICHR) (2009) states that citizen security involves "those rights to which all members of a society are entitled, so that they are able to live their daily lives with as little threat as possible to their personal security, their civic rights and their right to the use and enjoyment of their property; on the other hand, citizen security problems occur when a State's failure to discharge, either in whole or in part, its function of providing protection against crime and social violence becomes a generalized situation, which means that the basic relationship between those governing and the governed has broken down."

Figure 4. Homicide Rate and Gross Domestic Product per Person, 2012

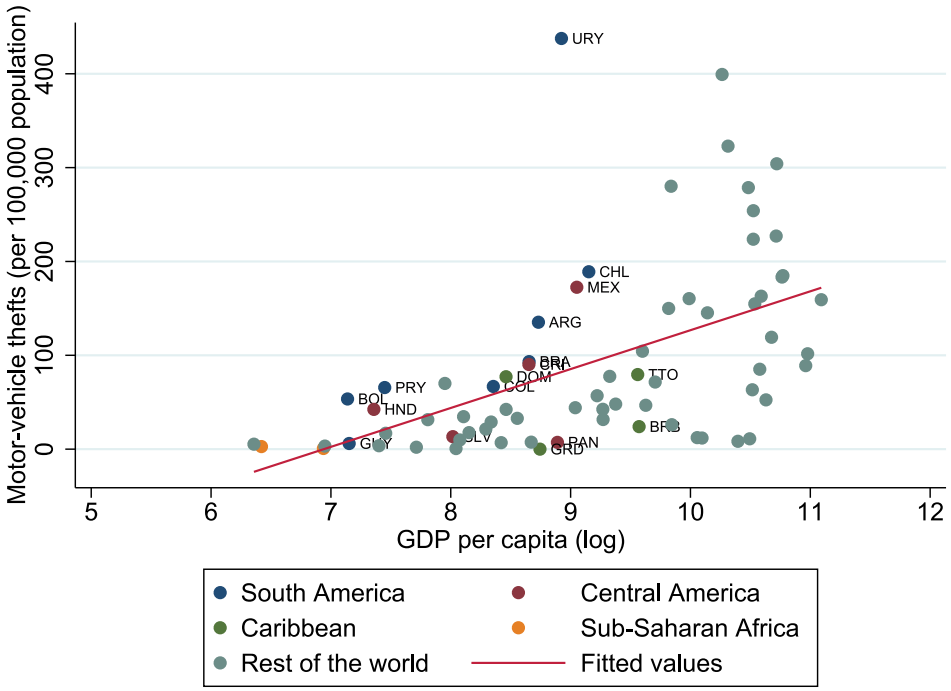
(or latest year available)



Source: Jaitman (2015).

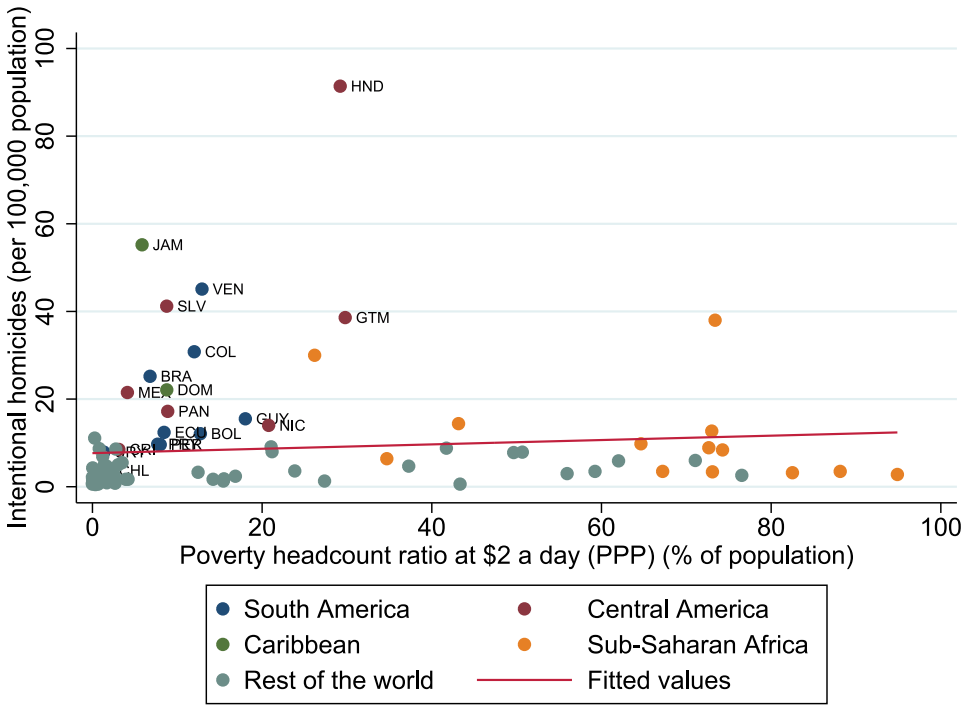
Figure 5. Vehicle-Theft Rate and Gross Domestic Product per Person, 2012

(or latest year available)



Source: Jaitman (2015).

Figure 6. Homicide and Poverty Rate, 2012 *(or latest year available)*



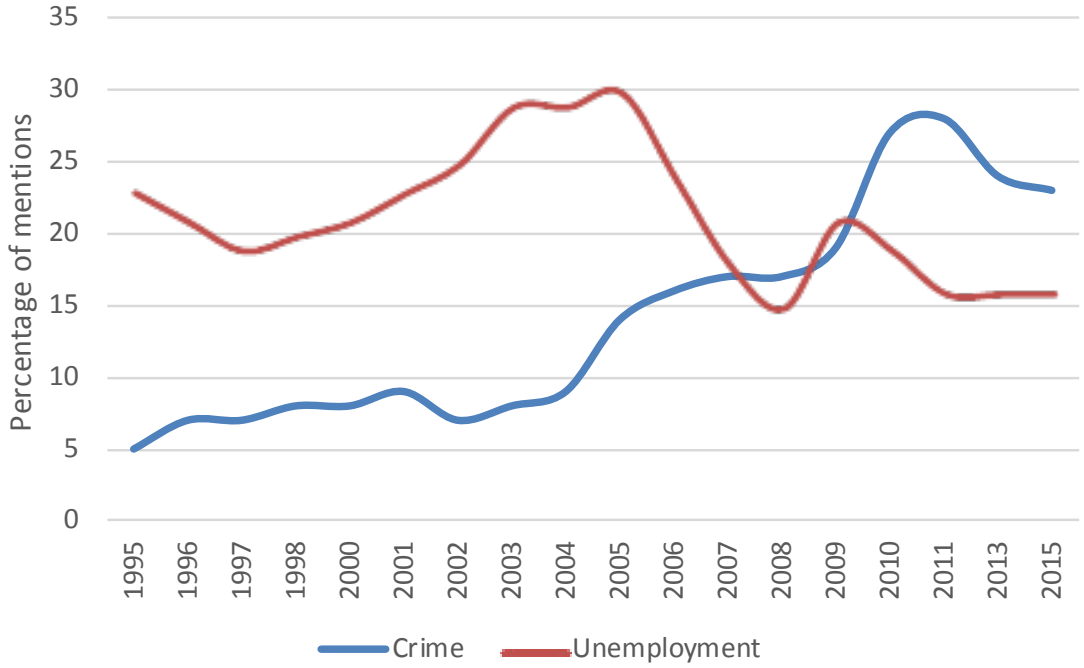
Source: Jaitman (2015).

Not surprisingly, then, is the fact that the main concern of the LAC population is crime, even above unemployment or the economic situation of their country (see Figure 7). Crime and violence affect the behavior of individuals, investment decision of companies, confidence in institutions responsible for ensuring safety, and it defers public and private resources from other areas to that of security. Crime imposes a significant cost on the economy, estimated at between 2 and 14 percent of gross regional product, depending on the methodology employed and whether or how indirect and intangible costs are accounted for (Latinobarómetro, 2015; Londoño, Gaviria, and Guerrero, 2000; Acevedo, 2008; Guerrero Compeán and Olavarría, 2015). Because such estimates not only depend on the method selected but also on the data available, it is difficult to measure the cost of crime precisely and comparatively (Jaitman, 2015).

The issue of crime and violence is serious and multidimensional. The solutions should be integral and comprehensive. It is critical to understand what the root of this Latin American exceptionalism is and what the most cost-effective interventions are to prevent and reduce crime, taking into account the particular context of the region. The questions are whether or not (i) LAC faces idiosyncratic social and economic challenges; (ii) LAC countries are implementing the best practices that are at their disposal to reduce crime; and (iii) the crime problem in the region requires a series of tailored solutions.

This document's primary aim is to identify the key knowledge gaps that relate to

Figure 7. Percentage of Respondents Claiming that Crime or Unemployment Is Their Main Concern, 1995–2013



Source: Authors' elaboration based on Latinobarómetro (2015).

crime policies in LAC—ones that the IDB will endeavor to close over the next few years. Although there may be other areas of intervention, this paper refers only to those gaps that fall within the action areas of the Citizen Security and Justice Cluster.

Section 2 of this document describes the role of the IDB in promoting a regional agenda for the research and operations of citizen security. The IDB has very clear operational guidelines that are described in its Sector Framework Document (IDB, 2014b). This framework identifies four areas that can benefit from the support of the IDB: (i) social prevention, focusing on youth and women, (ii) policing strategies to deter crime; (ii) efficient criminal justice; and (iv) institutional coordination for the governance of citizen security. This framework excludes areas in which the IDB does not intervene due to reputational and expertise concerns (e.g., terrorism, organized crime, drug trafficking). Section 3 introduces the research framework and reviews the evidence from the international and regional literature that are relevant to the IDB's areas of intervention so as to identify best practices and gaps in the literature that relate to the region. Section 4 recommends avenues for further research to be undertaken by the IDB, taking into account its comparative advantages, the demands of government, its operational guidelines, and the gaps that have been determined in the literature.

2 THE ROLE OF THE INTER-AMERICAN DEVELOPMENT BANK: A REGIONAL AGENDA

Citizen security is an institutional priority for the IDB. The IDB has been involved in citizen security projects for almost two decades. In 1999, the IDB emphasized citizen security as a precondition for sustained prosperity. Its undertaking has visibly intensified as the region's crime pandemic has spread. Over the past 15 years, it has approved citizen security loans and technical cooperations (grants) in 20 countries. Most of them, in fact, have taken place during the last four years. Today, the Citizen Security and Justice Cluster has a regional portfolio of approximately US$900 million in loans and US$50 million in technical assistance. In 2012, the IDB launched the Citizen Security Initiative, a grant-making mechanism dedicated specifically to improve the effectiveness of public policies on citizen security in LAC. This catalytic support focuses on three critical areas: (i) generating, analyzing, and disseminating data to enable the design, execution, and evaluation of policies based on information; (ii) strengthening the capacity of State entities to manage and evaluate public policies on citizen security; and (iii) promoting more knowledge sharing and good practices through regional dialogue and bilateral cooperation across countries. Institutionally, a Citizen Security and Justice Cluster within the Institutional Capacity of the State Division is leading the IDB's agenda in this area by promoting effective and comprehensive public policies and strengthening the state's institutional capacity to deliver safety, security, and justice.

In particular, the Citizen Security and Justice Cluster supports the efforts of member countries to tackle crime and violence from a developmental perspective, pursuant to IDB's mandate. It has framed its work around citizen security by establishing the Operational Guidelines for Program Design and Execution in the Area of Civic Coexistence and Public Safety and the Operational Guidelines for More Effective Justice Administration Systems (IDB, 2012a). The Citizen Security and Justice Sector Framework Document (IDB, 2014b) illustrates the extent to which the Bank supports crime and violence prevention, and identifies four areas that guide the institution's undertakings on the subject:[2]

[2] Several areas are not suitable for IDB financing, given the high reputational costs in terms of human rights abuse and political interference. These activities include operations relating to homeland security, secrecy, military, antiterrorism, intelligence, and armed conflict; procurement and training in the use of lethal equipment, including weaponry and war equipment; money laundering; drug trafficking; and organized crime.

I. Social prevention of crime and violence. The IDB supports social interventions that mitigate risk factors that increase the vulnerability of youth to exhibit violent and criminal behavior. Social interventions include domestic violence prevention from the side of the parents to that of the children (intergenerational transmission of violent behavior) and against women, as well as situational prevention policies to reduce opportunities for crime and violence that arise from environmental factors.

II. Police strategies to prevent crime. The IDB supports the police as a fundamental agent responsible of implementing strategies to prevent crime and violence and detect potential criminal opportunities from occurring, such as community policing.

III. Efficient and timely criminal justice. The IDB supports the judiciary system (courts, prosecution) to prevent crime and violence by detecting, prosecuting, and sentencing offenders, as well as the penitentiary system to improve the offerings and coverage of rehabilitation programs for the criminal offender population.

IV. Institutional coordination for citizen security governance. The IDB supports institutional capacity building to enhance state effectiveness and efficiency to prevent crime and violence by increasing policymaking capacities and promoting evidence-based policies at the national and local levels, in order to improve decision making, expedite intersectoral coordination, and optimize the implementation of sector interventions.

There are certainly other areas of intervention to prevent crime and violence, such as early child development interventions. The analysis, however, is restricted to the work of the Citizen Security and Justice Cluster.

The nature of the sector poses a continuum of obstacles for the implementation of effective policy instruments. For example, capacity barriers across responsible agencies to provide comprehensive responses that tackle promptly and reliably the multi-causal channels of violence generation; technical specialization to coordinate, streamline, and eventually scale up project execution; and substantial gaps in data and knowledge for rigorous evidence-based assessments are priority areas for consolidation.

Thus, designing and implementing a sound research agenda on citizen security is critical for the organization in order to continue its pivotal role of formulating effective policy in the region to reduce crime and violence.

The IDB builds knowledge as it provides assistance to the countries to meet their pressing needs in this complex field. In particular, the organization has detected several challenges to perform rigorous research in this context. First, the available scholarly work is limited for the region, when relating to citizen security (see Section 3).

Research on crime in LAC is constrained in terms of the supply of policy-relevant knowledge and the demand for it from policymakers. From the supply side, the most evident

problem is the lack of reliable crime- and violence-related data and deficient information systems (Jaitman and Guerrero Compeán, 2015). The main input for any rigorous empirical analysis is at best scarce, typically of very bad quality and, at worst, not publicly available or simply not existent. Despite the efforts targeting the reduction of asymmetries and the generation of robust citizen security information, the crime statistics required for diagnosis and evaluation remain fragmented, inconsistent, and not very disaggregated. Notwithstanding, improved information-sharing platforms—the main agencies responsible for managing crime and violence data (police forces, criminal justice, and institutes of forensic medicine)—keep separate records with different compilation methodologies, leading to generalized unreliability. Official crime statistics are plagued by underreporting issues and surveys are, in many cases, inadequate in terms of periodicity, scale, and scope. To overcome these problems, developed countries have national statistic systems, which is not common practice in the LAC region. The IDB has been working within and across countries to strengthen crime observatories, carry out various sorts of surveys, and put in place data collection mechanisms through its projects. The IDB has led the creation of regional data-driven initiatives, including the Standardized Regional System of Indicators for Citizen Security and Violence Prevention (SES), which produces statistical information for its 20 member countries and two member cities.

Conducting research that effectively measures the impact of an intervention is also hard, since any attempt at attributing a causal effect necessarily needs to answer the counterfactual question of what would have happened to the program beneficiaries in the absence of the intervention. The challenge is methodological in nature; that is, it is impossible to compare a program beneficiary with herself/himself in the counterfactual situation, which is usually referred to the fundamental problem of causal inference. Often, analysts simply compare program beneficiaries to nonbeneficiaries, which may be misleading—especially in this field—as by definition, citizen security programs are implemented in communities struck by violence and, as a result, crime indicators may be worse in the areas where such programs operate. Observational analyses might confound the effect of any given intervention with the social, economic, and environmental institutions that hinder security in the first place. In comparison to other development disciplines, such as education and health, for many citizen security issues, it is not easy or always feasible to resort to experimental or quasi-experimental techniques that provide a solid identification strategy that overcomes this challenge and provides internally valid designs and credibility to an evaluation. Additionally, many interventions in this area involve only a small number of units (e.g., one prison), rendering any statistical analysis unviable. Furthermore, the scarcity of experimental research is also attributable to ethical and even financial concerns (Lum and Mazerolle, 2014). As a result, a lack of citizen security evaluations from which to draw lessons regarding what works and what does not persists (IDB, 2014b).

From the demand side, security is a visible and sensitive topic closely related to public opinion and political concerns. It follows that the implementation and dissemination of research projects on, say, the nature and determinants of crime or the impact of alternative policies to reduce violence may be obstructed when

they run counter to established political gains, expose corruption, or simply are considered by political operators to undermine society's perception of security. Notably, as Casas Zamora (2014) argues, such demand-side considerations create biases against conducting solid citizen security research.

In addition, when the institutions in charge of security are weak, particularly at the local level, they tend to exhibit high rotation of its authorities and personnel which, in turn, compromises policy sustainability. As Fixsen et al. (2005: 72) summarize, "high rates of turnover at practitioner and leadership levels [...] are disruptive to any attempts to systematically implement practices of any kind." In the context of citizen security, this resource instability, particularly in conflictive regions, complicates the process of supporting new research efforts. The IDB has a long-term relationship with governments that can mitigate some of these drawbacks to research in this field, by strengthening institutions, building capacity, and generating trust with their counterparts to put rigorous studies in place.

