COUNTRY REPORT

Firearm-related violence in Brazil

NEV/USP

BRAZIL

TECHNICAL SUPPORT:

Pan American Health Organization

Regional Office of the World Health Organization

small arms survey

Firearm-related violence in Brazil
Country report

National project coordinator:

Maria Fernanda Tourinho Peres

Contributors

Coordination of the project

Maria Fernanda Tourinho Peres
Senior Researcher, Center for the Study of Violence, University of São Paulo

Research team

Patrícia Carla dos Santos
Research assistant, Center for the Study of Violence, University of São Paulo

Eric Bacconi Gonçalves
Statistician, Center for the Study of Violence, University of São Paulo

Technical support

David Meddings
Department of Injuries and Violence Prevention, World Health Organization

Miguel Malo
Coordinator of Health Promotion Sector, Pan-American Health Organization, Brazil

Nancy Cardia
Joint Coordinator, Center for the Study of Violence, University of São Paulo

Peter Batchelor
Small Arms Survey

Robert Muggah
Small Arms Survey

Table of contents

Preface

This report provides a summary of the major findings and conclusions of a research effort to create a comprehensive profile of firearm-related violence in Brazil. The research was undertaken and coordinated by the Centre for the Study of Violence at the University of São Paulo, and received technical support from the World Health Organization (WHO), and the Small Arms Survey (SAS).

The WHO has drawn attention to the fact that violence is a major global public health problem through a variety of World Health Assembly resolutions and comprehensive reports such as the *World report on violence and health*. The statement that violence is a public health problem may not, at first view, be easily understandable. In Brazil, as in many other countries around the world, violence is traditionally approached almost exclusively as a public security problem, with major responses focused on police action and judicial mechanisms. However, this view is beginning to change, and there is increasing recognition of the role of the public health sector and perspective in preventing violence. A public health approach to violence promotes analysis of the distribution of violence and it's determinants, and advocates drawing from this analysis coherent preventive strategies which involve a variety of sectors, including the health sector. This does not mean that violence should be viewed only as a health problem, but that it is important to consider the effects of violence on public health and the potential contributions for preventing violence that can be made through the public health sector. In sum, a public health approach to violence advocates understanding violence through the study of its social determinants, knowing its frequency and distribution in population groups, identifying its risk factors, proposing preventive measures and evaluating and monitoring preventive actions.

Thus, far from viewing violence only as a health problem, the public health approach argues that violence must be understood in terms of it's distribution and determinants, and that from understanding these complexities societies can engage in preventive measures. This is neither an easy task, nor is it the task of a single sector. Violence is a social problem with public health, development and security dimensions, and rising to meet this challenge will require the combined and coherent efforts of a broad variety of sectors - both governmental and non-governmental.

While there have been a number of studies addressing violence within Brazil, particularly since the late 1980's, the specific issue of firearm-related violence has not always been addressed. Over and above this, many academic studies have tended to circulate mainly within academic networks, with relatively little impact on policy-making or practitioners of violence prevention. The purpose of this publication is to provide a means for the broad dissemination of the summary results of an extensive research undertaking regarding firearm-related violence in Brazil, and in particular to underline the policy-oriented relevance of this work. We hope to contribute to the public debate, as well as towards the formulation of new proposals for such a serious problem in the country.

Preventing firearm-related violence will require multi-sectoral approaches. The WHO's *World report on violence and health* rightly draws attention to the fact that no single factor is responsible for any form of violence. Firearm-related violence, like all other forms of violence, arises from a complex interaction of determinants that can be situated at the level of the individual, their relationships, the community, and society. Multi-sectoral and integrated preventive measures that include structural measures to reduce inequity are essential. Furthermore, the reduction of impunity, reforms within police, judicial and penitentiary systems are all necessary to reduce perceived insecurity within the Brazilian population, particularly since

perceived insecurity is the fundamental driver of demand for firearms. Ample evidence indicates that ready access to firearms dramatically increases the lethality of violent encounters, thereby augmenting feelings of fear and insecurity. As a result the demand for firearms fuels increasing insecurity, which fuels further demand for firearms and so on and so forth.

The pages of this report demonstrate clearly that firearm-related violence has become an everyday fact of life within Brazilian society, and that this tragedy is experienced most acutely by Brazil's urban youth. Illicit trafficking in drugs and firearms, limited opportunities and perspectives on life for the young population, combined with a social context characterized by unemployment and huge socioeconomic disparities, all contribute to the strikingly high levels of firearm-related violence among Brazil's urban youth.

It is beyond the scope of this work to answer all questions about armed violence in Brazil, and this has not been our intent. Our intent has been - through the presentation of a comprehensive profile of firearm-related violence within the country - to contribute to the recognition of the scale and characteristics of this problem, and to advance the case that a broad grouping of sectors within Brazil need to move forward in developing coherent solutions to the problem of firearm-related violence.

<div align="right">

Nancy Cardia
Joint Coordinator
Center for the Study of Violence
University of São Paulo, Brazil

</div>

Acknowledgements

Summary of tables, figures and charts

Tables

Figures

Charts

Map

Boa Vista

RORAIMA

AMAPÁ

Macapá

Manaus

Belém

São Luís

Fortaleza

Teresina

AMAZONAS

PARÁ

MARANHÃO

CEARÁ

RIO GRANDE
DO NORTE

Natal

João
Pessoa

PIAUÍ

PARAÍBA

PERNAMBUCO

Recife

ACRE

Porto
Velho

ALAGOAS

Maceió

Rio
Branco

RONDÔNIA

Palmas

SERGIPE

Aracaju

MATO GROSSO

TOCANTINS

BAHIA

Salvador

Cuiabá

FEDERAL
DISTRICT

GOIÁS

MINAS GERAIS

Goiânia

ESPÍRITO SANTO

MATO GROSSO
DO SUL

Belo Horizonte

Vitória

Campo Grande

SÃO PAULO

RIO DE JANEIRO

PARANÁ

São Paulo

Rio de
Janeiro

Curitiba

SANTA CATARINA

Florianópolis

RIO GRANDE
DO SUL

Porto Alegre

Northern region
Northeastern region
Central-western region
Southeastern region
Southern region

Introduction

The purpose of this report is to present the results of a research undertaking to comprehensively document firearm-related violence in Brazil. As the most developed source of data that can provide insight into firearm-related violence is the Brazilian Ministry of Health's Mortality Information System, much of the data within this report reflects fatal firearm-related violence. It should be noted at the outset that non-fatal outcomes of firearm-related violence represent a largely unknown - and likely very large - dimension of the problem. Given the pre-eminence of the available mortality data one of our primary objectives was to characterize the impact of firearm-related deaths on Brazilian mortality. Advantage was taken of the fact that the Mortality Information System provides historical data as well to conduct a time-series analysis, which has allowed us to distinguish developments in the impact and distribution of Brazilian firearm-related mortality from 1991 to 2000.

The text is divided into five chapters. In the first, the principal results and conclusions of a literature review of research on violence within Brazil is presented for the purpose of giving to the reader a general picture of violence in the country. The second chapter draws from previous research and literature a closer look at the particular importance of firearm-related violence within Brazil, and presents relevant findings from mortality studies, morbidity studies, and victimization surveys. Within both of the first two chapters a critical analysis is made of available data sources in the country and the main obstacles to research in the field are examined.

The third chapter presents the results of the firearm-related mortality data analysis based on data provided by the Brazilian Ministry of Health. Initially, the data is presented in a consolidated manner, considering the entire 90's, as can be seen in the sections "The impact of firearm-related deaths in the 1990's", and "Firearm-related deaths by sex in the 1990's". Our objective is to reveal the magnitude of the problem in the country in the 1990's, as well as its distribution in the five major Brazilian regions and states. After this aggregated view, we present the result of the time-series analysis, identifying secular trends in the country, its five major regions, states and capitals. Data on the magnitude of firearm-related deaths is presented through percentages changes over time, as well as through firearm-related mortality rates. The fourth chapter discusses major problems in the quality of the information regarding firearms in death certificates, and their influence relative to the time-series analysis. The fifth chapter presents the main results and recommendations of the research effort. After the five chapters bibliographic references and a methodological appendix are set out.

Chapter 1

Violence in Brazil: A brief overview

Violence in Brazil is a problem of major concern since the transition from authoritarianism to democracy in the early 1980's (Mesquita Neto, 2002b). Social scientists pointed out that after the democratization process and political opening of the Brazilian government, violence and criminal activity grew substantially, reaching levels previously unheard of. Considering all the external causes that have killed Brazilians in the last two decades, homicide is the most critical, becoming the principal cause of early death in 1997 (Azevedo-Lira et al., 2000). In this sense, homicide is considered a major social and public health problem in the country.

Analyzing the Ministry of Health's mortality data, Souza (1994) and Mello-Jorge (1997), emphasize the growth of the homicide death rate in death totals. In 1989, external causes reached second place in the causes of death for the entire population (Souza, 1994). Considering data from 1977 to 1994, the homicide mortality rate grew from 7.9/100,000 in 1977 to 21.2/100,000, signifying an increase of approximately 160%, according to Mello-Jorge (1997). Despite the fact that violence levels had grown throughout the country, this growth was concentrated in certain geographical areas and social groups, pointing to an unequal distribution of the risk of being a victim of violence and also to an unequal distribution of social and civil rights in the Brazilian population.

Homicide and gender

Gender distribution of homicide in Brazil points to an excessive risk of death by homicide for the male population, throughout the country and in state capitals (Souza, 1994). In a total of 168,518 homicides that occurred between 1980 and 1988, 90.9% were male homicides and 9.1% female homicides (Figure 1). Despite the fact that men face a higher risk of death by homicide, the author points to a growth in death by homicide amongst women. The rate grew by 44% for the entire population, 47% among males and 28% among females between 1980 and 1988, with a relative risk (RR) of murder of eleven amongst men - meaning male risk of dying from homicide is eleven times higher than for females.

Figure 1: Homicide deaths by sex, Brazil, 1980 - 1988
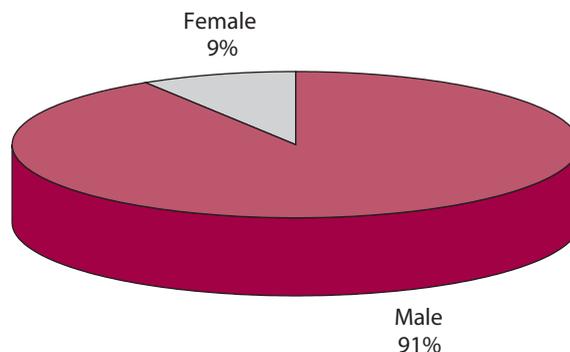
Source: Souza, ER., Homicídios no Brasil. CSP 10(1s), 1994.

Homicide in different age groups

In the 1980's, homicides were concentrated in the 20-29 and 30-39 age groups. Nevertheless, it was possible to see the growth of homicides at earlier ages such as 10-14 and 15-19 (Souza, 1994). The increase in juvenile homicide death rates merits special attention, in view of its magnitude and social impact. In 1997, homicide was responsible for 17.8% of potential years of life lost (PYLL) in Brazil, followed by road traffic crashes, responsible for 12.4% of PYLL (Azevedo-Lira et al. 2000).

In a study conducted by UNESCO, the author points out that the proportion of homicide deaths in the age group of 15 to 24 was 39% compared to 4.7% for the entire population (Waiselfisz, 2000). In states such as São Paulo, Rio de Janeiro, Espírito Santo, and Pernambuco, the proportion of homicide deaths was higher than 50%, which means that considering all the causes of violent deaths, more than half among the young population was attributed to homicides. The homicide mortality rate in the young population (15 to 24 age group) increased 48% from 1991 to 2000 as compared with an increase of 29.4% for the entire population (Figure 2). In the states of Rio de Janeiro and Pernambuco, the homicide death rate for the young population was higher than 100/100,000 inhabitants in the year 2000.

Figure 2: Homicide rates (/100.000). Total population and 15-24 year olds. Brazil, 1991 - 2000
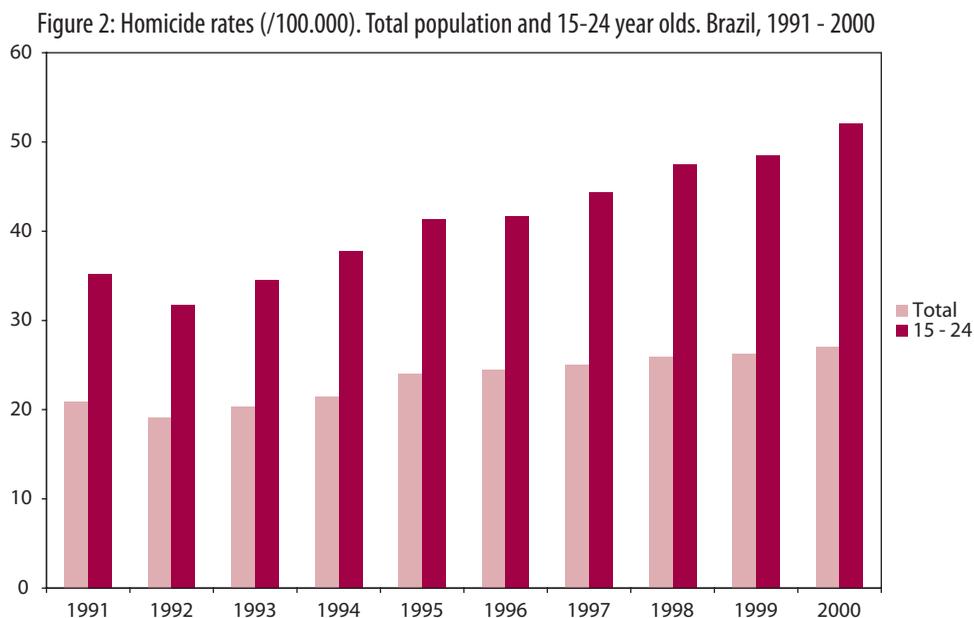
Source: Waiselfisz, J. Mapa da Violência III - os jovens do Brasil. UNESCO, 2002.

The young male population was the most affected, with higher rates between the ages of 15 and 49. Considering all the homicide deaths among the young population that occurred in Brazil in the year 2000, 93% occurred in the male and 7% in the female population (Figure 3). While in the entire population the male homicide death rate was eleven times higher than the female, in the young population the male rate was fourteen times higher (Waiselfisz, 2002).

Figure 3: Homicide deaths by sex, age 15-24, Brazil, 2000

Female
7%

Male
93%
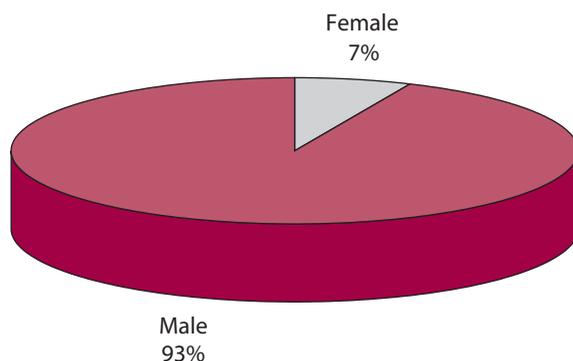
Source: Waiselfisz, J. Mapa da Violência III - os jovens do Brasil. UNESCO, 2002.

Homicide in urban areas

Besides this unequal distribution of homicide between sex and age groups, differences in the spatial distribution of homicides in Brazil are also found. According to Barata et al. (1998), the homicide mortality rate distribution in the municipality of São Paulo shows a strong negative correlation with social development indicators (r = – 1.0; p<0.05). The authors considered five urban regions – Central, Northern, Southern, Eastern and Western – and found higher rates in the Southern zone, one of the poorest of the city, that presented the worst socioeconomic indicators. Cardia & Schiffer (2002), found higher homicide rates in four districts of the southern zone of the São Paulo municipality, respectively, Capão Redondo (93.02/100,000), Campo Limpo (93.8/100,000), Jardim São Luis (103.75/100,000), and Jardim Ângela (116. 23/100,000). These districts are characterized by social deprivation and disadvantages such as a high concentration of family heads that earn no more than three minimum salaries and with low schooling levels, insufficient work posts, high infant mortality rates, difficult access to hospitals and health services, low number of security officers such as military and civil police.

Analyzing the correlation between homicide rates and socioeconomic indicators in ninety-six urban districts in the São Paulo municipality Cardia et al. (2003), found significant correlations with a set of socioeconomic indicators such as mean income, population growth and density, age composition, schooling, infant mortality rate, and access to public services such as hospitals and sewerage systems. According to the authors, this set of characteristics can explain, at least in part, the higher rates of homicide in certain zones of the São Paulo municipality characterized by the concentration of disadvantages, which may have influence on social cohesion as well as potentiate conflicts. Furthermore, the authors point out the weak linkage between the population and the public authorities or institutions, since low investments in public policies not only make access to public services difficult, but also contribute towards the low effectiveness of services provided. Thus, public institutions – including police and judicial systems – have a very low social legitimacy.

Studies in other Brazilian cities also point to an unequal distribution of homicide deaths in urban areas. In Salvador, capital of the state of Bahia, the same pattern of homicide deaths was found by Paim et al. (1999) and Macedo et al. (2001). According to Paim et al. (1999), homicide deaths are concentrated in some specific areas, which are characterized by lower economic and cultural patterns, pointing to a differential risk of homicide death in the city (Macedo et al. 2001). In Recife, capital of the state of Pernambuco, Lima and Ximenes (1998) found higher homicide

rates in areas with lower socioeconomic conditions. In Belo Horizonte, capital of the state of Minas Gerais, Beato et al. (2001) identified five clusters of homicide deaths in poor neighborhoods and *favelas*. According to the authors, this can be explained by the presence of illicit drug trafficking in those areas. In Porto Alegre, capital of the state of Rio Grande do Sul Santos et al. (2001) also found higher rates in areas with lower socioeconomic conditions, high population density, presence of *favelas*, and drug trafficking.

However, the relationship between homicide deaths and socioeconomic conditions is not entirely straightforward. Analyzing the homicide mortality rate according to mean income of family leaders in São Paulo municipalities, Barata (2002) found higher rates in municipalities with higher mean income. The RR of homicide deaths is lower than two in municipalities with low income and reaches eight in municipalities with high income. This suggests that poverty alone cannot explain the excessive homicide risk in more vulnerable groups. More important than income are social inequity, injustice and exclusion, problems that are related to population size. According to Barata (2002), the bigger the population size in the São Paulo municipalities, the bigger the economic inequity and homicide death rates. The profile of victims also differs in relation to socioeconomic strata. Considering five socioeconomic strata, the male to female homicide death ratio in the São Paulo municipalities varies from 5.2: 1 in the higher, to 32.6: 1 in the lower. The victim's age is also higher in the higher strata.

These data suggest the existence of a relationship between socioeconomic conditions and homicide distribution. According to Barata (2002), people who live in areas with low socioeconomic conditions have a higher risk of homicide death. Income inequalities create conditions for conflicts and social alienation. Furthermore, the higher the disparities in income distribution, the lower the investments in social areas such as health, education, and human development (Barata, 2002:22). According to the author, socioeconomic conditions are macrostructural determinants of homicide risk which modulate more specific exposure factors related to age and sex. Homicide risk is a product of macrostructural determinant actions and specific risky behavior.

Chapter 2

The impact of firearms on violence in Brazil

Despite the growth of violence in Brazil, few researchers focus on the problem of firearm-related violence. In fact, a low level of consistency and validity and a lack of standardization of criminal data collection are among the greatest obstacles to research in this field (Beato-Fo, 2000, Cano, 2000, Kahn, 2002b, Piquet-Carneiro, 2000) (Chart 1). According to Beato-Fo (2000) this can be explained, in part, by the lack of the required technology in the state security departments throughout Brazil, since "only a few state security departments have data collection and statistics departments, as well as the required technology". Additionally, there is no tradition established regarding information production, dissemination and use for planning purposes. Thus, data collection is considered by the police agents as a bureaucratic and useless activity, with no bearing on their work (Cano, 2000). This view has a direct effect on the quality of data collected.

Analyzing the data produced by police departments in Rio de Janeiro, Cano (2000) identifies the major problems that limit its quality: lack of standardization among categories in different years, duplication of information collected by different police departments, lack of information regarding characteristics of victims, aggressors and criminal activities, lack of standardization of data collection processes and categories used, and underreporting. Moreover, the same event can be categorized in different ways during the investigative and judicial procedures (Cardia et al. 2003). Another problem that renders the use of police information to monitor criminal activities or violence in Brazil difficult, is that published police data provides information only on the number of criminal events, even when more than one victim or aggressor is involved. Hence, a multiple homicide such as a slaughter is considered as one case regardless of the number of victims (Cardia et al. 2003). In addition, the police departments' socio-geographical references do not coincide with other administrative areas, which make the calculation of rates difficult.

The problems involved in comparing data collected in different states are even bigger, since different categories are used to classify criminal events. According to Beato-Fo (2000), while the Police Department in Rio de Janeiro uses seven different categories to classify crimes such as robberies, 31 categories in Minas Gerais and 5 categories in São Paulo are used for the same type of crime. Thus, data are not comparable across different settings and over time, which makes a national diagnosis of criminal violence in Brazil difficult, regarding its magnitude, distribution, victims' and aggressors' characteristics, and risk factors.

Moreover, since topics such as violence and criminality are problems of major concern, they figure as a very important item in political campaigns in Brazil (Cardia et al. 2003). This way, the authors point out that published data on criminal activities are commonly manipulated to distort reality. Other problems such as political orientation to cover up some criminal events, (an example would be homicides that could be classified in different criminal categories such as death following a robbery), pacts among victims, aggressors, and authorities or desistance in notifying the fact to the police, influence the quality of criminal data in Brazil.

This being so, little is known about firearms availability, firearms-related morbidity, mortality and criminal activities, victim and aggressor profiles. According to Kahn (2002b) it is difficult to know the number and types of firearms available in Brazil because of official data underreporting, lack of accurate data on criminal activities, and arms trafficking in the

country. Furthermore, raw databases on the number of firearms registered and seized by the police state departments are not available for research purposes. In Table 1 we can see the number of firearms seized by the police departments in different states of Brazil during the years 1999 through 2001.

Table 1: Number and rates (/100.000 inhabitants) of firearms seized by the police, Brazilian states, 1999-2001

	1999		2000		2001	
	n	Rate[1] (/100.000)	n	Rate[1] (/100.000)	n	Rate[1] (/100.000)
Acre	-	-	265	47.5	209	36.4
Alagoas	-	-	538	19.1	-	-
Amapá	159	36.2	80	16.8	310	62.2
Amazonas	-	-	-	-	153	5.3
Bahia	-	-	-	-	4898	37.1
Ceará	4079	57.4	3402	45.9	17463	231.4
Federal district	889	45.1	815	39.9	2892	137.9
Espírito Santo	502	17.1	1024	33.1	-	-
Goiás	-	-	-	-	519	10.1
Maranhão	84	1.6	-	-	200	3.5
Mato Grosso	-	-	-	-	541	21.1
Mato Grosso do Sul	-	-	-	-	1715	81.2
Minas Gerais	6588	38.1	6985	39.2	797	4.4
Pará	-	-	-	-	-	-
Paraíba	-	-	-	-	1231	35.5
Paraná	-	-	2718	28.4	1082	11.2
Pernambuco	4102	54.1	4102	51.9	3617	45.2
Piauí	-	-	-	-	217	7.6
Rio de Janeiro	-	-	-	-	7753	53.3
Rio Grande do Norte	-	-	-	-	788	28.0
Rio Grande do Sul	-	-	-	-	-	-
Rondônia	-	-	-	-	-	-
Roraima	30	11.2	6	1.9	17	5.0
Santa Catarina	-	-	-	-	663	12.2
São Paulo	-	-	40226	108.8	-	-
Sergipe	-	-	-	-	79	4.3
Tocantins	-	-	-	-	435	36.7

Source: Ministry of Justice(MJ)/National Public Security Dept.(SENASP)/General Coordination of information - Coordination of Statistics and data production.
Brazilian Institute of Geography and Statistics - IBGE
(1) Rates were calculated based on 2001 population from IBGE.
Preliminary data (April 30, 2003)

We should note that only a few states supplied the information to the Ministry of Justice during the three years. Moreover, the number of firearms seized varies considerably from one year to the next, especially in some states. The lack of information was much more evident in the two first years, which can be explained if we consider the work conducted by the Ministry of Justice to convince the state authorities regarding the importance of information collection.

However, it bears emphasizing that the information collection, processing and remittance to the federal authorities depends on the state security departments and is not, to date, a procedure that is standardized or developed with a clear routine. This makes it extremely difficult to use information for research or planning purposes.

In a study conducted by Viva Rio and the Civil Police Department of Rio de Janeiro State (Rivero, 2002) regarding arms in police custody and registered arms, it was estimated that a total of more than 700,000 arms are available in the state. Seventy-seven percent of the seized and 82% of the registered guns were Brazilian made and 25% of the seized guns were sold in the illegal market. In São Paulo Lima et al. (2000) estimated a total of 3,608,789 firearms available in the State of São Paulo, and 1,804,395 in the São Paulo municipality, considering all arms registered between 1938 and 1999 and the number of illegal arms found on police rounds. Kahn (2002b) estimated the number of legally held arms in the country and in all federal states, considering the number of arms sold by Taurus Corporation in 1997 and 1998. According to Kahn, there are more than 7,000,000 legally held arms in Brazil. State numbers vary from 562 in Acre to 1,455,960 in São Paulo. All these numbers are estimates of the total number of circulating firearms, calculated through different methodologies and data sources.

The lack of quality of official police information regarding criminal activities makes it necessary to use alternative sources to study firearm-related violence in Brazil. The most consistent official data source is the Ministry of Health's Mortality Information System (SIM) (Chart 1), in which data on mortality from 1979 through 2001 are available for the entire country. Additionally, underreporting of criminal activities to police departments can be estimated through victimization surveys (Chart 1).

Chart 1: Data sources on crime and violence in Brazil

Source	Description	Type of information	Major problems
Police Data	Data collected by police officers regarding criminal activities.	Criminal activity Seized firearms	Underreporting Lack of standardization Duplication of information Lack of information regarding the weapon used, victim and aggressor profiles Each state has its own reporting and data collection procedures Raw data not available
Mortality Data	Data collected by municipal health authorities from death certificates following ICD* - 9th and 10th revisions, are compiled in a national data source. Available on the internet and via CD-Rom (raw database)	All notified deaths that occurred in Brazil, from 1979 to 2002. Information on victims' socio-demographic characteristics (sex, age, civil status, occupation, schooling, address), medical assistance, place, cause and circumstance of death	Underreporting Missing information on victims' socio-demographic characteristics, medical assistance, place of death. High percentage of external cause deaths of undetermined intention.
Victimization Surveys	Primary data collection.	Prevalence of victimization, firearms ownership and use, characteristics of victims and aggressors, reporting to the police, public awareness, attitudes, rules and behavior regarding violence, access to justice.	Methodological problems such as information and recall bias, sampling and external validity. Prevalence does not represent "real" victimization or firearms' ownership.

ICD=International Classification of Diseases

Firearm-related mortality

The data that feeds the Ministry of Health's Mortality Information System (SIM) is extracted from death certificates – an official document that is mandatory and standardized – by Municipal and State Health Departments (Chart 1). Death certificates have information on the sociodemographic characteristics of the victim, place of death, cause of death, circumstance (accident, homicide, suicide), and medical assistance. Cause of death is classified following the International Classification of Diseases (ICD), Revision IX – from 1979 through 1995, and Revision X – from 1996 onwards.

Despite the fact that the SIM is universal and broad in scope, both spatially and temporally, and that the information that feeds the system is standardized, authors point out some problems that compromise the quality of the information provided. According to Njaine et al. (1997), information on the victim's civil status and place of birth is absent more than 10% of the time, information on the victim's schooling and medical assistance is absent in more than 30% of cases, and information on the victim's occupation, place of death and kind of violence is absent in more than 50% of all death certificates of victims from 0 to 19 years old for the Rio de Janeiro municipality in 1993. The proportion of deaths of undetermined intention was even higher in 1994, reaching 60% of all deaths from external causes for the 0 to 19 year-old population in the Rio de Janeiro municipality. Considering data for all Brazilian states in 1998, the ratio between deaths of undetermined intention and aggression varies from 0.00 in Amapá to 3.23 in Sergipe. In states such as Maranhão, Rio Grande do Norte, Sergipe, Bahia, Minas Gerais, and Goiás, the ratio exceeds one, which means that there are more deaths classified as of undetermined intention than as aggression (Catão, 1999). The fact that more than half of the deaths of undetermined intention are firearm-related deaths is of major concern, and suggests that homicide is the most probable cause of death in the group (Njaine et al. 1997).

According to Gawryszewski (2002), death certificates also present important limitations concerning information on the kind of weapon used in homicide deaths. In a study made in the São Paulo municipality considering deaths for the year 2000, discrepancies were observed when comparing the information provided by death certificates furnished by PRO-AIM[1], police records and the Medico-Legal Institute. According to the PRO-AIM database, a total of 5,978 homicides occurred in the year 2000, of which 57.7% were committed with firearms and 38.4% with an unknown weapon. Considering the data provided by police records, firearms were used in 69% of the homicides while 22.1% of them were committed with an unknown weapon. According to the Medico-Legal Institute, firearms were the weapons used in 90.1% of the homicides, the percentage of deaths with an unknown weapon being very much lower (0.2%). According to Gawryszewski (2002) the Medico-Legal Institute does not inform in death certificates the kind of weapon used, which explains the high number of homicides with unknown weapons found in the PRO-AIM database. Since the Ministry of Health's SIM uses death certificates as sources of data, this study from São Paulo demonstrates a very real possibility that SIM data will tend to underestimate firearm-related homicide.

Despite this, according to the SIM data, firearms were the weapons used in the majority of homicides that occurred in Brazil in the 1980's (Souza, 1994). In state capitals the percentage was higher than 50%. The highest percentages were found in Rio de Janeiro (83.4% in 1980 and 73.8% in 1989), Recife (70.2% in 1980 and 79.2% in 1989), Belo Horizonte (63.4% in 1980), and Porto Alegre (63.7% in 1989). Considering all deaths from external causes in nine state capitals (Belém, Fortaleza, Recife, Salvador, Belo Horizonte, Rio de Janeiro, São Paulo, Curitiba, and Porto Alegre), 14.5% were due to firearms in 1980 and 26% in 1989. In 1985, 43.14% of all child homicides in

São Paulo were committed with firearms (Mello-Jorge, 1988). According to Catão (1999), homicide rates in Brazil grew 102.5% from 1980 through 1996, while firearm-related homicide death rates grew 174%, from 5.1/100,000 to 14.0/100,000 inhabitants in the same period.

Firearm-related mortality rates in Brazil (including homicides, suicides, accidents, deaths from police intervention and of undetermined intention) grew 211.6%, from 1979 through 1999, from 6.0/100,000 to 18.7/100,000 inhabitants (Fernandes et al, 2002). According to the authors, in 1999 firearm-related deaths were responsible for 27% of all deaths from external causes for the entire population and 42% for the 15-19 year-old male population. The Brazilian male to female firearm-related death ratio in 1999 was 13.4. In the Rio de Janeiro municipality, firearm-related causes were responsible for 44% of all deaths from external causes and 72% in the 15-19 year-old male population in 1999. The firearm-related mortality rate grew 95% in the same period, from 21.3/100,000 in 1979 to 42.1/100,000 inhabitants in 1999. The rates were also higher for the male population in the Rio de Janeiro municipality, with a risk of firearm-related relative to females on the order of 18.5 in 2001 (Fernandes et al. 2002).

Firearm-related morbidity

Only few researchers have studied firearm-related morbidity in Brazil. This can be explained by the fact that the collection procedure for external cause morbidity information is not well established in the entire country, when compared with the SIM. Until 1998, the data collected did not provide information on the type of external cause that was responsible for the injury (road traffic crashes, homicides, etc.), the information being limited to the kind of injury that was treated. From 1998 onwards, information on the type of external cause is also being collected (Mello-Jorge, 2000).

In a study conducted by the Center of Research in Prevention and Education of the Sarah Kubitchek Hospital in the Federal District and in Salvador, a total of 1,578 hospital admissions due to external causes from February 1st, 1999 to January 31st, 2000 were analyzed. External causes were responsible for more than a quarter of all admissions in the period, firearms ranking third (Figure 4).

Figure 4: Hospital admissions due to external causes, Sarah Kubitcheck Hospital, Salvador and Federal District, Brazil, 1999

Others
27.5%

Firearm-related
16.9%

Falls
17.1%

Road traffic injuries
38.5%

Source: CEPES/Sarah, 2000.

This pattern was found for both hospitals together and for the Federal District alone. In Salvador, firearms ranked second, being responsible for almost 30% of all external cause admissions (CEPES/Sarah, 2000). When considering data by age groups, it is possible to see that firearm-related injury is much more common in the young population, especially in the 20-24 age group, more than 90% of the cases being in the 15 to 39 age group. Male victims were 6 times more frequent than female, confirming the risk profile identified through mortality data.

Some additional information provided in this study yield important contextual indications. The great majority of the cases were due to intentional shooting. When considering the motivation, the high number of cases motivated by non-criminal fights and discussions should be noted, the percentage being quite similar to that found for robbery (Figure 5).

Figure 5: Firearm injuries by type of motivation, Sarah Kubitcheck Hospital, Salvador and Federal District, Brazil, 1999

Source: CEPES/Sarah, 2000.
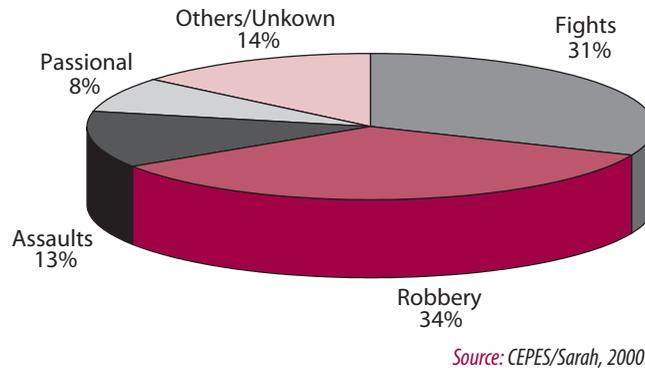
It is also important to observe that despite the fact that in most cases the aggressor was unknown to the victim, in more than one third of the cases, the victims and aggressors were known persons, friends, or had a family tie (Figure 6).

Figure 6: Firearm injury by aggressors, Sarah Kubitcheck Hospital, Salvador and Federal District, Brazil, 1999

Source: CEPES/Sarah, 2000.
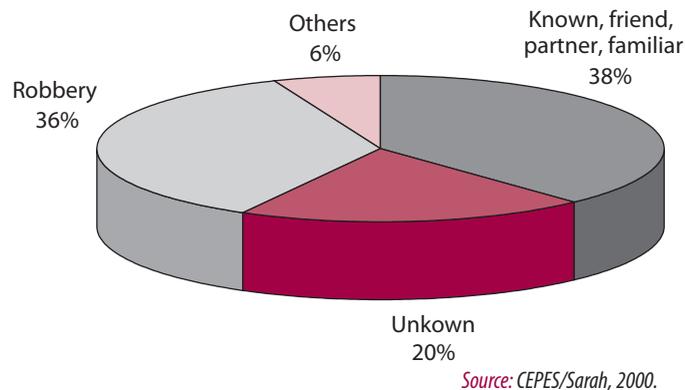
Medullar injury was the cause of admission in almost 90% of the firearm-related injuries, with almost 80% of them resulting in paraplegia. Despite the fact that this study has a limited external validity and does not represent the total of firearm-related hospital admissions in Brazil, it gives us important information regarding victim profile, motivation, victim and aggressor relationships and severity of the injuries. Firearm-related causes were involved as the third most common reason for external cause admissions in these two hospitals and most cases presented severe medullar damage and resulting paraplegia. The victims tended to be young males, as is the case in homicides and firearm-related deaths in Brazil. This information provides some insight into some of the social costs of firearm-related violence in Brazil.

The lack of information regarding the duration of hospitalization and medical procedures does not allow us to know the costs these events represent to the health sector. However, this can be estimated through data provided in a publication of the regional Medical Council of São Paulo

Chapter 2 - The impact of firearms on violence in Brazil

(CRM-SP/APM/Sindimed, 1998). In 1998, a total of US$ 60,955,634.53 was spent in the public health sector in Brazil for the outpatient treatment of victims of violence[2], considering all external causes. The average daily cost of a hospital admission due to firearm-related causes in that year was on the order of US$81.9, and of US$ 190.32 for homicide victims who were admitted and died in the hospital. In 1997, the public heath sector in Brazil spent US$ 78,566,143.12 in hospital treatment for victims of violence – considering all external causes – and US$ 747,092.21 in hospital treatment for homicide victims. More studies should be made in order to estimate the direct and indirect costs of firearm-related violence in Brazil, including not only those costs related to the health sector.

