

# STOP THE VIOLENCE IN LATIN AMERICA

A LOOK AT PREVENTION FROM  
CRADLE TO ADULTHOOD

LAURA CHIODA



OVERVIEW



WORLD BANK GROUP

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IN LATIN AMERICA



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A Look at Prevention from Cradle to Adulthood

Laura Chioda



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## Foreword

For a long time, the logic seemed unassailable: Crime and violence were historically thought of as symptoms of a country's early stages of development that could be "cured" with economic growth and reductions in poverty, unemployment, and inequality. More recently, however, our understanding has changed. Studies now show that economic progress does not necessarily bring better security to the streets. Developments in Latin America and the Caribbean exemplify this point.

Between 2003 and 2011, average annual regional growth in Latin America and the Caribbean, excluding the global crisis of 2009, reached nearly 5 percent. What's more, the growth rate among the bottom 40 percent of the population eclipsed that of the same group in every other region of the world. During that same decade, the region experienced unprecedented economic and social progress: extreme poverty was cut by more than half, to 11.5 percent; income inequality dropped more than 7 percent in the Gini index; and, for the first time in history, the region had more people in the middle class than in poverty.

Despite all this progress, the region retained its undesirable distinction as the world's most violent region, with 23.9 homicides per 100,000 inhabitants. The rate of homicide actually accelerated during the latter half of the decade. The problem remains staggering and stubbornly persistent.

Every 15 minutes, at least four people are victims of homicide in Latin America and the Caribbean. In 2013, of the top 50 most violent cities in the world, 42 were in the region. And between 2005 and 2012, the annual growth rate of homicides was more than three times higher than population growth. Not surprisingly, the number of Latin Americans who mention crime as their top concern tripled during those years. Violence makes people withdraw, hide behind closed doors, and avoid public spaces, weakening interpersonal and social ties that bind us as a community.

Insecurity is the result of a combination of many factors, from drug trafficking and organized crime, to weak judicial and law enforcement systems that promote impunity, to a lack of opportunities and support for young people who live in deprived communities.

Youth bear a disproportionate share of the risk of committing and falling victim to violence, with important repercussions for their life trajectories and society as a whole.

The complexity of the issue (and multiplicity of its causes) is one of its defining characteristics and the main reason why there is no magic formula or a single policy that will fix the violence in our region. We will not solve the problem by relying only on greater police action or greater incarceration, or through more education or employment. We must do all this and do it in a deliberate way, based on reliable data and proven approaches, while continuously striving to fill existing knowledge and data gaps to improve policy design.

To that end, *Stop the Violence in Latin America: A Look at Prevention from Cradle to Adulthood* is a significant contribution. This report takes a new and comprehensive look at much of the evidence that now exists in preventing crime and violence. It identifies novel approaches—both in Latin America and elsewhere—that have been shown to reduce antisocial behavior at different stages in life. Effective prevention starts even before birth, the report argues, and, contrary to common perceptions, well-designed policies can also be successful later in life, even with at-risk individuals and offenders. The report emphasizes the importance of a comprehensive approach to tackle violence, and it highlights the benefits and cost-effectiveness of redesigning existing policies through the lens of crime prevention. This will require substantial coordination across ministries, as well as accountable and efficient institutions.

While economic and social development do not necessarily lead to a reduction in crime and violence, high levels of crime and violence do take a toll on development. And in that regard, we at the World Bank are fully aware that in order to succeed in our goals to eradicate extreme poverty and boost prosperity, the unrivaled levels of crime and violence in the region need to come to an end.

*Jorge Familiar*  
*Vice President*  
*Latin America and the Caribbean Region*  
*World Bank Group*

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## Abbreviations

ADHD	attention deficit hyperactivity disorder
CCT	conditional cash transfer
ECD	early childhood development
EM	electronic monitoring
IQ	intelligence quotient
LAC	Latin America and the Caribbean
LAPOP	Latin America Public Opinion Project
MTO	moving to opportunity
POP	problem-oriented policing
PTSD	post-traumatic stress disorder
SES	socioeconomic status
WHO	World Health Organization





# Overview

## Introduction

Crime and violence in the Latin America and Caribbean (LAC) region is pervasive and costly—particularly violent crime. LAC has the undesirable distinction of being the world’s most violent region, with 23.9 homicides per 100,000 inhabitants in 2012, compared to 9.7, 4.4, 2.7, and 2.9 for Africa, North America, Asia, and Europe, respectively.

The magnitude of the problem is staggering and stubbornly persistent. LAC accounts for only 8 percent of the world’s population, but for 37 percent of the world’s homicides (map O.1 illustrates the point dramatically by presenting a world map where country sizes are proportional to their homicide rates). Eight out of the 10 most violent countries in the world are in LAC. In 2013, of the top 50 most violent cities in the world, 42 were in the region, including the top 16. The annual growth rate of homicides (3.7 percent) dramatically outstripped population growth (1.15 percent) from 2005 to 2012. In 2012 alone, 145,759 people in LAC fell victim to homicide, corresponding to 400.44 homicides committed per day and 4.17 homicides every 15 minutes.

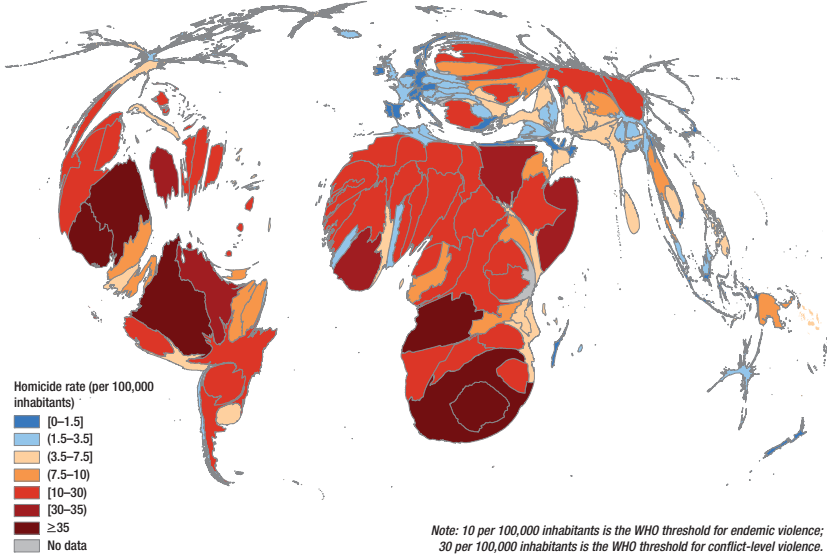
Eight countries exceed the level of violence defined by the World Health Organization (WHO) as “conflict” (30 homicides per 100,000), with Honduras and República Bolivariana de Venezuela experiencing the staggering rates of 90 and 54, respectively. These figures are well above the rate of any country in Africa, some of which were engaged in civil wars. In 2012, only Lesotho and Swaziland recorded homicide rates above the conflict threshold (38.0 and 33.8 homicides per 100,000 respectively). Unfortunately, the “endemic” level of violence, defined by WHO as 10 homicides per 100,000, appears to be the norm in the LAC region, with only ten countries below the threshold.<sup>1,2</sup>

This is not a recent phenomenon for the region, which has experienced high and persistent levels of violence for several decades (see figure O.1). Over the last 15 years, the homicide rate has hovered stubbornly around 24 homicides per 100,000. The trend started to decline slightly in the first half of the 2000s, but with the deteriorating situation in Central America, any gain has been reversed.

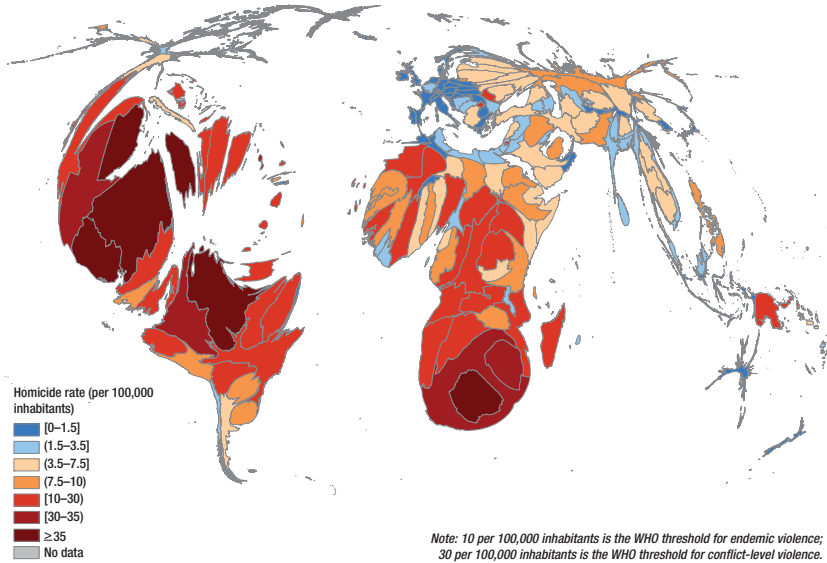
The region’s history of elevated homicide rates and the latest uptick in violence are in stark contrast with the most recent decade of significant social progress. Between 2003 and 2011, Latin America and the Caribbean as a whole has made important

## MAP O.1: World cartogram showing country size proportional to homicide rate

a. Homicide rates, circa 2000



b. Homicide rates, circa 2012



Source: World Bank calculations, based on data from UNODC and WHO.

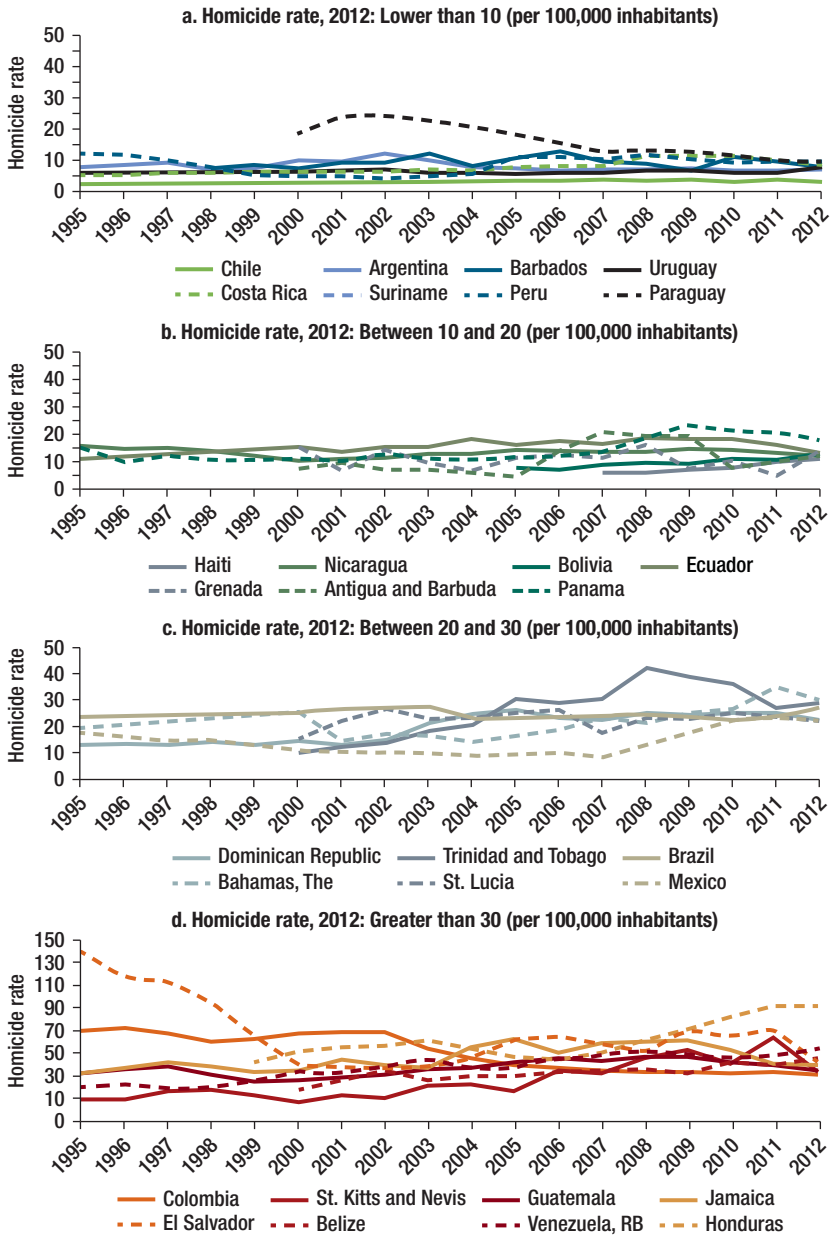
strides toward broader social equity, as reflected by sizable reductions in poverty (from 45 percent to 25 percent) and income inequality, and rising shares of people in the middle class. This contrast—rising violence versus major improvements in social equity—highlights the complexity of the relationship between economic development and crime and violence.

*The focus of this study is the prevention of crime and violence.* In particular, this study seeks to identify novel policies whose impacts have been validated by rigorous empirical evidence. It considers a broad range of policy interventions—both in LAC and elsewhere—that have been shown to reduce antisocial behavior early in life or patterns of criminal offending in youth and adulthood, whether by design or by indirect effect. Further, it highlights the mechanisms underlying the success of such interventions. The study also aims to shed light on the complex landscape of violence in the region by combining several data sources, utilizing econometric techniques, and highlighting a number of background studies that were produced for the report, are centered on the region, and credibly identify causal links between policy and reductions in or prevention of crime and violence. An exhaustive review of all existing literature on crime (criminological, psychological, and economic) would be an overwhelming task and is beyond the scope of this document. Instead, attention is devoted to a selection of recent and innovative studies for which credible evidence exists regarding the links between the interventions in question and outcomes. The emphasis on causality is rooted in policy concerns—policies are best designed where the underlying causal processes are better understood. The delicate nature of the crime and violence problem, the high stakes, and the potential risks from unintended consequences of well-intentioned policies call for this evidence-based approach.

*This study does not address organized crime explicitly, but policies highlighted here remain relevant.* By design, this study does not delve into causes and dynamics of organized crime in the region (largely drug-related), nor does it explicitly broach the roles of national institutions and international cooperation in determining the level of organized crime and violence. A thoughtful treatment of these topics is beyond the scope of this study. The data requirements and the methodological approach that would be necessary for this exercise would differ greatly—and would, in all likelihood, entail the adoption of an industrial organization perspective in the analysis of drug markets and of interactions among cartels.

Nevertheless, certain aspects of violence, described in this study, overlap with organized crime. In particular, when presenting data on the evolution of violence over time, this study does not attempt to distinguish between interpersonal violence that is unrelated to organized crime and that which is driven by it.<sup>3</sup> The rationale is twofold. First, pursuing that distinction empirically is nearly impossible given that definitions, methodologies, and data collection systems of drug-related statistics vary enormously across countries, and data are reported too sporadically to create meaningful long-term regional comparisons. Second, conceptually, there are no universally accepted—or

FIGURE O.1: The homicide rates in Latin America and the Caribbean<sup>a</sup>



a. The thresholds of 10 and 30 homicides per 100,000 inhabitants correspond to the WHO-defined “endemic” and “conflict” levels of violence, respectively.

mutually exclusive—definitions of violence and organized crime. Hence, a unique mapping of crimes into the relevant data categorizations (for example, related or not related to drug-driven organized crime) is extremely difficult and largely unattainable—even abstracting from longstanding debates surrounding the separation of drug-related crimes from other types.

Because the focus is on prevention, the study is only marginally affected by this regrettable data limitation. Much of the evidence on policy interventions and mechanisms discussed in the study has applicability and relevance to many questions surrounding organized crime. Whether in LAC or elsewhere, an intervention that is proven to reduce violence (whether homicides, violent crimes, or property crimes) in neighborhoods where interpersonal violence is intertwined with organized crime (leading to gang affiliation and drug trafficking) will be deemed to have promising preventive effects, regardless of the underlying motives of violence. Notably, policies that prevent youth violence are also frequently effective at reducing gang affiliation.<sup>4</sup> Some of the most promising gang violence prevention programs have been focused on training children, adolescents, and young adults in pro-social behavior and self-control. Of course, the overlap is not always perfect.<sup>5</sup>

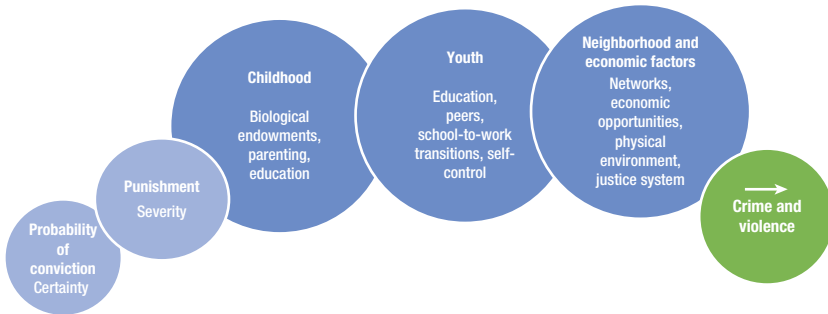
*The organizing framework of this study.* The study reviews and assesses the evidence in the context of an organizing framework that encompasses features of three different models of criminal and antisocial behavior, each with origins in different disciplines:

1. Becker's (1968) economic theory of the supply of criminal offenses
2. The ecological framework, whose origins lie in the medical literature
3. The developmental life course theories, building on Bronfenbrenner's (1979) theory of child development and on Loeber and others (1993) and Farrington (2003), who formalize developmental and life cycle insights for the criminological literature

The study's organizing framework builds on the classical Beckerian model, which posits that the number of crimes in any given period is a function of the probability of apprehension and conviction; the severity of punishment; and a residual that captures all other relevant considerations, such as risk aversion, family background, peers, human capital characteristics (for example, education and health), and wages in the legal labor market (see figure O.2). The residual plays an important role—it is a placeholder for a set of variables that are key determinants in the specific crime and violence problem under consideration.

The ecological elements of the organizing framework are adapted from the medical literature. They organize risk factors (that is, factors that can encourage crime and violence) and protective factors (that is, factors that dissuade or shield individuals from crime and violence) according to the hierarchical levels at which they operate, namely, individual, family, peer, community, or societal levels (WHO 2002).