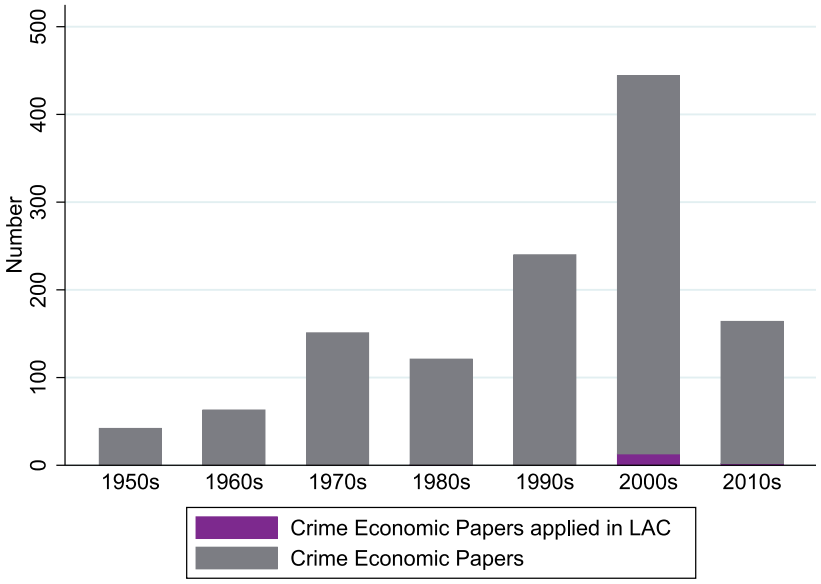
3 ESTABLISHING A RESEARCH AGENDA ON CITIZEN SECURITY

Although of critical importance, crime and violence in the region has been an understudied topic in comparison to other development disciplines. Furthermore, it is important to note that research in this field has experienced a significant rise in importance and prominence in the developed world, while work focusing on LAC is extremely limited (see Figure 8).

This section frames the research agenda for the IDB, in line with the operational guidelines of the Citizen Security and Justice Cluster. The main research questions are identified following an analysis of the gaps in the literature relating to the action areas of the IDB.

As a first approximation, reliance is placed on the crime economics framework to structure the discussion on the research agenda for the IDB. This means that in order to explain the differences between Nogales, Sonora—a dangerous city—and its safer neighbor north of the border, a behavioral model is employed

Figure 8. Total of Papers on Economics of Crime Published in Leading Economics Journals



Source: Adapted from Draca and Machin (2015).

Note: Journals include Econometrica, Economica, Journal of Law and Economics, Journal of Political Economy, The American Economic Review, The Bell/RAND Journal of Economics, The Economic Journal, The Quarterly Journal of Economics, The Review of Economic Studies, and The Review of Economics and Statistics.

which accounts for the rationality of committing acts outside of the law, incorporating considerations with regard to choice and incentives.

Economists and criminologists alike have long discussed the costs and benefits of crime, as well as its welfare implications in terms of resource allocation and utility maximization. Although the study of crime under an economic framework—and explicitly including deterrence considerations—can be traced back to the late eighteenth century (Posner, 2004) with Cesare Beccaria's *Dei delitti e delle pene* (1764) and Jeremy Bentham's *Introduction to the Principles of Morals and Legislation* (1780), the most influential work on the crime economics movement is arguably *Crime and Punishment* (Becker, 1968).

In its most stylized form, Becker's model proposes that criminals are rational individuals who compare the expected cost and benefit of committing crimes with those of doing legal activities, and then select the option with the higher expected net payoff. This basic model is very general and flexible (see a more refined version by Polinsky and Shavell (1999) and Lee and McCrary (2009), for example). In this setup, high crime rates in LAC are a consequence of higher expected net benefits from illegal activities for prospective criminals. This is due to a low expected return to education or legal jobs, or low expected cost of committing crimes, or most likely a combination of both factors.

Because the Becker model is an objective and straightforward approach to the crime issue, it motivates important IDB efforts to evaluate citizen security outcomes.[3] There are interventions that may **increase the expected net benefit of legal activities**. This is where **social prevention** of crime and violence interventions are set. Those interventions are supposed to increase the payoff of legal activities, thus making crime less attractive. In the case of social prevention targeting youths, a training or employability program would increase the possibilities of labor market attachment and, thus, the potential earnings in the legal sector, ultimately reducing crime. Similarly, programs that target women at risk of domestic violence seek to reduce the payoff of using violence as a way to manage conflict.

There are other interventions that **may increase the expected cost of committing crimes**, thus having a deterrent effect on prospective criminals. There are three main concepts on the deterrence theory: certainty, severity, and—less studied—celerity of punishment. Certainty refers to the probability of legal sanctions, given the commission of a crime; severity refers to the onerousness of the sanction imposed; and celerity refers to the lapse in time between the commission of a crime and its punishment (Nagin, 2013). This paper focuses on the certainty and celerity of punishment within the **police section** and on the severity of punishment in the **criminal justice section**. Also in the criminal justice section, reinsertion and rehabilitation

[3] Of course, other frameworks also set IDB projects in the Citizen Security and Justice platform. Although the Becker model accounts for many of the incentives and constraints behind the commission of a variety of criminal acts, other facts are resistant and can be better understood by deviating from the standard economic reasoning and incorporating behavioral and psychological insights (Mullainathan and Thaler, 2000). Many Bank interventions in citizen security and justice resort to epidemiologic, social control, and collective efficacy models to test specific hypotheses on social risk and protection factors at the individual and community levels.

programs are analyzed. These interventions, in expectation, improve the situation of improve the situation of inmates when released and position them to have better opportunities in the legal job market, thus reducing recidivism.

Research on citizen security and justice in the region remains a small proportion of the scholarly work of the broader field of institutional capacity and governance. The field, however, continues to expand and shows progressive vitality since the publication of Di Tella, Edwards, and Schargrodsky's (2010) economics of crime in LAC.

We present below evidence on the effectiveness of a variety of policy instruments derived from the estimation of causal relationships for priority areas within the IDB's framework for work on citizen security and justice, with the objective of discussing and setting the organization's research agenda for the next four years. Although works on the LAC context are of particular importance, international experiences that potentially inform crime-prevention policy designs are also incorporated. To limit the scope of the review, a critical inclusion criterion was that an evaluation must have a control or comparison group for causal inference of a crime-and-violence-related outcome. Random assignment studies have been highlighted, but solid quasi-experimental analyses are also incorporated.

It is important to emphasize, nonetheless, that when pursuing the research agenda, the most appropriate research methodologies will be considered for every situation. Research at the IDB is guided by the relevance of the topic, rather than a doctrinal use of a particular method. Many important questions cannot be adequately answered through impact evaluations; rather, they need to be assessed through serious observational studies comparing cross-sections of countries or case studies with solid theoretical frameworks. Similarly, given the nature of issues pertaining to coordination for citizen security governance, many institutional insights are better approached from alternative research design formulations. Rather than strictly stressing causal inference, the central objective is to generate formal knowledge that facilitates institutional efficiency; multilevel government coordination, vertically and horizontally; data management reliability and dissemination; and strong capacity development and public participation, which is typically derived from procedural theories on effective managerial structures, regulatory frameworks, and the democratic process. The key elements of such theories are identified, encapsulated, and systematized by the planning, politics, and organizational theory literatures, which are beyond the scope of this paper and which deserve future analysis and discussion in and of themselves.

3.1. Social Prevention of Violence in Youth and against Women

This is an area where interventions from multiple sectors have taken place. It emphasizes the prevalence, incidence, and social impact of gender-based violence on women themselves (Ellsberg et al., 2014) and on their children (Aizer, 2011; Almond and Currie, 2011; Foureaux, Koppensteiner, and Manacorda, 2013), as well as the development of skills and capacities that the youth need to cope with the social, economic, and environmental risk factors that

induce criminal and violent behavior.[4] These factors are identified at (i) the individual level, such as child abuse and other psychological trauma, personality disorders, aggressive behavior, early exposure to violence, the use of drugs and alcohol, as well as fractured family relationships; (ii) the interpersonal level, such as substance abuse, domestic violence, marital instability, divorces or separations, weak channels of communication with parents, and relationships with aggressive or delinquent friends or peers; and (iii) the community/situational level, such as lack of employment opportunities, high concentrations of poverty, widespread violence in society, access to drugs and weapons, gang presence, high levels of inequality, a lack of recreational opportunities and public infrastructure deterioration, high rates of mobility among residents, socially acceptable discrimination, and neighborhood segregation (IDB, 2014b).

Evidence suggests that the mitigation of risk factors can emerge from social and institutional interventions, including school attendance, self-control and conflict resolution, job training, and social interaction programs. These initiatives are influenced by the theory of incentives and the rational choice theory in that their goal is to make legal activities more attractive among prospective criminals by increasing the cost and the effort and reducing the gains, and hence the overall return to deviant behavior. Such interventions can be implemented by the state or led by the private sector and civil society.

On **youth and adult violence**, recent empirical analyses estimate that educational attainment and quality have a negative effect on crime and incarceration rates. In a seminal paper, Lochner and Moretti (2004) find that a one-year increase in the average education level reduces state arrest rates by 15 percent in the United States. Deming (2011) shows that attending a first choice school leads to a 50 percent reduction in crime for high-risk youth, with impacts persisting seven years after random assignment, echoing previous evidence by Cullen, Jacob, and Levitt (2006) of reduced criminal activity. For the United Kingdom, Machin, Marie, and Vujić (2011) find that a one-year increase in average male educational attainment reduces incarceration rates by 20 percent. The same causal mechanism was studied by Hjalmarsson, Holmlund, and Lindquist (forthcoming), who find that an additional year of education reduces the incarceration rate for men by almost 16 percent in Sweden. Through an incapacitation effect, Jacob and Lefgren (2003) show that the level of property crime committed by juveniles decreases by 14 percent on days when school is in session.

Progress has also been made in criminological research with regard to **youth-at-risk** violence-prevention program evaluation. Prevention approaches can be classified by their social ecology: treatment-specific (i.e., cognitive behavioral therapy, counseling and social skills training), family-based (i.e., behavioral parent

[4] Early childhood development has been identified as an effective mechanism to mitigate crime and violence, but given that the majority of murder victims and perpetrators in LAC are young people, the IDB's citizen security research efforts gravitate towards youth at risk. This does not mean that early childhood development does not receive research support from the organization. Other IDB divisions, such as Education and Social Protection, are directly responsible for conceptualizing and executing interventions, as well as conducting analytical work, in this area.

training and home visitation), and school- or community-based (i.e., mentoring and after-school programs, as well as social capital building outside of the family) strategies (Matjasko et al., 2012). In Becker's crime-economics framework, these approaches targeting youth-at-risk —usually those who do not study or work—aim to improve their outcomes in the legal job market, such that the payoff of legal activities outweighs the net benefit of criminal activities.

Heller et al. (2013) report results from a large randomized controlled trial of a cognitive behavioral therapy intervention for disadvantaged male youth from high-crime Chicago neighborhoods. They find that program participation reduced violent-crime arrests during the program year by 44 percent; however, the impact fades out over time. In an extensive analysis of experimental studies, Lösen and Beelmann (2003) provide empirical support for a variety of treatment-specific interventions to reduce antisocial behavior in children and youth. Cognitive-behavioral interventions, such as the Big Brother/Big Sister program, had the strongest impact on antisocial behavior over time, more than double the effect of counseling therapy.

In their review of randomized controlled trials and quasi-experimental designs of family therapeutic interventions, Olds et al. (1997) examine the long-term effects of home-visitation services and find that during the 15-year period after the birth of the first child, the rate (log incidence) of treated women who were identified as perpetrators of child abuse and neglect was 0.29, in contrast to 0.54 in the comparison group. Curtis, Ronan, and Borduin (2004) estimate that treated youths and their families committed 70 percent less offenses than comparison groups receiving alternative services, with follow-up data suggesting that treatment effects were sustained for up to four years. Similarly, Woolfenden, Williams, and Peat (2004) show that family and parenting interventions lead to a lower risk of being rearrested. Piquero et al. (2009) provide evidence in support of parenting programs, indicating that while treated young children exhibited a 33 percent recidivism rate, half of the children in the control group relapsed into criminal behavior. More modest but significant treatment effects on delinquency, particularly on juveniles under the age of 15 with severe starting conditions, are reported by van der Stouwe et al. (2014). In contrast, Littell, Popa, and Forsythe (2005) analyze eight randomized controlled trials in the United States, Canada, and Norway and find no statistical effect of multisystemic therapy on arrests and convictions.

Mentoring programs are based on the premise that positive relationships outside of the family circle (based on emotional, academic, social-competence, or career-development issues) promote self-control and resilience among at-risk youth. Once again, Becker's framework provides an interpretation of the linkages between this type of intervention and crime: character and cognition can be shaped, and to the extent that such skills will enable people to socially function better and give them agency, they can foster an ability to engage productively in society and promote economic mobility (Heckman and Kautz, 2013), which in turn, makes deviant behavior relatively more costly (Gottfredson and Hirschi, 1990).

Although most evidence suggests these interventions are beneficial, some analyses have

failed to determine an effect on crime and violent behavior. Cohen and Piquero (2010) evaluate the YouthBuild USA Offender Project and show that the treated group exhibited a decline in recidivism and improved educational outcomes. Taft et al. (2011) evaluate a community antenatal mentoring program targeting women in Melbourne, Australia and find that treated women experienced reduced partner violence and lower abuse scores vis-à-vis program non-participants (15.9 versus 21.8). Chandler, Levitt, and List (2011), however, study a community-based mentoring program in Chicago and conclude the intervention does not improve antisocial behavior outcomes.

In Colombia, Klevens et al. (2009) indicate that a teacher-delivered intervention was an effective mechanism to reduce aggressive behavior. Berthelon and Kruger (2011) analyze the effect of a school reform that lengthened the school day from half- to full-day shifts in Chile and find that the reform reduced youth crime. Obach, Sadler, and Aguayo (2011) assess the effect of educational workshops held for young men in public schools in Chile and show significant negative changes on the acceptance of violence as a conflict-resolution mechanism. In Brazil, Pulerwitz et al. (2006) study the effect of community campaigns targeting young men on violence against women and find significant positive changes in 10 of 17 gender-attitude items for the treatment group six months after implementation, with no changes exhibited among program non-participants.

Skill programs and job-related interventions to remedy youth unemployment may also help reduce delinquent behavior, although the evidence is mixed. A large-scale employment program failed to reduce recidivism among young participants (Uggen, 2000). Schochet, Burghardt, and McConnell (2008) analyze a large U.S. vocationally focused education and training program for disadvantaged youths and show that approximately 33 percent of controls were arrested during the 48-month follow-up period, compared to 29 percent of treatments. The authors, however, conclude that—once considering all measurable positive impacts—program costs are so high they exceed program benefits for the full sample under most scenarios. Short-term, low-cost programs, such as summer jobs, however, offer convincing—albeit limited—evidence of their effectiveness. Heller (2014) finds that assignment to a summer job program decreases violence by 43 percent over 16 months (3.95 fewer violent-crime arrests per 100 youth). Gelber, Isen, and Kessler (2014) study randomized lotteries for access to a New York City's summer youth employment program and find that participation in the program leads to a 10 percent reduction in the incarceration rate, relative to the baseline.

The causal effect of **inequality** on crime is well identified. As mentioned before, according to Becker's economic theory of crime, in a society with high inequality, low-income individuals have a greater propensity to criminal behavior because the costs of committing the crime are lower than the expected benefits gained, which are represented by the wealth differences between the rich and the poor (Bourguignon, 2000). Similarly, in terms of **poverty**, household income shocks have been found to increase the incidence of violent crimes and property crimes in India (Iyer and Topalova, 2014) and civil conflict in African countries (Miguel, Satyanath, and Sergenti, 2004). As a result, analysts have hypothesized

that conditional cash transfer programs, by increasing household income and by mitigating the impact of income shocks, contribute to crime and violence prevention. Chioda, De Mello, and Soares (2012) estimate the effect of a conditional cash transfer program on crime in São Paulo, Brazil, by exploiting the 2008 expansion of the intervention to adolescents aged 16 and 17. The authors find that, on average, 22 additional students per school would be covered by the program due to its expansion, leading to a reduction of almost 8 percent in crime in the school neighborhood. Familias en Acción also helped to reduce crime in Colombia (Camacho and Mejía, 2013), with robberies and car thefts declining by 7.2 percent and 1.3 percent, respectively.

Regarding **violence against women**, violence prevention and care centers for women have been observed to reduce the likelihood of domestic violence. Randomized control trials undertaken in Washington, D.C. (Kiely et al., 2010), and Hong Kong (Tiwari et al., 2005) show significantly lower rates of violence revictimization among pregnant women victims of violence who received psychosocial support, compared with women in control groups. Agüero (2013) examines the role of women's care centers in Peru and shows that, in general, the likelihood of violence decreases with age, although the gradient is steeper for districts with women's centers compared to those without them, providing empirical support for the theoretical model by Farmer and Tiefenthaler (1996).