Victimization surveys

In Brazil nine victimization surveys have been conducted since 1988 (Chart 2). The first one, conducted by the Brazilian Institute of Geography and Statistics (IBGE), is the only one with a national scope. Different methodological approaches and reference periods make comparisons among the studies difficult. It is also important to consider that victimization surveys are susceptible to information and recall biases that influence the results, meaning they can not necessarily represent the real prevalence of violence victimization or criminal activities. Nevertheless, victimization surveys are an important source of information regarding violence, criminal activity, firearm ownership and public awareness, attitudes and rules regarding violence.

As we can see in Chart 2, the majority of the victimization surveys that were made in Brazil are limited to Rio de Janeiro and São Paulo. Two of them were made in more than three state capitals of Brazil, for the purpose not only of estimating the victimization rates, but also of evaluating public awareness in relation to two governmental programs implemented in Brazil: National Program of Human Rights (Cardia, NEV/USP, 1999) and Urban Violence Prevention Program (Kahn, Ilanud/FIA-USP/GSI, 2002). We will present the main results of both studies, giving special attention to information regarding the use of firearms, when available[3].

Chart 2: Methodological characteristics of victimization surveys conducted 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	Individual 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
Kahn, 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 extracted from Piquet-Carneiro, Leandro (2000). Violent Crime in Latin American cities: Rio de Janeiro and São Paulo. Research Report.

In a study conducted in four Brazilian capitals, Kahn et al. (2002) found that half of those interviewed (n=2800) had been victims of at least one crime in the previous five years and more than one third had been victims in the previous year. The highest victimization rates were found in Recife, followed by São Paulo, Vitória, and Rio de Janeiro. According to the authors, victimization rates presented a linear relationship with income, in the sense that victimization rates were higher in higher income groups. This can be partially explained by the fact that the majority of the reported crimes were against property, the rates being much higher than those found for physical and sexual assaults in all four capitals. Despite the fact that most of the crimes were against property, high rates of physical and sexual assault were found in Recife (14% and 7%, respectively). Use of weapons was referred in almost two thirds of robberies, the percentage being lower in relation to crimes against individuals (physical and sexual assault) (Table 2). The highest percentage of weapons used in crimes against individuals was found in Recife and Rio de Janeiro.

The low rates of police notification found in all four capitals are worth noting. When we consider all crimes together, less than one third of the victims reported the fact to the police, higher rates, however, being found for low-income populations. Underreporting was found for all types of crimes, with exception of car robberies. Crimes against individuals (sexual and physical assaults), which involve the use of violence, were underreported in all four capitals. We should observe, however, the very low rates of reporting found for sexual assaults, especially in high-income populations, where only 1% of the victims reported the fact to the police while 36% of the low-income group did so. It is important to highlight also the dissatisfaction with police action, since only one third of those who reported the crimes to the police were satisfied, with higher percentages found for those who were victims of physical aggression. Additionally, more than half of the responders consider that the police work to control crime is ineffective.

Table 2: Use of weapon by type of crime (%) in four Brazilian state capitals, 2000

	Total	São Paulo	Rio de Janeiro	Recife	Vitória
Robbery	68	70	66	63	50
Physical aggression	44	42	46	51	33
Sexual aggression	8	5	12	14	9

Source: Kahn, Tulio et al. Pesquisa de Vitimização 2002 e avaliação do PIAPS, Ilanud/FIA-USP/GSI, 2002.

The high victimization rates and dissatisfaction with police action found in this study may explain, at least in part, the feelings of fear and insecurity reported by the population in all four capitals. More than half of those who were interviewed have changed their habits, avoiding certain places or persons because of fear, and one third said that they felt very insecure in their own neighborhoods. This indicates that violence is influencing the daily life choices of at least part of the Brazilian population, and has become a source of major concern. More than half of the responders consider that the most important problem in Brazil is insecurity, and 80% think that criminal activity was worse on the date questioned than it had been 5 years previously.

When questioned about what could be done to reduce crime in Brazil, repressive and preventive measures were cited in all four capitals, in all income groups. This shows us that violence and criminality are not considered by the respondents as problems to be solved solely by the police action, but also with social and preventive measures. It should be noted that the majority of the population felt that firearm control is important towards reducing crime rates (Table 3). This suggests that there should be an acceptance, on the part of the population, not only of firearm control measures, but also in relation to the implementation of preventive programs.

Table 3: Measures to reduce crime (%) in four Brazilian capitals, 2002

	Total	São Paulo	Rio de Janeiro	Recife	Vitória
More policing in the streets	84	86	80	87	92
Longer sentences	61	64	56	63	50
Social youth programs	75	74	76	81	87
More resources for prevention	69	65	74	66	77
Firearm control measures	83	83	81	85	88
Integration approach	88	86	93	86	92
Restriction of violence on TV	40	34	47	48	51

Source: Kahn, Tulio et al. Pesquisa de Vitimização 2002 e avaliação do PIAPS, Ilanud/FIA-USP/GSI, 2002 (adapted).

Feelings of fear and insecurity were also referred to by the greater part of the population in a victimization survey conducted in ten Brazilian capitals (Cardia, NEV/USP, 1999). According to Cardia (1999), most of those who were interviewed (n=1000) were victims of a crime or witnessed a crime in the previous year and most of the victims were young males (16-34 age group). In all ten capitals the majority of the population reported changing some of their daily habits, avoiding going out at night or walking through certain neighborhoods or streets. The use of firearms in the crimes referred to by the respondents can be seen in Table 4 and are quite striking. In particular, the high percentage of those who were threatened with a firearm or witnessed someone being threatened with a firearm, should be noted. The percentage of witnesses to more severe violence, such as seeing someone being shot or murdered, was also very high in this population, especially in the 16-24 age group, where almost 20% said they had seen someone being shot or murdered in the previous year.

Table 4: Victimization rates in the neighborhood in the last 12 months, Brazil, 1999

	%
Was threatened by someone bearing a firearm to steal something	6
Felt the necessity to carry a firearm	6
Was injured by a firearm	1
Had a family member injured by a firearm or a knife	5
Had a family member murdered	4
Witnessed someone being threatened with a firearm	21
Witnessed someone being shot	14
Witnessed someone being murdered	11

Source: Cardia, N. Atitudes, normas culturais e valores em relação à violência. NEV/USP, 1999 (adapted).

The exposure to violence in the young population very likely accounts for their perception regarding life expectancy, since only 60% of those younger than 20 consider that the probability of being alive by the time they are 25 years old is very high. In this population the percentage of those who have a friend that was shot with a firearm, murdered or had his life threatened is surprisingly high, as is the percentage of those who have friends who carry a weapon or who killed someone (Table 5).

Table 5: Percentage of young individuals (under 20 years old) who know victims or aggressors, by sex groups, Brazil, 1999

Know someone who	Males (%)	Females (%)	Total (%)
Carries a weapon	41	32	36
Has already killed someone	13	15	14
Was shot with a firearm	30	28	29
Had his/her life threatened	37	21	29
Was murdered	23	20	21

Source: Cardia, N. Atitudes, normas culturais e valores em relação à violência. NEV/USP, 1999 (adapted).

It is important to point out that only a minority of the population agreed that to have or to carry a weapon makes their home (11%) or themselves (7%) safer, with the higher agreement being found in the young population. The most important reasons provided for having a weapon were for self-protection (34%) and for feeling stronger (22%), in all age groups (Table 6). Also in this study, only a very small fraction of those who were interviewed (10%) considered that the police guarantees the security of the population.

Table 6: Reasons for carrying a weapon (%), Brazil, 1999

		Age			
	Total	16-24	25-34	35-49	50+
To self- protect	34	32	30	34	38
To feel strong	22	23	24	24	15
To give a good impression to peers	17	16	20	14	17
To imitate others	5	6	5	5	4
To solve conflicts	7	8	6	6	6

Source: Cardia, N. Atitudes, normas culturais e valores em relação à violência. NEV/USP, 1999.

Only a few of the victimization surveys have information on weapons used and also on public awareness regarding the use of weapons. Most questions fail to ask for information on specific types of weapons, such as firearms, knives or others. This makes it difficult to estimate the importance of firearms in criminal activities and violent victimization. Nevertheless, it is important to note that the consensus view was that having or carrying a weapon did not make an individual safer. It is also important to note that perceptions of fear and insecurity are influencing the daily life of individuals and changing patterns of relationship and community life.

The extent to which firearms are involved in violence varies in different countries and is related to a number of factors such as legislation, judicial and police system organization and effectiveness, illegal firearm markets, presence of drug trafficking, "violence culture", and also to social processes such as urbanization, social exclusion, demographic and familial structural changes which influence the growth of violence as a entire (Reiss, 1993; Fernandes et al. 2001). According to Reiss (1993: 268)

"differences across nations, states and communities, may reflect separate local traditions about guns and about violence, rather than any direct connection between guns and violence. To the extent that alienation from public institutions exists […], it could account for higher levels of gun ownership and of violent crime; mistrust of the police and courts could trigger a "vigilant" mentality in which citizens arm themselves in order to be prepared to settle disputes without recourse to civil or criminal justice systems".

While firearm-related violence is thus part of a more complex problem, than simply the availability of firearms alone, many researchers point out the importance of firearm availability as a risk factor for violent death, and support that controlling firearm use and availability will help to decrease violence rates (Cook, 1978; Kellerman, 1993; Miller, 2002; Wiebe, 2003). According to Reiss (1993), quoting Cook (1979) and Killias (1990), firearm availability is associated with higher homicide rates, and those states in the United states that have more permissive legislations regarding firearms, have higher homicide and firearm-related homicide death rates than more rigorous states. Nevertheless, firearm availability is not related to non-fatal criminal events (Reiss, 1993). Fagan (1999) analyzing homicide death rates in the United states, points out an increase in the firearm to non-firearm-related homicide death ratio. Considering three homicide sub-epidemics in the United states in 1972, 1981 and 1991, the ratio grew from 1.23 to 3.16.

According to Fagan, the increase in violence in the United States can be explained by a set of factors, including the growth of the illicit drug market, increase in the demand for firearms, racial segregation and racial economic deficits. However, a more complex process is involved in homicide epidemics, which, in the author's view, can be understood through an analogy with the medical model of contagion that goes beyond the host and agent model and includes environmentally and socially determined susceptibility. Firearm-related homicide is affected through social contagion, especially in more isolated and socially excluded areas. Social contagion involves interaction, "…mutual influence of individuals within social networks" (Fagan, 1999). Social inequity and low socioeconomic conditions make up the social and ecologic determinants of susceptibility, which are basic causal factors that create paths through which more proximal causal factors can act.

Firearm-related homicides are, in the author's view, events which have the potential to act in a manner similar to a contagious agent within a dynamic social process in which new meaningful behaviors are spread through contact and communication between susceptible "hosts". According to Fagan, the meaning of guns and of violent behavior for the contagion process can be explained by three different processes which include fear – use of guns for self defense in violent environments–, behavior – use of guns related to their instrumental and symbolic values–, and violent identities – use of the gun as a strategic necessity and as a component of identity formation. According to Fernandes et al. (2001), the medical model of contagion can be useful to guide preventive measures related to the vehicle/agent, host or environment. Firearm control strategies target the vehicle component of the problem and can be addressed through measures to reduce the selling of new guns, restricting the number of firearms that are still available, and measures to curb demand. Thus, various authors have argued that firearm control measures can be effective interventions contributing to prevention and control of firearm-related violence despite firearms themselves not capable of being the cause of firearm-related violence.

While the contagion model has some attributes that make it useful to consider firearm-related violence and it's prevention, it is nevertheless somewhat artificial and non-sensical to apply literally to firearm-related violence and eventually is somewhat insufficient to understand such a complex problem. It is ultimately more helpful to consider violence within an ecological model, and recognise that violence is not the result of a single causal factor, but rather, the result of dynamic interaction of multiple determinants, which include individual, relational, social and community factors (Krug et al. 2002). The first step to implement effective preventive measures is to know the magnitude and distribution of violent events, and identifying the determinants of violence in order to guide the planning of preventive interventions and process of implementing these interventions.

In Brazil many researchers have studied violence, particularly through mortality data and victimization surveys. Nevertheless, only a few of them have given salience to the impact of firearm-related violence which as has previously been mentioned may relate to the lack of quality of criminal data collection procedures.

In order to examine the impact of firearm-related causes on Brazilian mortality, we analyzed mortality data from the SIM for the period of 1991 to 2000[4]. The use of mortality data, despite the caveats mentioned above and the limitations these imply for eventual interpretation, is well justified in the Brazilian context inasmuch as this data represents the best raw database available and has been collected for the country as a entire since 1979. Police or medico-legal institute information is not available for research purposes and its use would require costly and time consuming primary data collection. Deaths were classified according to ICD-9 and ICD-10 sub-codes in 19 variables:

4. *Methodological details are presented attached to this report.*

External causes

Road traffic crashes

Firearm-related deaths

Non-firearm-related deaths

Homicides

Firearm-related homicides

Non-firearm-related homicides

Suicides

Firearm-related suicides

Non-firearm-related suicides

Legal interventions

Firearm-related legal interventions

Non-firearm-related legal interventions

Death of undetermined intention

Firearm-related deaths of undetermined intention

Non-firearm-related deaths of undetermined intention

Other accidents

Firearm-related accidents

Non-firearm-related accidents

The total number of deaths that occurred in the 1990's according to each of the specific variables was collected for the entire country, its five major regions, twenty-seven states (including the Federal District), and twenty-six state capitals. Proportional mortality and mortality rates (/100,000 inhabitants) were calculated for each year, for the entire population, by sex and age groups.

Chapter 3

Results

Impact of firearms on mortality in the 1990's

In this section we present the data on the total of external cause deaths that occurred in the 1990´s in Brazil, its five major regions and states, considering the entire population. The contribution of firearms in the total number of external cause deaths, as well as the importance of each of the specific causes of violent deaths in the total of external causes and firearm-related deaths, are shown through the calculation of percentages.

A. Brazil and regions

In Brazil, external causes were responsible for 12.4% (n=1,108,422) of all deaths in the 1990's. In Figure 7, we can see that the external cause proportional mortality ranged from a minimum of 10.5% in the Northeastern region to a maximum of 17.3% in the Central-western region. We should also observe that in the Northern and Central-western regions, external cause proportional mortality was higher than that found for Brazil, showing the existence of regional differences in relation to the contribution of external causes in the total of deaths. Considering all the external cause deaths that occurred in the country from 1991 to 2000 (Table 7), firearms were involved in 24% (n=265,975), and road traffic crashes in 27.8% (n=308,256) of them. These data show us the importance and magnitude of firearm-related deaths in Brazil.

Figure 7: External cause proportional mortality (%) by sex groups, Brazil and regions, 1990´s
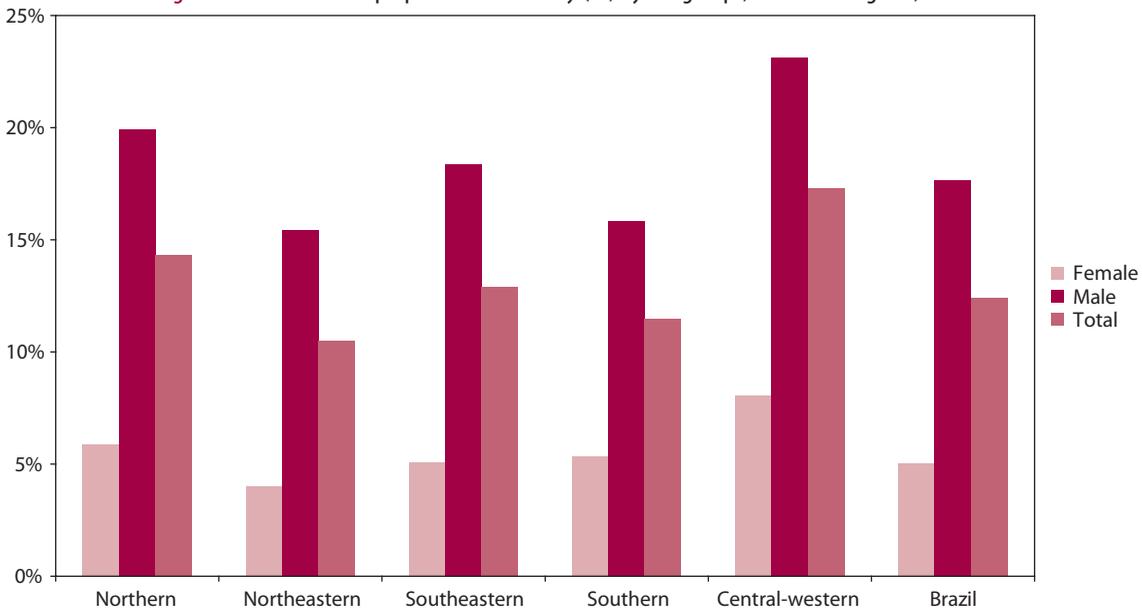
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

In Table 8, we see that the proportion of homicides (33.3%, n=369,068) exceeds for road traffic crashes (27.8%, n=308,256) in the country and in three of its five regions, with the exception of the Southern and Central-western regions, where road traffic crashes rank first. In the Northern, Northeastern, and Southeastern regions, homicides were responsible for 35.2%, 34.8% and 36.7%, respectively, of all external cause deaths. Considering only the firearm-related deaths (Table 9), homicide is the primary cause of deaths in the country (82.2%) and its five regions, ranging from 72.7% in the Southern region to 85.5% in the Northeastern region. In the Northern and the Northeastern regions, percentages of homicides in relation to the total of firearm-related deaths are higher than those found for Brazil. Analyzing Table 10, we see that firearms are used in most of the homicides in Brazil (59.3%) and in all five regions, especially in the Southern and the Northeastern regions, where 60.6% and 65.9% of all the homicides were committed with firearms.

Table 7: Road traffic crashes, firearm and non-firearm-related deaths by sex groups and total population, Brazil and regions, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Northern region						
Road traffic crashes	3434	37.1	12857	26.7	16318	28.4
Non-firearm-related deaths	4802	51.9	23954	49.7	28817	50.1
Firearm-related deaths	1023	11.7	11351	23.6	12392	21.5
External cause deaths	9259	100.0	48162	100.0	57527	100.0
Notheastern region						
Road traffic crashes	11862	33.0	46206	25.3	58212	26.8
Non-firearm-related deaths	19941	55.5	81868	44.8	102116	47.0
Firearm-related deaths	4097	11.4	54579	29.9	58798	27.0
External cause deaths	35900	100.0	182653	100.0	217495	100.0
Southeastern region						
Road traffic crashes	30096	32.2	112149	23.0	142356	24.5
Non-firearm-related deaths	53000	56.7	238263	48.8	291585	50.1
Firearm-related deaths	10361	11.1	137653	28.2	148147	25.5
External cause deaths	93457	100.0	488065	100.0	582088	100.0
Southern region						
Road traffic crashes	13361	41.8	49460	37.3	62851	38.2
Non-firearm-related deaths	15702	49.2	58320	44.0	74059	45.0
Firearm-related deaths	2868	9.0	24754	18.7	27625	16.8
External cause deaths	31931	100.0	132534	100.0	164535	100.0
Central-western						
Road traffic crashes	6103	40.4	22356	32.0	28519	33.5
Non-firearm-related deaths	7181	47.5	30296	43.4	37614	44.2
Firearm-related deaths	1838	12.2	17118	24.5	19013	22.3
External cause deaths	15122	100.0	69770	100.0	85146	100.0
BRAZIL						
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Non-firearm-related deaths	100626	54.2	432701	47.0	534191	48.2
Firearm-related deaths	20187	10.9	245455	26.6	265975	24.0
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 8: External cause deaths by sex groups and total population, Brazil and regions, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Northern region						
Accidents	2710	29.3	11986	24.9	14720	25.6
Road traffic crashes	3434	37.1	12857	26.7	16318	28.4
Homicides	1838	19.9	18373	38.1	20251	35.2
Undetermined	564	6.1	2679	5.6	3255	5.7
Legal interventions	0	0.0	11	0.0	11	0.0
Suicides	713	7.7	2256	4.7	2972	5.2
External cause deaths	9259	100.0	48162	100.0	57527	100.0
Northeastern region						
Accidents	12764	35.6	45256	24.8	58228	26.6
Road traffic crashes	11862	33.0	46206	25.3	58212	26.6
Homicides	6340	17.7	69753	38.2	76265	34.8
Undetermined	2800	7.8	13890	7.6	16725	7.6
Legal interventions	1	0.0	31	0.0	32	0.0
Suicides	2133	5.9	7517	4.1	9664	4.4
External cause deaths	35900	100.0	182653	100.0	219126	100.0
Southeastern region						
Accidents	28858	30.9	97477	20.0	126488	21.7
Road traffic crashes	30096	32.2	112149	23.0	142356	24.5
Homicides	17298	18.5	196059	40.2	213532	36.7
Undetermined	11849	12.7	61740	12.6	73703	12.7
Legal interventions	1	0.0	174	0.0	175	0.0
Suicides	5355	5.7	20466	4.2	25834	4.4
External cause deaths	93457	100.0	488065	100.0	582088	100.0
Southern region						
Accidents	8702	27.3	27984	21.1	36700	22.3
Road traffic crashes	13361	41.8	49460	37.3	62851	38.2
Homicides	3654	11.4	29478	22.2	33147	20.1
Undetermined	2493	7.8	10721	8.1	13225	8.0
Legal interventions	2	0.0	118	0.1	120	0.1
Suicides	3719	11.6	14773	11.1	18492	11.2
External cause deaths	31931	100.0	132534	100.0	164535	100.0
Central-western region						
Accidents	3558	23.5	13906	19.9	17516	20.6
Road traffic crashes	6103	40.4	22356	32.0	28519	33.5
Homicides	2825	18.7	22973	32.9	25873	30.4
Undetermined	1380	9.1	6267	9.0	7699	9.0
Legal interventions	1	0.0	20	0.0	21	0.0
Suicides	1255	8.3	4248	6.1	5518	6.5
External cause deaths	15122	100.0	69770	100.0	85146	100.0
BRAZIL						
Accidents	56592	30.5	196609	21.3	253652	22.9
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Homicides	31955	17.2	336636	36.5	369068	33.3
Undetermined	19086	10.3	95297	10.3	114607	10.3
Legal interventions	5	0.0	354	0.0	359	0.0
Suicides	13175	7.1	49260	5.3	62480	5.6
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 9: Firearm-related deaths by sex groups and total population, Brazil and regions, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Northern region						
Accidents	54	5.3	367	3.2	421	3.4
Homicides	803	78.5	9750	85.9	10571	85.3
Undetermined	77	7.5	713	6.3	790	6.4
Legal interventions	0	0.0	7	0.1	7	0.1
Suicides	89	8.7	514	4.5	603	4.9
Firearm-related deaths	1023	100.0	11351	100.0	12392	100.0
Northeastern region						
Accidents	236	5.8	2665	4.9	2921	5.0
Homicides	3284	80.2	46915	86.0	50296	85.5
Undetermined	305	7.4	3424	6.3	3733	6.3
Legal interventions	0	0.0	13	0.0	13	0.0
Suicides	272	6.6	1562	2.9	1835	3.1
Firearm-related deaths	4097	100.0	54579	100.0	58798	100.0
Southeastern region						
Accidents	120	1.2	994	0.7	1115	0.8
Homicides	8115	78.3	114203	83.0	122418	82.6
Undetermined	1485	14.3	18360	13.3	19871	13.4
Legal interventions	0	0.0	101	0.1	101	0.1
Suicides	641	6.2	3995	2.9	4642	3.1
Firearm-related deaths	10361	100.0	137653	100.0	148147	100.0
Southern region						
Accidents	44	1.5	315	1.3	359	1.3
Homicides	1744	60.8	18334	74.1	20081	72.7
Undetermined	404	14.1	2551	10.3	2955	10.7
Legal interventions	2	0.1	113	0.5	115	0.4
Suicides	674	23.5	3441	13.9	4115	14.9
Firearm-related deaths	2868	100.0	24754	100.0	27625	100.0
Central-western region						
Accidents	70	3.8	558	3.3	634	3.3
Homicides	1349	73.4	13924	81.3	15313	80.5
Undetermined	175	9.5	1250	7.3	1433	7.5
Legal interventions	0	0.0	13	0.1	13	0.1
Suicides	244	13.3	1373	8.0	1620	8.5
Firearm-related deaths	1838	100.0	17118	100.0	19013	100.0
BRAZIL						
Accidents	524	2.6	4899	2.0	5450	2.0
Homicides	15295	75.8	203126	82.8	218679	82.2
Undetermined	2446	12.1	26298	10.7	28782	10.8
Legal interventions	2	0.0	247	0.1	249	0.1
Suicides	1920	9.5	10885	4.4	12815	4.8
Firearm-related deaths	20187	100.0	245455	100.0	265975	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Death of undetermined intention – which means that it is impossible to define if the death was due to homicide, suicide or an accident which, in the majority of the cases, is determined by police investigation processes – represents 10.3% (n=114,607) of all external cause deaths in the country and 12.7% (n=73,703) in the Southeastern region (Table 8). When we consider all external cause deaths, those of undetermined intention are in the fourth position in the country and in four regions except in the Southern region, where they rank fifth. However, when we consider only firearm-related deaths (Table 9), deaths of undetermined intention move upwards to the second position in Brazil (10.8%), and in the Northern, the Northeastern and Southeastern regions, being exceeded by suicides in the Southern and Central-western regions, where they are in the third position. Higher proportions are found in the Southeastern region, where 13.4% (n=19,871) of all firearm-related deaths are of undetermined intention. We should note that these deaths could, in fact, represent homicides in most cases, as was shown by Souza (1994), Mello Jorge (1997), and Najine et al. (1997). Despite the high percentage of homicides, considering both the external causes and firearm-related deaths, they could be underestimated in the country due to misclassification problems.

Accidents (excluding road traffic crashes) are the third external cause of death in the country (22.9%) and in four of its five regions, with the exception of the Southern region, where accidents are in the second position (Table 8). If we consider firearm-related deaths only (Table 9), accidents move to the fourth position in the country (2.05%), in the Northern (3.4%), Southeastern (0.75%), Southern (1.3%), and Central-western (3.33%) regions, and to third in the Northeastern region (4.97%). In Table 10, we see the low contribution of firearms in the total number of accidents. Only 2.1% of the unintentional deaths that occurred in Brazil in the 1990's, were related to the use of firearms. The percentage varies from a maximum of 5% in the Northeastern to 0.9% in the Southeastern region. We should highlight the Northeastern region, where fully 53.6% (n=2,921) of all firearm-related accidents in the country occurred (n=5,450). This low contribution of firearms in the total number of accidents reinforces the idea that most of the deaths of undetermined intention are in fact homicides, particulary if they were committed with firearms.

It should be noted that these data show a very low percentage of deaths due to police action (legal intervention) in the total of external causes (0.03%, n= 359) and firearm-related deaths (0.09%, n=249) in the country (Tables 8 and 9). Considering only the legal intervention deaths firearms are the weapons most frequently used in Brazil (70%), with percentages varying from 40.6% in the Northeastern, to 95.8% in the Southeastern regions (Table 10). The very low numbers reflect another source of potential misclassification, as the general consensus among violence researchers in Brazil is that a considerably higher number of firearm-related deaths arise through legal intervention.

Table 10: External cause deaths by type of instruments (%), Brazil and regions, 1990´s

	Accidents		Homicides		Undetermined		Legal interventions		Suicides	
	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm
Total population										
Northern	2.9	97.1	52.2	47.8	24.3	75.7	63.6	36.4	20.3	79.7
Northeastern	5.0	95.0	65.9	34.1	22.3	77.7	40.6	59.4	19.0	81.0
Southeastern	0.9	99.1	57.3	42.7	27.0	73.0	57.7	42.3	18.0	82.0
Southern	1.0	99.0	60.6	39.4	22.3	77.7	95.8	4.2	22.3	77.7
Central-western	3.6	96.4	59.2	40.8	18.6	81.4	61.9	38.1	29.4	70.6
BRAZIL	2.1	97.9	59.3	40.7	25.1	74.9	69.4	30.6	20.5	79.5
Male										
Northern	3.1	96.9	53.1	46.9	26.6	73.4	63.6	36.4	22.8	77.2
Northeastern	5.9	94.1	67.3	32.7	24.7	75.3	41.9	58.1	20.8	79.2
Southeastern	1.0	99.0	58.2	41.8	29.7	70.3	58.0	42.0	19.5	80.5
Southern	1.1	98.9	62.2	37.8	23.8	76.2	95.8	4.2	23.3	76.7
Central-western	4.0	96.0	60.6	39.4	19.9	80.1	65.0	35.0	32.3	67.7
BRAZIL	2.5	97.5	60.3	39.7	27.6	72.4	69.8	30.2	22.1	77.9
Female										
Northern	2.0	98.0	43.7	56.3	13.7	86.3	0.0	0.0	12.5	87.5
Northeastern	1.8	98.2	51.8	48.2	10.9	89.1	0.0	100.0	12.8	87.2
Southeastern	0.9	99.1	46.9	53.1	12.5	87.5	0.0	100.0	12.0	88.0
Southern	0.5	99.5	47.7	52.3	16.2	83.8	100.0	0.0	18.1	81.9
Central-western	2.0	98.0	47.8	52.2	12.7	87.3	0.0	100.0	19.4	80.6
BRAZIL	0.9	99.1	47.9	52.1	12.8	87.2	40.0	60.0	14.6	85.4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B. Brazilian states

B.1. Northern region

External cause proportional mortality in Rondônia, Roraima, Amapá, and Tocantins, exceeds that found for the region (14,3%), and Brazil (12.4%) (Figure 8). In Roraima, external cause proportional mortality in the 1990's was on the order of 27.2%, being 22.7% in Rondônia, 20% in Amapá, and 13.4% in Tocantins. In Table 11, we can observe the existence of differences when we consider specific causes of death in the total of external causes. In Rondônia only, firearm-related deaths rank second exceeding road traffic crashes. In all the other six states of the Northern region, firearms are in the third position as the instrument of external cause deaths. The percentage of firearm-related deaths varies from a maximum of 26% in Rondônia to 15.1% in Tocantins. Considering the total of firearm-related deaths in the Northern region (n=12,392), 38.1% of them occurred in Pará (n=4,727), 23.7% in Rondônia (n=2,945), and 18.5% in Amazonas (n=2,298). Pará accounts for 4.7% of all the firearm-related deaths that occurred in Brazil in the 1990's (n=265,975).

Homicides are the first external cause of death and exceed road traffic crashes in all states of the Northern region except for Tocantins (Table 12). In Rondônia, Amazonas, Roraima, Amapá, and Pará, homicide percentages exceed those found for the country. We should draw attention to the high contribution of homicides in the total of external cause deaths in Amapá, (42.9%), Amazonas (38.7%), and Roraima (37.8%). In Table 13, we can see that the homicide

percentages in the total of firearm-related deaths are high in all the states of the Northern region, ranging from 69.44% in Tocantins to 92.97% in Amapá. In four other states – Rondônia, Amazonas, Roraima, and Pará – the proportion of homicides in the total of firearm-related deaths is over 80%. In Table 14, we can see that considering all the homicide deaths that occurred in the region, in four of its seven states – Amazonas, Roraima, Amapá, and Tocantins – firearms were the weapons used in the minority of the cases. In Tocantins only, the high percentage of firearm-related deaths of undetermined intention (18.51%) could explain the low contribution of firearms in the total of homicides, when compared with Brazil (Table 13). Firearms were used in 59.2% of all homicides in Rondônia, 56.6% in Pará, and 50.4% in Acre (Table 14).

Unintentional deaths (excluding road traffic crashes) are in the second position, considering all the external cause deaths only in Tocantins (28.7%), and Acre (25.7%) (Table 12). If we consider firearm-related deaths only, (Table 13), accidents fall to the third and fourth positions in all seven states, except for Amapá, where firearm-related accidents are in the second position (4.37%). In Amapá, we should highlight the nonexistence of cases classified as of undetermined intention in the total of firearm-related deaths. The percentages of firearm-related accidents in the total number of accidents are small in all of the seven states, the maximum being found in Pará (3.5%) (Table 14).

