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Brazil
Crime, Violence and Economic Development in Brazil
Elements for Effective Public Policy

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MAIN ABBREVIATIONS AND ACRONYMS

APAC	Associação de Proteção e Assistência Carcerária/aos Condenados
BNPP	Barisan National Pember-Basan Pattani
CEAPA	Central de Apoio e Acompanhamento de Penas e Medidas Alternativas
CESEC	Centro de Estudos de Segurança e Cidadania
CEJIL	Centro por la Justicia y el Derecho Internacional
CISALVA	Instituto de Investigaciones y Desarrollo en Prevención de Violencia y Promoción de la Convivencia Social
CPC	Código de Processo Civil
CPTED	Crime Prevention through Environmental Design
CRISP-UFMG	Centro de Estudos de Criminalidade e Segurança Publica, Universidade Federal de Minas Gerais
FEBEM	Fundação Estadual do Bem-Estar do Menor
FPA	Fundação Perseu Abramo
FGV	Fundação Getúlio Vargas
GIS	Geographical Information Systems
IBGE	Instituto Brasileiro de Geografia e Estatísticas
ILANUD	Instituto Latino Americano das Nações Unidas para a Prevenção do Delito eo Tratamento do Delinqüente
IMF	International Monetary Fund
ISER	Instituto de Estudos da Religião
NESEG	Núcleo de Estudos de Sexualidade e Gênero
NGO	Non Governmental Organization
PC	Polícia Civil
PM	Polícia Militar
PMMG	Polícia Militar de Minas Gerais
PPA	Plano Plurianual
PROERD	Programa Educacional de Resistência ás Drogas
SENASP	Secretaria Nacional de Seguranca Publica
SIM	Sistema de Informações sobre Mortalidade
SUSP	Sistema Único de Segurança Pública
UNESCO	Organização das Nações Unidas para a Educação, a Ciência e a Cultura
UNICRI	United Nations Interregional Crime and Justice Research Institute
USP	Universidade de São Paulo
WHO	World Health Organization
UN	United Nations

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TABLE OF CONTENTS

List of Figures

List of tables

List of boxes

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EXECUTIVE SUMMARY

Crime and violence rates are high in Brazil. In 2002 the country's homicide rate—32 per 100,000 inhabitants—was the fourth-highest in Latin America and the Caribbean. Not only is the Brazil's homicide rate quite high, it also has more than doubled since 1980. The prevalence of other forms of violence and crime are also worrying: according to data from victimization surveys, Brazil in the mid-1990s had the highest rate of victimization for robbery and sexual assault among 16 developing countries included in the survey; more recent data for 2001 show continued high rates of robbery and theft, with 9.8 percent of individuals being victimized. Intimate partner violence affects one in three Brazilian women.

This report documents levels and trends in violence and crime in Brazil since 1980 and estimates the impact that crime and violence have on the country's economy. But describing magnitudes and costs is only the first step; the report's more fundamental contributions are to provide a critical survey of approaches to public safety in Brazil and to identify good practices in the prevention of crime and violence through analyses of initiatives in Brazil and —where relevant—other countries.

Ten critical messages emerge from the report:

- *Crime and violence are far more than a criminal justice issue; they have significant negative impacts on economic growth.* According to various analyses at the city and state level, the direct costs of crime amount to 3 to 5 percent of GDP per year. Investment climate assessments in Brazil consistently identify crime and violence as a major constraint to business growth. Potentially more important is the impact of crime on economic growth. Preliminary estimates based on a cross-country analysis in this report suggest that a 10 percent reduction in Brazil's homicide rate might raise per capita income by 0.2-0.8 percent over the next five years.

- *There is no single solution to reduce levels of crime and violence in Brazil.* Since factors that contribute to crime and violence operate at multiple levels (individual, family and peer group, community and society), no single intervention, no matter how well designed and executed, will solve the problem. There are multiple entry points to prevent crime and violence, and this report identifies some of the approaches likely to pay large dividends in reducing crime and violence. They include prevention programs targeting at-risk youth and gender-based violence, controlling the sale of alcohol, police reform, and integrated municipal (and state) public safety programs.

- *While it is common to argue for either prevention or control responses to crime and violence, the two types of interventions are in fact complementary.* A more efficient and professional criminal justice system—and especially police forces—are essential to lower levels of impunity. Most police forces rely on antiquated, reactive policing models, and there is ample room to improve results by shifting to problem-oriented policing using modern information systems. At the same time, many types of crime and violence are most appropriately and cost-effectively dealt with by prevention activities.

- *Prevention activities are generally more cost-effective than control actions.* The preliminary estimates in this report suggest that in terms of crimes averted per *real* spent, prevention—particularly secondary prevention—is more cost-effective than control or repression; this result is consistent with evidence from other countries. Nonetheless, the criminal justice approach, focusing on police, prosecutors and the judicial system for control and repression, continues to be the dominant approach to crime and violence prevention in Brazil.

- *Effective institutions must exist for public safety strategies to work.* Brazil has begun to construct the institutions needed to coordinate public safety initiatives at the federal, state, and local levels. The Unified System for Public Safety (Sistema Único de Segurança Pública or SUSP) is a promising start, but it needs to be strengthened significantly.

- *States play a key role in the prevention of crime and violence.* States not only control the judicial and police apparatus, but also implement many of the social and public works programs that are key elements of integrated prevention programs. The capacity at the state-level to prevent crime and violence needs to be strengthened, as does coordination with, and support to, municipalities.

- *The municipal level is an important entry-point for the prevention of crime and violence, and integrated municipal programs—in Brazil and elsewhere—are one of the most effective ways to reduce crime.* Many municipalities in Brazil are assuming a crime and violence prevention role, but need more technical assistance, resources, and coordination with other levels of government to be fully successful. Where municipalities do not have the capacity to undertake crime and violence prevention programs, there is a need for the states to partner with municipalities to design and execute these programs.

- *Public policy for the prevention of crime and violence—whether at the national, state or municipal levels—must be constructed on a solid base of empirical information about crime levels, trends, and spatial distribution.* There are serious consistency problems between health sector homicide data and police homicide data, and data issues are even more serious for other types of crime and violence. Standardization of definitions, better data collection, formation of integrated information systems between institutions, and regular national and local victimization surveys should be a high priority.

- *There are several emerging good practice experiences in Brazil on which to draw.* While violence prevention may be in its infancy as a scientific discipline, there are extremely valuable experiences in Brazil in the area of integrated municipal programs, youth violence prevention, crime prevention through environmental design, and the use of geographic information systems to shape crime prevention interventions.

- *More information is urgently needed about what works in Brazil in preventing violence and crime.* While the emerging good practices mentioned above are promising, very few crime and violence prevention interventions have been subject to rigorous impact evaluation. Such evaluations are fundamental, both in order to inform the design of future interventions and to ensure that resources are allocated to programs that work.

ROAD MAP OF THE REPORT

The report is organized as follows. It first discusses crime and violence in Brazil, its magnitude (chapter 1) and determinants and costs (chapter 2). It then reviews various public policy approaches used in Brazil to address crime and violence – presenting an overview of the types of interventions used (chapter 3). The remaining chapters discuss some of the key public policy experiences in public safety in Brazil: responses that have come from the public health perspective, namely those addressing youth violence, arms control, and the control of alcohol sales (chapter 4); a criminal justice perspective, examining some of the key issues around police reform (chapter 5); and some of the cross sectoral approaches, in particular looking at gender-based violence, integrated municipal programs and the use of geographic information systems (GIS) as a tool for effective public safety policy across different sectors (chapter 6). Finally, the report approximates the cost effectiveness of various crime prevention initiatives in Brazil, using parameters from impact evaluations of comparable programs from outside Brazil and cost data from these Brazilian initiatives (chapter 7). The last chapter of the report offers conclusions and some recommendations for public policy at the federal, state and municipal levels (chapter 8).[1] The rest of this executive summary follows the same structure.

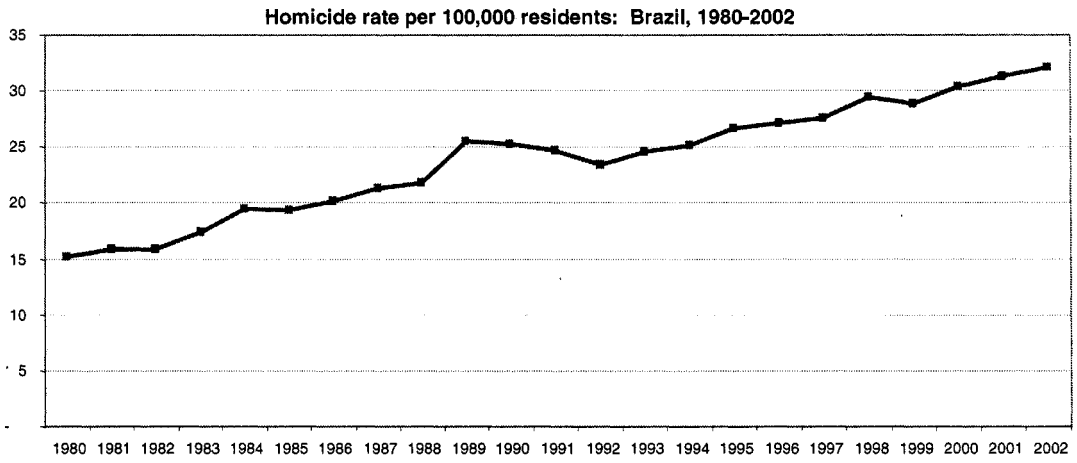
LEVELS AND TRENDS IN CRIME AND VIOLENCE IN BRAZIL

Homicide

Researchers in Brazil and elsewhere often use the homicide rate as a barometer of serious crime and violence. Although this approach has limitations, it also offers significant advantages: homicide is generally considered the most serious crime and is less susceptible to measurement errors and underreporting than other crimes.

Between 1980 and 2002 Brazil's homicide rate more than doubled, from 15 to 32 per 100,000 people. Homicide is concentrated among young men, who are 15 times more likely than young women to die from it. The homicide rate for Afro-Brazilians is two-thirds higher than the rate for whites, although a recent analysis for São Paulo shows that homicide rates there do not vary by race after controlling for levels of education. Homicide rates vary substantially by state, ranging from 10 per 100,000 in Maranhão to 57 in Rio de Janeiro in 2002. There is no clear relation between income levels and homicide at the state level, but city neighborhoods with lower household incomes are characterized by higher homicide rates. In the last three years, several Brazilian regions and cities—particularly São Paulo—have seen their homicide rates fall significantly.

[1] This report provides a detailed analysis of issues surrounding police reform in Brazil. Note, however, that this report does not analyze other institutions in the criminal justice system such as prosecution services and the penitentiary system. Nor does this report analyze issues related to organized crime, due to both data and space constraints.



Youth violence

Youth violence in Brazil has risen since 1980, when 23 percent of deaths among men aged 15-24 were caused by homicides and 36 percent were due to natural causes. By 2002, 51 percent of deaths among this group were caused by homicides and 20 percent by natural causes.

Large cross-country variations in youth homicide rates—from 1.7 per 100,000 in Canada and 3.0 in Chile to 84.4 in Colombia and 32 in Brazil—suggest that there is nothing inevitable about youth violence. The most important risk factors for youth violence in Brazil are substance abuse, having committed "general" offenses (such as theft), having antisocial parents, being male, low family socioeconomic status, poor school performance or attitude, and aggressive behaviors these factors raise the likelihood of delinquency by 21-35 percent. Reducing youth homicides may be possible through interventions that target some of these known risk factors.

Violence against women

Intimate partner violence is the most common form of violence against women in Brazil. There were 14,280 rapes reported in 2003. That translates into 16 per 100,000 women—almost certainly a severe underestimate, since rape is often not reported to the authorities. A 2001 survey found that 27 percent of women in the city of São Paulo and 34 percent in Zona da Mata (in Pernambuco) had been victims of physical violence by their partners or former partners. About 10 percent of women in São Paulo and 14 percent of women in Zona da Mata had been physically forced to have sexual intercourse or carry out sexual practices against their will. Intimate partner violence affects not just the female victims - who often suffer wounds requiring medical care - but also children who witness it.

Other Crimes

The most recent victimization survey in Brazil was conducted in 2002 in São Paulo, Rio de Janeiro, Recife, and Vitória. The survey found that in 2001, on average, almost 10 percent of motorcycle owners and 6 percent of automobile owners in these cities had their vehicles stolen, while 5.5 percent of respondents were victims of robbery, 3.0 percent victims of theft, and 1.4 percent victims of sexual assault. Victimization rates varied significantly across the four cities. São Paulo had the highest rates for auto theft, robbery, and sexual assault; Vitória had the highest rates for physical assault and burglary; and Recife had the highest rate for theft.

DETERMINANTS AND COSTS OF CRIME AND VIOLENCE

The empirical literature on the determinants of crime and violence in Brazil is limited but growing. Factors associated with increased levels of violent crime at the state or municipal level include increased income inequality, share of female-headed households, share of youth in the population, lower wages and higher unemployment. Factors that increase the likelihood of an individual being a victim of violent crime include: low income, unmarried status, unemployment, not being religious, use of public transportation, alcohol consumption, and, not surprisingly, living in a violent neighborhood.

Crime has a significant effect on economic development in Brazil. Studies estimating the direct costs of crime for Brazilian cities and states range from 3 to 5 percent of GDP per year. Such direct costs, however, are likely to be a small fraction of the total costs; potentially more important is the impact of crime on economic growth. This report estimates that if the homicide rate in Brazil had been 10 percent lower between 1991 and 1995, per capita income could have been 0.2- 0.8 percent higher over the following five years. Nationwide, using 1996 population, this would be equivalent to U.S. $2.2 billion. This might be considered a lower-bound estimate of society's willingness to pay for a ten percent reduction in homicide; it is considered a lower-bound estimate since there is presumably some willingness to pay for homicide reduction even if such a reduction would not affect GDP growth.

PUBLIC POLICY RESPONSES TO CRIME AND VIOLENCE IN BRAZIL

In Brazil the main responsibility for public safety resides at the state level. State secretariats of public safety are responsible for maintaining public order, formulating and executing government public safety policy and plans, strengthening state and municipal institutions responsible for public safety, and training and equipping state military and civilian police forces.

The National Secretariat for Public Safety (SENASP), housed in the Ministry of Justice, is responsible for formulating national public safety policies, yet the ministry does not have authority over states and their institutions (such as state-level police forces), or over municipalities. Its authority is limited to two federal forces: the Federal Police (DPF), which investigates offenses with interstate repercussions, oversees immigration and border patrol, and represses drug trafficking; and the Federal Transportation Police (DPRF), which enforces traffic laws. The structure of the ministry and its lack of bureaucratic reach make the formulation, coordination and execution of a national crime prevention strategy difficult.

SENASP is also charged with distributing federal resources from the National Public Safety Fund (Fundo Nacional de Segurança Pública) to states and municipalities. SENASP has not succeeded in disbursing all available resources in the Fund; and it has been particularly slow in disbursing funds to municipalities. This is due in large part to the lack of capacity in municipalities to formulate adequate municipal crime prevention plans that merit financing. SENASP, however, has not always provided opportune technical support to municipalities to assist them in preparing these plans.

In 2000, the Unified System for Public Safety (Sistema Único de Segurança Pública, SUSP, for which SENASP functions as the secretariat) was created to reduce crime and violence by coordinating the actions of various independent public safety and justice institutions at the federal, state, and municipal levels.

The associated National Plan for Public Security (Plano Nacional de Segurança Pública) requires municipalities to formulate municipal public safety plans, outlines a program of capacity building and technical assistance for municipalities, and envisions longer-term direct financing for the implementation of policies at the municipal level. But the plan has been criticized for failing to promote coordination between state and municipal institutions.

At the level of civil society, a number of Brazilian nongovernmental organizations (NGOs) and research institutes have significant experience and internationally-recognized expertise in public safety. They have been leaders and innovators in the field, served as advocates for modernization and accountability, and promoted an active and informed public policy debate. Many of the more innovative crime and violence control and prevention strategies and programs in Brazil were started by or in partnership with one or more of these organizations.

Most countries—including Brazil—invest the majority of their public safety resources with a criminal justice focus. But this is not necessarily the most cost-effective approach, and a number of alternative or complementary approaches are available. Table 1 offers a description of these approaches and distinguishes between sector-specific approaches (such as criminal justice, public health, and human rights) and cross-sectoral approaches (such as crime prevention through environmental design and citizen security).

SECTOR SPECIFIC APPROACHES

The report discusses in-depth the two most common sector-specific approaches for the prevention of crime and violence: the criminal justice and public health approaches. Due to space constraints, the conflict transformation approach is not addressed in the report.

Table 1: Policy approaches to violence and associated urban-focused interventions

Policy approach	Goal	Types of violence	Typical interventions
Sector-specific			
Criminal justice	Deterring and controlling violence through higher arrest and conviction rates and more severe punishment	• Crime • Robbery • Corruption	Judicial reform
		• Crime • Robbery	Police reform
		• Delinquency • Robbery • Family violence	Accessible justice systems Mobile courts
		• Family violence	Community policing All-women police stations
Public health	Preventing violence by reducing individual risk factors	• Youth violence • Gender-based violence • Homicide	Preschool programs Home visitation programs School-based social development programs Restriction of alcohol sales Restriction on gun ownership Gun buy back programs
Conflict transformation and human rights	Resolving conflict nonviolently through negotiation and legal enforcement of human rights by states and other social actors	• Political violence	Traditional systems of justice
		• Institutional violence • HR abuses • Arbitrary detention	Government human rights advocates or ombudsman Civil society advocacy NGOs
Cross-sector			
Crime prevention through environmental design / urban renewal	Reducing violence by focusing on the settings of crime rather than the perpetrators	• Economic violence • Social violence	Municipal level programs
Citizen / public / community security	Using cross-sector measures to prevent or reduce violence	• Economic violence • Social violence	National level programs Municipal level programs
Community-driven development/ Social capital	Rebuilding social capital, trust, and cohesion in informal and formal social institutions	• Youth gangs	Community-based programs
		• Domestic / family violence	Crisis services for victims Ongoing support and prevention Communication campaigns School programs Programs for perpetrators

Source: Adapted from Moser and others (2000) and Moser and Winton (2002).

Public Health / Evidence-based approaches to violence prevention in Brazil: youth violence, gun and alcohol control

Public health models of violence note that it emerges from the interaction of different risk and protective factors (WHO 2002). The core of the public health approach is the identification of risk and protective factors, the design and execution of interventions to reduce risk factors or

strengthen protective factors, and the evaluation of these interventions. The public health approach has been used in Brazil to address youth violence, as well as the specific risk factors of guns and alcohol.

Youth Violence: International evidence suggests that several approaches could be useful for preventing youth violence in Brazil. At the individual level, programs should intervene early (for example, through preschool and home visitation programs, and school-based social development programs) and increase positive adult involvement in the lives of youth. At the community level, efforts should be made to strengthen communities (say, by reducing the availability of alcohol, improving child care, and creating safe routes for children to and from school and other activities). At the societal level, programs should aim to change cultural norms, reduce income inequality, and improve the criminal justice and social welfare systems.

There are many programs in Brazil that address one or more risk factors for youth violence. Some of these are primary prevention programs (universal) such as the *Bolsa Familia* Program, whose principal purpose may not include crime prevention per se; others are secondary prevention programs focusing on at-risk youth, frequently in high violence neighborhoods. Lastly are tertiary prevention programs which work with youth that have already been engaged in some form of criminal or violent behavior. While there is a general sense of what works, what does not, and what looks promising, based on international evidence, few Brazilian programs have been evaluated for their specific impact on the reduction of youth violence.

***Gun control*:** Another key contribution of the public health field has been to address gun availability as important risk factors for violence. A background paper summarized in this report attempted to measure the early impacts of the recent Brazilian gun control initiative using monthly data on violent crime for two cities and states (São Paulo city and state, and Rio de Janeiro city and state). The study found no evidence of any impact on homicide rates of the initiative in the São Paulo city and state, but found some support for impacts at the state and city levels in Rio de Janeiro. The study's results are suggestive, but they should be interpreted with caution: the small amount of elapsed time since the initiative was put in place makes evaluation of the long-run impacts problematic.

***Alcohol control*:** Alcohol availability also represents an important risk factor for violence. Empirical studies in several countries have documented the role of alcohol abuse in triggering homicides. While such careful studies are not yet available for Brazil, the municipality of Diadema took the lead in 2000 by prohibiting the sale of alcohol after 11 p.m. While at first controversial, the measure now enjoys widespread public support and is credited for being a significant factor behind Diadema's dramatic reduction in the homicide rate from 75:100,000 in 2000 to 34:100,000 in 2004 (Pacific Institute, 2004).

Criminal justice and police reform

Within the criminal justice approach to crime prevention, police reform is an important element. The dominant model of modern policing is problem-oriented policing, an approach that "is designed to identify and remove the causes of recurring crime and disorder problems that harm communities" (Center for Problem-Oriented Policing, 2005). Yet Brazilian police forces, on the

whole, are still largely marked by a culture of reactive policing that is concerned with responding to each incident rather than identifying crime trends and preventing future incidents.

Some of the high impact solutions to reform the Brazilian police forces that can be implemented incrementally and are feasible in the short- and medium term include: i) introduction of modern management systems and problem-oriented policing; ii) use of integrated information systems and technological innovations such as GIS-based crime mapping; and iii) increased participation of universities and civil organizations in police training and education.

Addressing some of the institutional issues that face the Brazilian police forces is a key step to a better functioning and more effective criminal justice system. Many of the issues and proposals discussed such as training, pay and promotion, and the introduction of integrated information systems – particularly those that are feasible in the short and medium term - have modest impacts by themselves, but may incrementally bring about much-needed change. Unless these reforms are accompanied by the adoption of a problem-oriented policing model and incentives that reward performance, however, progress will be slow and piecemeal.

CROSS-SECTORAL CRIME AND VIOLENCE PREVENTION INITIATIVES: PREVENTION OF GENDER-BASED VIOLENCE, INTEGRATED MUNICIPAL PROGRAMS AND GEOGRAPHIC INFORMATION SYSTEMS (GIS)

Prevention of gender-based violence: A number of initiatives have addressed gender-based violence over the last few decades in Brazil. These initiatives have frequently been sectorally based (in criminal justice, health, or education), but there have been ongoing efforts to integrate and coordinate actions across sectors. The main initiative during the 1980's and 1990's was the creation of Special Women's Police Stations (Delegacias especiais de atenção a Mulher-DEAMs). These women's police stations were an attempt to provide female victims of abuse better-quality police services and, consequently, to increase their willingness to report abuse. While the DEAMs undoubtedly have helped make violence against women more visible and have processed an impressive number of cases, serious questions about their effectiveness remain. In particular, the majority of the officers staffing the DEAMs have received no specialized training, calling into question their ability to offer high-quality services. Additionally, the mere presence of specialized women's police stations may encourage regular police stations to abdicate their responsibility for dealing with violence against women.

In the health sector there has been a rapid growth of health services for women affected by violence. In 1997, there were only 17 centers within hospitals that offered a full range of services to female victims of violence; by 2003, there were 85 such centers in hospitals and 113 mobile units.

While there have been numerous social marketing campaigns that emphasize women's rights and urge women to break the silence surrounding violence, the impact of these campaigns on behaviors have not been evaluated; nor in general, would one expect great changes in behaviors from general messages focusing on rights. Efforts to engage in primary or secondary prevention to change behaviors by men have largely and appropriately focused on youth.

In sum, progress has been made in creation of special police stations for women, provision of health services, and prevention targeting young males. Still, there is much that remains to be done; priority items include: i) generating regular data via victimization surveys on the true prevalence of gender-based violence; ii) evaluating the impact of interventions on women's quality of life and on the probability of being re-victimized by violence; and iii) integration of services (and service providers) to improve the quality of services that women receive.

Integrated municipal crime and violence prevention programs: One of the more effective entry-points for crime and violence prevention is the municipal level. Because this level of government most responsive to direct contact with its constituents, projects can be designed to target the specific needs of local communities and specific 'hotspots' of crime and violence. Municipalities also deliver day-to-day services such as trash collection, low-income housing, public transport, early childhood education, parks and recreation, public lighting, health programs, and the enforcement of local ordinances. These services improve people's quality of life and build better living environments. Many of these services are also basic elements of a cross-sectoral crime and violence prevention strategy.

While in Brazil public safety issues are traditionally handled at the national or state level, public pressure has increasingly demanded interventions at all levels of government and interventions that go beyond their formal responsibilities. Over the last 15 years, municipalities have increasingly been involved in designing and implementing public safety interventions, sometimes in the form of autonomous municipal plans (e.g. Diadema) and sometimes by creating consortia to engage other municipalities, the police, or state and federal agencies in an area-wide crime prevention strategy. Some of the most important challenges facing municipalities in formulating successful crime prevention programs include weak financial or technical capacity of municipal governments, limited collaboration among different levels of government, and the susceptibility to corruption of local level initiatives

Integrated municipal programs essentially pull together targeted interventions from various sectors such as evidence-based planning, community-policing, access to justice measures, alcohol and firearms control, targeted social interventions, and situational prevention. The state of São Paulo and in particular the municipalities of Diadema and São Paulo have had particular success with this kind of approach. Typically these programs combine elements of:

- *social prevention,* involving targeted programs that address the causes of crime and violence;
- *situational prevention,* involving measures that reduce opportunities for particular crime and violence problems through urban spatial interventions such as the Crime Prevention Through Environmental Design (CPTED) methodology; and
- *judicial/policing reform,* focusing on access to justice via alternative dispute resolution mechanisms, legal aid, and community policing.

Geographic information systems (GIS): The use of GIS for crime prevention is an area undergoing rapid change, as technology evolves and new conceptual and analytic tools are developed. This kind of spatial analysis provides invaluable assistance because targeting the

physical and socio-economic context in which crimes take place is a matter of interest for the development of prevention programs. The challenge is turning spatial analysis into an operational tool for managing public safety activities, specifically to produce timely information that is useful for resource allocation, for evaluating the results of police activities, and for tactical and strategic planning in crime control and prevention projects in all sectors—whether at the national, municipal, or community level. Belo Horizonte has been a pioneer in the use of GIS for crime prevention in Brazil.

Cost effectiveness of violence prevention programs in Brazil

This report offers a preliminary analysis of the cost-effectiveness of several important interventions in Brazil to reduce violence. This analysis is neither comprehensive (it estimates the cost effectiveness of only nine interventions) nor definitive (impact parameters have been borrowed from substantially similar programs in other countries because of the lack of impact evaluation data in Brazil). However, it represents the first attempt to estimate the cost effectiveness of violence prevention initiatives in a developing country.

Cost-effectiveness estimates are a potentially powerful tool for allocating scarce crime prevention resources; of course, this tool must be used with caution in Brazil because of the preliminary nature of these estimates and because they are based on imported effectiveness parameters. The estimates presented in this report suggest that investment in secondary prevention programs, focusing on at-risk individuals, is the most cost effective way to prevent crime. These results are similar to those found in the few developed countries for which cost-effectiveness estimates are available.

THE WAY FORWARD

This report provides a clear road map for crime and violence prevention efforts in Brazil. Crime prevention and control are complementary: prevention cannot be the sole response if impunity reigns, but at the same time—given the preliminary evidence on the cost-effectiveness of secondary prevention activities that focus on individuals at risk—there seems to be systematic underinvestment in prevention in Brazil.

Thus, public policies should advance on two parallel and complementary fronts: by reducing impunity though a reform of state level police forces and other elements of the criminal justice system, and by investing in primary and secondary prevention activities, particularly those targeting young men.

A particularly promising approach involves integrated municipal programs. Focusing on local public safety allows policymakers to: 1) specify the types of crime and violence that are to be the objects of public policy; 2) identify the risk factors for the types of crime and violence that can be addressed through prevention programs; and: 3) integrate the police as part of the solution, in coordination with other authorities and community agencies. Although violence and crime are serious problems in Brazil today, they are neither intractable nor immutable. As experience has shown both inside and outside Brazil, intelligent public policy can produce safer, more livable communities.

CHAPTER 1. DEFINITIONS, LEVELS, AND TRENDS IN CRIME AND VIOLENCE IN BRAZIL[2]

This chapter explains why violent crime has become such a pressing issue in Brazil. Since 1980 the country's homicide rate has more than doubled, leaving it with one of the world's highest rates; serious problems with violence have emerged in areas that were previously relatively unaffected. Rates of robbery, physical assault, and sexual assault are significantly higher than in many other developing countries. Intimate partner violence affects one in three Brazilian women. Crucially, these developments have significant negative impacts on economic growth and other important development outcomes.

LEVELS AND TRENDS OF CRIME AND VIOLENCE IN BRAZIL

There is no internationally recognized index that allows the tracking of the overall level of crime in a society. Although many justice and interior ministries publish such indicators, they are of little use because they conflate violent and nonviolent crimes against people, property crimes, and other types of criminal acts. Brazil's National Secretariat for Public Safety (Secretaria Nacional de Segurança Pública, or SENASP) is no exception. It reports "total criminal incidents" (*total de ocorrências*) at the national and state levels, but this aggregate number and its per capita equivalent are of little use for tracking trends in crime or formulating policy responses.

Researchers in Brazil and elsewhere often use the homicide rate as a barometer of serious crime and violence. Although this approach has limitations, it also offers significant advantages: homicide is generally considered the most serious crime and is less susceptible to measurement error and underreporting than other crimes. Thus this section examines homicide rates in Brazil at both the national and state levels. These rates are also disaggregated by age, sex, and race, because homicide patterns vary significantly among population groups. Since homicide is not the only important type of crime and violence, this section also looks at other forms of violence, including youth and gender-based violence.

Homicide

National data

Brazil's adjusted homicide rate is high by international standards; it has also more than doubled between 1980 and 2002—to 32 homicides per 100,000 inhabitants (Figure 1.1). The adjusted homicide rate, used here and below except where noted, includes changes made to reclassify deaths due to unknown causes[3] (See Annex 1 for a description of the methodology used to calculate the adjusted homicide rate). This rate is 3.4 times the global average for adjusted homicide and 1.6 times the mean for Latin America (Phebo 2005).[4]

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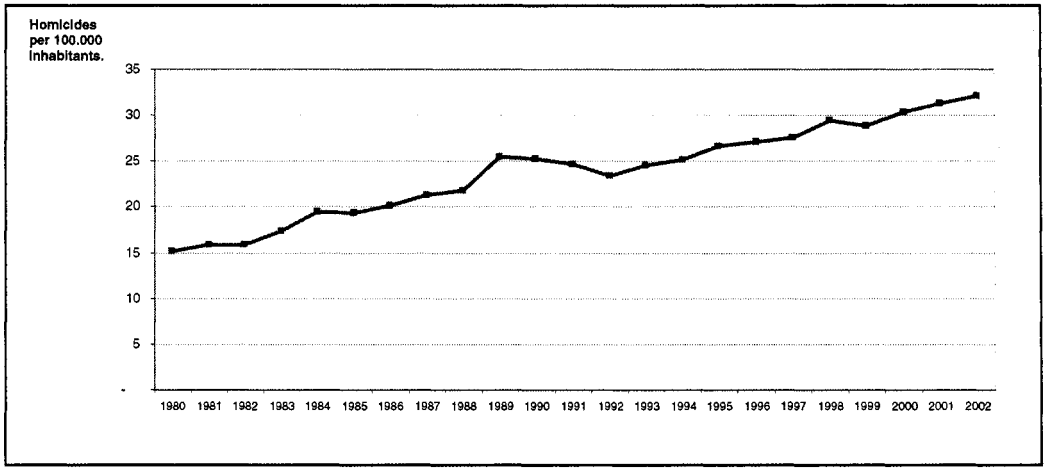
[2] This chapter draws on a background paper prepared by Luciana Phebo.