Regardless of whether or not evidence on the effectiveness of community mobilization strategies (e.g., public events and advocacy campaigns) to reduce violence remains limited, these strategies appear to have changed attitudes towards gender and violence. This is essential in order to build on violence reduction approaches (Usdin et al., 1982; Michau et al., 2014).

There is some promise in training and life-skill interventions to reduce sexual violence. Bandiera et al. (2012) evaluate the impact of an adolescent development club program in Uganda, which shows a reduction in girls being forced to have sex of approximately 17 percent (from a baseline of 21 percent) in communities where the program operates. Similarly, the rate of sexual assault of adolescent girls in Kenya decreased by 60 percent only one year after taking weekly empowerment sessions. In contrast, no variance was evident for the comparison group, according to a study by Sarnquist et al. (2014). More modest results are presented by Hidrobo, Peterman, and Heise (2013), who indicate that a cash, food, and voucher program targeting women in relationships in Ecuador decreased sexual violence by 6 percent, regardless of the mode of transfer. South African women participating in a microfinance program that included a training component on gender and violence were 55 percent less likely to experience physical or sexual violence by a partner vis-à-vis women in the comparison groups (Kim et al., 2007).

While there is increasing recognition that men and women should both be engaged in efforts to prevent violence against women, programs that target male perpetrators or consist of school-based group training sessions demonstrate little manifestation of violence reduction. This evidence is based on methodologically rigorous evaluations (Ellsberg et al., 2015).

Economic incentives, such as cash transfers, have been found to reduce violence to some

extent. A study by Haushofer and Shapiro (2013) on an unconditional cash transfer program in Kenya indicates that a significant reduction to near-zero levels in physical, sexual, and emotional violence levels came as a result of a drop in the intensity of cortisol, a steroid hormone released in response to stress. Angelucci (2008), however, shows that while small conditional cash transfers decrease violence by 37 percent in rural households in Mexico, large transfers increase the aggressive behavior of husbands with traditional views of gender roles. This may be because the entitlement of the wife to a large transfer threatens the husband's identity.

Situational prevention of violence is another area of intervention supported by the IDB. The two most relevant theories on the relationship between crime and the traditional built environment are Oscar Newman's *Defensible Space* and Ray Jeffrey's *Crime Prevention through Environmental Design*, both of which were influenced by the work of Jane Jacobs and Shlomo Angel in the 1960s. With regard to Becker's model, situational prevention strategies can be understood as spatio-environmental deterrents that increase the potential effort and, therefore, the relative cost of committing crimes. Indeed, a growing number of economists, urbanists, and criminologists have built a body of empirical evidence supporting the notion that the manipulation of the physical environment is an effective mechanism to reduce criminal acts.

This can be achieved by implementing urban renewal and neighborhood improvement programs. Kling, Ludwig, and Katz (2005) study the impact of housing vouchers by way of a random lottery to public housing residents in five U.S. cities. They indicate that the offer to relocate to lower poverty areas reduces arrests among youth for violent crimes, relative to a control group, although increased behavioral problems and property crime in the case of young males are also reported. Owens and Freedman (2011) demonstrate that physical revitalization (in the form of affordable housing development) in low-income communities, rather than in already gentrified areas, reduces robberies and assaults by 3 percent, while county-wide aggravated assaults fall by approximately 3 percent for each new unit located in a poor neighborhood. On a related issue, Galiani et al. (2014) find that upgrading slum dwellings in El Salvador improves the perception of safety inside the house by 27 percent, but not so in Mexico or Uruguay.

Similarly, the physical and social integration of informal urban neighborhoods has shown promising results. Cerdá et al. (2012) examine the effect on violence of municipal investment in neighborhood infrastructure and transit-oriented urban redevelopment connecting isolated low-income neighborhoods in Medellín, Colombia, to the city's urban center. They report that the decline in the homicide rate was 66 percent greater in intervention neighborhoods than in control neighborhoods, while resident reports of violence decreased 75 percent more in intervention neighborhoods.

Several adverse conditions in the urban space have been identified. Cui and Walsh (2015) find that vacant residential properties in Pittsburgh, Pennsylvania, increase violent crime rates by 19 percent, and show that this vacancy effect intensifies with length of vacancy. Even specific retail stores impact significantly the urban environment. Although communities across the United States saw a decline in crime during

the 1990s, Wolfe and Pyrooz (2014) find that in U.S. counties where Walmart, a large retail store, expanded in that decade, there were 17 additional property crimes and two additional violent crimes for every 10,000 people, vis-à-vis comparable counties where Walmart did not establish itself.

Local laws that change institutional dynamics spatially and help manage the physical environment in a systematic way can also reduce opportunities for crime. Heaton (2012) analyzes the effects of the legalization of Sunday packaged-liquor sales on crime in Virginia and his triple-difference estimates indicate the new legislation increased minor crime by 5 percent and alcohol-involved serious crime by 10 percent. Similarly, Grönqvist and Niknami (2014) exploit a policy scheme in Sweden whereby the state, in 2000, required all alcohol retail stores in selected areas to stay open on Saturdays. They show that this increase in alcohol availability increased total crime on Saturdays by 19 percent. In Rajasthan, India, the implementation of a random sobriety checkpoint policy decreased alcohol-related crime and accident rates in the 60-day period following the program, suggesting gradual learning by drivers about levels of police enforcement (Banerjee et al., 2012). In Latin America, Biderman, DeMello, and Schneider (2010) provide evidence of the consequences of late-night alcohol-sale restrictions in bars in São Paolo and demonstrate that the policy led to a 10 percent decrease in homicides and assaults.

Although this is not an area suitable for IDB financing, Ronconi, Lenis, and Schargrodsky (2011) evaluate a gun buyback program in Argentina and find that the intervention failed to reduce the number of homicides and firearm-related auto-thefts. Evidence on the ineffectiveness of gun buyback programs to reduce violence is also reported in Australia by Baker and McPhedran (2006) and in the United States by Sherman (2001).

Finally, evidence of the effect of other situational prevention mechanisms, including closed circuit television, street lighting, public space surveillance, security guards, safety housing certification, residential alarms, is weak. New research controlling for biases in the selection process and ensuring sufficient statistical power needs to be conducted.

In summary: educational attainment and quality are very effective crime-reducing mechanisms, and their effects are sustained over time. Conflict-resolution, mentoring, and counseling—including those targeting violence against women—in general, are effective interventions. The magnitude of the impact, however, varies depending on whether they focus on individual, family, or community-level dimensions. Furthermore, it is not clear whether the impact fades over time. Cognitive-behavioral programs appear to show the most favorable results. Job-related interventions present mixed evidence on their effectiveness to reduce crime, but there is evidence that summer jobs for the youth are much more successful. Likewise, conditional-cash transfers lead to less crime, but further research is needed to disentangle the income effect from the education effect. In terms of situational prevention, although empirical research is scant, neighborhood improvement and integration show promise, as well as relocation to neighborhoods with less crime. Legislation that restricts the supply of alcohol does reduce crime, yet gun buyback programs do not.

3.2. Police Strategies to Prevent Crime

Police presence can deter crime and disorder through various mechanisms, from influencing the probability of apprehension of active offenders—which is a necessary step for their subsequent conviction—to a proactive targeting of places and people who are "hot" with crime; to a fast response to call for services; and contribution to successful post crime investigation (Lum and Nagin, forthcoming). Studies of changes in police presence, whether achieved by changes in police numbers or in their strategic deployment, consistently find positive effects of police in reducing crime (Nagin, 2013).

With regard to the effect of **more police officers** on crime, the identification problem arises from the fact that, usually, areas with higher crime rates have naturally more police presence. Therefore, when regressing in a cross-sectional approach the crime rates on police force size variables, there is an omitted variable bias. There has been a growing body of literature using quasi-experiments or natural experiments to overcome the endogeneity problem of causal inference in assessing the effect of police force size on crime.

Levitt (1997) uses an instrument to examine an increased police presence at mayoral elections. He finds that more police presence generates statistically significant reductions in murder, and large—but not significant—reductions in robbery, aggravated assault, burglary, and auto theft (see also McCrary (2002) on the review of these results). Levitt (2002) employs another instrument for the size of the police force: the number of fire fighters. He finds a statistically significant reduction in murders and auto theft, although not statistically significant reductions in rapes, robberies, burglaries, and larcenies.

Along these lines, Evans and Owens (2007) use the variation in timing and size of grants provided by the Community Oriented Policing Services (COPS) program in the United States to examine the relationship between police force size and crime. Specifically, they use the magnitude of COPS grants as an instrument for the size of the police force in regressions where crime is the outcome of interest. The authors find that officers that were added to the police force by COPS generated statistically significant reductions in auto thefts, burglaries, robberies, and aggravated assaults.[5]

The other strand of research on police force sizes relating to crime is the exploitation of natural experiments relating to exogenous shocks to police presence in very particular settings, such as a response to terrorist attacks. Di Tella and Schagrodsky (2004) study the deployment of police officers in Jewish institutions after a terrorist attack to the main Jewish administrative building in Buenos Aires, Argentina. They show that motor-vehicle thefts fell significantly in areas where extra police were subsequently deployed, compared to areas several blocks away without strengthened security. The

[5] Evans and Owens (2007) find that an average hiring grant will generate a statistically significant reduction in the violent crime rate by 3.7 percent, a reduction in the property crime rate of 1 percent, and a reduction of 2.2 percent, 3.3 percent, and 5 percent in burglaries, auto thefts, and robbery, respectively.

effect is large, relative to the control group: car thefts fell by 75 percent in the blocks in which the protected institutions are situated. The effect is local, however, with no appreciable impact outside the narrow area in which the police are deployed. A similar identification strategy is carried out by Draca, Machin, and Witt (2011), who analyze the deployment of police officers in London after the terror attacks of July 2005. The authors find strong evidence that more police lead to reductions in what they refer to as susceptible crimes (i.e., those that are more likely to be prevented by police visibility, including street crimes such as robberies and thefts). They estimate an elasticity of crime with respect to police of approximately −0.3 to −0.4; that is, a 10 percent increase in police activity reduces crime by 3 to 4 percent. Another study by Klick and Tabarrok (2005) uses terror alert levels in Washington, D.C., to make inferences about the crime-police relationship. They show that an increase in police presence of about 50 percent leads to a statistically significant decrease in the level of crime on the order of 15 percent.

There is also literature on the effect of different **police tactics** on crime. There appears to be a consensus that random patrol and unfocused enforcement efforts have not been effective in preventing crime (Lum et al., 2010; Sherman and Eck, 2002). In the last two decades, policing strategies have been more place-based focused, acting in very small units, smaller than neighborhoods, blocks, or block segments. These tactics are usually known as **hot-spot policing**. Various rigorous evaluations of such type of interventions have taken place, and they suggest that the police can be more effective in addressing crime and disorder when they focus in on small, high-crime-rate geographic units (Braga, Papachristos, and Hureau, 2012; National Research Council [NRC], 2004; Weisburd and Eck, 2004). Randomized control trials on hot-spot policing interventions, in general, show a statistically significant decrease on crime, non-significant spatial displacement, and some evidence of diffusion of benefits (Bowers et al., 2011).

In this vein, Sherman and Weisburd (1995) employ a randomized control design to examine the deterrent effects of police patrol on crime. The research team identified 110 hot spots, which were allocated to treatment and control conditions in five statistical blocks (resulting in 55 treatment hot spots and 55 control hot spots). The experimental treated group, on average, experienced twice as much patrol presence. The authors reported that the police patrol treatment generated between 6 percent and 13 percent statistically-significant reductions in calls for service in treatment hot spots, relative to calls for service in control hot spots, and that observed disorder was only half as prevalent in treatment hot spots, relative to control hot spots.

Similarly, Renee Mitchell, a sergeant at the Sacramento Police Department in California, undertook a three-month randomized experiment (Telep, Mitchell, and Weisburd, 2012), in which officers were explicitly instructed to randomly rotate between treatment group hot spots and spend about 15 minutes in each. Results suggest significant overall declines in the calls for service and crime incidents in the treatment hot spots, relative to the controls. Another study implements a randomized controlled trial to determine whether foot patrol prevents crime at violent crime hot spots (Ratcliffe et al., 2011). The intervention

entailed the use of over 200 foot patrol officers, deployed at 60 violent crime hot spots throughout Philadelphia. The hot spots were ranked by volume of violent crime incidents, matched into like pairs, and then randomly allocated to treatment and control conditions. Focusing high-dosage foot patrol at hot spots was found to reduce violent crime by 23 percent, as compared with normal police service in control areas.

One might suspect that hot-spot policing might be an even more important and effective strategy in Latin America, given the very low clearance rates for many crimes (Morrison, 2007). One example of hot-spot policing—with elements of community-oriented policing—is the Fico Vivo program, a homicide prevention program that originally targeted a poor neighborhood in Belo Horizonte, Brazil, which was characterized by very high homicide rates. The Fico Vivo program built a targeted, community-oriented, and hot-spot policing intervention that also provided social assistance to reduce the dependence of young people on criminal groups. The officers' aim was to establish ties within the community and to develop an in-depth local knowledge of the area (Higginson et al., 2013). Alves and Arias (2012) evaluated this program using a time-series design to measure annual homicides in five targeted locations. Results show that the program encountered significant success in reducing homicides.

A promising approach for dealing with crime hot spots is having officers that incorporate principles from **problem-oriented policing (POP).** POP involves organizing residents and property owners to help the police identify the sources of violent and property crime and then target these problems with focused deterrence-based warnings to repeat offenders; increased police, citizen, and technological monitoring; and better control of physical and social disorders (Nagin, 2013). Usually, it involves joint action with police, prosecutors, and even the community. Beginning with the Jersey City Drug Market Analysis Experiment (Weisburd and Green, 1995), a series of experiments and quasi-experiments have pointed to the crime-control effectiveness of hot-spot policing programs that incorporate problem-oriented policing approaches (e.g., Braga and Bond, 2008; Braga et al., 1999; Mazerolle, Price, and Roehl, 2000).

Two experimental evaluations of problem-solving applications in crime hot spots have been cited, often in support of POP approaches (Braga et al., 1999; Weisburd and Green, 1995).[6] In a randomized trial involving Jersey City, New Jersey, Braga et al. (1999) identified 24 violent crime hot spots, matched them into 12 pairs, and allocated one member of each pair to a treatment or control group. The treatment consisted of POP interventions comprised of mostly aggressive disorder enforcement tactics with some situational responses. The authors found statistically significant reductions in property and violent crime in the treatment locations and that social disorder was alleviated at 10 of 11 treatment places, relative to controls.

The Jersey City Drug Market Analysis Experiment (Weisburd and Green, 1995)

[6] A systematic review of hot-spot policing has been conducted by Braga (2001; 2007).

provides more direct support for the added benefit of the application of problem solving approaches in hot-spot policing (Weisburd et al., 2010). In this study, a similar number of narcotics detectives were assigned to treatment and control hot spots. The treatment followed a strategy that involved an analysis of assigned drug hot spots, along with site-specific enforcement and collaboration with landlords and local government regulatory agencies. The control group experienced unsystematic arrest-oriented enforcement on an ad hoc target selection. The analysis reveals statistically significant reductions in disorder calls for service in the treatment drug hot spots, relative to the control drug hot spots.

In line with this, Braga and Bond (2008) conducted a randomized controlled trial to examine the effects of problem-oriented policing strategies in reducing crime and disorder problems at hot spots in Lowell, Massachusetts. Only the treatment group received POP. The authors find that the treated hot spots experienced statistically significant reductions in total calls for service, as well as varying reductions in all subcategories of crime types, relative to controls. In turn, Taylor, Koper, and Woods (2011a) conducted the first randomized experimental study to compare different treatments to hot spots in Jacksonville, Florida. One treatment group received a more standard saturation patrol response and the second received a problem-oriented response that focused on officers analyzing problems in the hot spot and their responding with a more tailored solution. Results showed a decrease in crime (though not statistically significant) in the saturation patrol hot spots, but this decrease lasted only during the 90-day intervention period. In the POP hot spots, there was no significant crime decline during the intervention period, although in the 90 days after the experiment, street violence declined by a statistically significant 33 percent.

Finally, Weisburd et al. (2010) examine the effectiveness of POP in reducing crime and disorder. Using meta-analytic techniques, they find an overall modest but statistically significant impact of POP on crime and disorder. These authors conclude that although POP, in general, is promising, it still requires better evaluation. Indeed, a much larger number of studies is needed to draw strong generalizations regarding the possible effectiveness of POP across different types of jurisdictions and different types of police agencies.

A recent innovation in POP that capitalizes on the growing evidence of the effectiveness of police deterrence strategies is the **focused deterrence framework, often referred to as pulling levers** policing[7] (Kennedy, 1997; 2009). The focus of the responses, based on deterrence theory, is that they be certain, severe, and swift (Braga and Weisburd, 2012). This strategy was first implemented as a POP project in Boston, Massachussetts, in the 1990s, and it has been implemented in many different communities, mainly across the United States.

[7] Pulling-levers-focused deterrence strategies are often framed as problem oriented exercises where specific recurring crime problems are analyzed and responses are highly customized to local conditions and operational capacities (Braga and Weisburd, 2012).