Figure 8: External cause proportional mortality (%) by sex groups, Brazil, Northern region and states, 1990´s
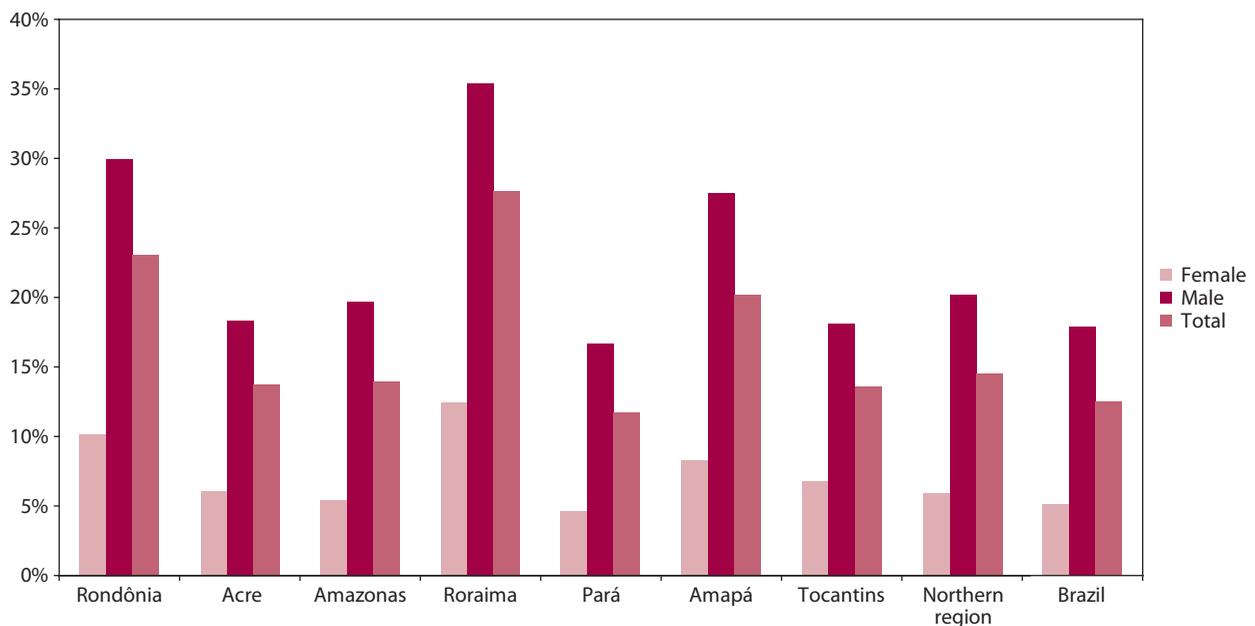
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Table 11: Road traffic crashes, firearm and non-firearm-related deaths by sex groups and total population, Brazil, Northern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Rondônia						
Road traffic crashes	600	34.5	2239	23.4	2847	25.1
Non-firearm-related deaths	901	51.8	4634	48.4	5556	49.0
Firearm-related deaths	239	13.7	2700	28.2	2945	26.0
External cause deaths	1740	100.0	9573	100.0	11348	100.0
Acre						
Road traffic crashes	153	30.7	589	23.6	745	24.8
Non-firearm-related deaths	270	54.2	1298	52.0	1575	52.4
Firearm-related deaths	75	15.1	610	24.4	686	22.8
External cause deaths	498	100.0	2497	100.0	3006	100.0
Amazonas						
Road traffic crashes	680	38.5	2416	24.9	3099	27.0
Non-firearm-related deaths	917	52.0	5154	53.2	6085	53.0
Firearm-related deaths	168	9.5	2123	21.9	2298	20.0
External cause deaths	1765	100.0	9693	100.0	11482	100.0
Roraima						
Road traffic crashes	165	40.2	831	36.4	1000	37.0
Non-firearm-related deaths	201	49.0	986	43.2	1188	44.0
Firearm-related deaths	44	10.7	468	20.5	513	19.0
External cause deaths	410	100.0	2285	100.0	2701	100.0
Pará						
Road traffic crashes	1322	37.8	4926	27.4	6251	29.1
Non-firearm-related deaths	1794	51.4	8683	48.4	10481	48.8
Firearm-related deaths	377	10.8	4347	24.2	4727	22.0
External cause deaths	3493	100.0	17956	100.0	21459	100.0
Amapá						
Road traffic crashes	169	37.1	663	27.2	833	28.7
Non-firearm-related deaths	244	53.5	1295	53.1	1541	53.1
Firearm-related deaths	43	9.4	483	19.8	526	18.1
External cause deaths	456	100.0	2441	100.0	2900	100.0
Tocantins						
Road traffic crashes	345	38.5	1193	32.1	1543	33.3
Non-firearm-related deaths	475	53.0	1904	51.2	2391	51.6
Firearm-related deaths	77	8.6	620	16.7	697	15.1
External cause deaths	897	100.0	3717	100.0	4631	100.0
Northern region						
Road traffic crashes	3434	37.1	12857	26.7	16318	28.4
Non-firearm-related deaths	4802	51.9	23954	49.7	28817	50.1
Firearm-related deaths	1023	11.0	11351	23.6	12392	21.5
External cause deaths	9259	100.0	48162	100.0	57527	100.0
BRAZIL						
Road traffic crashes	64856	34.9	243024	26.4	308256	27.8
Non-firearm-related deaths	100626	54.2	432701	47.0	534191	48.2
Firearm-related deaths	20187	10.9	245455	26.6	265975	24.0
External cause deaths	185669	100.0	921180	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 12: External cause deaths by sex groups and total population, Brazil, Northern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Rondônia						
Accidents	447	25.7	2372	24.8	2825	24.9
Road traffic crashes	600	34.5	2239	23.4	2847	25.1
Homicides	402	23.1	3743	39.1	4160	36.7
Undetermined	161	9.3	827	8.6	994	8.8
Suicides	130	7.5	392	4.1	522	4.6
External cause deaths	1740	100.0	9573	100.0	11348	100.0
Acre						
Accidents	141	28.3	631	25.3	774	25.7
Road traffic crashes	153	30.7	589	23.6	745	24.8
Homicides	122	24.5	865	34.6	991	33.0
Undetermined	52	10.4	304	12.2	356	11.8
Suicides	30	6.0	108	4.3	140	4.7
External cause deaths	498	100.0	2497	100.0	3006	100.0
Amazonas						
Accidents	485	27.5	2139	22.1	2631	22.9
Road traffic crashes	680	38.5	2416	24.9	3099	27.0
Homicides	351	19.9	4080	42.1	4442	38.7
Undetermined	129	7.3	584	6.0	716	6.2
Legal interventions	0	0.0	5	0.1	5	0.0
Suicides	120	6.8	469	4.8	589	5.1
External cause deaths	1765	100.0	9693	100.0	11482	100.0
Roraima						
Accidents	95	23.2	390	17.1	485	18.0
Road traffic crashes	165	40.2	831	36.4	1000	37.0
Homicides	113	27.6	907	39.7	1022	37.8
Undetermined	1	0.2	23	1.0	24	0.9
Legal interventions	0	0.0	1	0.0	1	0.0
Suicides	36	8.8	133	5.8	169	6.3
External cause deaths	410	100.0	2285	100.0	2701	100.0
Pará						
Accidents	1090	31.2	4900	27.3	5991	27.9
Road traffic crashes	1322	37.8	4926	27.4	6251	29.1
Homicides	614	17.6	6661	37.1	7280	33.9
Undetermined	143	4.1	575	3.2	718	3.3
Legal interventions	0	0.0	3	0.0	3	0.0
Suicides	324	9.3	891	5.0	1216	5.7
External cause deaths	3493	100.0	17956	100.0	21459	100.0
Amapá						
Accidents	158	34.6	526	21.5	686	23.7
Road traffic crashes	169	37.1	663	27.2	833	28.7
Homicides	102	22.4	1143	46.8	1245	42.9
Undetermined	1	0.2	6	0.2	7	0.2
Legal interventions	0	0.0	1	0.0	1	0.0
Suicides	26	5.7	102	4.2	128	4.4
External cause deaths	456	100.0	2441	100.0	2900	100.0
Tocantins						
Accidents	294	32.8	1028	27.7	1328	28.7
Road traffic crashes	345	38.5	1193	32.1	1543	33.3
Homicides	134	14.9	974	26.2	1111	24.0
Undetermined	77	8.6	360	9.7	440	9.5
Legal interventions	0	0.0	1	0.0	1	0.0
Suicides	47	5.2	161	4.3	208	4.5
External cause deaths	897	100.0	3717	100.0	4631	100.0
Northern region						
Accidents	2710	29.3	11986	24.9	14720	25.6
Road traffic crashes	3434	37.1	12857	26.7	16318	28.4
Homicides	1838	19.9	18373	38.1	20251	35.2
Undetermined	564	6.1	2679	5.6	3255	5.7
Legal interventions	0	0.0	11	0.0	11	0.0
Suicides	713	7.7	2256	4.7	2972	5.2
External cause deaths	9259	100.0	48162	100.0	57527	100.0
BRAZIL						
Accidents	56592	30.5	196609	23.6	253652	22.9
Road traffic crashes	64856	34.9	243028	25.6	308256	27.8
Homicides	31955	17.2	336636	34.3	369068	33.3
Undetermined	19086	10.3	95297	10.7	114607	10.3
Legal interventions	5	0.0	354	0.0	359	0.0
Suicides	13175	7.1	49260	5.8	62480	5.6
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 13: Firearm-related deaths by sex groups and total population, Brazil, Northern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Rondônia						
Accidents	9	3.8	78	2.9	87	3.0
Homicides	190	79.5	2266	83.9	2462	83.6
Undetermined	27	11.3	271	10.0	298	10.1
Suicides	13	5.4	85	3.1	98	3.3
Firearm-related deaths	239	100.0	2700	100.0	2945	100.0
Acre						
Accidents	5	6.7	19	3.1	24	3.5
Homicides	54	72.0	444	72.8	499	72.7
Undetermined	11	14.7	111	18.2	122	17.8
Suicides	5	6.7	36	5.9	41	6.0
Firearm-related deaths	75	100.0	610	100.0	686	100.0
Amazonas						
Accidents	3	1.8	34	1.6	37	1.6
Homicides	137	81.5	1913	90.1	2057	89.5
Undetermined	8	4.8	64	3.0	72	3.1
Legal interventions	0	0.0	5	0.2	5	0.2
Suicides	20	11.9	107	5.0	127	5.5
Firearm-related deaths	168	100.0	2123	100.0	2298	100.0
Roraima						
Accidents	1	2.3	12	2.6	13	2.5
Homicides	39	88.6	421	90.0	461	89.9
Undetermined	0	0.0	8	1.7	8	1.6
Suicides	4	9.1	27	5.8	31	6.0
Firearm-related deaths	44	100.0	468	100.0	513	100.0
Pará						
Accidents	33	8.8	176	4.0	209	4.4
Homicides	292	77.5	3824	88.0	4119	87.1
Undetermined	14	3.7	147	3.4	161	3.4
Legal interventions	0	0.0	1	0.0	1	0.0
Suicides	38	10.1	199	4.6	237	5.0
Firearm-related deaths	377	100.0	4347	100.0	4727	100.0
Amapá						
Accidents	0	0.0	23	4.8	23	4.4
Homicides	41	95.3	448	92.8	489	93.0
Suicides	2	4.7	12	2.5	14	2.7
Firearm-related deaths	43	100.0	483	100.0	526	100.0
Tocantins						
Accidents	3	3.9	25	4.0	28	4.0
Homicides	50	64.9	434	70.0	484	69.4
Undetermined	17	22.1	112	18.1	129	18.5
Legal interventions	0	0.0	1	0.2	1	0.1
Suicides	7	9.1	48	7.7	55	7.9
Firearm-related deaths	77	100.0	620	100.0	697	100.0
Northern region						
Accidents	54	5.3	367	3.2	421	3.4
Homicides	803	78.5	9750	85.9	10571	85.3
Undetermined	77	7.5	713	6.3	790	6.4
Legal interventions	0	0.0	7	0.1	7	0.1
Suicides	89	8.7	514	4.5	603	4.9
Firearm-related deaths	1023	100.0	11351	100.0	12392	100.0
BRAZIL						
Accidents	524	2.6	4899	2.0	5450	2.0
Homicides	15295	75.8	203126	82.8	218679	82.2
Undetermined	2446	12.1	26298	10.7	28782	10.8
Legal interventions	2	0.0	247	0.1	249	0.1
Suicides	1920	9.5	10885	4.4	12815	4.8
Firearm-related deaths	20187	100.0	245455	100.0	265975	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 3 - Results

Table 14: External cause deaths by type of instruments (%) Brazil, Northern region and states, 1990´s

	Accidents		Homicides		Undetermined		Legal interventions		Suicides	
	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm
Total population										
Rondônia	3.1	96.9	59.2	40.8	30.0	70.0	0.0	0.0	18.8	81.2
Acre	3.1	96.9	50.4	49.6	34.3	65.7	0.0	0.0	29.3	70.7
Amazonas	1.4	98.6	46.3	53.7	10.1	89.9	100.0	0.0	21.6	78.4
Roraima	2.7	97.3	45.1	54.9	33.3	66.7	0.0	100.0	18.3	81.7
Pará	3.5	96.5	56.6	43.4	22.4	77.6	33.3	66.7	19.5	80.5
Amapá	3.4	96.6	39.3	60.7	0.0	100.0	0.0	100.0	10.9	89.1
Tocantins	2.1	97.9	43.6	56.4	29.3	70.7	100.0	0.0	26.4	73.6
Northern region	2.9	97.1	52.2	47.8	24.3	75.7	63.6	36.4	20.3	79.7
BRAZIL	2.1	97.9	59.3	40.7	25.1	74.9	69.4	30.6	20.5	79.5
Male										
Rondônia	3.3	96.7	60.5	39.5	32.8	67.2	0.0	0.0	21.7	78.3
Acre	3.0	97.0	51.3	48.7	36.5	63.5	0.0	0.0	33.3	66.7
Amazonas	1.6	98.4	46.9	53.1	11.0	89.0	100.0	0.0	22.8	77.2
Roraima	3.1	96.9	46.4	53.6	34.8	65.2	0.0	100.0	20.3	79.7
Pará	3.6	96.4	57.4	42.6	25.6	74.4	33.3	66.7	22.3	77.7
Amapá	4.4	95.6	39.2	60.8	0.0	100.0	0.0	100.0	11.8	88.2
Tocantins	2.4	97.6	44.6	55.4	31.1	68.9	100.0	0.0	29.8	70.2
Northern region	3.1	96.9	53.1	46.9	26.6	73.4	63.6	36.4	22.8	77.2
BRAZIL	2.5	97.5	60.3	39.7	27.6	72.4	69.8	30.2	22.1	77.9
Female										
Rondônia	2.0	98.0	47.3	52.7	16.8	83.2	0.0	0.0	10.0	90.0
Acre	3.5	96.5	44.3	55.7	21.2	78.8	0.0	0.0	16.7	83.3
Amazonas	0.6	99.4	39.0	61.0	6.2	93.8	0.0	0.0	16.7	83.3
Roraima	1.1	98.9	34.5	65.5	0.0	0.0	0.0	0.0	11.1	88.9
Pará	3.0	97.0	47.6	52.4	9.8	90.2	0.0	0.0	11.7	88.3
Amapá	0.0	100.0	40.2	59.8	0.0	100.0	0.0	0	7.7	92.3
Tocantins	1.0	99.0	37.3	62.7	22.1	77.9	0.0	0.0	14.9	85.1
Northern region	2.0	98.0	43.7	56.3	13.7	86.3	0.0	0.0	12.5	87.5
BRAZIL	0.9	99.1	47.9	52.1	12.8	87.2	40.0	60.0	14.6	85.4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Deaths of undetermined intention are in the fourth and fifth positions in all the states (Table 12). A high percentage was found in Tocantins where 9.5% of the external cause deaths were classified in this category, which can explain the low percentage of homicides found in the state. Considering firearm-related deaths only (Table 13), those of undetermined intention rise to the second position in Rondônia (10.12%), Acre (17.7%), and Tocantins (18.5%), and to the third position in Amazonas (3.13%). In Roraima and Pará, deaths of undetermined intention are in the fourth position, being absent in Amapá. Firearms were used in more than 20% of the cases in Rondônia (30%), Acre (34.3%), Roraima (33.3%), Pará (22.4%), and Tocantins (29.3%) (Table 14).

Suicides are in the fourth and fifth positions when we consider all external cause deaths (Table 12), and in the second and third positions, considering only firearm-related deaths (Table 13). The proportion of firearm-related suicides, considering the total of suicides that occurred in the region (Table 14), varied from 10.9% in Amapá to 29.3% in Acre. In the states of Amapá, Amazonas, and Tocantins, it was higher than that found for the country as a entire and for the Northern region.

B.2. Northeastern region

In Pernambuco, Alagoas, and Sergipe, external cause proportional mortality exceeds that found for the Northeastern region (Figure 9). In Paraíba, external cause proportional mortality (7.5%) is much lower than that found for the entire country and for the Northeastern region. In Table 15, we can observe that in Pernambuco and Bahia only, the percentage of firearm-related deaths exceeds road traffic crashes, considering all external cause deaths. We should highlight Pernambuco, where 43.8% of all external cause deaths were related to the use of firearms. In Bahia, where we found the lowest percentage of road traffic crashes in the region (17.6 %), firearms were responsible for 24.2% of all external cause deaths in the 1990's. In the other seven Northeastern states, the percentage of firearm-related deaths varied from 9.5% in Piauí to 26.7% in Alagoas. Considering all the firearm-related deaths that occurred in the Northeastern region (n=58,798), 45.9% were in Pernambuco (n=27,002), and 22.8% in Bahia (n=13,449). If we consider the total of firearm-related deaths that occurred in the country (n=265,975), 10.2% of them were in Pernambuco and 5.1% in Bahia.

Figure 9: External cause proportional mortality (%) by sex groups, Brazil, Northeastern region and states, 1990´s
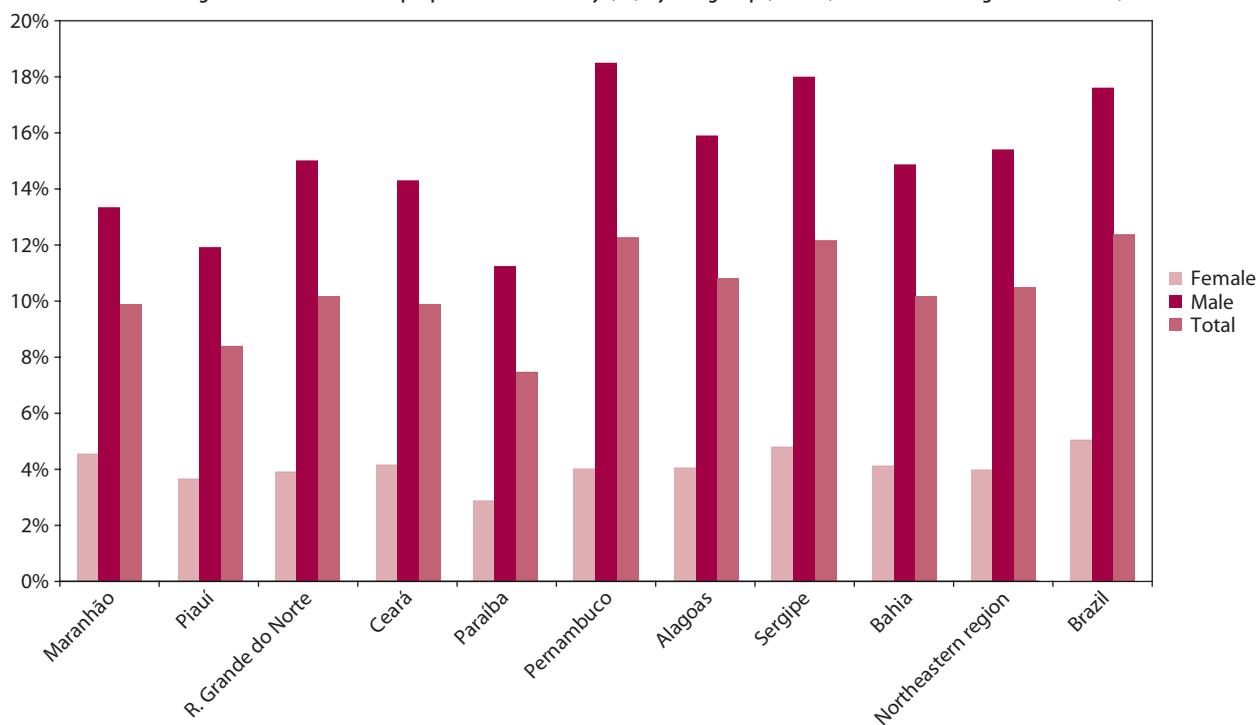
Homicides are the first external cause of death in three of the nine states of the Northeastern region: Pernambuco (53.9%), Alagoas (41.2%), and Paraíba (33.4%) (Table 16). In Pernambuco and Alagoas, the proportion of homicides exceeds that found for the entire country. One notes the high percentage of deaths of undetermined intention found in Sergipe (23.7%) and Rio Grande do Norte (20.7%), which suggests that homicides are underestimated in both states. In the total of firearm-related deaths (Table 17), homicides are in the first position in all states of the region. Very high percentages are found in Alagoas (96%), Pernambuco (95.5%), and Paraíba (94.8%), the lowest being found in Rio Grande do Norte (65.4%), and Bahia (66.7%), both states with high

percentages of deaths of undetermined intention in the total of firearm-related deaths. In Table 18, we can see that firearms were used in most of the homicides committed in six of the nine states of the region (Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, and Bahia). Pernambuco presents the top percentage, with 77% of all homicides being committed with firearms.

Unintentional causes (excluding road traffic crashes) are the first external cause of death in Bahia, being responsible for 48.6% of them (Table 16). In Piauí, accidents are in the second position, exceeding homicides. In Rio Grande do Norte and in Sergipe, accidents are in the fourth position. In Table 17, we can observe that accidents are the second cause of firearm-related deaths in Piauí and Bahia. We should stress that Bahia accounts for 42.4% of all accidental deaths related to the use of firearms that occurred in the entire country and 79.2% of those that took place in the Northeastern region. However, in Table 18, we can see that the contribution of firearms in the total of accidental deaths was small in all the Northeastern states, the highest percentage being found in Bahia, where 8.6% were related to the use of firearms.

The deaths of undetermined intention are in the fourth and fifth positions in seven of the region's nine states, when considering the total external cause of deaths (Table 16). In Rio Grande do Norte and Sergipe, they are in the second and third positions, with 20.7% and 23.7%, respectively, of all external cause deaths being classified in this category. If we consider only firearm-related deaths (Table 17), those of undetermined intention are in second position in Maranhão (14.7%), Sergipe (15.1%), and Rio Grande do Norte (25.4%). In Bahia, despite the fact that they are in the third position, deaths of undetermined intention represent 14.1% of all firearm-related deaths. It is important to highlight that 51.4% of all deaths of undetermined intention in Bahia were committed with firearms (Table 18). In the other states, the percentages varied from 5.2% in Paraíba to 21.3% in Rio Grande do Norte.

Suicides are the fifth external cause of death in six of the nine states of the Northeastern region (Maranhão, Ceará, Rio Grande do Norte, Pernambuco, Sergipe, and Bahia), and the fourth in the others (Table 16). The percentage of suicides in the total of firearm-related deaths (Table 17) varied from 2.4% in Pernambuco to 12.8% in Piauí, where suicides, together with accidents, are in the second position. In Table 18, we can see that the majority of the suicides in the Northeastern region's states were non-firearm-related suicides. Firearms were used in 24.7% of all the suicides in Pernambuco and in 21.5% in Alagoas.

Table 15: Road traffic crashes, firearm and non-firearm-related deaths by sex groups and total population, Brazil, Northeastern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Maranhão						
Road traffic crashes	983	40.5	3443	31.0	4448	32.7
Non-firearm-related deaths	1278	52.6	5803	52.2	7099	52.2
Firearm-related deaths	167	6.9	1875	16.9	2051	15.1
External cause deaths	2428	100.0	11121	100.0	13598	100.0
Piauí						
Road traffic crashes	524	41.6	2113	37.7	2643	38.4
Non-firearm-related deaths	684	54.3	2883	51.5	3584	52.1
Firearm-related deaths	51	4.1	605	10.8	657	9.5
External cause deaths	1259	100.0	5601	100.0	6884	100.0
Ceará						
Road traffic crashes	1901	38.5	7960	32.1	9891	33.2
Non-firearm-related deaths	2681	54.4	12751	51.5	15461	51.9
Firearm-related deaths	350	7.1	4069	16.4	4423	14.9
External cause deaths	4932	100.0	24780	100.0	29775	100.0
Rio Grande do Norte						
Road traffic crashes	814	38.1	3322	34.4	4149	35.0
Non-firearm-related deaths	1121	52.5	4488	46.4	5629	47.6
Firearm-related deaths	201	9.4	1859	19.2	2060	17.4
External cause deaths	2136	100.0	9669	100.0	11838	100.0
Paraíba						
Road traffic crashes	822	35.8	3159	28.9	3988	30.1
Non-firearm-related deaths	1210	52.7	5371	49.2	6598	49.8
Firearm-related deaths	263	11.5	2395	21.9	2659	20.1
External cause deaths	2295	100.0	10925	100.0	13245	100.0
Pernambuco						
Road traffic crashes	2956	34.2	11345	21.4	14315	23.2
Non-firearm-related deaths	4020	46.5	16233	30.7	20275	32.9
Firearm-related deaths	1660	19.2	25313	47.9	27002	43.8
External cause deaths	8636	100.0	52891	100.0	61592	100.0
Alagoas						
Road traffic crashes	1232	48.4	4580	34.9	5826	37.1
Non-firearm-related deaths	990	38.9	4682	35.7	5681	36.2
Firearm-related deaths	321	12.6	3870	29.5	4197	26.7
External cause deaths	2543	100.0	13132	100.0	15704	100.0
Sergipe						
Road traffic crashes	662	35.0	2522	28.0	3201	29.1
Non-firearm-related deaths	1062	56.1	4385	48.6	5482	49.9
Firearm-related deaths	169	8.9	2111	23.4	2300	20.9
External cause deaths	1893	100.0	9018	100.0	10983	100.0
Bahia						
Road traffic crashes	1968	20.1	7762	17.1	9751	17.6
Non-firearm-related deaths	6895	70.5	25272	55.5	32307	58.2
Firearm-related deaths	915	9.4	12482	27.4	13449	24.2
External cause deaths	9778	100.0	45516	100.0	55507	100.0
Northeastern Region						
Road traffic crashes	11862	33.0	46206	25.3	58212	26.6
Non-firearm-related deaths	19941	55.5	81868	44.8	102116	46.6
Firearm-related deaths	4097	11.4	54579	29.9	58798	26.8
External cause deaths	35900	100.0	182653	100.0	219126	100.0
BRAZIL						
Road traffic crashes	64856	34.9	243024	26.4	308256	27.8
Non-firearm-related deaths	100626	54.2	432701	47.0	534191	48.2
Firearm-related deaths	20187	10.9	245455	26.6	265975	24.0
External cause deaths	185669	100.0	921180	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 3 - Results

Table 16: External cause deaths by sex groups and total population, Brazil, Northeastern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Maranhão						
Accidents	709	29.2	2707	24.3	3428	25.2
Road traffic crashes	983	40.5	3443	31.0	4448	32.7
Homicides	346	14.3	3213	28.9	3572	26.3
Undetermined	273	11.2	1359	12.2	1634	12.0
Suicides	117	4.8	396	3.6	513	3.8
External cause deaths	2428	100.0	11121	100.0	13598	100.0
Piauí						
Accidents	380	30.2	1602	28.6	1993	29.0
Road traffic crashes	524	41.6	2113	37.7	2643	38.4
Homicides	131	10.4	1151	20.5	1286	18.7
Undetermined	111	8.8	358	6.4	472	6.9
Suicides	113	9.0	377	6.7	490	7.1
External cause deaths	1259	100.0	5601	100.0	6884	100.0
Ceará						
Accidents	1482	30.0	5274	21.3	6767	22.7
Road traffic crashes	1901	38.5	7960	32.1	9891	33.2
Homicides	692	14.0	7801	31.5	8511	28.6
Undetermined	437	8.9	2086	8.4	2526	8.5
Suicides	420	8.5	1645	6.6	2066	6.9
External cause deaths	4932	100.0	24780	100.0	29775	100.0
Rio Grande do Norte						
Accidents	479	22.4	1700	17.6	2188	18.5
Road traffic crashes	814	38.1	3322	34.4	4149	35.0
Homicides	230	10.8	2065	21.4	2296	19.4
Undetermined	433	20.3	2009	20.8	2451	20.7
Suicides	180	8.4	572	5.9	753	6.4
External cause deaths	2136	100.0	9669	100.0	11838	100.0
Paraíba						
Accidents	832	36.3	3133	28.7	3977	30.0
Road traffic crashes	822	35.8	3159	28.9	3988	30.1
Homicides	460	20.0	3955	36.2	4421	33.4
Undetermined	60	2.6	228	2.1	288	2.2
Suicides	121	5.3	449	4.1	570	4.3
External cause deaths	2295	100.0	10925	100.0	13245	100.0
Pernambuco						
Accidents	2138	24.8	6445	12.2	8587	13.9
Road traffic crashes	2956	34.2	11345	21.4	14315	23.2
Homicides	2356	27.3	30782	58.2	33179	53.9
Undetermined	524	6.1	2348	4.4	2878	4.7
Suicides	662	7.7	1969	3.7	2631	4.3
External cause deaths	8636	100.0	52891	100.0	61592	100.0
Alagoas						
Accidents	562	22.1	2043	15.6	2609	16.6
Road traffic crashes	1232	48.4	4580	34.9	5826	37.1
Homicides	575	22.6	5886	44.8	6469	41.2
Undetermined	37	1.5	133	1.0	173	1.1
Suicides	136	5.3	482	3.7	618	3.9
External cause deaths	2543	100.0	13132	100.0	15704	100.0
Sergipe						
Accidents	405	21.4	1288	14.3	1708	15.6
Road traffic crashes	662	35.0	2522	28.0	3201	29.1
Homicides	271	14.3	2727	30.2	3028	27.6
Undetermined	472	24.9	2130	23.6	2607	23.7
Suicides	83	4.4	349	3.9	437	4.0
External cause deaths	1893	100.0	9018	100.0	10983	100.0
Bahia						
Accidents	5777	59.1	21064	46.3	26971	48.6
Road traffic crashes	1968	20.1	7762	17.1	9751	17.6
Homicides	1279	13.1	12173	26.7	13503	24.3
Undetermined	453	4.6	3239	7.1	3696	6.7
Suicides	301	3.1	1278	2.8	1586	2.9
External cause deaths	9778	100.0	45516	100.0	55507	100.0
Northeastern Region						
Accidents	12764	35.6	45256	24.8	58228	27.3
Road traffic crashes	11862	33.0	46206	25.3	58212	24.5
Homicides	6340	17.7	69753	38.2	76265	35.8
Undetermined	2800	7.8	13890	7.6	16725	7.9
Legal interventions	1	0.0	31	0.0	32	0.0
Suicides	2133	5.9	7517	4.1	9664	4.5
External cause deaths	35900	100.0	182653	100.0	219126	100.0
BRAZIL						
Accidents	56592	30.5	196609	21.3	253652	23.6
Road traffic crashes	64856	34.9	243028	26.4	308256	25.6
Homicides	31955	17.2	336636	36.5	369068	34.3
Undetermined	19086	10.3	95297	10.3	114607	10.7
Legal interventions	5	0.0	354	0.0	359	0.0
Suicides	13175	7.1	49260	5.3	62480	5.8
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 17: Firearm-related deaths by sex groups and total population, Brazil, Northeastern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Maranhão						
Accidents	10	6.0	81	4.3	91	4.4
Homicides	121	72.5	1440	76.8	1570	76.5
Undetermined	26	15.6	276	14.7	302	14.7
Suicides	10	6.0	77	4.1	87	4.2
Firearm-related deaths	167	100.0	1875	100.0	2051	100.0
Piauí						
Accidents	11	21.6	73	12.1	84	12.8
Homicides	30	58.8	418	69.1	449	68.3
Undetermined	5	9.8	35	5.8	40	6.1
Suicides	5	9.8	79	13.1	84	12.8
Firearm-related deaths	51	100.0	605	100.0	657	100.0
Ceará						
Accidents	17	4.9	95	2.3	112	2.5
Homicides	259	74.0	3507	86.2	3770	85.2
Undetermined	22	6.3	174	4.3	196	4.4
Suicides	52	14.9	284	7.0	336	7.6
Firearm-related deaths	350	100.0	4069	100.0	4423	100.0
Rio Grande do Norte						
Accidents	8	4.0	55	3.0	63	3.1
Homicides	109	54.2	1238	66.6	1347	65.4
Undetermined	51	25.4	472	25.4	523	25.4
Suicides	33	16.4	94	5.1	127	6.2
Firearm-related deaths	201	100.0	1859	100.0	2060	100.0
Paraíba						
Accidents	9	3.4	33	1.4	42	1.6
Homicides	243	92.4	2276	95.0	2520	94.8
Undetermined	2	0.8	13	0.5	15	0.6
Suicides	9	3.4	73	3.0	82	3.1
Firearm-related deaths	263	100.0	2395	100.0	2659	100.0
Pernambuco						
Accidents	25	1.5	154	0.6	179	0.7
Homicides	1485	89.5	24263	95.9	25775	95.5
Undetermined	40	2.4	353	1.4	395	1.5
Suicides	110	6.6	541	2.1	651	2.4
Firearm-related deaths	1660	100.0	25313	100.0	27002	100.0
Alagoas						
Accidents	0	0.0	16	0.4	16	0.4
Homicides	302	94.1	3724	96.2	4031	96.0
Undetermined	2	0.6	13	0.3	16	0.4
Suicides	17	5.3	116	3.0	133	3.2
Firearm-related deaths	321	100.0	3870	100.0	4197	100.0
Sergipe						
accidents	3	1.8	17	0.8	20	0.9
Homicides	122	72.2	1728	81.9	1868	81.2
Undetermined	34	20.1	313	14.8	348	15.1
Suicides	10	5.9	53	2.5	64	2.8
Firearm-related deaths	169	100.0	2111	100.0	2300	100.0
Bahia						
Accidents	153	16.7	2141	17.2	2314	17.2
Homicides	613	67.0	8321	66.7	8966	66.7
Undetermined	123	13.4	1775	14.2	1898	14.1
Suicides	26	2.8	245	2.0	271	2.0
Firearm-related deaths	915	100.0	12482	100.0	13449	100.0
Northeastern region						
Accidents	236	5.76	2665	4.88	2921	4.97
Homicides	3284	80.16	46915	85.96	50296	85.54
Undetermined	305	7.44	3424	6.27	3733	6.35
Legal interventions	0	0.00	13	0.02	13	0.02
Suicides	272	6.64	1562	2.86	1835	3.12
Firearm-related deaths	4097	100.00	54579	100.00	58798	100.00
BRAZIL						
Accidents	524	2.60	4899	2.00	5450	2.05
Homicides	15295	75.77	203126	82.75	218679	82.22
Undetermined	2446	12.12	26298	10.71	28782	10.82
Legal interventions	2	0.01	247	0.10	249	0.09
Suicides	1920	9.51	10885	4.43	12815	4.82
Firearm-related deaths	20187	100.00	245455	100.00	265975	100.00

Source: Mortality Information System (SIM), Ministry of Health, Brazil

	Accidents		Homicides		Undetermined		Legal interventions		Suicides	
	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm
Total population										
Maranhão	2.7	97.3	44.0	56.0	18.5	81.5	33.3	66.7	17.0	83.0
Piauí	4.2	95.8	34.9	65.1	8.5	91.5	0.0	0	17.1	82.9
Ceará	1.7	98.3	44.3	55.7	7.8	92.2	64.3	35.7	16.3	83.7
Rio Grande do Norte	2.9	97.1	58.7	41.3	21.3	78.7	0.0	100.0	16.9	83.1
Paraíba	1.1	98.9	57.0	43.0	5.2	94.8	0.0	100.0	14.4	85.6
Pernambuco	2.1	97.9	77.7	22.3	13.7	86.3	100.0	0.0	24.7	75.3
Alagoas	0.6	99.4	62.3	37.7	9.2	90.8	11.1	88.9	21.5	78.5
Sergipe	1.2	98.8	61.7	38.3	13.3	86.7	0.0	100.0	14.6	85.4
Bahia	8.6	91.4	66.4	33.6	51.4	48.6	0.0	0.0	17.1	82.9
Northeastern region	5.0	95.0	65.9	34.1	22.3	77.7	40.6	59.4	19.0	81.0
BRAZIL	2.1	97.9	59.3	40.7	25.1	74.9	69.4	30.6	20.5	79.5
Male										
Maranhão	3.0	97.0	44.8	55.2	20.3	79.7	33.3	66.7	19.4	80.6
Piauí	4.6	95.4	36.3	63.7	9.8	90.2	0.0	0	21.0	79.0
Ceará	1.8	98.2	45.0	55.0	8.3	91.7	64.3	35.7	17.3	82.7
Rio Grande do Norte	3.2	96.8	60.0	40.0	23.5	76.5	0.0	100.0	16.4	83.6
Paraíba	1.1	98.9	57.5	42.5	5.7	94.3	0.0	100.0	16.3	83.7
Pernambuco	2.4	97.6	78.8	21.2	15.0	85.0	100.0	0.0	27.5	72.5
Alagoas	0.8	99.2	63.3	36.7	9.8	90.2	12.5	87.5	24.1	75.9
Sergipe	1.3	98.7	63.4	36.6	14.7	85.3	0.0	100.0	15.2	84.8
Bahia	10.2	89.8	68.4	31.6	54.8	45.2	0.0	0.0	19.2	80.8
Northeastern region	5.9	94.1	67.3	32.7	24.7	75.3	41.9	58.1	20.8	79.2
BRAZIL	2.5	97.5	60.3	39.7	27.6	72.4	69.8	30.2	22.1	77.9
Female										
Maranhão	1.4	98.6	35.0	65.0	9.5	90.5	0.0	0.0	8.5	91.5
Piauí	2.9	97.1	22.9	77.1	4.5	95.5	0.0	0.0	4.4	95.6
Ceará	1.1	98.9	37.4	62.6	5.0	95.0	0.0	0.0	12.4	87.6
Rio Grande do Norte	1.7	98.3	47.4	52.6	11.8	88.2	0.0	0.0	18.3	81.7
Paraíba	1.1	98.9	52.8	47.2	3.3	96.7	0.0	0.0	7.4	92.6
Pernambuco	1.2	98.8	63.0	37.0	7.6	92.4	0.0	0.0	16.6	83.4
Alagoas	0.0	100.0	52.5	47.5	5.4	94.6	0.0	100.0	12.5	87.5
Sergipe	0.7	99.3	45.0	55.0	7.2	92.8	0.0	0.0	12.0	88.0
Bahia	2.6	97.4	47.9	52.1	27.2	72.8	0.0	0.0	8.6	91.4
Northeastern region	1.8	98.2	51.8	48.2	10.9	89.1	0.0	100.0	12.8	87.2
BRAZIL	0.9	99.1	47.9	52.1	12.8	87.2	40.0	60.0	14.6	85.4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B.3. Southeastern region

In Espírito Santo, Rio de Janeiro, and São Paulo, external cause proportional mortality exceeds that found for Brazil (Figure 10). In the total of external cause deaths (Table 19), firearms exceed road traffic crashes in Espírito Santo and Rio de Janeiro, ranking first in the latter. Rio de Janeiro accounts for the majority of firearm-related deaths that occurred in the Southeastern region (42.7%, n=69,617). São Paulo, despite the fact that firearm-related deaths are in the third position in the total of external cause deaths, accounts for 40.4% (n=59,842) of all firearm-related deaths in the region. Considering the total of firearm-related deaths that occurred in the country in the 1990's (n=265,975), 22.5% were in São Paulo and 26.2% in Rio de Janeiro. Together these two states concentrate 48.7% of all firearm-related deaths that occurred in Brazil from 1991 to the year 2000.

Figure 10: External cause proportional mortality (%) by sex groups, Brazil, Southeastern region and states, 1990´s
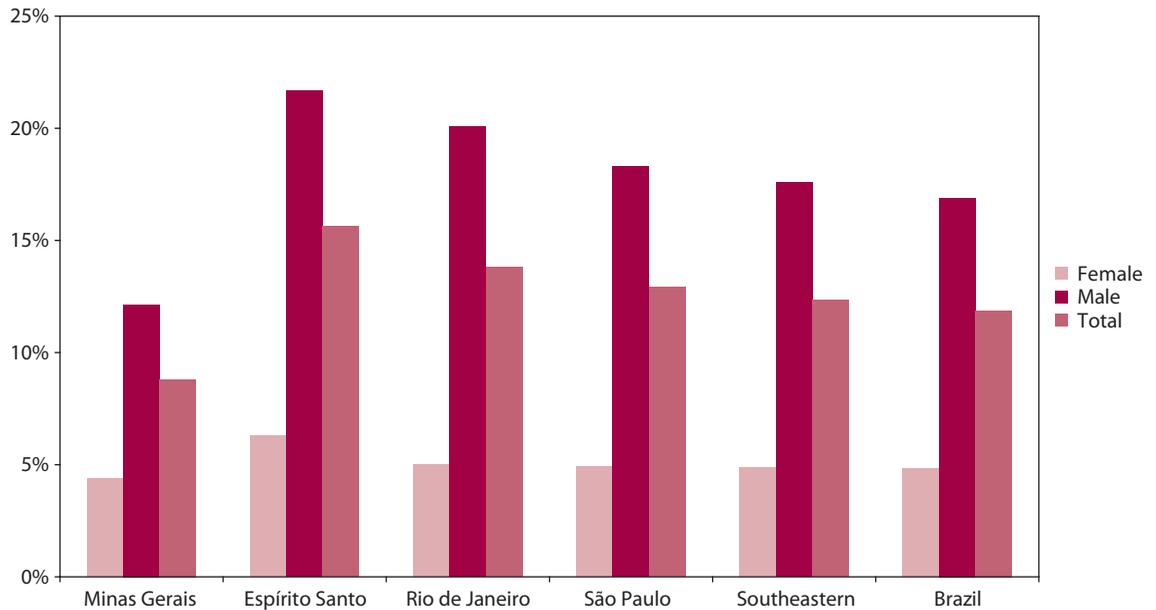
Homicides are the first external cause of death in Espírito Santo (46.9%), São Paulo (39.4%), and Rio de Janeiro (41.6%) (Table 20). In Minas Gerais, homicides are in the third position, being responsible for 15.5% of all external cause deaths. It is important to draw attention to the high percentage of deaths of undetermined intention in Rio de Janeiro (24.3%) and in Minas Gerais (12.5%), which suggests that homicides are underestimated. Considering all the deaths due to the use of firearms (Table 21), homicides are in the first position in all four states of the Southeastern region. Percentages were lower in Minas Gerais (65.2%) and in Rio de Janeiro (77.8%), and higher in Espírito Santo (94.2%) and São Paulo (89.4%). Once again, we should stress the high percentage of deaths of undetermined intention in Rio de Janeiro (21.2%) and Minas Gerais (20.6%), regarding all the firearm-related deaths, which can explain the lower percentage of homicides found in these states. Table 22 demonstrates the high percentage of non-firearm-related homicides in the total of homicides in São Paulo, on the order of 55.1%. This can be explained by problems with information in relation to the kind of weapon used, since, according to Gawryszewski (2002) a great proportion of the homicides committed in São Paulo were classified as homicides with an unknown weapon in death certificates. In all the other states of the region firearms were used in the majority of the cases, with greater percentages in Rio de Janeiro (80%) and Espírito Santo (60.3%).