**FIGURE O.2: A model of the supply of criminal offenses, but also a model of crime and violence prevention**



However, the ecological model was originally developed as an organizing descriptive tool and is, as such, static in nature; that is, it is not designed to capture the feedbacks between the various factors. As an individual matures and progresses through adolescence and young adulthood, peers, the quality of schools, and neighborhood characteristics exert increasing influence on his or her behavior, such that different sets of proximal risk and protective factors take greater prominence (Bronfenbrenner 1979 and Plas 1992). In particular, criminal offending is a multifaceted phenomenon with roots in both biological and social causes. The developmental life course theories speak to this complexity, as each stage of one's life is associated with an evolving array of risk factors, including biological endowments; smoking, drug use, or stress during pregnancy; inconsistent and punitive parenting; antisocial peers; poor schooling; disadvantaged or violent neighborhoods; and poor job opportunities. Each of these factors can be accommodated via different formulations for the Beckerian residual.

*Prevention can never start too early or too late, or be too comprehensive.* The organizing framework thus adopts a life cycle perspective and argues that, as individuals progress through stages of their lives (from birth to old age), different sets of risk factors arise, their prominence evolves, and interdependencies among them mutate. These interactions and interdependencies, and the changes in the relative importance of different risk and protective factors, not only shape behavior but also help identify relevant margins for policy action—that is, margins that can be targeted by prevention policies at different stages of the life cycle.<sup>6</sup> Indeed prevention can never start too early, or start too late, or be too comprehensive. Effective prevention starts even before birth and, contrary to common perceptions, well-designed policies can also be successful later in life. At-risk individuals and offenders have been shown to respond to incentives (including those set by labor markets and the criminal justice system) even if their behavior is only boundedly rational (Cook and Ludwig 2011).

Furthermore, better understanding of brain functions and development serves to expand the menu of policy options available for prevention. The success or failure of a violence prevention strategy rests on the ability to implement an integrated set of policies that can exploit these interdependencies; in this way, the ultimate outcome in terms of crime reduction may be larger than the sum of the individual policy outcomes.

*The overview is structured as follows.* The first part of this overview systematically describes a set of key stylized facts that characterize the landscape of crime and violence in the region. These facts are grouped into four broad categories: (a) the nexus between crime and economic development; (b) the geography of crime; (c) the distribution of crime among individuals and over the life cycle; and (d) the determinants of victimization, concerns about crime, and well-being. The second part of the overview focuses on the scope for prevention at different stages of the life cycle (prenatal, early childhood, and youth) and in different contexts (family, school, neighborhoods, labor markets, and criminal sanctions). The discussion in the second part of the overview follows the organizing conceptual framework described above.

## **Stylized facts: The physiognomy of crime and violence in LAC**

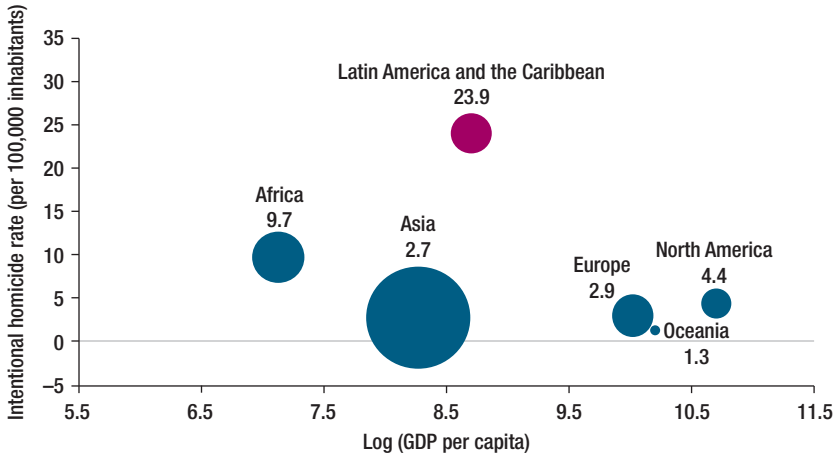
### *Crime and violence and economic development*

At first glance, the indicators on the extent of crime and violence seem to suggest that Latin America and the Caribbean represents an outlier, with an extraordinary level of violence relative to other regions with comparable levels of economic development, as proxied by GDP per capita (see figure O.3). However, recent research calls into question whether the level of crime and violence in the region has been truly exceptional. During the 1990s, the incidence of crime in the region was found not to be so different from what should be expected given the socioeconomic and policy characteristics of its constituent countries (Soares and Naritomi 2010; Fajnzylber, Lederman, and Loayza 2002a).

This conclusion makes the more recent trends all the more puzzling. The “good” decade of the 2000s witnessed important reductions in poverty (more than 80 million Latin Americans rose above the moderate poverty line between 2003 and 2012<sup>7</sup>) and in income inequality (at least 14 countries in the region experienced a significant decline in their Gini coefficient), and a simultaneous rise in the share of people in the middle classes (from 20 percent in 2003 to 34 percent in 2012, as measured by the proportion of people making more than US\$10 a day on a purchasing power-adjusted basis) (see figure O.4). Yet levels of violence have risen or remained constant in all LAC countries except Argentina, Brazil, Colombia, and Paraguay. The experience of the 2000s—particularly the second half of the decade, when violence appeared to accelerate—suggests that there is no one-to-one mapping between (a) crime and violence and (b) standard indicators of social and economic development and that, instead, the links, if any, are subject to a high degree of complexity.



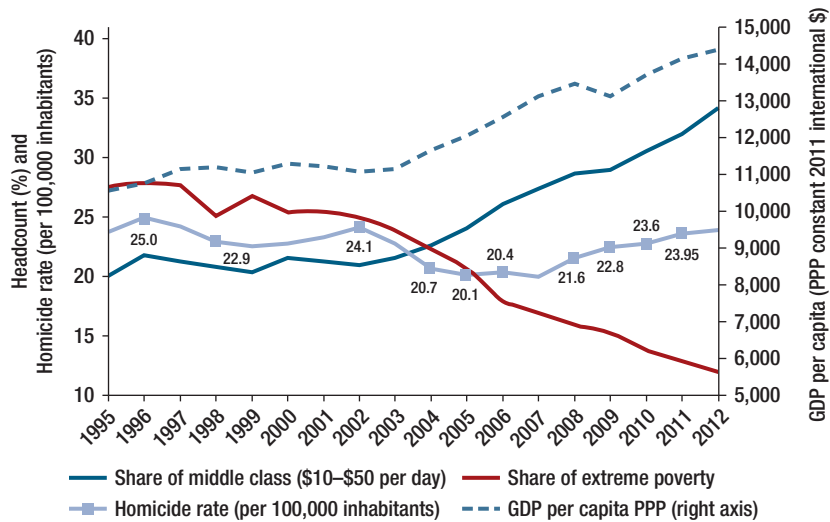
**FIGURE O.3: LAC's homicide rate relative to other regions in terms of GDP per capita, 2012**



Source: World Bank calculations, based on data from UNODC (2012).

Note: The size of the spheres is proportional to population.

**FIGURE O.4: Evolution of poverty, the middle class, economic development, and violence in Latin America, 1995–2012**



Source: Author's calculations. Homicide rates are calculated with data from UNODC, OAS, and official statistics from various countries. Data for poverty and the middle class are from Ferreira et al. (2013) and LAC Equity Lab (2015).

Note: PPP = purchasing power parity.

*The relationship between crime and development is highly nonlinear: crime can increase as income rises.*<sup>8</sup> Indeed, the cross-country relationship between homicides and GDP per capita is well approximated by an inverted U shape; homicide rates first increase as per capita income rises and then decline at high levels of per capita income. Empirically, low levels of violence are observed at both low and high levels of economic development. As countries grow from low levels of income, both the opportunities for crime and the returns to criminality increase. At least initially, the probability of crime detection and sanctions declines—as investments in institutions of criminal justice typically lag behind income—lowering the expected costs of criminality (“crime pays”).

However, as income continues to grow, the opportunity cost of crime also increases in the form of forgone wages in the legal sector in the event of being apprehended; thus crime declines, as reflected in the downward portion of the curve. It is also possible that, as the level of crime rises, both citizens and the private sector increase their demands for public goods—including security and safety—forcing institutions to devote more resources to controlling crime and thus raising the probability of crime detection and sanctions (being caught and being sentenced to prison). These processes are analogous to Maslow’s (1943) “hierarchy of needs,” whereby there is a sequence of individual needs and priorities, starting with basic physiological necessities such as food and shelter and moving up to needs for safety. As countries progress through different stages of development, new challenges and needs arise and become more pressing. In this context, as countries become wealthier and their basic physiological needs for survival are met, their concerns and efforts turn to personal safety and a more peaceful society.

*Economic development per se does not seem sufficient to curb violence: development must occur at a fast enough pace and be inclusive.* A closer look at the role of poverty, of vulnerability (defined as per capita daily income between \$4 and \$10 per day), and of the middle class (defined as per capita daily income between \$10 and \$50 per day) delivers more insight into the relationships between income and violence. In the case of LAC, there is a noteworthy break in the early 2000s for certain economic variables as they relate to homicide rates. Before 2003, there is no systematic and statistically significant relation between the size of either the vulnerable class or the upper class (defined as per capita income above \$50 per day) and changes in homicide rates. After 2003, the size of the vulnerable class emerges as a risk factor (it rises as the rate of homicides increases), while the size of the upper class emerges as a protective factor (it is associated with a lower homicide rate). In turn, throughout the 15-year period (1996 to 2010), the size of the middle class and the level of poverty are not statistically significant determinants of observed trends in violence. Hence, in the case of LAC, economic development per se does not seem sufficient to halt violence: it must occur at a fast enough pace. Indeed, the data reveal a precise and robust protective effect of real GDP growth on homicide rates: a 1 percentage point increase in the growth rate of GDP is related to roughly 0.24 fewer homicides per 100,000 (all else equal including income per capita). Growth acts as a protective factor and can help “outstrip” the need

for crime. In order for these gains to be sustainable, however, the strength and credibility of institutions (the confidence in the democratic and judicial systems and in law enforcement) also must improve in lockstep with economic development.

The relationship between crime and development is further complicated when alternative measures of development (such as unemployment, demographic structure, or inequality) are considered. Each exerts possibly competing forces on criminality.

*The relationship between crime and inequality is confounded by poverty. If inequality matters for crime, it matters at the local level.* The relationship between crime and the distribution of income has drawn a good deal of scrutiny. Some researchers have estimated significant effects of the Gini coefficient on homicides (Kelly 2000; Fajnzylber, Lederman, and Loayza 2002a, 2002b). More recent studies have found little evidence of a relationship (Brush 2007; Pridemore 2011). The findings in this study—which are based on Latin America data—are consistent with the latter group, with the Gini coefficient appearing not to predict changes in homicides.

How can these two sets of results be reconciled? While differences across countries in the level of the homicide rate are captured by differences in income and income inequality, changes within a particular country over time are poorly predicted by these variables (Brush 2007). Furthermore, a growing body of evidence suggests that the relationship between crime and inequality is confounded by poverty (that is, it vanishes after controlling for poverty), which is the one most consistent predictor of homicide rates in the United States (Pridemore 2011). Qualitatively similar results regarding poverty emerge also for LAC. In particular, proxy measures of extreme poverty, such as the teen pregnancy rate, indicate positive and precisely estimated effects of poverty on national homicide rates: an increase in the contemporaneous teen pregnancy rate is associated with approximately 0.5–0.6 additional homicides per 100,000 (Chioda 2014a).

As discussed in greater detail below, crime is very local in nature. It is therefore not surprising that the degree of inequality measured at the national level is at best a weak predictor of its behavior. What appears to matter is the level of inequality experienced by the individual. Recent research that considers the impact of neighborhood characteristics on behavior suggests that poor boys living in largely well-to-do neighborhoods are the most likely to engage in antisocial behavior (lying, misdemeanors, property crimes, and other problem behaviors), compared to their counterparts in poor areas.

*Not all unemployment is created equal: age and quality of employment opportunities matter.* Economic development is also associated with improvements in labor market conditions: more and better employment opportunities and possibly higher wages. Whether unemployment and crime are related remains an open question, both theoretically and empirically (Bushway 2011).<sup>9</sup> In a panel of LAC countries, the aggregate (lagged) unemployment rate is not related to violence measure (Chioda 2014a). However, when youth and adult unemployment are treated separately, a stable pattern emerges: whereas adult unemployment is unrelated to crime, youth unemployment is consistently positively related to the homicide rate (a 1 percentage point increase in

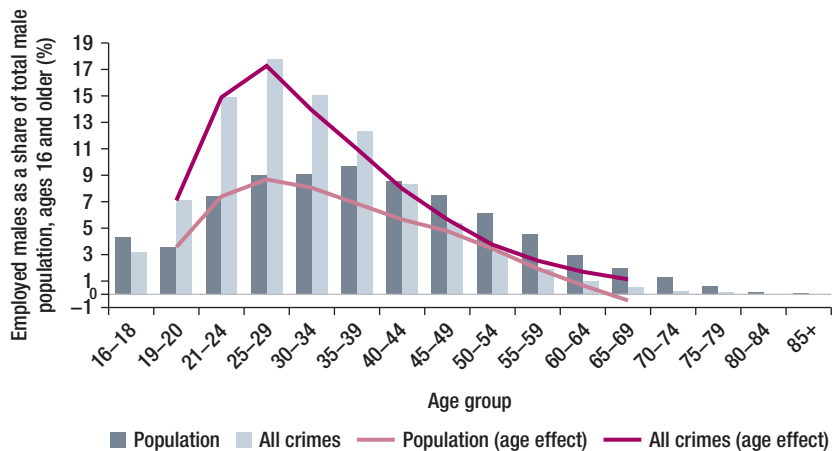
youth unemployment leads to 0.34 additional homicides per 100,000). Not all forms of unemployment are thus equal; youth unemployment is particularly nocive to citizen security. Since youth are at particularly high risk of engaging in antisocial and criminal behavior (see discussion below), the linkages between the labor market and criminal participation may be particularly important for this group.

*However, employment per se is not sufficient to deter criminality.* Regardless of the type of crime (homicides, robberies, violent or property crimes), perpetrators in Mexico, for instance, are characterized by higher labor market attachment than the general population (see figure O.5).<sup>10</sup> Indeed, crime and work are not perfect substitutes, but instead “imperfect” complements:<sup>11</sup> rather than a dichotomous choice, for many individuals, economic activity appears to lie along a continuum of legal and illegal “work.” Micro-level analyses from Brazil and Mexico indicate that the *quality* of employment plays a central role in the relationship between labor markets and criminal offending, rather than employment status per se.

This is especially relevant for youth with low educational attainment (for example, incomplete secondary schooling), who are likely to face (legal) employment prospects that offer limited potential for wage growth, skill acquisition, and job stability, and who may ultimately find employment in the informal sector.

*Development has a dark side. What benefits the formal economy may also benefit illegal markets.* While this regional study does not focus on organized crime and illicit drugs markets, it is difficult to avoid acknowledging the spillovers of development into these markets, particularly given LAC’s status as a leading producer of illicit drugs and its unique geographical proximity to one of the world’s largest

**FIGURE O.5: Employment profiles of male perpetrators and the male general population, Mexico, 2010**



Source: Chioda 2014c, based on data from INEGI.

consumer markets (the United States). As countries transition through different stages of economic development, increased tensions can result, with theoretically ambiguous effects of income on violence and illicit opportunities. In particular, while improvements in infrastructure, financial markets, transportation, and income may help economic growth and foster the development of legal markets, they may also increase the economic returns to transactions in illegal markets (lowering both transaction costs and the likelihood of detection by law enforcement<sup>12</sup>). For instance, in LAC, exports—an indirect measure of a country’s openness—are positively related to homicides: all else equal, a 1 percentage point increase in exports as a percent of GDP is associated with an increase of 0.2 homicides per 100,000 (Chioda 2014a). One interpretation of this relationship is that increased violence is one of the transitory “costs” of development: Crime and violence are social ills that arise and evolve along with the level of a society’s development. In particular, while improvements in infrastructure, financial markets, and rising incomes may foster economic growth and the development of legal markets, they can also increase the economic returns to participating in illegal markets by lowering transaction costs and the likelihood of detection. That is, transaction costs may fall as a result of improved information technology or as transportation costs decline from better roads and infrastructures; the likelihood of detection may similarly decrease if the volume of economic activity from greater trade is not matched by a proportional effort to monitor it.

### *Geographically, crime is concentrated, persistent, and contagious*

More than 1,560,000 people in LAC fell victim to homicide during the 2000s (UNODC 2013), though this likely represents an underestimate because official statistics are not available for all countries and all years. To put this figure into perspective, it is 2.5 times the population of Washington, DC, and close to half of the population of Panama. Over this ten-year period, homicide victims in LAC far exceeded casualties of the Iraq War (both civilian and military), which have been estimated in the range of 400,000 and 750,000.

*Violence is very local in nature: highly heterogeneous across countries, states, and municipalities.* The aggregate levels of violence mask a great deal of heterogeneity. As noted earlier, while LAC as a whole is the most violent region in the world, the variance across countries within LAC is staggering. In 2010, and for most of the decade, Chile—at 3.2 per 100,000—enjoyed a lower incidence of homicide than the United States (4.8 per 100,000 in 2010, a historical low). Similarly, in 2008, Uruguay was on par with North America and was only marginally higher in 2010. These optimistic figures are in stark contrast with the gloomy picture painted by eight LAC countries whose levels of violence exceed the WHO-defined “conflict” threshold of 30 per 100,000.