One of the most publicized versions of focused-deterrence POP is Boston's Operation Ceasefire (Kennedy et al., 2001). The objective of the operation was to prevent inter-gang gun violence, using two deterrence-based strategies. The first strategy was to target enforcement against suppliers of weapons to Boston's violent youth gangs. The second involved a more novel approach. The youth gangs, themselves, were assembled by the police on multiple occasions to send the message that the response to any instance of serious violence would be pulling every lever legally available to punish gang members collectively. This included a salient severity-related dimension: vigorous prosecution for unrelated, nonviolent crimes such as drug dealing. The aim of Operation Ceasefire, therefore, was to deter violent crime by increasing the certainty and severity of punishment, but only in targeted circumstances—specifically, if the gang members committed a violent crime (Tonry, 2013).

Since Operation Ceasefire, the strategy of pulling every lever has been the centerpiece of field interventions in many large and small U.S. cities, including Richmond, Virginia; Chicago, Illinois; Stockton, California; High Point, North Carolina; and Pittsburgh, Pennsylvania. The reader is referred to Kennedy (2006), one of the architects of this strategy, for an extended description of these interventions and the philosophy behind them. Independent evaluations of some of these interventions have also been conducted: e.g., Boston (Cook and Ludwig, 2006), Richmond (Raphael and Ludwig, 2003), Chicago (Papachristos, Meares, and Fagan, 2007), Pittsburgh (Wilson and Chermak, 2011), and High Point (Corsaro et al., 2012) among others.

As part of a systematic review and meta-analysis of the effects of focused deterrence strategies on crime, Braga and Weisburd (2012) find that nine of the 10 eligible evaluations reported statistically significant reductions in crime.[8] They concluded that deterrence strategies of pulling levers seem to be effective in reducing crime. The authors are concerned, however, that there is a lack of systematic rigorous experimental studies (such as randomized control trials) to support this conclusion.

The conclusions of the independent evaluations are varied, although Cook's (2012) characterization of the much publicized High Point drug-market intervention seems apt: initial conclusions of eye-catching large effects have been replaced with far more modest assessments of effect sizes and cautions about the generalizability of the results. Reuter and Pollack (2012) wonder whether a successful intervention in a small urban area such as High Point can be replicated in a large city such as Chicago. Ferrier and Ludwig (2011) point out the difficulty in understanding the mechanism that underlies a seemingly successful intervention that pulls many levers. These results suggest the potential for combining elements of both certainty and severity

[8] For instance, Papachristos, Meares, and Fagan (2007) use a quasi-experimental design to evaluate the impact of Project Safe Neighborhood (PSN) initiatives on neighborhood-level crime rates in Chicago. They analyze four interventions: (i) increased federal prosecutions for convicted felons carrying or using guns; (ii) the length of sentences associated with federal prosecutions; (iii) supply-side firearm policing activities; and (iv) social marketing of deterrence and social norms messages through justice-style offender notification meetings. Their findings show that several PSN target areas did experience greater declines of homicide in the treatment neighborhoods as compared to the control neighborhoods.

enhancement to generate a targeted deterrent effect.

Another police strategy that has become very popular in the developed and the developing world is **community policing**. Police scholars have recognized it as one of the most widely adopted ideas in policing in the last several decades (Weisburd and Eck, 2004). A key component of community policing is developing partnerships and relationships with the community in order to understand and solve problems, as well as to engender cooperation and legitimacy of the police (Santos, 2014).

Some of the strategies falling under the umbrella of community policing have been effective in reducing crime, disorder, or fear of crime, while others have not (see also Bennett, Farrington, and Holloway, 2008; Sherman et al., 1997; Sherman and Eck, 2002). For instance, as Santos (2014) describes, results of evaluations of community policing programs confirm that drug awareness programs, community meetings, storefront offices, and newsletters do not reduce crime (Telep, Mitchell and Weisburd, 2012; Weisburd and Eck, 2004). In turn, door-to-door visits by the police have been found to effectively reduce crime, but providing information about crime to the public has not been shown to prevent crime either (Sherman et al., 1997; Weisburd and Eck, 2004).

As part of the Campbell Collaboration review process, Bennett, Farrington, and Holloway (2008) find that a neighborhood watch is associated with a reduction in crime, ranging between 16 and 26 percent.[9] The most frequently recorded mechanism by which a neighborhood watch is supposed to reduce crime is by residents looking out for suspicious activities and reporting these to the police. In other words, offenders can be deterred if they are aware of the propensity of the local residents to report suspicious behavior and if they perceive this as increasing the risks of being caught.

Along these lines, García, Mejía, and Ortega (2013) examine the effects of a new police patrolling program introduced in Colombia on crime. The program, known as National Plan for Community Policing Areas (Plan Nacional de Vigilancia Comunitaria por Cuadrantes (Plan Cuadrantes), constitutes a new initiative that combines elements of community policing and POP. The strategy divides the eight largest cities into small geographic areas, assigns six policemen to each, establishes a new patrolling protocol involving more community contact, and holds officers accountable for crime in their assigned area. By staggering the training schedule between three randomly chosen cohorts of police stations, the authors were able to generate an experimental variation in the exposure to training and in the effective implementation of the program. Results show a significant reduction in several types of crime, ranging from approximately 0.13 of a standard deviation for homicides to

[9] It is important to note that none of the studies included in this review was based on random allocation of areas to treatment or control conditions. Instead, all studies were based on some version of a quasi-experimental design. This is almost certainly a result of the difficulties involved in implementing community-based programs in areas where communities have not requested them. It is difficult to conduct a randomized experiment with areas as the unit of assignment (Bennett, Farrington, and Holloway, 2008).

0.18 of a standard deviation for brawls. In line with this, a year-end evaluation of a community policing pilot project in Costa Rica that involved the creation of four local police stations, which provided permanent police patrol services—vehicle and foot patrols—and increased police presence in the area, shows a reduction in crime of 9.5 percent (Chinchilla and Rico, 1997).

In line with this, Ruprah (2008) analyzes the impact of the Safer Commune Program, implemented in 2001 in Chile. The program aimed to reduce crime and fear of crime by attempting to prevent crime opportunities in urban spaces, in part by encouraging local community participation in the program. The evaluation of this program, using a double-difference propensity score method, reveals that it reduced high crimes, particularly of battery and theft. The author also concludes that active participation in the program by local residents reduced insecurity as well as fear of crime.

Similarly, in 1997, the government of São Paulo adopted a new model of community policing. A study, conducted by the United Nations Latin American Institute for the Prevention of Crime and the Treatment of Offenders (ILANUD) in 2000, analyzed the levels of fear and confidence in treated and control areas. They identified 23 neighborhoods where community police stations were established and 23 neighborhoods in which they did not exist. Although there can be identification issues due to selection of neighborhoods, the results suggest that in the areas where the program was conducted and where neighborhoods know each other, levels of fear decreased while citizens' police confidence and support for community policing increased (Frühling et al., 2004).

A question that is often raised is whether **crime analysis** reduces crime. Crime analysis is the process of examining data and making conclusions by personnel within a police department (Santos, 2014). Two studies that have sought to understand the prevalence and nature of crime analysis implementation in police agencies revealed that crime analysis and crime mapping are becoming more common, although they are mainly implemented in larger police agencies (Mamalian and LaVigne, 1999; Taylor and Boba, 2011).

According to Santos (2014), "the connection between crime analysis and crime reduction is only through an effective police strategy that uses crime analysis". Through a qualitative assessment, this author concludes that there is a clear pattern in that crime analysis plays a significant role in police approaches that are effective, while crime analysis plays a very limited role in policing approaches that are ineffective. This study, therefore, shows that crime analysis is a key component in successful crime reduction efforts and a necessary element in the police approaches (e.g., hot spots and pattern identification, trend analysis) that are effective in reducing crime.

For instance, as mentioned above, POP strategies are the most promising of the police approaches. Crime analysis plays an integral role in all phases of problem solving for crime reduction. In relation to hot-spot policing, evidence suggests it is effective in reducing crime. In this approach, crime analysis—in particular, the use of crime mapping and spatial analysis—is essential o identify the places where the policing strategies are best implemented. Moreover, when hot-spot policing is coupled with in-depth problem solving, crime analysis is even more relevant to identify and

understand the nature of the hot spot and to implement appropriate responses. A clear example of how crime analysis is systematically used by police to reduce crime is documented by Santos and Santos (2015). These authors show, through a robust quasi-experimental design, that responding to micro-time hot spots (i.e., hot spots that flare up in the short term) is effective in reducing residential burglary and vehicle theft without displacement. In this study, crime analysis played a clear and significant role. Finally, in the pulling levers strategy, a specific problem-solving approach to address serious violent offenders is essential. As with POP, the problem-solving process, therefore, is making crime analysis also central. At the same time, the pulling levers strategy is effective and shows promise (Santos, 2014).

The use of crime analysis is generally related to the widespread use of **technology**. Understanding the effects of technological change is a critical issue in contemporary policing. In recent years, there have been important developments with respect to information technologies, analytic systems, video surveillance systems, license plate readers (LPRs), DNA testing, and other technologies that have far reaching implications for policing. Relatively little research has been done, however, on the impacts of technology on policing beyond technical evaluations (Koper et al., 2015). Moreover, the available literature suggests that technology does not necessarily bring anticipated benefits to police agencies and that, in some cases, it may even have unintended consequences (Koper, Taylor, and Kubu, 2009; Lum et al., 2011).

For example, Lum et al. (2011) conducted a randomized controlled experiment to test whether LPRs deter crime, in general—more specifically, automobile crime—in crime hot spots in two adjacent jurisdictions in Washington, D.C. LPR technology, which has become one of the most rapidly diffusing innovations in law enforcement, is a scanning and information technology used by law enforcement agencies to detect, deter, and prevent crime. The authors employed a place-based block randomized experiment, assigning 30 hot spots to treatment and control conditions. The treatment involved targeted police patrols using a sweep-and-sit approach with LPR in these hot spots. Results suggest that when small numbers of LPR patrols are used in crime hot spots, they do not appear to generate either a general or offense-specific deterrent effect. The limitations of this study, however, emphasize that there may be other ways LPR might be used to generate a crime control effect that have not yet been tested.

Similarly, Taylor et al. (2011b) employed a randomized control trial to measure the effect of the use of LPR on vehicle theft along likely routes between stolen and recovery locations of vehicles, as well as hot zones of stolen and recovery locations. They find that while LPR technology significantly enhances the rates of license plates checked, recoveries of stolen cars, and apprehension of auto thieves, the number of plates scanned does not, itself, predict a reduction of vehicle theft rates.

The George Mason University research team conducted a randomized experiment with Agency 1 that attempted to increase dosages of police presence, activity, and mobile technology utilization at randomly selected hot spots. Analogous to other studies described above, 18 hot spots were randomly assigned to the experimental and control group in

equal parts. Officers in the treatment group were encouraged to consider strategies that might use available information technology for more in-depth investigation and problem solving at hot spots. Results show that officers used technology primarily for checking automobile license plates and for running checks on people; however, it appears that they made limited use of technology. The authors also find that patrols reduced crime in the target locations when dosage of police presence was sufficiently high, but that greater use of technology did not make officers more effective in reducing crime (Lum et al., 2015).

Another example of the use of technology is the study of Roman (2008) that provides evidence on how DNA testing impacts police performance and crime. In a randomized experiment, they found that the use of DNA evidence greatly enhanced outcomes in property crime cases. Compared to traditional investigations, cases involving the use of DNA evidence resulted in twice as many suspects being identified, doubled the suspects being arrested, and more than duplicated the cases accepted for prosecution.

Technology in policing is currently one of the most important issues in the field, affecting the way agencies conduct their daily responsibilities and functions. The studies reviewed here, however, suggest that more careful thought should be given to ways in which to optimize the effectiveness of technologies, given the many mandates for which the police are responsible (i.e., reducing crime, maintaining legitimacy in a democratic society, achieving cost-savings, among others.). There is a need, therefore, to more deeply understand how technology affects police agencies and, in turn, reduce crime. This is especially true for LAC where, for instance, information software, such as predictive policing, is being acquired and CCTVs are being widely installed without a clear notion of their effect.

Finally, issues relating to police organization are very important for LAC, where there is a wide range of institutional arrangements. Police systems with multiple commands exist in various countries. In some cases, a militarized and uniformed police is responsible for ostensive patrolling while a judiciary police is responsible for investigations. When police forces have different attributions, hierarchical structures, geographic organizations, and maintain separate systems of information, problems of coordination and exchange of information may arise. Soares and Viveiros (2010) show that the integration of police operations leads to increased efficacy and reductions in crime.

Brazil is one example. In that country, the police system manifests itself in the existence and almost total independence of the Military and Civil Polices (Polícia Militar and Polícia Civil). Soares and Viveiros (2010) examine the experience of information sharing, coordination, and integration of actions of the Civil and Military Polices in the state of Minas Gerais, Brazil, in the context of the Program of Integration and Management in Public Safety (Programa Integração da Gestão em Segurança Pública (IGESP)).[10] This model

[10] IGESP was inspired by the CompStat system, implemented originally in New York and later adopted in slightly modified forms in various cities in the world. The model is based on modern technologies of information monitoring and targeted policing, using a dynamic updating and constant evaluation of strategies and actions by police organizations.

is based on modern technologies of information monitoring and targeted policing, and uses a dynamic updating and constant evaluation of strategies by police organizations. The authors use data between 2000 and 2008 on 853 Minas Gerais municipalities and, exploiting the staggered process of program expansion, apply a difference-in-difference strategy to identify the effects of the IGESP on crime rates and police performance. Their most conservative estimates suggest that implementation of the program reduced property crimes by 24 percent and personal crimes by 13 percent.

A related study by Garicano and Heaton (2010) examines the impact of information technologies on organization and productivity. In order to do so, a large sample of U.S. police departments was used. In a panel context, the authors estimate that information on technology investments, when linked to particular organizational and management practices similar to those associated with CompStat, tend to increase police productivity. Still, due to data limitations, they can only conduct explicit analyses of the impact of CompStat[11] in a single cross-section.

In summary, an increase in the size of the police force decreases crime. The important question is how to make police departments more efficient. On policing strategies, the conclusions are still contested and there is room for further research. Place-based approaches, mainly hot-spot policing, POP, and focused deterrence seem to work for some type of crimes in particular contexts. In all those strategies, criminal analysis plays a fundamental role. Community policing needs more examination. The use of technology to prevent crime and to resolve crimes through police investigations is still not clear.

3.3. Efficient and Timely Criminal Justice

Overall, five intervention philosophies in the field of criminal justice can be identified: deterrence (i.e., emphasis on the negative consequences of delinquent behavior), incapacitation (i.e., emphasis on preventing at-risk individuals from becoming involved in delinquent activities), discipline (i.e., the imposition of a rigorous regime to avoid reoffending), surveillance (i.e., closer monitoring to reduce the likelihood of reoffending), diversion (i.e., sentencing mechanisms for offenders to avoid criminal charges, such as community service, restitution to victims, and drug courts), and rehabilitation (i.e., counseling, therapy, skill-building and reentry programs to change attitudes, and behavior of prisoners). Theoretically, according to Becker's conceptual framework for crime and law enforcement, these interventions can be effective because they (i) raise the expected cost of lawless behavior by increasing the probability of authorities detecting such behavior, as well as the severity of the punishment once caught; (ii) change cognitive processes, as well as self-control and empathy capacities, relatively reducing the expected gains of delinquency; and (iii) make individuals more educated and employable, thus increasing the quantity and quality of legitimate opportunities and reducing the

[11] CompStat shows promise of helping departments reduce crime through systematic data collection, crime analysis, and heightened accountability.

cost of opportunity of deviant behavior as a result.

The effectiveness of **deterrence** has been empirically validated in a recurrent fashion. Philippe (2013) studies a shift in the instantaneous probability of reoffense when offenders are threatened with higher sentences, using data on French *peines planchers* (minimum sentences). The author isolates the deterrent effect of an increase in sentence time from the incapacitation effect (discussed below) by focusing on the reoffense dynamics of people sentenced before the law was passed and finds a decline in the hazard rate of reoffense of approximately 5 percent. A similar outcome is reported by Kessler and Levitt (1999), who show that Proposition 8—a popular referendum passed in California in 1982 to increase the scope and severity of repeat-offender enhancements—appears to have reduced eligible crimes by 4 percent in the year following its passage and 8 percent three years after passage. Drago, Galbiati, and Vertova (2009) assess the impact of an increase in sentence time in the context of the large Italian amnesty of 2006 and estimate that when expected sentences are increased by 25 percent, the propensity to reoffend in seven months decreases by approximately 18 percent. Bell, Jaitman, and Machin (2014) show that important increases in sentencing severity, induced by the London riots of August 2011, led to a 13 percent decline in riot crimes in non-riot subwards.

Lee and McCrary (2009), however, exploit the fact that young offenders are legally treated as adults (and face longer lengths of incarceration) the day they turn 18; in expectation, therefore, individuals should significantly lower their offending rates immediately upon turning 18. The authors show that, in fact, behavioral responses from juveniles when they turn 18 are marginal, and evidence indicates that offenders exhibit hyperbolic time preferences, illustrating that the effectiveness of deterrence is highly dependent on criminals' discount rates. Due to discounting, Durlauf and Nagin (2011) find that longer sentences generate less deterrence for a given level of expected punishment.