Accidents (excluding road traffic crashes) are the first external cause of deaths in Minas Gerais (33.8%), the third – jointly with road traffic crashes – in Rio de Janeiro (15.1%), São Paulo (22.1%), and Espírito Santo (18.2%) (Table 20). In Minas Gerais only, the percentage of accidents exceeds the one found for the Southeastern region and Brazil. Considering only firearm-related deaths (Table 21), accidents fall to the fourth position in all the states, being responsible for a small proportion of deaths in this group, the highest being found in Minas Gerais (3.1%) and the lowest in Rio de Janeiro (0.1%). We should consider the possibility that part of the firearm-related deaths of undetermined intention were unintentional. In Table 21 we can see how infrequently firearms are involved in the total of accidental deaths in all the region's states.

Deaths of undetermined intention are in the second position in Rio de Janeiro (24.3%) considering all the external cause deaths (Table 20). In Minas Gerais and São Paulo, they are in the fourth position. Considering firearm-related deaths only (Table 21), those classified as deaths of undetermined intention are in the second position in Minas Gerais (20.6%), Rio de Janeiro (21.2%), and São Paulo (4.6%). The use of firearms is noteworthy in the group, especially in Espírito Santo and Rio de Janeiro, where more than 30% of all deaths of undetermined intention were related to the use of firearms (Table 22).

Suicides are in the fourth position, considering all the external cause deaths in Espírito Santo, and fifth in Rio de Janeiro, São Paulo, and Minas Gerais (Table 20). Minas Gerais is the state in the Southeastern region that presents the highest percentage of suicides (6.4%), considering all external cause deaths. In the total of firearm-related deaths (Table 21), suicides are in the second position in Espírito Santo (2.9%) and third in all the other states of the region. In Minas Gerais, 11.1% of all firearm-related deaths were suicides. Firearms were used in more than 20% of the suicides in Minas Gerais and Espírito Santo (Table 22).

Table 19: Road traffic crashes, firearm and non-firearm-related deaths by sex groups and total population, Brazil, Southeastern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Minas Gerais						
Road traffic crashes	6383	34.0	21856	31.3	28293	31.9
Non-firearm-related deaths	11248	59.9	38390	55.0	49777	56.1
Firearm-related deaths	1137	6.1	9559	13.7	10720	12.1
External cause deaths	18768	100.0	69805	100.0	88790	100.0
Espírito Santo						
Road traffic crashes	1638	39.1	6041	27.0	7697	29.0
Non-firearm-related deaths	1920	45.8	8978	40.2	10918	41.1
Firearm-related deaths	630	15.0	7330	32.8	7968	30.0
External cause deaths	4188	100.0	22349	100.0	26583	100.0
Rio de Janeiro						
Road traffic crashes	6236	25.4	21680	15.7	27948	17.2
Non-firearm-related deaths	13797	56.2	51369	37.2	65327	40.1
Firearm-related deaths	4514	18.4	65002	47.1	69617	42.7
External cause deaths	24547	100.0	138051	100.0	162892	100.0
São Paulo						
Road traffic crashes	15839	34.5	62572	24.3	78418	25.8
Non-firearm-related deaths	26035	56.7	139526	54.1	165563	54.5
Firearm-related deaths	4080	8.9	55762	21.6	59842	19.7
External cause deaths	45954	100.0	257860	100.0	303823	100.0
Southeastern region						
Road traffic crashes	30096	32.2	112149	23.0	142356	24.5
Non-firearm-related deaths	53000	56.7	238263	48.8	291585	50.1
Firearm-related deaths	10361	11.1	137653	28.2	148147	25.5
External cause deaths	93457	100.0	488065	100.0	582088	100.0
BRAZIL						
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Non-firearm-related deaths	100626	54.2	432701	47.0	534191	48.2
Firearm-related deaths	20187	10.9	245455	26.6	265975	24.0
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 20: External cause deaths by sex groups and total population, Brazil, Southeastern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Minas Gerais						
Accidents	7220	38.5	22662	32.5	29979	33.8
Road traffic crashes	6383	34.0	21856	31.3	28293	31.9
Homicides	1846	9.8	11848	17.0	13724	15.5
Undetermined	2158	11.5	8910	12.8	11094	12.5
Suicides	1161	6.2	4526	6.5	5697	6.4
External cause deaths	18768	100.0	69805	100.0	88790	100.0
Espírito Santo						
Accidents	1073	25.6	3765	16.8	4844	18.2
Road traffic crashes	1638	39.1	6041	27.0	7697	29.0
Homicides	1167	27.9	11272	50.4	12456	46.9
Undetermined	98	2.3	461	2.1	562	2.1
Suicides	212	5.1	805	3.6	1019	3.8
External cause deaths	4188	100.0	22349	100.0	26583	100.0
Rio de Janeiro						
Accidents	6870	28.0	17633	12.8	24551	15.1
Road traffic crashes	6236	25.4	21680	15.7	27948	17.2
Homicides	5087	20.7	62507	45.3	67722	41.6
Undetermined	5575	22.7	33915	24.6	39575	24.3
Suicides	778	3.2	2272	1.6	3051	1.9
External cause deaths	24547	100.0	138051	100.0	162892	100.0
São Paulo						
Accidents	13695	29.8	53417	20.7	67114	22.1
Road traffic crashes	15839	34.5	62572	24.3	78418	25.8
Homicides	9198	20.0	110432	42.8	119630	39.4
Undetermined	4018	8.7	18454	7.2	22472	7.4
Legal interventions	0	0.0	122	0.0	122	0.0
Suicides	3204	7.0	12863	5.0	16067	5.3
External cause deaths	45954	100.0	257860	100.0	303823	100.0
Southeastern region						
Accidents	28858	30.9	97477	20.0	126488	21.7
Road traffic crashes	30096	32.2	112149	23.0	142356	24.5
Homicides	17298	18.5	196059	40.2	213532	36.7
Undetermined	11849	12.7	61740	12.6	73703	12.7
Legal interventions	1	0.0	174	0.0	175	0.0
Suicides	5355	5.7	20466	4.2	25834	4.4
External cause deaths	93457	100.0	488065	100.0	582088	100.0
BRAZIL						
Accidents	56592	30.5	196609	21.3	253652	22.9
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Homicides	31955	17.2	336636	36.5	369068	33.3
Undetermined	19086	10.3	95297	10.3	114607	10.3
Legal interventions	5	0.0	354	0.0	359	0.0
Suicides	13175	7.1	49260	5.3	62480	5.6
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 21: Firearm-related deaths by sex groups and total population, Brazil, Southeastern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Minas Gerais						
Accidents	36	3.2	299	3.1	336	3.1
Homicides	685	60.2	6293	65.8	6988	65.2
Undetermined	272	23.9	1926	20.1	2206	20.6
Legal interventions	0	0.0	0	0.0	0	0.0
Suicides	144	12.7	1041	10.9	1190	11.1
Firearm-related deaths	1137	100.0	9559	100.0	10720	100.0
Espírito Santo						
Accidents	5	0.8	45	0.6	50	0.6
Homicides	561	89.0	6941	94.7	7509	94.2
Undetermined	23	3.7	147	2.0	170	2.1
Legal interventions	0	0.0	5	0.1	5	0.1
Suicides	41	6.5	192	2.6	234	2.9
Firearm-related deaths	630	100.0	7330	100.0	7968	100.0
Rio de Janeiro						
Accidents	10	0.2	60	0.1	70	0.1
Homicides	3445	76.3	50633	77.9	54161	77.8
Undetermined	974	21.6	13779	21.2	14771	21.2
Legal interventions	0	0.0	41	0.1	41	0.1
Suicides	85	1.9	489	0.8	574	0.8
Firearm-related deaths	4514	100.0	65002	100.0	69617	100.0
São Paulo						
Accidents	69	1.7	590	1.1	659	1.1
Homicides	3424	83.9	50336	90.3	53760	89.8
Undetermined	216	5.3	2508	4.5	2724	4.6
Legal interventions	0	0.0	55	0.1	55	0.1
Suicides	371	9.1	2273	4.1	2644	4.4
Firearm-related deaths	4080	100.0	55762	100.0	59842	100.0
Southeastern region						
Accidents	120	1.2	994	0.7	1115	0.8
Homicides	8115	78.3	114203	83.0	122418	82.6
Undetermined	1485	14.3	18360	13.3	19871	13.4
Legal interventions	0	0.0	101	0.1	101	0.1
Suicides	641	6.2	3995	2.9	4642	3.1
Firearm-related deaths	10361	100.0	137653	100.0	148147	100.0
BRAZIL						
Accidents	524	2.6	4899	2.0	5450	2.0
Homicides	15295	75.8	203126	82.8	218679	82.2
Undetermined	2446	12.1	26298	10.7	28782	10.8
Legal interventions	2	0.0	247	0.1	249	0.1
Suicides	1920	9.5	10885	4.4	12815	4.8
Firearm-related deaths	20187	100.0	245455	100.0	265975	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 22: External cause deaths by type of instruments (%) , Brazil, Southeastern region and states, 1990´s

	Accidents		Homicides		Undetermined		Legal interventions		Suicides	
	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm
Total population										
Minas Gerais	1.1	98.9	50.9	49.1	19.9	80.1	0	100	20.9	79.1
Espírito Santo	1.0	99.0	60.3	39.7	30.2	69.8	100	0	23.0	77.0
Rio de Janeiro	0.3	99.7	80.0	20.0	37.3	62.7	91.1	8.9	18.8	81.2
São Paulo	1.0	99.0	44.9	55.1	12.1	87.9	45.1	54.9	16.5	83.5
Southeastern region	0.9	99.1	57.3	42.7	27.0	73.0	57.7	42.3	18.0	82.0
BRAZIL	2.1	97.9	59.3	40.7	25.1	74.9	69.4	30.6	20.5	79.5
Male										
Minas Gerais	1.3	98.7	53.1	46.9	21.6	78.4	0.0	100.0	23.0	77.0
Espírito Santo	1.2	98.8	61.6	38.4	31.9	68.1	100.0	0.0	23.9	76.1
Rio de Janeiro	0.3	99.7	81.0	19.0	40.6	59.4	93.2	6.8	21.5	78.5
São Paulo	1.1	98.9	45.6	54.4	13.6	86.4	45.1	54.9	17.7	82.3
Southeastern region	1.0	99.0	58.2	41.8	29.7	70.3	58.0	42.0	19.5	80.5
BRAZIL	2.5	97.5	60.3	39.7	27.6	72.4	69.8	30.2	22.1	77.9
Female										
Minas Gerais	0.5	99.5	37.1	62.9	12.6	87.4	0.0	0.0	12.4	87.6
Espírito Santo	0.5	99.5	48.1	51.9	23.5	76.5	0.0	0.0	19.3	80.7
Rio de Janeiro	0.1	99.9	67.7	32.3	17.5	82.5	0.0	100.0	10.9	89.1
São Paulo	0.5	99.5	37.2	62.8	5.4	94.6	0.0	0.0	11.6	88.4
Southeastern region	0.4	99.6	46.9	53.1	12.5	87.5	0.0	100.0	12.0	88.0
BRAZIL	0.9	99.1	47.9	52.1	12.8	87.2	40.0	60.0	14.6	85.4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B.4. Southern region

External cause proportional mortality in Paraná and Santa Catarina exceeds that found in the Southern region (Figure 11). Considering all deaths due to external causes (Table 23), firearms are in the third position in all the Southern region's states, with percentages ranging from 8.7% in Santa Catarina, 15.9% in Paraná, and 21.8% in Rio Grande do Sul. Non-firearm-related deaths rank first in the total of external cause deaths in Rio Grande do Sul (48.7%), and Paraná (42.3%), and second in Santa Catarina (42.9%). In a total of 27,625 firearm-related deaths that occurred in the Southern region, 52,5% were in Rio Grande do Sul (n=14,321), 37.7% in Paraná (n=10,403), and 10.5% in Santa Catarina (n=2,901). Considering all the firearm-related deaths that occurred in Brazil (n=265, 975), 5.4% were in Rio Grande do Sul, and 4% in Paraná.

Homicides were the second external cause of deaths in Rio Grande do Sul (22.9%), the third in Paraná (21.8%) and Santa Catarina (11.5%) (Table 24), moving upwards to the first position if we consider only firearm-related deaths (Table 25). In this group, 65.5% of all firearm-related deaths in Santa Catarina, 70.8% in Rio Grande do Sul, and 77.3% in Paraná were homicides. In Table 26 we can observe that the majority of the homicides in Paraná and Rio Grande do Sul were committed with firearms.

Accidents (excluding road traffic crashes) were the second external cause of death in Paraná (21.9%) and Santa Catarina (24.6%) – both percentages being higher than those found for the entire country – and the third in Rio Grande do Sul (Table 24). Considering all firearm-related deaths, accidents move downwards to the fourth position in all the region's states (Table 25), the percentage of firearm-related accidents in the total of accidents being small in all of them (Table 26).

Despite the fact that suicides are the fourth external cause of death, the high percentage of suicides in all the states of the Southern region, should be noted (Table 24). In Rio Grande do Sul, 14.2% of all external cause deaths were suicides, while in Santa Catarina and Paraná, the

percentages were, respectively, 11% and 8.5%. Considering only firearm-related deaths (Table 25), suicides move upwards to the second position in all three states, with the highest proportion in Santa Catarina (21.4%). This relative importance of suicides in states of the Southern region can be partially explained by the lower frequency of homicides, when compared with other Brazilian states. In the total of suicide deaths, 22.2% were committed with firearms in Paraná, 16.9% in Santa Catarina, and 22.4% in Rio Grande do Sul (Table 26).

Deaths of undetermined intention are in the fifth position, considering all the external cause deaths (Table 24), in all three states of the Southern region, the highest percentage being found in Rio Grande do Sul (11.9%). In the total of firearm-related deaths, those of undetermined intention exceed accidents and are in the third position in all states of the Southern region (Table 25). Despite the fact that the majority of the deaths of undetermined intention were non-firearm-related deaths, firearms were used in 24.2% in Paraná, 22.3% in Rio Grande do Sul, and 17.6% in Santa Catarina (Table 26).

Figure 11: External cause proportional mortality (%) by sex groups, Brazil, Southern region and states, 1990´s
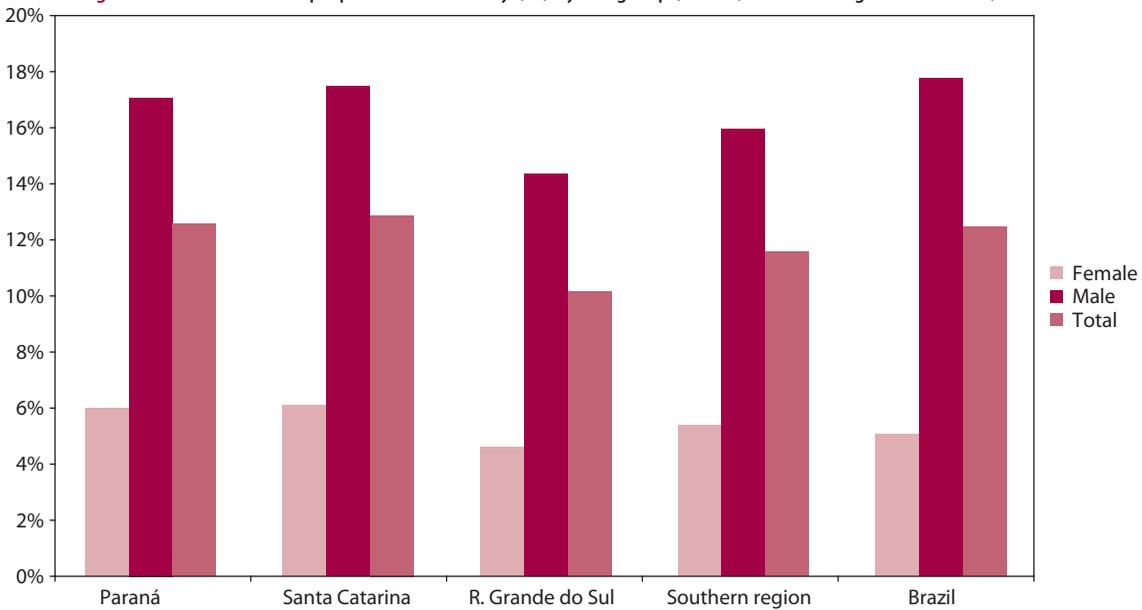
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Table 23: Road traffic crashes, firearm and non-firearm-related deaths by sex groups and total population, Brazil Southern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Paraná						
Road traffic crashes	5685	44.6	21669	41.1	27377	41.8
Non-firearm-related deaths	6047	47.4	21666	41.1	27743	42.3
Firearm-related deaths	1015	8.0	9385	17.8	10403	15.9
External cause deaths	12747	100.0	52720	100.0	65523	100.0
Santa Catarina						
Road traffic crashes	3354	52.3	12800	47.4	16156	48.4
Non-firearm-related deaths	2769	43.1	11570	42.9	14343	42.9
Firearm-related deaths	295	4.6	2606	9.7	2901	8.7
External cause deaths	6418	100.0	26976	100.0	33400	100.0
Rio Grande do Sul						
Road traffic crashes	4322	33.9	14991	28.4	19318	29.4
Non-firearm-related deaths	6886	53.9	25084	47.5	31973	48.7
Firearm-related deaths	1558	12.2	12763	24.2	14321	21.8
External cause deaths	12766	100.0	52838	100.0	65612	100.0
Southern region						
Road traffic crashes	13361	41.8	49460	37.3	62851	38.2
Non-firearm-related deaths	15702	49.2	58320	44.0	74059	45.0
Firearm-related deaths	2868	9.0	24754	18.7	27625	16.8
External cause deaths	31931	100.0	132534	100.0	164535	100.0
BRAZIL						
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Non-firearm-related deaths	100626	54.2	432701	47.0	534191	48.2
Firearm-related deaths	20187	10.9	245455	26.6	265975	24.0
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 24: External cause deaths by sex groups and total population, Brazil, Southern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Paraná						
Accidents	3630	28.5	10700	20.3	14339	21.9
Road traffic crashes	5685	44.6	21669	41.1	27377	41.8
Homicides	1530	12.0	12711	24.1	14254	21.8
Undetermined	690	5.4	3286	6.2	3987	6.1
Legal interventions	1	0.0	25	0.0	26	0.0
Suicides	1211	9.5	4329	8.2	5540	8.5
External cause deaths	12747	100.0	52720	100.0	65523	100.0
Santa Catarina						
Accidents	1680	26.2	6519	24.2	8203	24.6
Road traffic crashes	3354	52.3	12800	47.4	16156	48.4
Homicides	505	7.9	3351	12.4	3856	11.5
Undetermined	252	3.9	1205	4.5	1457	4.4
Legal interventions	0	0.0	63	0.2	63	0.2
Suicides	627	9.8	3038	11.3	3665	11.0
External cause deaths	6418	100.0	26976	100.0	33400	100.0
Rio Grande do Sul						
Accidents	3392	26.6	10765	20.4	14158	21.6
Road traffic crashes	4322	33.9	14991	28.4	19318	29.4
Homicides	1619	12.7	13416	25.4	15037	22.9
Undetermined	1551	12.1	6230	11.8	7781	11.9
Legal interventions	1	0.0	30	0.1	31	0.0
Suicides	1881	14.7	7406	14.0	9287	14.2
External cause deaths	12766	100.0	52838	100.0	65612	100.0
Southern region						
Accidents	8702	27.3	27984	21.1	36700	22.3
Road traffic crashes	13361	41.8	49460	37.3	62851	38.2
Homicides	3654	11.4	29478	22.2	33147	20.1
Undetermined	2493	7.8	10721	8.1	13225	8.0
Legal interventions	2	0.0	118	0.1	120	0.1
Suicides	3719	11.6	14773	11.1	18492	11.2
External cause deaths	31931	100.0	132534	100.0	164535	100.0
BRAZIL						
Accidents	56592	30.5	196609	21.3	253652	22.9
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Homicides	31955	17.2	336636	36.5	369068	33.3
Undetermined	19086	10.3	95297	10.3	114607	10.3
Legal interventions	5	0.0	354	0.0	359	0.0
Suicides	13175	7.1	49260	5.3	62480	5.6
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 25: Firearm-related deaths by sex groups and total population, Brazil, Southern region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Paraná						
Accidents	17	1.7	126	1.3	143	1.4
Homicides	651	64.1	7392	78.8	8046	77.3
Undetermined	131	12.9	832	8.9	963	9.3
Legal interventions	1	0.1	22	0.2	23	0.2
Suicides	215	21.2	1013	10.8	1228	11.8
Firearm-related deaths	1015	100.0	9385	100.0	10403	100.0
Santa Catarina						
Accidents	5	1.7	59	2.3	64	2.2
Homicides	187	63.4	1712	65.7	1899	65.5
Undetermined	31	10.5	225	8.6	256	8.8
Legal interventions	0	0.0	61	2.3	61	2.1
Suicides	72	24.4	549	21.1	621	21.4
Firearm-related deaths	295	100.0	2606	100.0	2901	100.0
Rio Grande do Sul						
Accidents	22	1.4	130	1.0	152	1.1
Homicides	906	58.2	9230	72.3	10136	70.8
Undetermined	242	15.5	1494	11.7	1736	12.1
Legal interventions	1	0.1	30	0.2	31	0.2
Suicides	387	24.8	1879	14.7	2266	15.8
Firearm-related deaths	1558	100.0	12763	100.0	14321	100.0
Southern region						
Accidents	44	1.5	315	1.3	359	1.3
Homicides	1744	60.8	18334	74.1	20081	72.7
Undetermined	404	14.1	2551	10.3	2955	10.7
Legal interventions	2	0.1	113	0.5	115	0.4
Suicides	674	23.5	3441	13.9	4115	14.9
Firearm-related deaths	2868	100.0	24754	100.0	27625	100.0
BRAZIL						
Accidents	524	2.6	4899	2.0	5450	2.0
Homicides	15295	75.8	203126	82.8	218679	82.2
Undetermined	2446	12.1	26298	10.7	28782	10.8
Legal interventions	2	0.0	247	0.1	249	0.1
Suicides	1920	9.5	10885	4.4	12815	4.8
Firearm-related deaths	20187	100.0	245455	100.0	265975	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

External cause deaths by type of instruments (%), Brazil, Southern region and states, 1990´s

	Accidents		Homicides		Undetermined		Legal interventions		Suicides	
	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm
Total population										
Paraná	1.0	99.0	56.4	43.6	24.2	75.8	88.5	11.5	22.2	77.8
Santa Catarina	0.8	99.2	49.2	50.8	17.6	82.4	96.8	3.2	16.9	83.1
Rio Grande do Sul	1.1	98.9	67.4	32.6	22.3	77.7	100.0	0.0	24.4	75.6
Southern region	1.0	99.0	60.6	39.4	22.3	77.7	95.8	4.2	22.3	77.7
BRAZIL	2.1	97.9	59.3	40.7	25.1	74.9	69.4	30.6	20.5	79.5
Male										
Paraná	1.2	98.8	58.2	41.8	25.3	74.7	88.0	12.0	23.4	76.6
Santa Catarina	0.9	99.1	51.1	48.9	18.7	81.3	96.8	3.2	18.1	81.9
Rio Grande do Sul	1.2	98.8	68.8	31.2	24.0	76.0	100.0	0.0	25.4	74.6
Southern region	1.1	98.9	62.2	37.8	23.8	76.2	95.8	4.2	23.3	76.7
BRAZIL	2.5	97.5	60.3	39.7	27.6	72.4	69.8	30.2	22.1	77.9
Female										
Paraná	0.5	99.5	42.5	57.5	19.0	81.0	100.0	0.0	17.8	82.2
Santa Catarina	0.3	99.7	37.0	63.0	12.3	87.7	0.0	0.0	11.5	88.5
Rio Grande do Sul	0.6	99.4	56.0	44.0	15.6	84.4	100.0	0.0	20.6	79.4
Southern region	0.5	99.5	47.7	52.3	16.2	83.8	100.0	0.0	18.1	81.9
BRAZIL	0.9	99.1	47.9	52.1	12.8	87.2	40.0	60.0	14.6	85.4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B.5. Central-western region

In all the states of the Central-western region external cause proportional mortality exceeds that found for Brazil, especially in Mato Grosso (20.7%) and in the Federal District (19.9%) (Figure 12). Despite the magnitude of external cause deaths in all the Central-western states, firearms rank third in all of them, with the highest percentage in the Federal District (28.2%) and the lowest in Mato Grosso (19.3%) (Table 27). Considering all firearm-related deaths that occurred in the region (n=19,013), 34.6% were in Goiás (n=6,569), 23.6% in the Federal District (n=4,483), 23.2% in Mato Grosso do Sul (n=4,402), and 18.7% in Mato Grosso (n=3,559). Goiás accounts for 2.5% of all firearm-related deaths that occurred in the country in the 1990's.

Homicides are in the first position in the total of external cause deaths in Mato Grosso do Sul and Mato Grosso, and in the second in Goiás and the Federal District (Table 28). It is important to highlight that Goiás is the Central-western state that presents the greatest percentage of deaths of undetermined intention (16.3%), suggesting that homicides are probably underestimated. The percentage of homicides in Mato Grosso, Mato Grosso do Sul, and in the Federal District, was equal to or higher than the one found in the Central-western region and in Brazil. Considering firearm-related deaths only (Table 29), homicides exceed all the other external causes throughout the states, especially in the Federal District, where they represent 90.8% of the total. In Goiás we found the lowest percentage of homicides in the group of firearm-related deaths (71.1%), which can be explained by the high proportion of firearm-related deaths of undetermined intention (16.2%). In the total of homicide deaths (Table 30), firearms were used in most of the cases in the Federal District (69.5%), Goiás (57.5%), and Mato Grosso do Sul (62.1%). In Mato Grosso, the majority of the homicides (51.1%) were committed with other weapons/instruments.

Accidents (excluding road traffic crashes) were the second external cause of death in Mato Grosso (31.8%), the third in Mato Grosso do Sul (20.9%), and in the Federal District (17.6%), and the fourth in Goiás (15.7%) (Table 28). In the total of firearm-related deaths (Table 29), accidents

maintain the second position in Mato Grosso (9.5%), being in the fourth in Mato Grosso do Sul (3.8%), Goiás (1.6%), and in the Federal District (0.6%). The percentage of firearm-related accidents in the total of firearm-related deaths varies from 5.7% in Mato Grosso, 4.7% in Mato Grosso do Sul – exceeding the percentage found for Brazil and the Central-western region – to 0.9% in the Federal District (Table 30).

Deaths of undetermined intention are in the third position in the group of external cause deaths in Goiás (16.3%), fourth in Mato Grosso do Sul (8.2%), fifth in Mato Grosso (3.1%), and in the Federal District (1.3%) (Table 28). If we consider only firearm-related deaths (Table 29), they move upwards to the second position in Goiás (16.2%), third in Mato Grosso do Sul (6.4%) and in the Federal District (1%), and fourth in Mato Grosso (1.2%). In Goiás, the small percentage of firearm-related deaths should be noted, considering all the deaths of undetermined intention (7.7%) (Table 30), the highest percentage being found in the Federal District where 25% of the deaths in this category were related to the use of firearms.

Suicides are the fourth and fifth external cause of deaths (Table 28), the highest percentage being found in Mato Grosso do Sul, and Goiás, where it is on the order of 7%. In the total of firearm-related deaths (Table 29), suicides rank second in Mato Grosso do Sul (8.5%), and in the Federal District (7.7%), and the third in Mato Grosso (5.2%) and Goiás (10.9%). The high proportion of suicides committed with firearms in the total of suicides in the Central-western region, should be noted (Table 30). It exceeds 30% in Mato Grosso do Sul, Goiás, and in the Federal District.

Figure 12: External cause proportional mortality (%) by sex groups, Brazil, Central-western region and states, 1990´s

Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Chapter 3 - Results
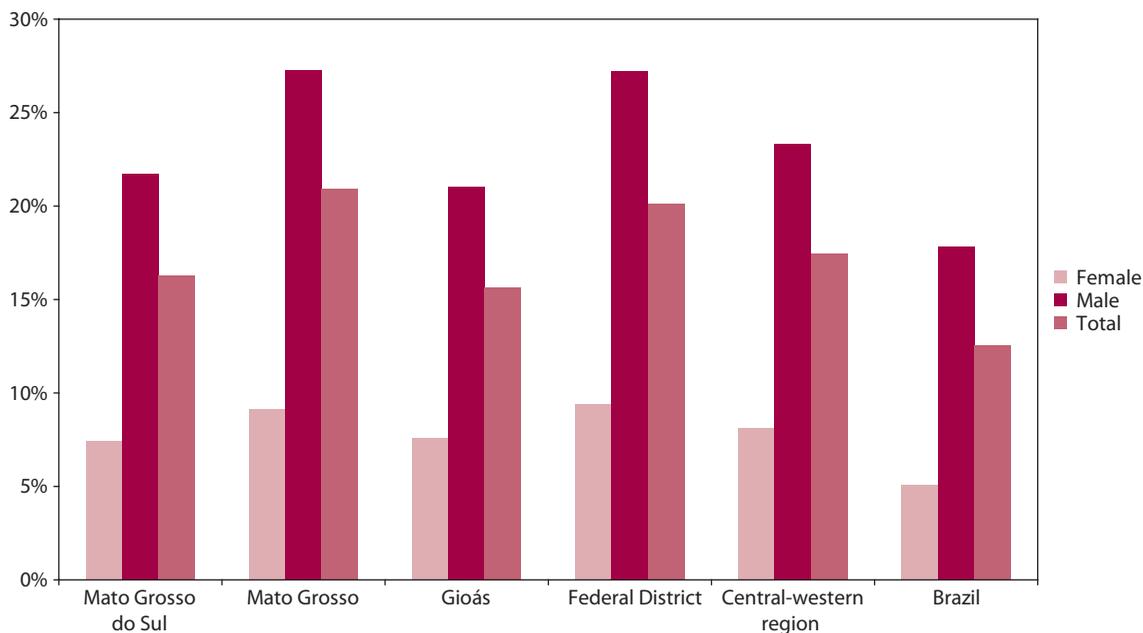
Table 27: Road traffic crashes, firearm and non-firearm-related deaths by sex groups and total population, Brazil, Central-western region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Mato Grosso do Sul						
Road traffic crashes	1057	36.6	3904	28.1	4972	29.5
Non-firearm-related deaths	1386	48.0	6068	43.6	7502	44.5
Firearm-related deaths	445	15.4	3936	28.3	4402	26.1
External cause deaths	2888	100.0	13908	100.0	16876	100.0
Mato Grosso						
Road traffic crashes	967	34.2	3956	25.3	4931	26.7
Non-firearm-related deaths	1572	55.6	8388	53.7	9983	54.0
Firearm-related deaths	288	10.2	3262	20.9	3559	19.3
External cause deaths	2827	100.0	15606	100.0	18473	100.0
Goiás						
Road traffic crashes	2620	40.6	9894	36.2	12544	37.0
Non-firearm-related deaths	3065	47.5	11663	42.7	14786	43.6
Firearm-related deaths	765	11.9	5780	21.1	6569	19.4
External cause deaths	6450	100.0	27337	100.0	33899	100.0
Federal District						
Road traffic crashes	1459	49.3	4602	35.6	6072	38.2
Non-firearm-related deaths	1158	39.2	4177	32.3	5343	33.6
Firearm-related deaths	340	11.5	4140	32.0	4483	28.2
External cause deaths	2957	100.0	12919	100.0	15898	100.0
Central-Western region						
Road traffic crashes	6103	40.4	22356	32.0	28519	33.5
Non-firearm-related deaths	7181	47.5	30296	43.4	37614	44.2
Firearm-related deaths	1838	12.2	17118	24.5	19013	22.3
External cause deaths	15122	100.0	69770	100.0	85146	100.0
BRAZIL						
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Non-firearm-related deaths	100626	54.2	432701	47.0	534191	48.2
Firearm-related deaths	20187	10.9	245455	26.6	265975	24.0
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 28: External cause deaths by sex groups and total population, Brazil Central-western region and states, 1990's

	Female		Male		Total	
	N	%	N	%	N	%
Mato Grosso do Sul						
Accidents	724	25.1	2777	20.0	3525	20.9
Road traffic crashes	1057	36.6	3904	28.1	4972	29.5
Homicides	601	20.8	5140	37.0	5765	34.2
Undetermined	210	7.3	1158	8.3	1382	8.2
Suicides	296	10.2	926	6.7	1229	7.3
External cause deaths	2888	100.0	13908	100.0	16876	100.0
Mato Grosso						
Accidents	928	32.8	4939	31.6	5878	31.8
Road traffic crashes	967	34.2	3956	25.3	4931	26.7
Homicides	620	21.9	5489	35.2	6126	33.2
Undetermined	92	3.3	472	3.0	568	3.1
Suicides	219	7.7	745	4.8	964	5.2
External cause deaths	2827	100.0	15606	100.0	18473	100.0
Goiás						
Accidents	1161	18.0	4138	15.1	5313	15.7
Road traffic crashes	2620	40.6	9894	36.2	12544	37.0
Homicides	1101	17.1	6998	25.6	8127	24.0
Undetermined	1050	16.3	4454	16.3	5537	16.3
Suicides	518	8.0	1842	6.7	2367	7.0
External cause deaths	6450	100.0	27337	100.0	33899	100.0
Federal District						
Accidents	745	25.2	2052	15.9	2800	17.6
Road traffic crashes	1459	49.3	4602	35.6	6072	38.2
Homicides	503	17.0	5346	41.4	5855	36.8
Undetermined	28	0.9	183	1.4	212	1.3
Suicides	222	7.5	735	5.7	958	6.0
External cause deaths	2957	100.0	12919	100.0	15898	100.0
Central-western region						
Accidents	3558	23.5	13906	19.9	17516	20.6
Road traffic crashes	6103	40.4	22356	32.0	28519	33.5
Homicides	2825	18.7	22973	32.9	25873	30.4
Undetermined	1380	9.1	6267	9.0	7699	9.0
Legal interventions	1	0.0	20	0.0	21	0.0
Suicides	1255	8.3	4248	6.1	5518	6.5
External cause deaths	15122	100.0	69770	100.0	85146	100.0
BRAZIL						
Accidents	56592	30.5	196609	21.3	253652	22.9
Road traffic crashes	64856	34.9	243028	26.4	308256	27.8
Homicides	31955	17.2	336636	36.5	369068	33.3
Undetermined	19086	10.3	95297	10.3	114607	10.3
Legal interventions	5	0.0	354	0.0	359	0.0
Suicides	13175	7.1	49260	5.3	62480	5.6
External cause deaths	185669	100.0	921184	100.0	1108422	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 29: Firearm-related deaths by sex groups and total population, Brazil, Central-western region and states, 1990´s

	Female		Male		Total	
	N	%	N	%	N	%
Mato Grosso do Sul						
Accidents	18	4.0	144	3.7	167	3.8
Homicides	315	70.8	3250	82.6	3578	81.3
Undetermined	43	9.7	236	6.0	281	6.4
Legal interventions	0	0.0	2	0.1	2	0.0
Suicides	69	15.5	304	7.7	374	8.5
Firearm-related deaths	445	100.0	3936	100.0	4402	100.0
Mato Grosso						
Accidents	30	10.4	306	9.4	337	9.5
Homicides	231	80.2	2754	84.4	2993	84.1
Undetermined	5	1.7	39	1.2	44	1.2
Legal interventions	0	0.0	1	0.0	1	0.0
Suicides	22	7.6	162	5.0	184	5.2
Firearm-related deaths	288	100.0	3262	100.0	3559	100.0
Goiás						
Accidents	18	2.4	87	1.5	105	1.6
Homicides	524	68.5	4132	71.5	4673	71.1
Undetermined	124	16.2	936	16.2	1065	16.2
Legal interventions	0	0.0	9	0.2	9	0.1
Suicides	99	12.9	616	10.7	717	10.9
Firearm-related deaths	765	100.0	5780	100.0	6569	100.0
Federal District						
Accidents	4	1.2	21	0.5	25	0.6
Homicides	279	82.1	3788	91.5	4069	90.8
Undetermined	3	0.9	39	0.9	43	1.0
Legal interventions	0	0.0	1	0.0	1	0.0
Suicides	54	15.9	291	7.0	345	7.7
Firearm-related deaths	340	100.0	4140	100.0	4483	100.0
Central-western region						
Accidents	70	3.8	558	3.3	634	3.3
Homicides	1349	73.4	13924	81.3	15313	80.5
Undetermined	175	9.5	1250	7.3	1433	7.5
Legal interventions	0	0.0	13	0.1	13	0.1
Suicides	244	13.3	1373	8.0	1620	8.5
Firearm-related deaths	1838	100.0	17118	100.0	19013	100.0
BRAZIL						
Accidents	524	2.6	4899	2.0	5450	2.0
Homicides	15295	75.8	203126	82.8	218679	82.2
Undetermined	2446	12.1	26298	10.7	28782	10.8
Legal interventions	2	0.0	247	0.1	249	0.1
Suicides	1920	9.5	10885	4.4	12815	4.8
Firearm-related deaths	20187	100.0	245455	100.0	265975	100.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 30: External cause deaths by type of instruments (%) Brazil, Central-western region and states, 1990´s

	Accidents		Homicides		Undetermined		Legal interventions		Suicides	
	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm	Firearm	Non-Firearm
Total population										
Mato Grosso do Sul	4.7	95.3	62.1	37.9	20.3	79.7	66.7	33.3	30.4	69.6
Mato Grosso	5.7	94.3	48.9	51.1	7.7	92.3	16.7	83.3	19.1	80.9
Goiás	2.0	98.0	57.5	42.5	19.2	80.8	81.8	18.2	30.3	69.7
Federal District	0.9	99.1	69.5	30.5	20.3	79.7	100.0	0.0	36.0	64.0
Central-western region	3.6	96.4	59.2	40.8	18.6	81.4	61.9	38.1	29.4	70.6
Brazil	2.1	97.9	59.3	40.7	25.1	74.9	69.4	30.6	20.5	79.5
Male										
Mato Grosso do Sul	5.2	94.8	63.2	36.8	20.4	79.6	66.7	33.3	32.8	67.2
Mato Grosso	6.2	93.8	50.2	49.8	8.3	91.7	20.0	80.0	21.7	78.3
Goiás	2.1	97.9	59.0	41.0	21.0	79.0	81.8	18.2	33.4	66.6
Federal District	1.0	99.0	70.9	29.1	21.3	78.7	100.0	0.0	39.6	60.4
Central-western region	4.0	96.0	60.6	39.4	19.9	80.1	65.0	35.0	32.3	67.7
Brazil	2.5	97.5	60.3	39.7	27.6	72.4	69.8	30.2	22.1	77.9
Female										
Mato Grosso do Sul	2.5	97.5	52.4	47.6	20.5	79.5	0.0	0.0	23.3	76.7
Mato Grosso	3.2	96.8	37.3	62.7	5.4	94.6	0.0	100.0	10.0	90.0
Goiás	1.6	98.4	47.6	52.4	11.8	88.2	0.0	0.0	19.1	80.9
Federal District	0.5	99.5	55.5	44.5	10.7	89.3	0.0	0.0	24.3	75.7
Central-western region	2.0	98.0	47.8	52.2	12.7	87.3	0.0	100.0	19.4	80.6
Brazil	0.9	99.1	47.9	52.1	12.8	87.2	40.0	60.0	14.6	85.4

Firearm-related deaths by sex in the 1990's

In this section we present the data on the total of external cause deaths that occurred in the 1990's in Brazil, its five major regions and states, by sex groups. The contribution of firearms in the total of external cause deaths, as well as the importance of each of the specific causes of violent deaths in the total of external causes and firearm-related deaths, will be shown through the calculation of percentages. The difference between male and female frequency of firearm-related deaths will be presented through the calculation of ratios.