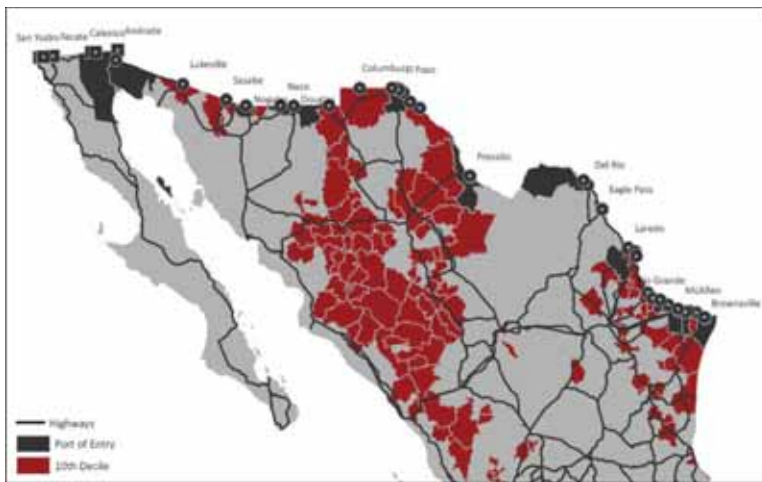
However, national figures can also paint a misleading picture. For instance, Mexico’s homicide rates of 10.34 per 100,000 in 2000 and 21.85 per 100,000 in 2010 are the result of significant variability at the state and municipal level. Despite the recent

dramatic deterioration in security in Mexico, several municipalities experienced declines in violence and homicide (see map O.2). During the 2000s, the state of Chihuahua had the third-highest state-level homicide rate in Mexico (with 19.2 per 100,000), but security deteriorated dramatically, with homicides sky-rocketing to 187.6 in 2010.<sup>13,14</sup> Within the state, over the course of one year, the homicide rate in the municipality of Ciudad Juarez soared eightfold, from 14.1 per 100,000 in 2007 to 114.8 in 2008. It increased to 263.2 in 2010, accounting for approximately 60 percent of homicides in the state of Chihuahua and 15 percent of all murders in Mexico, respectively.

One of the distinguishing features of the crime and violence phenomenon is the degree to which it is geographically concentrated, implying that a great deal of heterogeneity underlies aggregate figures, especially at the regional and national levels (see map O.3). Municipality- and state-level data consistently point to handfuls of locations where the majority of homicides occur. For instance, six of Guatemala’s 22 departments account for 63.7 percent of its homicides; in 2007, the state of Chihuahua alone accounted for one-quarter of the homicides in Mexico, 50 percent of which were accounted for by two of its municipalities. In 2008, not only did violence increase dramatically in Chihuahua, but so did its concentration: two municipalities accounted for 76.8 percent of the state’s homicides.

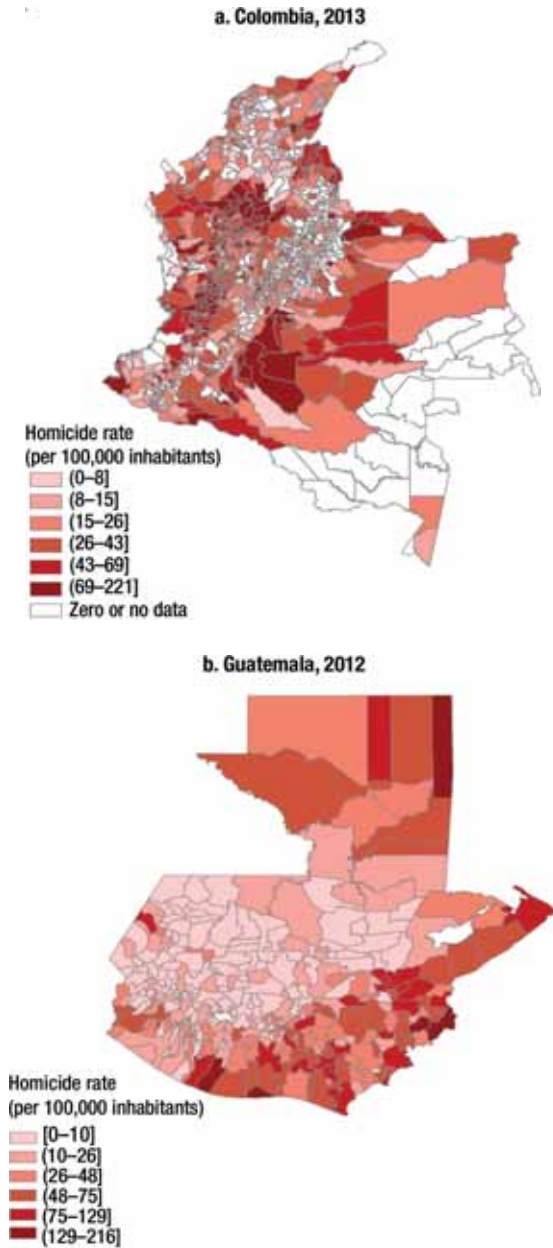
The clustered nature of violence appears at even finer levels of geographical disaggregation, manifesting itself at the neighborhood and even the street levels. Is this feature specific to Latin America and the Caribbean? Here again, the parallel with developed

**MAP O.2: U.S. ports of entry, Mexican highways, and homicide rates for the most violent municipalities in 2012**



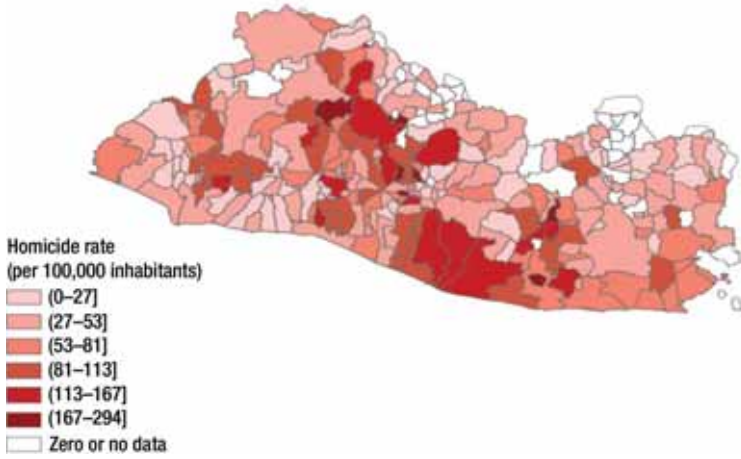
*Source:* World Bank calculations, based on data from INEGI.  
*Note:* The 10th decile = the ten percent most violent municipalities.

MAP O.3: Homicides rates by municipality in Colombia, Guatemala, El Salvador, and Brazil

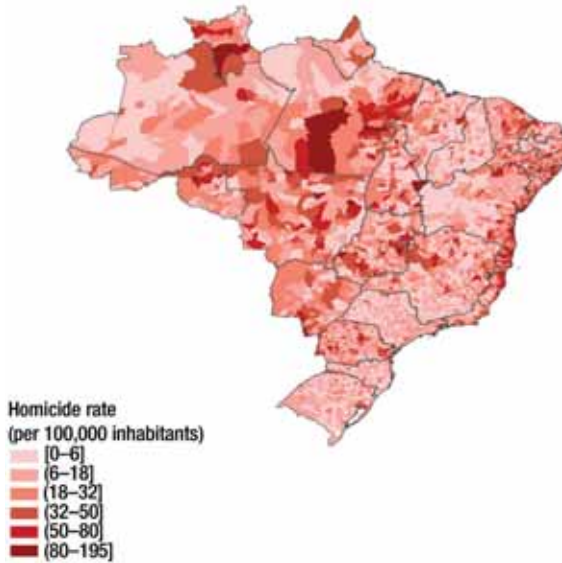


MAP O.3: Homicides rates by municipality in Colombia, Guatemala, El Salvador, and Brazil (continued)

c. El Salvador, 2014



d. Brazil, 2012



Sources: Instituto Colombiano de Medicina Legal, Guatemala's National Police, El Salvador's National Police, and DATASUS.



countries persists: In Seattle, between 4.7 percent and 6.1 percent of street segments accounted for 50 percent of the crimes in 2004; in Minneapolis, Minnesota, 3.5 percent of addresses produced 50 percent of criminal offenders in 1989; and in Tel Aviv, 50 percent of the criminal incidents were concentrated in 5 percent of the street segments in 2010 (Weisburd, Groff, and Yang 2012). LAC is in this sense no different. In Antioquia, Colombia, 18 percent of municipalities accounted for 75 percent of department-wide homicides in 2013. In Medellín, Colombia, approximately 13 and 30 percent of its 317 neighborhoods account for 50 and 75 percent of all the intentional homicides in a given year, respectively, with little change in the degree of concentrations over the last decade.

The marked geographic concentration of violence highlights the importance of understanding local-level determinants and networks in crime. It also stresses the critical need for data that match the nature of the problem, and draws attention to the limits of analyses with aggregate country-level data. If a few states, a few municipalities, or a few neighborhoods account for a large fraction of the violence, then the implications for policy are clear: effective deployment of resources will likely include geographically targeted interventions.

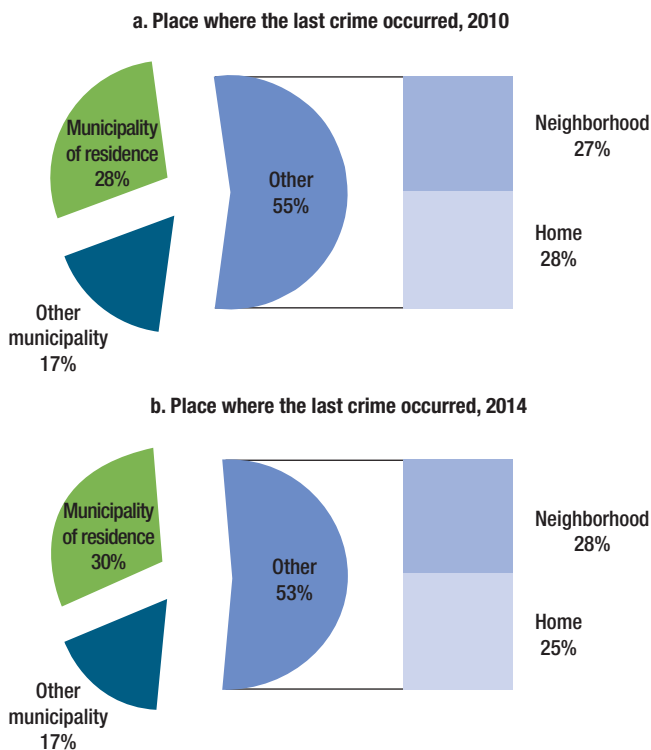
*Most crime and violence occur close to the homes or neighborhoods of both victims and perpetrators.* Another local aspect of the phenomenon is that crime and violence tend to be extremely proximal to victims: in 2012, 50 percent of victims in the region reported that the last crime occurred at their home or in their neighborhood, and an additional 32 percent fell victim somewhere within their municipality of residence. Only a small fraction fell victim outside their municipality or abroad. Similar patterns hold for both property and violent crimes. The stability of this pattern is noteworthy across countries in the region.

Not only do crimes occur in close proximity to the victims' homes, but at least three-quarters of crimes occur within the same municipality in which the *perpetrators* live. In Mexico, this has been the case for 71 percent of homicides, 76 percent of property crimes, and 85 percent of violent crimes over the last 15 years. Property crimes tend to be more local in nature than violent crimes and homicides (figure O.6).

*Crime is persistent: today's crime rate is a strong predictor of tomorrow's. Crime is also contagious.* What is possibly more worrisome from a policy perspective is that crime in the region is not only concentrated geographically, but also exhibits high degrees of persistence. Research discussed in the study formalizes and quantifies this notion for the region as a whole and for a handful of specific countries. All else constant, on average in Latin America and the Caribbean, an additional homicide in a given year predicts 0.66 additional homicides in the following year. Persistence over time is not only a feature of homicide statistics at the national level, but it is also observed at subnational levels and holds true for different types of crime. Persistence is even higher at the municipal level in Brazil and Mexico, with an additional homicide in one year predicting 0.64 and 0.80 additional homicides the following year, respectively.

The parallel similarity with developed countries continues. The greatest predictor of violence in the streets of U.S. cities is a prior violent incident, which mirrors the behavior typical of epidemic waves (Slutkin 2013). As mentioned, violence in the

**FIGURE O.6: Victim reporting on where the last crime occurred, 2010 and 2014**



Source: World Bank calculations, based on 2010 and 2014 data from LAPOP.

Note: LAC-weighted averages.

Mexican state of Chihuahua is highly concentrated, with significant clustering during the recent deterioration of security. A closer look reveals that violence first became more acute in locations where its level was already high and then propagated across municipalities outward along the highways, consistent with a model of spatial contagion.

A formal, yet crude measure of contagion (that is, the spreading of crime from one geographic area to another) is whether violence from neighboring municipalities predicts levels of violence in a given locality even after controlling for a number of other predictors, including the municipality's own lagged level of violence. Spillover effects for homicides are sizable and significant; however, their intensity varies across countries. In Mexico, one additional homicide (per 100,000) occurring outside a given municipality, but within the same state, predicts 0.6 additional homicides per 100,000 within that municipality. Smaller magnitudes of contagion are recorded in Brazil and Colombia, where the corresponding measures are 0.14 and 0.20, respectively.<sup>15</sup> Similar patterns

of detrimental spillovers also emerge for other types of crimes (violent and property crimes, and robberies), with approximately 0.3 additional crimes (per 100,000) in each crime category predicted by one additional incident in neighboring municipalities.

Geographic and temporal spillovers have important implications and can be exploited in policy design. In particular, the magnitude of declines in violence in a given municipality may depend on the actions of neighboring municipalities; one municipality's crime reduction efforts in one year spill over to future years and to neighbors. Coordinated action of many municipalities may thus yield benefits that exceed the sum of their individual efforts: an additional crime that is prevented yields additional prevented crimes downstream. Hence, the momentum of contagion can be harnessed to the benefit of policy.

### *Over the life cycle, crime is concentrated and persistent*

Distinguishing features of crime and violence are their degree of concentration, persistence, and proximity to the victim. These features characterize criminal behavior not only across geographic areas (states, municipalities, and even streets) but also across individuals and throughout the life cycle.

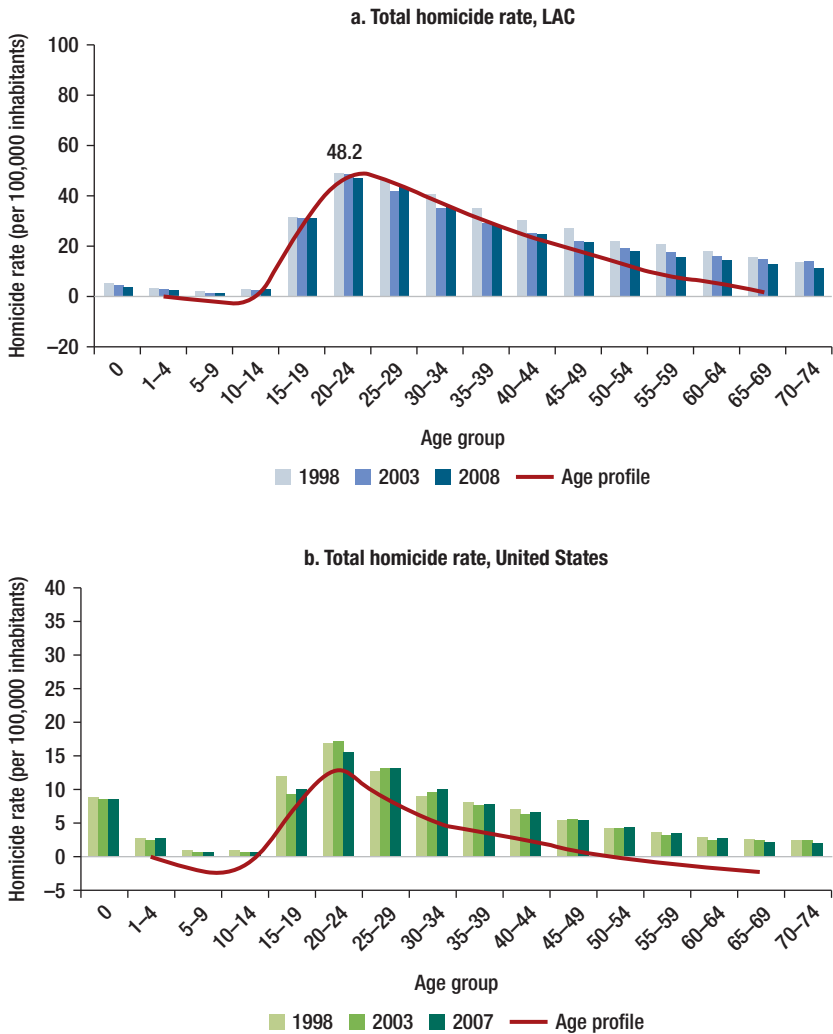
*The age-crime profiles of victims and perpetrators are remarkably stable across cohorts, income levels, and types of crime.* One of the oldest and most stable empirical regularities in criminology—documented in several developed countries since the beginning of the 17th century—is referred to as “the age-crime curve” by modern criminologists. That is, criminal behavior increases substantially during adolescence, reaching a peak in early adulthood, and then declines until old age.

Similar patterns emerge in Latin America and the Caribbean. The homicide rate for younger teens ages 10–14 is around 2.8 (per 100,000) and increases more than tenfold (to 31.1 per 100,000 in 2008) for older teens ages 15–19. The risk of homicide victimization peaks at 48.2 per 100,000 for those ages 20–24 (see figure O.7).

Gender differences are stark. Violence is committed by and affects boys at disproportionate rates: at almost all ages, boys are at least 10 times more likely than girls to fall victim to homicide. Homicide rates among young boys (ages 10–14, 15–19, and 20–24) are double those of the general population (4.2, 56.0, and 92.4 per 100,000, for the respective age groups). These numbers further corroborate the parallel with the United States (see figure O. 8). The figures for homicides of African American males, ages 18–24, are remarkably close, reaching a historic low of 91.1 per 100,000 in 2008,<sup>16</sup> after a decade of rates between 105 and 110 per 100,000. This record low is nevertheless still 20 homicides higher than the homicide rate for males, ages 20–24, in Mexico, which peaked at 71.5 in 2010. This consistent trajectory provides a clear picture of how the risk of violence evolves over the life cycle, and how its burden falls disproportionately on adolescents and young adults. While these patterns relate to victims, they are mirrored for perpetrators; the age-crime profiles of perpetrators and of victims are nearly identical and are stable across cohorts and levels of income.