Instead of sentence enhancements, Katz, Levitt, and Shustorovich (2003) demonstrate that violent prison conditions have a deterrent effect and lead to a decline in crime rates in the United States. This finding, nevertheless, is contested by Drago, Galbiati, and Vertova (2011) who, based on variation in prison assignment, suggest that the prison environment is criminogenic; that is, harsh prison conditions actually increase post-release criminal activity in Italy. By exploiting a discontinuity in the assignment of federal prisoners to security levels, Chen and Shapiro (2007) arrive to the same conclusion. Gaes and Camp (2009) show that when offenders are placed into higher than necessary levels of security, they are more likely to have higher rates of recidivism than if they were placed at the appropriate security level. Finally, in a study of framing effects, by exploiting a legal change in Maryland that altered recommended, but not actual, sentences for a subset of offenders, Bushway and Owens (2013) find that criminals who receive a large reduction in their sentence may internalize the notion that the criminal justice system is lenient and be less deterred in the future.

In addition, the effect of **incapacitation** on incarceration and recidivism is well documented in the literature. Owens (2009) uses a

change in Maryland sentencing law that allows her to estimate the effect of sentence length on recidivism. She shows that former delinquents between the age of 23 and 25 would have been involved in 1.4 to 2.9 index crimes per person each year had they not been incarcerated. Vollaard (2013) exploits a legislative change that extends a criminal's prison term tenfold in the Netherlands, and concludes that even when only 5 percent of the prison population was sentenced under the law six years after its introduction, the rate of theft declined on average by 25 percent and up to 40 percent in cities where the new law was applied more intensively. Helland and Tabarrok (2007) identify the deterrent effect of incapacitation by evaluating the impact of California's Three-Strikes legislation. The authors find that the law reduced felony arrest rates among second-strike criminals by 17-20 percent. Iyengar (2008) analyzes the same law and finds a 30 percent reduction in reoffences for third-strike eligible offenders. Barbarino and Mastrobuoni (2014) estimate the incapacitation effect on crime using a variation in the prison population caused by sudden collective pardons in Italy. He shows that the elasticity of total crime with respect to incapacitation is between -17 and -30 percent. Furthermore, Buonanno and Raphael (2013) exploit a discontinuous break in Italian crime rates corresponding to the 2006 national collective pardon, and the crime-preventing effects of incarceration diminish with increases in the incarceration rate.

Programs based mainly on **fear, shock, incarceration, punishment, or military discipline** surprisingly have received negligible empirical research. The scarce literature on the subject matter reveals no appreciable impact on recidivism.

The archetypical model for juvenile awareness is the Scared Straight intervention, which attempts to deter youths from delinquent behavior by terrifying them about prison life. It is based on the 1978 documentary of the same name. In a review of studies that randomly assigned delinquents into control or intervention (Scare Straight) groups, Petrosino, Turpin-Petrosino, and Buehler (2003) show that in no case was there a decline in recidivism in the treated group; in addition, treated delinquents were, in fact, up to 28 percent more likely to recidivate than those in the control groups. The authors suggest, however, taking these results with a degree of caution given potential methodological limitations. Aizer and Doyle (2014) find that imprisonment as a punishment for youths leads to a higher probability of adult incarceration.

The Office of Juvenile Justice and Delinquency Prevention undertook experimental impact evaluations of three boot camp programs in Cleveland, Ohio; Denver, Colorado; and Mobile, Alabama, yielding little support for this sort of intervention. While the recidivism rate in the control group was 50 percent, 72 percent of treated inmates in Cleveland's Camp recidivated. In Denver and Mobile, rates of recidivism were found to be comparable in the experimental and control groups (39 percent versus 36 percent and 28 percent versus 31 percent, respectively) (Peters, 1996a; Peters, 1996b; Thomas and Peters, 1996). Based on a quasi-experimental design, Zhang (2000) evaluates a juvenile boot camp in Los Angeles which, unlike most military discipline interventions, includes an aftercare component combined with intensive supervision and counseling. The author shows that boot camp graduates exhibited almost identical recidivism outcomes to inmates in the comparison

group; however, boot camp participants were more likely to have probation revocations. More recently, Wells et al. (2006) compare the recidivism of juveniles who completed a shock incarceration program that included a systematic aftercare phase with a matched comparison group of youths released from traditional residential placements. They find no differences in reconvictions or reoffense seriousness at 8- or 12-month follow-ups.

Some governments in developed and developing countries have considered the re-implementation of conscription as a policy mechanism to reduce violence among the youth. Galiani, Rossi, and Schargrodsky (2011), however, exploit the random assignment of young men to conscription in Argentina through a draft lottery. They show that compulsory enlistment into the armed forces increases the likelihood of developing a criminal record. The authors do not necessarily suggest this is the result of deleterious behavioral changes induced by extremely regimented activities, but rather they attribute this effect to reduced entry costs into crime caused by firearm training received during military service, as well as lost employment opportunities resulting from delayed insertion into the labor market.

Evaluation of **electronic tagging** to monitor the movement of offenders remains a nascent field, and although poor research designs have led to superficial conclusions of "correctional quackery" (Latessa, Cullen, and Gendreau, 2002), results from solid evaluations show promise of electronic monitoring in reducing relapse in criminal behavior. Di Tella and Schargrodsky (2013) exploit random assignment of alleged offenders in the Province of Buenos Aires to judges with differing propensities to resort to electronic monitoring. They find that an electronic monitoring program as a substitute for incarceration induces a decline in the rate of recidivism by 11-16 percentage points. Marklund and Holmberg (2009) compare an early release program that included electronic monitoring at home in Sweden to a register-based matched comparison group and find that 38 percent of the control group had been convicted of new offences during the follow-up period, whereas the corresponding proportion within the early-release group was 26 percent. Bales et al. (2010) employ a propensity score matching approach to determine the effect of electronic monitoring on Florida's medium- and high-risk felony offenders and find that it reduces the hazard of a revocation or absconding from supervision by 31 percent. Bonta, Wallace-Capretta, and Rooney (2000), however, conduct a quasi-experimental evaluation of a cognitive-behavioral treatment program delivered within the context of intensive community supervision via electronic monitoring, and find that electronic monitoring appeared to have little impact with respect to offender recidivism, yet sample size issues lead to excising caution when interpreting this result.

Analyses that isolate variation in criminal justice policies that is orthogonal to unmeasured variation in crime and violence conditions are scant, although the literature continues to expand in terms of **diversion**. Kuziemko (2007) conducts a difference-in-difference analysis of a 1998 policy change in Georgia that greatly limited discretionary parole for a group of inmates by requiring them to serve at least 90 percent of their sentence. He shows that for the 90 percent crimes group, the three-year recidivism rate increased by

13 percent, while no perceptible effect was found for the control group. In contrast, Green and Winik (2010) follow over 1,000 drug defendants and conclude that variation in assignment to incarceration versus probation, induced by random assignment to different judges, did not impact future arrest rates.

In one of the few evaluations of **day fines**, Turner and Petersilia (1996) exploit the paced implementation of a criminal day-fine program in Maricopa County (Phoenix, Arizona), that targets low-risk offenders as an alternative to routine probation. They show that the lower level of supervision afforded to the treated offenders does not lead to an increase in recidivism, with an arrest rate among the treated of 11 percent after one year versus 17 percent in the matched comparison group—a difference that is statistically negligible.

The effectiveness of **drug courts** as an alternative sentence for those found guilty of minor offenses and suffering from addiction shows that, in general but not always, recidivism rates among participants are substantially lower than in control groups. Gottfredson and Exum (2002) conducted an evaluation of the Baltimore City Drug Treatment Court, where 235 eligible clients were randomly assigned to either drug treatment court or treatment as usual. They show that after one year, 48 percent of drug-treatment court clients and 64 percent of controls were arrested for new offenses. Gottfredson, Najaka, and Kearley (2003) find that the program continues to be effective after two years (the re-arrest rate in the treated group was 66 percent, 15 percentage points lower than that of the control group) and even three years (Gottfredson et al., 2006). Based on a quasi-experimental design, Rempel, Green, and Kralstein (2012) also provide evidence in support of drug court participation to reduce criminal behavior: after 18 months, drug courts reduced the probability of reoffending by almost one-quarter relative to the comparison group (from 64 to 49 percent), and reduced the total number of criminal acts by more than half (from 110.1 to 52.5). Deschenes and Turner (1995), however, analyze a post-adjudication program for probationers with a first-time felony conviction for drug possession and find no statistically significant difference between participants in the drug court program and those on routine probation in terms of new arrests. The absence of an effect was attributed to the treatment not incorporating strong enough community service, restitution, and education components (Gottfredson, Najaka, and Kearley, 2003). The importance of treatment is an issue that is also discussed by Peters and Murrin (1998).

Unfortunately, in terms of access to justice and the decongestion of the justice system, the number of randomized experiments and quasi-experimental designs of **restorative justice conferences and community sentencing interventions,** relative to observational studies, remains small, and evidence on their effectiveness is modest. Nevertheless, due to the much lower cost of implementation vis-à-vis incarceration, analysts advise that due consideration be given to these instruments. Sherman et al. (2015) reviewed 519 studies on restorative justice conferences and only 10 (1.9 percent of the total) were randomized controlled trials that met the authors' quality selection criteria. Their meta-analysis shows that restorative justice conferences cause a 7–45 percent decline in repeat convictions or arrests two years after random assignment, and find them very cost-effective

mechanisms. Similarly, Villetaz, Killias, and Zoder (2006) examined nearly 300 relevant studies on community-based sentences, and only five analyses (1.7 percent) were based on a randomized or natural experimental design. The authors concluded that no significant difference in terms of curbing recidivism is found between community custodial and non-custodial sanctions. When matched-pair design studies are incorporated, however, the authors do report a decline in reoffences caused by non-custodial sanctions. In any case, given the far higher costs of imprisonment, the potential savings of applying community penalties is substantial.

Systematic reviews of **correctional rehabilitation** treatments are very consistent in their overall conclusion that well-designed and effectively implemented programs can provide stability and order in prisons and improve inmate wellbeing. They also improve social, economic, and workforce reintegration, thus reducing criminal recidivism. Lipsey and Cullen (2007) review eight meta-analyses, spanning 18 years of research, and all of them report mean effect sizes favorable to treatment, from a 10 to nearly 40 percent average reduction in recidivism. Declines are significant for juveniles and adults in residential- and community-based treatment settings. More importantly, the authors show that the least of those mean reductions is greater than the largest mean reductions reported by any meta-analysis of sanctions. According to all the systematic reviews analyzed, the most effective rehabilitation treatments tend to be those based on multisystemic therapy, family therapy, cognitive-behavioral therapy, and treatment for sex offenders. More modest results are reported for challenge programs, drug courts, and group counseling. Vocational and employment programs showed the least impact, although still achieved negative changes in recidivism. Even so, it is important to acknowledge that a variety of external and contextual factors may influence rehabilitation program outcomes. Therefore, comparing different rehabilitation treatments in terms of their effectiveness provides a priori knowledge at best.

Community service work seems also promising. Based on a propensity score matching approach, Wermink et al. (2010) compare recidivism after community service to that after short-term imprisonment in the Netherlands. They show that offenders recidivate significantly less (28 percent) after having performed community service compared to after having been imprisoned (52 percent), a conclusion previously attained by Nirel et al. (1997), Muiluvuori (2001), and Killias, Aebi, and Ribeaud (2000) in their studies of community service in Israel, Finland, and Switzerland, respectively, although for the latter, the difference in favor of community service is not statistically significant.

Reentry has become an essential mechanism for effective reintegration. Most of the empirical literature on the issue, including most work-release programs and prison industry systems, is methodologically weak, but the few exceptions available show promise for interventions offering support for offenders released to the community. Saylor and Gaes (1997) evaluate the Post-Release Employment Project, a U.S. prisoner reentry program using propensity score matching. The authors show that, after one year, members of the treated group were 35 percent less likely to recidivate than those in the comparison group. In the same study, the authors

also provide evidence in support of **halfway houses**: members of the treated group were 24 percentage points (86 percent versus 62 percent) more likely to obtain a full-time job than those in the comparison group. Braga, Piehl, and Hureau (2009) evaluate the Boston Reentry Initiative, which offers comprehensive interventions (social, health, mentoring, and counseling services) to high-risk, violent criminals. They find that the program reduced recidivism rates by 30 percent, relative to a matched comparison group. Bloom et al. (2007) conduct a randomized evaluation of a large prisoner reentry program in New York City and show that there is a modest, but statistically significant, decline in felony convictions and incarceration for new crimes during the first year of follow-up.

Finally, the **relocation** of re-entering offenders to a different city shows promise. Kirk (2009) exploits the exogenous variation in residence caused by Hurricane Katrina on the Louisiana Gulf Coast and finds that moving away from former geographic areas substantially lowers a parolee's likelihood of re-incarceration by 15 percentage points: the predicted probability of re-incarceration for male parolees, who returned to the same parish where they were convicted, is 0.26. In contrast, the predicted probability for males released to a different parish is 0.11.

In summary, research has shown that deterrence and incapacitation are elements that work in favor of reduced recidivism and overall decrease crime. Conversely, fear and punishment mechanisms are insignificantly effective. Electronic tagging shows promise, but further empirical work is needed. Diversion interventions, such as day fines and drug courts, appear to work favorably as long as they robustly incorporate social integration, restitution, and education components. More research on restorative justice conferences is critical, and in spite of modest results, their low cost of implementation makes them a policy worth assessing. Empirical evidence supports the notion that correctional rehabilitation and community service work and reentry programs are crime-reducing instruments. In addition, the relocation of re-entering offenders needs to be further studied, but it seems to be effective.

4 FUTURE RESEARCH IN LATIN AMERICA AND THE CARIBBEAN

It is very important to the IDB to assist in improving the efficiency and effectiveness of citizen security and justice public policies in LAC in order to contribute to the reduction in crime and violence. It is essential, therefore, to intensively foster dialogue and deepen collaboration with academics and specialists to increase the importance of evidence-based strategies. The organization acknowledges that it is in a position to facilitate the learning process by generating and disseminating new knowledge, as well as transversally identifying current theoretical and information gaps.

As evidenced throughout this document, there are important demands in terms of cost-effective responses to the crime and violence phenomenon in LAC. Almost all the rigorous evidence available in the areas of IDB intervention originate from the developed world, although there are many issues yet to be resolved in the United Kingdon and United States. The IDB can contribute to fill the various gaps that have been identified from the literature with reference to LAC, some of which have been assessed in this publication and could be of benefit.

4.1 Generation of Information and Measurement Methodologies

Information and weak national statistics systems relating to crime in the LAC region are lacking. **Information** is a key to accurate diagnosis and monitoring, which is useful in evaluations. Some countries have made significant progress towards useful and integrated information systems, while others remain without reliable data on crime and violence. The IDB supports many countries in the region by (i) improving their data generation and dissemination processes by providing platforms of dialogue for awareness raising ; (ii) implementing regional projects, such as the SES, which aims at standardize indicators relating to citizen security; (iii) helping to create and strengthen crime observatories in different countries in cooperation with national and subnational governments; (iv) building operational capacity within government counterparts to produce better information and put in place information systems (e.g., case management systems for beneficiaries); and (v) committing to the improvement of knowledge in understudied and critical issues, such as crime and violence in the Caribbean. Together with the United Nations, the IDB, currently carrys out surveys in the Caribbean relating to victimization and violence against women. This is the first of its kind in the Caribbean, and further surveys will take place in the rest of the region.

It is essential that an institutionalized agenda on measuring the **costs of crime and violence** in the region be established, not only to advance the different methodologies but also in terms of rigorous estimation techniques (Ajzenman, Galiani, and Seira, 2015; Jaitman, 2015). Exploring better ways to measure the willingness to subsidize crime reduction and evaluate the link between crime, informality, and productivity growth is critical.

In addition, the specific gaps in the criminal justice system discussed above reveal that research has been evolving and that there is an effort to consolidate the application of experimental and quasi-experimental methodologies. LAC is lagging behind, however, and while somewhat paradoxically, it is the most violent region in the world where investment in knowledge generation is essential.

4.2 Social Prevention of Crime: The Focus on Vulnerable Populations

From the literature, it is clear that the selection of topics is becoming more diverse and there is more in-depth analyses. In the developed world, however, there is a sizeable body of research claiming that there is a wide range of social prevention interventions that are effective, although many have weak methodologies. While the theories may be clear, the empirical assessment of this literature may be unreliable and the policy implications therefore unknown. This publication attempts to evaluate interventions that can be applied as best practice in the context of LAC. It also aims to analyze various innovative interventions that are currently being carried out in the region.

In general, opportunities to expand the portfolio of randomized controlled trials in behavioral interventions should continue to be pursued. In particular, follow-up research needs to be prioritized in order to develop a better understanding of the long-term effects of such interventions.

Given that they are the beneficiaries of most social prevention operations, it is natural for the IDB to focus on **vulnerable populations** such as the youth and women at risk. The approach here is comprehensive in nature. It attempts to understand and compare the effect of interventions that change behaviors at the individual, family, and community levels—in particular, those that combine education or job training with life skills and values in order to build and strengthen resilience. The IDB has a substantial experience in implementing such policies across the region.