A. Brazil and regions

For the entire country and for each of the five regions of Brazil, male external cause proportional mortality exceeds for females (Figure 7). What should be noted in the analysis of Figure 7 is the sex-specific external cause proportional mortality in the Central-western region, much higher than that found for Brazil as a entire and for the other four regions. While female proportional mortality in Brazil is 5% and male is 17.6%, in the Central-western region, the female proportional mortality reaches 8% and for males exceeds 20%.

Considering all deaths due to external causes (Table 7), the percentage of firearm-related deaths in the male group is 26.6% in Brazil and varies from 29.9% in the Northeastern region to 18.7% in the Southern region. In the female group, the highest was found in the Central-western region (12.2%) and the lowest was found in the Southern region (9.0%). In Brazil in the Southeastern and in the Northeastern regions firearm-related deaths exceeded road traffic crashes in the male group, ranking second in the 1990's.

Considering all firearm-related deaths that occurred in Brazil (n=265,975), 92.3% (n= 245,455), occurred in the male and 7.6% (n=20,187) in the female group, which means a frequency 12 times higher for firearm-related deaths among males (Table 31). The excess of firearm-related deaths in the male group varies from 8.6 in the Southern region to 13.3 in the Northeastern and Southeastern regions.

Gender differences are strongly evident when we analyze the data on specific external cause deaths. As is shown in Table 8, while homicide is the first external cause of death for the male group in the entire country and in four regions – with the exception of the Southern region where homicides rank second – it is in the third position for the female group, in the entire country and in the Northern, Northeastern, Southeastern and Central-western regions, and fourth in the Southern region. In the female group, road traffic crashes and other accidents are the first and second external causes of deaths.

If we consider all firearm-related deaths (Table 9), homicides rank first for both males and females, for the entire country and in the five regions. In Brazil, 82.7% of the male and 75.7% of the female firearm-related deaths were due to homicides. In both the male and female groups, the highest percentages were found in the Northern, Northeastern and Southeastern regions.

Analyzing homicide deaths only (Table 10), we can see different patterns in relation to weapons used in male and female populations. While in the male group the majority of the homicide deaths were committed with firearms, varying from 67.3% in the Northeastern region to 53.1% in the Northern region, in the female group the greater part of the homicides were committed with other weapons, with the exception of the Northeastern region where 51.8% of homicides were firearm-related. Considering all firearm-related homicides that occurred in Brazil (n=218,679), 93% (n= 203,126) occurred in the male and 7.0% (n=15,295) in the female group, which means a frequency 13.3 times higher of firearm-related homicides among males (Table 31). The excess of firearm-related homicides in the male group varies from 10.3 in the Central-western region to 14.3 in the Northeastern region.

Table 31: Percentage of external cause deaths by sex groups and male to female ratio, Brazil and regions, 1990´s

	Homicides			Accident			Suicides			Undetermined			Firearm		
	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio	Male	Female	Ratio
Northern	92.2	7.6	12.1	87.2	12.8	6.8	85.2	14.8	5.8	90.3	9.7	9.3	91.6	8.3	11.1
Northeastern	93.3	6.5	14.3	91.2	8.1	11.3	85.1	14.8	5.7	91.7	8.2	11.2	92.8	7.0	13.3
Southeastern	93.3	6.6	14.1	89.1	10.8	8.3	86.1	13.8	6.2	92.4	7.5	12.4	92.9	7.0	13.3
Southern	91.3	8.7	10.5	87.7	12.3	7.2	83.6	16.4	5.1	86.3	13.7	6.3	89.6	10.4	8.6
Central-western	90.9	8.8	10.3	88.0	11.0	8.0	84.8	15.1	5.6	87.2	12.2	7.1	90.0	9.7	9.3
BRAZIL	92.9	7.0	13.3	89.9	9.6	9.3	84.9	15.0	5.7	91.4	8.5	10.8	92.3	7.6	12.2

Source: Mortality Information System (SIM), Ministry of Health, Brazil

The excess of male deaths can be seen in all other causes of firearm-related deaths and in the group of deaths of undetermined intention (Table 31). Nevertheless, the male to female ratio is lower than that found for firearm-related homicides and firearm-related deaths, shown above. Firearm-related accidents are 9 times more frequent in the male population of Brazil, varying from 6.8 in the Northern region to 11.3 in the Northeastern region. Accidents (excluding road traffic crashes) were the third external cause of death in the male population of Brazil and in its five regions, and the second in the female population of Brazil and in four of its regions (Table 8). Nevertheless,

considering firearm-related deaths only, accidents fall to the fourth position for both male and female populations (Table 9), with the exception of the Northeastern male population. Considering the total of accidents that occurred in the Brazilian regions (Table 10), the proportion of firearm-related accidents ranged from 1% in the Southeastern to 5.9% in the Northeastern male population and 0.5% in the Southern to 2% in the Northern and Central-western female populations.

Firearm-related suicides and deaths of undetermined intention are in the second and third positions, considering all firearm-related deaths (Table 9). Firearm-related suicides are 5.7 times more frequent in the Brazilian male population, ranging from 5.1 in the Southern region to 6.2 in the Southeastern region (Table 31). Considering all male suicide deaths, 22.1% were committed with firearms, while among females the equivalent proportion was 14.6% (Table 10). Higher percentages of firearm-related suicides were found in the Central-western region, both in the male and female populations.

Firearm-related deaths of undetermined intention are 10.8 times more frequent in the male population, the highest ratio being found in the Southeastern region and the lowest in the Southern region (Table 31).

B. Brazilian states

B.1. Northern region

In all states of the Northern region, male external cause proportional mortality exceeds that for females (Figure 8). In Tocantins, Amapá, Roraima, Acre, Amazonas, and Rondônia, male and female external cause proportional mortality exceeds that found for Brazil. Female external cause proportional mortality exceeded 8% in Amapá (8.2%), Rondônia (10%), and Roraima (12.3%), while the male exceeded 20% in the same states, reaching 34.8% in Roraima.

Considering all deaths due to external causes in the Northern region (Table 11), the percentage of firearm-related deaths in the male population varied from 16.7% in Tocantins to 28.2% in Rondônia. In the female population, the highest percentages were found in Acre (15.1%), and Rondônia (13.7%), and the lowest in Tocantins (8.6%). Firearm-related deaths rank second in the male populations of Rondônia (28.2%), and Acre (24.4%), exceeding road traffic crashes.

Considering all firearm-related deaths that occurred in the Northern region (Table 32), 91.6% (n=12,392) occurred in males, and 8.3% (n=1,023) in the female population, which means that male frequency of firearm-related deaths are eleven times higher than those for females in the region. The excess of firearm-related deaths in the male population was found in all states of the Northern region, the highest ratio being in Amazonas (12.64) and the lowest in Acre (8.1). The frequency of non-firearm violent deaths (excluding road traffic crashes) is also higher in the male population in all states and in the entire country, which suggests that the male population is at a higher risk of violent death, regardless of the instrument used. However, it is important to highlight that firearms seem to act as an additional risk factor in the male group, since in the non-firearm-related death group the excess of male deaths is half of that found in the firearm group, not being higher than 5.6.

Homicide is the first external cause of death in the male population in all states of the Northern region, with the exception of Tocantins, where homicide is in the third position being exceeded by road traffic and other accidents (Table 12). The highest percentage of homicides in the male population, regarding all deaths due to external causes, is found in Amazonas (42.1%). In the female group, homicides are in the third position in six of the seven states – Rondônia,

Acre, Amazonas, Pará, Amapá, and Tocantins –, being exceeded by accidents and road traffic crashes. In Roraima, homicides are the second external cause of death, the first being road traffic crashes. In four states of the Northern region, homicides are responsible for more than 20% of female external cause deaths, with the highest percentage being in Roraima (27.6%).

Table 32: Percentage of firearm and non-firearm-related deaths by sex groups and male to female ratio, Brazil, Northern region and states, 1990´s

FIREARM

	Firearm homicides				Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Rondônia	92.0	7.7	11.93		91.7	8.1	11.30
Acre	89.0	10.8	8.22		88.9	10.9	8.1
Amazonas	93.0	6.7	13.96		92.4	7.3	12.64
Roraima	91.3	8.5	10.79		91.2	8.6	10.6
Pará	92.8	7.1	13.10		92.0	8.0	11.53
Amapá	91.6	8.4	10.93		91.8	8.2	11.23
Tocantins	89.7	10.3	8.68		89.0	11.0	8.05
Northern region	92.2	7.6	12.1		91.6	8.3	11.1
BRAZIL	92.9	7.0	13.3		92.3	7.6	12.2

NON-FIREARM

	Non-Firearm homicides				Non-Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Rondônia	87.0	12.5	6.97		83.4	16.2	5.14
Acre	85.6	13.8	6.19		82.4	17.1	4.81
Amazonas	90.9	9.0	10.13		84.7	15.1	5.62
Roraima	86.6	13.2	6.57		83.0	16.9	4.91
Pará	89.8	10.2	8.81		82.8	17.1	4.84
Amapá	91.9	8.1	11.39		84.0	15.8	5.31
Tocantins	86.1	13.4	6.43		79.6	19.9	4.01
Northern region	89.1	10.7	8.33		83.1	16.7	4.99
BRAZIL	88.8	11.1	8.01		81.0	18.8	4.30

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Considering all firearm-related deaths (Table 13), homicides are the first cause for both males and females. The percentage of homicides in the total of firearm-related deaths was higher than 90% in the Amapá and Amazonas male populations, and represented more than 80% of all firearm-related deaths in the female population of Amazonas (81.5%), Roraima (88.6%), and Amapá (95.3%). Considering all deaths due to homicide in the male population (Table 14), firearms were used in the majority of cases in only three of the seven states of the Northern region: Rondônia (60.5%), Acre (51.3%), and Pará (57.4%). Female homicides, in all seven states, were committed with other weapons in the most of the cases (Table 14). In Tocantins, 44.6% of the male homicides and 37% of the female homicides were committed with firearms.

The frequency of male firearm-related homicides exceeds the female in all the states of the Northern region (Table 32). The frequency of male firearm-related homicides is almost 14 times higher than the female in Amazonas, the lowest ratio being found in Acre (8.2). In Table 32, we can see that non-firearm-related homicides are also more frequent in the male population in all states of the Northern region, the gender difference being lower, however, than that found for firearm-related homicides, with the exception of Amapá.

B.2. Northeastern region

A similar pattern was found in the Northeastern region, where external cause proportional mortality is higher in the male group in all nine states (Figure 9). In Pernambuco and Sergipe only, male external cause proportional mortality exceeded that found in Brazil, without, however reaching the levels found in the Northern region. The highest percentages of external cause deaths in the male population were found in Pernambuco (18.5%) and Sergipe (18%). In the female group, all states presented an external cause proportional mortality lower than for Brazil, the greatest being found in Sergipe (4.8%) and Maranhão (4.6%).

Considering all deaths due to external causes in the male group (Table 15), firearm-related deaths exceeded road traffic crashes in Pernambuco and Bahia only. In the former, firearm-related deaths are in the first position, being responsible for almost 50% of the total. In Bahia, male firearm-related deaths are in the second position (27.4%), being exceeded by non-firearm-related deaths. In all other states, firearm-related deaths rank third in the male population, the highest percentage being found in Alagoas (29.5%). In the female population, firearms rank third in all nine states. It is important to emphasize the high percentages of female firearm-related deaths in Pernambuco (19.2%) and Alagoas (12.6%).

Considering all the firearm-related deaths that occurred in the Northeastern region (n=58,798), 92.8% (n=54,579) were male, and 7% were female (n=4,097) (Table 33). This means a frequency of firearm-related deaths thirteen times higher in the male population. The excess of male firearm-related deaths, as compared to the female, was highest in Pernambuco (15.2), and lowest in Paraíba (9.1). In all states of the Northeastern region, the excess of male deaths was much more pronounced when firearms were the weapons used, the male to female firearm-related death ratio being three times higher than the male to female ratio for non-firearm-related deaths.

Homicide is the primary external cause of death in the male population in four of the nine states, the highest figure being found in Pernambuco, where almost 60% of the total were homicides, followed by Alagoas (44.8%), and Paraíba (36.2%) (Table 16). In Maranhão, Ceará, Rio Grande do Norte, and Bahia, homicides were the second external cause of male deaths, being exceeded by road traffic crashes in the first three states and other accidents in Bahia. In Bahia, 46.3% of all male external cause deaths were due to accidents. In Piauí, homicides were the third external cause of deaths in the male population, the first and second being traffic and other accidents.

For the female group (Table 16), homicides were the second external cause of death in Pernambuco (27.3%) and Alagoas (22.6%), the third in Maranhão, Piauí, Ceará, Paraíba, and Bahia, and the fourth in Sergipe and Rio Grande do Norte. Road traffic crashes were the first external cause of female deaths in seven of the nine states of the Northeastern region, with the exception of Paraíba and Bahia, where other accidents ranked first. In the latter, accidents were responsible for 59% of the total.

Considering firearm-related deaths only (Table 17), homicides rise to the first position in all states for both males and females, being responsible for more than 90% of all male firearm-related deaths in Alagoas (96.2%), Pernambuco (95.9%), and Paraíba (95%). The lowest results were found in Bahia (66.7%), Rio Grande do Norte (66.6%), and Piauí (66.1%). In Bahia and Piauí more than 10% of all male firearm-related deaths were due to accidents, and in Rio Grande do Norte more than 25% were deaths of undetermined intention. Firearms were used in most of the male homicides in Rio Grande do Norte, Pernambuco, Alagoas, Sergipe, and Bahia (Table 18). In Pernambuco, almost 80% of all male homicides were committed with firearms.

In the female population (Table 17), what should be noted is the high percentage of homicides regarding all firearm-related deaths in Paraíba (92.4%), Alagoas (94.1%), and

Pernambuco (89.5%). Female homicides were committed with other weapons in most of the cases in six of the nine states of the Northern region (Table 18). In Piauí, only 22% of all female homicides were committed with firearms, while the proportion for Pernambuco was 63%.

A total of 50,296 firearm-related homicides were committed in the Northeastern region in the 1990's, of which 93.3% (n=46,915) were in males, and 6.5% (n=3,284) in the female population (Table 33). The male firearm-related homicide frequency is fourteen times higher than that for females in the Northeastern region, the highest ratio being found in Pernambuco (16.3). The ratio between male and female homicides was much higher in all states of the Northeastern region, for homicides committed with firearms.

Table 33: Percentage of firearm and non-firearm-related deaths by sex groups and male to female ratio, Brazil, Northeastern region and states, 1990´s

FIREARM

	Firearm homicides				Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Maranhão	91.7	7.7	11.9		91.4	8.1	11.2
Piauí	93.1	6.7	13.9		92.1	7.8	11.9
Ceará	93.0	6.9	13.5		92.0	7.9	11.6
Rio Grande do Norte	91.9	8.1	11.4		90.2	9.8	9.2
Paraíba	90.3	9.6	9.4		90.1	9.9	9.1
Pernambuco	94.1	5.8	16.3		93.7	6.1	15.2
Alagoas	92.4	7.5	12.3		92.2	7.6	12.1
Sergipe	92.5	6.5	14.2		91.8	7.3	12.5
Bahia	92.8	6.8	13.6		92.8	6.8	13.6
Northeastern region	93.3	6.5	14.3		92.8	7.0	13.3
BRAZIL	92.9	7.0	13.3		92.3	7.6	12.2

NON-FIREARM

	Non-Firearm homicides				Non-Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Maranhão	88.6	11.2	7.9		81.7	18.0	4.5
Piauí	87.6	12.1	7.3		80.4	19.1	4.2
Ceará	90.6	9.1	9.9		82.5	17.3	4.8
Rio Grande do Norte	87.1	12.8	6.8		79.7	19.9	4.0
Paraíba	88.3	11.4	7.7		81.4	18.3	4.4
Pernambuco	88.0	11.8	7.5		80.1	19.8	4.0
Alagoas	88.7	11.2	7.9		82.4	17.4	4.7
Sergipe	86.1	12.8	6.7		80.0	19.4	4.1
Bahia	84.9	14.7	5.8		78.2	21.3	3.7
Northeastern region	87.9	11.8	7.5		80.2	19.5	4.1
BRAZIL	88.8	11.1	8.0		81.0	18.8	4.3

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B.3. Southeastern region

The male external cause proportional mortality exceeds the female in all states of the Southeastern region, the highest percentage being in Espírito Santo, where the male external cause proportional mortality is almost 23% and the female exceeds 6% (Figure 10). In Minas Gerais only, the external cause proportional mortality was lower than that found for Brazil.

For the male population, considering the total of external cause deaths (Table 19), firearms rank first only in Rio de Janeiro, responsible for 47,1% of the total. In Espírito Santo, firearm-related deaths are in the second position (32.8%), exceeding road traffic crashes. In São Paulo and Minas Gerais, firearm-related deaths rank third, non-firearm-related deaths being in the first position in both states. Considering the external cause deaths among females, firearms were in the third position in all of the Southeastern states, the highest percentages being found in Rio de Janeiro (18.4%), and Espírito Santo (15%).

A total of 148,147 firearm-related deaths were committed in the region in the 1990's, of which 93% were in the male (n=137,653) and 7% (n=10,361) in the female population (Table 34). Frequency of firearm-related deaths was 13 times higher among males, with the highest male to female ratio found in Rio de Janeiro (14.4). The excess of male violent deaths is also present when we consider non-firearm-related deaths. Nevertheless, in all four states, the male to female ratio is much greater in the firearm-related deaths group, especially in Rio de Janeiro, where it is almost four times higher than that found for non-firearm external cause deaths.

Homicides are the first external cause of death in the male population of Espírito Santo (50.4%), Rio de Janeiro (45.3%), and São Paulo (42.8%), and the third in Minas Gerais (17%) (Table 20). In Minas Gerais, the first and second are, respectively, accidents and road traffic crashes. It is important to stress the high percentages of deaths of undetermined intention found in the male populations of Minas Gerais (12.8%), and Rio de Janeiro (24.6%), which suggest that the homicide percentages are underestimated in these states. Considering all homicides that occurred in the Southeastern states' male populations (Table 22), firearms were the weapons used in more than 50% of the cases in Minas Gerais, Espírito Santo, and Rio de Janeiro. In this state, 81% of all male homicides were committed with firearms. In São Paulo, most of the male homicides (54.4%) were committed with other weapons.

In the female population (Table 20), homicide is the second external cause of death in Espírito Santo only, where it was responsible for 27.9% of the total. In São Paulo, female homicides are in the third position, exceeded by accidents and road traffic crashes. In Rio de Janeiro and Minas Gerais, homicides rank fourth among females, which can be explained by the high percentage of deaths of undetermined intention in both states, 22.7% and 11.5%, respectively. In the female population, firearms were the weapons used in most of the homicides only in Rio de Janeiro (67.7%) (Table 22).

Considering firearm-related deaths only (Table 21), homicides are the first cause for both male and female populations of the four Southeastern states. In the male group the highest percentage of homicides in the total of firearm-related deaths was found in Espírito Santo (94.7%) and São Paulo (90.3%), and the lowest in Minas Gerais (65.8%) and Rio de Janeiro (77.9%). In Rio de Janeiro and Minas Gerais, more than 20% of all male firearm-related deaths were of undetermined intention, suggesting again, that the homicide percentage is underestimated in those states. In the female population, the highest percentages of firearm-related homicides were also found in Espírito Santo (89%) and São Paulo (83.9%), and the lowest in Rio de Janeiro (76.3%) and Minas Gerais (60.2%), the states with the highest percentage of female deaths of undetermined intention.

A total of 122,418 firearm-related homicides were committed in the Southeastern region in the 1990's, of which 93.3% (n=114,203) were in the male and 6.6% (n=8,115) in the female population (Table 34). Male frequencies of firearm-related homicides were fourteen times higher than female, with the most substantial ratio in Rio de Janeiro and São Paulo, and the least substantial ratio in Minas Gerais. Non-firearm-related homicides were more frequent in the male population in all four states of the region. The male to female ratio in non-firearm-related homicide deaths were lower than those found for firearm-related homicides.

Table 34: Percentage of firearm and non-firearm-related deaths by sex groups and male to female ratio, Brazil, Southeastern region and states, 1990´s

FIREARM

	Firearm homicides				Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Minas Gerais	90.1	9.8	9.2		89.2	10.6	8.4
Espírito Santo	92.4	7.5	12.4		92.0	7.9	11.6
Rio de Janeiro	93.5	6.4	14.7		93.4	6.5	14.4
São Paulo	93.6	6.4	14.7		93.2	6.8	13.7
Southeastern region	93.3	6.6	14.1		92.9	7.0	13.3
BRAZIL	92.9	7.0	13.3		92.3	7.6	12.2

NON-FIREARM

	Non-Firearm homicides				Non-Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Minas Gerais	82.5	17.2	4.8		77.1	22.6	3.4
Espírito Santo	87.5	12.2	7.1		82.2	17.6	4.7
Rio de Janeiro	87.6	12.1	7.2		78.6	21.1	3.7
São Paulo	91.2	8.8	10.4		84.3	15.7	5.4
Southeastern region	89.8	10.1	8.9		81.7	18.2	4.5
BRAZIL	88.8	11.1	8.0		81.0	18.8	4.3

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B.4. Southern region

In all three states of the Southern region, male external cause proportional mortality exceeds that for females (Figure 11). In none of the states was the male external cause proportional mortality higher than that found for Brazil. On the other hand, in two of the three states of the Southern region, Paraná (6%) and Santa Catarina (6.1%), the female external cause proportional mortality was higher than the percentage found for Brazil (5%).

In all of the Southern region's states firearm-related deaths are in the third position, considering the total of external cause deaths, for both males and females (Table 23). Greater percentages were found in Rio Grande do Sul and Santa Catarina. A total of 27,625 firearm-related deaths occurred in the Southern region, being 89.6% (n=24,754) in the male, and 10.4% (n=2,868) in the female population, which means that the male frequency of firearm-related deaths exceeds the female 8.6 times. The highest ratio was found in Paraná (9.2) (Table 35).

Homicides were the second external cause of death in the male populations of Rio Grande do Sul (25.4%) and Paraná (24.1%), and the third in Santa Catarina (Table 24). In Santa Catarina, the male homicide percentage was 12.4%, surpassing suicide by less than 1%. In the female population, homicides were the third external cause of death in Paraná (12%), and the fourth in Santa Catarina (7.9%), and Rio Grande do Sul (12.7%).

Considering firearm-related deaths only (Table 25), homicides rise to the first position in all the states for both male and female populations. For the male population, the percentage of homicides does not reach 80%. In all of the region's states, more than 10% of male firearm-related deaths were suicides. Male homicides were committed with firearms in most of the cases in all the states of the Southern region (Table 26). For the female population, the percentage of homicides in the total of firearm-related deaths is less than 65% in all the states, and suicides exceed 20% (Table 25). In Santa Catarina and Paraná, female homicides were committed with other weapons in more than 50% of the cases (Table 26).

In a total of 20,081 firearm homicides that occurred in the Southern region, 91.9% (n=18,334) were male, and 8.1% (n=1,744), were female (Table 35). The male firearm-related homicide frequency is 10.5 times higher than the female, the highest ratio being in Paraná (11.4) and the lowest in Santa Catarina (9.2). Despite the fact that non-firearm-related homicides are also more frequent in the male population, the male to female ratio is much lower than the one found for firearm-related homicides. This region presents the lowest gender difference compared with all other Brazilian states.

Table 35: Percentage of firearm and non-firearm-related deaths by sex groups and male to female ratio, Brazil and Southern region and states, 1990´s

FIREARM

	Firearm homicides				Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Paraná	91.9	8.1	11.4		90.2	9.8	9.2
Santa Catarina	90.2	9.8	9.2		89.8	10.2	8.8
Rio Grande do Sul	91.1	8.9	10.2		89.1	10.9	8.2
Southern region	91.3	8.7	10.5		89.6	10.4	8.6
BRAZIL	92.9	7.0	13.3		92.3	7.6	12.2

NON-FIREARM

	Non-Firearm homicides				Non-Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Paraná	85.7	14.2	6.1		78.1	21.8	3.6
Santa Catarina	83.8	16.2	5.2		80.7	19.3	4.2
Rio Grande do Sul	85.4	14.5	5.9		78.5	21.5	3.6
Southern region	85.3	14.6	5.8		78.7	21.2	3.7
BRAZIL	88.8	11.1	8.01		81.0	18.8	4.30

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B.5. Central-western region

In all states of the Central-western region, male and female external cause proportional mortality exceeds that found for Brazil (Figure 12). In the Federal District and Mato Grosso, higher percentages were found.

Considering the total of external cause deaths, firearms rank second for the male population in Mato Grosso do Sul (28.3%), and third in Mato Grosso (20.9%), Goiás (21.1%), and in the Federal District (32%) (Table 27). In the latter, firearm-related death percentages are only slightly exceeded by non-firearm-related deaths. In the female population, firearm-related deaths rank third in all three states and in the Federal District, the highest percentage being in Mato Grosso do Sul (15%).

There was a total of 19,013 firearm-related deaths in the region, 90% (n= 17,118) being in the male, and 7.6% (n= 1,838) in the female population (Table 36). Male firearm-related deaths

exceeded female by 9 times, with the highest ratio being found in the Federal District (12.2). The male to female ratio is much lower if we consider the non-firearm-related deaths only, in all three states and in the Federal District.

Homicide was the primary male external cause of death in Mato Grosso do Sul (37%), Mato Grosso (35.2%), and in the Federal District (41.4%), and the second in Goiás (25.6%) (Table 28). Firearms were the weapons used in most of the male homicides in all the Central-western states and in the Federal District. However, in Mato Grosso, the use of firearms was only slightly higher than that of other weapons (Table 30). In the female population, homicides were the third external cause of death in all three states and in the Federal District, being exceeded by traffic and other accidents (Table 28). Considering the total of homicides in the female population (Table 30), the use of firearms was more frequent in Mato Grosso do Sul (52.4%), and in the Federal District (55.5%), being exceeded by other weapons in Mato Grosso and Goiás.

In the total of firearm-related deaths (Table 29), homicides rank first for both males and females in all the states and in the Federal District. The highest percentages were found in the Federal District, where 91.5% of the male and 82.1% of the female firearm-related deaths, were homicides.

A total of 15,313 firearm-related homicides were committed in the Central-western region in the 1990's, of which 90.9% (n=13,924) were in the male, and 8.8% (n= 1,349) in the female population (Table 36). The male frequency of firearm-related homicides was 10 times higher than that of the females, the highest ratio being in the Federal District (13.6), and the lowest in Goiás (7.9). Non-firearm-related homicides were also more frequent in the male population, the ratio being lower than that found in the firearm-related homicides group.

Table 36: Percentage of firearm and non-firearm-related deaths by sex groups and male to female ratio, Brazil Central-western region and states, 1990´s

FIREARM

	Firearm homicides				Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Mato Grosso do Sul	90.8	8.8	10.3		89.4	10.1	8.8
Mato Grosso	92.0	7.7	11.9		91.7	8.1	11.3
Goiás	88.4	11.2	7.9		88.0	11.6	7.6
Federal District	93.1	6.9	13.6		92.3	7.6	12.2
Central-western region	90.9	8.8	10.3		90.0	9.7	9.3
BRAZIL	92.9	7.0	13.3		92.3	7.6	12.2

NON-FIREARM

	Non-Firearm homicides				Non-Firearm deaths		
	Male	Female	Ratio		Male	Female	Ratio
Mato Grosso do Sul	86.4	13.1	6.6		80.9	18.5	4.4
Mato Grosso	87.3	12.4	7.0		84.0	15.7	5.3
Goiás	83.0	16.7	5.0		78.9	20.7	3.8
Federal District	87.2	12.5	7.0		78.2	21.7	3.6
Central-western region	85.7	14.0	6.1		80.5	19.1	4.2
BRAZIL	88.8	11.1	8.0		81.0	18.8	4.3

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Time-series analysis: Firearm-related deaths from 1991 to 2000

In this section we present the data from 1991 to the year 2000. Our aim is to analyze how firearm-related deaths evolved during this period, in relation to the total of external cause deaths, road traffic crashes and non-firearm-related deaths. Thus, we will present the data for both proportional mortality and mortality rates. Proportional mortality provides information on the contribution of the cause-specific deaths in the total of deaths, and the results are presented as percentages (%). Mortality rates (/100,000) provide information on the number of deaths in relation to the total population and on the risk of dying due to firearm-related injuries. Rates and percentages will be calculated for the entire population, sex and age groups in Brazil, its five major regions, twenty-seven states (including the Federal District) and twenty-six capitals.

A. Brazil and regions

A.1. Frequency of external cause and firearm-related deaths: Proportional mortality and percentages

Analyzing the data in Figure 13, we note that in Brazil external cause proportional mortality changed very little in the period. A small increase can be noted from 1991 to 1997, when it went from 12.6% (n =101,356) to 13.1% and then it started to drop, reaching the lowest figure in 2000 (12.4%, n= 116,947). Despite this relative stability of external cause proportional mortality in the country, we observe a constant increase in firearm-related deaths, which increased from 20.9% in 1991 (n=21,181) to 29.95% in 2000 (n=35,028), exceeding road traffic crashes at the end of the decade (Figure 14). We should remark that the number of external cause deaths increased by 15,591 from 1991 to the year 2000, and within this increase, 89% of the new deaths (n=13,847) were firearm-related. During the period the percentage of firearm-related deaths was the only one that presented an increasing tendency in the country when compared with non-firearm and road traffic crashes, despite the fact that all three presented an increase in the absolute number of cases. The percentage of non-firearm-related deaths dropped from 51% (n=51,720) to 44.7% over the time period (n=52,279). The percentage of road traffic crashes increased from 28.1% (n=28,455) in 1991 to 30.2% in 1997, and then began to drop, reaching the lowest figure (25.3%) in 2000 (n=29,640).

Figure 13: External cause proportional mortality (%) by sex groups, Brazil, 1991-2000
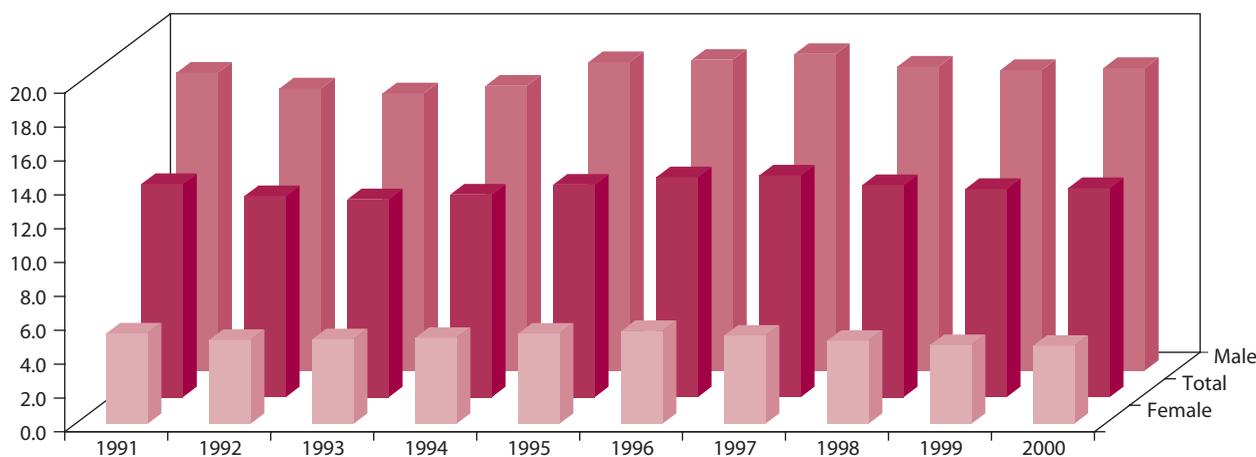
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

In Figure 15, we can note that the percentage of firearm-related deaths increased in all age groups. It is important to highlight that it grew significantly in the younger groups, especially in the 5-9 (97%), and 10-14 (79%) age groups, confirming the tendency first described by Souza (1994), in relation to homicide deaths. Comparing the increase of firearm-related deaths for both the total population and age groups, we can observe that while it was on the order of 43% for the entire population of Brazil (Table 37), it exceeded 50% for the 5-9, 10-14 and 15-19 age groups, and 44% for the 0-4 and 20-29 age groups (Figure 15).