[3] Therefore, typically the unadjusted homicide rate underestimates the real number of homicides. Wherever available the report uses adjusted homicide rates.

[4] Data on Brazil's homicide rates presented in this section and attributed to Phebo (2005) are drawn from the Brazil Ministry of Health's Information System on Mortality (Sistema de Informações sobre Mortalidade, or SIM).

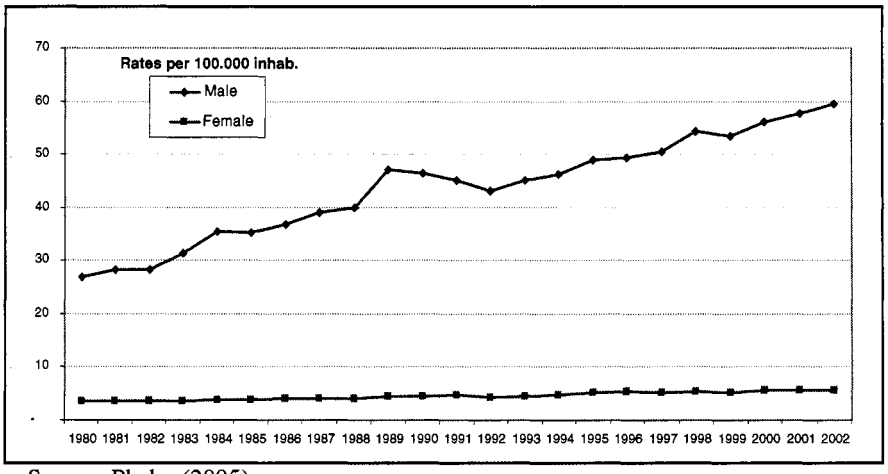
Figure 1.1. Adjusted homicide rate in Brazil, 1980-2002



Source: Phebo (2005).

As elsewhere, homicide in Brazil is primarily a male pathology: in 2002, 91 percent of homicide victims were men. Indeed, the country's rising homicide rate has been almost entirely due to an increase in male homicides (Figure 1.2). Many of the homicides are concentrated among young males; see the section on youth violence below for details.

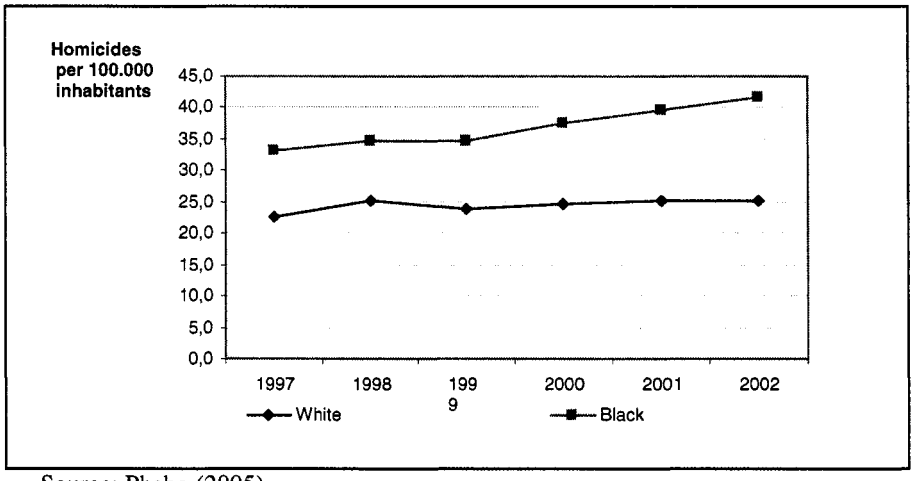
Figure 1.2. Adjusted homicide rate in Brazil by sex, 1980-2002



Source: Phebo (2005).

Race is another important factor associated with homicide rates. In 2002 the adjusted homicide rate for Brazilians of African descent (including both pardos and pretos) was 42 per 100,000 inhabitants—two-thirds higher than the rate for whites. Moreover, the gap between homicide rates for African descendents and whites has been rising over time In 2002 homicides were responsible for 9.4 percent of deaths among African descendents, but only 3.9 percent among whites (Phebo 2005). An important question is whether these differences in homicide rates between black and white Brazilians remain after controlling for other socioeconomic characteristics. A recent study for São Paulo (Kilsztajn and others, 2005) using logistic regression found that after controlling for education level, race was not a statistically significant predictor of the risk of dying from homicide.

Figure 1.3. Adjusted homicide rate in Brazil by race, 1997-2002



Source: Phebo (2005).

Internationally, Brazil's (unadjusted) homicide rate is the fourth highest among countries for which data are available, behind Colombia, El Salvador, and Russia. Brazil has the dubious distinction of being among the five countries with annual homicide rates above 20 per 100,000 inhabitants.

Table 1.1. International comparison of homicide rates

Economy	Year	Homicide rate (per 100,000 people)
Colombia	2000	68.0
El Salvador	1999	37.0
Russia	2000	28.4
Brazil	2000	27.1
Venezuela	2000	26.2
Puerto Rico	1999	17.4
Ecuador	2000	16.8
Kazakhstan	1999	16.4
Estonia	2000	13.9
Ukraine	2000	13.1
Latvia	2000	12.5
Moldova	2000	11.9
Belarus	2000	11.4
Mexico	2000	10.9
Panama	2000	9.8
Lithuania	2000	9.3
Kyrgyz Rep.	2000	8.0
Nicaragua	2000	6.7
United States	1999	6.1
Costa Rica	2000	6.1
Uruguay	2000	5.5
Cuba	2000	5.2

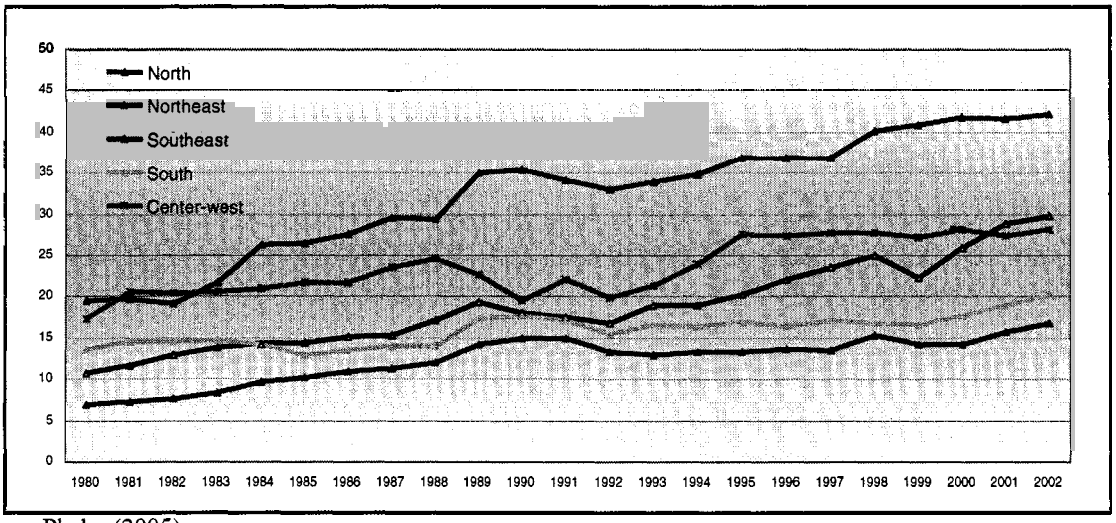
Note: Data are unadjusted homicide rates. Data for Latin America do not include two countries (Jamaica and Guatemala) that other sources have cited as having homicide rates above 30 per 100,000 inhabitants.
Source: Waiselfisz (2005).

Regional, state, and municipal data

Between 1980 and 2002 Brazil's adjusted homicide rates varied considerably by region, state, and metropolitan area, in terms of both levels and changes over time. For example, although the Southeast started and ended the period with the country's highest regional homicide rate, in recent years the Northeast overtook the Center-west as the region with the second-highest rate.

Figure 1.4. Adjusted homicide rate in Brazil by region, 1980-2002

Homicides per 100,000 inhabitants



Source: Phebo (2005).

During the 1980s adjusted homicide rates rose most quickly in the North, while in the 1990s the fastest increases occurred in the Center-west and Northeast. More importantly, all regions experienced faster adjusted homicide growth in the 1980s compared with the 1990s, except for the center-west.

Table 1.2. Changes in adjusted homicide rate in Brazil by region, 1980-90 and 1990-2000

Region	1980-1990 (%)	1990-2000 (%)
North	113.0	-4.3
Northeast	67.5	43.7
Southeast	80.6	18.2
South	28.9	0
Center-west	12.0	44.2
Total	**66.0**	**20.8**

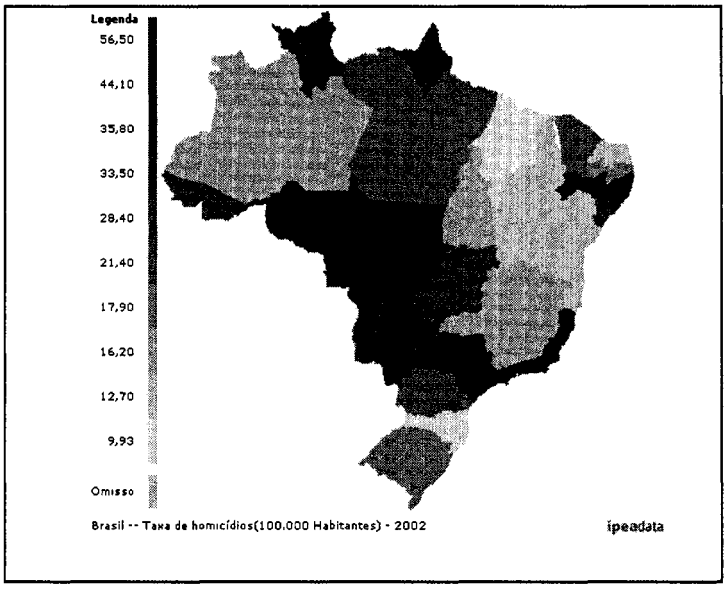
Source: Beato (2005)

In 2002 state-level (unadjusted) homicide rates ranged from 10 per 100,000 inhabitants in Maranhão to 57 in Rio de Janeiro (Figure 1.5). Other states with homicide rates above 40

included Espírito Santo, Pernambuco, and Rondônia. States with rates below 15 included Bahia, Piauí, Rio Grande do Norte, Santa Catarina, and Tocantins. [5]

Perhaps the most interesting story involves the evolution of adjusted homicide rates by metropolitan area. In 1980 there were just a few areas with adjusted homicide rates exceeding 25 per 100,000 residents (mainly in Pará and Mato Grosso; see Figure 1.6). By 2002, homicide rates above 100 had spread through much of the country, including southern Pará state, the interiors of Maranhão, Pernambuco, and Bahia, and the Center-west and Southeast regions (Figure 1.7). But not all the news is bad: in recent years several Brazilian regions and cities—particularly São Paulo—has seen their homicide rates fall (Box 1.1).

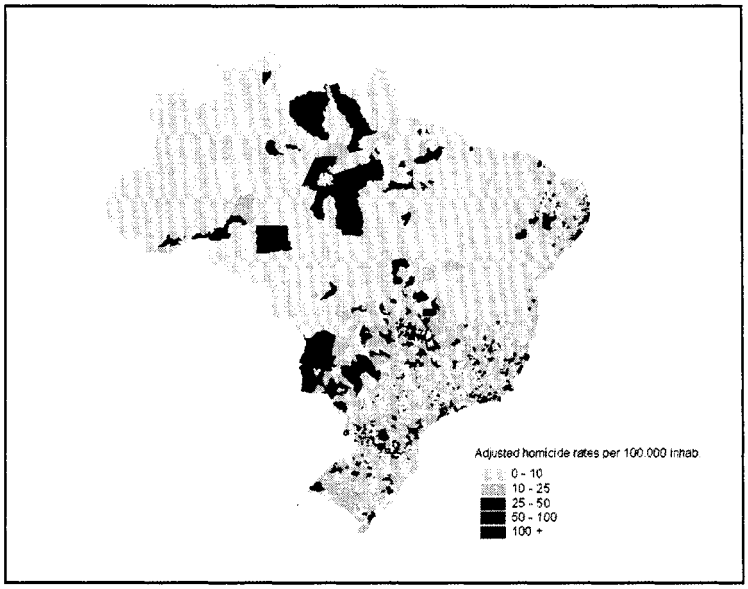
Figure 1.5. Unadjusted homicide rate in Brazil by state, 2002



Source: IPEADATA [http://www.ipeadata.gov.br].

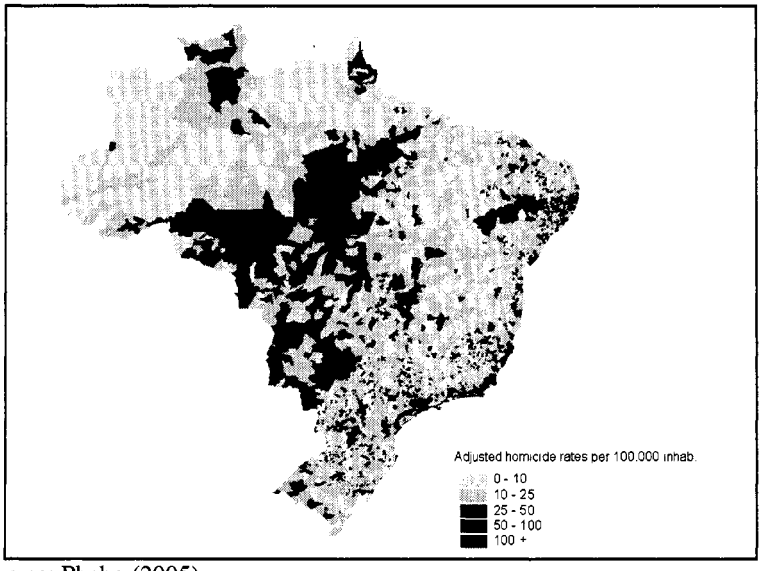
[5] Interestingly, there seems to be no clear relationship between household incomes at the state level and homicide rates. While some authors (Araujo, Jr. and Fajnzylber, 2001 and Mendonça and others 2003) find that higher family income is associated with higher homicide rates, others (Andrade and Lisboa, 2000 and Pereira and Carrera – Fernandez, 2000) find that higher incomes are assocated with lower homicide rates.

Figure 1.6. Adjusted homicide rate in Brazil by metropolitan area, 1980



Source: Phebo (2005).

Figure 1.7. Adjusted homicide rate in Brazil by metropolitan area, 2002



Source: Phebo (2005).

Box 1.1. São Paulo's falling homicide rate

Although Brazil's national homicide rate has risen in recent years and high rates have spread to more regions and cities, some areas have recently seen declines—including Belo Horizonte in Minas Gerais and Diadema and São Paulo in the state of São Paulo. The case of São Paulo is particularly striking. Recent studies by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the Seade Foundation show that the homicide rate in the state of São Paulo fell 29 percent between 1999 and 2004 (to just under 40 per 100,000 residents). The city of São Paulo saw an even larger drop in its rate, which fell 41 percent during this period

No definitive explanations or impact evaluations are available to explain these declines, but it appears that they were driven by dramatic declines in a few of the previously most violent areas. For example, the homicide rate in Jardim Angela was more than 100 per 100,000 people in 2000, but fell 73 percent by 2004. Several factors are thought to be behind these improvements, including:

- Use of integrated information systems and geo-referenced crime mapping, which has allowed for more proactive policing.
- Targeted implementation of municipal social programs (such as *Renda Mínima, Bolsa Trabalho,* and *Começar de Novo*), public transport improvements, and other improvements in the city's 10 most violent districts since 2000.
- Communication and collaboration between the municipalities of greater São Paulo and the state of São Paulo through the Forum Metropolitano de Segurança Pública.
- Participation by civil society and communities in violence prevention initiatives. In Jardim Angela some 26 nongovernmental organizations (NGOs) have developed a large number of activities, many of which target at-risk youth and include skills training, income generation, and cultural programs that offer alternatives to violence.
- Alcohol restrictions. In Diadema restrictions on alcohol sales after 10 p.m. have contributed to a significant decline in homicides (from 76 per 100,000 people in 2000 to 35 in 2004).

Sources: Personal communication with Denis Mizne (director, *Sou da Paz*); www.soudapaz.org; www.unesco.org.br; www.diademasp.gov.br; www.worldpress.org;

Youth violence

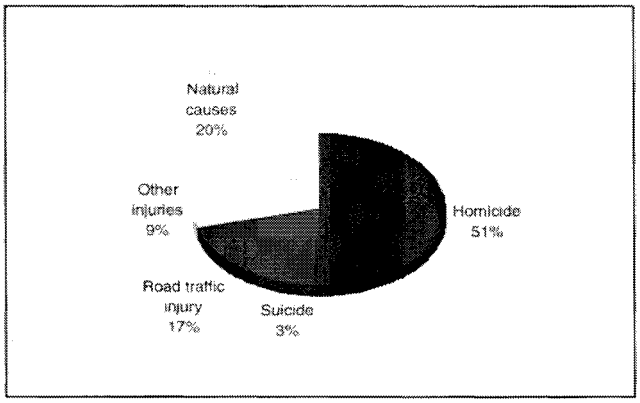
Young people as victims

Although homicide rates are high for all Brazilian men, young men are the most affected. In 2002 the adjusted homicide rate was 114 (per 100,000 inhabitants) for men ages 15-24, and 111 for men ages 25-34—both far in excess of the overall rate of 32. Brazil's youth homicide rate far exceeds the global average of 19.4 for the larger age group of 15-29 year olds (Table 1.3).

Men ages 15-24 were 5.0 times more likely to die of homicide than the general population, and 2.5 times more likely than the rest of the male population. Moreover, they were 20.0 times more likely to die from homicide than women as a whole, and 14.6 times more likely than women of the same age group (Phebo 2005).

Thus, it is not surprising that among men ages 15-24, homicide accounted for just over half of total deaths in 2002; more young men were killed by homicide than by all other causes combined (see Figure 1.8).

Figure 1.8. Causes of death for Brazilian men ages 15-24, 2002



Source: Phebo (2005).

Table 1.3. Estimated global homicide rates by age group, 2000

Age Group	Homicide rate **(per 100,000 population)**	
	Males	Females
0-4	5.8	4.8
5-14	2.1	2.0
15-29	19.4	4.4
30-44	18.7	4.3
45-59	14.8	4.5
>60	13.0	4.5
Total	13.6	4.0

a. Age-standardized using WHO (2002).
Source: WHO Global Burden of Disease project for 2000, Version 1 (see Statistical annex)

Among 10-29 year olds, Brazil's homicide rate is the third highest (after Colombia and El Salvador) among nine North and South American countries for which data are available. The large variations in youth homicide rates—ranging from 1.7 per 100,000 in Canada and 3.0 in Chile to 50.2 in El Salvador and 84.4 in Colombia—suggest that there is nothing inevitable about youth violence, and that reducing it may be possible both through gradual transformations to more equitable societies and through interventions that target known risk factors and are known to be effective.

Youth violence in Brazil has been rising since the 1980s. In 1980, 23 percent of deaths among men ages 15-24 were caused by homicides, while 36 percent were due to natural causes. By 2002 that relationship had reversed: 51 percent of deaths among this group were caused by homicides, and 20 percent by natural causes. Not surprisingly, young Brazilians are worried about violence. A recent survey found that 27 percent cited safety and violence as their top concern, and 55 percent placed it among their top three concerns (Projeto Juventude, 2004).

Table 1.4. Homicide rates among 10-29 year olds in North and South America by country and sex

Country	Year	Homicide rate per 100,000 people		
		Total	Males	Females
Argentina	1996	5.2	8.7	1.6
Brazil	1995	32.5	59.6	5.2
Canada	1997	1.7	2.5	0.9
Chile	1994	3.0	5.1	*
Colombia	1995	84.4	156.3	11.9
El Salvador	1993	50.2	94.8	6.5
Mexico	1997	15.3	27.8	2.8
United States	1998	11.0	17.9	3.7
Uruguay	1990	3.6	4.5	*

Fewer than 20 deaths reported; rate not calculated.
Source: Adapted from WHO (2002).

The concentration of violence's victims among the young is not limited to homicides. In a 1999 São Paulo survey of people who said they had been victimized by any type of crime, nearly a third were between 15 and 24 years old (Piquet Carneiro and others, 1999). And according to a 1997 survey in the Rio de Janeiro metropolitan region, the frequency of victimization was higher among people under 30 than those over 30 for 10 of 11 crimes covered. The risk of victimization for those under 30 was more than twice as high as for older individuals for crimes such as assault (7.1 percent vs. 2.7 percent), extortion by police or public officials (4.5 percent vs. 2.0 percent), and armed robbery (10.9 percent vs. 4.9 percent; FGV-ISER 1997).

Young people as perpetrators

Just as they account for a disproportionate share of the victims of violence, young people are disproportionately its perpetrators. For example, in a 1999 survey of crime victims in São Paulo, 52 percent who could identify the age group of their assailants identified them as youth.[6]

There appears to be continuity between violent behavior in youth and in adulthood (Box 1.2). Evidence supporting this assertion comes from numerous studies, principally in the United Kingdom and United States.[7] In addition, evidence from São Paulo, Minas Gerais, and Rio de Janeiro suggests that cohorts that suffer higher homicide rates when young tend to suffer higher homicide rates when older, all other factors being equal (Viegas and Lisboa 2005).

[6] "Jovem(ns)" were identified as the assailants by 39.6 percent of victims; 39.6 divided by the 75.7 (the percentage of victims who could identify the age group of their assailants) yields 52.3 percent.

[7] A study in Columbus, Ohio (United States) found that 59 percent of youth arrested for violent offenses before the age of 18 were rearrested as adults, and 42 percent of these adult offenders were charged with at least one serious violent offense, such as homicide or rape (Hamparian and others 1985). A study in Cambridge, England, found that one-third of males who had been convicted of violent offenses before the age of 20 were convicted again between the ages of 21 and 40, compared with only 8 percent of those not convicted of violent offenses during their teenage years (Farrington 2001).

Box 1.2. Violent in youth, violent in adulthood?

The continuity between violent behavior in youth and adulthood suggests that youth violence prevention may pay off not only today, in the form of lower youth violence, but in the future, in the form of less violence perpetrated or suffered by adults.

But not all youth violence prevention programs reduce future adult crime, even if they succeed in reducing youth crime today. Consider the case of tough penalties for juvenile crime. Such penalties may reduce juvenile crime in the short term, but if juveniles passing through the criminal justice system acquire criminal human capital, crimes committed in the future by today's juveniles may be unaffected or even increased.

That may be happening in the United States. A reduction of between 0.49 and 0.66 violent crimes by juveniles is achieved for each year of delinquent-custody (that is, counting equally one delinquent held for one year and six delinquents held for two months each, for example). Thus, tougher enforcement reduces juvenile crime today, the data suggest. But the severity of the juvenile justice system during the last year (before becoming an adult) does not have a statistically significant impact on adult criminal behavior. This suggests that the deterrence or incapacitation effect of juvenile punishment is counterbalanced by the "criminal human capital/stigma" effects of being held in custody. Thus, a more punitive juvenile justice system may reduce juvenile crime today, but it will not affect crime among today's juveniles when they are adults—since being held in custody increases the returns to criminality or decreases the returns to legal activity that they face.

This example highlights the importance of monitoring and evaluation to gauge the intended (and unintended) impacts of violence prevention programs.

Source: Levitt (1998).

Gender-based violence

The Belém do Pará Convention is the main reference point for measures and policies addressing gender-based violence in Brazil.[8] In its first article the convention identifies violence against women as "any act or conduct, based on gender, which causes death or physical, sexual or psychological harm or suffering to women, whether in the public or the private sphere," including:

[8] The Belem convention, more formally known as the "Inter-American Convention on the Prevention, Punishment and Eradication of Violence Against Women" establishes women's right to lives without violence as being grounded in the basic rights "already recognized in the inter-American human rights system, including the right to life; physical and mental integrity, personal liberty; and to equal protection of and before the law." Article 5 recognizes that violence prevents and nullifies a woman's exercise of other fundamental rights, and provides that: "Every woman is entitled to the free and full exercise of her civil, political, economic, social and cultural rights, and may rely on the full protection of those rights as embodied in regional and international instruments on human rights." Article 7 of the Convention sets forth the principal undertakings of State Parties to ensure that their agents refrain from any "act or practice" of gender violence, and to "apply due diligence" to prevent, investigate and punish violence against women whenever it occurs. State Parties must take the measures necessary to give effect to the objectives of the convention, and women who have been subjected to violence must have access to available and effective recourse to obtain protective measures, or to seek restitution or reparation. (CEJIL, Centro por la Justicia y el Derecho Iternacional 2005.

Violence that occurs in the family, household, or any interpersonal relationship—regardless of whether the aggressor has shared the victim's residence—including rape, mistreatment, and sexual abuse.

- Violence committed by any person in the community, including rape, mistreatment, sexual abuse, other types of violent acts, torture, trafficking of women, forced prostitution, kidnapping, and sexual harassment in the workplace, educational institutions, health services, or any other place.
- Violence perpetrated or tolerated by the state or its agents, wherever it occurs.[9]

Brazil's Ministry of Health has adopted broad definitions for gender-based violence distinguishing among its four main types: physical, sexual, psychological, and economic. Each is defined by lengthy examples of actions that constitute that type.[10] Within the notion of economic violence, some analysts include the trafficking of people—a crime that mainly affects women and children.

Intimate partner violence is the most common form of violence against women in Brazil. In 2001 the World Health Organization (WHO) conducted a survey on intimate partner violence in developing countries around the world, including Brazil. The study administered nearly identical questionnaires in all the countries, making it possible to place the data from Brazil in an international context. In several countries the survey was administered in both urban and rural areas.

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[9] The Belem Convention utilizes the same language as the original United Nations General Assembly declaration (1993) on the elimination of violence against women. By defining violence against women as "any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women..." the declaration generated a lasting confusion between the terms gender-based violence and violence against women. Read carefully, the declaration can be interpreted as implying that gender-based violence is a broader concept than violence against women—including, perhaps, violence against men that is based on gender. In practice, however, gender-based violence and violence against women are generally used as synonyms.

[10] *Physical Violence:* slaps, pushes, punches, bites, kicks, burns, cuts, choking, lesions by weapons or objects, forceful taking of unnecessary or inadequate medication, alcohol, drugs or other substances including foods, forcefully removing one from one's home, tying, dragging, forcefully taking off one's clothes, abandonment in unknown places, physical harm resulting from negligence (omission of care and protection against avoidable situations of danger, disease, pregnancy, nourishment, hygiene and others). *Sexual Violence:* rape, forced sexual intercourse in a marital relationship, sexual abuse of children, incestuous abuse and sexual harassment, undesired sexual fondling, forced oral, anal or genital penetration with the penis or objects, forced exposure to pornographic material, forced exhibitionism and masturbation, use of erotic language in an inappropiate situation, refusal or impediment to the use of contraceptive methods, forced sexual relationships with other people. *Psychological Violence:* constant insults, humiliation, blackmailing, isolation from friends and family members, rejection, emotional manipulation, exploitation, negligence (omission of care and protection against avoidable situations of danger, disease, pregnancy, malnourishment, hygiene and others), threats, arbitrary restriction of freedom (impediment from working, studying, taking care of one's own personal appearance, managing one's own money, playing, etc.), domestic confinement, criticism for sexual performance, withholding of affection, and denial of attention. *Economic or Financial Violence:* theft, destruction of goods, refusal to pay alimony or child support or to take part in expenses that are basic to the household's survival, use of economic resources of a person who is elderly, incapable, or under the responsibility of a guardian by not allowing this person to manage his own financial resources and while not providing him care.

The survey found that 27 percent of women in the city of São Paulo and 34 percent in Zona da Mata (in Pernambuco) had been victims of physical violence committed by their current or a former partner (Figure 1.9). In addition, 10 percent of women in São Paulo and 14 percent of women in Zona da Mata had been physically forced to have sexual intercourse or engage in sexual practices against their will out of fear of their partner (WHO/USP 2002).

Several other recent surveys have gathered data on violence against women without specifying whether the male abuser is an intimate partner. In a 2001 survey in Brazil conducted by the Perseu Abramo Foundation, 43 percent of female respondents said they had suffered violence at the hands of a man at some point in their lives. Of these women, 33 percent said they had been victims of physical violence, 27 percent indicated psychological violence, and 11 percent sexual harassment (FPA 2001).

The Latin American Institute of the United Nations for Crime Prevention and Offender Treatment (ILANUD--Instituto Latinoamericano de las Naciones Unidas para la Prevención del Delito y el Tratamiento del Delincuente), as part of a crime victimization study in São Paulo, Rio de Janeiro, Recife, and Vitoria, asked women about their victimization by sexual and physical violence. The extremely low prevalence rates of 7 percent for physical violence and 4 percent for sexual violence—far lower than those from the WHO and Fundacao Perseu Abramo studies, and far lower than for prevalence studies of violence against women in other countries of the region—suggest that general victimization studies cannot collect accurate data on intimate partner and sexual violence.[11]

According to Brazil's National Secretariat for Public Safety (SENASP),[12] 14,280 rapes were registered in 2003. That translates into a rate of 16 per 100,000 women—certainly a significant estimate, given that the crime is often not reported to the police. The rate was highest in the state of Amapá (52.5) and lowest in Ceará (2.3).[13]

Victims of rape and sexual assault were overwhelmingly young (70 percent and 85 percent were 24 or younger, respectively) and single (63 percent and 68 percent). Aggressors are rarely arrested or prosecuted; impunity is the rule. Only 3.5 percent of rapes resulted in an arrest, and only 4.5 percent of men committing sexual assault were arrested (CESEC/NESEG, 2005).

[11] This is the case for two reasons. First, to elicit accurate answers about gender-based violence, a large number of specific questions must be asked. A general-purpose victimization survey generally will not be able to devote enough time and space to asking such questions. Second, surveys on gender-based violence require specialized training for interviewers and specialized protocols to protect the safety of both interviewers and subjects. The most serious and complete protocol is WHO (2001).

[12] (www.mj.senasp.gov.br)

[13] Rates were calculated based on population estimates from IBGE for intra-censal years.