Research on the development of community centers for children and youths is critical in order to understand their effectiveness and the challenges for success—whether they can reduce crime through incapacitation or by improving the payoff of legal activities. Examining the link between poverty and crime and the role of anti-poverty programs on crime should be a part of this agenda. Furthermore, the role of private security in explaining heterogeneous effects on crime across income groups is also an issue worthy of further study (Di Tella, Galiani, and Schargrodsky 2010).

In many countries, victims and perpetrators concentrate in disadvantaged communities where there is a high proportion of ethnic minorities. As a result, the IDB is committed to

develop learning and knowledge with regard to the link between ethnicity and crime—an issue that, so far, lacks investigation. In support of this effort, the organization is working with national and subnational governments to disaggregate crime statistics by ethnicity.

Of great importance is the study of **violence against women**. Some research opportunities may be found in the empirical study of community mobilization and advocacy campaigns. Both topics, with a few exceptions, are all but academically orphaned, especially in the region. The effect of victims' services and the economic empowerment of women need further examination in LAC. In its pursuit of a threefold agenda, the IDB will continue to promote surveys across LAC regarding violence against women in an effort to increase the reporting and registration of incidences. The IDB also will create more refined measuring instruments and develop various methodologies to mitigate underreporting. In the field, the organization continues to support advocacy campaigns and mobilization, taking advantage of the innovative research opportunities that this offers. In addition, the IDB intends to help establish a rigorous research agenda that is based on essential methods to prevent violence against women and treat the victims, focusing on the direct and indirect impacts of centers for women, education services, conditional cash transfers, and treatment for aggressors.

4.3 Crime in the City: The Issue of Space

The increase in crime in the LAC region coincides with a period of rapid and unplanned urbanization. The rate of growth of cities has exceeded the capacity of local LAC governments to provide urban services, creating spatial disconnection, social segregation, and deficiencies in public infrastructure. It is not surprising, therefore, that crime is significantly concentrated in the cities. To understand the linkages between urbanization and crime, the relationship between violence and informality, and the location of crime in space over time, more rigorous analyses are needed. Heterogeneities across and within countries will inform more tailored crime prevention strategies.

Most **situational prevention** analyses are poorly executed and there is a lag between the theoretical advances in urban planning and the empirical analyses carried out by economists, resulting in scant innovations in LAC cities. The IDB is well positioned to close the research gap and has comparative advantages to move the agenda forward, based on its experience in implementing comprehensive citizen security projects as components of slum upgrading and other urban interventions. Additional research opportunities have been identified with regard to transportation, particularly the evaluation of mechanisms that make public transport safer, especially for women.

4.4 Community Policing and the Use of Technology

Analytically, **policing** is an area where experimental and quasi-experimental methods gradually are becoming a powerful research tool. Notwithstanding these advances, the knowledge gap still exists in relation to police crime prevention efforts and how the overall knowledge can inform the implementation of effective strategies. Many police strategies have to be rigorously evaluated and current literature indicates many ambiguities (Weisburd, Lum, and Petrosino, 2001).

The literature shows that the placement of more police can reduce crime (this was evident in the context of exogenous shocks to police force sizes in the context of developed countries and those in LAC). This gives ground to saturation techniques which are sometimes employed in the region during periods of severe crime, although these strategies can neither be applied everywhere nor for long periods of time given the cost.

Police strategies can deter and, therefore, prevent crime. Reviews indicate that police effectiveness to deter crime cannot be encapsulated as a monolithic, one-size-fits-all policing model, especially since public order is intimately related to trust and the interaction with citizens; the nature of crime; and the mechanisms to prevent violence in the context of a predetermined level of social cohesion. Modern policing theory shows that the emphasis on preemptive actions that are locally adapted are more promising crime-reducing strategies than that of reactive exercise of control and violence suppression by centralized institutions. Among those actions are focal operations on locations where crime occurs (i.e., hot-spot policing), for which there is rigorous evidence. There are also other strategies that appear promising, despite the fact that the empirical literature is not sufficiently robust, such as in the case of citizen engagement; community policing; crime and behavior, and ways in which to address the underlying factors leading to them in the long term (i.e., problem-oriented policing); and focused-deterrence interventions.

The emphasis of IDB interventions and its related research relate to the deterrent effect of policing strategies, making better use of the human, material, and technological resources available. Its attention to the role of police, in terms of deterrence rather than incapacitation, is due to the fact that the latter raises the rate of imprisonment and overcrowding and it imposes greater social costs. In contrast, crime prevention by deterrence does not necessarily involve a trade-off between the rates of crime and imprisonment (Blumstein, Cohen, and Nagin, 1978; Durlauf and Nagin, 2011).

There is a dearth of literature on police strategies in LAC. This, however, may suggest that POP, community policing, and especially the better coordination of police forces are proving to be successful in reducing crime. Community policing and POP are features of police reforms that many countries in the region are pursuing with the support of the IDB. Evaluations in these areas, therefore, should be a priority. Needless to say, strengthening community policing by ensuring police are in closer contact with citizens is a challenge, given that police forces in the region have an embedded culture and history of repression and despotism, often exacerbated by dictatorial military regimes. Along similar lines, governments in the region realize that simply training their

police forces does not address the needs of today. In its effort to promote training across the region, the IDB is actively implementing relevant programs, the evaluation of which is essential for effective policymaking.

Finally, technology is changing the way police forces work worldwide. It affects criminal analysis and investigations alike. The IDB understands that innovation is a driver of productivity, and carrying out cutting-edge research on the role of technology in policing is a fundamental part of the research agenda. The role of technology in criminal analyses is already part of a range of policing strategies in a number of LAC cities. The IDB supports such initiatives and seeks to promote their successful implementation and evaluation.

4.5 Criminal Justice

One of the areas where research has led to broader consensus is criminal justice, with most evidence pointing to the ineffectiveness of imprisonment and most forms of extreme disciplinary mechanisms, particularly in the case of minors and low-risk individuals, given the inability of most justice systems to provide rehabilitation in a conducive and sustainable manner. It is important to target sentences according to the risk profile of the offender, including the offense committed, the frequency of occurrence, and the ability to inflict graver harm to society. Alternative approaches to prosecution, such as electronic monitoring, community work programs, drug courts, restorative justice meetings, cognitive behavioral therapies, drug treatments, and reentry initiatives (e.g., halfway houses and residence relocation), are found to produce more favorable outcomes, not only in terms of recidivism rates but also in cost-effectiveness.

Contrary to social prevention and policing, where some research has been done in LAC and other developing countries, empirical research on criminal justice with a focus outside of the United States and Europe is extremely rare. Questions about external validity arise as a result: whether findings of criminal justice reforms that took place in the United States can be transferred to other cultural and institutional contexts. There are also gaps in the literature, even in terms of the United States. The use of randomized controlled trials in this field is limited, probably due to the subject matter, as it is difficult to randomize sentences or prisoners. Creative research that exploits change in legislation has been used in the developed world and should be further explored in the region.

Deviation and surveillance issues are surprisingly understudied and there are many areas of opportunity for potential research endeavors. In the future, rigorous research needs to account for spillover effects of prior prison spells and in-prison networks, which are often ignored. Special consideration to the development of indicators and the implementation of surveys should be given. Although research has generally concluded that drug courts are effective, precisely why and for whom drug courts work remains largely unknown.

Emphasis on criminological analyses using econometric techniques is solid in other regions and will contribute to the generation of knowledge in LAC countries if produced. In this strand of the literature, there is evidence that precision of terminology is very

important, especially in the use of the term "impact". In terms of reentry, for example, experimental and quasi-experimental research designs are sometimes compared on equal terms to observational studies based on anecdotal evidence. The accuracy of outcome indicators is critical, especially considering the underreporting and semantic issues in some metrics, both within and outside the prison system, as well as the unwillingness to share data by the authorities. The homogenization and development of robust indicators and survey design and implementation has been progressing in the region, partly due to the support of the IDB and other multilateral entities. In terms of the IDB research agenda, surveys in penitentiary centers, which will stimulate much needed applied analysis on the criminal justice system, are planned for implementation in some countries in the short term. This may facilitate comparative research in the medium term and constitute baselines for future interventions.

There are many research questions with fundamental policy implications on the issue of prisons in the region. As pointed out above, LAC prisons are generally overcrowded, lack adequate reinsertion programs, have deficient infrastructure, and demand multiple budgetary resources. Consequently, the IDB supports the construction of nontraditional prisons with innovative services and infrastructure; for example, the Association for the Protection and Assistance of Prisoners (Associação de Proteção e Assitência aos Condenados (APAC)—a restorative justice prison model in Brazil—or the Pacora Juvenile prison in Panama. Research on the cost-effectiveness of different types of prisons or administrative arrangements is needed in LAC. It is fundamental to assess how cost-effective the many types of alternative criminal justice interventions are vis-à-vis incarceration. Although today's orthodoxy is that rehabilitation is effective, little is known in terms of the mechanisms of why it reduces recidivism. Alternatives to prison, as well the provision of different interventions inside the prisons to reduce recidivism in LAC, are some of the main research topics in the criminal justice area.

Of course, this document frames the research agenda within the Beckerian model of crime, which relies on the assumption that prospective criminals compare rationally the expected net benefit of legal and illegal activities, and behave accordingly. There are very interesting research areas for the IDB, however, that do not assume rationality, particularly on how time-inconsistent behavior and self-control interventions (which it currently promotes for inmates and youth at risk) induce changes in criminal outcomes.

Finally, it is important to reiterate the notion that, although the issue of causality is vital for a sound citizen security and justice policy dialogue, the agenda is focused on topics rather than on methods. The IDB's research should be of the highest standards and always be guided by the relevance of the issue, rather than by a doctrinal use of a particular technique. Furthermore, the topics discussed above were prioritized in terms of the repeated demands heard from the IDB's country counterparts, the gaps in the literature—in advanced and developing countries alike—and the IDB's comparative advantages in citizen security and justice. The research agenda, by being closely linked to the operational agenda, ensures rigorous analysis that considers idiosyncratic complexities and accounts for practical constraints, thus enabling innovative

and effective policy designs which are, at the same time, evidence-based, technically solid, and institutionally executable (Jaitman and Guerrero Compeán, 2015). As the agenda is broad and comprehensive, so are the operational guidelines to address the issue of crime and violence in all its complexity. Therefore, prioritization is essential. Improving on the methodologies and estimations of the costs of crime and violence in the region is one of its priorities. Furthermore, the estimations to the costs for the private sector and how to engage the private sector in crime reduction policies should be expanded.

In terms of social prevention, the IDB's focus will be on the effects of programs that target youth at risk and the role of self-control. Violence against women is at the core of the agenda, specifically in terms of measurement improvement and the evaluation of interventions to reduce violence in the public space. The effect of community policing and the effectiveness of technology and criminal analysis to deter crime is critical with regard to the IDB's research efforts on policing. On criminal justice, it seeks to understand the effect of rehabilitation interventions and the impact of alternatives to prison on recidivism. In the end, it is clear that old-fashioned questions deserve to be looked at again with fresh eyes and from different and unconventional vantage points. Only some have been discussed; they all still demand to be answered with scientific rigor to contribute to crime prevention and control in the region. To achieve this, improvements in crime statistics will be promoted, information will be generated, and there will be close cooperation with governments and academic centers from different disciplines.

REFERENCES

Acevedo, C. 2008. "Los costos económicos de la violencia en Centroamérica." Presidencia de la República. San Salvador: Consejo Nacional de Seguridad Pública.

Agüero, J. 2013. "Causal estimates of the intangible costs of violence against women in Latin America and the Caribbean." IDB Working Paper 414. Washington, DC: Inter-American Development Bank.

Aizer, A. 2011. "Poverty, Violence and Health: The Impact of Domestic Violence during Pregnancy on Newborn Health." *Journal of Human Resources* 46(3): 518–38.

Aizer, A. and J.J. Doyle. 2014. "Juvenile incarceration, human capital and future crime: Evidence from randomly assigned judges." Manuscript. Brown University/Massachusetts Institute of Technology.

Ajzenman, N., S. Galiani, and E. Seira. 2015. "On the distributive costs of drug-related homicides." *Journal of Law and Economics* (in press).

Almond, D. and J. Currie. 2011. "Human capital development before age five" in Ashenfelter, O. and D. Card (eds.) *Handbook of Labor Economics. Volume 4*. Amsterdam: North Holland.

Alves, M.C. and E.D. Arias. 2012. "Understanding the Fica Vivo programme: Two-tiered community policing in Belo Horizonte, Brazil." *Policing and Society* 22(1): 101–13.

Angelucci, M. 2008. "Love on the rocks: domestic violence and alcohol abuse in rural Mexico." *The B.E. Journal of Economic Analysis and Policy* 8(1): article 43.

Baker, J. and S. McPhedran. 2006. "Gun laws and sudden death: did the Australian firearms legislation of 1996 make a difference?" *British Journal of Criminology* 47(3): 455–69.

Bales, W., K. Mann, T. Blomberg, G. Gaes, K. Barrick, K. Dhungana, and B. McManus. 2010. *A Quantitative and Qualitative Assessment of Electronic Monitoring.* Washington, DC: U.S. Department of Justice.

Bandiera, O., N. Buehren, R. Burgess, M. Goldstein, S. Gulesci, I. Rasul, and M. Sulaiman. 2012. "Empowering adolescent girls: evidence from a randomized control trial in Uganda." Washington, DC: World Bank.

Banerjee, A., E. Duflo, D. Keniston, and N. Singh. 2012. "Crime, punishment and monitoring: Deterring drunken driving in India." Manuscript. Abdul Latif Jameel Poverty Action Lab. Massachusetts Institute of Technology.

Barbarino, A. and G. Mastrobuoni. 2014. "The incapacitation effect of incarceration: Evidence from several Italian collective pardons." *American Economic Journal: Economic Policy* 6:1–37.

Becker, G.S. 1968. "Crime and punishment: An economic approach." *Journal of Political Economy* 76(2): 169-217.

Bell, B., L. Jaitman, and S. Machin. 2014. "Crime deterrence: Evidence from the London 2011 riots." *Economic Journal* 124(576): 480–506.

Bennett, T., D. Farrington, and K. Holloway. 2008. "The effectiveness of neighborhood watch: A systematic review." *Campbell Systematic Reviews* 4(18).

Berthelon, M. E. and D. I. Kruger (2011). "Risky behavior among youth: Incapacitation effects of school on adolescent motherhood and crime in Chile." *Journal of Public Economics* 95 (1-2): 41–53.

Biderman, C.J., J.M.P. De Mello, and A. Schneider. 2009. "Dry laws and homicides: Evidence from the São Paulo Metropolitan Area." *Economic Journal* 120(543): 157–182.

Bloom, D., C. Redcross, J. Zweig, and G. Azurdia. 2007. "Transitional jobs for ex-prisoners early impacts from a random assignment evaluation of the Center for Employment Opportunities (CEO) Prisoner Reentry Program." Contract No. HHS-233-01-0012. Washington, DC: U.S. Department of Health and Human Services (HHS).

Blumstein, A., J. Cohen, and D. Nagin. 1978."Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates." Washington, DC: National Academy of Sciences.

Bonta, J.S. Wallace-Capretta, and J. Rooney. 2000. "A quasi-experimental evaluation of an intensive rehabilitation supervision program." *Criminal Justice and Behavior* 27(3): 312–329.

Bourguignon, F. 2000. "Crime, violence, and inequitable development." In B. Pleskovic and J.E. Stiglitz (eds.) *Annual World Bank Conference on Development Economics 1999*. Washington, DC: The World Bank.

Bowers, K.J., S.D. Johnson, R.T. Guerette, L. Summers, and S. Poynton. 2011. "Spatial displacement and diffusion of benefits among geographically focused policing initiatives." *Journal of Experimental Criminology* 7: 347–374.

Braga, A.A. 2007. "Effects of hot spots policing on crime." *Campbell Systematic Reviews* 2007:1.

Braga, A.A. 2001. "The effects of hot spots policing on crime." *Annals of the American Academy of Political and Social Sciences* 578: 104–125.

Braga, A.A. and B.J. Bond. 2008. "Policing crime and disorder hot spots: A randomized controlled trial." *Criminology: An Interdisciplinary Journal* 46(3): 577–607.

Braga, A., A. Papachristos and D. Hureau, 2012. "Hot spots policing effects on crime." *Campbell Systematic Reviews* 8(8) 1–96.

Braga, A.A. and D.L. Weisburd. 2012. "Pulling levers focused deterrence strategies to prevent crime." *Crime Prevention Research Review 6.* Washington, DC: U.S. Department of Justice, Office of Community Oriented Policing Services.

Braga, A.A., D.L. Weisburd, E.J. Waring, L.G. Mazerolle, W. Spelman, and F. Gajewski. 1999. "Problem-oriented policing in violent crime places: A randomized controlled experiment." *Criminology* 37: 541–580.

Buonanno, P. and S. Raphael. 2013. "Incarceration and incapacitation: Evidence from the 2006 Italian collective pardon." *American Economic Review* 103: 2437–2465.

Bushway, S.D. and E.G. Owens. 2013. "Framing punishment: Incarceration, recommended sentences, and recidivism." *Journal of Law and Economics* 56(2): 301–331.