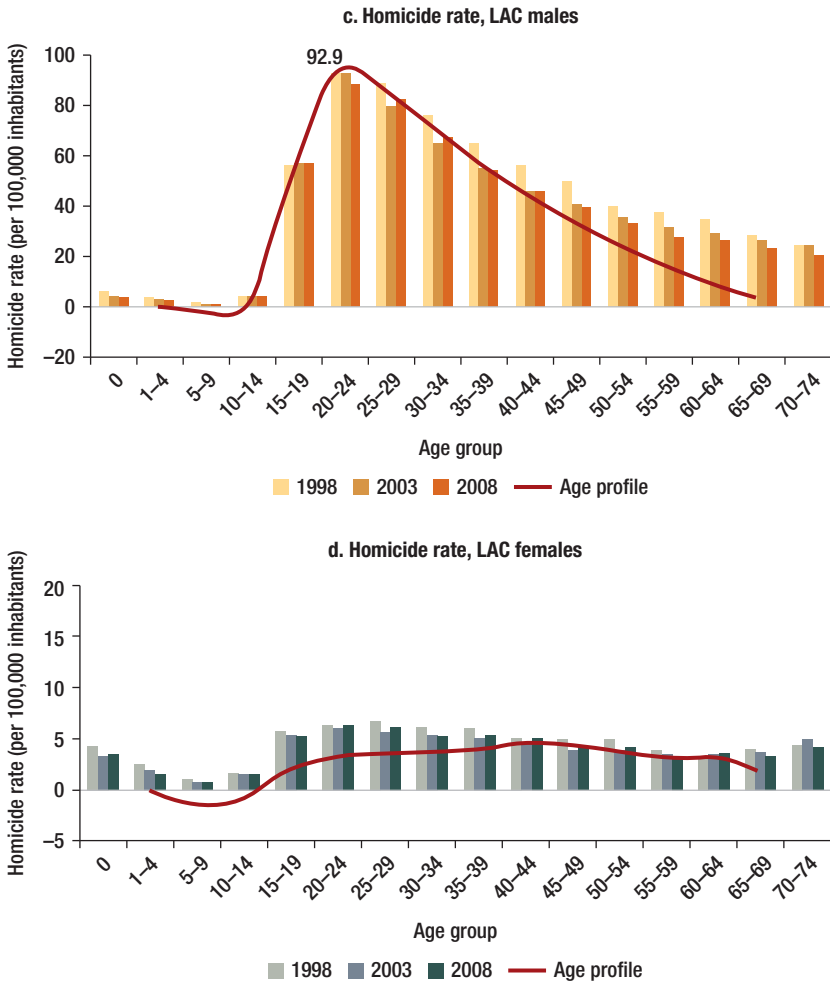
Just as antisocial behavior tends to cluster in very specific geographical areas, life course trajectories of offending suggest that the majority of crimes are perpetrated by a very specific age and demographic group: adolescent and young adult males. The similarity of age profiles for offenders and victims reinforces the notion of their proximity, not only with respect to location, but also with respect to age.

**FIGURE O.7: LAC homicide age-crime profile, selected years**



*(continued on next page)*

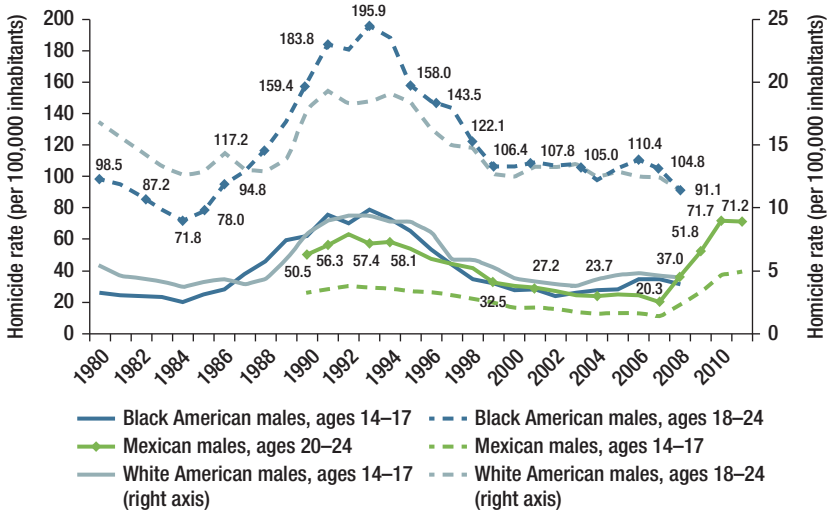
FIGURE O.7: LAC homicide age-crime profile, selected years (continued)



Source: Chioda 2014d, based on data from the Global Burden of Injuries.  
 Note: The age profile (solid red line) represents population-weighted estimates of age effects from models estimated across years controlling for year and cohort dummies. In computing the regional average, 2007 data were used for Chile, Colombia, and República Bolivariana de Venezuela, as they were missing for 2008. For Nicaragua, 2006 was used in lieu of 2008.

Evidence on perpetrators supports the conclusion that the adolescent peak reflects a temporary increase in the number of people involved in antisocial behavior, not a temporary acceleration in the offense rates of individuals. Indeed, rates of illegal behavior soar so high during adolescence that participation in delinquency appears to be a normal part of teen life (Elliott and others 1983). This age group is a pivotal target for any policy aimed at violence prevention.

**FIGURE O.8: Trends in homicide rates in the United States and Mexico, by age and race**



Source: World Bank calculations, based on INEGI data for Mexico and CDC data for the U.S. series.

What underlies the age-crime profile? Adolescence and early adulthood are critical stages not only from a socioeconomic point of view because of the transition from child to adult roles, but also because they represent a delicate phase in brain development.<sup>17</sup> As will be discussed later, developmental and biological effects are important factors related to crime and violence. However, their magnitudes are mediated by environmental factors, which may contribute to heightening or lowering the risk for a group of individuals who already exhibit intrinsic vulnerabilities. Is this all bad news? These developmental phases reveal significant plasticity of skills, brain functions, and susceptibility to peers and to environmental factors, which can be harnessed as promising margins for policy to exploit. Hence, there is room for optimism regarding the potential for effective policy.

*Chronic offenders: few individuals are responsible for a large share of crimes.* Studies of the evolution and trajectory of offending identify a specific subgroup of offenders, labeled chronic offenders, as being of particular interest for policy. Not only do their criminal careers exhibit significant longevity, because they do not desist from crimes after the peak years, but they are also responsible for a large fraction of total crimes committed. This fact points to another sense in which concentration appears to be a defining characteristic of crime: a number of studies conclude that, at any given stage in the life cycle (childhood, adolescence, adulthood, old age), a small fraction of the offenders—between 5 percent and 15 percent—is responsible for over 75 percent of crimes committed and of aggressive behaviors (Moffitt 1990; Tracy, Wolfgang, and Figlio 1990; Farrington and West 1993; Garrido and Morales 2007).

The distinction between chronic offenders and those who are transiting through adolescence and young adulthood, developmentally sensitive stages of life, has important implications for theory and research on the causes of crime and on resulting policy responses. For delinquents whose criminal involvement is confined to the adolescent years, the causal factors may be specific to that period of development. Theory must account for this discontinuity in their lives, and policy must target it. In contrast, for persons whose adolescent delinquency is merely one episode in a lifelong antisocial trajectory, a theory of antisocial behavior must identify causal factors beyond the environment and explain personality traits and brain functioning more intensely. Sanctions will also work differently on these two groups, as discussed below.

### *Victims of crime and their perceptions*

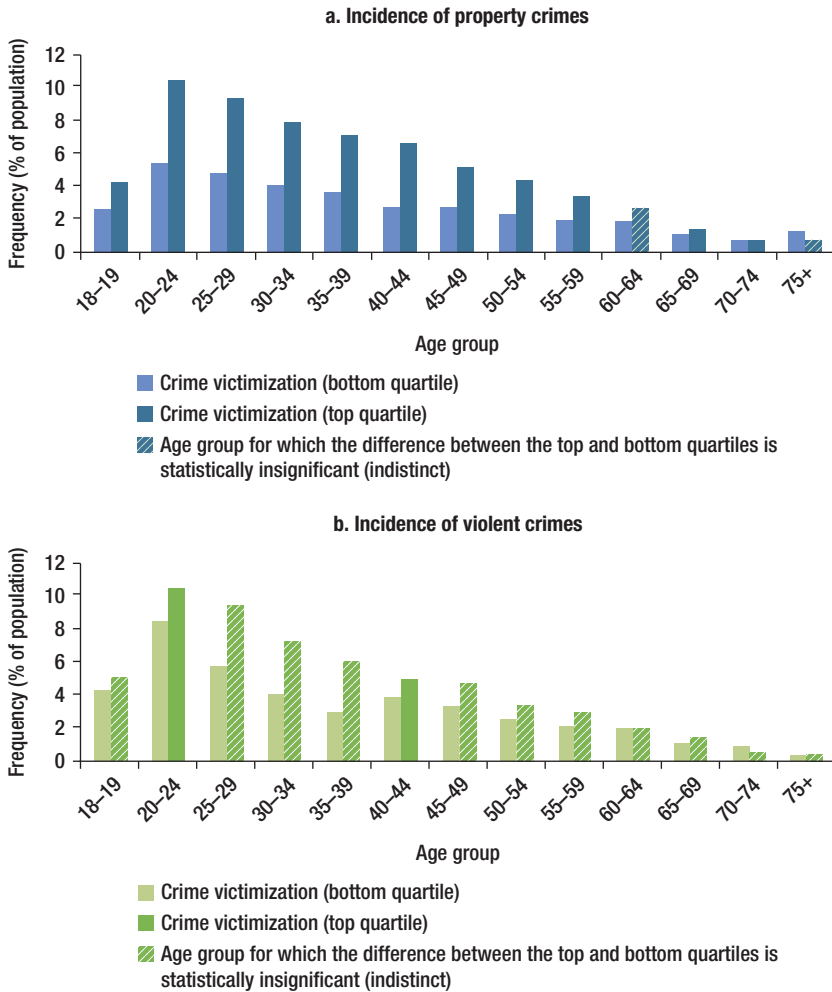
While official crime statistics can be linked to the characteristics of the municipalities in which crimes take place, no such link to information on victims is possible, such as income, age, perceptions about security, and subjective measures of social capital. This void is filled by making use of the two opinion surveys from the region, the Latin American Public Opinion Project (LAPOP) and Latinobarómetro. Each has its strengths and weaknesses, but both record victimization information about their respondents,<sup>18</sup> as well as demographics and opinions. These surveys provide the basis for studying the predictors of victimization, which can then be contrasted with predictors of respondents' concerns about crime in their country. The effects of crime on health and well-being of its victims are also explored.

### **Determinants of victimization**

*Income is a risk factor for property crimes, but not for (nonlethal) violent crimes.* As discussed above, the sign of the relationship between income and the risk of falling victim to a crime (victimization) is theoretically ambiguous: wealthier individuals may attract more perpetrators due to their more elevated income (particularly for property crime, since they represent higher expected payoffs for perpetrators), but their wealth also affords them the possibility of investing in greater protection from crime. The mechanisms at play appear to differ according to the type of crime. For property crime, a steep income gradient in victimization is observed; individuals in the highest income quartile are one-third more likely to fall victim to property crime than those in the lowest income quartile. For violent crime, however, there is no evidence of an income gradient. The gradient also appears to hold roughly across all ages (see figure O.9): for every age group, higher income is a risk factor for property crime but not for violent crime. Furthermore, the shape of the age-victimization profile for both types of crimes looks very similar across income levels.

*Reflecting the local nature of crime, the most effective crime avoidance strategy appears to be to sort into safer neighborhoods.* Even after controlling for income and education, living in safer neighborhoods lowers the likelihood of victimization by

**FIGURE O.9: Age-crime incidence by income level for property and violent crimes, LAC**



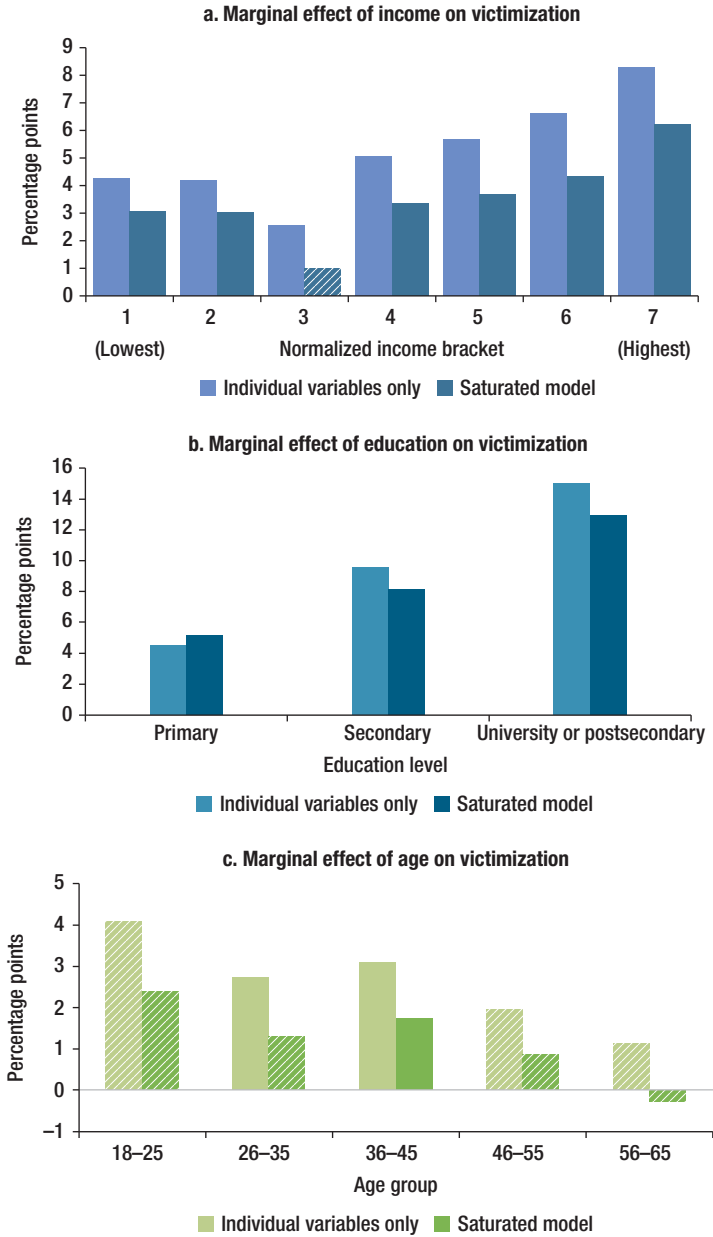
Source: Chioda 2014d, based on data from LAPOP 2012.

Note: The age 20-24 bars reflect a spike that is common to most Central American countries.

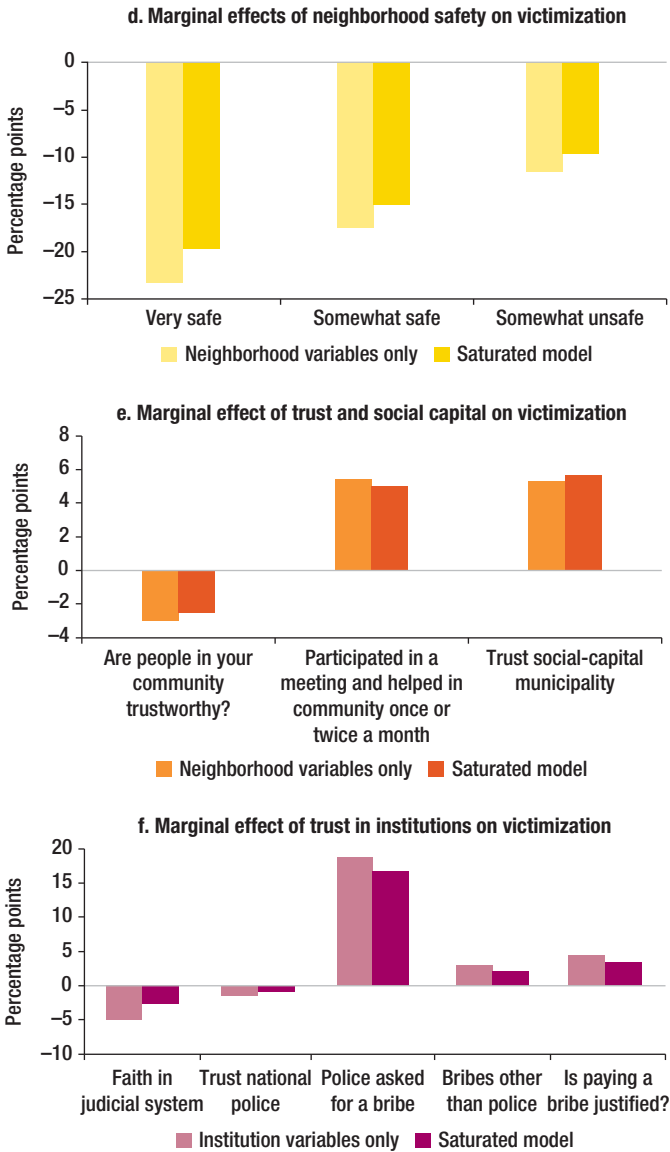
approximately 50 percent, compared to living in a neighborhood deemed “not safe” by the respondent. Of course, this crime avoidance strategy is more readily available to higher-income households. However, meaningful protection from victimization (of approximately 30 percent) can also be achieved by relocating to neighborhoods deemed “somewhat unsafe.” These magnitudes provide additional evidence of the local nature of crime (see figure O.10).



**FIGURE O.10: Marginal effects on victimization of income, education, age, neighborhood safety, social capital, and trust in institutions, LAC**



**FIGURE O.10: Marginal effects on victimization of income, education, age, neighborhood safety, social capital, and trust in institutions, LAC (continued)**



Source: Chioda 2014d, based on LAPOP data.

Note: Regressions weighted by population. Standard errors are clustered at the country level. Income brackets have been normalized for comparability across countries. Income increases by income bracket, with 1 the lowest and 7 the highest income group. All coefficients are significant at conventional levels, except for the bars that have diagonal lines.