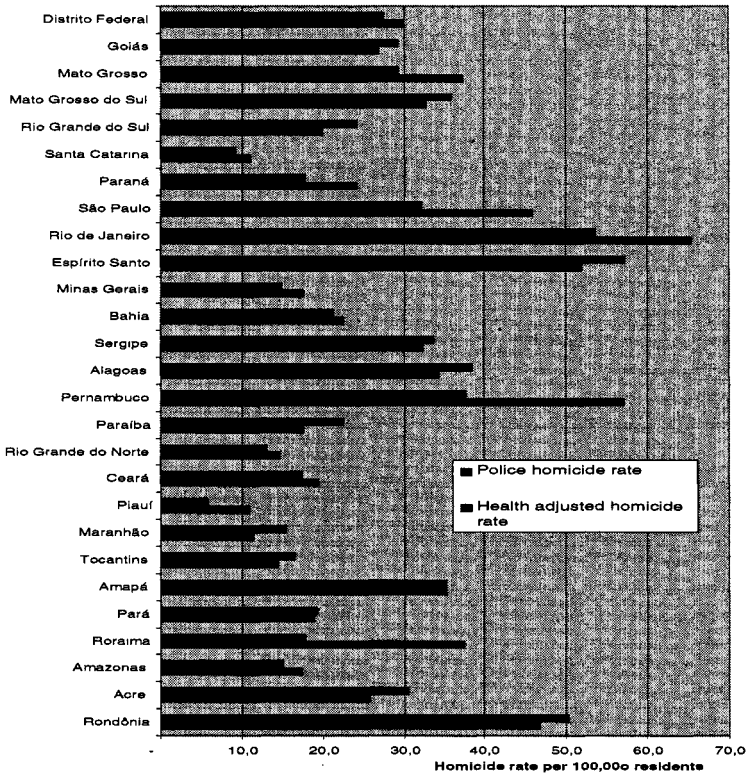
DATA ISSUES: PUBLIC HEALTH DATA AND POLICE DATA

Homicide

The homicide data for Brazil reported above are from the Ministry of Health's Information System on Mortality (SIM). But there are several other sources for homicide data, including military police, civil police, and coroner records.

Figure 1.9 reports the adjusted homicide rate reported by SIM and the homicide rate reported by police forces for all Brazilian states in 2002.

Figure 1.9. Police and health sector estimate of homicide in Brazilian states, 2002



Source: Phebo (2005).

The homicide rates from the health sector were higher than from the police in 15 of 26 states and federal district. One reason for the divergence between the two data sources could be definitional. The health sector includes in its homicide count deaths resulting from: i) legal interventions (killings by police and public security forces), ii) war; and iii) declared homicides. An adjustment is also made for deaths from unknown intent. For the police the homicide rate includes first-degree murders, corporal aggression followed by death, suspicious deaths, and deaths associated with robberies. Legal interventions and some other situations reclassified using

health data (such as finding corpses) are not included in the police definition. Thus, there are serious consistency problems between health sector and police data. The only way to resolve these inconsistencies is for state and city officials from health and police organizations to work together to standardize definitions and data.

Other crimes

Data issues are even more serious for other types of crime and violence, where underreporting is more prevalent. Consequently, statistics based on official police records often have little meaning; victimization data from population-based surveys are needed to give a more accurate picture of real levels of crime.

Only one national victimization survey has been conducted in Brazil; in 1988, a small module of the national household survey asked about victimization. Other victimization surveys have covered individual cities or a few metropolitan areas. Table 1.5 summarizes the victimization surveys that have been conducted in Brazil.

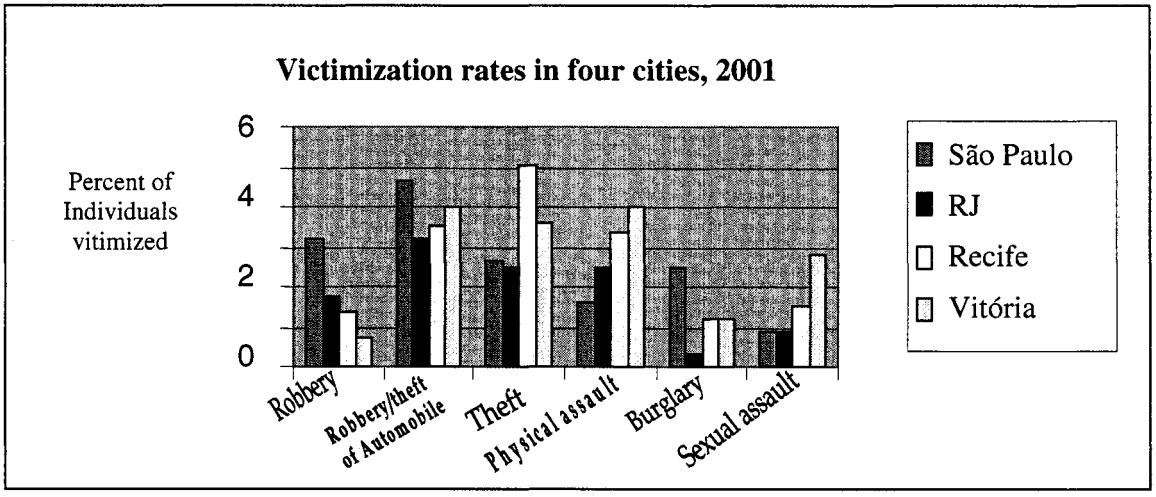
Table 1.5. Methodological characteristics of victimization surveys in Brazil

Victimization Survey	Scope	Interview Technique	Reference period	Age limit
IBGE, 1988*	National	Proxy interview	Previous 12 months	No limit
UNICRI, 1992	City of Rio de Janeiro	Individual interview	Previous 5 years and 1 year	Over 16 years old
PAHO/ISER, 1996*	Rio de Janeiro and Salvador Metropolitan Areas	Individual interview	Previous 12 months	From 18 to 70 years old
CPDOC-FGV/ISER, 1996*	Rio de Janeiro Metropolitan Region	Phase I: Proxy interview Phase II: individual interview	Phases I and II: Previous 3 and 12 months	Phase I: Over 16 years old Phase II: From 16 to 65 years old
ILANUD/Datafolha 1997	City of São Paulo	Indiviual interview	Previous 5 years and 1 year	Over 16 years old
SEADE, 1998	State of São Paulo	Proxy interview	Previous 12 months	
Cardia, NEV/USP, 1999	10 capitals (Porto Alegre, São Paulo, Rio de Janeiro, Belo Horizonte, Salvador, Recife, Belém, Manaus, Porto Velho, Goiânia)	Individual interview	Previous 12 months	Over 16 years old
Piquet-Carneiro, 1999	São Paulo Metropolitan Region	Proxy interview	Previous 6 months	No limit
Kahan, Ilanud/ FIA-USP/GSI, 2002	4 capitals (São Paulo, Rio de Janeiro, Recife and Vitória).	Individual interview	Previous 5 years and 1 year	Over 16 years old

*Methodological information are from Piquet-Carneiro, Leandro (2000). Violent Crime in Latin American cities: Rio de Janeiro and São Paulo. Research Report.
Source: NEV/USP (2004)

The most recent victimization survey (ILANUD 2002) was conducted in 2002 and surveyed 700 people in each of four cities: São Paulo, Rio de Janeiro, Recife, and Vitória (Figure 1.10). The survey found that in 2001, on average, almost 10 percent of motorcycle owners and 6 percent of automobile owners in these cities had their vehicles stolen, while 5.5 percent of respondents were victims of robbery, 3.0 percent victims of theft, and 1.4 percent victims of sexual assault. Victimization rates varied significantly across the four cities. São Paulo had the highest rates for auto theft, robbery, and sexual assault; Vitória had the highest rates for physical assault and burglary; and Recife had the highest rate for theft. Despite popular conceptions to the contrary, Rio de Janeiro did not lead in any category of victimization.

Figure 1.10. Victimization rates in four cities, 2001



Source: ILANUD (2002).

Figure 1.4 and table 1.6 report these and other victimization rates for the four cities and provide comparable data for Argentina and Panama.[14] For 6 of the 11 crimes, Brazil has the highest victimization rates among the three countries.[15] Still, several recent victimization surveys—conducted by UNICRI and ILANUD for Rio de Janeiro in 1992, 1996, and 2002, and for São

[14] The 2002 survey in Brazil, as well as the 2000 surveys in Argentina and Panama, were based on a similar questionnaire and methodology developed by the United Nations Interregional Crime and Justice Research Institute (UNICRI).

[15] An international comparison can be made using a 1996 series of UNICRI surveys conducted in 48 countries, including Brazil. This source offers the advantage of a larger number of comparator countries, albeit with older data. For contact crimes (so called because the victim comes into personal contact with the criminal, as opposed to, for example, burglary, where the victim is not physically present), Brazil's rates of victimization are quite high relative to other developing nations. Among 16 developing countries in which comparable surveys were completed in 1996, Brazil had the highest rate of victimization for robbery and sexual assault, as well as the fourth-highest rate for assault with force (tied with Colombia). These rates for contact crime were significantly higher than those for industrial countries. At the same time, Brazil had the second-lowest rate of burglary among the developing countries surveyed, with only 1.9 percent of individuals suffering burglaries (versus rates of 5.5, 6.0, 6.7, 7.3, and 8.2 percent for Argentina, Colombia, Bolivia, Costa Rica, and Paraguay, respectively). Brazil's rate of victimization for burglary was, in fact, on par with that in many industrial countries (see Barclay and Tavares 2003 for data on victimization in industrial countries).

Paulo in 1997 and 2002—show that burglary and attempted burglary victimization rates have fallen significantly in the two cities, while auto theft rates have remained almost constant.[16]

Table 1.6. Victimization rates (%) by type of crime in Brazil, Argentina, and Panama

Type of Crime	Brazil	Argentina	Panama
Robbery of Theft	**9.8**	5.7	0.1
Car based robbery	**9.0**	4.0	3.0
Robbery or theft of bicycle	8.1	**9.7**	1.4
Robbery or theft of auto*	6.2	**13.0**	1.0
Robbery	**5.5**	5.4	0.9
Theft	3.0	3.0	**4.0**
Physical assault	**2.5**	n.a.	2.3
Attempted burglary	2.2	**7.7**	3.3
Burglary	1.5	1.0	**3.8**
Sexual assault	**1.4**	n.a.	0.3

* Only among owners of these items; ** A car-based robbery is undertaken from an automobile ("depredação em automate").
Note. The highest rate of victimization among the three countries is in boldface type. Data are for 2001 in Brazil and 1999 in Argentina and Panama
Source: ILANUD (2002).15

Underreporting of crime

Victimization surveys not only allow a more accurate portrayal of crime rates than do official police records, they also permit estimation of crime underreporting to police. Such estimates can be made in two ways. The most straightforward way is to use the questions in victimization surveys about whether individuals reported to police the crimes by which they were victimized (the last column in Tables 1.7 and 1.8). A second approach is to calculate victimization rates for different crimes using victimization surveys and compare these to the rates implied by official police statistics (the penultimate column in Tables 1.7 and 1.8).

These two approaches provide quite different pictures of underreporting. The percentage of robberies that went unreported ranged between 25 and 36 percent in São Paulo, Rio de Janeiro, Recife, and Vitoria when respondents to the victimization survey were directly asked whether they had reported the crime. Yet when the robbery rates generated by the victimization survey are compared with those implied by police data, the percentage of robberies not reported to police rises significantly: between 66 and 85 percent of robberies go unreported. A similar situation occurs with thefts. According to the direct question on reporting in the victimization survey, between 12 and 24 percent of thefts go unreported. But a comparison of rates from the

[16] These are three crimes for which survey questions are quite similar over the period covered, allowing good comparability. Note that these victimization rates are for five-year periods, while the previously cited rates were for one-year periods. One-year rates are not readily available from many victimization surveys.

victimization survey and police data suggests that between 38 and 87 percent of thefts go unreported.

Table 1.7. Robbery (roubo) victimization rates (%), according to victimization survey and police data, 2001

City	Robbery – victimization data**	Robbery-police data**	Underreporting: police data versus victimization data#	Underreporting according to victimization survey
São Paulo	4.68%	1.59%	66%	32%
Rio de Janeiro	3.23%	1.10%	66%	24%
Recife	3.57%	1.00%	72%	25%
Vitória	5.29%	0.79%	85%	36%

Source: *From 2002 victimization survey; data refer to calendar year 2001 (ILANUD, 2002); **calculated as the number of robberies reported to the Civil Police divided by city population; data come from the SENASP - Sistema Integrado de Informações Criminais (www.mj.gov.br/SENASP); # calculated as % difference between columns 2 and 3.

Table 1.8. Theft (furto) victimization rates (%), according to victimization survey and police data, 2001

City	Theft rates – victimization data*	Theft rates – police data**	Underreporting: police data versus victimization data#	Underreporting according to victimization survey
São Paulo	2.64%	1.64%	38%	15%
Rio de Janeiro	2.50%	0.91%	64%	12%
Recife	5.04%	0.67%	87%	24%
Vitória	3.60%	1.33%	63%	17%

Source: *From 2002 victimization survey; data refer to calendar year 2001 (ILANUD, 2002); **calculated as the number of thefts reported to the Civil Police divided by city population; data come from the SENASP's Sistema Integrado de Informações Criminais (www.mj.gov.br/SENASP); # calculated as % difference between columns 2 and 3.

Underreporting is also widespread for intimate partner violence. WHO and USP (2002) found that only 11 and 16 percent of victims sought help at health centers in Pernambuco and São Paulo, respectively, while 10 percent and 32 percent sought help from the police. It is much more common for women to seek help from parents, siblings, and friends than from police or health centers.

CHAPTER 2. DETERMINANTS AND ECONOMIC COSTS OF CRIME AND VIOLENCE IN BRAZIL

This chapter first examines evidence—mainly from Brazil, but complemented by data from other countries—on the determinants of crime and violence. The purpose is not to provide new research for Brazil, but rather a brief overview of research that has already been conducted on these issues, in Brazil and elsewhere. It focuses on two questions:

- Why do some areas have higher crime rates than others?
- Why are some people victimized, and others not?

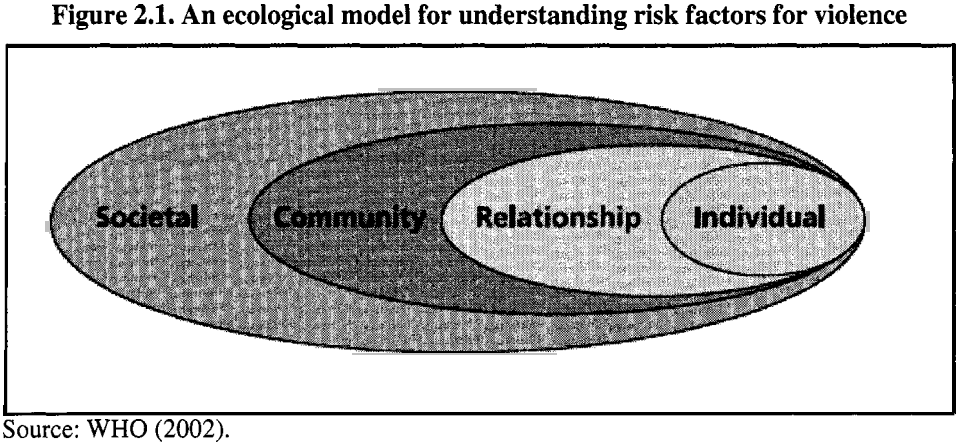
Second, the chapter estimates the economic costs of crime and violence in Brazil, drawing on both existing research and new work undertaken for this report. Most existing research has calculated the direct costs of crime and violence in Brazil—that is, the value of goods and services used to prevent crime and violence and to offer treatment to victims or perpetrators. Since this public and private spending may bear only a tenuous relationship to the true welfare impact of crime and violence, this chapter uses an alternative methodology to estimate the impact of crime and violence on GDP growth.

DETERMINANTS OF CRIME AND VIOLENCE

Variations in crime rates among different locales in Brazil are large (see Chapter 1). This raises some difficult questions: Why do some neighborhoods, municipalities, and states suffer more crime than others? And why are certain individuals more likely to be victimized?

An ecological model is useful for exploring the factors behind violent behavior and victimization. Developed by public health specialists in violence prevention, the model classifies risk factors for violence according to the level—individual, relationship, community, or societal—at which they operate. The model not only helps classify risk factors for violence, it can also aid in organizing and analyzing public policy responses to it.

Figure 2.1. An ecological model for understanding risk factors for violence



Source: WHO (2002).

Why do some areas suffer more crime?

At the societal and community levels, differences in crime levels may be explained by—among others—differences in:

- *Criminal justice.* Policing and punishment are traditional tools for controlling crime. The criminal justice system can reduce crime in two ways: through deterrence (by increasing the expected cost of committing crime) and incapacitation (by taking criminals off the streets). A study by Cerqueira and Lobao (2003) finds that increased spending on public security is associated with declines in the homicide rate in a panel study of Rio de Janeiro and São Paulo states. (See Box 2.1 for a summary of work that attemps to establish causality between more police and reduced crime.)
- *Wages and unemployment.* Higher wages for unskilled workers and lower unemployment would seem to increase the benefits to legal activities and thus reduce crime. Some studies in Brazil have found a relationship between higher unemployment and increases in crime (Fajnzylber and Araujo 2001; de Mendonca and others 2003), while others have not (Beato and Reis 2000; Sapori and Wanderley 2001).
- *Inequality and poverty.* High levels of inequality place poor individuals who have low returns from market activities in close proximity to high-income individuals who have goods worth taking (Kelly 2000); thus, we might expect inequality to be positively correlated with robbery and theft. State-level studies of Brazil provide evidence that inequality is related to violent-crime rates (de Mendonca and others 2003; Andrade and Lisboa, 2000). One cross-country study found that higher inequality results in higher homicide rates (Fajnzylber, Lederman, and Loayza 1998).
- *Gun ownership.* Although many analysts believe that the prevalence of guns increases violence, the evidence is mixed. A meta-analysis for the United States found a link between the extent of gun ownership and suicide rates, but not homicide rates. In contrast, research across countries finds little evidence of an association between rates of suicide and gun ownership, but a substantial association between gun ownership and homicide (National Academies of Sciences, 2004). Despite the fact that a recent publication produced careful statistics on the number of firearm-related deaths in Brazil, the relationship between availability of weapons and homicide rates has not been examined due to weak data on gun ownership (Núcleo de Estudos da Violência, 2004).
- *Share of female-headed households.* A state-level study in Brazil found that an increase in the percentage of female-headed households was associated with higher homicide rates, presumably from the negative impact on child socialization of single parent families (Fajnzylber and Araujo, 2001).
- *Age and sex composition of the population.* Demographics matter. Since young males are more likely to commit crimes than older men or than women, a larger population of young men will lead to a higher crime rate—all other factors being equal.

Box 2.1. Disentangling causality: Do more police reduce crime?

In one survey of 22 papers, 18 concluded that there is no relationship between police and crime or that more police are associated with more crime (Cameron 1988, cited in Klick and Tabarrok 2005). But, as Di Tella and Schargrodsky (2004) note, "It is likely that the government of a city in which the crime rate increases will hire more police officers. Areas beset by high crime will thus end up with more police officers than areas with low crime rates."

So, how can analysts tell if more police mean less crime? One way to solve this endogeneity problem is to find a variable that predicts changes in the size of the police force, but is unrelated to changes in crime once other variables are taken into account (Levitt 1997)—i.e., use an instrumental variables approach (in the USA).

Levitt (1997) first proposed this approach to disentangle the effect of police on crime, using electoral cycles as the instrumental variable. As mayoral and gubernatorial elections approach, politicians are likely to increase the number of police. This would be an increase in police that is not due to an increase or predicted increase in the crime rate. Of course, politicians might also increase spending on education or social programs before an election, which could have an effect on crime, so Levitt (1997) controls for these as well.

Levitt (1997) contains some technical mistakes, pointed out by McCray (2002), but Levitt (2002) tried again, using the number of firefighters as an instrumental variable. The study found that a 1 percent increase in the number of police was associated with a 0.4 percent decrease in violent crime and a 0.5 percent decrease in property crime.

Di Tella and Schargrodsky (2004) use a related approach to analyze policing and car thefts in Buenos Aires, Argentina. After a terrorist attack on the main Jewish center in Buenos Aires, all Jewish institutions received police protection. This deployment of police is presumably unrelated to car thefts, so if car thefts on city blocks that received additional police protection decreased relative to car thefts on city blocks that did not, one might conclude that this reflects the true effect of policing on car thefts. After taking a range of other factors into account, Di Tella and Schargrodsky (2004) found that car thefts fell by 75 percent on blocks where a protected institution was situated. Roughly, a 1 percent increase in the number of police on a block was associated with a 0.3 percent reduction in car thefts, the study estimates.

It is through such analysis that social scientists suggest that more police reduce crime.

Why are some people victimized?

In addition to the reasons cited in Chapter 1—such as age, gender, and race[17]—some Brazilians are more likely to be victims of crime and violence because of their:[18]

- *Income.* Rich people can spend more money to protect themselves from crime than can poor people. In addition, the rich may have more political power to demand adequate protection from the state. But wealthier citizens can also make more tempting targets, at least for property crimes. In São Paulo, Carneiro and Fajnzylber (2000) find

[17] Although young people and males are more likely to be victims of crime and violence (except sexual violence), Afro-Brazilians are not more likely to be victimized than whites—except when it comes to homicide (see Chapter 1).

[18] These bullet points are based on Piquet (2000) and Fajnzylber, Lederman and Loayza (2000), except as noted in the text.

that the poor have a higher rate of victimization for violent crime and a lower rate for property crime.

- *Education.* Better-educated individuals are more likely to be crime victims—although when education is included in an analysis and income is not, the measured effect of education on victimization may partly reflect the effect of income, which is correlated with education.
- *Marital status.* Married people are less likely to be victimized by violent crime. This may be because they are alone less often or because of more complex sociological reasons. There is no clear evidence about the effect on victimization of household structure (single-parent households, female-headed households, or nuclear families) or of household size.
- *Employment status.* Being unemployed is associated with a lower risk of crime in general, and violent crime in particular.
- *Religious involvement and political participation.* Religious involvement is associated with lower victimization risk. That may be because people who are religious have characteristics (such as respect for the law) that reduce their risk or because religious activities create social capital. In contrast, political participation may be associated with higher risk.
- *Time spent in public.* Evidence from Belo Horizonte suggests that taking public transportation and being more active at night than during the day is associated with increased victimization.
- *Alcohol and drug use.* Evidence from Rio de Janeiro suggests that regularly consuming alcohol is associated with increased risk of victimization, as is living in a community where illegal drugs are prevalent.
- *Living in marginal housing or neighborhoods.* In Belo Horizonte, living in a squatter settlement or in neighborhoods where gunshots can be heard is associated with higher risk of victimization. The Belo Horizonte analysis found no impact of home ownership on victimization risk.

Box 2.2. Determinants of victimization in Fortaleza

In 2003 the World Bank surveyed living conditions, poverty, and violence in three poor urban neighborhoods of Fortaleza: Autran Nunes, Edson Queiroz, and Pirambú (Verner and Alda 2004). This box, based on Verner (2005), presents some of the survey's key findings about victimization.

The sensation of insecurity in the three neighborhoods was strong: 47 percent of youth and 55 percent of adults did not feel safe in their homes. This fear was not unreasonable, given that 31 percent of residents reported being victimized by some type of crime or violence in the 12 months prior to the survey. Moreover, 73 percent of the young people interviewed said that their neighborhood had experienced gang fights in the previous 12 months.

The survey data also revealed why people living in poor neighborhoods engage in violent activities. Just under half of the young people interviewed said that family problems were the main reason for youth violence, while nearly a quarter cited lack of opportunities.

Verner (2005) estimated a probit regression to identify the determinants of victimization in the three neighborhoods. The most important findings (controlling for individual and neighborhood characteristics):

- People ages 15-25 were significantly more likely to be victimized than were both younger and older individuals.
- Whites (comprising 40 percent of the sample, compared with 45 percent mixed race, 10 percent black, 3 percent Indian, and 1 percent Asian) were 14 percent more likely to be victimized than were other races.
- Individuals who spent more time outside their homes—whether working, attending school, playing sports, or engaging in cultural activities—were 20-30 percent more likely to be victimized.
- Several results were surprising. Drug use (self-reported) was not associated with higher risk of being victimized. Receipt of a cash transfer from Bolsa Escola was associated with lower risk of victimization, though one might think that receiving this additional cash would make someone a more attractive target for robbery or theft. Finally, women were just as likely as men to be victimized.

Source: Verner, 2005

ECONOMIC IMPACTS OF CRIME AND VIOLENCE

Crime has a significant effect on economic development in Brazil. In addition, investment climate assessments in Brazil consistently put crime and violence as a major constrained to business growth.

What should be included in estimates of the costs of crime and violence? Several categorizations of the socioeconomic costs of violence have been offered. Buvinic and Morrison (1999b) distinguish among:

- *Direct costs*: the value of all goods and services used to prevent violence or offer treatment to its victims or perpetrators. This is the most commonly estimated category of

costs and includes health, police, justice, and prison costs, as well as resources spent on private security. But while it is the most frequently measured, this category may not be the most important.

- *Nonmonetary costs*: higher mortality and morbidity rates that result in pain, suffering, and death, but not necessarily in expenditures on health care or easily quantifiable economic losses.
- *Economic multiplier effects*: effects on human capital, labor force participation, wages and incomes, savings, and macroeconomic growth.
- *Social multiplier effects*: erosion of social capital, intergenerational transmission of violence, and lower quality of life.

A recent publication by the World Health Organization (WHO 2004) offers a simpler framework, distinguishing just between direct costs (medical, legal, policing, prisons, foster care, and private security) and indirect costs (lost earnings and time, lower human capital, lower productivity, lower investment, psychological costs, and other nonmonetary costs).

Among the few estimates of the socioeconomic costs of crime and violence in Brazil, most have used an accounting methodology. This simple methodology has been used in many studies of crime costs in other countries as well; it involves specifying categories of costs and summing the costs across the categories. The first study in this vein for Brazil was Couttolene and others (2000), which estimated direct and indirect costs of violence in the city of Rio de Janeiro.[19] It included spending on medical costs, the value of years lost to death and disability (measured as the monetary value of the number of disability-adjusted life years lost), public spending on police, justice, and prisons, insurance costs, and the value of stolen items. The sum represented 5 percent of 1995 municipal GDP.

Kahn (1999) also used an accounting methodology to calculate the costs of violence for the state of São Paulo, distinguishing among public spending on violence and crime prevention and control, direct spending by citizens on security, and lost production or earnings. Adding these three categories of costs yielded an estimate of about 3 percent of 1997 state GDP.

Finally, Velasco and Viegas (2003) applied an accounting methodology to estimate the costs of crime in Belo Horizonte. They included lost wages due to premature death, health treatment costs, public and private insurance costs, and direct losses due to theft and robbery.[20] The authors concluded that crime losses amounted to 4.1 percent of 1999 municipal GDP.[21]

The accounting methodology is useful in providing an order of magnitude for the costs associated with crime and violence. It is also attractive in data-poor environments: if information is missing for some categories of costs, estimates can be generated using categories for which data are available (Buvinic and Morrison 1999b). But the methodology also has important weaknesses. First, any specification of categories is arbitrary. Second, public spending on crime

[19] Though not published until 2000, the research was conducted in 1995 and was the first of its kind in Brazil.

[20] Some other authors have treated theft and robbery as a transfer rather than as a welfare loss.

[21] Even more restricted estimates of direct costs have been made of hospital costs resulting from violence against children and adolescents in Pernambuco state (Mondonca and others 2002). The authors find that such violence was responsible for 65 percent of hospital admissions and 80 percent of hospital costs.

and violence may bear only a tenuous relationship to citizens´ willingness to pay for crime reduction, since policymakers cannot easily measure this willingness to pay.

A second methodology—rarely used in developing countries—tries to estimate the willingness to pay for reductions in crime using hedonic housing and land models or contingent valuation surveys. Only one such study has been done for Brazil, by researchers at the University of São Paulo estimating a hedonic model of housing rents in São Paulo (Hermann and Haddad 2003). The model controls for characteristics of dwellings and for neighborhood amenities and disamenities such as distance to public transport, building density, percentage of slum dwellers, population density, and homicide rate. The homicide rate is one of the few neighborhood variables that is a statistically significant determinant of rents. Evaluated at the means, a 10 percent reduction in the homicide rate is associated with a 1.5 percent increase in monthly rents (about 5.3 reais).

This section develops a third methodology for estimating the costs of crime. It estimates the impact of violent crime rates (proxied by homicide rates) on overall economic growth by using panel data for a set of countries. This approach summarizes the overall economic cost of crime by measuring the economic growth forfeited as a result of violent crime.[22] the estimates produced should be viewed as a lower-bound measure of the benefits of crime reduction, because even if crime did not negatively affect growth, societies would likely still be willing to pay for crime reduction. Moreover, this measure includes only the impact of one violent crime (homicide)—not all crimes—on economic growth. The goal is to calculate an order of magnitude of how much societies would be willing to pay for crime reduction in order to achieve higher income growth.

Data and methodology

To analyze the relationship between violent crime and economic growth, this section uses the literature on the determinants of growth (see Forbes 2000 for a summary) and regresses GDP per capita on homicide rates, controlling for a country's level of income inequality, the cost of investment, and average male and female education.

Real GDP per capita (constant prices, chain series) and price level of investment are taken from the Penn World Tables.[23] Data on schooling comes from Barro and Lee (2000). Income inequality data comes from Deininger and Squire (1996). Data on homicides for 1975 through 2000 are from the United Nations *Survey of Crime Trends and Operations of Criminal Justice Systems*, second through seventh survey waves.[24] Data on homicides for Brazil come from Phebo (2005). Homicide rates per 100,000 inhabitants were calculated using population data from the *World Development Indicators*. This chapter uses data for intentional homicide, defined by the UN survey as "death deliberately inflicted on a person by another person, including infanticide."

[22] This permits estimating the national-level impact of crime, something that is not feasible in hedonic studies that focus on local land or housing markets.

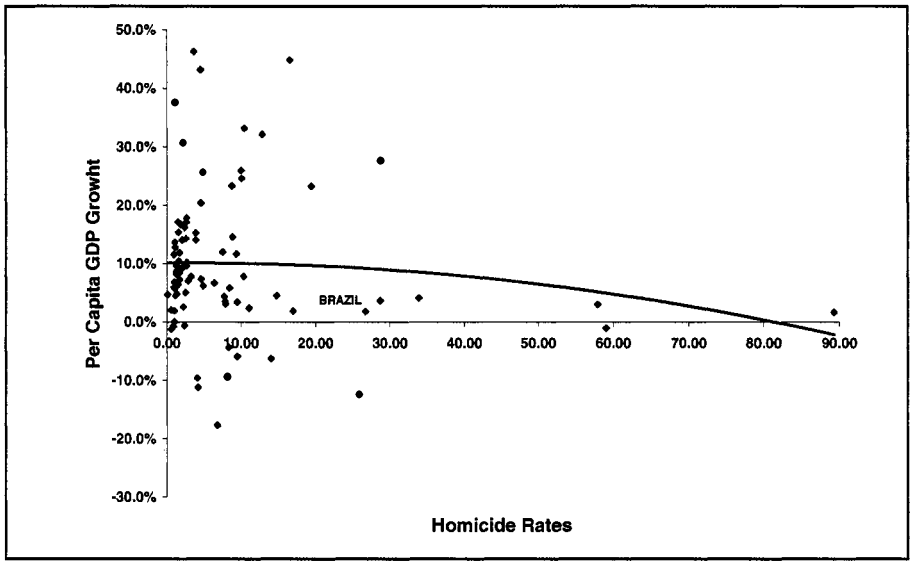
[23] As a robustness check, one specification uses real GDP per capita measured using purchasing power parity (PPP, at constant 2000 international dollars) from the World Bank's *World Development Indicators*.