A greater percentage of firearm-related deaths is found for the 15-19 and 20-29 year-old populations of Brazil, exceeding 40% in the year 2000 (Figure 15). In both age groups firearms rank first, considering the total of external cause deaths since 1999, being responsible for almost 40% of the total. In the 30-39 year-old population, firearms equaled road traffic crashes in 1998, climbing since then to the second position and maintaining the increase tendency up to the year 2000, when they reached the percentage of 31.8% (n=7,363). In the other age groups firearm-related deaths also presented an increase tendency, without exceeding the percentage of road traffic crashes (data not shown).

Figure 14: Proportion of road traffic crashes, firearm and non-firearm-related deaths in relation to all external causes (%), Brazil, 1991-2000
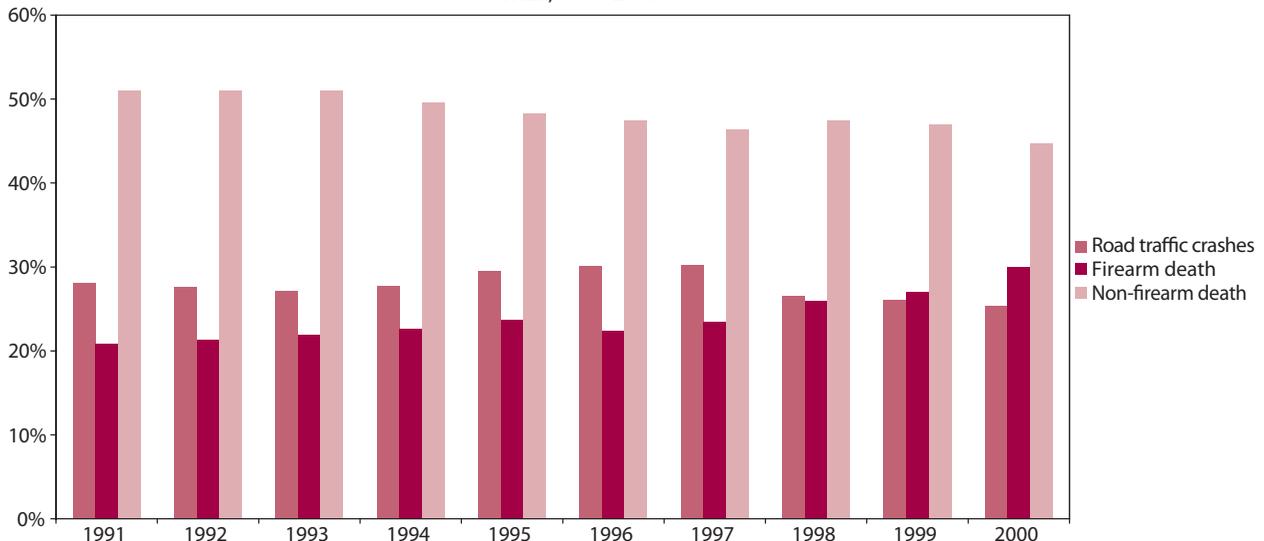
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

The percentage of firearm-related deaths increased in four of the five regions of Brazil (Table 37), with the exception of the Northern region, where it fell 10%, from 23.54% (n=1,227) in 1991 to 21.19% (n=1,355) of all external cause deaths in the year 2000. The most important increase was observed in the Central-western (56.5%), and in the Southeastern (56.6%) regions. In the former, the percentage of firearm-related deaths rose from 18.16% (n=1,330) to 28.43% (n=2,609) in the period. Nevertheless, firearms rank third in the region (data not shown). In the Southeastern region, the percentage of firearm-related deaths rose from 21.58% (n=11,684) in 1991, to 33.79% (n=20,030) in 2000, being in the second position since 1998 (data not shown). The same pattern can be found in the Northeastern region, where firearm-related deaths exceeded road traffic crashes in 1997 (data not shown). In the Southern region, the percentage of firearm-related deaths has been growing since 1991, without, however, exceeding road traffic crashes in the period. In all five regions the percentage of non-firearm-related deaths dropped from 1991 to the year 2000 (data not shown).

Source: Mortality Information System (SIM)/Ministry of Health, Brazil.
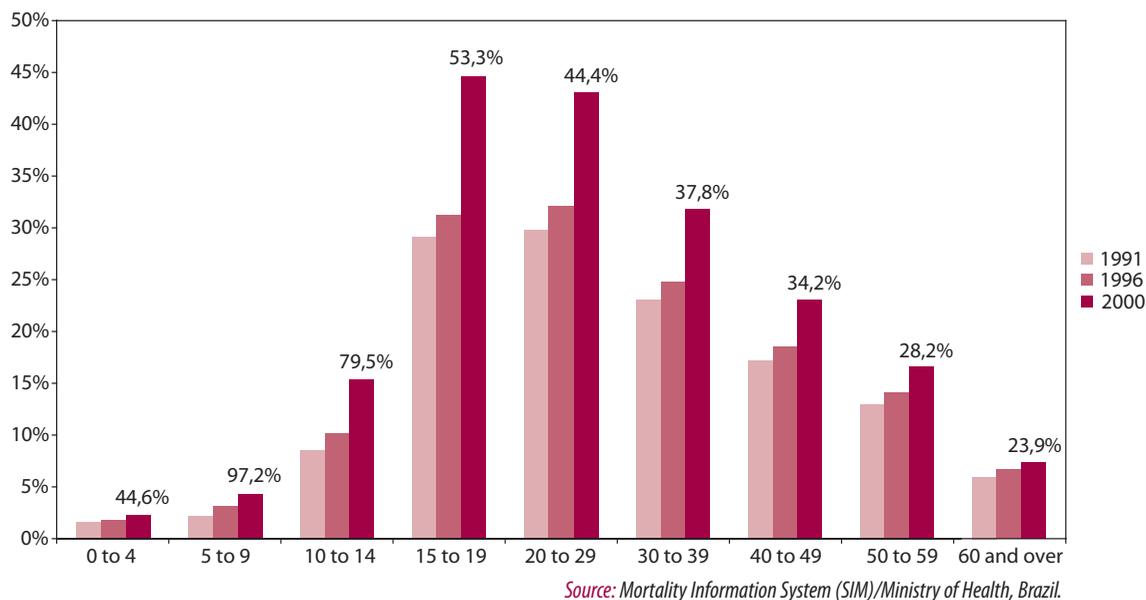
Analyzing the data for the 15-19 and 20-29 year-old populations (Tables 38 and 39), we see that the proportion of firearm-related deaths increased in all regions in both age groups, with the exception of the Northern region. It is important to highlight that, despite the fact that firearm-related deaths dropped in the Northern region in both age groups, they dropped less than for the entire population (Table 37). In the Northeastern, Southeastern and Central-western regions, the 15-19 age group presented the most important increase in the period, when compared with that observed for the entire and for the 20-29 year-old populations. In the Southern region, the most important increase was observed in the 20-29 age group (Tables 37, 38 and 39). Considering the data for the year 2000, we see that firearms have a more important contribution in the total of external cause deaths for the 15-19 year-old population of the Southeastern region, where they exceed 50%, while for the entire region's population, the percentage of firearm-related deaths is 33.8%.

Analyzing the data by sex (Tables 40 and 41), we can note that the percentage of firearm-related deaths for both males and females increased in the period in the entire country and in four of its five regions. In the Northern region only the male and female percentage of firearm-related deaths dropped. In the male group, the percentage of firearm-related deaths in the Northern region went from 25.6% (n=1,126) to 23.4% (n=1,270), with a relative drop of 8.3%. In the female population firearm-related deaths went from 12.4% (n=99) to 8.7% (n=85), dropping 29.9% in the period.

It is important to emphasize that the increase of firearm-related deaths in females was greater than that for males in the Northeastern and Southeastern regions (Table 41). The highest female increase was found in the latter, where it exceeded 60%. There, the percentage of female firearm-related deaths went from 9.06% (n=815) in 1991 to 14.9% (n=1,297) in the year 2000, and in the Northeastern region it climbed from 9.38% (n=312) to 13.63% (n=532).

In the male group, while the proportion of firearm-related deaths increased 41.6% in the country, considering all age groups together (Table 40), the increase was on the order of 52% for the 15-19, 42.7% for the 20-29, and 35.2% for the 30-39 age groups (Tables 42, 43 and 44). Growth was more significant in the 15-19 age group, for the entire country and for three of its five regions, with

the exception of the Southern region, where the increase was higher for the 20-29 year-old group (Tables 42 and 43), and the Northern region, where the proportion of male firearm-related deaths dropped in all the age groups. It is important to stress that firearms were responsible for 47.7% of all external cause deaths in the 15-19, and 45% in the 20-29 male age groups in Brazil during the year 2000. In the 15-19 and 20-29 male age groups, firearm-related deaths exceeded road traffic crashes, ranking first in the group of external cause deaths in the country (data not shown). A higher percentage was found in the Southeastern region, where the proportion of firearm-related deaths exceeded 50% in the 15-19, and was on the order of 49.5% in the 20-29 male age groups.

For the female population, despite the growth tendency observed for the three age groups (Tables 45 to 47), firearm-related deaths are in the third position, when compared with road traffic crashes and non-firearm-related deaths (data not shown). While the percentage of firearm-related deaths increased 43.6% in the country, considering all female age groups together (Table 41), it increased almost 50% in the 15-19, 40% in the 20-29 and 70% in the 30-39 age groups (Tables 41, 45, 46, 47). In the Northeastern, Southeastern, Southern, and Central-western regions, the increase was more significant in the 30-39 age group, being on the order of 58.7% in the Northeastern, 89% in the Southeastern, 87% in the Southern, and 79% in the Central-western region (Table 47). Considering all age groups together (Table 41), the proportion of female firearm-related deaths was lower than 20% in Brazil and in its five regions during the entire period, while it exceeded 20% in the three age groups, at the end of the decade (Tables 41, 45, 46). Analyzing the data by regions, it is possible to see that the most substantial contribution of firearm-related deaths was in the Southeast's 15-19 age group female population, where it was responsible for 30% of all external cause deaths in the year 2000. High percentages were also found in the Northeastern and Southeastern regions for the 20-29 year-old populations.

Table 37: Proportion of firearm-related deaths in relation to all external causes and increase (%),
Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	20.90	21.32	21.86	22.63	23.63	22.44	23.44	25.93	27.02	29.95	43.3
Northern	23.54	23.20	21.96	21.00	20.05	20.91	20.29	21.90	21.80	21.19	-10.0
Rondônia	25.24	25.31	26.01	25.16	21.06	26.50	25.79	28.63	31.09	25.02	-0.9
Acre	28.57	22.70	24.65	20.20	22.54	24.52	22.71	24.55	21.40	16.61	-41.9
Amazonas	24.10	20.41	20.36	19.29	18.03	21.43	19.04	19.38	19.72	19.30	-19.9
Roraima	13.57	25.70	23.66	22.12	23.83	19.78	15.75	18.86	16.88	14.99	10.4
Pará	25.79	24.43	21.82	23.06	21.56	17.78	20.09	21.35	20.93	24.05	-6.8
Amapá	6.84	20.98	18.88	13.74	19.06	26.22	20.54	21.86	17.44	12.13	77.3
Tocantins	12.06	16.77	12.57	10.03	12.32	15.87	13.62	16.29	18.12	18.42	52.8
Northeastern	23.51	23.52	24.60	24.26	26.46	26.07	27.99	30.51	30.32	30.22	28.5
Maranhão	16.17	16.84	15.71	14.24	14.61	17.31	13.73	15.30	13.75	13.39	-17.2
Piauí	7.57	7.27	7.03	7.46	12.08	9.20	9.84	9.71	10.76	12.17	60.8
Ceará	13.79	11.59	13.54	13.34	14.58	12.82	14.74	17.51	15.80	18.01	30.6
Rio Grande do Norte	13.06	14.00	17.85	15.80	17.92	19.21	20.50	16.90	18.08	18.21	39.5
Paraíba	14.57	20.46	18.09	15.65	16.00	18.13	24.89	22.88	22.56	28.06	92.6
Pernambuco	37.78	36.25	37.80	38.66	39.94	40.06	45.99	51.01	52.21	50.57	33.8
Alagoas	17.48	20.80	25.77	26.74	30.45	32.19	29.47	25.72	27.12	30.07	72.0
Sergipe	20.49	25.54	19.03	20.99	16.22	19.91	17.41	17.81	24.17	26.32	28.5
Bahia	22.10	22.07	23.79	22.71	21.54	26.28	24.81	26.98	25.43	25.16	13.9
Southeastern	21.58	22.78	23.51	25.17	25.27	22.64	23.69	26.63	28.79	33.79	56.6
Minas Gerais	10.60	10.47	10.50	9.77	10.55	11.10	11.72	13.95	12.18	20.40	92.4
Espírito Santo	21.72	20.52	24.21	24.94	25.78	26.54	35.02	38.20	40.50	35.17	61.9
Rio de Janeiro	41.99	44.75	43.50	45.23	43.75	37.03	39.73	42.02	43.78	45.96	9.4
São Paulo	12.92	13.21	15.34	17.27	19.09	18.26	18.32	21.68	25.32	31.54	144.2
Southern	15.61	14.89	14.96	15.10	16.22	16.30	17.37	18.43	18.79	20.00	28.1
Paraná	13.34	13.19	13.84	14.26	15.81	15.21	16.08	17.91	18.80	19.63	47.1
Santa Catarina	9.41	6.92	7.81	7.54	9.18	7.93	9.42	9.92	8.85	9.77	3.8
Rio Grande do Sul	20.51	20.19	19.64	19.77	20.40	22.14	23.01	23.19	23.86	25.58	24.7
Central-western	18.16	17.46	17.60	17.69	22.89	24.72	23.49	25.40	24.83	28.43	56.5
Mato Grosso do Sul	21.77	21.39	22.33	22.38	29.31	28.23	28.87	28.09	25.05	31.11	42.9
Mato Grosso	7.28	8.32	4.83	4.01	18.70	26.57	24.50	28.92	25.16	31.35	330.5
Goiás	18.89	18.13	18.02	18.03	19.21	19.76	17.31	18.97	21.77	23.13	22.4
Federal District	24.29	21.95	25.32	25.69	28.09	28.38	30.05	32.49	31.34	33.35	37.3

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 3 - Results

Table 38: Proportion of firearm-related deaths in relation to all external causes and increase (%), age 15-19, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	29.13	28.95	32.21	31.57	33.07	31.26	33.74	37.96	39.73	44.66	53.3
Northern	28.62	24.80	26.08	26.73	25.15	23.96	25.17	29.95	26.85	26.10	-8.8
Rondônia	29.09	25.61	27.03	32.97	24.00	30.19	28.16	31.45	39.80	30.09	3.4
Acre	37.21	17.07	38.24	23.81	50.00	35.71	34.04	36.96	24.14	23.26	-37.5
Amazonas	33.13	18.35	25.38	24.85	21.30	26.88	25.41	27.89	25.58	28.41	-14.2
Roraima	23.53	27.78	15.79	18.18	23.53	14.71	27.27	23.68	17.46	22.92	-2.6
Pará	28.44	28.49	26.50	29.67	23.15	17.94	24.00	31.51	24.19	26.04	-8.5
Amapá	5.56	32.14	39.29	26.19	37.93	32.08	24.53	31.03	25.00	20.00	260.0
Tocantins	7.14	25.00	5.88	10.26	9.52	19.40	16.36	23.33	34.43	23.44	228.1
Northeastern	30.67	29.85	35.94	33.91	32.47	37.19	39.42	44.61	43.87	42.64	39.0
Maranhão	20.51	10.09	14.91	27.55	22.66	21.60	14.69	16.95	16.67	18.89	-7.9
Piauí	11.36	8.16	10.14	6.78	13.25	14.47	14.47	11.49	12.05	16.19	42.5
Ceará	20.99	14.94	21.05	15.38	21.52	16.93	21.81	25.93	23.38	25.94	23.6
Rio Grande do Norte	19.77	18.99	26.76	23.21	24.76	23.62	36.00	29.92	23.08	25.16	27.3
Paraíba	20.17	18.28	26.17	23.13	23.89	29.45	28.86	31.16	26.00	41.85	107.5
Pernambuco	44.91	40.74	52.32	52.56	50.41	56.05	59.41	67.89	69.17	63.98	42.5
Alagoas	17.17	19.83	28.78	22.60	32.37	32.72	32.42	28.90	37.11	40.00	132.9
Sergipe	23.53	38.02	31.00	31.09	19.05	24.14	22.32	24.47	33.05	36.52	55.2
Bahia	30.81	35.20	38.78	33.96	31.35	42.28	38.56	41.99	39.94	39.35	27.7
Southeastern	31.16	31.53	35.33	34.15	36.73	32.18	34.50	38.43	42.18	51.31	64.7
Minas Gerais	12.79	13.34	15.54	13.98	14.14	16.27	17.17	20.07	17.55	36.21	183.2
Espírito Santo	27.17	28.85	37.80	34.88	36.62	34.88	54.49	54.64	58.71	52.56	93.5
Rio de Janeiro	60.52	61.90	61.46	60.77	63.46	53.81	56.03	62.76	64.00	68.40	13.0
São Paulo	19.96	19.45	25.54	24.36	27.59	25.21	25.74	29.81	36.66	47.24	136.7
Southern	22.77	21.22	20.70	22.49	23.29	21.58	24.26	27.15	28.68	30.02	31.8
Paraná	17.34	20.47	18.48	21.43	22.93	20.43	22.97	26.34	30.46	31.88	83.9
Santa Catarina	13.78	6.67	9.52	8.48	8.95	10.68	10.51	12.95	10.75	12.12	-12.0
Rio Grande do Sul	31.45	29.20	29.07	31.34	31.79	29.18	33.07	34.82	36.19	36.78	17.0
Central-western	22.83	25.18	27.68	27.99	32.77	33.00	35.14	38.43	38.21	41.47	81.6
Mato Grosso do Sul	31.58	26.21	30.77	34.13	37.85	34.63	35.61	39.39	35.90	40.53	28.3
Mato Grosso	5.41	12.10	4.29	3.29	18.75	25.99	30.49	36.70	35.98	38.82	618.1
Goiás	20.00	19.93	26.07	23.06	25.57	24.40	23.66	24.62	31.31	35.14	75.7
Federal District	35.80	45.03	46.31	50.50	50.00	52.31	56.88	57.49	54.22	56.05	56.6

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 39: Proportion of firearm-related deaths in relation to all external causes and increase (%),
age 20-29, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	29.84	30.21	31.58	32.48	33.24	32.13	33.65	36.78	38.79	43.08	44.4
Northern	30.58	30.89	28.83	26.51	27.32	27.75	26.37	27.28	27.42	28.86	-5.6
Rondônia	29.77	34.82	31.21	30.30	28.72	26.02	30.07	35.69	33.57	31.55	6.0
Acre	47.06	39.13	31.58	23.53	21.05	26.53	33.01	35.16	34.38	20.00	-57.5
Amazonas	30.19	25.95	29.53	25.45	29.32	31.10	25.85	23.56	25.57	26.71	-11.5
Roraima	17.57	23.38	30.43	25.45	34.57	27.54	22.67	28.00	23.85	18.95	7.9
Pará	34.63	33.03	27.95	30.89	29.35	26.50	27.08	27.27	27.89	33.65	-2.8
Amapá	6.90	24.66	33.33	15.73	16.44	37.25	18.75	27.27	21.82	15.24	121.0
Tocantins	17.86	24.24	15.73	10.91	14.42	20.75	18.25	15.00	22.01	30.06	68.3
Northeastern	33.82	33.72	36.14	36.26	35.57	37.25	40.10	43.08	43.53	43.20	27.7
Maranhão	26.09	20.67	18.43	20.68	19.94	23.28	21.10	21.66	17.01	13.79	-47.2
Piauí	12.61	14.58	11.84	12.12	21.79	13.64	11.84	13.74	18.32	17.54	39.1
Ceará	20.20	16.99	22.03	18.62	21.30	18.62	21.45	23.41	21.31	25.20	24.8
Rio Grande do Norte	19.49	21.14	26.15	24.51	23.05	26.65	29.79	23.51	27.97	29.85	53.2
Paraíba	16.81	28.95	21.94	19.83	22.54	24.88	33.42	31.35	32.94	38.15	127.0
Pernambuco	50.96	49.28	53.04	53.06	56.21	54.30	60.39	64.32	67.42	66.52	30.5
Alagoas	23.34	30.85	34.41	39.13	38.05	40.87	32.79	35.06	39.11	42.89	83.7
Sergipe	28.85	36.05	27.54	33.33	24.34	30.46	23.72	25.63	32.32	39.00	35.2
Bahia	34.00	34.48	37.34	37.46	33.38	41.03	38.90	42.73	39.02	37.37	9.9
Southeastern	30.67	32.16	33.68	35.54	35.59	32.40	34.18	37.69	40.91	47.55	55.0
Minas Gerais	16.19	15.83	15.85	15.38	15.96	17.28	19.02	23.70	19.79	33.55	107.3
Espírito Santo	31.00	29.43	34.14	33.92	36.43	37.55	44.37	50.70	55.46	47.34	52.7
Rio de Janeiro	57.48	60.49	60.51	63.56	61.46	53.45	57.02	58.59	62.16	64.05	11.4
São Paulo	19.09	19.80	23.22	25.42	27.09	26.07	26.67	30.54	35.51	43.98	130.4
Southern	22.54	21.36	22.65	22.11	24.27	24.53	25.60	27.97	29.30	31.58	40.1
Paraná	20.44	19.08	20.86	20.74	24.85	25.56	25.31	27.92	29.82	31.77	55.4
Santa Catarina	12.02	10.59	11.90	11.15	13.43	11.78	11.24	15.10	11.27	13.27	10.4
Rio Grande do Sul	29.49	28.82	30.06	29.15	29.72	30.43	33.98	34.52	37.99	41.02	39.1
Central-western	26.00	23.43	23.41	24.36	30.39	33.01	30.98	33.18	33.63	39.42	51.6
Mato Grosso do Sul	28.40	29.30	29.00	28.91	42.20	36.54	38.89	37.74	30.61	46.03	62.1
Mato Grosso	7.94	10.80	4.66	4.77	18.24	37.03	29.00	36.01	30.66	39.87	401.9
Goiás	27.55	24.17	24.20	24.14	23.92	25.74	22.79	24.97	31.48	32.26	17.1
Federal District	38.48	29.05	35.93	36.86	42.63	38.17	42.66	42.64	43.95	47.95	24.6

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 40: Proportion of male firearm-related deaths in relation to all external causes and increase (%),
Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	23.32	23.83	24.52	25.25	25.93	24.85	25.82	28.70	29.76	33.02	41.6
Northern	25.57	25.27	24.11	22.80	22.17	22.88	22.07	24.10	23.65	23.44	-8.3
Rondônia	27.51	27.81	28.36	26.75	23.18	28.33	27.65	31.14	34.19	27.35	-0.6
Acre	29.96	22.96	26.47	23.17	23.17	27.24	24.10	27.37	21.67	17.74	-40.8
Amazonas	26.89	22.43	22.32	21.10	20.22	22.91	20.48	21.11	21.09	21.53	-19.9
Roraima	14.14	25.53	23.93	25.26	27.64	22.33	16.32	19.38	18.63	16.61	17.5
Pará	27.81	26.80	24.07	24.78	23.59	19.86	22.09	24.10	22.68	26.61	-4.3
Amapá	8.00	22.47	22.95	15.63	21.18	28.62	21.91	23.49	18.64	12.30	53.7
Tocantins	12.18	18.93	13.68	10.03	14.33	17.50	15.92	17.23	20.04	21.50	76.4
Northeastern	26.50	26.50	27.58	27.16	27.37	28.91	30.86	33.94	33.51	33.23	25.4
Maranhão	17.83	18.06	17.69	16.20	16.52	19.77	15.16	17.12	15.93	14.66	-17.8
Piauí	8.15	8.27	8.01	8.46	13.32	10.25	11.03	10.52	12.40	14.39	76.4
Ceará	15.56	12.63	15.19	14.80	16.31	13.97	16.13	19.47	17.62	19.46	25.1
Rio Grande do Norte	15.51	15.64	19.38	18.17	19.11	21.41	22.19	18.50	19.53	20.18	30.1
Paraíba	15.70	22.38	20.46	17.39	17.68	19.36	26.69	24.86	24.76	29.63	88.7
Pernambuco	41.88	39.83	41.69	42.60	44.30	43.83	49.76	55.23	55.77	54.64	30.5
Alagoas	19.90	23.47	27.85	29.72	33.07	35.32	31.87	28.55	29.68	33.17	66.6
Sergipe	23.65	29.73	22.07	22.91	18.51	21.89	18.82	19.66	26.10	28.97	22.5
Bahia	25.05	25.73	26.98	25.44	24.61	29.39	27.89	30.80	28.73	28.03	11.9
Southeastern	24.07	25.45	26.39	28.07	28.00	25.06	26.08	29.31	31.62	37.08	54.0
Minas Gerais	12.12	11.82	11.83	11.18	12.06	12.29	13.30	15.96	13.64	22.86	88.7
Espírito Santo	24.42	22.69	27.46	27.11	27.96	28.31	37.95	41.49	44.05	38.27	56.7
Rio de Janeiro	46.26	49.11	47.89	49.66	48.12	41.24	43.86	46.24	47.93	50.77	9.8
São Paulo	14.21	14.70	17.11	19.14	20.84	20.07	19.84	23.59	27.64	34.28	141.2
Southern	17.38	16.59	16.93	16.77	18.10	17.99	19.13	20.38	20.77	22.38	28.7
Paraná	14.72	14.81	15.89	15.96	17.72	17.00	17.96	19.97	20.99	21.90	48.7
Santa Catarina	10.12	7.85	8.86	8.57	10.37	8.81	10.66	10.88	9.45	10.87	7.3
Rio Grande do Sul	23.19	22.32	22.04	21.77	22.69	24.14	24.87	25.42	26.31	28.73	23.9
Central-western	19.84	19.01	19.07	19.48	25.44	27.16	25.63	28.22	27.14	31.14	57.0
Mato Grosso do Sul	22.87	23.07	24.25	25.05	32.16	30.24	31.76	29.88	26.85	33.85	48.0
Mato Grosso	7.97	8.90	5.23	4.19	20.66	29.11	26.33	31.53	27.11	34.10	327.8
Goiás	20.70	19.45	19.06	19.94	20.94	21.42	18.64	21.57	23.77	25.14	21.5
Federal District	27.98	25.75	28.82	28.88	32.42	32.59	33.38	36.48	35.29	37.20	33.0

Table 41: Proportion of female firearm-related deaths in relation to all external causes and increase (%), Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	9.27	9.08	9.32	10.40	10.71	11.10	11.30	11.65	12.31	13.32	43.6
Northern	12.45	11.95	11.10	11.72	9.29	11.90	11.21	10.93	11.58	8.73	-29.9
Rondônia	11.80	12.87	14.13	15.43	9.78	18.13	15.53	14.59	13.69	11.11	-5.8
Acre	20.00	21.74	15.00	8.20	20.75	11.32	16.39	10.71	20.00	11.32	-43.4
Amazonas	7.75	7.14	10.32	9.83	7.04	13.19	10.06	10.75	12.15	6.50	-16.1
Roraima	10.00	26.92	20.00	6.06	2.78	9.43	11.76	15.56	9.33	6.90	-31.0
Pará	15.36	11.29	10.53	13.71	10.79	8.71	10.57	8.35	10.68	9.26	-39.7
Amapá	2.56	11.11	4.00	5.26	7.14	15.63	13.04	13.21	10.20	10.34	303.4
Tocantins	11.63	10.34	7.58	10.39	4.65	9.71	5.41	12.28	9.00	7.19	-38.1
Northeastern	9.38	8.68	10.13	10.62	10.66	12.48	12.38	11.95	13.13	13.63	45.3
Maranhão	9.77	8.99	5.80	4.47	5.56	6.50	7.46	6.94	5.12	7.38	-24.5
Piauí	4.76	3.31	3.55	2.75	7.14	5.59	3.70	5.43	3.28	1.70	-64.2
Ceará	5.79	6.27	6.47	7.28	5.21	7.44	7.21	7.11	6.59	10.21	76.4
Rio Grande do Norte	3.43	7.65	10.71	7.62	13.08	9.36	12.96	9.05	11.21	8.26	140.9
Paraíba	9.76	12.08	7.07	9.17	9.03	13.40	14.22	12.38	10.77	18.18	86.4
Pernambuco	15.85	14.61	16.65	16.45	16.93	18.75	19.79	22.01	26.08	23.49	48.2
Alagoas	6.45	8.53	14.73	11.02	16.00	15.99	16.73	10.98	13.50	12.99	101.4
Sergipe	5.84	4.46	6.51	11.54	6.49	10.40	10.06	9.14	14.13	11.36	94.4
Bahia	7.54	6.09	8.09	10.20	8.73	11.98	10.07	8.74	10.04	11.15	48.0
Southeastern	9.06	9.08	9.44	10.96	11.39	10.47	11.15	11.93	12.62	14.85	64.0
Minas Gerais	4.89	5.56	5.91	5.10	5.15	6.80	5.69	6.48	6.28	9.44	92.8
Espírito Santo	9.22	10.12	8.35	13.58	15.12	16.97	17.63	20.61	20.19	16.43	78.1
Rio de Janeiro	17.39	18.39	17.97	20.54	19.16	16.15	17.27	18.63	19.80	18.90	8.7
São Paulo	6.25	5.39	6.52	7.65	9.44	8.15	9.73	9.79	10.83	14.51	132.3
Southern	8.53	8.06	7.04	8.35	8.59	9.78	9.74	10.30	9.93	9.44	10.6
Paraná	8.03	7.16	6.21	7.54	7.93	8.35	7.79	8.89	8.86	9.01	12.2
Santa Catarina	6.26	2.88	3.18	3.08	4.24	4.65	4.28	6.15	6.18	5.09	-18.8
Rio Grande do Sul	9.93	11.28	9.73	11.67	11.43	14.26	14.83	13.88	12.94	12.11	21.9
Central-western	10.24	10.62	10.73	10.08	11.84	14.05	12.99	12.50	13.51	14.41	40.7
Mato Grosso do Sul	15.50	14.02	11.83	11.71	15.41	18.73	14.58	18.60	15.97	18.08	16.6
Mato Grosso	3.48	4.33	2.77	2.95	9.12	14.15	14.24	15.93	13.29	14.29	310.7
Goiás	10.84	12.93	13.63	10.50	12.18	13.06	11.18	8.24	12.86	13.56	25.1
Federal District	9.83	7.19	10.82	12.77	10.47	11.34	14.03	13.28	13.00	12.70	29.2

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 42: Proportion of male firearm-related deaths in relation to all external causes and increase (%),
age 15-19, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	31.46	31.32	35.10	34.26	35.97	34.03	36.12	40.92	42.46	47.77	51.9
Northern	31.46	31.32	35.10	34.26	35.97	34.03	36.12	40.92	42.46	47.77	51.9
Rondônia	34.07	30.00	31.33	32.86	30.93	30.38	30.23	38.00	43.75	31.46	-7.7
Acre	34.21	18.92	40.63	30.00	52.50	37.04	37.14	41.03	26.09	23.53	-31.2
Amazonas	35.17	19.35	27.36	26.09	24.31	29.22	25.61	28.85	24.86	31.08	-11.6
Roraima	20.00	26.67	11.11	22.22	28.57	14.29	24.00	26.47	21.57	23.26	16.3
Pará	28.49	31.65	28.40	32.20	26.99	20.56	25.76	38.50	24.64	29.41	3.2
Amapá	6.25	33.33	47.83	31.43	41.51	34.15	27.08	32.69	25.00	19.67	214.8
Tocantins	10.00	22.22	4.00	10.71	10.34	21.82	23.08	26.09	34.69	24.49	144.9
Northeastern	33.29	33.05	39.39	37.15	35.90	40.05	42.62	48.41	47.41	45.90	37.9
Maranhão	21.84	10.71	13.68	32.05	26.36	26.53	17.43	18.92	19.80	20.67	-5.4
Piauí	13.51	10.26	10.71	8.33	12.68	18.64	16.67	13.24	13.43	17.20	27.3
Ceará	22.22	16.15	23.20	16.88	23.70	17.67	23.05	28.73	24.32	28.02	26.1
Rio Grande do Norte	21.88	18.84	30.51	29.27	27.37	24.11	37.50	33.33	24.51	27.74	26.8
Paraíba	20.00	16.88	30.34	24.17	25.87	28.57	32.50	31.36	27.56	44.79	123.9
Pernambuco	48.00	44.88	56.72	56.30	54.58	60.27	62.36	70.90	71.57	68.35	42.4
Alagoas	19.05	24.18	29.51	24.39	36.61	33.09	32.24	30.82	41.18	43.40	127.8
Sergipe	25.00	43.00	36.14	34.91	24.21	24.19	26.60	26.51	35.96	38.10	52.4
Bahia	34.08	38.95	42.62	36.12	34.71	45.52	42.41	46.71	44.49	42.44	24.5
Southeastern	33.47	33.69	38.23	37.02	39.33	34.88	36.63	40.72	44.86	54.06	61.5
Minas Gerais	14.47	13.48	17.31	15.51	16.33	18.32	18.74	22.40	19.24	40.28	178.4
Espírito Santo	28.57	30.37	40.00	36.92	37.25	37.35	57.30	58.55	62.15	55.19	93.2
Rio de Janeiro	63.38	64.66	64.63	64.52	66.61	56.99	58.66	65.71	66.67	70.61	11.4
São Paulo	21.51	20.95	27.53	26.52	29.02	27.24	26.85	30.95	38.97	49.69	131.0
Southern	24.83	23.10	22.54	22.94	24.96	23.22	25.99	29.02	30.51	32.63	31.4
Paraná	18.43	20.52	20.77	21.55	24.73	22.55	24.62	28.71	32.59	34.72	88.4
Santa Catarina	14.49	6.82	10.55	8.73	9.36	10.73	12.82	13.94	10.74	11.69	-19.3
Rio Grande do Sul	34.77	32.98	31.01	32.32	33.70	30.65	34.01	35.91	38.13	39.96	14.9
Central-western	24.27	26.49	29.55	30.97	36.07	37.19	37.39	42.40	40.75	45.57	87.8
Mato Grosso do Sul	28.33	27.03	32.84	40.00	39.20	37.42	36.78	42.25	40.00	45.52	60.7
Mato Grosso	6.50	12.62	5.43	3.36	21.37	31.82	29.32	37.50	39.61	42.31	550.9
Goiás	22.08	19.40	25.43	24.82	28.41	26.95	26.21	29.27	32.10	38.91	76.2
Federal District	40.74	50.81	50.29	55.28	54.29	56.89	60.42	61.19	56.70	59.79	46.8

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 43: Proportion of male firearm-related deaths in relation to all external causes and increase (%), age 20-29, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
Brazil	31.59	31.93	33.51	34.43	35.32	33.74	35.12	38.61	40.54	45.09	42.7
Northern	31.16	31.93	30.70	27.67	28.70	29.38	27.24	28.44	28.78	30.39	-2.5
Rondônia	30.26	37.25	34.01	31.58	30.86	27.75	31.73	36.93	35.97	33.88	12.0
Acre	47.62	35.06	32.58	24.00	21.18	29.11	31.96	34.94	33.33	21.25	-55.4
Amazonas	30.93	27.10	31.22	26.95	30.99	30.87	27.04	24.66	27.27	28.29	-8.5
Roraima	18.46	22.86	29.27	27.66	38.57	29.31	24.29	27.17	26.09	19.48	5.5
Pará	35.33	34.74	29.64	31.85	30.45	28.74	27.86	29.51	29.00	34.93	-1.1
Amapá	6.12	24.64	37.25	15.79	16.42	37.08	18.39	26.37	21.00	13.86	126.5
Tocantins	14.89	27.27	16.22	10.99	14.44	24.42	18.45	13.64	23.53	33.56	125.4
Northeastern	36.39	35.32	38.24	38.59	37.58	39.27	42.23	45.70	45.75	45.24	24.3
Maranhão	26.81	20.00	19.58	22.79	19.79	24.75	23.00	22.96	19.24	14.13	-47.3
Piauí	11.54	15.00	11.63	13.10	25.00	13.53	12.32	16.00	19.88	19.65	70.3
Ceará	21.14	16.73	23.10	19.51	22.38	19.48	22.36	24.73	22.29	25.68	21.5
Rio Grande do Norte	21.28	22.22	26.40	27.52	22.80	27.81	30.10	24.47	28.92	31.40	47.5
Paraíba	16.67	29.89	23.99	21.71	23.61	25.77	33.72	32.92	34.98	38.65	131.8
Pernambuco	54.39	51.31	54.99	55.84	58.72	56.84	62.31	66.98	69.72	68.43	25.8
Alagoas	24.10	31.49	37.25	40.18	38.27	43.75	33.33	35.98	40.65	44.99	86.7
Sergipe	32.02	38.82	28.37	33.93	26.44	32.10	25.68	26.21	34.26	42.43	32.5
Bahia	36.80	36.98	40.24	39.83	36.40	43.13	42.20	46.32	41.46	39.66	7.8
Southeastern	32.50	34.06	35.64	37.43	37.30	33.96	35.45	39.33	42.48	49.49	52.3
Minas Gerais	17.18	16.98	16.53	16.48	16.75	17.37	20.15	25.56	21.13	35.85	108.7
Espírito Santo	33.39	30.72	36.52	34.94	38.36	39.06	46.41	52.46	57.05	50.13	50.1
Rio de Janeiro	60.24	63.02	62.79	65.91	63.63	55.99	59.11	60.54	63.92	66.13	9.8
São Paulo	20.01	20.95	24.47	26.64	28.19	27.34	27.31	31.77	36.77	45.53	127.5
Southern	23.22	22.72	24.16	23.61	25.47	25.61	26.95	29.19	30.66	33.49	44.2
Paraná	20.87	20.58	22.39	22.30	26.46	26.82	26.81	29.12	31.73	33.57	60.8
Santa Catarina	12.26	11.59	12.34	12.50	14.10	12.67	12.01	16.05	11.31	14.75	20.3
Rio Grande do Sul	30.71	30.27	32.24	30.63	30.61	31.50	35.54	35.80	39.38	43.03	40.1
Central-western	27.82	24.33	24.60	25.97	31.91	34.27	32.11	34.72	35.47	41.54	49.3
Mato Grosso do Sul	30.74	29.37	31.31	32.03	44.79	37.80	40.85	37.90	32.47	48.33	57.2
Mato Grosso	8.49	11.17	5.09	4.47	19.34	36.71	29.70	37.06	32.03	42.61	401.8
Goiás	28.98	24.85	24.54	25.58	23.79	26.99	23.42	26.78	32.93	33.49	15.6
Federal District	42.21	32.14	38.56	39.85	45.52	40.51	43.94	45.25	47.00	50.35	19.3