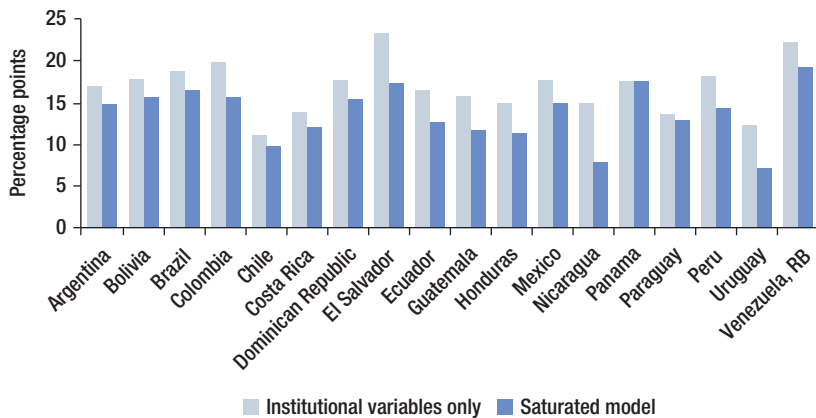
*Institutions matter. Police bribes are very important risk factors and reveal an inherent weakness of institutions in LAC.* The quality of and trust in police and in the judicial system appear to matter for victimization, though their effects are relatively small in magnitude.<sup>19</sup> The most striking effects among institutional variables relates to respondents’ reports about whether police ask for bribes, which directly relate to the police’s willingness to detect and apprehend offenders (see figure O.11). All else equal, police soliciting bribes is associated with a staggering 16 percentage point increase (representing nearly a 50 percent increase) in the probability of experiencing some form of crime. The social acceptability of bribes is also a significant risk factor for victimization: respondents who report that paying bribes is justified are between 2 and 8 percentage points more likely to have been victimized, depending on the country. To put these magnitudes of the effect into perspective, the nocive effect of police corruption more than offsets the protective effect of sorting into safer neighborhoods.

Public perceptions of the incidence of public corruption and confidence in government in LAC have improved substantially over the past 15 years. However, measures of trust in the police and in the judicial systems have remained almost flat. As will be discussed in the last section of the overview, certainty of sanctions (as proxied by the likelihood of apprehension) plays a critical role in deterring crime. The findings above highlight the importance of institutions for crime control.

### Well-being and concern about crime

Having studied the determinants of victimization, it is instructive to consider the factors that underlie the subjective concerns about crime and their relation to victimization.

**FIGURE O.11: Marginal effects on victimization of the variable “police asked for bribes”**



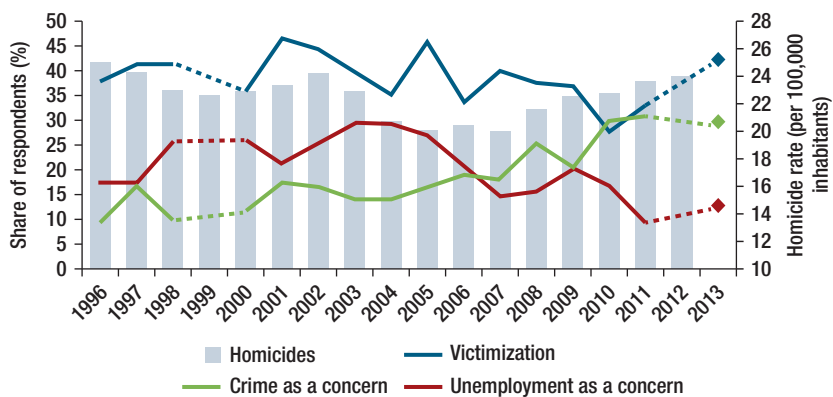
Source: Chioda 2014d, based on LAPOP 2014.

The psychological burden of crime is not trivial and is an important dimension of well-being. Being a victim of a crime in LAC reduces the likelihood of self-reported happiness (a proxy of well-being) by 3 percentage points, and by twice that amount in Central America.<sup>20</sup> An individual who never falls victim to crime may nevertheless feel a persistent sense of fear, insecurity, and stress in a context of elevated crime rates—a secondary consequence of crime that Bentham (1781) termed the “alarm effect.”

*Concern about crime has increased over time, reflecting trends in homicides, rather than victimization rates.* In LAC, over the past 15 years, the fraction of people indicating crime as a main concern has tripled to 30 percent. Concerns about crime have risen even as the trend in victimization<sup>21</sup> has declined (see figure O.12). Rather than following personal experience with crime, the rising concern more closely tracks trends in homicides (the most salient and extreme of crimes) over the latter half of the 2000s. A Benthamian “alarm effect” may be at play. A more detailed consideration of the determinants of victimization may thus provide insight into the negative correlation between victimization and concerns about crime.

*Subjective perceptions of insecurity are weakly related to objective determinants of victimization.* Income only marginally predicts concern about crime, whereas it is a strong predictor of (self-reported) victimization. Similarly, holding income constant, the effect of education on concern about crime is negative, whereas it is positively related to victimization: more educated respondents are more likely to fall victim to crime,<sup>22</sup> but are less likely to express concern about it.

FIGURE O.12: Trends in homicides, concerns about crime, and victimization, LAC, 1996–2013



Source: World Bank calculations, based on data from Latinobarómetro and UNODC.

Note: Homicides, on the right axis, are expressed per 100,000 inhabitants. “Crime as a concern” and “victimization” correspond to the share of people who list crime and delinquency as one of their main concerns and who report being a victim or knowing someone in their family who has been a victim in the last 12 months, respectively.

Demographics are important determinants of concern about crime, though the patterns are also counterintuitive. Men worry less about crime, though they are at higher risk of being victims. Similarly, while the risk of victimization declines with age (overall), concern about crime increases with age, though with a mild gradient. This pattern may reflect the evolution of risk aversion: as individuals age, they typically become more averse to uncertainty and to losses. Likewise, marriage is a mild protective factor for victimization, but it is instead associated with an increased likelihood of expressing concern about crime. Being married may entail more concern about crime because of lower tolerance for risk, but also because the safety of family members becomes more important: Relationships increase the risk and the concern that someone in one's extended circle will be victimized, thereby raising the psychological costs of crime.

*Neighborhood security strongly predicts both victimization and perceptions of insecurity.* Whereas a number of strong predictors of victimization are weakly related to concerns about crime or exhibit conflicting patterns, neighborhood security strongly predicts both victimization and concerns about security. Sorting into neighborhoods based on safety is a powerful protective strategy in reducing victimization rates and serves to align perceptions about crime and victimization. The safer the neighborhood or residence is, the lower is the psychological burden associated with crime. Living in what respondents perceive to be a "very safe" and "somewhat safe" neighborhood lowers concerns about insecurity by 21 percent and 15.7 percent, respectively, compared to respondents who declare that they live in an "unsafe" neighborhood. This crime avoidance strategy may not be available to resource-constrained households, placing a higher psychological burden of crime on lower-income individuals who care about safety.

*People who live in high-crime areas appear to "adapt" to the elevated criminality.* The weight individuals place on concerns about crime appears to depend more on changes in the incidence of crime than on its level, consistent with the literature on reference points and "adaptation." People who live in consistently high-crime areas appear to "adapt" to the elevated criminality, reporting less impact on their well-being than those living in low-crime areas who experience a sharp rise in violence.

*Worries about crime become more prominent as people perceive that their own or their country's economic circumstances are improving.* As noted earlier, objective measures of economic well-being (income brackets) are only mildly correlated with concerns about crime, while subjective assessments of well-being are highly correlated with concerns about crime, all else equal (including income, education, salary, and job satisfaction). In particular, the concern about crime increases along with the degree of satisfaction with one's economic circumstances, with those who are most satisfied being 30 percent more likely to express concern than those who are least satisfied. Qualitatively similar results are observed for people's perceptions about their country's economic outlook: the more optimistic people's expectations are about the country's economic future, the more they express concerns about crime and violence.

Why might satisfaction with personal or national economic circumstances be positively related to concerns about crime? This pattern is consistent with the

hypothesis that security lies higher in the hierarchy of human concerns than economic or physical well-being. As economic circumstances are perceived to improve, material concerns become less important, and attention turns to security. Just as in Maslow's hierarchy of needs, concerns more proximal to an individual's situation (such as one's own economic situation) must be "met" before other concerns become salient. In particular, the significant economic gains experienced by LAC during the past decade may have contributed to the steep rise in the concern about crime over the same period.

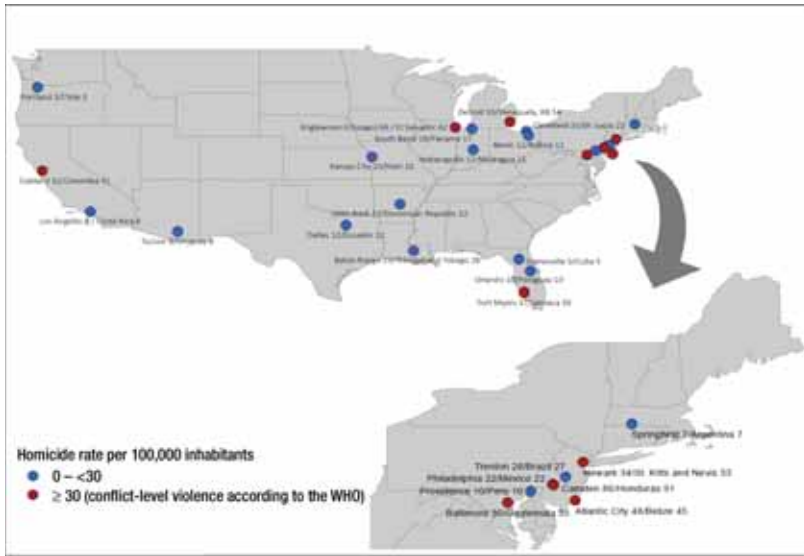
### *A meaningful parallel: Context matters, but important lessons can be drawn from developed countries*

In discussing the evidence, the study frequently refers to and builds on studies from developed countries. The rationale is twofold and follows as a corollary from the stylized facts presented. While rigorous empirical evidence from LAC is developing, it is still in its infancy, and the study refers to it whenever possible. More importantly, the evidence from developed countries is relevant for several reasons. First, the study highlights the importance of biological, intergenerational, cognitive, and developmental stages of the brain and their relationship with antisocial behavior. Many of these mechanisms are invariant to context and are rooted in human nature.

Second, while aggregate levels of violence may be considerably lower in developed countries, certain subgroups of their populations are characterized by levels of violence that resemble those of LAC (see map O.4). New Orleans and Detroit are the 17th and 21st most violent cities in the world, respectively, with homicide rates well above 50 per 100,000, which puts them on par with some of the most violent cities in the region. In 2014, one of the most violent neighborhoods in Chicago, Englewood, was plagued by a homicide rate of 65.5 per 100,000, higher than that of Ciudad Juarez in Mexico (55.9 per 100,000 in 2013) and similar to that of Salvador, Brazil (65.6 per 100,000). Sadly, the murder rate among African Americans in the United States is significantly higher than the U.S. national average. In 2008, the homicide rate for young black men ages 18–24 was 91.1 per 100,000, compared to 37 per 100,000 for young men ages 20–24 in Mexico. Therefore, while the analogy between developed and developing countries appears stretched at the national level, it remains accurate for particular subgroups of the population, and for the at-risk population in particular. Third, certain stylized facts documented in this study—such as the age-crime profile of offending, the degree of geographic concentration of violence, and its persistence—are also common traits of the physiognomy of antisocial behavior in developed countries. Indeed, one of the contributions of the study is to formalize and document the stylized facts for the region and to establish appropriate parallels between LAC and developed countries.

With these parallels in mind, it is not unreasonable to consider a prevention approaches with proven effectiveness in reducing crime among disadvantaged and

**MAP O.4: U.S. cities and LAC countries with comparable homicide rates circa 2012**



Source: World Bank calculations, based on data from UNODC and FBI.

at-risk youth in developed countries as being suggestive for policy in the LAC region. Of course, context and the capacity of institutions matter. For instance, Sherman and others (2005) stress the importance of these factors in conditioning the effectiveness of community-based crime-prevention programs: “*In study after study, evidence emerges that crime-prevention programs are more likely to take root, and more likely to work, in communities that need them the least. Conversely, the evidence shows that communities with the greatest crime problems are also the hardest to reach through innovative program efforts*” (39). This observation does not invalidate optimism about certain promising policy margins and interventions discussed herein. But it serves as a cautionary warning and highlights the role of institutions when implementing these policies.

**Never too early: Stopping the transmission of violence across generations**

Research on crime and violence as well as antisocial behavior has traditionally focused on adolescents and adults, motivated in part by the age-crime profile, which identifies youth and young adults as being at particularly high risk. However, some

recent studies have provided new insights on the development of physical aggression, taking advantage of longitudinal data that follow children over many years as they become adults. The peak frequency of physical aggression occurs in early childhood (between 24 and 42 months)—suggesting that, as children age, they learn ways to control their behavior and limit or avoid physical aggression. Children who fail to learn how to self-regulate and exhibit high levels of aggression and conduct problems in the primary school years are at higher risk of negative behavior in adolescence and adulthood.

Parents and families can therefore serve as entry points for policies tackling crime and violence, in their roles helping children self-regulate and “unlearn” violence. Moreover, the link between family and crime appears to run much deeper than a mere window of opportunity for parenting during these early stages.

Family history is a powerful predictor of serious criminal offending; it includes both a family’s biological and social vulnerability to crime. A large body of evidence highlights how crime is concentrated not only in specific geographic areas, but also across families, and appears to be passed on from generation to generation.<sup>23</sup> “Crime runs in the family” has become a recurring stylized fact in criminology. Family background (in general) and parental criminality (in particular) are among the strongest predictors of an individual’s criminality, stronger even than his or her income or employment status.

Indeed, research indicates that crime and violence have a biological basis, which involves both genetic factors and deficiencies in the (autonomic and central) nervous systems. A series of studies indicates that as much as 50 percent of differences in individuals’ antisocial behavior can be explained by a combination of biological and prenatal conditions,<sup>24</sup> including genetic make-up, the environment *in utero*, and infant birth weight. Causes of aggression and violent behavior have been traced back to complications at the time of birth and even to disruptions in fetal brain development during early stages of pregnancy.

The relevance of biological and prenatal factors does not imply that social factors are irrelevant. The latter account for the other 50 percent of the differences in individuals’ antisocial behavior. Social mechanisms related to antisocial behavior during early stages of life include behavioral channels (role modeling, parenting styles); psychological channels (childhood traumas and abuse, family conflict); and biological channels occurring well after birth (head injuries, exposure to environmental toxins such as lead). The harmful effects of biological vulnerability related to poor endowments at birth are greatly augmented when they are coupled with social vulnerability, such as maternal rejection and child abuse.

The evidence discussed in the report establishes two key points in this regard. First, chronic disruptive behavior early in life tends to lead to frequent and often serious delinquency during adolescence and adulthood (McCord and others 2001; Piquero and others 2003). Second, family histories (biological factors) and parental behavior can greatly influence adult criminal behavior as early as during gestation. Once these



early processes are identified, new pivotal margins for prevention become available. Taking family history and genetic factors as predetermined, one of the first entry points for crime prevention is the family and begins before an individual is conceived.

### *Policies that work*

*Perinatal home visitation programs.*<sup>25</sup> A combination of prenatal care and home visits by nurses or other trained experts to at-risk pregnant women and to at-risk households with very young children have been demonstrated to improve the behavioral outcomes of children, adolescents, and young adults. Children whose at-risk mothers received home nurse visitations for the two years following birth were less likely to run away from home, to get arrested (53 percent reduction) or convicted (63 percent reduction), and to violate probation.<sup>26</sup>

It is informative from a policy perspective to consider the mechanism underlying these outcomes. The mediating factors can be classified into two broad categories: mothers' health-related outcomes and parenting styles. In the very short run, the prenatal phase of the program reduced fetal exposure to tobacco, improved the qualities of women's prenatal diets, and improved levels of informal social support, with positive implications for children's health at birth.

*Reducing or eliminating child abuse or neglect.* The program also appears to lower the rate of child injury, child abuse, and child neglect—key risk factors in the early onset of violence—and self-reported arrests (including for mothers). Maltreatment in particular is a major determinant of future criminal behavior.<sup>27</sup> These results suggest that, while not everyone who is abused becomes a criminal, maltreatment is a major determinant of future criminal behavior.

Effects of home visitation programs have been strongest among more vulnerable families, in keeping with other preventive interventions that have shown greater effects for children of families at greater social risk (defined by such factors as low socioeconomic status [SES], prenatal habits, family conflict, and low cognitive abilities).<sup>28</sup> This suggests that these kinds of services may have higher returns for families in greater need, highlighting the importance of well-targeted programs.

*Early childhood development programs.* The results linking criminal careers to early stages of life broaden the well-established observation that early childhood is a critical period for cognitive and psychosocial development. From a human capital perspective, investments during this period create the foundations for the evolution of cognitive and psychosocial skills that are central determinants of lifetime outcomes.

Long-term evaluations of early childhood development (ECD) interventions—that improve young children's thinking and reasoning abilities as well as skills such as memory, attention, and self-control and self-regulation—are scant. Even fewer are those that track their impacts on crime and violence for youth and young adults. However, the existing research discussed in this study points to ECD

interventions as promising avenues to reduce early aggression as well as criminal behavior later in life.

The returns to well-designed and well-targeted ECD programs can dwarf their costs. For example, a detailed cost-benefit analysis that followed children for 40 years in one such program (the High/Scope Perry Preschool Program in the United States, which targeted African-American preschool-age children with low intelligence quotient [IQ] and low SES) concludes that every dollar invested in the program repays taxpayers \$12.90—and that the bulk of this return is accounted for by the reductions in male criminality (Belfield and others 2006). Similar results have been documented also in a developing country setting (see Gertler and others' 2014 study in Jamaica). However, it is worth cautioning that not all early interventions deliver declines in offending, suggesting that much more research is needed, particularly on the mechanisms through which different types of early interventions operate.

*Addressing personality traits that lead to crime and violence.* One of the salient (and perhaps surprising) conclusions that emerge from recent research on the mechanisms underlying the success of ECD programs reveals that not only are measures of IQ and academic performance malleable, but so are personality traits. Furthermore, changes in academic achievement and IQ do not necessarily predict longer-term antisocial behaviors; personality traits such as agreeableness and conscientiousness (which in turn regulate externalizing behaviors, a psychological construct that encompasses aggressive, antisocial, and rule-breaking behaviors) do. Biologically, all of these traits are regulated by a very specific area of the brain known as the prefrontal cortex, locus of self-control and executive functions, which are key determinants of antisocial behavior, aggression, and criminal behavior.

Remarkably, personality traits appear to be amenable to policy interventions outside the typical window of opportunity (in childhood) identified for cognitive ability (Cunha and others 2006). Indeed, different traits might be more responsive to investments at different ages (Heckman, Stixrud, and Urzua 2006). In particular, as discussed later, self-control and executive functions can be influenced by suitable policy interventions in adolescence and young adulthood.