[24] Following Fajnzylber and others (2002), countries were excluded from the estimations if the number of homicides increased more than 10-fold over one year.

Two measures of intentional homicide are used: i) completed homicides, which are actual consummated homicides; and ii) total homicides, which—following the convention of the UN survey—include attempted homicides as well.

Figure 2.2 gives a first notion of the relationship between homicide and economic growth. As seen by the quadratic trend-line plotted, the data suggest that there is indeed a negative correlation between homicide rates and per capita GDP growth. As indicated by the increasingly negative slope of the quadratic trend line, this negative correlation seems to be more pronounced in countries with high homicide rates.[25]

Figure 2.1. Crime and growth



The negative correlation between crime and growth observed in Figure 2.2, however, cannot be immediately interpreted as causal, since other factors causing crime may also be related to growth. For instance, as the literature summarized in Soares (2004) suggests, there seems to be a strong positive relationship between crime and income inequality, and the latter may affect growth negatively.

To control for these other factors, we build on the work of Forbes (2000), who used dynamic panel data methods to investigate the relationship between income inequality and growth. In particular, Forbes (2000) relates the logarithm of future per capita GDP to the logarithm of current per capita GDP, income inequality, education and the cost of investment as follows:

$$Ln(pcGDP_{it+1}) = \varphi + \beta_1 Ln(pcGDP_{i,t}) + \beta_2 Inequality_{i,t} + \beta_3 MaleEducation_{i,t} +$$

$$\beta_4 FemaleEducation_{i,t} + \beta_5 PPPI_{i,t} + \alpha_i + \upsilon_{it+1} \qquad (1)$$

[25] Note that this relationship is robust to removal of the outlier (with a homicide rate of almost 90 per 100,000) in Figure 2.2.

where i represents a country, and t represents a time period.[26]

The country dummies α_i represent unobserved country characteristics that do not change over time. Thus, if growth were driven by a variable that cannot be observed or that is not included in the regression, this model would still be correct so long as the variable were unchanging over time. Examples of such variables might include geography or the quality of institutions in 1975.

We first try to replicate the estimations in Forbes (2000) and then include homicide rate as an additional explanatory variable into the model. We follow this route because we are particularly concerned with controlling for income inequality, which is likely to be causally related to crime (Demombynes and Ozler 2003).

Adding the homicide rate to Equation 1 yields:

$$\beta_1 Ln(pcGDP_{i,t+1}) = \varphi + \beta_0 Homicide_{i,t} + \beta_1 Ln(pcGDP_{i,t}) + \beta_2 Inequality_{i,t} +$$

$$\beta_3 MaleEducation_{i,t} + \beta_4 FemaleEducation_{i,t} + \beta_5 PPPI_{i,t} + \alpha_i + w_{it+1} \quad (2)$$

The parameter β_0 gives us the marginal (*ceteris paribus*) impact of exogenous changes in the homicide rate on the logarithm of next period of per capita GDP, controlling for current GDP level, income inequality, female and male average educational levels, and the cost of investment.[27] We use the Arrellano-Bond GMM estimator to obtain consistent estimates of the parameters in Equations 1 and 2.[28] Following Forbes (2000), five-year periods are used to smooth out business cycles, which generate serial correlation.[29]

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[26] Barro (2000) uses a much larger set of controls. We opted for a specification based on Perroti (1996) and Forbes (2000) to preserve degrees of freedom. Our sample size is already limited by the availability of inequality and crime data and the estimator we use below requires at least three consecutive observations for a given country.

[27] Note that as discussed in Soares (2004), homicide rates are more likely to be under-reported in low GDP countries than in high GDP countries. But if the level of under reporting is only related to a country's time-invariant characteristics (such as institutional development and the quality of the justice system) which tend to be more or less constant during the period analyzed here, then—as long as we control for α_i--the estimates of β_0 should be consistent. Moreover, measurement error for homicide is likely to be less severe than measurement of error of other types of crime, because of the severity and nature of the crime.

[28] If lagged income was absent from the right hand side of the model, random effects estimators of the remaining parameters in Equations 1 and 2 would be consistent under the assumption that none of the explanatory variables on the right hand side of the equations were correlated to α_i or w_{it+1}. Such an assumption requires that crime, inequality, the cost of investing and education are not correlated with other country characteristics not controlled for, such as the quality of institutions, natural resources, and history. Also, without lagged income on the right hand side, fixed effects estimators of the same parameters would be consistent under a weaker assumption, that is, that the explanatory variables are not correlated to time-variant unobserved factors such as weather and other exogenous shocks. The correlation between the explanatory variables and time-invariant factors such as history and the quality of institutions does not imply that the fixed effects estimators are inconsistent. With the inclusion of the logarithm of lagged per capita GDP as a explanatory variable, however, not even the fixed effects estimators of the parameters in Equations 1 and 2 are consistent under this weaker set of assumptions. One solution, used in Forbes (2000) and Li and Zou (1998), is to use the Arellano and Bond (1991) GMM estimator under the weaker identifying assumption that the explanatory variables are not correlated to the time-variant components of the error terms.

[29] Thus the average income over 1981-85 is modeled as a function of inequality, the price level of investment, and educational levels in 1980 and the average income and homicide rate over 1976-80. If inequality, price level of

Results

Estimates of Equation 2, which include the homicide rate, are presented in Table 2.1. Specifications 1 and 3 use the completed homicide rate, while Specifications 2 and 4 use the total homicide rate (which includes attempted homicide). Specifications 3 and 4 include period dummies, while Specifications 1 and 2 do not. In all specifications the homicide rate carries a significant and negative coefficient, indicating that in the short and medium term, an increase in a country's homicide rate has a significant and negative impact on subsequent economic growth.

The size of the estimated effect is considerable. A decrease of 10 in a country's completed homicide rate per 100,000 people produces an increase in per capita GDP over the next five years of 0.7-2.9 percent, depending on the specification.

To illustrate this result, consider the examples of Jamaica and Costa Rica, where completed homicide rates averaged 33.9 and 8.1, respectively, over the 1996-2000 period. If Jamaica had been able to lower its completed homicide rate to the level of Costa Rica, ceteris paribus its annual per capita GDP would have increased between 5.4 and 7.5 percent over the next five-year period.[30]

In Brazil the average homicide rate for 1991-95 was 28.7 murders per 100,000 people. If this homicide rate had been just 10 percent lower (about 25), ceteris paribus per capita income would increase between 0.2-0.8 percent over the next five-year period—assuming, of course, that the coefficients estimated in the cross-country pooled regression are a reasonable approximation for Brazil.

What does this imply about willingness to pay for violent crime prevention? The average per capita income in Brazil was $7,158 during 1991-95 and $7,421 in 1996-2000. If the homicide rate had declined by 10 percent, per capita income would have risen to between $7,435 and $7,481—$14-60 more than observed historical levels. Multiplying the lower-bound estimate by Brazil's population in 1996 yields a sum of $2.2 billion.[31] This is a conservative estimate of what Brazilians would be willing to spend to reduce homicide rates by 10 percent and leave per capita income unchanged. The upper bound estimate (using the largest coefficient from Table 2.1) is $9.4 billion.

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investment, or education-level data are unavailable for 1980, we use the latest available year before 1980 for which data are available.

[30] As a robustness check, we included the square of the homicide rate to investigate the possibility of non-linearities in the relationship between crime and growth. The squared homicide rate has the expected negative coefficient but is not statistically significant. Their presence does not change the statistical significance of the total and completed homicide rate variables, but the size of their coefficients is reduced. As a final robustness check, we used alternative variables for income and education. First, we used GDP data from the *World Development Indicators* instead of the Penn World Tables. The coefficient on the homicide rates remain negative, and the total homicide rate retains in significance. The "completed-homicide" coefficient, however, is no longer significant. Second, we substituted the percentage of the male and female population that had "attained primary schooling" instead of average years of secondary schooling in the male and female population. The results are quite robust to this change: the coefficients on the homicide rates retain their statistical significance and magnitudes.

[31] The national population in 1996 was 157,070,163 (IBGE 2004).

Table 2.1. Regression results for a growth model, including homicide rate

Specification Variable	1	2	3	4
Income	-0.1353	-0.0632	-0.1362	-0.0631
	(.0182)	(.0182)	(.017)	(.0201)
Inequality	0.0015	0.0013	0.0013	0.0012
	(.0005)	(.0007)	(.0005)	(.0007)
Male education	0.0102	-0.0134	0.0120	-0.0113
	(.0153)	(.0094)	(.0168)	(.0096)
Female education	-0.0046	0.0168	-0.0084	0.0152
	(.0155)	(.0097)	(.0179)	(.0114)
Price level of investment	0.0000	-0.0001	0.0000	0.0000
	(.0001)	(.0001)	(.0001)	(.0001)
"Completed" homicide rate	-0.0029		-0.0021	
	(.0008)		(.0006)	
Total homicide rate		-0.0008		-0.0007
		(.0002)		(.0004)
Period dummies?	No	No	Yes	Yes
Countries	28	43	28	43
Observations	32	95	32	95

Note: Dependent variable is average annual per capita GDP growth. Robust standard errors are in parentheses. A constant was included in all models; period dummies are included in columns 3 and 4.

CHAPTER 3. PUBLIC POLICY RESPONSES TO CRIME AND VIOLENCE IN BRAZIL

This chapter reviews public policy approaches to and experiences with crime and violence prevention. It first describes how public policies and institutions address crime and violence at the federal, state, municipal, and civil society levels in Brazil; it then gives an overview of sector and cross-sectoral approaches to crime and violence prevention in Brazil.

PUBLIC RESPONSES

This section outlines the institutional setup in Brazil—at the federal, state, municipal, and civil society levels—for addressing crime and violence.

Federal level

Within the federal government, public safety is the responsibility of the Ministry of Justice. The ministry does not have authority over states and their institutions (such as state-level police forces) or over municipalities. Its authority is limited to two federal forces: the Federal Police (DPF), which investigates offenses with interstate repercussions, oversees immigration and border patrol, and represses drug trafficking; and the Federal Transportation Police (DPRF), which enforces traffic laws.

In addition, the Ministry of Justice contains the National Secretariat for Public Safety (Secretaria Nacional de Segurança Pública, or SENASP). SENASP is responsible for formulating national public safety policies and distributing resources from the National Public Safety Fund (Fundo Nacional de Segurança Pública)—an important source of additional funding—to states and municipalities. Other responsibilities of SENASP include:

- Implementing public safety programs.
- Modernizing public safety institutions through training and upgrading of equipment—particularly for information systems and technical investigations.
- Promoting studies, research, and activities to reduce crime and violence.
- Promoting the formulation of public safety plans at the state and municipal levels, with an emphasis on prevention and the role of community policing.
- Creating and maintaining a modern, national, integrated information system on crime levels and trends.

Other independent agencies in the Ministry of Justice include the National Secretariat of Justice, National Secretariat of Legislative Subjects, Federal Public Prosecution Service, and various councils, including the National Council on Criminal and Penitentiary Policy and National Public Safety Council. The Human Rights Secretariat and the newly created National Anti-Drugs Secretariat are located in the (Brazilian) president's office.

In all these areas, particularly public safety, the Ministry of Justice's structure makes it difficult to formulate, coordinate, and execute an integrated plan for crime and violence prevention. SENASP, while legally responsible for formulating national public safety policies, is separate from and lacks authority over the Federal Police, Federal Transportation Police, Department of

Penitentiaries, and other relevant federal agencies. In addition, coordination with other ministries (such as Health, for injury surveillance; Cities, for situational prevention; and Social Protection, for youth concerns) tends to be *ad hoc* and infrequent.

Severe problems plaguing Brazil's criminal justice system play a large role in promoting economically motivated crimes. The inefficiencies of criminal investigations, prosecution services, and the courts merit urgent judicial and police reform. Brazil's prisons are notorious for their overcrowding, violence, and lack of rehabilitation, and are in dire need of reform and investment.[32] Both sets of reforms are critical to reduce criminal impunity and to address deeper issues involving justice, corruption, human rights abuses and rehabilitation of prison inmates. Although their importance is recognized, a comprehensive examination of the issues facing the criminal justice system is beyond the scope of this study (except for the look at police reform in Chapter 5).

The suggested creation of a National Guard would give the federal government an intervention force that would keep public order without the need to involve the army. The federal government has already created the National Public Security Force; it may have, however, a limited impact from the point of view of the reformulation of police activities, since policing still mostly remains under the aegis of state governments.

State level

In Brazil, the main responsibility for public safety resides at the state level. Each state has a secretariat of public safety (sometimes under names such as "social defense") and control over the civil and military police. State secretariats of public safety are responsible for maintaining public order, formulating and executing government public safety policy and plans, strengthening state and municipal institutions responsible for public safety, and training public safety officers.

The two police forces in each of Brazil's 26 states and the Federal District report to the governor of the state. Civilian police conduct investigative and judicial policing, and work with the Ministério Público (Attorney General's Office). Military police engage in visible, uniformed, and preventive policing—a role established by the 1988 constitution. The military police constitutionally is also a reserve army force, subordinated to national army command. Thus, the federal government's authority is limited—except in extreme circumstances when a state government is incapable of providing security to its population. In such cases, the authority over state police forces is transferred to an authority designated by the federal government.

Municipal level

Similarly, most large municipalities have public safety secretariats responsible for formulating and implementing municipal public safety plans. Under Brazil's constitution, municipalities do not have their own police forces. But many municipalities have transformed their municipal

[32] UN Commission on Human Rights, 2003; Human Rights Watch, 2003: hrw.org/english/docs/2003/12/31/**brazil**6998.htm;

guards (*guardas civis*)—whose original function was to protect municipal public property—into public security agencies. Some of these forces are even armed (for example, in São Paulo, though not Rio de Janeiro), and many are large. The municipal guards in São Paulo and Rio de Janeiro, for example, each have more than 6,000 officers.

A few large metropolitan areas have created public safety "consortiums" to better coordinate plans and actions among municipalities and across municipal boundaries, sometimes in partnership with the federal and state governments. Examples include Forum Metropolitano de Seguranca Publica in São Paulo and the Consorcio Metropolitano de Politica de Defesa Social e Prevencao de Violencia de Recife.

Multilevel institutions

Sistema Único de Segurança Pública

The Unified Public Safety System (SUSP) was created in 2000 to reduce crime and violence in Brazil by coordinating the actions of the various independent public safety and justice institutions at the federal, state, and municipal levels. SENASP serves as SUSP's coordinating agency at the federal level.

SUSP has endorsed a strong role for municipal governments in combating urban crime and violence. Its National Plan for Public Safety (Plano Nacional de Segurança Pública) requires municipalities to formulate municipal public safety plans, outlines a program of capacity building and technical assistance at the municipal level, and envisions longer-term direct financing for implementing policies at the municipal level. But the plan still has a long way to go in its implementation, and has been criticized for failing to promote coordination between state and municipal institutions. Many states also view the plan as being politically-motivated—in essence, a bypass mechanism that allows the federal government to establish direct links with municipal governments, particularly those of the same political affiliation as the federal government.

Although increased recognition of the important role of municipalities in public safety programs is a positive development, state governments also need to be key partners within SUSP. Without cooperation from state police forces, it is impossible to create adequate crime and violence information systems and to implement crime control and prevention policies (such as gun control) that require police participation.

Fundo Nacional de Segurança Pública

The National Public Safety Fund is the main source of crime and violence prevention support for states and municipalities, transferring resources from SENASP to other levels of government. To receive resources from the fund, states and municipalities must present projects to SENASP for evaluation. But since its creation, the fund has failed to disburse all available resources and has systematically underinvested in violence prevention at the municipal level—largely because municipalities have been unable to formulate adequate plans and SENASP has been unable to provide support for municipalities in this process.

Civil society

Several Brazilian nongovernmental organizations (NGOs) and research institutes have significant experience and internationally recognized expertise in public safety. They have served as advocates for modernization and accountability and have been leaders and innovators informing public policy debates. In fact, many of Brazil's innovative crime and violence prevention programs were designed and implemented by or in partnership with one or more of these civil society organizations.

Among the most prominent of these organizations are Viva Rio/ISER and Centro de Estudos de Segurança e Cidadania in Rio de Janeiro and Sou da Paz in São Paulo, whose activities range from research and advocacy in areas such as policing and arms control, to partnerships with government agencies on community policing and formulation of integrated municipal public safety plans, to direct implementation of innovative community-based and participatory crime and violence prevention programs in some of the worst-affected *favelas*.

Similarly, the Instituto São Paulo Contra a Violência was fundamental in creating the Forum Metropolitano de Segurança Pública, which helps municipalities in São Paulo with information systems, social communication, and violence prevention. In addition, the Centro de Estudos de Criminalidade e Segurança Pública (CRISP-UFMG) has worked closely with the municipality of Belo Horizonte, the state of Minas Gerais, and the military police in designing crime and violence information systems and programs based on geographic information systems (GIS) to reduce the rate of violence.

Finally, a plethora of NGOs and foundations across Brazil conduct a variety of community-based crime and violence prevention programs in the areas of youth at risk, gangs, family support, legal aid, and dance, theatre, and music projects, to name just a few. These NGOs are important partners in the fight against crime and violence and could be even more effective if their actions were better coordinated with those of public agencies.

SECTORAL AND CROSS-SECTORAL APPROACHES

In Latin America and most other regions, efforts to prevent violence have focused on urban violence (except in post-conflict situations). Table 3.1 summarizes these efforts, distinguishing between sector-specific approaches (such as criminal justice, public health, and conflict transformation and human rights) and cross-sectoral approaches (such as crime prevention through environmental design and citizen security), and identifying the goals, types of violence addressed, and typical interventions for each.[33]

[33] This section uses the classification scheme presented in Moser and others (2005).

Table 3.1. Public Policy approaches and interventions to address urban violence

Policy approach	Goal	Types of violence addressed	Typical interventions
Sector-specific			
Criminal justice	Deterring and controlling violence through higher arrest and conviction rates and more severe punishment	• Crime • Robbery • Corruption	Judicial reform
		• Crime • Robbery	Police reform
		• Delinquency • Robbery • Gender-based violence	Accessible justice systems Mobile courts
		• Gender-based violence	Community policing All-women police stations
Public health	Preventing violence by reducing individual risk factors	• Youth violence • Gender-based violence • Homicide	Preschool programs Home visitation programs School-based social development programs Restriction of alcohol sales Restrictions on gun ownership Gun buy back programs
Conflict transformation and human rights	Resolving conflict nonviolently through negotiation and legal enforcement of human rights by states and other social actors	• Political violence • Institutional violence • HR abuses • Arbitrary detention	Traditional systems of justice Government human rights advocates or ombudsman Civil society advocacy NGOs
Cross-sectoral			
Crime prevention through environmental design / urban renewal	Reducing violence by focusing on the settings of crime rather than the perpetrators	• Economic violence • Social violence	Municipal level programs
Citizen security/public safety	Using cross-sector measures to prevent or reduce violence	• Economic violence • Social violence	National level programs Municipal level programs
Community-driven development (CDD)/ social capital	Rebuilding social capital, trust, and cohesion in informal and formal social institutions	• Youth gangs	Community-based solutions
		• Gender-based violence	Crisis services for victims Ongoing support and prevention Communication campaigns School programs Programs for perpetrators

Source: Adapted from Moser and others (2000) and Moser and Winton (2002)

Sector-specific approaches

Among sector-specific approaches, the *criminal justice approach* is perhaps the best-known; it tries to reduce crime and violence through higher arrest rates, higher conviction rates, and longer

sentences. Criminologists often distinguish between deterrence effects (dissuading potential criminals from committing crimes) and incapacitation effects (preventing criminals from committing crimes because they are imprisoned). The criminal justice approach aims to reduce crime through both deterrence and incapacitation effects.

The criminal justice approach - which involves work with police, prosecutors, the judiciary, and prisons - is favored by politicians who want to generate rapid decreases in crime and violence. Police and judicial reform is urgent both to reduce impunity and address deeper issues involving justice, corruption, and human rights abuses; impunity plays a large role in promoting economically-motivated crime in Brazil and elsewhere in Latin America. In the corrections area, serious reforms and additional investment are needed if prisons are to have any prospect of rehabilitating inmates, instead of just preventing them from committing crimes during their stays in prison.
At the same time, the criminal justice approach has serious limitations:

- To the extent that police and judicial institutions are inefficient and in need of reform, the injection of additional resources without reform may not produce the desired results.
- In the case of police, there is some evidence from the United States that simply putting more uniformed officers on the street does not reduce crime. Such officers must be in the right place and at the right time, which requires some sophistication in detecting crime patterns and allocating police resources (Felson 1994).
- Other types of investment—focused on prevention rather than control—are generally more cost-effective in reducing crime (Greenwood 1998; USDOJ 2000; ICPC 1999; WHO 2004).

The *public health approach* is another sector-specific approach. Often called the epidemiological approach, it involves four steps: defining the problem and collecting reliable data, identifying causes and risk factors for violent behavior, developing and implementing interventions, and analyzing and evaluating the effectiveness of violence prevention interventions (Mercy and others 1993; WHO 2004). In Latin America, the public health approach has been widely used, with an emphasis on alcohol and firearms as risk factors.

The public health approach has the great advantage of being evidence-based. Interventions are tailored to address risk factors that are most important in a given locale, and there is significant emphasis on evaluating the impacts of the interventions. The one disadvantage of this approach is that many of its most important interventions—such as programs to reduce unintended pregnancies and to promote early childhood development and parental training—may have payoffs, in terms of reduced violence, only after several years have passed. But not all public health–inspired interventions have delayed effects: limiting the availability of alcohol, providing recreational and mentoring programs for youth, and providing incentives for youth to remain in school, for example, may all produce relatively quick impacts.[34]

[34] For a complete list of potential interventions targeting youth violence, classified by developmental stage of youth, level of the ecological model (individual, relationship, community or society), and probable effectiveness, see WHO (2004).

The *conflict transformation and human rights approach* promotes nonviolent conflict resolution through mediation, negotiation, and enforcement of human rights. Often used in post-conflict settings, it has also been employed by NGOs working to promote enfranchisement of marginal communities and their citizens. This approach focuses on the state's role in ensuring citizens' rights to be free from victimization and the threat of violence (Moser and others 2005).

Cross-sectoral approaches

The *crime prevention through environmental design* and *urban renewal approach* is based on the premise that characteristics of the physical environment influence the amount of crime that occurs—and thus, that crime can be reduced by modifying the physical environment to make it more difficult and risky (and less rewarding) for potential criminals to commit crime. This approach involves interventions in the planning, design, and management phases of urban development projects (Moser and others 2005). Importantly, this approach can address not only objective levels of crime, but also residents' fear of crime. It is usually used in the context of community-based, multi-sector, "urban renewal" programs that attempt to address the causes of crime through targeted social, economic, and situational crime prevention measures in specific "hot spot" neighborhoods.

Citizen security initiatives (also known as "public safety"), as developed by several cities in Latin America—often with the support of the Inter-American Development Bank—are eminently cross-sectoral in nature. They typically involve violence prevention using the public health approach, combined with investments in criminal justice and, more recently, crime prevention through environmental design. The best-known of these initiatives has been in Bogota, where homicides rates were reduced by more than half between 1994 and 2000 (Mockus 2001). More recently, São Paulo has shown impressive homicide reduction by adopting a cross-sectoral approach (see Box 1.1).

The Community-Driven Social Development Approach focuses on rebuilding social cohesion in informal and formal institutions using small, participatory and demand-driven projects that aim to create trust by building on the strengths and assets of poor communities affected by violence. This approach has been particularly used to fight gang violence and domestic violence. In Brazil, this approach has most often been adopted by NGOs (Viva Rio, Sou da Paz, Afro Reggae, Olodum, Nos do Morro, to name just a few), although successful projects increasingly are adopted and scaled-up by municipalities and state government programs such as the Fica Vivo program in Minas Gerais and the various state and municipal initiatives in high crime neighborhoods such as Jardim Angela in São Paulo.

Overall, the Brazilian public sector response—as well as public opinion—still heavily favors the criminal justice approach to public safety over the other responses described above. In a few states and municipalities, however, there have been some interesting and successful experiences with other approaches in recent years, including those described above. The important role that these approaches, particularly preventive ones, can play is now beginning to be recognized. Chapters 4-6 below will discuss some of these experiences in more detail.

CHAPTER 4. PUBLIC HEALTH/EVIDENCE-BASED APPROACHES TO VIOLENCE PREVENTION IN BRAZIL

The next three chapters examine some of the key public policy experiences in public safety in Brazil, distinguishing among public health, criminal justice and cross-sectoral initiatives. This chapter will look at some of the responses that have come from the public health perspective, namely those focusing on youth violence, arms control, and the control of alcohol sales. Chapter 5 adopts a criminal justice perspective and will examine some of the key issues around police reform. Chapter 6 looks at some of the cross sectoral approaches; in particular, it examines gender-based violence, integrated municipal programs and the use of geo-referenced information systems (GIS) as a key tool for effective public safety policy across the sectors.

The public health perspective—described in Chapter 3—models violence as emerging from the interaction of different risk and protective factors (WHO 2002). These risk and protective factors operate at all levels of the ecological model (individual, social relationships, communities, or societies) to increase or decrease the likelihood of violence. Thus, the core of the public health approach is the identification of risk and protective factors, the design and execution of interventions to reduce risk factors or strengthen protective factors, and the evaluation of these initiatives. This chapter focuses on interventions to address youth violence, as well as the specific risk factors of guns and alcohol.

PREVENTION OF YOUTH VIOLENCE

For youth violence, examples of individual risk factors are hyperactivity, impulsiveness, poor behavioral control, and attention deficit disorder. Exposure to violence at home is one risk factor related to social relationships, as is poor parental monitoring and supervision. Local income inequality or the presence of youth gangs are examples of community risk factors. And nationwide norms that support the use of violence to resolve conflicts are an example of societal or national risk factors. The list of risk factors is long, and establishing prevention strategies requires prioritizing those risk factors which are most important. Lipsey and Derzon (1998) calculate effect sizes for several of the most important risk factors for the U.S.—i.e., the strength of the relationship between the risk factor and violent behavior. The most important predictor variables (in order of effect size) are substance abuse, having committed "general offenses, having antisocial parents, being male, low family socioeconomic status, poor performance or attitude about school, and aggressive behaviors. These factors raise the likelihood of delinquency between 21% and 35%, depending on the risk factor.

There has been little empirical research on risk factors for youth violence in Brazil. Box 4.1 reports the results of one study that looks at characteristics of juvenile offenders, albeit without a control group on non-offenders.

Interventions to address youth violence can be classified according to the level of risk factors they address. At the individual level, for example, preschool enrichment

programs have been shown to reduce children's involvement in violent behavior later in life. Home-visitation programs for infants are an intervention meant to change social relationships that have been shown to be effective. Community policing is by design a community-level intervention that has shown promise in reducing youth violence, and efforts to reduce violence in the media are a promising societal-level intervention.

Box 4.1. Risk markers for youth being arrested in São Paulo

For a 2001 study, researchers at ILANUD reviewed questionnaires filled out when adolescents passed through either the *Fórum Especial da Infância e Juventude* or the *Unidade de Atendimento Inicial da Febem/SP* in São Paulo, two facilities for juvenile offenders.

As the study notes, individuals interviewed do not reflect the true profile of perpetrators of crime or violent crime, since transgressors may go free and innocent adolescents be detained. Rather than speak of risk factors for committing crime, it is more precise to identify them as risk factors for arrest and detention.

Youth arriving at the two centers had the following characteristics:

- 95.9 percent were male;
- the majority lives in "poor, peripheral neighborhoods of the capital" such as Itaquera, Guaianazes, Sapopemba, Santo Amaro e Vila Nova Cachoeirinha;
- those who were working tended to have informal occupations such as informal mini-bus operators 'cobradores de lotação' (13,6%), general helpers 'ajudantes gerais' (10,1%), bricklayer assistants 'ajudante de pedreiro' (9,8%), streetvendors 'vendedores' (8,4%), market vendors 'feirantes' (5,3) and 'office-boys' (4,7%);
- 35 percent admitted to drug use; among drug users, 72 percent said they used marijuana, and 13 percent, crack.

The subset of youth who were interned in the UAI (rather than released) had the following characteristics:

- About one-third did not have a father and about one-tenth did not have a mother (the parent was either dead or unknown);
- Only 38 percent live with their fathers and only 72 percent, with their mothers;
- Four percent live in the street (*na rua*), three percent, in shelters (*em abrigo*), and 14 percent, with friends or parents who are not their biological parents.

As recognized by the authors, the study was unable to provide information on the general population with which to compare the characteristics of the detained youth; nonetheless, the study provides a valuable profile of the detained and does suggest some risk markers for arrest and detention in São Paulo.

Source: ILANUD staff, "Defesa Técnica de Adolescentes acusados da Autoria de Atos Infracionais em São Paulo," *Revista do ILANUD*, No. 10.

Brazil has seen a plethora of programs and projects aimed at addressing one or more risk factors for youth violence, whether by the federal, state or municipal governments, or by NGOs. Some of these are primary prevention programs such as Bolsa Família Program; , primary prevention is characterized by an intervention whose treatment group is the entire population—that is, it is not focused on at-risk groups. Secondary prevention interventions aim to reduce the probability of involvement of high-risk (vulnerable) youth

with crime, while tertiary prevention interventions seek to avoid future involvement in criminal activities by youth who have already committed crimes.

While there is a general sense of what works and what does not and what looks promising based on international evidence (see Box 4.2), few Brazilian programs have been evaluated for their specific impact on youth violence. This section provides brief descriptions of two youth violence prevention programs in Brazil that *have* been the subject of serious evaluations and may offer some useful lessons.

Box 4.2. Best practices in Youth Violence Prevention

While there are few evaluated youth violence prevention programs in Brazil, international evidence suggests "several overarching best practices" to violence prevention, many of which are directly applicable to youth violence prevention in Brazil. These can be summarized as (WHO, 2002):

At the individual level:

- *intervene early*, for example, via pre-school enrichment and home-visitation programs, and school-based social development programs that teach children social and problem-solving skills;
- *Increase positive adult involvement in the lives of youth*, for example, via mentoring programs that match high-risk children and youth with a positive adult role model;

At the community level:

- *Strengthen communities*, for example, via reducing the availability of alcohol, increasing the availability and quality of childcare facilities, and creating safe routes for children on their way to and from school and other activities in the community;
- At the societal level:
- Change cultural norms, for example, particularly those that associate violent behavior with masculinity and norms that foster racism, sexism and discrimination on the basis of class;
- Reduce income inequality, because "the juxtaposition of extreme poverty with extreme wealth appears to be universally associated with interpersonal and collective violence;" and
- Improve the criminal justice and social welfare systems, for example, by seeking a fair and efficient criminal justice system and an adequate social protection system.