Camacho, A. and D. Mejía. 2013. "Las externalidades de los programas de transferencias condicionadas sobre el crimen. El caso de Familias en Acción en Bogotá." Working paper IDB-WP-406. Inter-American Development Bank.

Casas Zamora, K. 2014. "Missing scholars and hard-nosed copes: The weak research behind citizen security policies" in Lowenthal, A.F. and M.E. Bertucci (eds.) *Scholars, Policymakers and International Affers. Finding Common Cause.* pp. 119–134. Baltimore, MD: Johns Hopkins University Press.

Cerdá M., J.D. Morenoff, B.B. Hansen, K.J. Tessari Hicks, L.F. Duque, A. Restrepo, and A.V. Diez-Roux. 2012. "Reducing Violence by Transforming Neighborhoods: A Natural Experiment in Medellín, Colombia." *American Journal of Epidemiology* 175(10): 1045–1053.

Chandler, D., S.D. Levitt, and J.A. List. 2011. "Predicting and preventing shootings among at-risk youth." *American Economic Review* 101(3): 288–292.

Chen, K.M. and J.M. Shapiro. 2007. "Do harsher prison conditions reduce recidivism? A discontinuity—based approach." *American Law and Economics Review* 9(1): 1–29.

Chinchilla, L. and J. Rico. 1997. *La prevención comunitaria del delito: Perspectivas para América Latina*. Miami, FL: Center for the Administration of Justice, Florida International University.

Chioda, L., J.M.P. De Mello, and R.R. Soares. 2012. "Spillovers from conditional cash transfer programs: Bolsa Família and crime in urban Brazil". IZA Discussion Paper 6371. Institute for the Study of Labor (IZA).

Cohen, M.A. and A.R. Piquero. 2010. "An outcome evaluation of the YouthBuild USA Offender Project." *Youth Violence and Juvenile Justice* 8(4): 373–385.

Cook, P.J. and J. Ludwig. 2006. "The social costs of gun ownership." *Journal of Public Economics* 90(1): 379–391.

Cook, P.J. 2012. "The Impact of Drug Market Pulling Levers Policing on Neighborhood Violence." *Criminology & Public Policy* 11(2): 161–164.

Corsaro, N., E.D. Hunt, N.K. Hipple, and E.F. McGarrell. 2012. Overview of: "The Impact of Drug Market Pulling Levers Policing on Neighborhood Violence: An Evaluation of the High Point Drug Market Intervention". *Criminology and Public Policy* 11(2): 165–166.

Cui, L. and R. Walsh. 2015. "Foreclosure, vacancy and crime." *Journal of Urban Economics* 87: 72–84.

Cullen, J.B., B.A. Jacob, and S.D. Levitt. 2006. "The effect of school choice on participants: Evidence from randomized lotteries." *Econometrica* 74(5): 1191–1230.

Curtis, N.M., K.R. Ronan, and C.M. Borduin. 2004. "Multisystemic treatment: a meta-analysis of outcome studies." *Journal of Family Psychology* 18(3): 411–419.

Deming, D. 2011. "Better schools, less crime?" *Quarterly Journal of Economics* 126(4): 2063–2115.

Deschenes, E.P. and S. Turner. 1995. "Drug court or probation?: An experimental evaluation of Maricopa County's drug court." *Justice System Journal* 18(1): 55–73.

Di Tella, R., S. Edwards, and E. Schargrodsky (eds). 2010. *The Economics of Crime: Lessons for and from Latin America*. Chicago, IL: The University of Chicago Press.

Di Tella, R., S. Galiani, and E. Schargrodsky. 2010. "Crime distribution and victim behavior during a crime wave," in Di Tella, R., S. Edwards and E. Schargrodsky (eds.) *The Economics of Crime: Lessons for and from Latin America*, pp. 175–204. Chicago, IL: University of Chicago Press.

Di Tella, R. and E. Schargrodsky. 2013. "Criminal recidivism after prison and electronic monitoring." *Journal of Political Economy* 121(1): 28–73.

Di Tella, R. and E. Schargrodsky. 2004. "Do police reduce crime? Estimates using the allocation of police forces after a terrorist attack." *The American Economic Review* 94(1): 115–133.

Draca, M. and S. Machin. 2015. "Crime and economic incentives." Manuscript. London School of Economics and Political Science.

Draca, M., S. Machin, and R. Witt. 2011. "Panic on the streets of London: Police, crime, and the July 2005 terror attacks." *The American Economic Review* 101(5): 2157–2181.

Drago, F., R. Galbiati, and P. Vertova. 2009. "The deterrent effects of prison: Evidence from a natural experiment." *Journal of Political Economy* 117(2): 257–280.

Drago, F., R. Galbiati, and P. Vertova. 2011. "Prison conditions and recidivism." *American Law and Economics Review* 13(1): 103-130.

Durlauf, S.N. and D.S. Nagin. 2011. "Imprisonment and crime: Can both be reduced?" *Criminology & Public Policy* 10: 13–54.

Ellsberg, M., D.J. Arango, M. Morton, F. Gennari, S. Kiplesund, M. Contreras, and C. Watts. 2014. "Prevention of violence against women and girls: what does the evidence say?" *The Lancet* 385(9977): 1555-1566.

Evans, W.N. and E.G. Owens. 2007. "COPS and crime." *Journal of Public Economics* 91(1): 181–201.

Farmer, A. and J. Tiefenthaler. 1996. "Domestic violence: The value of services as signals." *American Economic Review* 86(2): 274–279.

Federal Bureau of Investigation. 2014. Uniform Crime Reports. Retrieved on March 16, 2015 from http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s.

Ferrier M. and J. Ludwig. 2011. "Crime policy and informal social control." *Criminology & Public Policy* 10(4):1029–1036.

Fixsen, D.L., S.F. Naoom, K.A. Blasé, R.M. Friedman, and F. Wallace. 2005. *Implementation Research: A Synthesis of the Literature.* Tampa, FL: University of South Florida.

Foureaux Koppensteiner, M. and M. Manacorda. 2013. "The effect of violence on birth outcomes. Evidence from homicides in rural Brazil." IDB Working Paper IDB-WP-416. Inter-American Development Bank.

Frühling, H., M. Chinchilla, M.V. Llorente, P. de Mesquita Neto, and C.C. Beato. 2004. *Calles más seguras: Estudios de policía comunitaria en América Latina*. Washington, DC: Inter-American Development Bank.

Gaes, G.G. and S. Camp. 2009. "Unintended consequences: experimental evidence for the criminogenic effect of prison security level placement on post-release recidivism." *Journal of Experimental Criminology* 5(2): 139–162.

Galiani, S., P. Gertler, R. Cooper, S. Martínez, A. Ross, and R. Undurraga. 2014. "Shelter from the storm: Upgrading housing infrastructure in Latin American slums." IDB Working Paper IDB-WP-528. Washington, DC: Inter-American Development Bank.

Galiani, S., M. Rossi, and E. Schargrodsky. 2011. "Conscription and crime: Evidence from the Argentine draft lottery." *American Economic Journal: Applied Economics* 3(2): 119-136.

García, J., D. Mejía, and D. Ortega. 2013. "Police reform, training and crime: Experimental evidence from Colombia's Plan Cuadrantes." Documento CEDE. Retrieved on April 13, 2015 from http://www.caf.com/media/4243/police_reform_training_crime_experimental_evidence_colombia.pdf

Garicano, L. and P. Heaton. 2010. "Information technology, organization, and productivity in the public sector: Evidence from police departments." *Journal of Labor Economics* 28(1): 167–201.

Gelber, A., A. Isen and J.B. Kessler. 2014. "The effects of youth employment: Evidence from New York City Summer Youth Employment Program Lotteries." NBER Working Paper No. 20810. National Bureau of Economic Research.

Gottfredson, D.C. and M.L. Exum. 2002. "The Baltimore City Drug Treatment Court: One-year results from a randomized study." *Journal of Research in Crime and Delinquency* 39(3): 337–356.

Gottfredson, M.R. and T. Hirschi. 1990. *A General Theory of Crime*. Palo Alto, CA: Stanford University Press.

Gottfredson, D.C., B. Kearley, S.S. Najaka, and C.M. Rocha. 2006. "Long-term effects of participation in the Baltimore City Drug Treatment Court: Results from an experimental study." *Journal of Experimental Criminology* 2(1): 67–98.

Gottfredson, D.C., S.S. Najaka, and B. Kearley. 2003. "Effectiveness of drug treatment courts: Evidence from a randomized trial." *Criminology and Public Policy* (2): 171–197.

Green, D.P. and D. Winik. 2010. "Using random judge assignments to estimate the effects of incarceration and probation on recidivism among drug offenders." *Criminology* 48(2): 357–387.

Grönqvist, H. and S. Niknami. 2014. "Alcohol availability and crime: Lessons from liberalized weekend sales restrictions." *Journal of Urban Economics* 81: 77–84.

Guerrero Compeán, R. and M. Olavarría. 2015. "The indirect costs of crime: Causal evidence from Latin America," in Jaitman, L. (ed.) *The Welfare Costs of Crime and Violence in Latin America and the Caribbean*. Washington, DC: Inter-American Development Bank.

Haushofer, J. and J. Shapiro. 2013. "Household response to income changes: evidence from an unconditional cash transfer program in Kenya". Retrieved on March 26, 2015 from http://www.princeton.edu/~joha/publications/Haushofer_Shapiro_UCT_2013.pdf and http://www.princeton.edu/~joha/publications/Haushofer_Shapiro_UCT_Online_Appendix_2013.pdf

Heaton, P. 2012. "Sunday liquor laws and crime." *Journal of Public Economics* 96(1-2): 42–52.

Heckman, J.J. and T. Kautz. 2013. "Fostering and measuring skills: Interventions that improve character and cognition." NBER Working Paper 19656. National Bureau of Economic Research.

Helland, E. and A. Tabarrok. 2007. "Does three strikes deter? A nonparametric estimation." *Journal of Human Resources* 42(2): 309-–330.

Heller, S.B. 2014. "Summer jobs reduce violence among disadvantaged youth." *Science* 346(6214): 1219–1223.

Heller, S., H.A. Pollack, R. Ander, and J. Ludwig. 2013. "Preventing youth violence and dropout: A randomized field experiment." NBER Working Paper No. 19014. National Bureau of Economic Research.

HEUNI (European Institute for Crime Prevention and Control, Affiliated with the United Nations) and UNODC (United Nations Office on Drugs and Crime). 2010. *International Statistics on Crime and Justice.* Helsinki and Vienna: HEUNI and UNODC.

Hidrobo, M., A. Peterman, and L. Heise. 2013. "The effect of cash, vouchers and food transfers on intimate partner violence: evidence from a randomized experiment in Northern Ecuador." Washington, DC: International Food Policy Research Institute.

Higginson, A., L. Mazerolle, J. Davis, L. Bedford, and K. Mengersen. 2013. "Protocol for a systematic review: Community-oriented policing's impact on interpersonal violent crime in developing countries." *The Campbell Collaboration Library of Systematic Reviews*.

Hjalmarrson, R., H. Holmlund, and M.J. Lindquist. Forthcoming. "The effect of education on criminal convictions and incarceration: Causal evidence from micro-data." *Economic Journal*, (last version as of June 2014).

Inter-American Commission of Human Rights. 2009. *Report on Citizen Security and Human Rights.* Washington, DC: Organization of American States.

IDB (Inter-American Development Bank). 2012. Citizen Security Conceptual Framework and Empirical Evidence. Discussion paper IDB-DP-232. September. Washington, DC: IDB

------. 2014a. *IDB's Response to Key Challenges in Citizen Security, 1998-2012.* Washington, DC: IDB

------. 2014b. *Citizen Security and Justice Sector Framework Document.* Washington, DC: IDB.

Iyengar, R. 2008. "I would rather be hanged for a sheep than a lamb: The unintended consequences of California's three strikes law." NBER Working Paper No. 13784. National Bureau of Economic Research.

Iyer, L. and P.B. Topalova. 2014. "Poverty and crime: evidence from rainfall and trade shocks in India." Harvard Business School BGIE Unit Working Paper 14-067. Harvard University.

Jacob, B.A. and L. Lefgren. 2003. "Are idle hands the devil's workshop? Incapacitation, concentration and juvenile crime." *American Economic Review* 93(5): 1560-1577.

Jaitman, L. 2015. *The Welfare Costs of Crime and Violence in Latin America and the Caribbean*. IDB Monograph No. IDB-MG-354. Washington, DC: Inter-American Development Bank.

Jaitman, L. and R. Guerrero Compeán. 2015. "Promoting evidence-based crime prevention policies in Latin America and the Caribbean." *Translational Criminology* 9: 14–19.

Katz, L., S.D. Levitt, and E. Shustorovich. 2003. "Prison conditions, capital punishment, and deterrence." *American Law and Economics Review* 5(2): 318–343.

Kennedy, D.M. 2006. "Old wine in new bottles: Policing and the lessons of pulling levers," in Weisburd, D.L. and A.A. Braga (eds.) *Police Innovation: Contrasting Perspectives*. New York, NY: Cambridge University Press.

Kennedy, D.M. 1997. "Pulling levers: Chronic offenders, high-crime settings, and a theory of prevention." *Valparaiso University Law Review* 31: 449–484.

Kennedy, D.M. 2009. *Deterrence and Crime Prevention: Reconsidering the Prospect of Sanction*. London and New York: Routledge.

Kennedy, D.M., A.A. Braga, E.J. Waring, and A.M. Piehl. 2001. "Problem-oriented policing, deterrence, and youth violence: An evaluation of Boston's Operation Ceasefire." *Journal of Research in Crime and Delinquency* 38(3): 195–225.

Kessler, D. and S.D. Levitt. 1999. "Using sentence enhancements to distinguish between deterrence and incapacitation." *Journal of Law and Economics* 52: 343–363.

Kiely M., A.A. El-Mohandes, M.N. El-Khorazaty, S.M. Blake, and M.G. Gantz. 2010. "An integrated intervention to reduce intimate partner violence in pregnancy: a randomized controlled trial." *Obstetrics & Gynecology* 115: 273–283.

Killias, M., M. Aebi, and D. Ribeaud. 2000. "Does community service rehabilitate better than short-term imprisonment?: Results of a controlled experiment." *The Howard Journal* 39: 40–57.

Kim, J.C., C.H. Watts, J.R. Hargreaves, et al. 2007. "Understanding the impact of a microfinance-based intervention on women's empowerment and the reduction of intimate partner violence in South Africa." *American Journal of Public Health* 97: 1794–1802.

Kirk, D.S. 2009. "A natural experiment on residential change and recidivism: Lessons from Hurricane Katrina." *American Sociological Review* 74(3): 484–505.

Klevens, J., J.W. Martínez, B. Lea, C. Rojas, A. Duque, and R. Tovar. 2009. "Evaluation of two interventions to reduce aggressive and antisocial behavior in first and second graders in a resource-poor setting." *International Journal of Educational Research* 48(5): 307–319.

Klick, J. and A. Tabarrok, A. "Using terror alert levels to estimate the effect of police on crime." *Journal of Law and Economics* 48(1): 267–279.

Kling, J.R., J. Ludwig, and L.F. Katz. 2005. "Neighborhood effects on crime for female and male youth: Evidence from a randomized housing voucher experiment." *Quarterly Journal of Economics* 120(1): 87–130.

Koper, C.S., C. Lum, J. Willis, D. Woods, and J. Hibdon. 2015. "Examining mobile technology use and impacts in the context of hot spots policing: results from a field experiment in Agency 1" in Koper, et al. (2015) "Realizing the Potential of Technology in Policing: A Multisite Study of the Social, Organizational, and Behavioral Aspects of Implementing Policing Technologi es". Fairfax, VA: George Mason University and US Department of Justice.

Koper, C.S., B. Taylor, and B. Kubu. 2009. *Law Enforcement Technology Needs Assessment: Future Technologies to Address the Operational Needs of Law Enforcement*. Washington, DC: Police Executive Research Forum.

Kuziemko, I. 2007. "Going off parole: How the elimination of discretionary prison release affects the social cost of crime." NBER Working Paper No. 13380. National Bureau of Economic Research.

Latessa, E.T., F. Cullen, and P. Gendreau. 2002. "Beyond correctional quackery – professionalism and the possibility of effective treatment." *Federal Probation* 66(2): 43–49.

Latinobarómetro. 2013. *Informe 1995-2015.* Santiago de Chile: Corporación Latinobarómetro.

Lee, D.S. and J. McCrary. 2009. "The deterrence effect of prison: Dynamic theory and evidence." Industrial Relations Section Working Paper 550. Princeton University.

Levitt, S. 2002. "Using electoral cycles in police hiring to estimate the effect of police on crime: A reply." *The American Economic Review* 92: 1244–250.

Levitt, S. 1997. "Using electoral cycles in police hiring to estimate the effect of police on crime." *The American Economic Review* 87(3): 270–290.

Lipsey, M.W. and F.T. Cullen. 2007. "The effectiveness of correctional rehabilitation: A review of systematic reviews." *Annual Review of Law and Social Science* 3: 297–320.

Littell, J.H., M. Popa, and B. Forsythe. 2005. "Multisystemic therapy for social, emotional, and behavioral problems in youth aged 10-17." *Cochrane Database of Systematic Reviews* 4: 1–51.