*Cost effectiveness.* A well-designed and well-run home visitation program would likely pay for itself, even using conservative estimates of the costs of crime. For example, the costs to society of crime induced by child maltreatment in the United States range between \$6.4 billion (Lochner and Moretti 2004) and \$55 billion per year (Cohen 2004). A nurse visitation program costs roughly \$4,000 per child per year, implying that the cost for all births in the United States would be about \$14 billion per year.<sup>29</sup> However, crime induced by maltreatment is only one of the many social costs of maltreatment. If society assigns some benefit to improving the lives of poor children (beyond the value attached to saving taxpayers money), then the cost-benefit analysis looks even more favorable (Currie and Tekin 2012).

For ECD programs, there are reasons to suspect that benefits may be higher in developing countries, where children typically live in homes where the environment is

less stimulating than in developed countries, and where they may therefore enter ECD programs with lower levels of skills.<sup>30</sup>

Lastly, some interventions seem promising and cost-effective, even when for conservative measures of the cost of crime. A critical element for their success is the quality of delivery—specifically, the quality of the human capital of those who deliver the intervention, defined both in terms of specific knowledge and, more importantly, in terms of intangibles: The ability to connect and establish functional relationships with at-risk youth, parents, and children.

## **Adolescence and young adulthood: A critical age for policy intervention**

Adolescence and young adulthood are delicate phases of human development from a socioeconomic point of view because of the loosening of parental control, the increased pull of peers, and the transition from youth to adult roles, including from school to work. This is an especially difficult period to navigate for youth with low SES, who are at more elevated risk of leaving or dropping out of school.

These life stages are also critical periods in the development of three different regions of the brain, which are responsible for the regulation of automatic or instinctive reactions, risk-taking behavior, self-control, and reflective reasoning. During adolescence and young adulthood, the activity in the brain's reward system is heightened by the mere presence of peers (even in the absence of any interaction with them). Only adolescents and young adults exhibit this pull—precisely when they are spending an increasing amount of time with their peers. Evidence suggests that the pull of peers increases young people's risk-taking by enhancing the brain's sensitivity to the potential rewards of risky decisions. Taken together, these factors generate a perfect storm of vulnerability for this age group.

This set of vulnerabilities is reflected in the shape of the age-crime profile, discussed earlier. The pattern of rapid rise in crime among adolescents and young adults and of decline thereafter is stable across both developed and developing countries, across types of crime, and over time, and it applies to both perpetrators and victims. However, arrest and crime statistics reflect only a small fraction of deviance during these life stages, as made clear by research based on self-reports of antisocial behavior (Hood and Sparks 1970; Klein 1989; Elliott and others 1983). Actual rates of illegal behavior soar so high during teen years that participation in delinquency appears to be a normal part of adolescence.

Is this all bad news? The critical stages of brain development, which accompany young people's social and economic transitions to independence and adulthood, also reveal the plasticity of their skills and personality traits, and their susceptibility to peers and environmental factors—which can present opportunities for policy interventions. Research results challenge the notion that it may be too late to correct antisocial

behavior during teen years and young adulthood, and favor optimism regarding the potential for effective policy during this period. Far from being “hardened,” adolescents and young adults are a critical age group for policy intervention.

### *School-based interventions*

Education policies can significantly reduce property crime as well as violent crime. School-based interventions designed to alter behavior, thinking patterns, attitudes, and beliefs appear to be particularly successful.

*Time spent in school.* Research that carefully isolates the short-run effect of changes in school attendance uniformly finds that additional time in school reduces serious juvenile property crime (between 14 percent and 28 percent depending on the study), confirming that when adolescents are not provided a structured or supervised environment, they are likely to engage in antisocial behavior. However, most studies also indicate that violent offenses among juveniles increase by roughly 28 percent on school days. The amount of interaction among youth plays an important role in determining the level of juvenile violence, highlighting the volatile nature of juvenile interactions.<sup>31</sup>

*Discouraging young people—especially those at high risk—from dropping out of high school.* Policies discouraging dropping out in the final years of secondary education generate the most sizeable and persistent reductions in both violent and property crime for several years—and even decades—after school completion. Benefits also transmit to the next generation, thus turning a vicious circle into a virtuous one. Because crime rates are already quite low among high school graduates, policies that encourage young people to attend or complete postsecondary schooling are likely to yield much smaller social benefits in the form of crime reduction.

*Improving access to high-quality schools.* Not all schools are created equal. Evidence is emerging that attending a higher-quality school reduces contemporaneous crime. A promising message emerges from the heterogeneous effects of these two margins (quantity and quality): in both instances, the larger benefits are concentrated among the most at-risk youth, illustrating the malleability of behavior in the target population. Furthermore, the gains appear to be sustained throughout adulthood.

*A proviso: The concentration effect.* While discouraging young people, especially at-risk youth, from dropping out and encouraging them to stay in school for longer periods of time have been shown to reduce crime committed outside schools. These policies, however, can also have unintended consequences. Specifically, they can push criminal activity and delinquency back into schools. Bringing together hundreds of adolescents for the day concentrates opportunities for social interactions, including criminal or violent ones. In the short run, these effects are not trivial and may appear disappointing at first glance. However, these findings offer guidance as to how to design policies to accompany interventions that alter schooling decisions. For instance, academic curricula might be complemented with behavioral

features that target self-control and aggression, including programs to curb bullying and violence in school.

Long-run cost-benefit analyses of policies that delay dropping out show that the short-run costs associated with concentration effects are more than compensated by the long-run declines in lifetime involvement in criminal offending. For the United States, the social benefit from the decline in murders caused by a 1 percent increase in the male high school graduation rate is conservatively estimated at \$1.1 billion (Lochner and Moretti 2004).

*Behavioral interventions.* Behavioral interventions that focus on personality traits, social skills, and decision making related to “automatic” responses to triggers of perceived aggression can be surprisingly effective at addressing antisocial behavior, including violent crime. Effective interventions focus on improving self-control and decision making.<sup>32</sup> Even small dose interventions (lasting three to five months) targeting at-risk youth can have large effects, pointing again to the malleability of personality traits during adolescence and young adulthood, and their role in shaping offending.

### *Complementary interventions*

*Improving nutrition, treating mental health, and promoting mindfulness.* Provocative evidence is emerging about interventions that aim to reduce criminality and aggression by directly altering the brain structures that regulate behavior and impulsiveness.

Three channels—nutrition, mental health treatments, and mindfulness—have delivered surprisingly promising and lasting results. This evidence provides a basis for the case that health policies should be included in the policymaker’s toolkit to prevent and “treat” crime, violence, and aggression.

- Among nutrition interventions, enriching diets with essential fatty acids (EFA—typically found in fish oil) has been shown to be effective in attenuating aggression in a number of contexts, ranging from early interventions in developing countries to incarcerated youth (Mann, 1999; Hamazaki and Hamazaki, 2008, Gesch and others 2002; Buydens-Branchey, Branchey, and Hibbeln 2008). Essential fatty acids help remediate deficiencies in brain chemistry and serotonin, in particular, which is in turn related to impulsive behavior.
- An increasing number of studies points to the effectiveness of drugs in treating aggression across a wide range of psychiatric conditions in childhood and adolescence (Pappadopulos and others 2006). These are not limited to attention deficit hyperactivity disorder (ADHD), but also include bipolar disorder, schizophrenia, and chronic cognitive deficiencies. Surprisingly, certain medications are effective in directly treating children and youth who primarily exhibit antisocial behavior, rather than having been diagnosed with a psychosis and other mental conditions (Lichtenstein and others 2012; Dalsgaard, Nielsen, and Simonsen 2014).

- Evidence is mounting on the efficacy of mindfulness meditation in improving brain functioning. The benefits are not merely psychological (in the form of improved well-being, reduced stress, etc.) but are physical and translate into alterations in the structure of the brain. These changes affect regions of the brain that regulate antisocial behavior and violence. Improvements in behavior, hostility and other outcomes have been documented in both prison and school settings (Hölzel and others 2011; Himmelstein 2011).

### *Additional remarks*

*Behavioral and educational interventions should be thought of not as substitutes, but as complements.* Most studies of the impact of education on criminal behavior find at best marginal improvements in test scores, suggesting that education policy need not raise academic achievement to reduce crime. This conclusion is consistent with the findings of the early interventions section and further highlights the importance of personality traits and self-control, in particular, in explaining antisocial behavior. The efficacy of behavioral interventions and insights from brain development research directly corroborate this point. Traditional education policy and behavioral interventions should be thought of as complementary, thus expanding the menu of policy options.

*Schools represent a unique targeting opportunity.* As discussed in the stylized facts, crime is highly concentrated, with between 5 and 15 percent of individuals being responsible for 75 percent of crime. School-based interventions provide a unique opportunity to reach chronic offenders. After the mandatory schooling requirements are met and students are no longer in school, targeting this group becomes very difficult to reach with demand-side interventions. These typically attract lower-risk individuals. This observation further helps explain the large effects of policies discouraging or delaying interruptions of school careers.

## **The link between poverty and crime and violence**

One of the unintended costs of poverty can be crime and violence. Many channels link poverty and crime and violence, and can be addressed through various policy approaches. In particular, in light of the costs to taxpayers of incarceration, shifting resources from the penal system to social programs aimed at reducing poverty and disadvantage would represent a more cost-effective (preventative) strategy to controlling crime and violence.

*Complex links.* Income, or the lack of it—and in particular the adequacy of disposable income—influences individual and family behavior, investments in children, and social networks. Lack of income may operate on crime and violence through a direct income effect; robbery, for instance, makes desired goods attainable. Increases in income may also increase consumption of criminogenic goods like alcohol and drugs.

For low income families, if parents are actively engaged in the labor market, then there may be little time for parental supervision and investments. Conversely, additional income may lead to higher quantities and quality of parental investments in children. More generally, recent evidence supports the notion that poverty, as a condition of scarcity, increases stress and impedes decision making. It forces people into a kind of cognitive tunnel that, on the one hand, makes them less aware of cognitive biases in making economic decisions and, on the other, imposes a significant “cognitive tax”<sup>33</sup> that limits the individuals’ ability to perform well. It may deplete the self-control and cognitive ability of the poor and even influence antisocial behavior. Finally, while additional resources render more affordable changes in routines and investments that lower certain types of victimization, they may also entail higher returns to crime and more leisure time spent outside the home, thereby increasing the likelihood of victimization. The relative importance of risk versus protective factors associated with income cannot be established theoretically: the impact of income on crime and violence is ultimately an empirical matter.

The evidence from both developing and developed countries points to a causal relationship between income and crime and violence.<sup>34</sup> In particular, additional income targeting low-income segments of the population has been shown to lead to sizable reductions in

- Criminal activity, the benefits being heavily concentrated among male youth<sup>35</sup>
- The number of adolescent male arrests, including arrests in connection to violent crime<sup>36</sup>

In particular, recent studies have found that conditional cash transfer programs (CCTs) have had the positive yet unintended consequence of reducing crime and violence. In Brazil, CCTs led to important declines in violent and drug-related crimes, in addition to robberies (Chioda, De Mello, and Soares 2015). In Colombia, property crime declined significantly on the days immediately after beneficiaries received their transfer payments (Camacho and Mejia 2013).<sup>37</sup> Blattman, Jamison, and Sheridan (2015) also highlight the importance of income in shaping antisocial behavior. The authors randomized grants in combination with behavioral therapy targeting executive functions to criminally engaged Liberian men. Cash alone and therapy alone dramatically reduced crime and violence, but the effects dissipated within one year. More persistent crime reduction (50 percent after one year) was observed when cash and therapy were combined, speaking to the importance of both the resources and soft skills channels.

### *Evidence points to two sets of mediating factors*

In influencing crime and violence, two main channels are at work, with particular nuances for LAC:

- *The resource channel.* Additional income may improve the ability of households to devote sufficient resources to children’s development in the form

of goods and time (improving the quantity of parenting). Pure income effects on crime matter more for developing countries, reflecting the inability of families to achieve the desired degree of consumption smoothing, likely the result of credit constraints. Consistent with this observation, the resource channel has been found to be more prominent in LAC than in developed countries, reflecting higher levels of poverty and the greater prevalence of credit constraints (Fiszbein and Schady 2009; Bobonis 2009; Macours, Schady, and Vakis 2008).

- *The family process channel.* Additional resources can improve the psychological well-being and mental health of parents, resulting in higher quality of parenting. Across developing and developed countries, the family process channel for parents emerges as a vital mechanism in shaping children's outcomes, particularly behavioral outcomes such as aggression and bullying tendencies (Yeung, Linver, and Brooks-Gunn 2002; Ozer and others 2010, 2011).

The effects operating through the family process channel are frequently much larger than those operating through the resource channel.

*Unintended consequences.* One of the channels through which additional household income affects violent criminal behavior of youth and adolescents is through increased parental supervision—made possible by a reduction in the time that parents (typically the mother) allocate to work outside the household.

Cautionary lessons emerge from research identifying the impacts of additional household resources in the form of welfare programs that are conditional on employment.

While additional income is unambiguously welfare-enhancing, all else equal, additional resources that are conditional on work generate a tradeoff between the additional income provided by the transfers and the reduction in the quantity and quality of time parents can devote to parenting and investments in their children. The unintended consequences take the form of adverse effects on children in the household, who exhibit more behavioral problems and criminality. The observed negative effects are especially large for adolescents.

The relationship between income, parental labor force participation, and children's outcomes is of great importance in the design of policies that focus on the transition from welfare to work and out of poverty. These considerations are particularly relevant for single mothers, who are at elevated risk of stress given their status as the sole income earner and parent in the household, and highlight the need to consider policies more comprehensively and to foresee their possible unintended consequences.

### *The expanded menu of policies*

When considering policies related to income and poverty and their possible effects on crime and violence, the entry point for policy is no longer limited to the family and school, but extends to communities (defined as geographic units or groups of individuals who may be targeted by a social program). Unlike early interventions that



target young children and youth who are in or leaving school, the focus is now on individuals who, as earners, expand their “sphere” of interaction to include not only family members and peers but also local labor markets, coworkers, and the welfare system, among others.

## Does crime respond to features of labor market incentives?

Legal labor income is ascribed an important theoretical role in its relationship with antisocial behavior. Participation in the labor force generates “incapacitation” (that is, it crowds out the time that could otherwise be used in criminal activities) and traditional income (the latter is discussed in the previous section) among those employed. In addition, labor force participation builds social networks, strengthens social identity, and forges bonds with the community that act as protective factors against offending. However, there may also be crime and violence costs associated with labor force participation. For parents, these include important tradeoffs between employment and the quantity and quality of parental supervision; for youth, especially those at risk, employment may interfere with investments in education.

The multiplicity of theoretical links between employment and antisocial behavior has generated a rich body of economic and criminological research. Various studies have found that individuals at the margin of offending, particularly those with low skills, are responsive to certain incentives in the labor market, notably unemployment, quality of employment opportunities (including formal jobs), and wages. Thus crime prevention can include well-targeted labor market policies.

*Employment and unemployment.* Crime and violence are largely unrelated to the overall unemployment rate for the entire workforce. Aggregate unemployment is arguably too coarse a measure of labor market conditions since it aggregates across individuals with heterogeneous skills and different likelihoods of criminal offending. Instead, crime and violence are responsive to the unemployment rate of the segments of the population at higher risk of offending: youth and low-skilled workers. Hence, *focusing solely on unemployment misses the important point that crime and work may coexist*. Large proportions of offenders in the United States are employed at the time of the crime (Grogger 1998; Fagan and Freeman, 1999). Similarly, in Mexico, perpetrators are employed at significantly higher rates than the general population, irrespective of their age and the type of crime they have committed.

Criminals do not appear to make “all-or-nothing” decisions to perpetrate. They remain attached to the labor market as they engage in criminal acts, challenging the view that any form of employment is a protective factor against crime and violence. The interaction between legal and illegal work is fluid and complex.

Why? In the face of low wages, individuals may choose to reduce their work efforts to devote more time or effort, or both, to crime, especially in contexts where the returns to illegal labor may be significant. This type of response to labor market incentives will not be captured by movements in labor force participation.

*Wages.* Thus, studying how the relevant wages of those at risk of offending related to illegal behavior may be a more appropriate avenue to reconcile how offending and employment coexist, and it offers two important insights.

First, market wages in the low-skilled segment of the labor market are powerful determinants of criminal behavior, including violent crimes. They can tip work choices toward legal or illegal activities—especially in contexts where the expected returns in the illegal markets may be high. Indeed, the elasticity of offending with respect to wages in low-skill jobs exceeds that with respect to the rate of unemployment of low-skilled workers.

Second, this line of research provides strong support for the hypothesis that work and illegal activities should not be thought of as mutually exclusive; rather, individuals “double up” by combining legal and illegal work in an overall strategy to earn higher incomes (see Grogger 1998; Fagan and Freeman 1999).

*Not all employment is created equal in terms of its “protective” benefits.* Studies in both the United States and LAC have found that the quality of employment opportunities matters for crime and is particularly relevant for male youth.<sup>38</sup> Higher-quality employment opportunities for young adults that ensure stability, formality, wage growth, and opportunities for advancement and skill formation have strong protective properties against crime and violence, especially in a context in which young adults may be tempted to or actually supplement legal employment with criminal activity.

*By contrast, early and low-quality employment can be a risk factor.* Adolescents and young adults who start their work lives early, working long hours at low-skill, low-paying informal jobs alongside “bad” peers (who may have low education and skill sets, and are potentially already involved in illegal activities) are at particularly high risk of dropping out of school permanently, or of moving into crime, or both. Early intensive attachment to the labor market may thus have counterproductive consequences because the opportunities available to adolescents tend to be of low quality.

### *Can policy improve the labor market opportunities of individuals at the margin of offending?*

One implication of these observations is that policy could attempt to address criminality that results from the low-skill/limited prospects employment equilibrium with well-targeted training programs that build human capital, improve skills, and raise stakes in the labor force.

Various studies offer insights as to where to focus such training. Demand-side programs alone that stimulate demand for the labor of at-risk individuals have often been shown to be ineffective (Bushway and Reuter 2002).<sup>39</sup> This conclusion is consistent with the results discussed above. In particular, demand-side programs stimulate demand for at-risk individuals’ preexisting sets of skills, rather than improving soft and vocational skills that can lead to higher-quality employment opportunities.

Supply-side interventions that develop participants' skills fare better. But there are some limitations.