Abrindo Espaços

Evidence suggests that the *Abrindo Espaços* program, begun in 2000, is successful in reducing youth violence.[35] This UNESCO program operates in Rio de Janeiro, Pernambuco and Bahia; expansion to São Paulo and Rio Grande do Sul is underway.[36] The program was designed in response to a set of problems – youth as perpetrators and victims of violence; youth involvement with drugs; and the absence of collective spaces for sport, culture and leisure in socially vulnerable communities – that had been carefully studied by UNESCO.

[35] The information presented here on *Abrindo Espaços* comes from two publications: Abramovay et al. (2003) and Waiselfisz et al. (2003).

[36] The exact details of implementation differ by state.

The program consists of keeping schools open during the weekends for youth to participate in cultural and athletic activities. The program also seeks to construct citizenship, give a sense of voice to youth, and publicize positive youth activities. It targets schools in violent, socially vulnerable neighborhoods that lack community spaces and that were interested in participating.

For the evaluation of the Rio de Janeiro and Pernambuco programs, a control group was constructed by matching each program school with a control school with similar characteristics. School directors were surveyed about the occurrences of sixteen different types of crimes, and a "General Index of Violence" was calculated by weighting the occurrences by the number of years of punishment prescribed in the penal code for a given crime. In both states, the violence index for participating schools was lower than for control-group schools. Also, in both states, the index was lower for schools that entered the program earlier, suggesting increased impact over time.

School directors in Rio de Janeiro and Pernambuco were also asked whether there had been an improvement in eighteen aspects of school life, such as robberies, vandalism, and parental participation. The percentage of directors who reported an improvement were higher in the program schools than the control schools for all 18 categories in both cities, with only one exception.[37]

The evaluation of *Abrindo Espaços* in Rio de Janeiro and Pernambuco, as its authors acknowledge, is not perfectly designed. For one, without random selection of which schools participate, measured impacts may not reflect the true effect of the program but rather unobserved differences between the participant schools and the control group.[38] It would also be helpful to use victimization surveys, rather than school directors' reports, to measure the program's impact. Nonetheless, the evaluations of *Abrindo Espaços* do suggest that the program successfully reduces youth violence and might be usefully replicated in other Brazilian states.

[37] The exception is sexual aggression in Pernambuco, where the percentages of program-school directors and control-school directors reporting an improvement were 20.0 and 20.2 percent, respectively. Reductions in some other indicators of crime are impressive: for example, 32.7 percent of program-school directors reported an improvement with respect to robberies (furtos), versus 13.6 percent for control-group directors, a statistically significant difference.

[38] Perhaps the participant schools are more marginalized than the control schools, as the result of targeting; this would bias the measured impact downwards (i.e., the program's impact would appear smaller than it truly is). On the other hand, participating schools may have directors who are particulary skillful or dynamic; this would bias the measured impact upwards (i.e., the program's impact would appear larger than it truly is).

Program H

Program *H* (for *homens*) focuses on promoting gender-equitable behavior among young men.[39] It can be considered a youth-violence prevention program because one goal of the program is to reduce intimate partner violence perpetrated by men. Among the five themes of its curriculum is, "From Violence to Caregiving." Program *H* has two intervention components: interactive group education sessions for young men led by adult male facilitators and community-wide "lifestyle" social marketing campaigns using gender-equitable messages to promote condom use.

To facilitate evaluation, the program was implemented in different ways in three Rio de Janeiro *favelas:* Bangu, Maré, and Morro dos Macacos. In Maré, the group-education component was implemented alone, while in Bangu group education was combined with the social marketing campaign. In Morro de Macacos, the intervention was delayed so that residents could be used as a control group.

The evaluation measured changes using a "Gender Equitable Men" (GEM) scale that reflects whether a respondent disagrees with "'traditional'" gender norms, such as, "There are times that a woman deserves to be beaten." At six months, GEM scores in Bangu and Maré showed a significant improvement, whereas in the control site there was not a significant improvement.[40]

GUN AND ALCOHOL CONTROL PROGRAMS

Gun control: Another key contribution of the public health field has been to address gun and alcohol availability as important risk factors for violence. The risk of death by firearms is high in Brazil and rose significantly between 1982 and 2002. In 1982, the firearm death rate in Brazil was 7.5 per 100,000; by 2002, this rate had climbed to 21.2 per 100,000. This compares, for example, with a rate of 3.9 in the U.S. for 2000. In 2000, firearms were responsible for 68% of all homicide deaths in Brazil (Phebo, 2004).

Given widespread concern about homicide rates and the role that firearms play in homicide, the Brazilian Congress approved legislation in December 2003 (the "disarmament statute") that made it illegal for residents to carry weapons, imposed tighter restrictions on the purchase of weapons, and increased sanctions for using or owning guns illegally. In July 2004 an arms buyback program was begun that

[39] The target population is men 14 to 25 years old. The mean age of participants in the three evaluation sites, Bangu, Maré, and Morro dos Macacos, was 17.

[40] As with *Abrindo Espaços*, the evaluation of Program *H* would be more rigorous if it were conducted as a randomized experiment. In addition, since one of the program's objectives is to reduce intimate partner violence, victimization surveys or self-report surveys should have measured the incidence of intimate partner violence in addition to the Gender Equitable Men scale—which captures attitudes rather than behaviors. Improvements in attitudes can only be considered an "intermediate" outcome, albeit a welcome one.

encourages civilians to turn in their guns in exchange for a cash payment. Finally, a national referendum to ban *all* sales of guns and ammunition to civilians was held on October 23, 2005; this referendum was defeated, with 64% of voters voting against the ban.[41]

Box 4.3. International evidence on the effectiveness of gun buybacks

The international literature on the effectiveness of gun buybacks is rather pessimistic about their effectiveness (U.S. Surgeon General, 1999; Cook et al., 2001; Kennedy et al., 1996; Sherman, 2001; Retuer and Mouzos, 2003). There are ample reasons to be pessimistic about the potential impacts of gun buybacks: i) there are generally no restrictions on the type of guns repurchased; this means that the majority of guns turned in are typically not of the type or vintage typically used in violent crime; ii) many individuals who turn in guns possess other guns; iii) a typical buyback takes only a small fraction of guns "out of circulation"; and iv) buybacks may indirectly increase the demand for guns by taking the risk out of buying guns—by providing purchasers a kind of price support program.

Empirical evaluations of two gun buyback programs in the United States (in Saint Louis and Seattle) have failed to detect any impact of the programs (Sherman, 2001). Even the Australian buyback of long guns, which was combined with a new prohibition of ownership of these guns and involved a large number of weapons turned in, did not produce any acceleration in a pre-existing trend of lower homicide rates. The share of homicides committed with handguns did rise significantly—consistent with a decrease in the availability of long guns and also consistent with a high degree of substitutability among types of guns in the commission of homicides (Reuter and Mouzos, 2001).

There is, however, evidence from Colombia (Villaveces et al, 2000) that legal restrictions on the carrying of guns resulted in lower levels of homicide. This restriction on weapons-carrying was not accompanied by a buyback.

The Brazilian program is more than a simple buyback: it combines a buyback with significant legal restrictions on the ability to own and carry weapons. The fact that gun homicides declined by 8% in 2004—the first decline in 13 years and the first year after the approval of the disarmament statute—has led to ample discussion in the popular press about the possible positive impacts of the gun control initiative.[42]

A background paper prepared for this report attempted to measure the early impacts of this initiative using monthly data on violent crime for two cities and states (São Paulo city and state, and Rio de Janeiro city and state).[43] It is important to note at the outset that

[41] The rejection of the referendum does not invalidate the disarmament statute.

[42] See, for example, Control Arms, "Brazil gun referendum—a lost opportunity," October 27, 2005. and BBC News, "Questions and answers: Brazil arms referendum, " October 23, 2005.

[43] This research was conducted jointly with Viva Rio/ISER. State and city-level data on homicides were used as the outcome measure of interest. Several variants of the homicide rate were employed to test robustness of the results, including the homicide rate, the gun homicide rate and "adjusted" versions of these two variables that imputed cause of death in cases where the cause was initially unknown. Data series begin in either January 1996 or January 1999 (depending upon the series and the location), thus providing either 83 or 47 monthly observations before the approval of the arms control statute in December

this evaluation can not pretend to be definitive. Given the recent nature of the initiative, there simply may not be enough monthly observations after the initiation of the buyback to establish a definitive reduction in levels of violence.

The study found no evidence of any impact of the initiative in the São Paulo city and state, but found some support for impacts at the state and city levels in Rio de Janeiro. In particular, there is some evidence of a significant reduction (structural break) in adjusted gun homicides in the city of Rio de Janeiro in May 2004--after the disarmament statute was approved but before the gun buyback went into effect. The estimated size of the impact is large: a reduction in the adjusted gun homicide rate of between 6.2 and 10.8 deaths per 100,000 residents. With pre-intervention homicide rates oscillating between 40 and 50 per 100,000, the size of the impact is on the order of 12-22%. For only one specification, however, was this effect statistically significant at small sample critical values. There is no evidence that this result is robust to other dependent variables—even to (unadjusted) gun homicides. For the other variables (homicide rate, adjusted homicide rate and gun homicide rate), there is little or no evidence of a structural break.

At the state level, there is stronger evidence for a structural break. The break is estimated to occur between January 2004 and May 2004—once again, after the disarmament statute but before the beginning of the gun buyback. The size of the impact again is large, ranging from a reduction of 7.3 to 8.8 gun homicides per 100,000 residents. For the other variables, there is little evidence of a structural break.

The result of no impact in São Paulo should not be taken as a definitive statement of the initiative's ineffectiveness, given the small numbers of observations available after the beginning of the initiative. On the other hand, the finding of some impacts in Rio de Janeiro will need to be confirmed with data beyond July 2005 to confirm whether downward shifts in the homicide rate occurred and if the results are robust across multiple measures of violence.

More research is needed to determine whether the Brazilian anti-gun policies were effective in reducing crime and whether they were an efficient use of public resources relative to other public safety programs in Brazil. Finally, it is important to note that the disarmament statute and the gun buyback may have effects beyond those that are subject of this evaluation. The debate around both measures, for example, has served to mobilize

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2003. Unfortunately, there are not so many monthly observations after the beginning of the gun buyback initiative in July 2004—ranging from 5 observations in the case of adjusted homicide rates for Rio de Janeiro and São Paulo to ten observations in the case of homicide rates and gun homicide rates for Rio de Janeiro. This small number of post-intervention observations increases the likelihood that our analysis will not be able to detect a measurable and statistically significant impact of the gun control program. The impact of the arms control initiative was estimated using an ARIMA (autoregressive integrated moving average) model that allows for the testing for a structural break in the homicide rates. Two types of ARIMA models were employed: a traditional model where a structural break is tested for at a specified date, and an unknown structural break model where the structural break is determined endogenously within the model. In one variant of the traditional model, an instrumental variables methodology was used to test whether the number of guns turned in—rather than just the presence or absence of buyback program—affected homicide rates.

large sections of the population, the media, civil society, and policy makers around the need to address the public safety situation in the country and to develop innovative new policies and programs that go beyond the traditional law and order response. These benefits, of course, are extremely difficult to measure.

Alcohol control: Epidemiological studies of risk factors associated with homicide have found that alcohol tends to play an important role. For example, studies by CISALVA in Cali, Colombia, have shown that 56% of all homicides took place on weekends; moreover, a disproportionate increase in homicides takes place on special celebrations or holidays such as Christmas, New Years Eve, sports events etc.—all days that tend to have increased consumption of alcohol. In addition, it was found that fifteen to twenty percent of homicide victims had high blood-alcohol levels (Guerrero, 1999).

Restrictions on the sale of alcohol in public places have been widely seen as an effective measure in reducing crime, violence and accidents. The 'semi-dry' laws of Cali and the 'carrot' law (Ley Zanahoria) of Bogotá, Colombia, established curfews (between 1 and 2 AM) on the sale of alcohol. Guerrero (1999) argues that these measures contributed to a significant difference in reducing violence in these cities.

In Brazil, the municipality of Diadema introduced such alcohol restrictions in 2000. While controversial at first, they now enjoy widespread public support and are credited with being a significant factor behind Diadema's dramatic reduction in the homicide rate from 75:100,000 in 2000 to 34:100,000 in 2004 (Pacific Institute, 2004).

CHAPTER 5. CRIMINAL JUSTICE APPROACH: A CASE STUDY OF POLICE REFORM IN BRAZIL[44]

The criminal justice aproach, with a primary focus on deterrence and control, is the most widely used approach in Brazil. Within the crimininal justice system, arguably the most important institution for crime control and prevention is the police. This chapter briefly examines some of the organizational and institutional issues that contribute to poor policing outcomes and suggests possibilities for reform at the various levels.[45] Rather than focus on large-scale reform that will require constitutional changes, this chapter focuses on smaller-scale solutions that can be implemented incrementally and are more likely to be adopted. These include: changes in the management of police activities, training, decision-making and planning mechanisms; the introduction of technological innovations; and changes in the relations between police organizations and other government agencies. The chapter concludes by looking at some of the various reform proposals currently under discussion in Brazil.[46]

Despite the fact that all state police forces share the same institutional set-up, a more detailed analysis at the state level reveals marked differences among police forces. The most obvious is with respect to size of the forces. The most populous state, São Paulo, has 116,791 officers; at the other extreme is Roraima, with less than 1,700 officers. Officers per 100,000 residents range from a high of 944 in the Federal District to a low of 136 in Maranhão.

Some police forces have developed technological and management innovations that constitute international good practice in the handling of information and in organizational management, while others still have an outdated understanding of the police mission or of technological development. Rates of use of lethal force vary dramatically (see Table 5.1), as do other measures of respect for human rights. Finally, clearance rates (percentage of crimes that result in a conviction) also vary dramatically among states.

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[44] A decision was made early in the preparation of this report—for reasons of both tractability and budget limits—not to analyze other institutions within the criminal justice system such as the prosecution services or the penitentiary system. This chapter is based on two background papers on police reform in Brazil. See Beato, C. et al (2005) and Soares, L. E. (2005).

[45] Analysis is focused on the possibility for reforms in the form of the introduction of Problem Oriented Policing (POP), more than community policing. Problem Oriented Policing is a methodology developed by Goldstein (1990) that seeks to guide policing towards solving problems rather than attending to isolated incidents and occurrences (Brito and Allan, 1999. Eck and Spelman, 1987). This methodology may be used as part of the implementation of a community policing program, but differs conceptually from it. For more on the problems of setting up community policing see Beato, 2004.

[46] We therefore do not deal with issues for police reform relating to corruption and the development of external control mechanisms. Police corruption may be an important problem in Brazilian public security, and has never been the object of a major reform effort at federal level. A separate detailed study of the various forms of corruption that exist among civilian and military police could merit attention. Some of the relevant questions would include: i) to what extent do civilian police forces' control over investigation—and their control over access to the justice system—generate opportunities for corruption? Are internal control and disciplinary mechanisms weak, and if so why? Historically, how were criminal networks – protected from policing and immune from investigation - formed? Did the 'period of exception' of the military regime in some way generate a legislative and normative structure favorable to impunity?

Table 5.1. Fatalities by on Duty Military Police Officers, 2000

State	Killings by military on duty police officers	Killings by military police per 100,000 inhabitants	Killings by on duty military police per 1,000 officers
AC	0	0	0
AL	-	-	-
AM	1	0.04	0.16
AP	-	-	-
BA	88	0.67	3.1
CE	-	-	-
DF	48	2.38	3.21
ES	34	1.14	4.33
GO	-	-	-
MA	6	0.11	0.95
MG	48	0.27	1.18
MS	4 (3)	.78 (*)	-
MT	-	-	-
PA	24	0.4	1.9
PB	1	0.03	0.14
PE	36	0.47	2.08
PI	2 (2)	.44 (*)	-
PR	52	0.55	2.78
RJ	248	1.78	7.45
RN	2	0.07	0.28
RO	3(3)	.91(*)	3.77(*)
RR	0	0	0
RS	4	0.04	0.19
SC	-	-	-
SE	-	-	-
SP	524	1.44	6.36
TO	2	0.17	0.64
BRAZIL	**1127**	**0.82**	**3.6**

* The data marked with an asterisk (*) were estimated by extrapolating to complement the information on missing months.

Note: The number in parenthesis equals the total number of months used to estimate the total, when certain months are missing. Not all *Secretarias Estaduais de Segurança* (State Secretary on Security) disclosed information on victims to the *Secretaria Nacional de Segurança* (National Secretary on Security), and in the case of highly violent states, such as, Roraima and Acre, statistics were not divulged.

Source: Cano, Ignácio. 2003. "Execuções Sumárias no Brasil: O Uso da Força Pelos Agentes do Estado." In Execuções Sumárias no Brasil - 1997/2003. Rio de Janeiro, Brazil: Report by Justiça Global. htttp://www.global.org.br/portuguese/arquivos/Portugues.

POLICE TRAINING, PAY AND CAREERS

Education and training received: The level of education and training of police officers varies substantially, both between military and civilian police forces and among states. In general, civilian police have more schooling due to the pre-requisites for entering the career: only 4% of civilian police officers have less than eight years of schooling, in

comparison with 26% of military police officers. Similarly, almost all the civilian police chiefs *(delegados)* have university-level education, as opposed to only 78% of commissioned officers in military police forces.[47]

Training content: In general, the tendency in police training has been to offer instruction in basic legislation, interrogation techniques, evidence gathering, how to conduct investigations and patrolling techniques. The most frequently taught topics are: personal defense, human rights (offered in 21 military police organizations and 18 civilian police organizations), use of firearms, ethics/citizenship, physical health, telecommunications (in military organizations) and law-related subjects, such as criminal law and criminal process law in the case of military organizations and administrative law and applied legal medicine in the case of civilian organizations.

The POP (Problem-Oriented Policing) model—the predominant model for reducing crime among modern police forces around the world—is still largely unknown in Brazil; this is reflected in the fact that there are no major investments in preparing police personnel to identify, analyze and evaluate specific problems; training activities in preventive policing are still quite rare.

Police pay*:* The disparity in police pay among states is great. The Distrito Federal has the highest monthly pay for officers (R$1,388.60), followed by Rondônia (R$1,135.50) and Roraima (R$1,113.00). Piauí pays the lowest salary (R$394.00). São Paulo, one of the states with the highest cost of living, pays its officers relatively badly: R$616.00. For an officer who lives in one of Brazil's larger metropolitan areas, police pay is quite low. Low pay is often thought to contribute to the problem of police corruption and difficulty in attracting highly qualified personel. Low wages and corruption are particularly relevant for those officers who work in the specialized units of the civilian and military police related to narcotics and environmental control. For those living in remote rural areas, however, police work offers a rather attractive salary. The constitutionally-mandated pay parity makes it difficult to establish regionally differentiated policies within states.

Promotions and careers*:* All the military police forces employ criteria such as seniority, bravery (frequently and inappropriately measured by having killed a suspect in the line of duty) and merit as promotion criteria. As a rule, promotion criteria reward conventional operational activities such as arrests or apprehensions more than excelling in preventive activities; in general, promotion criteria for police reflect the low importance given by police forces to profiles geared to preventive or community policing.

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[47] The analysis of the data by state reveals a much less homogenous situation. In some states, such as Piauí and Roraima, the majority of delegados have completed only the first 11 years of schooling (65% and 52% respectively). A high proportion of Commissioned officers with only the first 8 years of schooling are found in Maranhão (40%) and Amazonas (14%). To a lesser extent, this also occurs in Espírito Santo (7%), Paraná (7%), Minas Gerais (5%), Rio de Janeiro (5%) and Roraima (5%). The highest proportion of troops in the military police with higher education can be found in São Paulo (11%), Paraíba (8%), Paraná (7%), Roraima (7%) and Rondônia (6%).

A police career has the job protection and security of the civil service, which makes it extremely difficult to dismiss someone—even in the face of flagrant irregularities or involvement in criminal activities. A final problem with the career streams in the military police forces is the lack of use of civilian employees.[48] Office and administrative activities are carried out by the military police themselves, putting an excessive strain on the organizations. In the case of civilian police forces, there are only eight states that have an exclusive administrative career. This translates into specialized professionals answering the phone or acting as secretaries (Bayley, 1994).

OVERARCHING ISSUES

Tensions between public and private policing: One of the stumbling blocks to greater professionalism - especially at the street patrol level in the civilian police- is the working week. An unusual shift system adopted by the civilian police forces in many Brazilian states, alternating 12 or 24 hours on and 48 or 72 hours off, allows officers to have a second paid job. These second jobs, often in the field of private security, frequently relegate police work to the status of a complementary activity and create additional difficulties for the integration between forces, since they have different schedules that make it impossible for teams from different forces to make plans jointly (Silva, 2001). [49]

The international literature on police is increasingly incorporating the term 'policing' to refer to a function that is ceasing to be a monopoly of public forces (Newburn, 2003; Bayley and Shearing, 1996). This is also valid for Brazil, where the number of private security guards now outstrips that of public police officers by a ratio of between 2:1 and 4:1.[50] Despite its magnitude, this is an issue that is still largely neglected by the federal authorities. While in other countries there is a discussion on partnerships between private and public forces in an attempt to minimize the inequality introduced by the increasing privatization of policing, in Brazil the debate and legislation on the issue are still quite incipient.

Predominance of reactive policing: Institutional rigidity has contributed to the institutional inertia that has made the Brazilian public security system one of the sectors that have least changed over the last few decades. While countries like Peru and Colombia have made bold efforts to reform their police forces (Fruhling, 2002), in Brazil little has changed in recent years. On the whole, Brazilian police forces are still largely marked by the absence of a culture of planning and management of public security problems oriented at achieving results. In other words, Brazilian police maintain a culture of reactive policing that is concerned with responding to each incident rather than identifying crime trends and preventing future incidents.

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[48] Sergipe is a notable exception.

[49] One result of this is a large number of deaths of police officers *outside* of working hours. According to a study conducted in the state of Rio de Janeiro that analyzed data from 1991 to 1994 (Cano, 1997), 70 police officers were killed on duty, as against 677 killed off duty. In spite of a conventional wisdom that professional policing is extremely risky, it seems that what is really dangerous is the extra-professional activity.

[50] See *O Globo* newspaper, May 29, 2005.

Problem-oriented policing is only slowly being adopted by Brazilian police organizations. They tend to limit themselves to what the Constitution defines as visible policing activities. Some of the most violent favelas in Brazil do not have a permanent police presence – but rather are policed through reactive police 'blitzes', usually as a result of specific gang-related violent incidents.

Absence of evaluation mechanisms: The result of a successful police action program or strategy will often be crimes *not* happening. Many police managers, however, are still attached to production indicators (outputs) such as number of firearm apprehensions, arrests, operations etc. It is not always clear however, how these production indicators are related to reducing crime: operations seeking to make apprehensions and arrests may be directed at the wrong places and people, checkpoints may be set up at unnecessary times and places etc.

PROPOSALS FOR REFORM

In this section, we discuss some of the proposals for reform of Brazil's police forces that are currently under discussion.[51] Table 5.3 has a more complete list of proposals; the proposals are grouped according to a subjective judgment of their feasibility (feasible in the short-term with little opposition; feasible in the medium-term with extenstive consultations and negotiations; and difficult). Within each category, we classify initiatives —based on the international literature on policing and police reform—into three categories: those that are likely to generate significant reduction in crime or significantly improve the relationship between police on society, those that will have a medium impact, and those that will have a low impact.

Feasible in the short-term

Perhaps the greatest revolution in police management is the use of models of the Compstat type (Henry, 2003; McDonald, 2002), utilized by the New York Police Department and adapted for use by the Brazilian police forces (Terra Crime). It is a management tool that solves several problems such as: the control of activity on the ground; coordination between units within the force itself and between police forces and other organizations of the criminal justice system, and the targeting of problems instead of isolated incidents. Compstat is also a powerful tool to increase accountability of a police force, both to its own management and to its external audiences. One important aspect of this form of management is the management of knowledge. Hence, setting up integrated information systems in the states, so that officers may share information for planning and evaluation purposes, is essential for obtaining results.

[51] There are three major fronts for the reform of police structures currently in the Brazilian National Congress. The first is the reform of the Criminal Process Code that, among other things, deals with the issue of the police inquiry. The others are the reform of the public security system (Constitutional Amendment Proposal 151/95) and the organic laws for the civilian police (Constitutional Amendment Proposal 151/95) and military police (Bill 4263/01). See Arantes and Cunha, 2005.

Two purely internal, administrative decisions can generate "medium" impacts on crime in the short-term. The first is the employment of more civilians in police administrative tasks; this frees police personnel to engage in crime fighting (which of course will be more effective if a Compstat-type model is used). Second, training in the professional investigation of crimes for civil police has the potential to significantly increase clearance rates. In terms of human rights abuses, subjecting police to increased scrutiny through the press may reduce abuses while more robust internal investigative capacity is created—although it is not clear how such a response by the press could be induced by policy makers.

Table 5.2. Police reform in Brazil

Feasibility	High Impact	Medium Impact	Low Impact
Feasible in the short term	- Setting up of COMPSTAT mangement model	- Crime investigation training and other in-service training	- Conventional human rights courses
	- Integrated information systems	- External control of police forces through the press	- Increased training in academies
		- Red Cross human rights course	- Joint raids/checkpoints/dragnets
		- Participation of civilians in administrative activities	- Social Defense Councils
			- Community Councils
			- Creation of National Guard
Feasible in the medium term	- Introduction of POP management model	- Community Policing	- Integrated training
	- Increase in participation of universities and civil organizations in police training and education	- Creation of integrated policing units	- Municipal Guards
	- Investment in technical police	- Public security plans and projects	
	- "Municipalization" of public security	- Increase in control of police abuses through internal affairs	
		- Creation of Ombudsman's services with powers of investigation	
Difficult	- Removal of police issue from the Constitution	- Sharing of material resources (police stations, barracks, vehicles etc)	- Abolition of military or civilian police
	- Unification of forces	- Abolition of police inquiry	- Army takes on police role
	- Reform of police training and pay structures	- Judicial control of investigation	

Source: Beato (2005).

Several activities are feasible—and hence tempting—but will have little or no impact on crime. One such activity is joint police force dragnet operations. As a general rule they are not grounded in analyses to focus on 'hotspots'(times and places characterized by high crime) where they could have the best results; their impact on crime has yet to be demonstrated. Longer training periods in police academies is another such intervention. As discussed above, Brazil's police undergo training that is not significantly shorter than international norms; the problem is not the length of training, but quality—and continuing opportunities for in-service training. Finally, expanding the offerings of traditional human rights courses in police academies will have little impact on human rights abuses by police; these courses are already offered in the vast majority of state academies; new approaches are needed (see below).

Feasible in the medium term

The great success stories in crime reduction in the last twenty years (New York, Boston, Bogota) have been where a fundamental management change has taken place—moving away from reactive policing models towards the adoption of problem-oriented, results-based policing models that incorporate the right incentive structures (including in pay and promotions), respect human rights, and train police adequately. While not easy to accomplish, incrementally various police forces such as those in São Paulo and Minas Gerais are already adopting these management approaches.

Another aspect of these success stories in crime reduction has been that they have been municipal—rather than national—successes. A proposal that has gained ground over the last few years in Brazil is an increased role for municipalities in public security, including in policing. Restricting the action of municipalities to the creation of Municipal Guards will limit potential impact, especially since most municipal guards simply replicate the policing model of existing military police forces.

Investments in training for technical police as well as in the scientific basis of investigations is a high impact measure. However, these investments must be significant to have an impact and would require a reasonable change in organizational culture. The Brazilian investigative police forces remain attached to traditional forms of investigation and often have conflictive relationships with forensic experts. One of the bills working its way through the National Congress is about the independence of the forensic sector from the civilian police forces.

A high impact proposal is officer training by civilian organizations and universities (Leeds, 2005). Whenever officers frequent civilian environments of education and training, the result has been very positive. States such as Minas Gerais have done this successfully for over twenty years, though it has been restricted to commissioned officers of the military police (Ward, 2002). This is a growing trend and also takes place in the states of Pernambuco, Amapá, Rio Grande do Sul and, more recently, Rio de Janeiro and the Distrito Federal.

One of the federal government's recent proposals has been to require the formulation of *state public security projects*, jointly produced by the two police forces, in order for states to be able access to the National Public Security Fund. This type of project has been positive in the sense that it has made police forces negotiate their demands jointly, with a view to some common goals and objectives.

Several other initiatives are identified as "medium impact" because their impact on crime reduction comes indirectly by improving police-community relations. Community policing is one example. A series of evaluations (Chinchilla, 1998; Fruhling, 2002) show that community policing has the potential to significantly improve the public's confidence in the police and significantly reduce levels of fear. Yet the impact on crime rates has been modest at best. There are several obstacles to the implementation of community policing—including cost—and it is unlikely to be achieved in the short-run (see Beato, 2003).

Curbing human rights abuses should be a priority for Brazil's police forces. This can be done via external or internal control mechanisms; given the lack of confidence by the public in internal (to the police) control mechanisms, the priority should probably be for the creation of external control mechanisms. One option is the creation of an ombudsman's service with powers of investigation. This is an important proposal advocated by specialists in Brazil (Lemgruber, 2004, 2005; Stone, 2003) that encounters subtantial resistance from police forces. External control, especially if granted an investigative capacity, remains a taboo issue for Brazilian police forces, but may become possible in the medium term.

Difficult

The existence of two police forces at the state level leads to dispersion of resources and duplication and redundancy of activities, notwithstanding the constitutionally different definitions of their roles. This organizational duality is also a source of difficulties in integrating the various organizations of the criminal justice system (the police forces, the Public Prosecution Service, the judiciary and the prison system), especially with regard to the jurisdictional conflicts between the civil and military police. This ends up leading to disjointed relations between the police apparatus and the administration of justice (Coelho, 1986) and to police forces operating in an equally uncoordinated fashion on the ground. Hence, there are numerous proposals for police integration, whether by simply abolishing the military force or by integrating their command structures. While difficult, the unification of police forces could pay enormous dividends in terms of better crime-fighting capacity and increased efficiency in the use of resources.[52]

Difficult because of 'corporate property' and rivalry between the forces, but with moderate potential impact, is the possible sharing of material resources such as buildings, vehicles and equipment between police forces. The impact would result from better

[52] See Constitutional Amendment Proposal 613-A/98. The term preferred by the forces is 'integration', as it would preserve each of their histories and traditions.

management of human and material resources. The state of Rio de Janeiro has found an interesting way to solve these inter-agency rivalries at least partially through the creation of Legal Police Stations—new physical structures to support police integration.

Another difficult proposal—but with high returns—is to remove 'public safety' from the constitution.[53] This would allow states to organize their police forces freely and would allow better control of police forces by state authorities. This, however, is one of the themes that elicits most resistance from military and civilian police lobbies.