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 3 - Results

Table 44: Proportion of male firearm-related deaths in relation to all external causes and increase (%),
age 30-39, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	24.59	24.69	25.24	26.05	26.39	26.11	26.55	29.15	30.38	33.24	35.2
Northern	29.11	28.54	28.21	28.02	23.36	26.08	24.88	24.47	26.06	24.66	-15.3
Rondônia	34.52	27.35	32.77	29.72	24.58	33.48	33.33	29.41	39.63	31.28	-9.4
Acre	20.41	18.64	28.89	29.17	16.28	28.26	17.86	18.87	19.05	27.08	32.7
Amazonas	32.53	31.76	22.67	29.51	20.19	26.07	22.33	23.63	22.41	19.07	-41.4
Roraima	14.63	31.25	35.00	33.93	25.58	29.63	10.64	17.74	19.12	13.04	-10.8
Pará	30.99	29.78	29.78	27.67	25.78	21.13	24.15	25.12	25.17	29.30	-5.4
Amapá	15.38	30.56	17.95	25.00	12.82	36.17	28.26	21.28	20.97	11.32	-26.4
Tocantins	10.61	25.00	18.31	15.25	25.81	15.71	22.06	18.95	17.02	15.84	49.3
Northeastern	27.86	28.34	28.83	28.16	27.82	30.24	31.16	33.15	33.81	34.27	23.0
Maranhão	16.74	22.22	28.21	13.40	19.31	25.70	16.34	16.78	20.67	17.15	2.5
Piauí	9.09	10.28	10.99	8.42	10.34	6.12	14.00	11.76	13.04	18.89	107.8
Ceará	18.13	16.62	13.87	16.03	15.15	15.46	15.82	19.86	18.69	19.09	5.3
Rio Grande do Norte	15.28	18.79	17.06	15.38	21.11	20.75	20.63	16.87	20.42	18.15	18.8
Paraíba	19.40	31.02	22.53	20.53	16.18	17.27	27.94	25.33	28.86	26.46	36.4
Pernambuco	44.85	42.76	42.92	44.20	46.34	45.94	50.00	54.15	55.26	55.91	24.7
Alagoas	21.57	25.10	32.26	36.01	34.21	40.48	40.85	32.10	27.68	33.23	54.1
Sergipe	24.32	33.17	18.92	20.23	18.32	19.37	19.21	20.69	25.12	26.64	9.5
Bahia	25.18	22.92	26.49	25.53	22.14	27.92	24.88	27.65	26.96	31.36	24.5
Southeastern	24.34	24.78	26.56	28.58	27.81	25.71	26.10	29.77	32.14	36.52	50.0
Minas Gerais	14.33	14.00	12.59	12.10	13.29	14.56	14.29	17.69	15.12	22.17	54.7
Espírito Santo	26.58	22.25	28.73	26.36	26.53	28.43	39.69	40.26	45.45	37.20	39.9
Rio de Janeiro	47.81	49.09	49.23	51.31	47.72	42.92	44.10	47.78	50.81	52.73	10.3
São Paulo	13.25	13.84	17.16	19.68	21.68	20.55	20.34	24.28	27.74	33.58	153.5
Southern	20.40	19.95	17.96	17.11	19.58	19.62	21.67	23.15	20.46	24.22	18.7
Paraná	18.51	19.50	17.40	17.11	18.79	19.02	21.14	24.02	19.25	22.97	24.1
Santa Catarina	12.65	9.57	8.76	8.05	12.93	9.08	14.45	9.85	12.08	14.59	15.3
Rio Grande do Sul	25.56	24.98	23.44	21.93	24.23	26.25	26.16	28.66	26.22	30.67	20.0
Central-western	21.23	21.11	19.33	19.75	27.65	30.70	27.60	27.81	28.84	31.48	48.3
Mato Grosso do Sul	27.82	30.80	20.88	29.56	34.95	34.56	32.70	32.54	29.89	35.79	28.7
Mato Grosso	7.86	6.84	5.96	5.37	28.53	31.15	31.98	29.78	33.25	36.70	366.9
Goiás	24.03	24.25	23.64	21.84	23.87	26.33	21.08	22.01	26.02	26.26	9.3
Federal District	24.02	22.87	24.79	21.56	26.27	33.81	29.00	32.35	28.14	30.14	25.5

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 45: Proportion of female firearm-related deaths in relation to all external causes and increase (%), age 15-19, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	16.49	15.59	16.64	17.99	17.88	17.22	19.40	20.49	22.58	24.65	49.5
Northern	18.81	14.63	16.19	17.46	5.83	15.79	16.94	11.69	22.69	16.28	-13.5
Rondônia	5.56	14.29	15.38	35.00	0.00	29.63	17.65	4.17	22.22	25.00	350.0
Acre	60.00	0.00	0.00	8.33	33.33	0.00	25.00	14.29	16.67	22.22	-63.0
Amazonas	13.33	12.50	16.67	19.35	4.00	15.63	23.81	23.53	30.00	14.29	7.1
Roraima	28.57	33.33	100.00	0.00	0.00	16.67	37.50	0.00	0.00	20.00	-30.0
Pará	28.26	10.71	18.42	17.07	7.50	6.98	15.22	7.69	21.62	9.09	-67.8
Amapá	0.00	25.00	0.00	0.00	0.00	25.00	0.00	16.67	25.00	25.00	0.0
Tocantins	0.00	33.33	11.11	9.09	7.69	8.33	0.00	14.29	33.33	20.00	-40.0
Northeastern	16.50	14.19	17.70	17.86	14.60	21.62	18.72	20.61	23.95	22.63	37.2
Maranhão	16.67	8.00	21.05	10.00	0.00	3.70	5.88	6.90	6.45	10.00	-40.0
Piauí	0.00	0.00	7.69	0.00	16.67	0.00	0.00	5.56	6.25	8.33	-98.9
Ceará	14.81	8.33	12.77	9.76	8.70	13.46	13.33	10.20	18.64	13.33	-10.0
Rio Grande do Norte	13.64	20.00	8.33	7.14	0.00	20.00	27.27	17.86	14.29	9.09	-33.3
Paraíba	21.43	25.00	5.56	18.52	16.22	32.43	10.71	30.00	17.39	19.05	-11.1
Pernambuco	27.50	20.78	27.16	28.38	25.84	27.06	31.40	37.89	47.87	33.88	23.2
Alagoas	6.67	6.67	23.53	13.04	14.81	30.77	33.33	18.52	13.04	25.00	275.0
Sergipe	18.75	5.56	6.25	0.00	3.23	23.81	0.00	9.09	24.14	20.00	6.7
Bahia	15.12	15.19	17.07	23.23	14.13	23.33	15.84	17.24	18.97	23.23	53.7
Southeastern	16.30	16.02	16.86	17.25	20.52	16.34	20.23	22.27	21.90	30.05	84.3
Minas Gerais	6.29	12.12	8.44	7.93	6.32	7.78	11.35	12.23	9.72	16.67	164.8
Espírito Santo	19.23	19.05	22.58	25.00	33.33	20.45	29.03	23.26	35.42	34.09	77.3
Rio de Janeiro	37.57	36.54	33.13	34.63	36.18	29.95	32.46	36.42	38.51	47.13	25.5
São Paulo	9.40	8.36	13.14	11.25	18.63	13.44	18.18	20.91	18.55	27.77	195.5
Southern	12.04	14.04	12.85	20.59	16.57	15.65	16.77	20.00	20.00	17.63	46.4
Paraná	12.62	20.31	8.93	20.98	16.22	13.21	16.00	17.73	18.56	16.36	29.7
Santa Catarina	11.59	6.15	4.92	7.27	7.41	10.53	2.53	10.00	10.77	13.64	17.6
Rio Grande do Sul	18.11	11.11	20.87	26.85	23.14	22.76	28.30	29.81	27.18	21.57	19.1
Central-western	11.89	20.29	20.48	17.91	21.46	17.28	23.68	20.24	26.40	21.79	83.3
Mato Grosso do Sul	41.94	23.53	23.53	19.15	31.58	23.81	29.03	21.74	20.00	24.44	-41.7
Mato Grosso	0.00	10.53	0.00	3.03	11.90	8.89	35.48	33.33	20.00	13.79	31.0
Goiás	11.67	22.41	28.17	17.07	17.24	15.79	12.50	9.33	27.78	19.74	69.2
Federal District	11.11	18.52	21.43	30.77	31.58	25.00	30.77	28.57	38.71	31.03	179.3

Chapter 3 - Results

Table 46: Proportion of female firearm-related deaths in relation to all external causes and increase (%), age 20-29, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	16.59	16.71	16.79	17.50	19.84	19.85	21.06	21.00	22.08	23.23	40.0
Northern	22.37	23.56	16.20	17.18	16.15	18.14	19.50	18.14	15.64	14.75	-34.0
Rondônia	25.00	23.26	14.89	19.35	12.90	16.67	18.92	26.32	15.15	9.38	-62.5
Acre	40.00	60.00	0.00	20.00	20.00	15.79	50.00	37.50	50.00	10.00	-75.0
Amazonas	22.22	14.81	18.18	7.69	17.50	33.33	15.91	14.89	9.09	8.57	-61.4
Roraima	11.11	28.57	50.00	12.50	9.09	18.18	0.00	37.50	11.76	16.67	50.0
Pará	29.23	20.29	16.67	23.21	18.37	14.29	21.05	8.97	16.95	21.67	-25.9
Amapá	11.11	25.00	11.11	15.38	16.67	38.46	22.22	37.50	30.00	50.00	350.0
Tocantins	33.33	11.11	13.33	10.53	14.29	5.00	17.39	21.43	13.04	8.33	-75.0
Northeastern	15.56	20.71	19.69	17.97	20.72	21.39	21.10	20.14	21.86	24.09	54.9
Maranhão	21.57	26.47	11.11	0.00	21.62	14.58	9.62	14.06	2.33	11.32	-47.5
Piauí	20.00	12.50	13.64	5.00	7.14	14.29	7.69	3.23	5.00	5.41	-73.0
Ceará	14.29	17.74	14.63	12.90	11.27	12.39	13.73	11.11	10.39	20.62	44.3
Rio Grande do Norte	8.11	15.38	24.24	8.33	26.19	15.63	27.50	16.22	21.62	18.75	131.3
Paraíba	17.95	23.26	8.11	8.70	16.67	18.75	30.56	20.00	16.22	32.26	79.7
Pernambuco	20.59	30.30	34.64	24.64	34.13	28.75	34.00	32.98	39.33	42.46	106.2
Alagoas	16.67	26.09	14.29	29.73	35.90	21.67	28.85	28.26	25.58	21.43	28.6
Sergipe	6.25	10.81	21.43	29.03	11.63	16.13	9.68	20.00	15.79	10.81	73.0
Bahia	12.50	14.86	13.14	19.16	12.72	25.70	15.74	14.59	17.18	18.95	51.6
Southeastern	14.70	15.40	17.11	19.42	20.86	18.95	22.39	21.59	24.16	26.05	77.2
Minas Gerais	10.42	9.70	12.06	10.12	11.33	16.67	11.49	11.90	11.07	17.60	68.9
Espírito Santo	14.81	21.33	16.67	23.81	23.96	28.04	28.26	36.63	40.74	21.69	46.4
Rio de Janeiro	29.41	31.74	32.61	37.70	37.73	29.36	34.53	35.99	40.39	36.27	23.3
São Paulo	11.54	9.21	13.10	14.67	17.04	14.01	20.51	17.54	20.88	25.71	122.8
Southern	16.41	13.15	13.21	13.33	16.42	18.28	15.94	19.88	19.16	16.02	-2.4
Paraná	18.14	11.42	12.00	11.76	13.74	18.18	14.29	19.50	15.34	16.86	-7.1
Santa Catarina	10.00	3.26	8.60	3.33	9.70	6.45	5.71	9.52	10.99	3.16	-68.4
Rio Grande do Sul	21.36	19.42	16.51	20.26	23.65	24.48	23.20	26.06	27.59	23.45	9.8
Central-western	13.21	17.88	16.27	14.38	20.12	25.36	23.26	23.66	20.49	22.65	71.4
Mato Grosso do Sul	18.33	28.85	15.09	13.70	21.43	27.69	25.00	37.25	15.91	28.85	57.3
Mato Grosso	3.92	7.50	1.75	7.69	12.33	38.10	24.59	30.77	19.67	17.39	343.5
Goiás	18.69	20.63	22.40	15.20	23.78	19.44	18.80	12.70	22.48	23.44	25.4
Federal District	14.52	8.93	18.33	17.74	19.64	23.94	31.91	25.81	20.37	21.05	45.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 47: Proportion of female firearm-related deaths in relation to all external causes and increase (%), age 30-39, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	12.48	13.89	14.33	15.10	15.10	16.04	16.25	17.15	18.29	20.88	67.3
Northern	14.91	17.60	17.50	14.05	21.26	17.24	13.57	18.79	13.82	8.33	-44.1
Rondônia	36.84	16.67	25.00	23.53	13.33	30.77	34.78	25.00	15.00	20.69	-43.8
Acre	0.00	20.00	30.00	0.00	28.57	9.09	11.11	7.14	0.00	20.00	0.0
Amazonas	5.88	8.00	17.65	15.79	16.67	17.39	8.00	8.70	16.00	0.00	-100.0
Roraima	0.00	42.86	20.00	0.00	0.00	28.57	50.00	50.00	25.00	0.00	-100.0
Pará	16.95	20.45	11.90	14.29	32.61	9.46	6.56	19.05	12.00	2.78	-83.6
Amapá	0.00	0.00	0.00	8.33	28.57	14.29	25.00	12.50	20.00	0.00	-100.0
Tocantins	0.00	20.00	14.29	21.43	0.00	23.08	8.33	27.27	5.56	7.41	-63.0
Northeastern	12.35	10.49	14.45	18.53	15.18	17.73	18.29	16.80	21.11	19.60	58.7
Maranhão	11.11	16.00	2.94	17.86	8.00	13.95	19.57	8.57	10.53	14.00	26.0
Piauí	10.00	0.00	0.00	7.14	16.67	8.00	14.29	10.00	5.88	0.00	-100.0
Ceará	8.16	2.33	7.02	12.12	3.03	10.67	4.71	8.33	13.58	16.09	97.1
Rio Grande do Norte	4.35	4.17	14.29	18.52	23.33	7.14	9.09	12.50	22.50	10.00	130.0
Paraíba	14.29	12.00	13.04	20.00	12.20	13.33	21.21	20.00	11.11	42.31	196.2
Pernambuco	20.79	20.48	20.51	31.63	21.54	28.57	27.07	33.86	35.48	32.48	56.2
Alagoas	8.33	5.13	26.67	17.39	26.67	26.32	21.43	8.33	33.33	20.00	140.0
Sergipe	4.55	8.00	4.55	24.00	2.78	15.15	30.00	10.00	26.32	14.29	214.3
Bahia	12.87	10.48	15.09	12.59	14.73	15.38	16.67	11.19	15.13	16.13	25.3
Southeastern	12.57	14.14	14.58	15.20	16.31	15.87	16.34	17.99	18.52	23.79	89.3
Minas Gerais	7.26	9.84	8.71	7.39	8.14	11.78	9.43	9.84	10.00	14.03	93.3
Espírito Santo	14.00	9.30	12.05	13.04	20.00	25.76	29.85	34.41	23.94	22.22	58.7
Rio de Janeiro	25.30	27.05	32.26	27.53	28.21	26.44	25.71	28.37	32.42	35.23	39.3
São Paulo	8.59	8.72	8.63	11.49	13.52	11.55	13.14	13.91	15.54	22.42	161.0
Southern	9.11	15.42	12.03	11.71	10.58	13.37	14.76	14.29	14.29	17.07	87.3
Paraná	8.97	12.90	12.73	8.00	11.73	11.62	12.20	9.84	13.54	16.23	80.9
Santa Catarina	8.47	4.05	6.76	7.69	2.02	5.69	11.11	10.91	8.45	10.68	26.0
Rio Grande do Sul	10.65	22.54	13.75	17.24	14.05	19.52	19.12	21.60	18.00	22.09	107.4
Central-western	12.72	13.51	15.03	14.47	12.55	17.99	15.95	17.37	20.32	22.77	79.0
Mato Grosso do Sul	17.50	10.00	19.35	6.25	15.22	16.00	19.23	26.32	36.67	25.00	42.9
Mato Grosso	4.76	5.00	11.76	3.23	8.00	12.00	12.73	23.26	19.30	34.00	614.0
Goiás	15.00	19.42	12.64	21.70	15.65	23.00	14.16	15.13	17.39	18.27	21.8
Federal District	13.04	10.26	19.51	14.00	6.82	15.38	21.62	8.33	18.37	16.67	27.8

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 3 - Results

A.2. Firearm-related mortality rates

The magnitude and increase tendency in firearm-related deaths can also be seen when we consider firearm-related mortality rates. In Figure 16, we can observe that the firearm-related mortality rate exceeded road traffic crashes in the year 2000, considering the entire population of Brazil. While in the Brazilian male population firearm-related mortality rates reached traffic accident figures sooner (1992) and exceeded them in 1998 (Figure 17), in the female population firearm-related mortality rates were lower than road traffic crashes for the entire period (Figure 18).

Different patterns, however, were seen in the Brazilian regions for both the entire population and for sex groups (data not shown). Despite the fact that road traffic crashes and non-firearm-related deaths are dropping in the entire country, they presented very little change in the Northern and Northeastern regions. In the Northeastern and Southeastern regions only, firearm-related mortality rates reached and exceeded road traffic crashes. In the former, traffic accident mortality rates remained stable during the period, while firearm-related mortality increased consistently. In the Southeastern region, we observed both an increase in firearm-related mortality rates and a decrease in road traffic crashes.

In the male population firearm-related mortality rates exceeded road traffic crashes only in the Northeastern, Southeastern and Central-western regions, while in the female population, firearm-related mortality rates were lower than road traffic crashes in all five regions of Brazil (data not shown).

Figure 16: Standardized external cause mortality rate (/100.000) and increase (%), Brazil, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
External Causes	73.4	68.9	72.6	73.9	78.0	77.4	76.6	74.2	73.0	69.4
Road traffic injuries	21.3	19.7	20.3	21.2	23.5	23.9	23.8	20.5	19.7	18.2
Firearm-related	14.0	13.3	14.4	15.2	16.6	16.1	16.7	17.8	18.2	19.4
Others	38.1	36.4	36.9	37.5	37.9	37.3	35.8	35.9	35.0	31.8
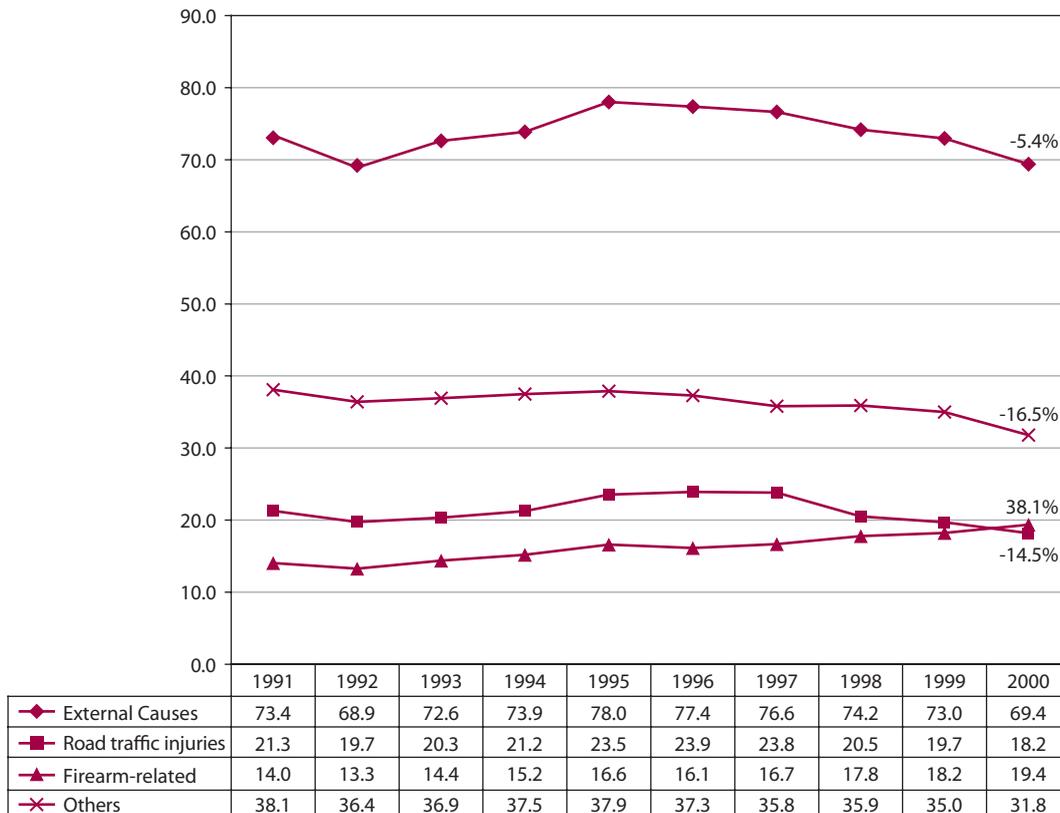
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Figure 17: Male external cause mortality rate (/100.000) and increase (%), Brazil, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
External Causes	115.4	111.0	113.1	115.4	122.3	125.7	125.7	122.1	120.4	118.1
Road traffic injuries	30.6	29.1	28.9	30.2	33.7	36.0	36.2	30.9	29.8	28.6
Firearm-related	26.9	26.5	27.7	29.1	31.7	31.2	32.5	35.1	35.8	39.0
Others	50.19	49.97	49.88	48.04	45.90	46.53	45.37	46.02	45.47	42.74
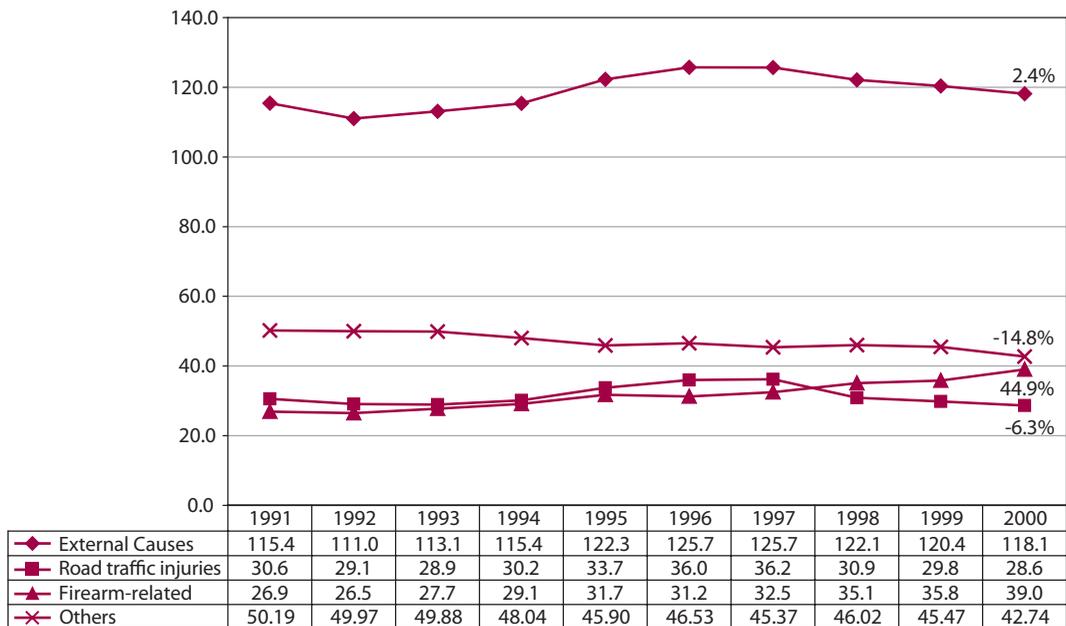
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Figure 18: Female external cause mortality rate (/100.000) and increase (%), Brazil, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
External Causes	23.5	22.3	23.4	23.8	24.9	25.9	24.0	23.0	21.8	21.0
Road traffic injuries	8.4	7.7	8.0	8.5	9.0	9.6	8.9	7.7	7.2	6.6
Firearm-related	2.2	2.0	2.2	2.5	2.7	2.9	2.7	2.7	2.7	2.8
Others	12.9	12.5	13.2	12.9	13.2	13.5	12.4	12.6	11.9	11.6

Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

It is important to highlight that while road traffic crashes and non-firearm-related deaths are dropping, the firearm-related mortality rate is growing for both the entire population and for the different sex groups (Figures 16 to 18). In Table 48, we observe that the increase in the firearm-related mortality rate was on the order of 38% for the entire country, where it went from

14/100,000 inhabitants in 1991, to 19.4/100,000 inhabitants in the year 2000. The most important increase was observed in the Southeastern and Central-western regions. In the former, the firearm-related mortality rate increased 47.6%, going from 16.9/100,000 to 24.9/100,000. In the latter, it increased almost 60% in the period, from 14.1/100,000 in 1991 to 21/100,000 in the year 2000. The highest firearm-related mortality rates were found in the Southeastern and Central-western regions, considering the entire population.

In Tables 49 and 50, we observe different increase patterns between sex groups for the entire country and its five regions. While for Brazil, the male firearm-related mortality rate increase was higher than that found for females (44.9% and 28.4%, respectively), in the Northeastern region the female increase (63.4%) was higher than the male (52.5%). In the Southeastern and Southern regions, male and female increases in the period were quite similar. This may suggest an intensification of female firearm-related deaths in the period, confirming the tendency first shown by Souza (1994), in the 1980's, regarding homicide deaths. However, as we can see in Figure 19, male firearm-related mortality rates are very much higher than female. This pattern was also found in all Brazilian regions (data not shown).

Figure 19: Firearm-related mortality rate (/100.000) by sex groups, Brazil, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Male	26.9	26.5	27.7	29.1	31.7	31.2	32.5	35.1	35.8	39.0
Female	2.2	2.0	2.2	2.5	2.7	2.9	2.7	2.7	2.7	2.8
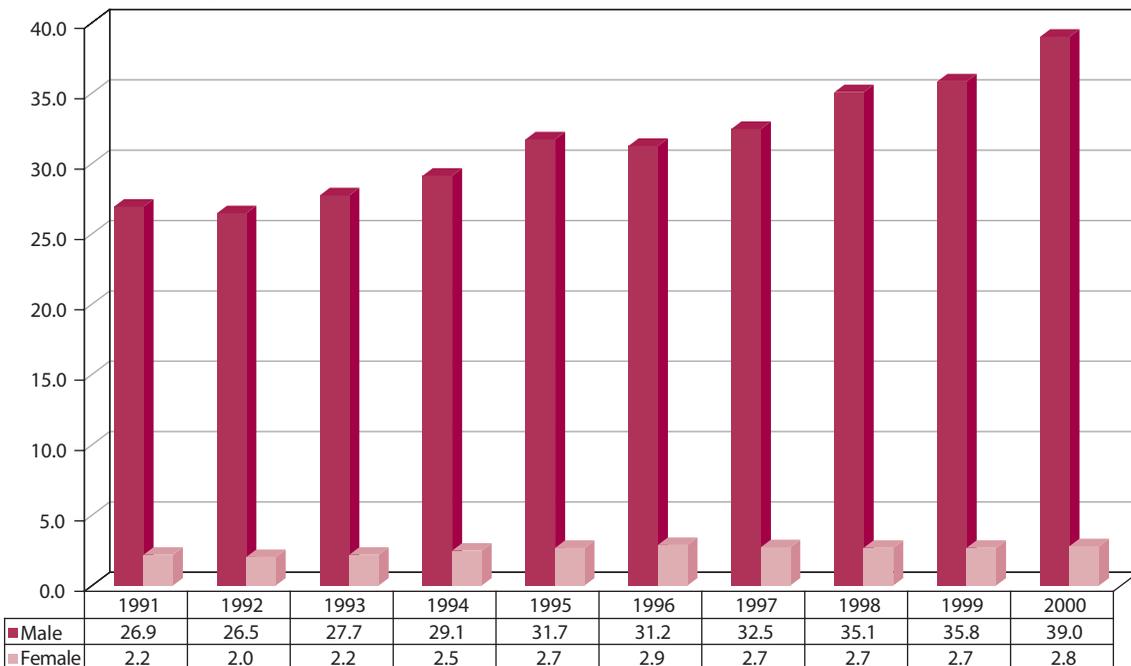
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

In Figure 20, we can observe that firearm-related mortality rates increased in all age groups in the entire country, the highest rates, however, being found in the 15-19, 20-29 and 30-39 year-old groups. In Tables 51 to 53, we can see that in the male population of Brazil firearm-related mortality rates were over 30/100,000 inhabitants during the entire period, for the three age groups. The highest rates were found for the 20-29 year-old group where rates exceeded 90/100,000 in the year 2000. Considering the same age groups, female rates reached their maximum figures in the 20-29 age group population in 1996 (5.24/100,000 inhabitants) (Tables 54 to 56).

In Table 57, we can see the age-related RR of firearm-related deaths for the entire, male and female populations of Brazil. Considering the entire and male populations, the RR of firearm-

related death was greater than 10 for the 15-19, 20-29 and 30-39 age groups during the entire period, without being higher than 5 in the female group. A higher RR was found for the 20-29 age group, for the total and sex-specific populations. In the 20-29 male population, the RR of firearm-related deaths was 25.3 in 1991, dropping to 22.8 in the year 2000, while for the 20-29 female population, the RR was 5.2 in 1991, and 3.6 in the year 2000.

Figure 20: Firearm-related mortality rate and increase (%) by age groups, Brazil, 1991, 1996, 2000

	0 to 4	5 to 9	10 to 14	15 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 and over
1991	0.33	0.32	1.60	20.16	31.89	22.51	14.99	10.53	6.09
1996	0.44	0.49	2.20	23.28	36.89	25.83	17.13	11.59	6.77
2000	0.46	0.53	2.66	33.48	47.59	29.11	18.41	11.60	6.44
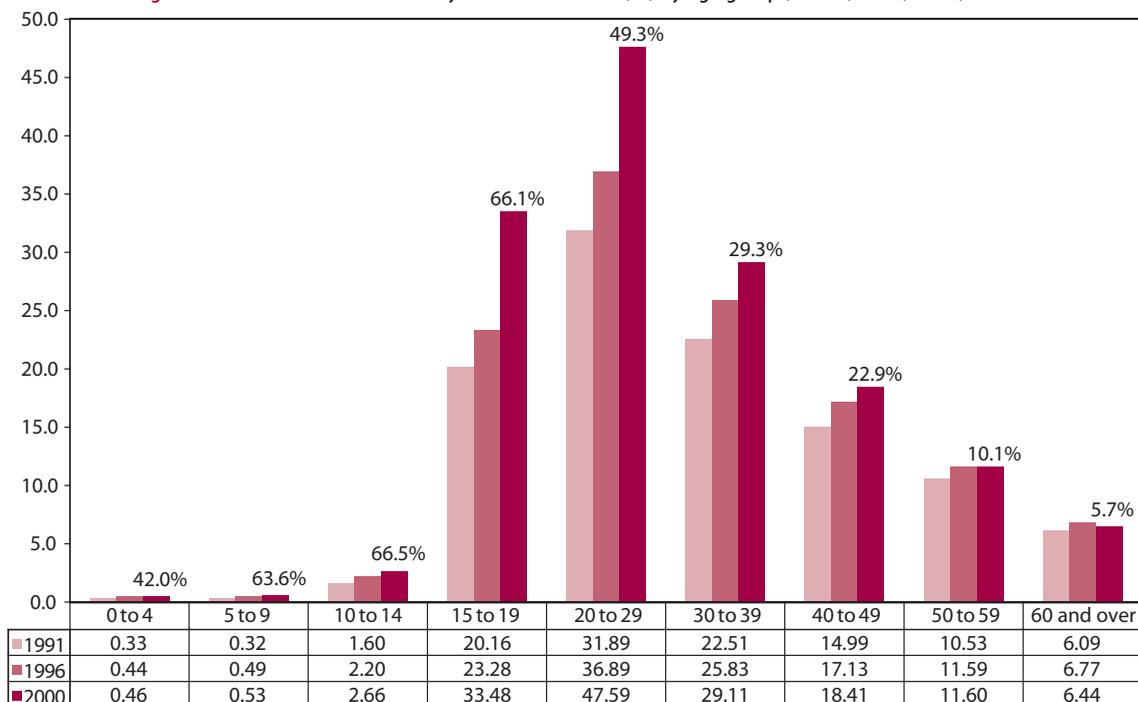
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Gender differences can be better seen in Tables 49 to 56. We can note that male, female and total population rates increased during the period, the male increase however, being higher than the female for the entire population and for the 15-19, and 20-29 age groups. While the female firearm-related mortality rate increased 28.4% in the entire population, 42% in the 15-19, 15.24% in the 20-29, and 44% in the 30-39 year-old populations, it increased 45%, 66.8%, 50.6% and 28.4% for the male, considering the same groups respectively. Despite the fact that during the entire period male rates were higher than female rates in all age groups, gender differences are much more noteworthy for the older than 15 age group. In Table 58, we present the male RR of firearm-related deaths by age groups in Brazil. We can see a very strong increase of risk from the 15-19 year-old group onwards. While for the younger population (0 to 14 age group), the RR doesn't exceed 3, it exceeds 10 in the older groups. Male RR of firearm-related deaths in the 20-29 age group population was 19.5 in the year 2000, which means that in this age group, the chance of dying from the use of firearms is almost 20 times higher for males than for females in the country. Considering the data for the entire period, we should highlight the RR increase found for the 20-29 age group. Besides the fact that in this age group we found the highest male RR during the entire period, the increase was also the most significant, being on the order of 30%, from 14.9 in 1991 to 19.5 in the year 2000. We should also stress that the male RR of firearm-related deaths is also very strong in the older age groups (over 40), and presents a growing tendency for the 40-49 and over 60 year-old populations.