- Transitional employment programs for ex-offenders are frequently found to be unproductive in terms of reducing recidivism (that is, reducing the risk that the ex-offender would relapse into criminal behavior), although there is some evidence as to their effectiveness among older and higher IQ ex-offenders, who are on average at lower risk of re-offending and, perhaps, more motivated to reintegrate into legal life and employment (Bushway and Reuter 2002; Bloom, Gardenhire-Crooks, and Mandsager 2009; Raphael 2010).
- Intensive skill training programs, directed at high-risk youth show more consistent promise, particularly if the investment in participants' human capital is substantial (Schochet, Burghardt, and McConnell 2008; Raphael, 2010; Attanasio, Kugler and Meghir 2011; Card and others 2011). These programs, which typically last six to eight months, include an array of components, including technical and life skills/behavioral training, academic skills, and placement assistance, among others. However, larger and longer-term effects tend to be concentrated among older individuals who are at relatively lower risk.
- Encouraging results also emerge from short-term interventions that target at-risk youth in school and complement summer job opportunities with approaches, such as cognitive behavioral therapy, that effectively help them control behaviors that can lead to crime and violence.

In sum, while well-targeted training programs that build human capital, improve skills, and raise stakes in the labor force show promise, further research is needed on how to effectively design supply-side interventions that develop the skills that will have long-lasting impacts on at-risk (out-of-school) individuals. Complementing training with job opportunities could enhance the potential benefits of supply-side programs. However, the potential displacement of existing workers—who could also be at the margin of offending—remains an unresolved issue.

## **The effect of neighborhood characteristics and social networks on crime and violence**

Crime and violence are localized and persistent, as the introduction discussed. Thus it is important to understand how certain features of localities may encourage or deter crime. Two dimensions, in particular, have drawn the attention of researchers and policy makers:

- The social context, including such aspects as community pride, social cohesion, and sense of control. The social context (frequently determined by geographic proximity), networks of relationships, and community norms can influence behaviors that are social in nature, such as crime.

- Physical characteristics, including the quality (or lack of quality) of housing, infrastructure such as street lighting, and the presence/absence and condition of neighborhood amenities such as parks.

*Observational studies*, which relate individual behavior to neighborhood characteristics, attribute an important role to the social and physical aspects of neighborhoods, especially in explaining antisocial behavior, including crime, and risky behaviors, such as drug use, alcohol consumption, and truancy. However, interpreting changes in crime and violence as the result of changes in the social and physical characteristics of a neighborhood is inherently difficult because such changes could also be consistent with a variety of other explanations, including, for example, changes in the individual characteristics of the inhabitants of the neighborhood (Manski 1993).

*Experimental and quasi-experimental studies* deliver findings that may at first glance seem somewhat disappointing. Neither “better” neighborhoods alone (which have lower levels of poverty and higher degrees of social cohesion and control) nor improved physical characteristics alone (better housing, better lighting, less graffiti, and so on) may be sufficient to yield better outcomes in terms of preventing or reducing criminal and violent behavior. However, underlying these seemingly disappointing conclusions are some important lessons about the actual mechanisms at work in neighborhoods and social networks as they relate to crime and violence, with implications for improving policy; these lessons include:

- Relocating people to better neighborhoods (that is, neighborhoods with higher social cohesion and social control, and lower poverty) may yield important benefits—but mostly for adults and girls. Paradoxically, disadvantaged at-risk boys seem to fare better in poorer neighborhoods, where they commit fewer crimes and score better in emotional well-being.
- Physical characteristics of localities alone do not appear to be sufficient to deter crime. The reality is more complex. The state of the physical environment acts as a marker for a set of intangible community characteristics, including social cohesion and a higher likelihood of reporting crime, that in turn serve to deter crime and violence.

These insights are important for policy since interventions at the neighborhood and community levels, including many popular ones, do not always work as expected. Better understanding of these aspects, and their interrelationships, will lead to better policy interventions.

### *Neighborhood effects*

Some of the most rigorous evidence is provided by a series of studies on the Moving to Opportunity (MTO) for Fair Housing Demonstration in the United States in the 1990s.<sup>40</sup> MTO randomly relocated groups of low-income families into neighborhoods

with very different characteristics, such as higher levels of social cohesion and control, police responsiveness, and lower poverty.

*Short-term effects were encouraging.* Delinquency among youth declined. Violent crime arrests fell for young males and females, and female arrest rates were lower also for other types of crimes (Kling, Ludwig, and Katz 2005). However, benefits disappeared several years after the program was implemented, when most children in beneficiary households were adolescents. In particular, the effects for male and female youth diverged: while the protective effects persisted for females, the incidence of arrests for property crime increased among males.<sup>41</sup> Female youths also reported engaging in fewer risky behaviors such as consuming alcohol or marijuana, as well as a higher likelihood of being enrolled in school. In contrast, not only did males engage in more criminal acts, but they also adopted more risky behaviors.

The striking gender differences in youth outcomes appear to be explained by differences in behavior and daily routines,<sup>42</sup> but also in the way in which boys and girls were viewed and treated in their new neighborhoods (Kling, Ludwig, and Katz 2005; Clampet-Lundquist and others 2011; and Kessler and others 2014). Girls had better baseline interpersonal skills and could more readily acclimate to the new neighborhood, where they were also viewed more favorably. As Kessler summed it up, “When the boys came into the new neighborhood, they were coded as these juvenile delinquents. Whereas the girls [were] embraced by the community—‘You poor little disadvantaged thing, let me help you’” (Sloat 2014).

These findings may seem disappointing at first glance. However, the improvements in neighborhood characteristics had important effects on the mental health and well-being of residents, though these benefits were not universally shared. Adults and girls significantly benefited from improved neighborhoods. The magnitude of the improvement in girls’ mental health was roughly equal in size to that of the depression that results from sexual assault among young women, only of opposite sign. By contrast, the well-being of boys declined: the incidence of post-traumatic stress disorder (PTSD) increased among boys who were relocated from low-quality neighborhoods to levels comparable to those found among veterans of war. The paradox of disadvantaged boys faring worse in terms of criminal involvement and mental health has also been documented in other contexts. It highlights the roles of alienation, neighborhood segmentation, and local inequality, more generally, in shaping problem behaviors.

### *Broken windows, disorder, and cues from the environment*

In an influential article in the *Atlantic Monthly*, Wilson and Kelling (1982) posited that addressing minor disorders could help reduce more serious crime. They argued that potential criminals take cues from their environment and adjust their behavior based on what they observe: thus broken windows or other forms of neighborhood disorder are symbols of unaccountability and signal that transgressions will not be punished.

In spite of its popularity, there is very limited evidence supporting this theory (see the next section on deterrence for a discussion of “broken-window policing”).

*Small stakes experiments.* Experiments in which the orderliness of public spaces is manipulated (through changes in relatively small features such as graffiti or illegal parking) are at best suggestive of a link between the physical environment and antisocial behavior. Keizer, Lindenberg, and Steg (2008) show that if people see one norm or rule being violated (such as graffiti or a vehicle parked illegally), they are more likely to violate other minor norms, such as littering or stealing an unattended 5-euro bill left outside a graffiti-covered mailbox. However, because the experiments’ stakes are relatively small (both their returns and the costs of being caught are low), it is difficult to generalize to higher-stakes environments; that is, it is difficult to determine whether misconduct would spread to higher payoff crimes for which the consequences in terms of penalties are more severe.

*Larger-scale interventions.* Some support for the broken-window hypothesis is found in certain observational studies of larger-scale interventions. For example, an urban upgrading project in poor neighborhoods of Kingston, Jamaica, added street lighting and removed fencing, with some reductions in crime (Guerra and others 2012). Nonetheless, the observed reduction in crime could be also explained by factors unrelated to urban upgrading—for instance, increased traffic on the street during the cleanup phase and employment of at-risk youth to remove the fences. Rigorous research on the causal impacts of physical disorder and of urban upgrading on crime has yet to replicate these tentative results of the Jamaica project, although this field is still in its infancy.<sup>43</sup>

*In situ upgrading (on-site improvements).* Compared to advanced economies, where large-scale interventions such as MTO have been undertaken, in situ interventions are more common in LAC. Rather than displace individuals and families, these interventions provide improved housing and neighborhood amenities for recipient households or neighborhoods, or both. Examples include urban upgrading schemes, which enhance or alter the attributes of existing neighborhoods. One of the first rigorous studies of the causal impact of *housing upgrading* on crime and the well-being of extremely poor households in LAC yields conclusions similar to those that emerge from the long-term evaluations of MTO (Galiani and others 2013). First, neither appears to reduce the incidence of crime and violence. Second, although both interventions had the objective of reducing the concentration of poverty or achieving other economic goals such as self-sufficiency, they were more successful in changing cognitive and physical elements of individuals’ well-being (such as adult physical and mental health and subjective well-being). To quote Sampson (2012), these interventions “impacted what the residents cared most about, rather than what policy makers deemed most important.”

*Street lightning.* Quasi-experimental studies in the United States and the United Kingdom deliver promising evidence on the deterrent effect of improved street lighting; crime fell between 7 and 20 percent (Welsh and Farrington 2008). Interestingly,

the decline occurred during both the day and the night. None of the evaluations found that nighttime crime fell more than daytime crime. Deterrence does not appear to operate through greater visibility, which in turn might lead to higher detectability. Instead, the evidence is consistent with the theory that improved lighting boosts community pride and social cohesion and, to a certain extent, increases social control over what happens within the community. Improved lighting might be effective in deterring crime only under certain circumstances, although the exact confluence of circumstances remains unresolved and should be the subject of future research that must overcome methodological difficulties.

*Additional Remarks.* At least in the short run, it is difficult to engineer a sense of community pride and social cohesion in support of lawful institutions simply by externally altering a low-income neighborhood's appearance and makeup. Community pride and social cohesion can be malleable and can be responsive to policy—as suggested by Medellín's urban, social, and educational transformation engineered during the latter half of the 2000s. Nonetheless the causal relations and interdependencies are complex and remain elusive and require more study.

Policy makers should be cautious about the unintended consequences of certain relocation experiments. Recent studies show that, while they may have meaningful benefits for parents and girls, they can also lead to fragmented neighborhoods or segmentation of subgroups of the population, especially among disadvantaged boys (Kling, Ludwig, and Katz 2005). These results represent something of a conundrum for policy makers: how does one trade off the substantial welfare gains for girls and adults against the harm that results for boys? Are relocation efforts that aim to break up clusters of poverty ultimately detrimental? Answers may lie in future research that endeavors to understand the interactions between the individual, family, and neighborhood so as to guide policy regarding public housing, neighborhood upgrading, and relocation experiments. Regarding the latter, in all likelihood, thoughtful strategies are required to prepare young boys in the transition following relocation (such as providing case worker assistance or a mentor in the receiving community), and some preparation may be necessary in the receiving communities as well.

## **Deterrence: The role of incentives in the justice system**

What can the criminal justice and penal systems do to deter crime and violence more effectively? To what extent do criminals and potential criminals take into account the probability of being caught and the harshness of prison sentences before they commit criminal and violent acts? Can the criminal justice system be made more efficient in its ability to maximize deterrence by finding the optimal combination of two key policy parameters: the certainty of sanctions and the severity of sanctions? The available body of research offers provisional answers to these questions.

### *Severity of sanctions: The length of prison sentences exhibits diminishing returns and may have unintended consequences*

Overall, the severity of sanctions has only a weak deterrent effect on criminal offending. Moreover, as sentences lengthen, the additional deterrence declines, and there are diminishing returns to longer sentences. In particular, when sentences are not commensurate with the gravity of the crime, the severity of offenses may escalate. Prominent examples include so-called “three strikes” laws that impose a zero marginal cost of gravity of crime after the second offense—the punishment for the third offense does not depend on its gravity. Such types of sanctions can lead criminals to commit more serious crimes—a form of moral hazard (Iyengar 2010).

Longer sentences and harsher prison conditions may have sizable unintended consequences, increasing the likelihood that ex-offenders will commit more crime after they are released from jail. For prisons to deter reoffending, it is paramount to ensure that time served is productive in the sense that it improves offenders’ education, pro-social and decision-making skills, self-control, and employability.

Further evidence on the potential unintended consequences of imprisonment on recidivism emerges from research that considers alternatives to status quo prison sentencing. Rigorous evidence on electronic monitoring (EM), for instance, is provided by the experiences of England and Wales (Marie 2013) and of Argentina (Di Tella and Schargrodsky 2013), with remarkably similar positive conclusions. Electronic monitoring<sup>44</sup> is more effective than incarceration in reducing recidivism, with an approximately 50 percent decline in recidivism in Argentina. This alternative sentencing strategy also generates large short term savings to society: \$18,460 per offender relative to imprisonment, or 2.4 times Argentina’s average GDP per capita in 2009.

*Prison may do more harm than good for young offenders.* Adolescents and youth are not particularly responsive to the length of sanctions—including when facing much harsher penalties imposed at majority and by the legal definition of adulthood—either because young people are myopic or they underestimate sentence lengths (Hjalmarrson 2009; Lee and McCrary 2009; Guarín, Medina, and Tamayo 2013). Moreover, young offenders tend to build more criminal capital and expand their criminal networks in prison more than older offenders. These crime-inducing (crimogenic) effects are large, and have led some researchers to provocatively conclude that a better strategy would be to let youth “age out” of crime and do nothing to arrest or jail them.

### *Certainty of sanctions (the likelihood of being caught): Some forms of policing work better than others*

*The size of the police force.* The second central policy parameter that affects the expected value of punishment is the probability (or the perception of the certainty) of punishment. This notion is intrinsically related to the probability of detection and, thus, to policing.



The certainty of sanctions has been found to have a larger deterrent effect than the severity of sentences. The likelihood of being caught depends on the size of the police force and the effectiveness of policing.

Most of the evidence on the effects on crime of the *size of the police force* comes from natural experiments and quasi-experimental studies. While results vary considerably, one consistent pattern does emerge: violent crime is systematically more responsive to the size of the police force than property crime.

Regarding the *effectiveness of policing*, the key message of rigorous studies is that some police deployment strategies work better than others. Some seem completely ineffective, such as rapid-response and broken-window policing (see below). Others deliver sizeable effects, such as hot-spots policing and problem-oriented policing. The latter strategies share a key element: the shift from reactive, incident-driven policing to a more proactive and preventive policing stance.

### *Policing methods that work*

*Hot-spots policing* builds on the observation that crime is highly concentrated—a few states, municipalities, and even street segments account for the majority of crimes. These are known as “hot spots.” The appeal of focusing limited resources on a small number of high-crime areas is straightforward. If crime can be prevented in these hot spots, then sizeable declines in crime can occur overall. Hot-spots policing has delivered noteworthy declines in crime and disorder (Braga 2008; Weisburd and others 2006). One of the main concerns regarding this strategy relates to possible displacement effects, whereby crime shifts to another area that is less heavily policed.

Whether crime is displaced depends on the nature of the crime and the extent to which the profitability of the particular crime is tied to specific geographic locales. For instance, drug markets and prostitution tend to be less mobile and harder to relocate. However, the channel through which hot-spots policing operates has not been formally established: it remains unclear as to whether it is incapacitation (due to arrest or imprisonment) of frequent offenders at hot spots or deterrence (through prevention).

*Problem-oriented policing* (POP) uses iterative approaches to identify, analyze, respond to, and evaluate the determinants of crime and disorder, and uses a wide array of (often nonstandard) approaches to reduce crime. POP is preventive in nature. It devises strategies to increase the likelihood of apprehension (which is a powerful deterrent) and to reduce criminal opportunities in ways that are tailored to the specific crime-related problems of a particular location or that involve a specific type of activity (such as altercations in schools). POP often engages various public agencies as well as the community and the private sector. POP has been shown to be effective against a wide array of crimes (Weisburd and Eck 2004; Braga and others 2001).

*Incapacitation vs. deterrence.* The preventive nature of both hot-spots policing and POP suggests the plausibility of the deterrence channel, rather than incapacitation. Indeed, reductions in crime do not appear to be achieved increases in arrests and convictions.<sup>45</sup>

### **Policing strategies that do not work**

*Rapid-response policing*, whereby police are rapidly deployed to scenes after crimes have been committed, does not reduce crime (Nagin 2013). By design, it operates only through an incapacitation effect rather than deterrence.

*Broken-window policing* strategies have been adopted in some form by many cities in the United Kingdom, Indonesia, the Netherlands, South Africa, and the United States since Wilson and Kelling published their influential article in 1982. In particular, laws related to minor misdemeanors have been aggressively enforced, and policing has been stepped up even for victimless crimes, such as panhandling. Surprisingly little consensus has emerged about the effectiveness of such policing strategies. The most methodologically careful studies provide little support for the hypotheses that underpin broken-window policing.<sup>46</sup> Most importantly, the evidence suggests that alternative forms of law enforcement, such as those discussed above, are more cost-effective.

### **Closing remarks**

Overall, research suggests that potential offenders respond to incentives set by the criminal justice system (in the form of sentence lengths and certainty of sanctions). However, certain combinations of incentives may yield bigger reductions in crime, while others may even be counterproductive. For a given level of expected punishment, shorter-but-certain sentences appear to have the largest deterrent effect.

The evidence suggests that efforts to increase police resources as a crime-prevention strategy are incomplete without details as to how the resources will be employed. Furthermore, establishing whether these policing strategies operate through deterrence or incapacitation is critical for designing policies and understanding their social costs. If law enforcement is able to deter potential criminals, then the social cost of police-induced crime reductions is relatively low. If, instead, the effect of heightened police presence is simply to increase the number of arrests and subsequent incarcerations, then it could be more efficient to allocate resources to a strategy that prevents crime (Owens 2013).

While there is cause for optimism regarding hot-spots and problem-oriented policing deployment strategies, their efficacy is likely to depend on the context. In particular, the evidence comes largely from developed countries. The crime-reducing effects of police plausibly depend heavily on the quality of and trust in local institutions, such as law enforcement and the criminal justice system, especially in contexts where trust in police may be compromised. As discussed in the section on stylized facts, victimization rates in LAC are significantly related to the degree of corruption and corruptibility of law enforcement.