A recurrent suggestion is the removal of the responsibility for police inquiries from the civilian police because of slowness, inefficiency, and corruption. Police inquiries, however, are a great source of power and discretion in the hands of the *delegados*, who are unlikely to willingly cede this power.[54] The participation in police inquiries of the Public Prosecution Service is the object of intense legal dispute; furthermore, it is unclear whether the Public Prosecution Service or judges would be willing to take on police functions.

[53] Constitutional Amendment Proposal 514-A/97, making its way through the *Câmara Federal* (the lower house of Congress).

[54] Civilian police officers, through the Association of *Delegados*, openly expressed their views in the Goiânia Charter of 2000, in which they manifested their support for the maintenance of the police inquiry and against the interference of the Public Prosecution Service in investigations.

CHAPTER 6. CROSS-SECTORAL APPROACHES

This chapter briefly outlines some of the main characteristics of cross-sectoral approaches to gender-based violence and integrated municipal programs to prevent crime and violence in Brazil; it also examines the use of geo-referenced information systems an effective tool for crime and violence prevention across the various sectors.

PREVENTION OF GENDER BASED VIOLENCE[55]: Gender based violence has been the target of a number of initiatives over the last few decades in Brazil, including: specialized police stations; legal reform; health sector, education and prevention initiatives; and integrated services.

Police: The main initiative during the 1980's and 1990's was the creation of Special Women's Police Stations (Delegacias Especiais de Atenção a Mulher-DEAMs). These women's police stations were an attempt to provide women victims of abuse better-quality police services and, consequently, to increase women's willingness to report abuse. In mid-2005 there were 340 of these police stations. The DEAMs undoubtedly have helped make violence against women more visible, and they have received an impressive number of cases. They do, however, suffer from a series of shortcomings:

- Lack of training. In 2004, only 32.6% of officers assigned to the DEAMs had undergone specialized training (SENASP, 2004, cited in Soares, 2005)
- High rotation of police personnel means that even those officers who have received specialized training may not remain in the DEAMs (Soares, 2005).
- Women officers who staff the DEAMs may not necessarily have better attitudes and offer better treatment to victims of violence simply by virtue of their sex (Morrison et al., 2004)
- Even when specialized police stations work well, their efforts are often undermined by other parts of the justice system that are unwilling or unable to enforce the law (Morrison et al, 2004). This is especially true for the DEAMs, since the specialized courts have taken over responsibility for handling many cases of intimate partner violence—and these courts frequently inappropriately mediate such cases.
- Finally, there is a real risk that the presence of DEAMs may indirectly encourage regular police stations to abdicate their responsibility for dealing with violence against women (Jubb and Izumino, 2003, cited in Morrison et al., 2004).

Health sector: There has been a rapid growth of health services for women affected by violence. In 1997, there were only 17 centers within hospitals that offered a full range of services to women victims of violence; by 2003, there were 85 such centers in hospitals and 113 mobile units (Soares, 2005). Services provided are guided by a technical norm for prevention and treatment of sexual violence that was developed by the Health Ministry in 1988. In 1992, guidelines were developed to handle cases of family violence. In 2004, a new law was passed requiring health providers to register cases of suspected violence against women; these data will be included in the Health Ministry database and

[55] This section draws on a background paper prepared by Barbara Soares.

in DATASUS and will consequently provide firm numbers of cases being seen by the health system. It may have the additional benefit of being accompanied by more systematic training of health providers in identifying cases of violence and referring the affected women to appropriate services.[56]

Education and prevention programs: Government has invested little in the primary prevention of violence against women. While there have been numerous social marketing campaigns that emphasize women's rights and urge women to break the silence surrounding violence, the impacts of these campaigns on behaviors have not been evaluated; nor in general, would one expect great changes in behaviors from general messages focusing on rights. Efforts to engage in primary or secondary prevention to change men's behaviors have largely and appropriately focused on youth. Such programs have been developed by NGOs such as NOOS, Papai Institute, and Pró-Mundo. For more on Programa H see chapter 4.

Integrated services to victims: Beyond the criminal justice system, health clinics, and a few innovative projects, the resources available to women victims of violence are basically limited to local crisis telephone services, assistance centers and shelters for at-risk women. These interventions typically provide orientation as well as medical, psychological, social and legal assistance. Since the 1990's in Brazil, it has been recognized that isolated initiatives had limited effect and that, therefore, it was necessary for several services to work as a network by integrating their respective interventions. Integration, it was hoped, would lead to higher quality services and less secondary victimization of women. Achieving integration in practice has been an enormous challenge: articulating police stations, courts, health care centers, institutes of legal medicine and public attorneys offices to the assistance centers and shelters, for example, requires both political will and resources.

Integration among institutions, not surprisingly, has been uneven. According to research by the National Secretariat on Public Safety, the DEAMs are very well articulated with the Institutes of Legal Medicine, the Tutelary Council, the Special Criminal Courts and the Juvenile Courts. Nonetheless, there is no integration with the shelters, telephone hotlines (SOS), Councils for the Rights of Women, NGOs offering services, the health care centers, or the centers for assistance to women (SENASP, 2004). Clearly, this lack of integration hinders the efficiency of the police stations themselves and limits the access victims have to the other available resources.

There are no consolidated statistics on the assistance centers that are currently working in the country, but in October of 2004, according to the Patrícia Galvão Institute's website, there were 72 shelters in Brazil.[57] This is a small number for a female population of

[56] It is important to note that there is no compulsory reporting to the police or prosecutors; compulsory registration is limited to the health system. Importantly, neither police nor prosecutors can be notified if the affected woman does not wish to do so. If notification to police were mandatory, health providers might be reticent to identify cases of violence for fear of becoming involved in lengthy police and judicial processes.
[57] www.violenciamulher.org.br. There has not been, however, any evaluation of the effectiveness of shelters in Brazil in protecting women from violence after their stays in the shelter have been completed.

nearly 90 million inhabitants which is characterized by high prevalence rates of physical and sexual violence.

The future of public policy on violence against women: In the area of prevention, regular data are needed to formulate policy and to measure the impact of interventions on behaviors. A first need is regular victimization surveys, which yield prevalence estimates not available in any other way. Future surveys should employ the methodology used by the WHO in its 2001 surveys in São Paulo and Zona da Mata, both in order to generate comparable data over time and to ensure respect for women´s safety in the process.

In the area of services for victims, there is an urgent need for evaluation of the impact of programs on the quality of victims' lives and on the probability of women being victimized again. Integration of services in networks is crucial to improve the quality of services and to reduce the costs—including re-victimization—to women of using services. Mundane initiatives like treatment guidelines, unified patient registries, referral procedures, and quality standards are all essential to guaranteeing quality services to women and their families. Prevention programs should continue to focus on youth (and especially male youth), since their behaviors are more malleable. General rights-based campaigns are not sufficient; interventions should target specific populations, attitudes and behaviors.

INTEGRATED MUNICIPAL PROGRAMS

Why local government? One of the more effective entry-points for crime and violence prevention is the municipal level. This is the level of government closest to the people and projects can be designed to target the specific needs of the local community and specific 'hotspots' of crime and violence. This is also where the day-to-day delivery of services happens such as trash collection, housing, public transport, early childhood education, parks and recreation, social services, public lighting, health programs, and the enforcement of local by-laws. These services improve people's quality of life and build better living environments. Many of these services are also the basic elements of crime and violence prevention.

Integrated municipal programs for crime prevention originally were mainly implemented in Europe and North America, but in recent years have become increasingly common in South Africa and Latin America. No doubt, the impressive results in reducing levels of crime and violence in the city of Bogotá, Colombia, served as an example to many other cities in the region struggling with similar public safety problems (Box 6.1).

Box 6.1. Integrated Municipal Crime and Violence Prevention in Bogotá, Colombia.

A renowned example of an integrated municipal program on public safety comes from Colombia. Championed largely by mayors Mockus and Penalosa, the city of Bogotá used the IDB's citizen security and coexistence program along with other resources to transform the city through an inter-sectoral approach combining public health, reclaiming of public space, and criminal justice. Rates of crime and violence had steadily increased in the city during the 1980s and early 1990s, with a cumulative negative effect on the sense of security held by citizens. Against this context, in 1994 the district administration began implementing a comprehensive program that included an integrated crime and violence information system, improving access to justice, control of alcohol consumption and traffic accidents, assistance to vulnerable groups such as youth-at-risk, the 'citizen culture' program, and the recovery of public spaces such as parks and bicycle paths. In addition, there were efforts to strengthen the police force, as well as judicial reform. Much media attention was given to the *'ley zanahoria'*, imposing a 1 a.m. curfew on alcohol sales, and on the rush hour restrictions on private cars. The results of these interventions have been striking. Homicide rates decreased by 50% over six years, and deaths from traffic accidents decreased from 1,387 in 1995 to 824 in 2000.

Source: Mockus (2001); World Bank (2005)

While in Brazil public safety issues are traditionally handled at the national or state level, public pressure has increasingly demanded interventions at all levels of government and interventions that go beyond their formal responsibilities. Over the last 15 years, municipalities have increasingly been involved in designing and implementing public safety interventions, sometimes in the form of autonomous municipal plans (e.g. Diadema[58]), sometimes by working together with other municipalities, the police, or state and federal agencies. Well-known examples of these in Brazil are the Public Safety Consortium for the Metropolitan area of Recife and the Metropolitan Forum for Public Safety in São Paulo, which regularly gathers secretaries of municipal security, or their equivalents, together with representatives of the state government. At these meetings they plan joint initiatives, as well as exchange information and experiences.

This type of inter-municipal coordination allows the participating municipalities to better address problems that cross municipal boundaries. A second advantage is significant savings in the purchase of goods and services—such as a technical team to conduct planning, supervision and evaluation, or a technologically-advanced information system. These purchases, while potentially not feasible for any one small municipality, may be quite feasible for a consortium of municipalities working together.

Municipalities tend to focus on prevention programs - either because of their natural inclination, or because they do not have access to many of the traditional instruments of repression (police, prisons, etc.). Many of the elements of integrated municipal programs have already been discussed in the previous chapters; it is in essence a methodology for pulling together targeted interventions from various sectors, such as evidence-based

[58] During the 90s this municipality was one of the most violent ones in the metropolitan area of São Paulo.

planning, community-policing, access to justice measures, alcohol and fire-arms control, targeted social interventions, and situational prevention. The state of São Paulo, in particular the muncicipalities of Diadema and São Paulo have had particular success with adopting this kind of approach (see Box 1.1). Below we outline some of the main elements found in integrated programs at the municipal level in Brazil.

Main elements of integrated municipal programs

Most municipal programs to prevent crime and violence emphasize *social prevention* (targeted multi-agency programs that address the causes of crime and violence) and *situational prevention* (measures that reduce opportunities for particular crime and violence problems through urban spatial interventions such as Crime Prevention Through Environmental Design (CPTED) methodology).[59] To the extent possible given the limited municipal control over police forces, most municipal programs also include some form of *judicial/policing reform* to promote order, fairness, and access to due process, as well as reductions in the public fear of crime.

Social prevention programs: Municipalities are ideally placed to carry out social prevention programs. They usually build on the regular functions of the municipality in the areas of health, education, and social assistance. When 'realigned' with a violence prevention focus - based on identification and addressing specific risk factors - they are an essential element of any integrated municipal crime and violence strategy. The implementation of social preventative policies, often targeting youth, is undertaken mostly through local government and community-level NGOs. Both the targeting of social prevention programs and the participation of civil society groups and NGOs were key elements behind the success of São Paulo's recent homicide declines.

Social prevention programs are generally divided into: primary prevention (universal programs), secondary prevention (targeting high risk groups), and tertiary prevention (targeting victims and offenders). Interventions include training and skills development, particularly in the area of life skills, vocational skills, sport and sporting facilities as well as recreational, artistic, and cultural activities to engage youth and promote positive behavior. These programs usually have a medium- and long term impact. International evidence and emerging evidence from Brazil (see Chapter 7) show that secondary prevention is the most cost-effective strategy for reducing crime and violence.

Municipalities traditionally use primary prevention programs. However, focusing social prevention interventions both on specific at-risk groups as well as geographically can increase their impact. For example, it is common to see prevention programs targeting poor youth since they appear to be a critical group. More specific targeting, however, can lead to better crime prevention results; for example, depending on the identified risk factors, programs can be oriented to youth of a specific age, with a particular social profile (low educational attainment, idle, unemployed, etc.) and living in specific high-violence areas.

[59] The basic premise of CPTED is that if the physical environment is planned, designed and managed appropriately, certain types of crime can be reduced.

Diadema has successfully used targeted secondary social prevention programs with at-risk youth in some of the municipality's 'hotspots' (Box 6.2). The Fica Vivo project in Belo Horizonte also has shown remarkable results with this kind of careful targeting of prevention programs (Box 6.3).

Box 6.2. Police and Community Cooperation for Reduction of Violence in Diadema, São Paulo, Brazil.

Objective: Develop a model program of how to reduce violence in Brazil's high-risk urban areas through community policing and community cooperation.

Activities and achievements:

- Pulled together support between diverse political actors;
- Launched monthly town meetings in partnership with the Mayor, the City Council, Military and Civil Police Chiefs, business, religious and community leaders;
- Developed contacts and in-depth knowledge on violence reduction approaches, which are transferable to other Brazilian cities;
- Founded partnerships between the different city community authorities and community residents.

Outcomes, impacts:

- A 12% decrease in homicide rates; 11% decrease in car thefts;
- Increased public awareness on the problem of violence; inidicated dialogue and effective police initiatives;
- Founding of a Social Defense Coordinating office and Municipal Public Safety Council to study and implement various approaches to violence prevention;
- Introduced a Municipal law regulating the functioning of bars after 11:00pm;
- Implementation of a task force to work with parents, students and teachers in the area of violence prevention in the city; a pilot project targeting school violence;
- Provision of a computerized criminal mapping system;
- Creation of an anonymous telephone system for criminal activity report. In 2001, 65 of the 352 anonymous calls resulted in real arrests;
- More police and community cooperation;
- Increase in dialogue from other cities's officals, cities facing problems with violence such as São José dos Campos and Campinas.

Source: Fernand Braudel Instituite of World Economics, Development Marketplace Project: Police and Community Cooperation for Reduction of violence in Diadema, São Paulo, Brazil. Project 802, Final report, February 2002. http://www.braudel.org.br

Tertiary prevention is relatively new for municipalities. Although it is important to assist victims and reduce offenders' chances of re-offending—especially in the case of first-time offenders that already suffer social stigmatization—the probability of preventing a re-offense is generally lower than that of preventing a first crime. Tertiary prevention tends to be expensive, as it usually requires case-by-case monitoring and supervision and/or is undertaken in expensive residential facilities (prisons or juvenile detention facilities).

Box 6.3. Fica Vivo Program, Minas Gerais

An example of a succesfull cross-sectoral municipal/state progam is the 'Fica Vivo' homicide control program. The favela 'Morro das Pedras' was chosen for a pilot project that involved an intensive multi-sectoral program of interventions involving multiple partners: the university (UFMG-CRISP); the military and civil police; various municipal departments such as health, education, and social welfare; NGOs; and the residents themselves. As a result of the interventions, homicides in Morro das Pedras dropped by 40 percent in the first 12 months of the project. The project has now been adopted by the state government for replication in other high-crime areas in Belo Horizonte and the state of Minas de Gerais.

Source: Beato, 2004

Situational Prevention: One key element of municipal crime and violence prevention is 'Crime Prevention through Environmental Design' (CPTED) or situational prevention. The fundamental concept is that the 'physical environment can be changed in a way that will reduce the incidence and fear of crime and improve the quality of life' (Cook, 2003). Focusing on the settings of crime rather than on the perpetrators, the approach is concerned not only with the criminal justice system, but also with private and public organizations and agencies, such as schools, hospitals, transport systems, shops, telephone companies, public parks and recreation facilities. One of applications of this approach in Brazil has been in thinking about the link between the physical characteristics of favelas and the probability of victimization; housing issues, lack of social infrastructure, poor access, and the lack of basic urban services such as trash collection may in many instances contribute to a sense of insecurity and actual levels of violence. This has direct implications for urban upgrading projects and how they are targeted (see Box 6.4).

CPTED techniques have been particularly popular in North American and European cities, where they have achieved relative success. However, they have more recently also been adapted to Africa and Latin America.[60] The recovery of public space, better urban planning, and public transport was also an integral part of the Bogotá strategy to reduce crime and violence (see Box 6.1 above). This methodology is still relatively new to Brazil – although many urban planners have used some the main concepts and it forms a part of the São Paulo violence prevention strategy. (World Bank, 2004).

[60] See, for example, the work piloted in Chile on 'Espacos Urbanos Seguros' (Chile, 2003). The World Bank is also starting to pilot the integration of CPTED principles in its urban operations in Brazil, Honduras and Jamaica.

Box 6.4. Crime and Violence Prevention Components in Bank-financed Integrated Slum Upgrading -Operations – Viver melhor II, Bahia

The World Bank is ***operationalizing*** local crime and violence prevention in Brazil through the development of a specific project component in the Viver Melhor II project in Bahia. The component seeks to take advantage of the infrastructure and social investments taking place and mainstream prevention at the local level into the overall project.

The component focuses specifically on the reduction of the very high levels of homicide, youth violence, and associated risk factors in the participating neighborhoods. The component adopts a municipal/ urban renewal approach with a *preventive, multi-sectoral, and local strategy* through activities that are complementary to, coordinated with, but go beyond traditional police responses. Particularly important are the synergies between the infra-structure, upgrading, and the 'situational prevention' - and the community-based 'social prevention' activities. The overall objective is a comprehensive intervention at the neighborhood level that is also closely coordinated with other relevant municipal, government, and non-governmental programs addressing crime and violence and their associated risk factors in these neighborhoods. The component has six subcomponents:

- *Diagnostics*: Crime and violence mapping of the micro areas using police statistics and where possible using GIS systems; victimization section in the baseline surveys, willingness-to-pay for increased safety, and; community based and situational diagnostics.
- *Situational prevention*: measures that reduce opportunities for particular crime and violence problems through spatial interventions such as Crime Prevention Through Environmental Design (CPTED) methodology and urban renewal. This method is mainstreamed in the infrastructure works of the projects through the training of the architects, engineers and other technical staff. This methodology is very new in Latin America but has been successfully piloted in Chile and in the Bank-financed PROMETROPOLE project in Pernambuco, Brazil.
- *Capacity-building, training and technical assistance in multi-sectoral crime and violence prevention* to the participating government agencies, municipalities, and CBOs.
- *Complementary investments and activities*: *A fund for complementary investments and activities*: the neighborhood residents work with the partner agencies and the technical staff of the project to develop a plan for crime and violence prevention and use these funds to implement the prioritized subprojects and community programs that are not already covered by one of the other project programs or partner programs. The menu for these may include: social infrastructure investments – such as recreation centers, community facilities, and public lighting not financed through the infrastructure works components, and; Social prevention activities – such as life skills, job skills, and parenting skills training, conflict resolution training, homework clubs, sports and arts-based recreational activities, victim support, and domestic violence prevention.
- *Community Organizers:* The role of these technical experts in community organization and crime and violence prevention is - at the neighborhood level – to: carry out community-based diagnostics; formulate participatory community safety plans and strategies; liaise and coordinate with other relevant agencies and associations, in particular with Community Safety Councils and the Police; coordinate closely with the works to ensure integration of CPTED principles; identify and work with youth at –risk in the community; organize and mobilize the community around the concept of safety though community campaigns (e.g. community clean-up\painting days, community safety festival, etc.); initiate additional projects such as summer camp for at-risk youth, etc.
- *Monitoring and Evaluation component:* Evaluations of the components have been designed and will be carried out Whilst we have as yet no data from these Bank-financed projects, a few similar community-based integrated interventions have yielded dramatic results. The 'Fica Vivo' program in the *Morro das Pedras* favela in Belo Horizonte, Brazil resulted in a 40 percent reduction in homicide rates in its first year.

Judicial/policing reform: Most municipalities are not in a position to carry out fundamental reform of the criminal justice system – as these need to be formulated and implemented at the state and federal levels. Therefore, coordination with state and federal agencies in this area is essential. Judicial reform is particularly significant for the urban poor who "lack the means to secure their own protection or legal counsel, routinely face unequal access to justice, distrust the justice system, and lack information on alternative channels through which to contest matters of rights and justice" (Vanderschueren and Oviedo, 1995 as cited in World Bank, 2005). Therefore, justice reform measures that bring justice into local communities can be quite effective and complement reform and institutional strengthening of the overall system. At the municipal level, justice projects in Brazil have increasingly focused on access to justice in community-focused interventions that include alternative dispute resolution mechanisms, legal aid, and attention to gender issues. A popular example of these throughout many Brazilian cities are the 'Balcão de Direitos', free legal aid services usually offered in partnership with NGOs or universities.

Police reform is another important institutional issue given the widespread lack of trust in the police in poor urban communities, closely linked to corruption and human rights abuses. Again, local-level interventions are considered to be particularly successful with community policing increasingly popular as a local-level intervention to address citizen insecurity. Its underlying philosophy is to broaden the role of the police from maintaining order and preventing criminality, to involving the community in the design and implementation of strategies to reduce and prevent violence. This approach is increasingly recognized and implemented in Brazil.

As noted before, Brazilian municipalities are very limited when it comes to the implementation of police violence prevention programs since police forces are accountable to the state or federal government level. It is possible to develop programs through the cooperation with the Polícia Militar and Polícia Civil, but there is much political, administrative and cultural resistance against municipal control of police. Even community policing experiences are almost always at the state police level and the role of local government is generally small.

One popular alternative used by municipalities in Brazil is the use of the Municipal Guards – either alone or in coordination with the police forces. When trained and managed properly, municipal guards can perform a community policing function complementing the more traditional activities of the other police forces. The guard can register small incidents not usually recorded by the police, hold community meetings, take note of social problems and transmit this information to the relevant the municipal secretariats. A good example of this kind of functioning of the municipal guard and coordination with the Polícia Militar can be found in Diadema.

Despite these promising entry points for municipal-level crime and violence prevention, municipalities have important limitations concerning resources, strategic vision, risk of corruption, and coordination with other levels of government.

Municipalities lack capacity/resources: Many municipalities simply lack the capacity to design and implement an effective crime and violence prevention strategy. While there often is general recognition of the importance of increased municipal role in public safety, municipalities frequently do not know where to start, the necessary strategic steps, whom to involve, and where to turn for help. Inadequate use of information systems, diagnostics, and monitoring and evaluation are often a reflection of the fact that many municipalities simply do not have the required in-house expertise; moreover, municipalities often lack the resources to hire this kind of expertise.[61]

While prevention projects that involve the 're-alignment' of existing municipal projects/program may not need significantly more budget, newly formulated prevention projects do. In the context of cash-strapped municipalities and other competing priorities and political pressures to show quick results, it is often difficult to fund these initiatives because they may only show results in the medium or long term.

Municipalities lack 'prevention vision': Related to the lack of capacity, many municipalities do not have a strong understanding of what multi-sectoral crime prevention entails and what their role might be. The dominant way of thinking about public safety remains the criminal justice approach. Municipalities attempting to tackle crime and violence often fall in the trap of simply replicating what state and federal programs are already doing. A typical example of this is the role of the Municipal Guard. In many cities, the guard is simply turned into another Military Police – reverting to traditional, ineffective policing methods. Often this is a response to a frustration with the lack of coordination between local government and state police forces.

Risk of corruption and local capture: As with many local programs, municipal crime and violence prevention programs are susceptible to corruption as well as to elite control. Resources are not always allocated to those areas that need them most, but rather to those that have a more powerful voice. In addition, in the context of the parallel powers of the organized crime and drugs organizations, there have been numerous examples of capture at the local governmental and community level. Transparent and community-based participatory processes are critical to counter these risks.

Lack of coordination with the state level: In many cases – and sometimes for political reasons – there is a lack of coordination between crime and violence prevention efforts at the local level with those at the state level. There is often also a cultural resistance within the police forces to work with municipalities. However, coordination with state level agencies is critical, especially in areas such as the sharing of crime and violence data and other information, and setting up of integrated information systems.

*Lack of capacity and resources at the federal level: SUSP (*Sistema Unico de Seguranca Publica) was created to compensate for the lack of capacity, resources, and coordination. Its function is to coordinate the actions of the various independent public safety and

[61] In response to this expressed demand, LCSFU has developed a Municipal Crime and Violence Prevention course with BNPP resources. In Brazil, the program has been taught in Rio de Janeiro, Minas Gerais, São Paulo, Porto Alegre, and Recife, and more courses are planned for 2006.

justice institutions at the federal, state, and municipal levels, and to provide technical assistance, leadership, and funding.

SUSP emphasizes municipal government as a key partner in combatting urban crime and violence across the country. However, SENASP itself lacks the necessary capacity and resources to provide this type of technical assistance to municipalities. In addition, the allocation of the resources from the Fundo Nacional de Seguranca Publica is still largely to traditional criminal justice projects (often funding police forces), while municipal prevention programs remain underfunded.

The way forward for integrated municipal programs and the role of other levels of government: Municipalities are one of the key entry points for crime and violence prevention. Traditional criminal justice solutions such as police and judicial reform are necessary – but can have much more impact when complemented by integrated programs.

An important step to advance the municipalization of public safety in Brazil is to strengthen SENASP and the Fundo Nacional de Segurança Pública so that they can provide more technical support and resources to municipalities. In addition to federal support, there is an important role for state governments to: a) strengthen their ability to deal with crime and violence in an integrated way; b) work with municipalities in a collaborative way and; c) provide assistance and leadership in metropolitan and statewide strategic partnerships with municipalities. Lastly, various research institutes and NGOs have provided a critical source of technical assistance to municipalities in the development of public safety diagnostics and municipal prevention plans.[62] Support for the continuation of this type of support and replication to other interested municipalities could go a long way toward building capacity at the local level.

GEOGRAPHIC INFORMATION SYTEMS (GIS): THE USE OF MAPS FOR CRIME ANALYSIS[63]

This section briefly examines the usefulness of GIS and the way in which these systems and related analysis are being incorpated into public safety across the different sectors and concludes with some practical examples using GIS mapping in Belo Horizonte.

Traditionally in the analysis of crime police forces would use (and some still do) paper maps with colored pinheads to indicate the location of incidents (Figure 6.1).. These were used by commanders for planning and operational management of public security activities. The use of these maps was made easier by the small number of events analyzed.

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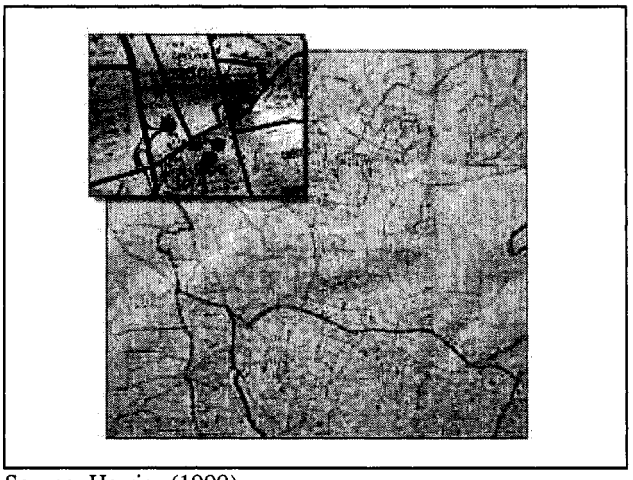
[62] For example, Viva Rio (with UNDP funding) worked with the municipalities of Resende, Barra Mansa, and Niteroi to develop integrated prevention plans; Sou da Paz is similarly helping Diadema and involved in the evaluation of its programs; CRISP provides technical assistance to Belo Horizonte and to the state of Minas Gerais.

[63] This section is based on a background paper prepared by Claudio Beato and Renato Assunção, CRISP / UFMG.

Figure 6.1.Traditional pinhead map



Source: Harries (1999)

However, often levels of crime and violence are such that there are not enough colored pinheads to mark all the cases to be visualized. Also, this method does not allow for the analysis of different patterns over time and space. The technological evolution of software and hardware over the last few years has made the use of GIS cheaper, more agile and powerful, making it possible to process a broad spectrum of information of a varied nature and a large number of events simultaneously. This has opened up a new range of analytical possibilities that are gradually being incorporated into the work on identification of patterns of criminal behavior.

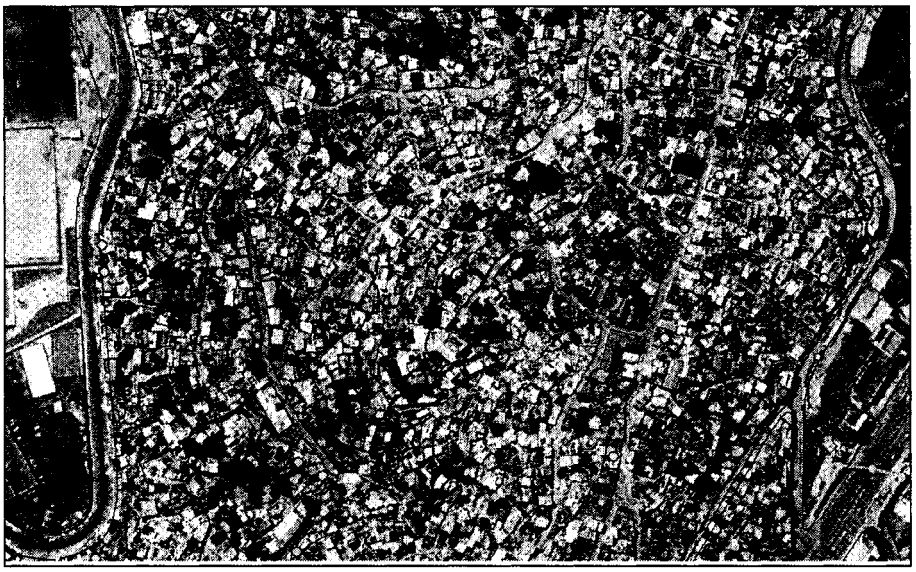
These technological advances have also fueled a fundamental change in public security management techniques in general, and those of police organizations in particular. COMPSTAT in New York City became a reference for police forces all over the world, demonstrating the importance of accurate and rapid information for the effective allocation of police resources. In Latin America, countries such as Brazil, Chile, Argentina and Colombia have seen a surge in the use of technologies of this nature. Their introduction has at times been accompanied by reforms in the organizational and management practices of police forces and have made possible the sharing of information with (and participation of) other actors ranging from academia to local government and civil society.

The identification of crime 'hotspots' has been decisive in the formulation of effective crime control strategies and programs, including control strategies for specific problems, the planning of actions, and the dispatch of police vehicles (Sherman *et al*, 1989; Beato, 2005). The creation of crime analysis units supports the development of community policing and problem-orieinted policing; they can also be used to promote police accountability to the community about police performance and conduct (Buslik and Maltz, 1998).