Lochner, L. and E. Moretti. 2004. "The effect of education on crime: Evidence from prison inmates, arrests and self-reports." *American Economic Review* 94 (1): 155–189.

Londoño, J.L., A. Gaviria, and R. Guerrero. 2000. *Asalto al desarrollo: Violencia en América Latina*. Washington, DC: Inter-American Development Bank.

Lösel, F. and A. Beelmann. 2003. "Effects of child skills training in preventing antisocial behavior: a systematic review of randomized evaluations." *Annals of the American Academy of Political and Social Science* 587, Assessing Systematic Evidence in Crime and Justice: Methodological Concerns and Empirical Outcomes: 84–109.

Lum, C. 2009. "Community policing or zero tolerance? Preferences of police officers from 22 countries in transition." *British Journal of Criminology*: azp039.

Lum, C., J. Hibdon, B. Cave, C. Koper, and L. Merola. 2011. "License plate reader (LPR) police patrols in crime hot spots: An experimental evaluation in two adjacent jurisdictions." *Journal of Experimental Criminology* 7(4): 321–345.

Lum, C. and L. Mazerolle. 2014. "History of randomized controlled experiments in criminal justice" in Bruinsma, G. and D. Weisburd (eds.) *Encyclopedia of Criminology and Criminal Justice*: 2227–2239. New York, NY: Springer Science+Business Media.

Lum, C., C. S. Koper, J.J. Willis, D. J. Woods, and J. Hibdon. 2015. "Examining mobile technology use and impacts in the context of hot spots policing: results from a field experiment in Agency 1." In Koper, C. S, C. Lum, J. J. Willis, D. J. Woods, and J. Hibdon (eds.), *Realizing the Potential of Technology in Policing: A Multisite Study of the Social, Organizational, and Behavioral Aspects of Implementing Policing Technologies*. United States: George Mason University and US Department of Justice

Lum, C. and D.S. Nagin. Forthcoming. "Reinventing American policing: A six-point blueprint for the 21st century." *Crime and Justice: A Review of Research Vol 44.* Chicago, IL: The University of Chicago Press.

Machin, S., O. Marie, and S. Vujić. 2011. "The crime reducing effect of education." *Economic Journal* 121 (552): 463–484.

Mamalian, C.A. and N.G. LaVigne. 1999. *Research Preview: The Use of Computerized Crime Mapping by Law Enforcement: Survey results*. Washington, DC: U.S. Department of Justice, National Institute of Justice.

Marklund, F. and S. Holmberg. 2009. "Effects of early release from prison using electronic tagging in Sweden." *Journal of Experimental Criminology* 5: 41–61.

Matjasko, J.L., A.M. Vivolo-Kantor, G.M. Massetti, K.M. Holland, M.K. Holt, and J. De la Cruz. 2012. "A systematic meta-review of evaluations of youth violence prevention programs: Common and divergent findings from 25 years of meta-analyses and systematic reviews." *Aggresion and Violent Behavior* 17(6):540–552.

Mazerolle, L.G., J.F. Price, and J. Roehl. 2000. "Civil remedies and drug control: A randomized field trial in Oakland, CA." *Evaluation Review* 24(2): 212–241.

McCrary, J. 2002. "Do electoral cycles in police hiring really help us estimate the effect of police on crime? Comment." *The American Economic Review* 92: 1236–1243.

Michau, L., J. Horn, A. Bank, M. Dutt, and C. Zimmerman. 2014. "Prevention of violence against women and girls: lessons from practice." *The Lancet* (in press).

Miguel, E., S. Satyanath, and E. Sergenti. 2004. "Economic shocks and civil conflict: an instrumental variables approach." *Journal of Political Economy* 112(4): 725–753.

Morrison, A. 2007. *Violence and Crime in Latin America*. Washington, DC: The World Bank.

Muiluvuori, M. 2001. "Recidivism among people sentenced to community service in Finland." *Journal of Scandinavian Studies in Criminology and Crime Prevention* 2: 72–82.

Mullainathan, S. and R. Thaler. 2000. "Behavioral economics." NBER Working Paper No. 7948. National Bureau of Economic Research.

NCR (National Research Council). 2004. "Fairness and Effectiveness in policing: The evidence." In W. Skogan and K. Frydl (eds), *Committee on Law and Justice, Division of Behavioral and Social Science and Education.* Washington, DC: The National Academics Press.

Nagin, D.S. 2013. "Deterrence: A review of the evidence by a criminologist for economists." *Annual Review of Economics* 5(1): 83–105.

Nirel, R., S.F. Landau, L. Sebba, and B. Sagiv. 1997. "The effectiveness of service work: an analysis of recidivism." *Journal of Quantitative Criminology* 13: 73–92.

Obach, A., M. Sadler, and F. Aguayo. 2011. *Involucrando hombres jóvenes en el fin de la violencia de género: intervención multipaís con evaluación de impacto: caso Chileno*. Santiago: CulturaSalud/EME.

Olds D.L., J. Eckenrode, C.R. Henderson, H. Kitzman, J. Powers, R. Cole, K. Sidora, P. Morris, L.M. Pettitt, and D. Luckey. 1997. "Long-term effects of home visitation on maternal life course and child abuse and neglect." *Journal of the American Medical Association* 278(8): 637–643.

Owens E.G. 2009. "More time, less crime? Estimating the incapacitative effect of sentence enhancements" *Journal of Law and Economics* 52: 551–579.

Owens, E. and M. Freedman. 2011. "Low income housing and crime." *Journal of Urban Economics* 70(2-3): 115-131.

Papachristos, A.V., T.L. Meares, and J. Fagan. 2007. "Attention felons: Evaluating Project Safe Neighborhoods in Chicago." *Journal of Empirical Legal Studies* 4(2): 223–272.

Peters, M. 1996a. "Evaluation of the impact of boot camps for juvenile offenders: Denver interim report." Fairfax, VA: US DOJ/ OJJDP. (NCJRS Document Reproduction Service No. 160927).

Peters, M. 1996b. "Evaluation of the impact of boot camps for juvenile offenders: Mobile interim report." Fairfax, VA: US DOJ/ OJJDP. (NCJRS Document Reproduction Service No. 160926).

Peters, R.H. and M.R. Murrin. 1998. "Evaluation of Treatment-Based Drug Courts in Florida's First Judicial Circuit." Tampa, FL: Department of Mental Health, Law and Policy, Louis de la Parte Florida Mental Health Institute, University of South Florida.

Petrosino, A., C. Turpin-Petrosino, and J. Buehler. 2003. "Scared Straight and other juvenile awareness programs for preventing juvenile delinquency: A systematic review of the randomized experimental evidence." *Annals of the American Academy of Political and Social Science* 589(1): 41–62.

Philippe, A. 2013. "The deterrent effect of an increase in sentence time: evidence from French peines planchers." Manuscript. Université de Paris 1 Panthéon-Sorbonne/CREST.

Piquero, A.R., D.P. Farrington, B.C. Welsh, R. Tremblay, and W.G. Jennings. 2009. "Effects of early family/parent training programs on antisocial behavior and delinquency." *Journal of Experimental Criminology* 5: 83–120.

Polinsky, A.M. and S. Shavell. 1999. "On the disutility and discounting of imprisonment and the theory of deterrence." *Journal of Legal Studies* 28(1): 1-16.

Posner, R.A. 2004. *Frontiers of Legal Theory.* Harvard University Press: Cambridge, MA.

Pulerwitz, J., G. Barker, M. Segundo, and M. Nascimento. 2006. *Promoting More Gender-equitable Norms and Behaviors among Young Men as an HIV/AIDS Prevention Strategy*. Horizons Final Report. Washington, DC: Population Council.

Raphael, S. and J. Ludwig. 2003. "Prison sentence enhancements: The case of Project Exile," in Cook, P.J. and J. Ludwig (eds.) *Evaluating Gun Policy: Effects on Crime and Violence,* pp. 251–286. Washington, DC: Brookings Institution Press.

Ratcliffe, J.H., T. Taniguchi, E.R. Groff and J.D. Wood. 2011. "The Philadelphia Foot Patrol experiment: A randomized controlled trial of police patrol effectiveness in violent crime hotspots." *Criminology* 49(3): 795–831.

Rempel, M., M. Green, and D. Kralstein. 2012. "The impact of adult drug courts on crime and incarceration: findings from a multi-site quasi-experimental design." *Journal of Experimental Criminology* 8: 165-192.

Reuter, P. and H.A. Pollack. 2012. "Good markets make bad neighbors." *Criminology and Public Policy* 11(2): 211-220.

Roman, J. 2008. "The DNA field experiment: Cost-effectiveness analysis of the use of DNA in the investigation of high-volume crimes." Retrieved on April 13, 2015 from: http://www.urban.org/url.cfm?id=411697andRSSFeed=UI_Crime/Justice.xml

Ronconi, L., D. Lenis, and E. Schargrodsky. 2011. "Evaluación del Programa de Entrega Voluntaria de Armas de Fuego en Argentina." *Perspectivas sobre el Desarrollo CAF* 9(1): 14–36

Ruprah, I.J. 2008. *An Impact Evaluation of a Neighbourhood Crime Prevention Program: Does Safer Commune Make Chileans Safer?* Washington, DC: Inter-American Development Bank.

Santos, R.B. 2014. "The effectiveness of crime analysis for crime reduction: Cure or diagnosis?" *Journal of Contemporary Criminal Justice* 30(2): 147–168.

Santos, R.G. and R.B. Santos. 2015. "An ex post facto evaluation of tactical police response in residential theft from vehicle micro-time hot spots." *Journal of Quantitative Criminology* 01/2015:1-20.

Sarnquist, C., B. Omondi, J. Sinclair, et al. 2014. "Rape prevention through empowerment of adolescent girls." *Pediatrics* 133: e1226.

Sayor, W.G. and G.G. Gaes. 1997. "Training inmates through industrial work participation and vocational and apprenticeship instruction." *Corrections Management Quarterly* 1(2): 32–43.

Schochet, P.Z., J. Burghardt, and S. McConnell. 2008. "Does Job Corps work? Impact findings from the National Job Corps Study." *American Economic Review* 98(5): 1864–1886.

SESNSP (Secretariado Ejecutivo del Sistema Nacional de Seguridad Pública). 2015. Incidencia delictiva del fuero común. Retrieved on March 17, 2015 from http://secretariadoejecutivo.gob.mx/incidencia-delictiva/incidencia-delictiva-fuero-comun.php.

Sherman, L.W. 2001. "Reducing gun violence: what works, what doesn't, what's promising?" *Criminal Justice* 1: 11–25.

Sherman, L.W. and J.E. Eck. 2002. "Policing for crime prevention," in Sherman, L.W. et al. (eds.) *Evidence-Based Crime Prevention,* pp. 295–329. New York, NY: Routledge.

Sherman, L.W. and D. Weisburd. 1995. "General deterrent effects of police patrol in crime 'hot spots': A randomized, controlled trial." *Justice Quarterly* 12: 625–648.

Sherman, L.W. et al. 2015. "Are restorative justice conferences effective in reducing repeat offending? Findings from a Campbell Systematic Review." *Journal of Quantitative Criminology* 31: 1–24.

Sherman, L. W.D. Gottfredson, D. MacKenzie, E, J.Reuter, P., and S. Bushway. 1997. *Preventing Crime: What Works, What Doesn't, What's Promising. A Report to the Attorney General of the United States*. Washington, DC: U.S. Department of Justice, Office of Justice Programs.

Soares, R. and I. Viveiros. 2010. "Organization and information in the fight against crime: An evaluation of the integration of police forces in the state of Minas Gerais, Brazil." IZA Discussion Paper No. 5270. Institute for the Study of Labor (IZA).

Taft, A.J., R. Small, K.L. Hegarty, L.F. Watson, L. Gold, and J.A. Lumley. 2011. "Mothers' Advocates In the Community (MOSAIC)– non-professional mentor support to reduce intimate partner violence and depression in mothers: a cluster randomised trial in primary care." *BMC Public Health* 11: 178.

Taylor, B. and R. Boba. 2011. *The Integration of Crime Analysis into Patrol Work: A Guidebook*. Washington, DC: Office of Community Oriented Policing Services.

Taylor, B., C.S. Koper, and D.J. Woods. 2011a. "A randomized controlled trial of different policing strategies at hot spots of violent crime." *Journal of Experimental Criminology* 7(2): 149–181.

Taylor, B., C.S. Koper, and D.J. Woods. 2011b. *Combating Auto Theft in Arizona: A Randomized Experiment with License Plate Recognition Technology. Final Report to the National Institute of Justice.* Washington, DC: Police Executive Research Forum.

Telep, C.W., R.J. Mitchell, and D. Weisburd. 2012. "How much time should the police spend at crime hot spots? Answers from a police agency directed randomized field trial in Sacramento, California." *Justice Quarterly* 31(5): 905–933.

Thomas, D. and M. Peters. 1996. "Evaluation of the impact of boot camps for juvenile offenders: Cleveland interim report." Fairfax, VA: US DOJ/ OJJDP. (NCJRS Document Reproduction Service No. 160928).

Tiwari, A., W.C. Leung, T.W. Leung, J. Humphreys, B. Parker, and P.C. Ho. 2005. "A randomised controlled trial of empowerment training for Chinese abused pregnant women in Hong Kong." *BJOG An International Journal of Obstetrics and Gynaecology* 112: 1249–1256.

Tonry, M. 2013. *Crime and Justice in America, 1975-2025*. Chicago, IL: The University Chicago Press.

Turner, S. and J. Petersilia. 1996. "Day Fines in Four U.S. Jurisdictions." Santa Monica, CA: The RAND Corporation.

Uggen, C. 2000. "The life course of criminals: a duration model of age, employment and recidivism." *American Sociological Review* 67: 529–546.

UNDP (United Nations Development Programme) 2013. *Informe Regional de Desarrollo Humano 2013-2014 Seguridad ciudadana con rostro humano: diagnóstico y propuestas para América Latina.* New York, NY : UNDP.

UNODC (United Nations Office on Drugs and Crime) 2015. Data. Statistics on Crime. Retrieved on April 8, 2015 from http://www.unodc.org/unodc/en/data-and-analysis/statistics/data.html.

UNODC (United Nations Office on Drugs and Crime) 2014. *Global Study on Homicide 2013*. Vienna: UNODC.

Usdin, S., E. Scheepers, S. Goldstein and G. Japhet. 1982. "Achieving social change on gender-based violence: a report on the impact evaluation of Soul City's fourth series." *Social Science & Medicine* 61: 2434–2445.

Van der Stouwe, T, J.J. Asscher, G.J.J.M. Stams, M. Deković, and P.H. van der Laan. 2014. "The effectiveness of multisystemic therapy: a meta-analysis." *Clinical Psychology Review* 34(6): 468–481.

Villettaz, P., M. Killias, and I. Zoder. 2006. "The effects of custodial vs. non-custodial sentences on re-offending: A systematic review of the state of knowledge." *Campbell Systematic Reviews*: 13.

Vollaard, B. 2013. "Preventing crime through selective incapacitation." *Economic Journal* 123(567): 262–284.

Weisburd, D. and J.E. Eck. 2004. "What can police do to reduce crime, disorder and fear?" *The Annals of the American Academy of Political and Social Science* 593: 42–65.

Weisburd, D. and L. Green. 1995. "Policing drug hot spots: The Jersey City drug market analysis experiment." *Justice Quarterly* 12: 711–735.

Weisburd, D., C. Lum, and A. Petrosino. 2001. "Does research design affect study outcomes in criminal justice?" *Annals of the American Academy of Political and Social Sciences* 578: 50–70.

Weisburd, D., C.W. Telep, J.C. Hinkle, and J.E. Eck. 2010. "Is problem oriented policing effective in reducing crime and disorder?" *Criminology and Public Policy* 9(1): 139–172.

Wells, J.B., K.I. Minor, E. Angel, and K.D. Stearman. 2006. "A quasi-experimental evaluation of a shock incarceration and aftercare program for juvenile offenders." *Youth Violence and Juvenile Justice* 4(3): 219–233.

Wermink, H., A. Blokland, P. Nieuwbeerta, D. Nagin, and N. Tollenaar. 2010. "Comparing the effects of community service and short-term imprisonment on recidivism: a matched samples approach." *Journal of Experimental Criminology* 6(3): 325–349.

Wilson, J.M. and S. Chermak. 2011. "Community-driven violence reduction programs: Examining Pittsburgh's One Vision One Life." *Criminology & Public Policy* 10(4) 993–1027.

Wolfe, S.E. and D.C. Pyrooz. 2014. "Rolling back prices and raising crime rates? The Walmart effect on crime in the United States." *The British Journal of Criminology* 54(2): 199–221.

Woolfenden, S., K.J. Williams, and J. Peat. 2004. "Family and parenting interventions in children and adolescents with conduct disorder and delinquency aged 10-17." *Cochrane Database of Systematic Reviews* 2: 1–30.

World Bank. 2015. World Development Indicators. Retrieved on March 19, 2015 from http://databank.worldbank.org/data/home.aspx.

Zhang, S. X. 2000. *An Evaluation of the Los Angeles County Juvenile Drug Treatment Boot Camp, Final Report*. Washington, DC: National Institute of Justice.


IDB