## Final thoughts

*An expanded menu of policies.* The interventions discussed above and the mechanisms underlying their effectiveness provide reason for cautious optimism. They also highlight the complexity of the crime and violence phenomenon. Complexity notwithstanding, the available evidence makes it fairly clear that it is never too early nor too late for prevention policies. While long-term approaches to prevention may begin before birth with successful results in adolescence and adulthood, effective policy interventions with shorter-term horizons are also available. Importantly and contrary to the popular belief that it is “impossible to fix a crooked tree,” a wide range of crime-preventing interventions applied later in life have shown to be effective. This in part reflects the now better-understood fact that there is substantial plasticity in humans at older ages—including with respect to brain functioning critical to regulating risky behaviors and especially during adolescence and young adulthood—that allows greater margins for affecting behavior away from crime and violence through suitable interventions. At-risk individuals and offenders are responsive to incentives, including those set by labor markets and the criminal justice system. Policy designs that carefully identify and take into account incentive effects can therefore be exploited to discourage criminal acts. Furthermore, improved understanding of brain function and physical and socioemotional development serves to expand the menu of available policy options, as evidence is mounting on the effectiveness of behavioral, nutritional, and even mindfulness interventions, all of which are known to affect the brain’s structures and its chemistry as well as habits and self-control.

Equally important, recent research also sheds light on popular yet less promising avenues for prevention. “Get tough” approaches which expose offenders and at-risk individuals, particularly adolescents and young adults, to strict discipline (for example, boot camps and youth transfer laws that allow juveniles to be tried and punished as adults in the courts of law) and attempt to shock them out of future crime tend to command political and popular support, in part because they cater to the public’s taste for law and order and discipline. Yet rigorous studies indicate that these interventions are largely ineffective and can even backfire (for instance, jail time for the youth can intensify their incentives and wherewithal to engage in criminal behavior after jail),<sup>47</sup> indicating that merely imposing harsh discipline on young offenders or frightening them is unlikely to help them refrain from problem behavior. Better ways of turning around at-risk youth involve teaching them how to engage in positive behaviors by correcting maladaptive thinking patterns and behaviors rather than by punishing them for negative ones.

*Harnessing interdependencies.* As discussed, crime and violence exhibit substantial spillovers across time, space, individuals, and generations. The success of crime-prevention strategies thus may rest on their ability to exploit these temporal and spatial dependencies. More importantly, the deployment of policies that harness these interdependencies may lead to greater crime prevention than the sum of the individual

policies would predict.<sup>48</sup> Developing a comprehensive response to violence then poses a practical challenge for governments, as it requires substantial coordination across ministries.

*Redesigning existing policies through the lens of crime prevention can be cost effective.* Comprehensive short- and long-run prevention strategies involve a wide array of interventions that target the different stages of the life cycle and the individual's different spheres of influence (for example: families, schools, neighborhoods, etc.), all of which requires high degrees of political will and coordination. This may seem a daunting task, particularly in the face of binding budget constraints. Where to begin? Does crime prevention imply abandoning existing policies? The evidence presented offers cause for some optimism.

First, certain findings highlight how a number of policies and interventions not specifically designed to prevent criminality have substantial crime-prevention benefits, such as early childhood development, mandatory education, and poverty-reduction programs. In other words, important crime-prevention features may already be embedded in existing social and educational programs; hence, important gains could be achieved by identifying, redesigning as needed, and suitably harnessing existing policies with a more deliberate crime- and violence-prevention purpose. For instance, vocational training could be directed specifically to at-risk youth and augmented to include socioemotional skills components targeting executive functions; the conditionality of CCTs could be extended to require completion of secondary school; and laws governing the minimum dropout age could be enforced more strictly, and urban upgrades and improvements to infrastructure could be implemented to foster social cohesion in communities and minimize marginalization of at-risk individuals.

Furthermore, most of the interventions discussed in the study are relatively inexpensive in absolute terms (that is, on a cost per participant basis), including intensive ones and those whose treatment programs are highly customized, such as Multisystemic Therapy. Perhaps more important, on the basis of crime prevention *alone*, their cost-effectiveness is extremely elevated, even for conservative estimates of the cost of crime. The obstacles to implementation of many of these interventions may lie in the human capital required to deliver them. This involves both specific knowledge and, possibly more important, intangibles such as the ability to connect and establish functional relationships with at-risk youth, parents, and children, so as to earn their trust and the de facto increase the take-up rate. For many of these programs, this may require that benefits accrue not only to program participants but to their children as well, such that the programs bear returns across generations.

*Beyond targeting: take-up is a key feature to ensure efficiency and effectiveness.* One of the most distinctive features of crime is its concentrated nature. Crime clusters geographically (in a few municipalities and street segments), over the life cycle (during adolescence and young adulthood), and across individuals (with chronic offenders accounting for a disproportionate share of crimes). Considerable reduction in

crime cannot be achieved without targeting hot spots, youth, and chronic offenders. However, ensuring that those segments of the population in which crime “concentrates” benefit from promising interventions may not be as simple as it appears. With high-quality data, policy makers will know critical age groups and where at-risk individuals and offenders concentrate. Yet, most of the programs in question—vocational and behavioral training, early education, and even certain forms of urban upgrading—tend to be on-demand. That is, individuals voluntarily select into these programs by signing up for them. However, selection into the pool of beneficiaries is often inversely related to the likelihood of being at-risk; that is, participants tend to be more motivated, have relatively higher abilities, and have more concerned parents, etc.

The inability to reach those at elevated risk of involvement in crime and antisocial behavior may severely weaken the crime-prevention potential of the interventions. As such, the take-up rate among the at-risk population should be viewed as an important intermediate policy outcome, which could determine both efficacy and efficiency of the crime- and violence-prevention strategy. Indeed, in the context of policies and programs for which the scope for self-selection is minimized, such as laws defining the minimum dropout age or efforts to increase school quality, the greatest benefits are typically concentrated among those most at risk.

*The role of institutions.* Finally, by design, this study does not focus on institutions. However, in a number of analyses specific to the region, indicators of the quality of institutions and of police corruption in particular emerged as powerful predictors of victimization rates. Furthermore, the effectiveness of school- and community-targeted policies relies heavily on the institutional capacity to deploy them, with the outcomes of community-based programs being particularly sensitive. As noted in Sherman’s (1998) report to the U.S. Congress: the community context of crime prevention requires a critical mass of institutional support to deter criminal behavior informally. Without that critical mass, neither families, nor schools, nor labor markets, nor police, nor prisons can succeed at preventing crime. These observations highlight the central role played by institutions, law enforcement, and the justice system in building trust and social capital.

## Notes

<sup>1</sup> The safest country in Latin America and the Caribbean is Chile, with just 2.74 murders per 100,000 people in 2013. Only 10 countries in the region have homicide rates below 10. These are Chile, Cuba, Argentina, Suriname, Peru, Barbados, Uruguay, Dominica, Costa Rica, and Paraguay.

<sup>2</sup> Since 2000, the number of homicides in El Salvador per year has been above 30 per 100,000—five times the world average. It peaked at over 60 homicides per 100,000 before a truce was declared between maras (gangs) in March 2012. The truce has since unraveled, and homicides escalated again in 2014. Experts forecast that the country may surpass Honduras as the most violent country in the world.

<sup>3</sup> Drug-related crimes have gradually but persistently increased over the past decade, according to crime reports compiled by the United Nations Office on Drugs and Crime.

<sup>4</sup> A study by the U.S. Centers for Disease Control and Prevention (CDC), “Gang Homicides—Five U.S. Cities, 2003–2008,” concludes that 90 percent of gang-related homicide incidents in the United States involve firearms, and that perpetrators are mostly young (CDC 2012).

<sup>5</sup> For instance, the study does not discuss secondary prevention programs that intervene when youths have been injured by gang violence, such as hospital emergency department interventions that might interrupt the retaliatory nature of gang violence and encourage youths to exit gangs.

<sup>6</sup> Throughout the study, “policy margins” or simply “margins” refer to opportunities for policy intervention.

<sup>7</sup> The World Bank sets the “moderate” poverty line at 4 purchasing power-adjusted U.S. dollars per person per day.

<sup>8</sup> This relationship is studied with the help of a detailed dynamic panel data analysis based on a sample of 19 LAC countries over the past 15 years, focusing on predictors of year-to-year changes in homicide rates within country (Chioda 2014a).

<sup>9</sup> In a rational Beckerian model of crime (Becker 1968), unemployment would lead to more crime by lowering its opportunity cost and increasing the attractiveness of illegal income. On the other hand, routine theory suggests that unemployment would, in the very short run, increase more home-based activities, so that the impact of unemployment on crime might be indeterminate in the short run.

<sup>10</sup> Perpetrators of all ages are employed at much higher rates (above 85 percent) than their counterparts in the general population (around 60 percent employed) and in the adult population (Chioda 2014c).

<sup>11</sup> This idea originates from evidence emerging from developed countries (see Grogger 1998; Fagan and Freeman 1999).

<sup>12</sup> For instance, trade agreements or improved infrastructure significantly increases the number of cross-border transactions, which mechanically lower risk of detection if the proportion of inspected transactions does not remain constant.

<sup>13</sup> The state of Chihuahua occupies a strategically and logistically unique position in terms of U.S. ports of entry, and has experienced dramatic deteriorations in security.

<sup>14</sup> In contrast, over the same period, the state of Yucatan experienced a decline in homicides from 2.7 per 100,000 in 2000 to 1.8 in 2010. Variance across municipalities is likewise substantial. In Mexico, the closest 25 percent of municipalities to the U.S. border accounted for 58.6 percent of total homicides in 2010, while the furthest 25 percent accounted for only 8.4 percent.

<sup>15</sup> The lower magnitudes may in part be due to the much larger sizes of Brazilian states and the more geographically targeted nature of violence in Colombia.

<sup>16</sup> The most recent year available for which the U.S. Department of Justice reported figures disaggregated by age and race is 2008.

<sup>17</sup> In particular, this is a critical phase of development of the frontal cortex—the locus of executive functions—which regulates impulsivity, risk-taking behavior, delayed gratification, and self-control (Raine 2013).

<sup>18</sup> In this section victimization refers to both violent and property crimes. It is worth acknowledging that, among violent crimes, homicides remain rare events.

<sup>19</sup> Their effects all tend to be of the expected sign, with trust in police and in the judicial system associated with 0.8 and 2.6 percentage points lower likelihood of victimization, respectively.

<sup>20</sup> These findings are consistent with the conclusions of Di Tella, MacCulloch, and Ñopo (2009).

<sup>21</sup> Victimization measured by LAPOP and LatinoBarometro refers to property and violent crimes.

<sup>22</sup> In the longitudinal analysis it is not possible to distinguish between violent and property crimes, the latter representing the larger share of crimes. In practice, higher income individuals are more often targets of property crime.

<sup>23</sup> Studies from London and Pittsburgh have shown that over 60 percent of crimes were committed by members of fewer than 10 percent of families (Farrington and others 1996, 2001). In their study of Boston, Glueck and Glueck (1950) document that 66 percent of delinquent boys in Boston had a criminal father, compared to 32 percent of nondelinquents. A New Zealand cohort study documents that a family history of disorderly conduct, antisocial personality, and alcohol and drug abuse assessed in cohort members' parents and grandparents was a strong marker of antisocial behavior early in life and of persistent offending in adulthood (Moffitt 1990).

<sup>24</sup> More than 100 heritability studies of antisocial behavior indicate a range of heritability in antisocial behavior between 0 to 80 percent, with a modal value of 50 percent (Raine 2013), meaning that in the largest share of studies, 50 percent of the variation in antisocial and aggressive behavior is explained by genetic factors. Furthermore, large sample twin studies (Arsenault and others 2003; Moffitt 2005; Viding and McCrory 2012) have shown that genetic influences are particularly strong for criminal careers that start at an early age and persist over the life cycle.

<sup>25</sup> The results detailed in the subsection pertain to the Elmira project (recently renamed Nurse Family Partnership, NFP). The results of its evaluation (Olds and others 1997, 1999) are particularly noteworthy and have been replicated in several contexts. NFP was awarded the rating of "model program" by the University of Colorado, Boulder's *Blueprints for Healthy Youth Development*. The *Blueprints* model programs are the highest quality U.S. youth prevention interventions focusing on violence, delinquency, and drug prevention that have demonstrated effectiveness.

<sup>26</sup> Children of women in the group that received home visitations during pregnancy only also experienced declines in arrests, though these were less dramatic than those of the more comprehensive program.

<sup>27</sup> Currie and Tekin's (2012) estimates indicate that the effects of maltreatment are large relative to other factors that have been studied in the economics literature such as unemployment (Corman and Mocan 2005), education (Jacob and Lefgren 2003), gun ownership (Mocan and Tekin 2006; Duggan 2001), the introduction of crack cocaine (Grogger and Willis 2000), the legalization of abortion (Donohue and Levitt 2001), and exposure to lead through paint or gasoline (Reyes 2007; Nevin 2007).

<sup>28</sup> This report documents a number of other interventions for which effect sizes are larger among more vulnerable participants. See the effects of the Brazilian conditional cash transfer (Chiolda and others 2015) and of dwelling upgrades in Mexico and El Salvador (Galiani and others 2013).

<sup>29</sup> Rather than weight the costs against some measure of the cost of crime, Raine (2013) considers *only* the benefits to society from the reductions in lifetime receipt of food stamps induced by the home visit program. With a total cost per birth of around \$11,511 in 2006, the food stamps savings *alone* amount to roughly \$12,300 per person.

<sup>30</sup> This conjecture finds support in the first study of the long-term effects of an ECD intervention in a low-income country setting, in Kingston, Jamaica (Gertler and others 2014).

<sup>31</sup> Jacob and Lefgren (2003) and Luallen (2006) observe daily changes in crime, such that their estimates are of contemporaneous effects of days in school. In contrast, Berthelon and Kruger (2011) can only measure crime at the annual level for the municipalities in their study, implying that their estimates are more medium-term in nature and, therefore, less comparable to those of Jacob and Lefgren (2003) and Luallen (2006).

<sup>32</sup> Effective behavioral interventions include cognitive behavioral therapy, functional family therapy, and life skills training.

<sup>33</sup> See Mullainathan and Shafir (2013) and, for a review, the *World Development Report 2015* (World Bank 2015).

<sup>34</sup> These findings are consistent with those discussed in the section on the physiognomy of crime and violence in LAC. In particular, proxies of poverty such as the (contemporaneous) incidence of teen pregnancy and low educational attainment are highly predictive of the level of violence, whereas GDP per capita appears to be unrelated, all else equal. Reconciling these results requires recalling that the relationship between GDP per capita and violence is highly nonlinear (such that the sign of the relationship depends on the level of per capita income). Furthermore, while GDP per capita measures the mean level of income, it fails to capture the degree of poverty. In turn, the above proxies express the same margin of poverty that is affected by exogenous changes in income studied in this section.

<sup>35</sup> See, for instance, Jacob and Ludwig (2010) and citations therein.

<sup>36</sup> In the United States, Akee and others (2010) and Jacob and Ludwig (2010) document 20 percent declines.

<sup>37</sup> Borraz and Munyo (2014) provide evidence from Uruguay that the criminal response to welfare payments may be sensitive to the method with which funds are delivered to CCT recipients. They show that the incidence of property crime increases when welfare payments take the form of cash (as opposed to a credit in a bank account, say).

<sup>38</sup> See Wadsworth (2006) for evidence in developed countries. In Mexico, Chioda (2014b) shows that the number of workers employed in the formal sector consistently predicts declines in the homicide rate. In Brazil, Chioda and Rojas-Alvarado (2014) show that not all employment is relevant to violence: only formal jobs for young men that have been created or destroyed are robustly related to homicides, while those for adults and women have no predictive power. Dix-Carneiro, Soares, and Ulyssea (2016) find that labor market conditions have a strong effect on homicide rates in Brazil. Exploiting the 1990s trade liberalization as a natural experiment, they document how regions facing more negative shocks experience larger relative increases in crime rates in the medium term.

<sup>39</sup> Demand-side programs aim to reduce the costs of employment borne by the employer through either wage supplements or subsidized bonds (insuring the employer against theft by the employee, who is an ex-offender or at-high risk of antisocial behavior). Among demand-side interventions are also community development programs, which lower costs for businesses locating in particularly needy communities.

<sup>40</sup> A subset of 4,600 low-income families with children living in high-poverty public housing projects were randomly offered housing vouchers to relocate into low-poverty areas.

<sup>41</sup> Interestingly, the effect on the total number of lifetime arrests was much larger than the effect on ever being arrested: offering vouchers yields much larger effects along the intensive margin of criminality (number of arrests) than along the extensive margin (any arrests at all).

<sup>42</sup> Clampet-Lundquist and others (2011) conclude that six factors likely contributed to the divergent experiences of young males and females: daily routines, fitting in with neighborhood norms, neighborhood-navigation strategies, interactions with neighborhood peers, delinquency among friends, and involvement with father figures. Females were significantly more likely to spend time in the neighborhoods of school and work places, and were typically indoors with friends or family, whereas boys more frequently spent their time outside or on the street. In particular, boys in the treatment arm were half as likely as control group males to describe a meaningful relationship with a close, caring male other than a biological father or to report that they had such a presence in their lives.



<sup>43</sup> For additional correlational evidence from the United States, see Sampson and Raudenbush (1999).

<sup>44</sup> U.S. Electronic Monitoring involves fitting offenders with electronic devices on the ankle or wrist that can be monitored remotely by correctional facilities that can verify whether the individual is violating a set of pre-established conditions.

<sup>45</sup> Nor does incidence of reported robberies and violent crimes decline in treatment areas.

<sup>46</sup> Indeed, Wilson conceded in a 2004 interview in *the New York Times* that the theory lacked substantive scientific evidence that it worked, adding: “I still to this day do not know if improving order will or will not reduce crime. People have not understood that this was a speculation” (Hurley 2004).

<sup>47</sup> Youth with conduct disorders are often angry and alienated, harboring feelings of resentment toward authority. “Get-tough” programs may fuel these emotions, boosting youth’s propensity to rebel and to adopt nonconforming behavior. Some programs may inadvertently provide adolescents with role models for bad behavior.

<sup>48</sup> For instance, crime prevention in one municipality will induce declines in crime in the neighboring municipality, such that adopting a global strategy in both municipalities will yield greater prevention than the individual strategies in isolation. Similarly, as a result of intertemporal linkages and the persistence of crime over time, crimes averted in one year yield declines in offenses in subsequent years. Similarly, given the intergenerational linkages in criminality, preventing one individual from embarking on a criminal career tends to do the same for his/her offspring.

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