Maps are also a way to establish links between environments and crime. The yellow dots in Figure 6.2 correspond to the location of homicides. They take place in the most public

parts and routes of the community, many in bars, and others in points of sale of drugs. The image illustrates how important an element the physical makeup of the urban fabric is, facilitating the escape of criminals and making police access difficult. Alleys and small, narrow, dead-end streets form a maze that makes patrolling and the delivery of public services difficult. This urban chaos is inseparable from the problems of violence and disorder that occur there.

Figure 6.2. Crime and Urban Architecture



Source: Beato (2005)

The building of geo-files is the first step in crime analysis in order to efficiently allocate resources and activites. This involves setting up geo-referenced databases with several sources such as census data, information from agencies in the justice system, and victimization data. The advantage of taking spatial units as the information-gathering base is that space becomes the common denominator for information coming from different sources, making it possible to build a database that brings together the most diverse types of information.[64] This cross-referencing of is crucial for identifying the factors generating crime and is the first step towards developing interventions.

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[64] One of the best-known examples is the Early Warning System Project of the Chicago Police. It is fed by: (a) *offical non-police sources*, such as public administration bodies that deal with parks, schools, traffic, housing and buildings, etc; (b) *police sources*, from databases on gangs and mobs, intelligence services, homicide files, maps of several types of crime, data from other bodies of the criminal justice system etc; (c) *community groups*, that produce information from formal and informal meetings with the community, information received from other agencies, associations, and prevention programs. All this information is processed by the system, which forwards it to an analysis unit charged with identifying hotspots. This information is disseminated later to those in charge of policing, special police units and municipal bodies involved, as well as the community, associations and civil society organizations. It is a structure that seeks to integrate a broad spectrum of information into a single system that brings together the police, and public and civil agencies (Rewers, 1995).

The effort to understand the factors associated with the occurrence of certain types of crime is illustrated by the example below on homicides in Belo Horizonte. The kernel map below (Figure 6.3) identifies the homicide hotspots registered by the police during the 1995-98 period. The analysis of the distribution of these hotspots shows that there are seven regions that concentrate homicides in the city. With the exception of the central region, they are all urban spaces dominated by slums (indicated by name on the map).

Hotspot mapping: the Belo Horizonte MAP project[65]

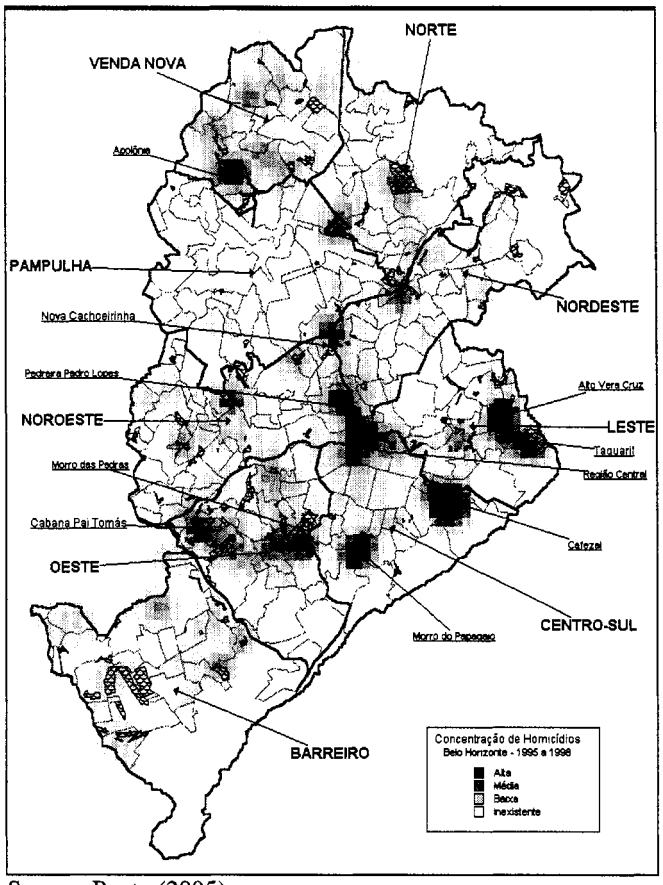
The MAP project was a partnership between the Center for Crime and Public Safety Studies (CRISP) of the Federal University of Minas Gerais and the Belo Horizonte Police Command (Comando de Policiamento da Capital - CPC) of the Minas Gerais Military Police (PMMG). It was part of a broader program implemented by the CPC called *Polícia de Resultados* (Results-based Policing), which sought to introduce new management techniques for police activities through the decentralization of operational planning and the introduction of mechanisms for monitoring and controlling results.

The city of Belo Horizonte is divided into 25 policing regions (companies). These became the responsibility of *public security managers*, who were the police captains in charge of each region. They were responsible for the results in the areas under their command and were given the power to adopt measures they deemed necessary. Adopting some of the police management techniques used by the New York City police, periodic meetings were held in which officials in charge of each unit took part, as well as occasionally community leaders. An operational plan was formulated for each of the areas; police captains were held accountable for the results delivered by the plan. Emphasis on management by results, therefore, was a fundamental change.

One of the principal components of the MAP project was the intensive use of information for operational planning and for the development of crime control programs and projects. Contrary to the traditional production of reports at the end of the year with the sole objective of bureaucratic accountability, the aim was to focus on organizing a center for crime analysis that permanently supplies commanders with timely information and analyses. Maps were the main tool at the disposal of analysts and commanders.

[65] The MAP project was implemented with support from the Ford Foundation and the Hewlett Foundation.

Figure 6.3 Concentration of homicides in Belo Horizonte - Period: 1995 to 1998



Source: Beato (2005)

Every six months, managers from each of the 25 policing regions were given a statistical diagnosis of the violent crimes incidents in each region, indicating the criminal acts with the highest incidence, in which neighborhoods they were concentrated, times, days of the week and month. In addition, the most common criminal acts in each region were specifically represented on a regional map, allowing the identification of crime 'axes' and 'patches', and 'hotspots', which the police began calling *zonas quentes de criminalidade*(hot crime zones). Based on this information, the captains of each region developed an operational plan for the coming months, establishing performance targets to be met in that period.

Solutions through partnerships were encouraged. In cases in which there were hold-ups on buses and taxis, for example, negotiations with unions and businesses were carried out in search of joint solutions. Mapped data of robberies of taxi drivers revealed hotspots located in streets and avenues near entrances to some nuclei of violence in the city. A strategy was put together with the Taxi Drivers' Union, so that check-points and passenger frisking for search and seizure of arms were put in place in these locations. Taxi drivers and police officers knew where these police operations were located. As a result, armed robbery of taxi drivers fell by more than 34% from 2000 to 2001. Another

example of the results of the MAP exercise was the successful cross-sectoral 'Fica Vivo' homicide control program (see Box 6.3 above).

The overall result was a reduction of 5,600 violent crimes over the first 18 months of the program. A subsequent analysis confirmed the efficacy of this type of planning and management through mapped information (Beato, 2005).

CHAPTER 7. COST EFFECTIVENESS OF VIOLENCE PREVENTION PROGRAMS IN BRAZIL[66]

This chapter provides the first estimates of the cost-effectiveness of crime prevention and control programs in Brazil. Such cost-effectiveness estimates are potentially useful in allocating scarce resources in such a way as to maximize the impact on crime prevention. Although the analysis is not comprehensive or definitive, it is the first attempt to estimate the cost-effectiveness of such initiatives in a developing country.

Cost-effectiveness estimates are a potentially powerful tool for allocating crime prevention resources; of course, this tool must be used with caution in Brazil because of the preliminary nature of the estimates and because they are based on imported effectiveness parameters. Despite its preliminary nature, the results are similar to those found in the few developed countries in which this type of analysis has been performed.

The chapter adapts an evaluation methodology developed by Greenwood and others (1998) to estimate the costs effectiveness of crime and violence prevention interventions. The chapter's results are only suggestive (rather than definitive) because no information is available on the effectiveness of the evaluated programs in Brazil. This chapter uses rates of effectiveness for similar programs in other countries obtained through meta-analysis studies from the international literature. While a sensitivity analysis is conducted in order to gauge the sensitivity of the analysis to these and other assumptions, it is important to recognize at the outset the tentative, back-of-the-envelope nature of the results.

Nine crime prevention and control programs are evaluated; these programs are being implemented in the cities of Belo Horizonte, Rio de Janeiro, and São Paulo. These interventions were chosen based on three criteria: availability of cost information, similarity to programs already evaluated in the international literature, and need to cover the three types of prevention interventions: primary, secondary, and tertiary.

The sole primary prevention program evaluated is Bolsa Família (Family Allowance), a federal conditional cash transfer program for poor families.

Secondary prevention programs evaluated include:

- Uerê, a program (developed by the nongovernmental organization (NGO) of the same name) that promotes the social and family reintegration of children and teenagers living on the streets and in violent communities in Rio de Janeiro.
- Paz nas Escolas (Peace in Schools), a program developed by Fundação Criança in São Paulo, offers training for the parents of at-risk children in poor neighborhoods. The training is designed to increase parents' ability to prevent and deal with anti-social behavior.

[66] This chapter is based on a background paper prepared by Monica Vieigas.

- Fica Vivo (Stay Alive/Stay Sharp), is a homicide control and crime prevention program in violent urban areas managed by the Minas Gerais state government.
- PROERD (Educational Program of Resistance to Drugs and Violence), a program to prevent drug use and violence among children and adolescents in schools, is implemented in Belo Horizonte by the Minas Gerais Military Police.

Tertiary prevention programs evaluated include:

- An APAC (Association for the Assistance and Protection of Convicts) program that develops a system of sentences using a socializing method, as an alternative to the traditional prison system developed in Itaúna, Minas Gerais.
- CEAPA (Central Program of Alternative Sentences), a state program managed by the Minas Gerais Department of Social Defense in conjunction with the Social Reintegration program for ex-convicts. CEAPA aims at monitoring the application of alternative (non-custodial) sentences and at social reintegration.
- Liberdade Assistida (Assisted Freedom), an alternative to the internment of underage transgressors at the State Foundation for the Welfare of Minors, managed by the Belo Horizonte Municipal Department of Social Defense.

The sole control program evaluated was Patrulha de Prevenção Ativa (Active Prevention Patrol, or PPA), a system of conspicuous patrolling conducted by the Minas Gerais Military Police in Belo Horizonte. Detailed descriptions of these nine programs are given in Appendices 2 and 3.

METHODOLOGY

We use an economic evaluation methodology originally used by Greenwood and others (1998) to compare the cost-effectiveness of crime prevention and control programs in California (United States). This methodology was used to examine the cost-effectiveness of the nine crime prevention and control programs in Brazil described above. For each program the summary measure of cost-effectiveness is the number of serious crimes prevented per million reais spent on the program. This summary measure requires, as inputs, a calculation of the program's benefits and an estimate of its costs.

Calculation of program benefits

Program benefits are calculated in four steps:

1) obtaining the effectiveness rate (that is, the program's impact on crime reduction, measured by comparing crime rates between beneficiaries and a control group);
2) estimating the number of crimes committed in the criminal career;
3) estimating the number of crimes avoided per person treated by each program; and
4) Discounting to present value the inter-temporal benefits and costs.

Despite growing recognition of the importance of impact evaluations of public programs, impact evaluations of social programs are rare in Brazil. Since such evaluations do not exist for Brazil's crime prevention and control programs, for comparative purposes we use effectiveness rates for foreign crime prevention and control programs with substantially similar characteristics to the nine Brazilian programs. Great care was taken to use impact parameters from substantially similar programs in other countries. The impact parameters come from meta-studies that gauge the average impact of programs using multiple impact evaluations, rather than relying on just one impact evaluation. Despite the care taken in choosing comparator programs, this modeling choice is a decidedly imperfect solution and introduces bias in directions that are impossible to predict.

Once the appropriate effectiveness rate is identified for each program, we adjust it for two effects that alter the efficacy of the program: scale effects and time effects. The scale effect is the loss of efficacy that results from increasing the size of the program's target group. The time effect captures the reduction in effectiveness over time.[67]

For PPA the effectiveness rate was approximated by calculating the reduction in crime in the municipality of Belo Horizonte during the months the program functioned (August 2004 to April 2005) relative to the same period the year before.[68]

For the tertiary prevention programs the effectiveness rate was calculated as the difference in recidivism rates between the treatment group and the control group. In the case of CEAPA, studies evaluating similar programs in other countries have found them ineffective; thus CEAPA is given a zero effectiveness rate (Aos and others 2001).

Table 7.1 provides estimates of gross effectiveness rates and corrected rates (taking into account scale and time effects) for each of the nine programs. Effectiveness rates are expressed as the percentage reduction in serious crimes among program beneficiaries compared to a control group of non-beneficiaries.[69]

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[67] In general, impact evaluations of crime prevention programs follow the target population for an insufficient period of time to adequately measure the long-term impacts. Furthermore, once the program ceases, a reduction in effectiveness is likely to occur. Note that corrections for scale and time effects do not apply to the crime control program evaluated (PPA).

[68] The category of violent crimes used here follows the classification used by the Military Police of Minas Gerais. It includes homicide (attempted and consummated), consummated robbery, consummated armed robbery, robbery followed by death, extortion through kidnapping, and rape (attempted and consummated).

[69] In the international literature the effectiveness rate for programs such as Bolsa Família is 70 percent and for Paz nas Escolas, 60 percent. Although the strategic actions of foreign programs are similar to those of the programs evaluated here, these effectiveness rates may be too high because there are significant differences in the target populations. For Bolsa Família the only conditional cash transfer program we found in the international literature that aims to stimulate increased schooling—and for which the impact on crime has been estimated—is the Quantum Opportunity Program (QOP). (Note that while several Latin American conditional cash transfer programs have been rigorously evaluated in terms of their impact on school attendance and performance, their impact on delinquent behavior is not known.) Despite having the same objective, QOP's target population is high school students, while Bolsa Família targets primary education. Hence Bolsa Família's results in terms of crime reduction tend to be smaller, since the program

Table 7.1. Gross and corrected effectiveness rates for Brazilian crime prevention programs (percentage reduction in serious crimes among program beneficiaries)

Program	Effectiveness rate	Scale effect	Time effect for youth crime	Time effect for adult crime	Corrected effectiveness rate for youth crime	Corrected effectiveness rate for adult crime
APAC	10	15	0	0	8,50	8,5
Liberdade Assistida	14	20	0	10	11,20	10,08
Uerê	13	15	5	40	10,50	6,63
Paz nas Escolas	15	20	20	70	9,60	3,6
Fica Vivo	31	25	0	10	23,25	20,925
Bolsa Família	25	40	10	50	13,5	7,5
PROERD	2	30	15	60	1,19	0,56
CEAPA	0	-	-	-	-	-
PPA	5,3	-	-	-	-	-

Source: Viegas (2005).

To obtain the number of crimes avoided per program beneficiary, it is necessary to calculate the number of serious crimes committed in the criminal career.[70] Needed parameters are the distribution of crimes between young people and adults, the distribution of individuals between criminals and noncriminals, the stock of active adult criminals on the streets, the annual number of adults beginning a criminal career, and the number of crimes committed each year by an active adult criminal. Databases in Brazil only contain information on the distribution of homicide victims by age group, making it impossible to estimate the above parameters for Brazil.[71] Thus, we use the parameters calculated by Greenwood and others (1998) for California.

The number of serious crimes committed in the criminal career is estimated by multiplying the duration of the criminal career and the number of serious crimes committed in a year. The duration of the criminal career of an adult is obtained by dividing the stock of active adult criminals by the number of adults beginning a criminal career.

Once the number of serious crimes committed in the criminal career has been identified, we estimate the number of crimes avoided per person treated in each program. The crime

ends when children are entering the at-risk age group. On the other hand, QOP is delivered to youth at the highest risk of engaging in delinquency. For Paz nas Escolas the most similar interventions in the international literature are courses for parents aimed at improving their ability to deal with their children, while the Paz nas Escolas training is carried out with community "multipliers." Accordingly, we assume that Paz nas Escolas is less effective than the programs found in the international literature. Given these concerns, the effectiveness rate for Bolsa Família was arbitrarily fixed at 25 percent, and for Paz nas Escolas at 15 percent.

[70] The definition of serious crimes put forward by Greenwood and others (1998) includes homicide, rape, theft, armed robbery, assault, arson, and 60 percent of burglaries.

[71] Information on homicide victims comes from the Ministry of Health's Mortality Information System (SIM). Information on other types of crime comes from police records, making it impossible to differentiate by age group.

status of the beneficiary population of each program is estimated by multiplying the distribution of criminals and noncriminals in the California group by the targeting ratio of each program.[72]

Finally, we estimate the number of crimes avoided per person treated in each program by multiplying the number of crimes the average individual commits during a criminal career by the corrected effectiveness rate of each program. These estimates are provided in Table 7.2.

Table 7.2. Number of serious crimes avoided per beneficiary in Brazilian crime prevention programs

Program	Young person	Adult
APAC	0.335	1.140
Liberdade Assistida	0,332	1,014
Uerê	0,280	0,600
Paz nas Escolas	0,118	0,151
Fica Vivo	0,619	1,894
Bolsa Família	0,167	0,314
PROERD	0,012	0,019

Source: Viegas (2005).

The last stage involves calculating the current value of each program's benefits. To perform this calculation, we distribute the crimes avoided per individual treated over the 30 years during which each program is assumed to produce results, taking care to distinguish between crimes avoided by young people and by adults because of different criminal "retirement" rates between the two groups (Greenwood and others 1998; see below for results).[73]

Calculation of program costs

Calculating program costs involves computing the average annual cost per beneficiary in present value terms. In general, the costs included in this calculation include all variable costs of program operations. Table 7.3 shows the annual cost per beneficiary and the

[72] The targeting ratio is an indicator that compares the crime rate among the beneficiary population of the program to the crime rate among the general population. A targeting ratio of 1 means that crime among the beneficiary population is identical to that among the general population—meaning that the program is not focused. The higher the targeting ratio, the more focused the program. For data reasons, this parameter was calculated directly only for Fica Vivo. We obtained a value of 5.4, indicating that the program's target population is rather vulnerable. For the other programs we arbitrarily fixed the values using the targeting ratio of Fica Vivo as a reference.

[73] This distribution is carried out assuming a criminal retirement rate of 10 percent per year for adult criminals and 0 percent for young people. Clearly, the speed with which each program's benefits appear depends in part on the age of its beneficiaries; for programs targeting very young populations, the benefits in terms of crime prevention will not materialize for some time since delinquent behaviors generally do not appear until the teen years.

duration of each program. The average total cost is the sum of the annual costs, using a discount rate of 4 percent a year.

Table 7.3. Annual cost per beneficiary of Brazilian crime prevention programs (reais)

Working period	APAC	Liberdade Assistida	Uerê	Paz nas Escolas	Fica Vivo	Bolsa Família	PROERD	CEAPA
Year 1	4878,82	1323,68	707,84	192,23	84,23	224,41	35,43	145,40
Year 2	4878,82	_	707,84	_	84,23	224,41	_	_
Year 3	4878,82	_	707,84	_	84,23	224,41	_	_
Year 4	4878,82	_	707,84	_	84,23	224,41	_	_
Year 5	_	_	707,84	_	84,23	224,41	_	_
Year 6	_	_	707,84	_	84,23	224,41	_	_
Year 7	_	_	707,84	_	84,23	224,41	_	_
Year 8	_	_	707,84	_	84,23	224,41	_	_
Year 9	_	_	707,84	_	84,23	224,41	_	_
Year 10	_	_	707,84	_	84,23	224,41	_	_
Year 11	_	_	707,84	_	84,23	224,41	_	_
Year 12	_	_	707,84	_	84,23	224,41	_	_
Year 13	_	_	707,84	_	84,23	224,41	_	_
Year 14	_	_	707,84	_	84,23	224,41	_	_
Year 15	_	_	707,84	_	84,23	224,41	_	_
Year 16	_	_	_	_	84,23	-	_	_
Year 17	_	_	_	_	84,23	-	_	_
Total	19515,28	1323,68	10617,60	192,23	336,92	897,64	35,43	145,40

Source: Viegas (2005).

RESULTS AND SENSITIVITY ANALYSIS

This section estimates the cost-effectiveness of the Brazilian programs, using the data on benefits and costs developed above. It then tests the strength of those results by conducting a sensitivity analysis of certain parameters.

Table 7.4 shows the results. The cost-effectiveness estimates in the third column are the number of reais spent by each program per serious crime avoided, while the fourth column reports the number of serious crimes avoided per million *reais* spent.[74] The estimates show that general, the prevention programs are more cost-effective than the control program considered. Only Bolsa Família (primary prevention), Uerê (secondary

[74] For all programs except PPA the estimates of *reais* per crime avoided come from comparing the benefits and costs calculations in the two previous sections. For PPA this indicator was calculated by dividing the total cost of the program by the number of violent crimes avoided in Belo Horizonte. For PPA the cost per crime avoided is probably overestimated because the cost data refer to a 12-month period and the crime reduction estimates refer to a 9-month period. Cost data are not available for the shorter period, and nonlinearities in costs mean that simply reducing costs by 25 percent may not be appropriate. Analysis of the CEAPA program (which has an assumed zero effectiveness rate based on the international literature) is limited to a comparison of its cost per beneficiary relative to the traditional prison system. APAC is analyzed by comparing its costs to those of the traditional prison system.

prevention), and APAC (tertiary prevention) were less cost effective than PPA, the police control program in Belo Horizonte.

In Bolsa Família and Uerê the beneficiaries stay in the programs for a long time, resulting in high costs per beneficiary. APAC is also costly—reflecting the nature of the program, which requires providing facilities and upkeep for a prison population. Even though it is less cost-effective than PPA and the other prevention programs, APAC is about one-fifth the cost per inmate of the traditional prison system, which in 2005 cost 22,128 *reais* per inmate in Minas Gerais.[75] The same is true for CEAPA, which does not present results in terms of effectiveness but is much cheaper than the traditional prison system (about 300 *reais* a year per beneficiary). The most cost effective program is Fica Vivo, followed by Paz nas Escolas. PROERD and Liberdade Assistida have similar cost-effectiveness rates. All four of these programs have a much lower cost per crime avoided than does PPA.

The purpose of the sensitivity analysis is to check for which values of the parameters the results are most sensitive. The robustness of the results may be tested through the variation in the value of one or more parameters; we conducted the analysis considering the variation in one parameter at a time. The parameters considered were the cost per beneficiary, targeting ratio, effectiveness rate, scale effect, time effect, and the discount rate.

Table 7.4. Cost-effectiveness of Brazilian crime prevention programs

Program	Current cost of program per beneficiary	Current number of serious crimes avoided per beneficiary	Reais per serious crime avoided	Serious crimes avoided per million *reais*
APAC	18,417,99	0,87	21,109,75	47,37
PPA	–	–	6,916,42	–
Liberdade Assistida	1,323,68	0,91	1459,94	684,96
Uerê	8,184,84	0,45	18,290,73	54,67
Paz nas Escolas	192,23	0,16	1,174,45	851,46
Fica Vivo	1,065,70	1,65	645,69	1,548,73
Bolsa Família	2,594,88	0,23	11,256,15	88,84
PROERD	35,43	0,02	1,682,33	594,42
CEAPA	145,40	–	–	–

Source: Viegas (2005)

[75] This information came from the Department of Social Defense in the state of Minas Gerais. In Brazil there is great variance in the costs of the traditional prison system. The unit of the federation with the highest cost is Distrito Federal (the Federal District, where the capital city is located).

The sensitivity analysis reveals that the results are very robust. Consider an example. The first line in Table 7.5 shows the critical values of the parameters for APAC. As shown in Table 7.4, APAC is less cost-effective than PPA, with expenses of 21,110 *reais* per serious crime avoided compared with 6,916 *reais* for PPA. To determine at what cost per beneficiary APAC would become more cost-effective than PPA, we reduced the cost per beneficiary until the critical amount of 1,500 *reais*, while keeping all other parameters constant. Thus, for any cost per beneficiary below 1,500 *reais*, APAC is more cost-effective than PPA.

This analysis was conducted for the seven parameters listed in Table 7.5. For the scale effect, which considers the loss in program efficacy resulting from the size of the population, the value arbitrarily fixed (originally) for APAC was 15 percent. But even when this effect is nil, APAC is less cost-effective than PPA. In other words, it is not possible to obtain a feasible critical value. In such cases "NA" (not applicable) is indicated in the table.

Cost per beneficiary was the parameter for which the cost-effectiveness analysis showed itself most sensitive for all the programs. For APAC, Liberdade Assistida, and Uerê, for example, reducing the cost per beneficiary to about a third of the stated value would make these programs more cost-effective than PPA. For Bolsa Família a reduction to 130 *reais* (about half its current cost) would make it more cost effective than PPA.

Table 7.5. Sensitivity analysis: critical values of the parameters

Program	Cost per beneficiary	Targeting ratio	Effectiveness rate
APAC	< R$1500	NA	>31
Liberdade Assistida	>R$6300	NA	NA
Uerê	<R$250	>20	>48
Paz nas Escolas	>R$1750	NA	NA
Fica Vivo	>R$950	NA	NA
Bolsa Família	<R$130	>6	>52
PROERD	>R$140	NA	NA

NA = not applicable (interval of values not feasible).
Source: Viegas (2005).

These results are rather robust and indicate that, in general, the secondary prevention programs spend the least resources per serious crime avoided, followed by PPA. Bolsa Família, the only primary prevention intervention analyzed, has a cost of more than 11,000 reais per serious crime avoided. This rather high amount is due to the program's duration and broad coverage, and to the fact that Bolsa Família was designed with very different goals from the other programs. Of the tertiary prevention programs, APAC has the highest cost per crime avoided, with a cost much higher than that of Liberdade Assistida. But of the three tertiary prevention programs analyzed, APAC is the only one that occurs while program beneficiaries (convicts) are in custody—and, as noted, APAC's cost per inmate is about one-fifth that of the traditional prison system.)

CHAPTER 8. CONCLUSIONS AND WAY FORWARD

As this report has documented, crime and violence rates are high in Brazil. In 2002 the country's homicide rate—32 per 100,000 inhabitants—was the fourth-highest in Latin America and the Caribbean. Not only is the Brazil's homicide rate quite high, it also has more than doubled since 1980. The prevalence of other forms of violence and crime are also worrying: according to data from victimization surveys, Brazil in the mid-1990s had the highest rate of victimization for robbery and sexual assault among 16 developing countries included in the survey; more recent data for 2001 show continued high rates of robbery and theft, with 9.8 percent of individuals being victimized. Intimate partner violence affects one in three Brazilian women (Chapter 1).

This report also examined the economic costs of crime and violence. Various state- and city-level studies have estimated that the direct costs of crime amount to 3 to 5 percent of GDP. Investment climate assessments in Brazil consistently put crime and violence as a major constrained to business growth. Potentially more important is the impact of crime on economic growth. Preliminary estimates for this report suggest that if the homicide rate in Brazil between had been 10 percent lower between 1991 and 1995, per capita income might have been 0.2- 0.8 percent higher over the following five years (Chapter 2).

Given the negative impact of crime and violence on development, the development of effective public policy to reduce levels of crime and violence is an urgent priority. This report provides a critical survey of approaches to public safety and identifies good practices in the prevention of crime and violence through analyses of initiatives in Brazil and —and where relevant—other countries.

This chapter distills the main conclusions of the report and provides recommendations for public policy at the federal, state and municipal level and the way forward.

In addition to the message that crime and violence are a key development issue, nine other important conclusions emerge from the report:

- *There is no single, magic solution to reduce levels of crime and violence in Brazil.* Since factors that contribute to crime and violence operate at multiple levels (individual, family and peer group, community and society—see Chapter 2), no single intervention, no matter how well designed and executed, will solve the problem. There are multiple entry points to prevent crime and violence, and this report identifies some of the approaches likely to pay large dividends in reducing crime and violence. They include prevention programs targeting at-risk youth and gender-based violence, controlling the sale of alcohol (Chapter 4), police reform (Chapter 5), integrated municipal (and state) public safety programs (Chapter 6).

- *While it is common to argue for prevention or control responses to crime and violence, the two types of interventions are in fact complementary.* A more efficient and professional criminal justice system—and especially police forces—are essential to lower levels of impunity. Most police forces rely on antiquated, reactive policing models, and there is ample room to improve results by shifting to problem-oriented

policing using modern information systems. At the same time, many types of crime and violence are most appropriately and cost-effectively dealt with by prevention activities.

- *Prevention activities are generally more cost-effective than control actions.* The preliminary estimates in this report suggest that in terms of crimes averted per *real* spent, prevention—particularly secondary prevention—is more cost-effective than control or repression; this result is consistent with evidence from other countries (Chapter 7). Nonetheless, the criminal justice approach, focusing on police, prosecutors and the judicial system, continues to be the dominant approach to crime and violence prevention in Brazil (Chapter 3).

- *Effective institutions must exist for public safety strategies to work.* Brazil has begun to construct the institutions needed to coordinate public safety initiatives at the federal, state, and local levels. The Sistema Único de Segurança Pública "Unified System for Public Safety" or SUSP) is a promising start, but it needs to be strengthened significantly (Chapter 3).

- *States play a key role in the prevention of crime and violence.* States not only control the judicial and police apparatus but also implement many of the social and public works programs that are key elements of integrated prevention programs. The capacity at the state-level to prevent crime and violence needs to be strengthened, as does coordination with and support to municipalities (Chapters 3 and 6).

- *The municipal/local level is an important entry-point for the prevention of crime and violence, and integrated municipal programs—in Brazil and elsewhere—are one of the most effective ways to reduce crime.* Many municipalities in Brazil are assuming a crime and violence prevention role, but need more technical assistance, resources, and coordination with other levels of government to be fully successful. Where municipalities do not have the capacity to undertake crime and violence prevention programs, there is a need for the states to partner with municipalities to design and execute these programs (Chapter 6).

- *Public policy for the prevention of crime and violence prevention—whether at the national, state or municipal levels—must be constructed on a solid base of empirical information about crime levels, trends, and spatial distribution.* There are serious consistency problems between health sector and police homicide data, and data issues are even more serious for other types of crime and violence. Standardization of definitions, better data collection, formation of integrated information systems between institutions, and regular national and local victimization surveys should be a high priority (Chapter 1).

- *There are a number of emerging good practice experiences in Brazil on which to draw.* While violence prevention may be in its infancy as a scientific discipline, there are extremely valuable experiences in Brazil in the area of integrated municipal programs, youth violence prevention, crime prevention through environmental

design, and the use of geographic information systems to shape crime prevention interventions (Chapters 3, 6 and 7).

- *More information prevention is urgently needed about what works in Brazil in preventing violence and crime.* While the emerging good practices mentioned above are promising, very few crime and violence prevention interventions have been subject to rigorous impact evaluation. Such evaluations are fundamental, both in order to inform the design of future interventions and to ensure that resources are allocated to programs that work (Chapter 7).

Specific recommendations to improve the public safety response at the various levels of government include:

Federal level

Strengthen the Secretaria Nacional de Segurança Pública (SENASP). Formally, SENASP is formally tasked with the responsibility of formulating a national public safety policy and providing national leadership in this area. The manner in which the federal government has organized the agencies of the criminal justice system, however, does not provide SENASP with a strong and clear mandate to exercise this overall leadership and coordination role.

With additional resources and improved technical and management capacity, SENASP and, more broadly, the Ministry of Justice, would become a clearinghouse and national resource center for best practices in public safety. More specifically, they could provide the following types of support to states and municipalities:

- technical assistance and capacity-building in the development of state and municipal crime and violence prevention plans;
- development of integrated information systems, including geographic information systems, that would inform the development of state and municipal violence prevention plans;
- execution of national-level victimization surveys, both on overall crime victimization and on specialized victimization surveys on gender-based violence; and
- design, funding and execution of a program of rigorous impact evaluations of public safety programs. This is particularly important in those cases where programs appear to be having a positive impact—such as the cases of São Paulo and Belo Horizonte—but where there is little scientific understanding of which interventions are responsible for generating the observed impacts.

Related to strengthening of SENASP is the need to ***bolster the Sistema Único de Segurança Pública (SUSP)***, which was created in 2000 with the aim of addressing the coordination problems among the various independent public safety and justice institutions at the federal, state, and municipal levels. SENASP functions as the overall coordinating agency for SUSP. The creation of SUSP and its funding mechanism, the *Fundo Nacional de Segurança Pública,* is a promising start, but both need to be strengthened significantly.

SUSP's National Plan for Public Safety (Plano Nacional de Segurança Pública) requires municipalities to formulate municipal public safety plans, outlines a program of capacity building and technical assistance at the municipal level, and envisions longer-term direct financing for implementing policies at the municipal level. But the plan still has a long way to go in its implementation, and has been criticized for failing to promote coordination between state and municipal institutions. Many states also view the plan as being politically-motivated—in essence, a bypass mechanism that allows the federal government to establish direct links with municipal governments, particularly those of the same political affiliation as the federal government.

Although increased recognition of the important role of municipalities in public safety programs is a positive development, state governments also need to be key partners within SUSP. Without cooperation from state police forces, it is impossible to create adequate crime and violence information systems and to implement crime control and prevention policies (such as gun control) that require police participation.

Marshal federal and state government support for—and partnerships with--leading civil society organizations. NGOs and research institutes have been a critical source of technical assistance to municipalities and states in the development of public safety diagnostics and municipal prevention plans. Continuation of this type of support and replication to other interested municipalities is a key step in building capacity at the local level. In particular, SENASP should play a role in ensuring that this type of technical assistance is made available to those states and cities that lack these highly effective organizations.

Promote coordination among federal ministries. There are missed opportunities because of a lack of collaboration among the federal ministries/agencies that are not traditionally associated with public safety but that have a potentially important role to play in social and situational violence prevention. Especially in the areas of youth violence and gender violence prevention, these could include joint initiatives that pair SENASP with the Ministries of Education, Culture, and Health. Another possible partner is the Ministry of Cities for situational violence prevention.

State level

Police reform is critical to a better functioning and more effective criminal justice system. A first priority is for States to invest serious financial and political capital in the modernization of their police forces. Many of the issues and proposals discussed in Chapter 5 such as training, pay and promotion, and the introduction of integrated information systems—particularly those that are politically feasible in the short and medium term—have modest impacts by themselves, but may incrementally bring about much-needed change. Unless these reforms are accompanied by the adoption of a problem-oriented policing model and incentives that reward performance, however, progress will be slow and piecemeal.

States need to coordinate and not compete with municipalities. It is imperative that state governments, in particular the Secretariats of Public Safety and the police forces, but also other secretariats such as Education, Social Welfare and Youth work in a collaborative fashion with their municipal counterparts. In reality, the relationship between these various agencies is often disjointed and regularly adversarial. Community policing initiatives by the Military Police often do not have any meaningful involvement by local government or the Municipal Guard and the latter is frequently viewed with suspicion by the former as attempting to usurp their role. Similarly, it is not uncommon for state level police to limit access to police data to municipalities – while for the creation of a good public safety information system, collaboration and the free sharing of data and information is essential.

Lastly, states need to invest in crime and violence prevention. State governments tend to restrict their public safety activities to those involving the police and other agencies of the criminal justice system. Few states invest significantly in prevention activities. Where states have combined traditional criminal justice activities with prevention activities, the results have been very encouraging. A particularly promising example of this approach is the Fica Vivo program from the state of Minas Gerais. The original Fica Vivo program was a local partnership coordinated by the municipality of Belo Horizonte with participation by the Military Police. Following the success of the program, the state Secretariat of Public Safety became a partner and is now investing significantly in replicating and scaling up the Fica Vivo model in other high violence areas throughout the state. Where municipal capacity is limited, a state-led partnership for crime and violence prevention—with the active participation of municipalities—is even more important.

Municipal level

An increasing number of municipalities in Brazil are creating or expanding their Municipal Guard. For these Guards to be an effective tool within the context of integrated municipal public safety strategies and plans, they need to be organized around community policing principles. ***The activities of the Municipal Guards should complement those of the Military Police, rather than replicate them.***

Municipalities can be ***one of the most effective entry points for crime and violence reduction and prevention,*** drawing on municipalities' traditional activities, particularly in social prevention and urban planning (situational prevention). To successfully formulate and implement integrated

crime and violence prevention plans and partnerships, municipalities need ***to invest resources and build technical capacity*** in the areas of: 1) diagnosis of problems and risk factors; 2) formulation of a municipal strategy that identifies priorities and sets short-, medium-, and long term goals; 3) implementation of interventions, including the training and coordination of all partners; 4) monitoring and evaluation of the results and processes; 5) building a coalition of key partners with strong leadership and administrative and technical support; and 6) development of a communication strategy that can mobilize partners, professionals, and the public.

The Way Forward

This report provides a road map for crime and violence prevention in Brazil. Crime prevention and control are fundamentally complementary activities: prevention cannot be the sole response if impunity reigns, but at the same time—and given the strong evidence in support of the cost-effectiveness of secondary prevention activities—there seems to be systematic under-investment in prevention in Brazil.

Thus, public policy should advance on two parallel and complementary fronts: reduction of impunity through a reform of state level police forces and other elements of the criminal justice system and investment in primary and secondary prevention activities, principally those targeting male youth.

A particularly promising approach to combine these two fronts is via integrated municipal programs. As this report has emphasized, focusing on local issues of public safety allows policy makers to:

- specify the types of crime and violence that are to be the object of public policy;
- identify the risk factors for these types of crime and violence that can be addressed via prevention policies; and
- integrate the police as part—but not all—of the solution.

Violence and crime are serious problems in Brazil today, but they are neither intractable nor immutable. As experience has shown inside and outside of Brazil, intelligent public policy can produce safer and more livable communities.

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ANNEXES

ANNEX 1. CALCULATION OF THE ADJUSTED HOMICIDE RATE

Methodology

Death certificates in Brazil include information on the cause of death according to the International Classification of Diseases. Until 1995, Revision IX of the International Classification of Diseases (ICD9) was used to classify the cause of death. After 1996, Revision X of the same classification system was used (ICD10). The ICD lists 21 categories of cause of death. A specific one, called "undefined causes" of death has been more important numerically than death from injuries in every year since 1979. In 2002, 13.7% of deaths were classified as "undefined cause"; this is clearly an issue of data quality.

Both ICD9 and ICD10 classify external causes of death as unintentional injuries, intentional injuries (violence) or as injuries with unknown intent. For the purpose of measuring injuries closer to reality, deaths with unknown intent were allocated to intentional or unintentional injury groups following the distribution of known cases. All deaths from the unknown intent group that were due to firearm injuries were considered intentional acts (homicide or suicide) and allocated according to the distribution of declared homicide and suicide. Unintentional deaths were not included, at this point, because of its low frequency. In the year 2000, for instance, there were 315 unintentional deaths due to firearms in contrast to 30.881 homicides and 1.329 suicides. This methodology was implemented using the distribution of causes of death for each state and capital city. Using this procedure, 24% of homicides in 1980 were reclassified from unknown intent injuries. This proportion dropped to 12% in 2002.

The quality of information varies geographically and over time. The proportion of undefined cases tends to decline after 1990 due to an improvement of administrative policies, when the City Health Departments, instead of the State Health Departments, became responsible for data management.

Table A1.1. The codes from ICD9 and ICD10 used were:

Categories	ICD9	ICD10
External Causes of deaths	E800 – E999	V01-Y98
Road traffic injuries	E810-E819 E929.0	V01- V 89 , Y85.0
Other unintentional injuries	E850-E868,E880- 929 (exceto E929.0)	W00-W59; Y86
Suicide	E950-E959	X60-X84; Y87.0
Homicide	E960-E969	X85-Y09; Y87.1
Unknown intent	E980-E989	Y10-Y34; 87.2
Legal intervention	E970-E978	Y35; Y89.0
War operation	E990-E999	Y36; Y89.1

Homicide includes cases from legal intervention (police), war operation, a percentage of injuries with unknown intent, and declared homicide.

ANNEX 2. CALCULATION OF PROGRAM BENEFITS

Table A2. 1. Source of effectiveness data in the international literature

Name of the Program	Program in the International Literature	Name of the Program	Type of Program
Bolsa Família	Aos *et al* (2001)	Quantum Opportunity Program	Provides financial incentives for youngsters, who receive public assistance, as well as education, services and development of cultural activities.
Uerê	Aos *et al* (2001)	Seattle Social Development Project	Offers training for parents, primary schoolchildren and teachers in risk areas, fostering bonds between them. Offers academic support for the children.
Paz nas Escolas	Greenwood *et al* (1998)	Parent Training	Offers training for the parents of youngsters in risk areas, fostering the capacity to deal with anti-social behavior.
Fica Vivo	Aos *et al* (2001)	Quantum Opportunity Program	Provides financial incentives for youngsters who receive public assistance, as well as education, services and development of cultural activities.
PROERD	Gottfredson, Wilson, Najaka; The Schools	Drug Abuse Resistance - D.A.R.E.	Offers prevention courses incorporated into the school curriculum, for children of fourth and six grades.
APAC	Lipsey, Chapman and Landenberger (2001)	Cognitive-Behavioral Programs for Offenders (CBT)	Treatment for convicts that seeks to modify their cognitive choices so as to correct dysfunctions and crime-related thoughts.
CEAPA	Aos *et al* (2001)	Intensive Supervision Programs	Carries out intensive supervision of convicts instead of incarcerating them.
Liberdade Assistida	Lipsey and Wilson (1998)	Intervention studies with non-institutionalized juveniles	Most studies analyze youngsters who had already been judged to be delinquents and forwarded to the intervention program through youth courts. The main types of intervention treat non- institutionalized youngsters by means of counseling and guided skills programs (social skills, vocational skills and drug abstinence).
PPA	Braga (2001)		Analyzes patrol programs based on hotspot analysis.

Source: Viegas, 2005

Table A2.2. Gross and corrected rates of effectiveness

Program	Rate of effectiveness	Scale effect	Time effect for youth crime	Time effect for adult crime	Corrected rate of effectiveness for youth crime	Corrected rate of effectiveness for adult crime
APAC	10	15	0	0	8,50	8,5
Liberdade Assistida	14	20	0	10	11,20	10,08
Uerê	13	15	5	40	10,50	6,63
Paz nas Escolas	15	20	20	70	9,60	3,6
Fica Vivo	31	25	0	10	23,25	20,925
Bolsa Família	25	40	10	50	13,5	7,5
PROERD	2	30	15	60	1,19	0,56
CEAPA	0	-	-	-	-	-
PPA	5,3	-	-	-	-	-

Source: Viegas, 2005

Table A2.3. Characteristics of the Criminal Career in California (A)

Item	Criminal of little activity	Criminal of much activity
Stock of active adult criminals on the streets (000)	797	795
Number of adults beginning a criminal career per year (000)	85	21
Number of crimes committed in a year per active adult criminal	0,24	4,13

Source: Greenwood *et al* (1998).

Table A2.4. Characteristics of the Criminal Career in California (B)

Item	Criminal of little activity	Criminal of much activity
Number of serious crimes committed by adult in the criminal career	2,25	38,35
Number of serious crimes committed by youngster in the criminal career	0,66	11,29

Source: Greenwood *et al* (1998).
Note: Since Greenwood *et al* (1998) do not have the parameters described in table 4 for youngsters, the number of serious crimes committed by youngsters in the criminal career is approximated by multiplying the rate of serious crimes committed by youngsters in relation to adults (table 3) by the number of serious crimes committed per adult in the criminal career.

Table A2.5. Distribution of crimes between youngsters and adults in California (thousands/year)

Type of crime	Youngsters	Adults	Total population
Serious crimes	293	995	1288
Other crimes	567	1557	2124
Total	860	2552	3412

Source: Greenwood *et al* (1998).

Table A2.6. Annual cost per beneficiary in each program

Working period	APAC	Liberdade Assistida	Uerê	Paz nas Escolas	Fica Vivo	Bolsa Família	PROERD	CEAPA
Year 1	4878,82	1323,68	707,84	192,23	84,23	224,41	35,43	145,40
Year 2	4878,82		707,84		84,23	224,41		
Year 3	4878,82		707,84		84,23	224,41		
Year 4	4878,82		707,84		84,23	224,41		
Year 5			707,84		84,23	224,41		
Year 6			707,84		84,23	224,41		
Year 7			707,84		84,23	224,41		
Year 8			707,84		84,23	224,41		
Year 9			707,84		84,23	224,41		
Year 10			707,84		84,23	224,41		
Year 11			707,84		84,23	224,41		
Year 12			707,84		84,23	224,41		
Year 13			707,84		84,23	224,41		
Year 14			707,84		84,23	224,41		
Year 15			707,84		84,23	224,41		
Year 16					84,23			
Year 17					84,23			
Total	**19515,28**	**1323,68**	**10617,60**	**192,23**	**336,92**	**897,64**	**35,43**	**145,40**

Source: Viegas, 2005

ANNEX 3. PROGRAM COSTS DETAILS

Cost of the APAC program

The cost of the APAC program was calculated on the basis of the financial spreadsheet supplied by the institution. The spreadsheet shown below refers to January 2005. At that time, the number of beneficiaries was 120. Considering the financial movement and the number of beneficiaries in January 2005 as proxy for the other months, we calculated the average annual cost per beneficiary.

Cost of the PPA program

The cost of the PPA program was calculated on the basis of information made available by the Minas Gerais Military Police. To set up and maintain the program, the PMMG has triennial, annual and monthly expenses. In order to calculate the program's annual cost per beneficiary, we considered with much sobriety the hypothesis that the depreciation of the inputs necessary for the program to operate is total by the end of their period of use. This hypothesis may generate an overestimation of the costs.

In table A3.2, we show the triennial set-up and maintenance expenses for a vehicle and its crew. In tables A3.3 and A3.4, we set out the annual and monthly expenses, respectively.

Table A3.1. Expenditures of the APAC program: January 2005

Items	Amount in reais
Food	17770,00
Electricity – Female APAC	320,00
Electricity – Male APAC	1428,97
Fuel and maintenance of vehicles	977,00
Rent	460,00
Social security	1500,00
Pharmacy	600,00
Staff	11311,75
Marcos Alberto da Silva (% of vouchers)	200,00
IT	500,00
Mobile phone	300,00
Maintenance and repairs	1600,00
Office supplies, equipment and furniture	600,00
Building materials	1500,00
SAAE – Male APAC	2327,23
Telephones	2000,00
Internet provider	39,50
Bedding, tableware and towels	600,00
Kitchen utensils	300,00
Travel	300,00
Retraining of staff	150,00
Outsourced services	300,00
Pedagogues	350,00
Cleaning and hygiene products	200,00
Teaching and sporting materials	350,00
Handicraft materials	250,00
Training of multiplier agents	300,00
General expenses	2003,70
Dental materials	250,00
Total monthly cost	**48788,15**
Average annual cost	**585457,80**
Average annual cost per beneficiary	***4878,82***

Table A3.2. Triennial expenses per vehicle

Items	Quantity	Unit value	Total value
Blazer 2.4 vehicle	1	48000,00	48000,00
Radio transmitter	1	2100,00	2100,00
Semi-automatic pistol	3	2150,00	6450,00
Stainless steel handcuffs	3	138,00	414,00
Compartmentalized bullet-proof vest	3	1200,00	3600,00
Sub-total			**60564,00**

Table A3.3. Annual expenses per vehicle

Items	Quantity	Unit value	Total value
Uniform kits	6	297,00	1782,00
Compartmentalized bullet-proof vest covers	6	120,00	720,00
Rolls of zebra tape	1	141,00	141,00
Cones	4	45,00	180,00
Torches	1	27,50	27,50
Spare battery sets	3	11,80	35,40
Pistol Ammunition	432	252	1088,64
Rechargeable batteries for radio transmitters	2	190,00	380,00
Sub-total			**4354,54**

Table A3.4. Monthly expenses per vehicle

Items	Quantity	Unit value	Total value
Fuel	1	2050	2050,00
Maintenance of vehicles	1	250	250,00
Average monthly pay	12	1360	16320,00
Sub-total			**18620,00**

Table A3.5. Calculation of the average annual cost

Costs	Monthly value
Annual cost of triennial expenses per vehicle	20188,00
Annual cost per vehicle	4354,54
Annual cost of monthly expenses per vehicle	223440,00
Average annual cost per vehicle	**247982,54**
Average annual cost	***11903162***
Average annual cost per crime avoided	***6916,42***

Based on the tables above, we calculated the average annual cost per vehicle, then the average annual cost of the program, which has 48 vehicles. As well as this, we calculated the average annual cost per crime avoided using the rate of the total cost of the program per number of violent crimes avoided.

Cost of the Liberdade Assistida program

The cost of *Liberdade Assistida* was calculated on the basis of data supplied by the Deputy Secretary of the Municipal Social Services Department, through the Promotion and Special Protection Manager's office. The data refer to the program's average monthly cost. At the time, the number of beneficiaries was 764. To calculate the average yearly cost per beneficiary, we considered the abovementioned number of beneficiaries as proxy for the average yearly number of beneficiaries of the program.

Table A3.6. Cost of the Liberdade Assistida program

Administrative costs	Total value
Hired technician	64365
Coordinator	3145,5
Management	3403,38
Public servants	5300
Operational costs	
Office supplies	450
Telephone (coordination)	550
Telephone (regional)	1530
Physical infrastructure[76]	750
Maintenance	540
Expenses with beneficiaries	
Transport vouchers	4240,50
Average monthly cost	***84274,38***
Average annual cost	***1011293***
Average annual cost per beneficiary	***1323,681***

Cost of the *Uerê* program

The average annual cost per beneficiary of the *Uerê* program was calculated on the basis on the cost projection for 2005 supplied by the institution. In this calculation, we considered the 290 children seen to by the program as proxy for the average annual number of beneficiaries.

Table A3.7. Cost of the Uerê program

Items	Annual quantity	Annual value in *reais*
Food		
Meat	12	9.563,52
Vegetables + greens + grain + seasonings	12	17.252,64
Extras	12	751,20
Sub-total		***27.567,36***
Maintenance of team		
1 coordinator	13	13.000,00
13 teachers and helpers	13	61.726,08
2 cooks	13	8.578,83
2 cleaners	13	5.951,66
1 driver	13	10.400,00
1 librarian	13	4.781,66
Transport vouchers	11	13.200,00
Taxes	13	29.900,00
Sub-total		***134.538,23***
Events		
Choir + *capoeira* performance	4	1.200,00
Tickets for end-of-year trip	1	4.500,00
Transport for end-of-year trip	1	3.500,00
Christmas	1	1.000,00
School celebrations	2	800,00
Sub-total		***11.000,00***
Publicity		
Brochure of the organization (5,000 copies)	1	6.060,00
Promotional banner	3	900,00
Sub-total		***6.960,00***
School and office materials		
Stationery	12	3.600,00
Toner	5	312,50
Materials & maintenance - choir, *capoeira* & dance	1	800,00
Sub-total		***4.712,50***
Maintenance of premises		
Cleaning products	12	4.592,64
Electricity + gas + telephones	12	7.091,04
Furniture	1	800,00
Sub-total		***12.483,68***
Transport		
Fuel + oil + maintenance	12	8.011,80
Sub-total		***8.011,80***
Annual cost		***205.273,57***
Average annual cost per beneficiary		***707,84***

Cost of the *Paz nas Escolas* program

The *Paz nas Escolas* program receives funding from two sources: Department of Education and Culture/FNDE and Fundação Criança/Ministry of Justice. For this reason, we have organized the data on the program's costs according to the two funding bodies.77 For the purposes of calculating the cost per beneficiary, we considered the 700 participants in the training courses. Given that the program consists in training multiplying agents in the schools and neighborhoods of Greater São Paulo, the cost per beneficiary may be overestimated, since the multiplying agents generate benefits for others.

Table A3.8. Cost of the Paz nas Escolas program - FNDE

Department of Education and Culture - FNDE				
Items	**Measure-ment unit**	**Quantity**	**Unit value (*reais*)**	**Total value (*reais*)**
Human Resources				
Teachers (7 teachers/4 hours each/24 days)	Class hour	672	91,00	61152,00
Meals (7 teachers/24 days/R$2.00)	Teacher	7	48,00	336,00
Transport (7 teachers/24 days/R$30.00)	Trip	168	30,00	5040,00
Sub-total				**66528,00**
Consumption materials				
Reproduction of teaching materials and promotion of culture of peace	Issue	221	6,00	1326
Reproduction of work units "Ethics and Citizenship"	Issue	221	6,00	1326
Copies/editing of tapes (5 tapes/ 221 teachers/R$10.00 per tape)	Kit	221	50,00	11050
Sub-total				**13702**
Total cost - Department of Education and Culture - FNDE				***80230,00***

[77] The data were made available by the ex-coordinator of Fundação Criança, Mr. Osmar Araújo.

Table A3.9. Cost of the Paz nas Escolas program – Fundação Criança

Fundação Criança - Ministry of Justice Items	Measure-ment unit	Quantity	Unit value (*reais*)	Total value (*reais*)
Human Resources – Lecturers and teachers				
Lecturer	Class hour	02	120,00	240,00
Lecturer	Class hour	02	120,00	240,00
Lecturer	Class hour	02	120,00	240,00
Lecturer	Class hour	02	120,00	240,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase I	Class hour	80	45,00	3600,00
Teacher Phase II	Class hour	60	30,00	1800,00
Sub-total	**Class hour**	**628**		**27960,00**
Human Resources – Coordination and Support for Execution				
Coordinator (duration: 7 months)	unit	1	16800,00	16800,00
Admin Assistant (duration: 7 months)	unit	1	4690,00	4690,00
Sub-total				***21490,00***
Sensitization seminar				
Ball-point pens	unit	200	0,50	100,00
Participation certificate	unit	200	0,30	60,00
Folders	unit	200	0,70	140,00
Name tags	unit	200	0,25	50,00
Posters	unit	100	2,00	200,00
Brochures	unit	200	0,50	100,00
Pins	unit	200	1,00	200,00
Course booklets	unit	200	1,50	300,00
Transparencies	Packet (50 units)	1	55,00	55,00
Ink cartridge for printer	unit	3	80,00	240,00
Paper	Packet (500 sheets)	4	7,50	30,00
Meals	unit	208	1,22	253,76
Sub-total				**1728,76**
Training - Phases I and II				
Ball-point pens	unit	420	0,50	210,00
Participation certificate	unit	420	0,30	126,00
Folders	unit	420	0,70	294,00
Name tags	unit	420	0,25	105,00
Posters	unit	100	2,00	200,00
Brochures	unit	420	0,50	210,00
Pins	unit	420	1,00	420,00
Course booklets	unit	420	1,50	630,00
Ink cartridge for printer	unit	5	80,00	400,00

Paper	Packet (500 sheets)	10	7,50	75,00
Meals	unit	420	1,14	478,80
Sub-total				**3148,80**
Total cost - Fundação Criança - Ministry of Justice				***54327,56***

On the basis of the cost tables shown above, we calculated the total cost and the average annual cost of the program, considering the 7 months of its duration. We also calculated the average cost per beneficiary, considering the 700 participants in the courses.

Table A3.10. Calculation of the average annual cost per beneficiary

Cost	Value (reais)
Total cost to the Department of Education and Culture - FNDE	80230,00
Total cost to Fundação criança - Ministry of Justice	54327,56
Total cost of program	**134557,56**
Average cost per beneficiary	***192,23***

Cost of the *Fica Vivo* program

The average annual cost of the *Fica Vivo* program in the Morro das Pedras suburban conglomerate was calculated on the basis of the program's October 2003 budget supplied by the Minas Gerais state Department of Social Defense (SEDS). This budget refers to the setting up of *Fica Vivo* in the program's seven areas of intervention. To calculate the cost at Morro das Pedras, we considered that the cost of the program is the same in the seven areas of intervention. This information is set out in tables 11, 12 and 13 according to the funding source — SEDS, Minas Gerais Military Police (PMMG) and Minas Gerais Civilian Police (PCMG). Table 14 refers to the calculation of the average annual cost per beneficiary, considering that these are 4,990 youngsters who live in Morro das Pedras.

Table A3.11. Cost of the Fica Vivo program – SEDS

Items	Value in *reais*
Consumption materials	274853,40
Outsourced services	3249699,20
Equipment and permanent materials	489971,40
Sub-total	**4014524,00**

Table A3.12. Cost of the Fica Vivo program – PMMG

Items	Value in *reais*
Equipment and permanent materials	745200,00
Consumption materials	60636,80
Outsourced services (companies)	415865,90
Equipment and permanent materials	42550,80
Sub-total	**1264253,50**

Table A3.13. Cost of the Fica Vivo program – PCMG

Items	Value in *reais*
Equipment and permanent materials	510669,00
Consumption materials	94751,00
Sub-total	**605420,00**

Table A3.14. Calculation of the average annual cost per beneficiary

Cost	Value in *reais*
Total cost of program	***5884197,50***
Cost at Morro das Pedras	840599,64
Average annual cost at Morro das Pedras	**420299,82**
Average annual cost at Morro das Pedras per beneficiary	***84,23***

Cost of the *Bolsa Família* program

The information regarding the cost of the *Bolsa Família* program was supplied by the Ministry of Social Development for 2004. It refers to the number of families benefited and the amount paid per municipality in 2004. On the basis of information on fertility rates for each Unit of the Federation (states plus the Federal District),78 we calculated the number of children benefited per Unit of the Federation. These calculations are shown on table A3.15. Table A3.16 shows the total cost of the program, the average annual cost and the average annual cost per beneficiary.

Table A3.15. Information per Unit of the Federation

Units of the Federation	Number of families benefited	Fertility rate in 2000	Average number of beneficiaries	Annual cost
AC	29.866	3,80	113.490,800	19.531.210
AL	221.070	2,95	652.156,500	137.724.223
AM	106.892	3,30	352.743,600	67.545.759
AP	10.466	3,10	32.444,600	8.047.007
BA	854.418	2,65	2.264.207,700	532.684.471
CE	585.564	2,65	1.551.744,600	399.472.576
DF	41.967	2,20	92.327,400	14.316.545
ES	124.313	2,30	285.919,900	53.086.063
GO	137.793	2,25	310.034,250	58.238.560
MA	388.092	3,20	1.241.894,400	272.001.169
MG	769.957	2,25	1.732.403,250	383.931.151
MS	33.140	2,50	82.850,000	24.333.175
MT	82.921	2,62	217.201,079	34.214.302
PA	262.848	3,00	788.544,000	162.275.823
PB	280.363	2,60	728.943,800	180.295.664
PE	532.236	2,12	1.128.340,320	304.053.138
PI	224.681	2,95	662.808,950	156.971.474

[78] The fertility rates were calculated based on information from the demographic census, 2000 – IBGE.

PR	313.173	2,25	704.639,250	137.030.490
RJ	198.609	2,10	417.078,900	81.974.775
RN	194.222	2,50	485.555,000	121.690.884
RO	56.072	2,70	151.394,400	25.040.014
RR	14.706	2,70	39.706,200	8.357.672
RS	295.707	2,25	665.340,750	147.175.131
SC	103.178	2,25	232.150,500	53.334.042
SE	116.613	2,65	309.024,450	68.581.861
SP	667.590	2,25	1.502.077,500	305.756.614
TO	56.295	2,70	151.996,500	34.123.705
Brazil	**6.702.752**		**16.897.018,599**	**3.791.787.498**

Table A3.16. Calculation of average annual cost per beneficiary

Cost	Value in *reais*
Average annual cost	3.791.787.498,00
Number of beneficiaries	16897019
Average annual cost per beneficiary	***224,41***

Cost of the CEAPA program

The information regarding the cost and number of beneficiaries of the CEAPA program were made available by SEDS, through the Crime Prevention Superintendent's Office, and refer to the year 2005. The estimated number of beneficiaries for 2005 is 10,000 individuals. Table A3.17 shows the calculation of the average annual cost per beneficiary.

Table A3.17. Cost of the CEAPA program

Items	CEAPA	Reintegration	Total
Permanent (value in reais)	95000,00	0,00	95000,00
Consumption (value in reais)	121000,00	500500,00	621500,00
Services (value in reais)	1238000,00	956900,00	716500,00
Average annual cost of the period	***1454000,00***	***1457400,00***	***2911400,00***
Average annual cost per beneficiary	***145,40***	***145,74***	***291,14***

Cost of the PROERD program

The data regarding the cost of the PROERD program were supplied by the PMMG for the five semesters between January 2003 and July 2005. Each PROERD officer-instructor is in charge of at least 4 and at most 18 groups, to which they give 17 one-hour classes throughout the semester. To calculate the hours spent on the program per officer-instructor, we considered that each one on average gives classes to 11 groups per semester. Since the work is voluntary, to calculate its cost we used the concept of opportunity cost. The opportunity cost of the hours dedicated by officer-instructors to PROERD is how much they would earn if they were working in their habitual functions. On the basis of this concept, we calculated the cost of the hours worked on

the program by multiplying the total number of class-hours taught by the average hourly pay of police work.79 Table A3.18 demonstrates this calculation.

Table A3.19 shows the other costs incurred by the program. Physical infrastructure costs were not included because the classes are part of the school curriculum and, as such, use their premises. Lastly, table A3.20 shows the calculation of the average annual cost per beneficiary, considering the program's 41,080 participants during the period.

Table A3.18. Calculation of the cost of the hours worked on the program

Items	Value
Duration of the course (hours)	17
Total course hours in the period	1705
Average monthly pay of officers (in *reais*)	1360,00
Monthly working hours (base 45h/week)	180
Value of hourly pay of police work (in *reais*)	*7,56*
Total hours worked by officers on PROERD	*28985*
Cost of officers' work (in *reais*)	**218997,78**

Table A3.19. Cost of training and materials

Cost of training and materials	Value in *reais*
Professional training course for officers	50000,00
Students' manual	32864,00
Students' certificate	8216,00
PROERD T-shirt for students	205400,00
Sub-total	**296480,00**

Table A3.20. Calculation of the average annual cost per beneficiary

Cost	Value in *reais*
Total cost in the period	**515477,78**
Total cost per beneficiary	12,55
Average annual cost per beneficiary	***35,43***

[79] The average hourly value of police work was estimated on the basis of officers' average monthly pay, considering a 45-hour working week, using data from PNAD 2003 (National Sample Survey of Households).