Table 48: Standardized firearm-related mortality rate (/100.000) and increase (%), Brazil, regions and states, 1991 - 2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	14.0	13.3	14.4	15.2	16.6	16.1	16.7	17.8	18.2	19.4	38.1
Northern	13.5	12.0	12.4	12.5	12.3	11.6	11.4	13.3	12.4	11.1	-17.9
Rondônia	27.2	24.0	28.5	26.1	23.4	25.0	22.8	30.4	29.5	22.8	-16.3
Acre	21.7	16.9	16.2	16.9	17.0	15.8	16.5	17.3	11.0	9.4	-56.6
Amazonas	12.3	9.5	9.3	10.2	10.4	11.1	9.8	10.2	10.0	9.4	-24.0
Roraima	12.0	21.4	18.8	20.7	24.3	24.9	16.5	27.4	27.0	17.5	46.2
Pará	12.0	10.3	10.0	10.4	10.0	7.4	9.2	9.9	9.2	9.1	-23.9
Amapá	6.1	13.2	13.7	15.3	19.1	23.8	17.2	18.3	13.5	7.6	24.2
Tocantins	5.2	6.4	5.8	4.9	6.1	8.1	6.7	10.3	10.2	11.0	110.9
Northeastern	11.6	10.5	11.7	11.9	12.8	13.9	15.4	16.7	16.3	16.3	40.7
Maranhão	4.9	5.4	5.1	3.5	4.2	5.1	4.5	5.3	3.7	4.2	-14.0
Piauí	1.8	1.9	2.0	2.1	3.5	2.5	2.7	2.8	3.2	4.6	162.8
Ceará	5.1	4.2	5.4	5.6	7.3	6.9	8.0	8.3	9.1	9.9	94.5
Rio Grande do Norte	6.1	5.6	7.4	7.2	9.3	10.3	11.1	8.1	9.4	9.8	61.5
Paraíba	7.1	8.2	7.5	6.9	8.5	8.7	11.1	9.3	8.9	11.1	57.9
Pernambuco	30.9	24.0	29.7	29.4	32.4	33.9	42.2	49.8	49.3	45.6	47.5
Alagoas	12.6	14.0	16.5	18.7	21.9	21.9	21.0	17.9	16.2	18.3	45.8
Sergipe	14.1	21.6	12.0	16.6	13.6	14.6	10.8	11.4	16.9	17.4	23.6
Bahia	9.6	8.9	9.7	10.0	8.9	11.7	11.6	12.6	11.3	11.4	19.5
Southeastern	16.9	16.4	17.9	19.2	20.7	19.1	19.4	20.9	22.5	24.9	47.6
Minas Gerais	5.7	5.5	5.8	5.4	6.2	6.4	6.8	7.7	5.9	8.7	52.4
Espírito Santo	19.9	15.1	21.3	23.0	23.8	25.4	33.8	39.9	37.8	31.4	57.8
Rio de Janeiro	45.4	45.6	46.4	49.7	48.6	40.5	41.5	41.4	41.4	41.2	-9.3
São Paulo	10.5	10.0	11.9	13.4	16.3	16.2	15.7	17.8	21.8	25.8	146.1
Southern	11.0	10.2	10.6	11.0	12.1	12.1	12.7	12.3	12.3	12.8	16.8
Paraná	9.6	9.2	10.3	11.2	12.3	11.6	11.9	12.6	12.8	13.1	36.5
Santa Catarina	6.3	4.6	5.5	5.5	7.1	6.2	7.1	6.4	5.7	5.9	-6.3
Rio Grande do Sul	14.5	13.8	13.4	13.7	14.5	15.5	16.1	15.0	15.2	16.1	10.8
Central-western	14.1	13.3	13.8	15.0	20.7	20.7	19.6	20.0	19.2	21.0	57.2
Mato Grosso do Sul	17.7	18.2	19.0	20.8	28.1	29.3	28.6	22.9	20.1	23.5	33.1
Mato Grosso	6.1	6.2	4.0	3.5	17.0	22.7	21.2	26.3	22.4	28.9	371.2
Goiás	13.9	13.2	13.3	14.8	17.1	14.7	13.8	14.2	15.9	15.6	12.3
Federal District	20.4	17.0	21.4	23.8	26.4	23.8	22.3	23.7	22.2	22.4	10.0

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 49: Male firearm-related mortality rate (/100.000) and increase (%), Brazil, regions and states, 1991 - 2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	26.9	26.5	27.7	29.1	31.7	31.2	32.5	35.1	35.8	39.0	44.9
Northern	22.1	20.5	19.2	18.6	18.5	19.1	18.9	22.0	20.1	19.4	-12.0
Rondônia	45.4	40.5	44.9	37.7	34.0	39.0	37.8	48.9	47.5	40.3	-11.2
Acre	33.6	27.1	28.4	25.2	26.0	28.6	26.5	28.9	16.5	15.7	-53.3
Amazonas	21.8	16.3	15.5	17.1	17.3	19.4	17.4	18.0	17.1	17.5	-19.8
Roraima	22.5	39.5	29.3	34.5	38.0	37.7	29.7	41.7	43.6	28.9	28.7
Pará	19.6	17.9	14.9	14.9	14.4	12.4	15.0	16.9	14.9	15.9	-18.6
Amapá	8.3	26.0	27.1	25.1	33.0	42.4	27.2	31.2	24.8	15.9	91.9
Tocantins	6.2	9.5	8.5	6.3	9.1	13.0	11.6	15.2	16.4	18.4	199.0
Northeastern	20.2	19.4	20.3	20.4	21.9	25.2	28.2	31.2	29.8	30.7	52.5
Maranhão	7.6	8.0	7.3	5.5	6.7	8.5	7.0	8.8	6.1	6.8	-11.1
Piauí	2.7	3.2	3.2	3.4	5.3	4.1	4.7	4.7	5.5	8.7	223.0
Ceará	8.7	7.0	9.3	9.0	12.8	12.0	14.4	15.0	15.9	17.6	103.1
Rio Grande do Norte	10.6	9.4	12.7	12.0	15.0	18.5	19.5	14.8	16.1	18.6	75.5
Paraíba	10.7	13.2	12.4	11.3	14.1	14.7	19.4	16.5	15.9	20.9	95.6
Pernambuco	56.9	49.2	53.5	53.5	58.2	63.8	82.1	97.9	95.4	90.9	59.7
Alagoas	19.9	22.8	26.3	29.7	34.8	38.4	34.2	30.4	27.7	33.7	69.1
Sergipe	24.6	41.5	20.8	28.3	23.2	25.7	19.2	21.0	29.0	32.9	33.6
Bahia	17.7	17.1	18.0	18.2	16.2	22.7	22.4	25.2	21.9	21.8	23.0
Southeastern	35.1	35.5	37.7	40.6	43.3	39.7	40.4	44.1	47.3	52.9	50.4
Minas Gerais	9.9	9.5	9.8	9.2	10.7	11.4	12.5	14.2	11.0	16.9	70.3
Espírito Santo	35.9	28.5	42.3	42.9	43.2	47.6	65.7	76.7	73.5	62.5	74.0
Rio de Janeiro	102.5	108.7	107.5	115.8	112.7	90.8	92.5	93.4	92.5	92.0	-10.2
São Paulo	21.0	20.3	23.9	26.8	32.7	33.4	32.1	37.3	45.6	54.7	160.1
Southern	19.5	18.3	19.2	19.6	21.8	21.7	23.0	22.5	22.7	24.3	24.8
Paraná	16.4	16.4	18.2	19.7	22.4	21.3	22.4	23.8	24.3	25.5	56.0
Santa Catarina	10.9	8.2	9.9	9.6	12.6	10.9	12.9	10.9	9.8	10.9	0.5
Rio Grande do Sul	26.8	25.3	24.7	24.6	26.1	27.5	28.9	27.2	27.9	30.4	13.3
Central-western	25.1	23.5	24.7	26.4	36.3	37.7	36.3	36.9	35.8	41.3	64.3
Mato Grosso do Sul	29.9	30.5	33.6	36.5	51.3	51.4	51.9	41.1	35.0	43.8	46.2
Mato Grosso	9.6	11.0	6.4	5.1	26.5	39.0	36.6	44.6	39.3	54.0	460.6
Goiás	24.5	22.2	22.4	25.7	27.8	25.8	24.5	25.6	29.4	29.9	22.1
Federal District	42.2	35.8	45.6	47.0	55.3	51.6	49.1	51.5	48.4	50.6	20.1

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 50: Female firearm-related mortality rate (/100.000) and increase (%), Brazil, regions and states, 1991 - 2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	2.2	2.0	2.2	2.5	2.7	2.9	2.7	2.7	2.7	2.8	28.4
Northern	1.8	1.8	1.8	1.9	1.6	2.3	2.0	2.1	1.8	1.3	-26.1
Rondônia	3.5	3.9	4.3	4.0	2.8	5.9	4.1	4.4	3.7	2.8	-18.7
Acre	3.4	4.7	2.8	2.3	4.9	2.5	4.0	2.4	3.1	2.2	-36.2
Amazonas	1.1	0.9	1.5	1.5	1.2	2.0	1.5	1.8	1.7	0.9	-12.3
Roraima	3.1	6.9	3.7	1.8	0.9	4.2	3.2	5.5	5.4	2.5	-17.9
Pará	2.2	1.4	1.3	1.6	1.3	1.3	1.5	1.3	1.2	1.0	-54.8
Amapá	0.7	2.0	1.3	1.9	1.9	5.3	3.0	3.4	2.3	1.3	82.6
Tocantins	1.1	1.3	1.1	1.7	0.8	2.0	1.1	2.6	1.6	1.8	59.5
Northeastern	1.3	1.2	1.5	1.6	1.7	2.2	2.0	1.9	2.1	2.2	63.4
Maranhão	1.1	0.7	0.5	0.3	0.5	0.6	0.8	0.7	0.5	0.7	-33.3
Piauí	0.3	0.3	0.4	0.2	0.7	0.6	0.3	0.5	0.3	0.2	-30.0
Ceará	0.7	0.7	0.9	1.0	0.7	1.2	1.1	1.0	1.1	1.6	143.3
Rio Grande do Norte	0.6	1.1	1.4	1.2	2.1	1.7	2.4	1.4	1.8	1.4	147.4
Paraíba	1.5	1.5	0.8	1.3	1.6	2.4	1.7	1.4	1.2	1.9	32.4
Pernambuco	3.8	2.8	3.7	3.4	4.0	4.6	4.4	5.3	5.7	5.5	45.9
Alagoas	1.4	1.7	2.5	2.0	2.9	3.2	3.2	2.1	2.3	2.3	63.6
Sergipe	1.2	1.3	1.4	3.0	1.8	2.5	1.9	2.0	3.0	2.2	86.4
Bahia	1.1	0.9	1.1	1.5	1.4	2.0	1.6	1.4	1.6	1.7	65.7
Southeastern	2.4	2.4	2.7	3.1	3.4	3.2	3.2	3.2	3.2	3.5	48.1
Minas Gerais	1.1	1.2	1.4	1.2	1.3	1.7	1.4	1.5	1.2	1.5	43.9
Espírito Santo	2.9	2.6	2.6	4.0	4.7	5.3	5.1	6.9	5.8	4.4	49.0
Rio de Janeiro	6.2	6.2	6.4	8.0	7.4	6.6	6.2	6.3	6.1	5.5	-10.8
São Paulo	1.8	1.4	1.8	2.0	2.6	2.4	2.7	2.4	2.8	3.6	104.0
Southern	1.8	2.2	1.9	2.4	2.5	3.0	2.7	2.7	2.4	2.3	23.5
Paraná	2.3	2.1	1.9	2.3	2.4	2.7	2.2	2.4	2.2	2.2	-1.8
Santa Catarina	1.5	0.7	0.8	0.8	1.2	1.5	1.3	1.6	1.5	1.2	-20.7
Rio Grande do Sul	2.8	3.0	2.6	3.2	3.3	4.0	3.8	3.5	3.0	2.9	1.1
Central-western	2.5	3.0	3.1	3.2	4.0	4.5	3.8	3.6	3.6	3.7	46.6
Mato Grosso do Sul	4.5	4.2	3.4	4.2	5.0	6.5	5.0	4.8	4.2	4.7	4.0
Mato Grosso	0.8	0.9	0.7	0.7	2.6	4.3	3.9	4.8	3.3	3.9	370.7
Goiás	2.9	3.7	3.9	3.4	4.2	3.9	3.2	2.4	3.6	3.4	18.3
Federal District	3.5	2.3	3.8	4.6	4.0	4.1	4.0	3.6	3.5	2.9	-16.7

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 51: Male firearm-related mortality rate (/100.000) and increase (%), age 15-19, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	36.97	33.81	40.29	42.05	46.51	42.34	46.92	52.85	54.99	61.66	66.8
Northern	26.56	18.24	22.29	25.81	26.37	21.78	24.38	31.79	25.40	23.60	-11.1
Rondônia	48.69	27.03	37.23	31.67	39.82	33.64	35.64	51.23	46.40	35.17	-27.8
Acre	55.81	26.82	53.26	36.13	82.69	33.75	42.45	50.86	18.58	23.83	-57.3
Amazonas	42.35	14.42	22.85	27.71	26.36	31.26	28.34	29.65	29.61	27.53	-35.0
Roraima	17.95	34.26	16.20	31.03	29.80	28.59	41.65	60.99	72.85	53.06	195.6
Pará	18.19	17.01	17.23	24.16	15.76	11.35	17.66	25.51	14.95	17.51	-3.8
Amapá	6.08	44.84	62.72	60.99	118.77	62.71	54.99	68.66	61.83	42.56	599.6
Tocantins	3.75	7.08	1.78	5.23	5.15	18.97	13.80	17.97	24.85	17.50	366.6
Northeastern	20.68	19.13	26.55	25.58	27.10	31.33	38.48	45.29	40.65	41.66	101.4
Maranhão	7.10	3.24	4.71	8.93	10.22	8.18	5.90	8.59	6.07	8.63	21.6
Piauí	3.39	2.62	3.95	2.60	5.78	6.76	6.71	5.45	5.41	9.16	170.5
Ceará	8.87	6.11	12.08	7.39	17.96	12.78	19.00	20.87	18.78	24.84	180.0
Rio Grande do Norte	10.90	9.96	13.53	17.76	18.95	19.43	34.07	23.16	17.35	24.52	125.0
Paraíba	11.76	7.22	14.81	15.74	19.89	19.23	20.68	19.50	18.33	37.18	216.1
Pernambuco	54.28	42.62	66.30	67.32	68.82	84.91	117.62	157.80	141.08	129.16	137.9
Alagoas	11.17	15.12	24.26	19.90	26.79	29.49	31.77	28.93	35.69	41.88	275.0
Sergipe	15.55	50.32	34.54	41.87	25.60	32.16	26.28	22.76	32.57	38.98	150.6
Bahia	22.86	23.88	29.18	25.19	22.44	31.44	33.37	36.48	30.75	28.70	25.6
Southeastern	56.63	52.83	60.35	64.09	70.88	59.32	63.27	70.53	79.83	94.51	66.9
Minas Gerais	10.00	9.03	12.08	12.43	13.60	14.46	14.15	15.74	14.16	26.99	169.8
Espírito Santo	31.89	29.99	62.99	56.92	65.26	62.60	103.12	127.48	125.62	101.81	219.2
Rio de Janeiro	165.71	160.71	162.69	176.12	193.21	144.30	158.54	160.60	158.59	162.81	-1.8
São Paulo	41.49	36.70	46.60	49.47	55.36	51.13	50.29	61.00	81.22	104.26	151.3
Southern	27.22	23.63	25.43	27.07	31.48	27.54	29.80	29.44	32.19	34.68	27.4
Paraná	18.73	19.81	21.84	25.48	30.40	26.57	27.89	31.15	36.84	43.52	132.4
Santa Catarina	13.84	6.58	12.53	10.22	11.75	12.75	14.16	11.57	10.23	9.93	-28.3
Rio Grande do Sul	43.86	36.70	36.50	38.25	43.75	36.56	40.26	37.43	39.41	39.76	-9.3
Central-western	29.68	29.23	37.49	38.90	47.96	46.60	50.22	55.36	55.07	63.34	113.4
Mato Grosso do Sul	36.68	31.78	45.74	49.05	69.37	59.93	61.71	56.96	57.95	59.85	63.2
Mato Grosso	7.05	11.35	5.78	3.18	19.32	33.39	30.31	50.33	45.66	63.38	798.8
Goiás	24.19	20.11	25.97	29.87	31.96	28.21	30.25	28.04	39.64	46.43	91.9
Federal District	68.67	75.12	105.13	104.29	109.27	94.28	111.74	125.97	100.97	107.85	57.1

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 3 - Results

Table 52: Male firearm-related mortality rate (/100.000) and increase (%), age 20-29, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	60.59	57.99	61.07	65.42	70.24	69.31	73.56	80.15	83.03	91.26	50.61
Northern	46.00	42.90	42.26	40.08	41.39	38.84	39.39	45.38	41.59	43.16	-6.17
Rondônia	75.20	70.82	84.49	67.57	61.26	55.49	68.11	89.89	75.92	80.75	7.37
Acre	86.79	72.14	79.93	48.61	47.68	54.31	70.73	64.36	43.20	33.90	-60.94
Amazonas	50.21	38.22	36.45	42.85	44.44	43.04	37.71	40.36	37.69	43.73	-12.90
Roraima	42.71	58.90	38.50	39.94	79.65	74.57	72.40	103.91	97.42	50.77	18.87
Pará	42.07	37.83	32.75	34.95	35.40	29.16	32.61	36.81	33.74	34.89	-17.07
Amapá	12.42	60.47	73.73	45.27	40.41	92.66	42.41	60.75	50.86	31.37	152.60
Tocantins	9.23	18.71	14.87	12.13	15.52	22.92	20.08	18.52	32.08	47.94	419.45
Northeastern	51.28	44.78	50.41	51.98	52.12	59.29	68.13	76.73	74.14	74.68	45.63
Maranhão	23.15	15.75	14.75	12.73	14.35	18.21	17.47	22.29	13.26	11.17	-51.76
Piauí	6.16	9.05	7.47	9.35	15.55	8.73	8.17	11.45	16.10	19.00	208.33
Ceará	21.80	16.52	24.95	20.88	28.99	30.86	35.27	33.52	35.00	38.61	77.10
Rio Grande do Norte	24.18	22.10	30.76	27.52	25.75	39.30	41.50	31.44	32.42	45.69	88.95
Paraíba	21.17	31.43	25.81	25.95	33.09	35.49	43.98	40.62	39.95	50.14	136.90
Pernambuco	139.96	102.61	133.41	132.87	138.80	146.13	202.52	239.36	235.84	222.98	59.32
Alagoas	38.93	51.88	52.05	61.40	68.22	79.67	56.66	60.54	60.37	79.74	104.80
Sergipe	56.85	90.22	44.13	69.84	56.40	61.85	39.70	52.04	66.67	81.30	43.02
Bahia	47.02	43.81	47.49	51.22	41.15	53.73	54.85	62.21	55.41	52.71	12.11
Southeastern	78.01	77.58	80.53	88.85	93.81	88.62	92.74	101.92	109.49	124.35	59.41
Minas Gerais	20.99	19.58	20.67	19.95	21.78	23.14	28.12	34.40	25.29	43.35	106.48
Espírito Santo	78.79	61.28	86.88	86.67	95.93	100.86	142.21	171.98	166.37	137.83	74.94
Rio de Janeiro	224.67	232.20	222.71	240.24	236.81	198.12	209.29	209.94	210.59	208.00	-7.42
São Paulo	49.20	48.29	54.88	64.92	74.34	78.39	76.78	88.85	107.69	130.73	165.69
Southern	37.79	37.32	38.88	38.95	43.45	45.82	47.77	46.33	49.97	53.31	41.04
Paraná	32.81	32.29	36.68	38.67	48.00	49.94	49.50	49.81	54.80	57.79	76.15
Santa Catarina	19.06	18.37	19.30	19.02	22.84	22.13	20.82	22.32	16.67	20.81	9.23
Rio Grande do Sul	52.87	52.92	51.77	50.23	50.53	54.74	61.01	56.17	63.67	67.19	27.07
Central-western	52.50	44.74	45.73	51.54	66.72	70.24	67.13	68.20	69.31	85.06	62.00
Mato Grosso do Sul	50.55	54.15	57.40	70.83	107.08	101.21	100.43	80.10	63.19	102.90	103.57
Mato Grosso	15.99	20.22	9.34	7.19	33.16	71.03	63.36	75.47	68.28	101.16	532.86
Goiás	50.66	42.11	40.70	49.24	47.00	46.14	44.62	48.49	58.93	61.85	22.09
Federal District	104.19	71.04	91.99	94.88	115.99	97.17	93.78	95.20	100.66	103.44	-0.72

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 53: Male firearm-related mortality rate (/100.000) and increase (%), age 30-39, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	43.04	39.95	43.79	45.87	49.21	48.68	48.66	50.80	52.29	55.29	28.47
Northern	44.95	40.45	42.15	41.55	35.09	36.24	35.09	35.71	35.93	34.03	-24.30
Rondônia	111.05	75.95	89.67	70.55	62.61	84.57	80.69	78.33	88.44	71.65	-35.48
Acre	41.30	42.78	51.18	54.02	26.49	44.74	33.24	32.32	25.15	38.05	-7.87
Amazonas	42.65	35.76	25.42	39.45	30.73	36.17	29.36	26.79	23.72	24.86	-41.70
Roraima	31.71	53.33	66.71	86.69	48.20	89.61	27.17	58.32	67.29	38.60	21.75
Pará	36.67	33.63	37.14	32.88	30.50	21.51	27.66	29.52	28.89	31.44	-14.26
Amapá	23.98	56.89	39.33	65.56	26.60	69.00	49.81	36.59	45.52	18.89	-21.24
Tocantins	13.05	25.87	22.75	15.42	26.97	16.49	21.77	25.45	22.05	20.51	57.20
Northeastern	39.19	36.65	38.13	39.71	42.28	45.49	48.88	50.87	51.30	52.29	33.41
Maranhão	14.01	20.55	20.71	9.65	16.48	22.23	14.38	16.91	14.36	14.65	4.54
Piauí	6.63	7.60	7.15	5.65	8.37	3.86	8.92	7.59	7.53	19.63	195.97
Ceará	19.89	16.18	16.17	21.01	22.14	22.95	24.91	25.72	29.94	30.06	51.14
Rio Grande do Norte	16.31	19.84	20.71	21.09	29.08	26.31	27.11	23.88	33.96	25.11	54.01
Paraíba	23.76	34.13	24.36	22.94	25.63	21.98	34.95	29.16	28.94	30.85	29.87
Pernambuco	115.92	89.26	99.40	103.47	117.07	118.69	139.56	155.19	162.56	150.84	30.13
Alagoas	39.98	45.24	63.00	77.19	79.43	87.22	84.81	65.12	46.46	60.40	51.07
Sergipe	42.76	76.34	31.92	39.22	40.77	35.95	37.07	33.61	47.70	50.70	18.57
Bahia	31.06	25.31	28.69	30.38	24.79	34.07	31.59	34.94	30.73	35.95	15.75
Southeastern	48.99	46.05	53.19	56.43	59.03	56.42	53.93	59.16	63.38	67.26	37.30
Minas Gerais	17.85	17.64	15.70	14.74	17.09	19.23	19.11	22.40	16.79	23.13	29.60
Espírito Santo	54.88	40.01	63.87	64.81	63.32	79.16	105.63	112.60	113.16	84.53	54.01
Rio de Janeiro	140.25	133.29	143.59	151.94	135.98	117.91	109.11	113.27	113.62	112.16	-20.03
São Paulo	26.32	24.83	33.70	37.14	47.48	48.02	44.68	51.13	61.62	69.48	163.98
Southern	30.66	27.66	27.89	27.48	32.25	31.71	35.86	33.36	28.43	34.69	13.14
Paraná	28.52	27.73	27.68	29.61	33.48	32.71	36.69	36.92	28.95	36.15	26.75
Santa Catarina	17.96	12.11	14.27	12.96	22.55	15.01	24.09	12.84	16.24	18.89	5.18
Rio Grande do Sul	38.67	35.37	34.78	32.89	36.05	39.51	41.28	40.95	34.36	42.19	9.12
Central-western	39.25	38.58	37.34	41.43	57.93	59.73	55.65	50.40	53.84	56.88	44.94
Mato Grosso do Sul	62.66	59.07	43.45	70.45	79.63	84.36	82.08	64.08	51.25	62.10	-0.89
Mato Grosso	14.89	13.29	11.39	10.96	62.10	64.99	70.09	59.42	71.61	84.92	470.25
Goiás	39.57	40.82	42.87	42.17	46.77	42.25	36.83	35.46	46.98	41.59	5.11
Federal District	44.25	44.33	51.85	49.16	55.74	70.70	56.34	62.04	50.94	53.69	21.34

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 54: Female firearm-related mortality rate (/100.000) and increase (%), age 15-19, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	3.52	2.96	3.47	4.28	4.31	4.20	4.21	4.47	4.64	5.00	42.04
Northern	3.33	2.02	2.94	3.72	1.15	3.15	3.07	2.57	3.77	2.77	-16.77
Rondônia	1.57	4.58	5.73	9.64	0.00	11.54	4.24	1.39	5.48	7.76	394.65
Acre	12.58	0.00	0.00	3.93	7.70	0.00	9.79	3.17	3.09	6.01	-52.23
Amazonas	1.64	1.58	3.10	4.55	0.74	3.44	3.34	5.22	5.73	2.39	45.69
Roraima	18.49	8.75	8.35	0.00	0.00	7.08	20.64	0.00	0.00	5.33	-71.18
Pará	4.61	1.03	2.59	2.54	1.06	0.93	2.12	1.48	2.32	1.10	-76.23
Amapá	0.00	5.36	0.00	0.00	0.00	12.82	0.00	3.85	3.69	3.42	-36.25
Tocantins	0.00	3.72	1.87	1.83	1.80	1.63	0.00	3.08	6.00	4.54	21.99
Northeastern	2.04	1.68	2.18	2.39	2.08	3.08	2.66	3.05	3.61	3.36	64.76
Maranhão	1.86	0.72	1.44	0.71	0.00	0.32	0.63	0.62	0.62	0.86	-53.86
Piauí	0.00	0.00	0.63	0.00	1.24	0.00	0.00	0.61	0.60	0.59	-7.65
Ceará	1.14	0.56	1.66	1.09	1.08	1.87	1.58	1.30	2.81	1.95	70.90
Rio Grande do Norte	2.29	1.50	0.74	1.45	0.00	2.13	4.21	3.47	1.37	1.30	-43.02
Paraíba	1.64	2.18	0.54	2.65	3.15	6.40	1.59	3.15	2.09	2.08	26.41
Pernambuco	5.40	3.91	5.28	4.98	5.40	5.51	6.41	8.49	10.53	9.34	72.98
Alagoas	0.67	1.33	2.59	1.91	2.51	5.17	6.39	3.16	1.88	5.48	715.56
Sergipe	3.50	1.14	1.12	0.00	1.08	5.30	0.00	1.02	7.04	1.96	-43.98
Bahia	1.93	1.74	2.01	3.25	1.81	2.79	2.10	2.59	2.82	2.94	51.88
Southeastern	4.20	3.48	4.14	5.01	5.77	4.67	5.22	5.44	5.14	6.84	62.87
Minas Gerais	1.13	1.96	1.59	1.57	1.43	1.48	2.36	2.55	1.54	2.39	111.75
Espírito Santo	3.77	2.92	5.08	7.86	8.44	5.91	5.81	6.36	10.65	9.12	142.16
Rio de Janeiro	12.09	9.53	9.01	13.22	11.80	9.77	9.65	9.72	9.47	11.22	-7.18
São Paulo	2.63	1.96	3.52	3.40	5.50	4.31	4.99	5.25	4.89	7.30	177.41
Southern	3.39	3.79	3.40	5.73	5.23	5.21	4.52	5.41	4.50	4.05	19.66
Paraná	2.96	5.93	2.24	6.67	5.30	4.62	4.34	5.35	3.80	3.83	29.75
Santa Catarina	3.59	1.78	1.30	1.71	2.53	4.20	0.83	2.85	2.81	3.41	-4.87
Rio Grande do Sul	5.75	2.63	5.85	6.99	6.68	6.36	6.73	6.88	6.15	4.62	-19.60
Central-western	3.26	5.27	6.24	6.47	7.75	5.66	6.02	5.57	7.54	6.30	92.93
Mato Grosso do Sul	13.96	8.44	8.27	9.14	12.00	9.88	8.72	4.77	7.51	10.19	-26.98
Mato Grosso	0.00	1.78	0.00	0.81	3.93	3.27	8.79	10.98	5.39	3.00	68.03
Goiás	3.14	5.72	8.65	5.96	6.28	4.88	3.16	2.71	7.56	5.76	83.36
Federal District	3.20	5.15	6.13	12.03	11.81	6.20	6.88	6.71	9.83	7.64	138.50

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 55: Female firearm-related mortality rate (/100.000) and increase (%), age 20-29, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	4.06	3.75	3.84	4.12	4.84	5.24	4.98	4.88	4.62	4.67	15.24
Northern	3.98	4.62	3.34	3.15	2.86	4.11	3.80	3.72	2.61	2.29	-42.37
Rondônia	6.75	9.46	6.16	5.07	3.26	6.21	6.08	8.56	4.22	2.34	-65.27
Acre	5.71	24.17	0.00	5.33	5.23	7.09	6.84	6.64	4.31	1.97	-65.52
Amazonas	3.34	2.14	3.16	1.03	3.52	4.64	3.16	3.08	1.29	1.14	-65.86
Roraima	5.31	10.31	9.58	4.59	4.40	9.19	0.00	13.06	8.50	10.09	90.25
Pará	4.55	3.23	2.75	3.18	2.15	2.71	3.25	1.39	1.95	2.33	-48.68
Amapá	4.05	3.52	3.79	7.37	3.59	13.97	5.27	7.55	7.23	4.32	6.70
Tocantins	4.04	1.29	2.53	2.48	2.44	1.12	4.34	6.33	3.08	1.96	-51.40
Northeastern	2.68	3.16	3.01	2.76	3.55	3.82	3.62	3.60	3.46	4.08	52.43
Maranhão	2.83	2.29	1.24	0.00	1.94	1.68	1.18	2.10	0.23	1.26	-55.48
Piauí	1.38	1.37	1.34	0.44	0.87	1.35	0.44	0.44	0.44	0.81	-41.34
Ceará	2.14	1.95	2.07	2.04	1.35	2.41	2.37	1.50	1.32	3.13	46.58
Rio Grande do Norte	1.36	2.72	3.50	1.29	4.66	2.23	4.84	2.61	3.44	3.70	172.10
Paraíba	2.57	3.65	1.08	1.42	3.87	3.19	3.86	3.13	2.07	3.35	30.06
Pernambuco	5.50	6.21	8.13	5.16	8.57	6.88	7.55	9.26	10.20	10.52	91.09
Alagoas	3.16	5.36	2.61	4.70	5.90	5.53	6.29	5.39	4.51	3.54	11.96
Sergipe	1.47	2.89	4.23	6.24	3.41	3.37	1.98	3.89	3.82	2.42	64.71
Bahia	1.98	2.15	1.72	3.01	2.04	4.22	2.80	2.41	2.47	3.07	55.04
Southeastern	4.25	3.88	4.44	5.26	5.91	5.67	6.12	5.59	5.75	5.81	36.72
Minas Gerais	2.24	2.03	2.59	2.36	2.67	3.82	2.33	2.50	2.07	3.02	34.82
Espírito Santo	4.97	6.63	5.19	5.89	8.89	12.03	10.23	14.34	12.60	6.40	28.73
Rio de Janeiro	10.15	9.63	8.70	11.83	11.89	10.52	10.57	10.22	10.29	8.19	-19.34
São Paulo	3.44	2.28	3.58	4.01	4.87	4.19	5.88	4.58	5.22	6.15	78.75
Southern	4.09	3.41	3.33	3.67	4.19	5.59	3.90	4.71	4.13	3.13	-23.55
Paraná	5.11	3.13	3.30	3.40	3.50	5.65	3.50	4.65	3.41	3.45	-32.37
Santa Catarina	1.85	0.71	1.78	0.88	2.82	1.88	1.38	2.27	2.24	0.65	-64.60
Rio Grande do Sul	5.39	5.17	4.18	5.43	5.60	7.57	5.70	6.13	5.94	4.19	-22.21
Central-western	3.97	5.19	4.92	4.32	6.50	8.53	6.69	7.01	5.40	5.74	44.38
Mato Grosso do Sul	6.57	8.95	4.59	5.64	6.66	10.40	8.50	10.59	3.84	8.10	23.29
Mato Grosso	1.05	1.57	0.49	1.42	4.14	11.57	7.06	11.07	5.43	5.12	386.43
Goiás	5.09	6.48	6.86	4.58	8.07	6.38	5.54	3.46	6.13	6.20	21.78
Federal District	4.97	2.71	5.81	5.70	5.60	8.49	7.27	7.57	5.08	3.48	-29.96

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 56: Female firearm-related mortality rate (/100.000) and increase (%), age 30-39, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	2.92	3.11	3.39	3.61	3.99	4.15	3.93	3.81	3.98	4.22	44.81
Northern	2.86	3.48	3.47	2.74	4.25	4.22	2.60	3.74	2.75	1.32	-53.81
Rondônia	9.69	6.33	10.10	4.86	4.68	13.99	9.14	6.75	6.65	5.99	-38.14
Acre	0.00	3.88	11.92	0.00	7.64	3.43	3.31	3.22	0.00	5.81	49.79
Amazonas	0.80	1.54	2.26	2.21	2.88	2.67	1.29	1.26	2.47	0.00	-100.00
Roraima	0.00	22.25	7.04	0.00	0.00	12.21	5.93	17.35	16.94	0.00	-100.00
Pará	3.43	2.92	1.79	2.10	5.13	2.06	1.15	3.36	1.65	0.25	-92.59
Amapá	0.00	0.00	0.00	5.49	10.69	4.20	7.94	3.79	3.63	0.00	-100.00
Tocantins	0.00	3.53	1.80	5.29	0.00	4.61	1.49	4.34	1.41	2.62	-25.71
Northeastern	1.98	1.54	2.41	3.19	2.86	3.55	3.17	2.71	3.68	3.26	64.50
Maranhão	1.45	1.42	0.35	1.73	0.68	1.93	2.85	0.94	1.24	2.04	40.87
Piauí	0.66	0.00	0.00	0.63	1.24	1.16	0.57	1.14	0.56	0.00	-100.00
Ceará	1.03	0.25	1.00	1.97	0.49	1.73	0.85	1.05	2.28	2.66	158.86
Rio Grande do Norte	0.67	0.64	1.93	3.17	4.37	1.65	1.62	2.14	4.76	1.44	115.11
Paraíba	2.65	1.55	1.55	2.56	2.53	2.76	3.19	2.72	1.35	4.56	72.21
Pernambuco	4.59	3.60	5.12	6.54	5.85	8.43	6.83	8.09	8.21	6.53	42.36
Alagoas	1.99	1.29	7.67	5.03	7.43	5.85	5.19	1.71	7.89	3.12	56.71
Sergipe	1.10	2.11	1.06	6.23	1.02	4.48	5.26	1.72	4.23	3.08	180.40
Bahia	1.81	1.49	2.15	2.25	2.48	2.63	2.47	1.74	2.64	2.78	53.28
Southeastern	3.34	3.59	4.00	4.05	4.93	4.46	4.41	4.44	4.38	5.13	53.65
Minas Gerais	1.58	2.14	2.14	1.78	2.34	2.72	2.29	2.27	2.01	2.24	41.49
Espírito Santo	3.62	2.00	4.98	4.41	8.20	7.67	8.85	13.95	7.30	6.55	80.62
Rio de Janeiro	7.86	8.98	9.97	9.52	9.80	8.76	8.58	8.42	8.01	8.37	6.60
São Paulo	2.30	2.10	2.26	2.75	3.81	3.26	3.34	3.09	3.78	5.07	119.97
Southern	2.06	3.51	2.75	2.84	2.75	3.70	3.85	3.29	2.95	3.83	86.07
Paraná	2.24	3.08	3.30	2.19	3.26	3.21	3.43	2.44	3.47	4.00	78.21
Santa Catarina	1.45	0.83	1.40	1.66	0.55	1.74	2.69	2.89	1.42	2.48	70.46
Rio Grande do Sul	2.46	5.18	2.93	3.95	3.39	5.13	4.81	4.27	3.26	4.41	79.24
Central-western	4.24	4.17	4.05	4.65	4.30	5.21	4.84	4.74	5.78	5.42	27.67
Mato Grosso do Sul	5.49	3.01	4.52	2.22	5.10	5.33	6.53	6.43	6.96	6.13	11.56
Mato Grosso	1.47	1.37	2.75	0.66	2.58	3.65	4.16	5.82	6.28	8.88	502.62
Goiás	5.15	6.51	3.63	7.47	5.75	6.47	4.38	4.81	5.23	4.67	-9.23
Federal District	4.66	3.00	5.95	5.11	2.15	3.88	5.02	1.84	5.38	2.78	-40.38

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 57: Age related relative risk of firearm-related death according to sex groups and total population, Brazil, 1991, 1996, 2000

	1991			1996			2000		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
10 to 14	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
15 to 19	12.6	15.4	4.5	10.6	12.8	3.9	12.6	15.4	3.9
20 to 29	20.0	25.3	5.2	16.7	21.0	4.8	17.9	22.8	3.6
30 to 39	14.1	17.9	3.7	11.7	14.7	3.8	11.0	13.8	3.3
40 to 49	9.4	11.5	3.7	7.8	9.5	3.2	6.9	8.7	2.4
50 to 59	6.6	8.4	2.0	5.3	6.6	1.9	4.4	5.6	1.3
60 and over	3.8	5.0	1.4	3.1	4.1	1.0	2.4	3.3	0.8

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 58: Male relative risk of firearm-related death according to age groups and increase (%), Brazil, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
Total population	12.35	13.10	12.72	11.75	11.88	10.85	11.93	13.08	13.37	13.93	12.82
0 to 4	1.94	2.31	2.29	1.89	1.37	1.82	1.45	2.95	1.67	2.37	22.10
5 to 9	2.43	2.86	2.30	1.74	2.09	1.71	2.28	1.98	1.79	2.04	-15.94
10 to 14	3.08	3.44	3.80	2.06	3.27	3.05	2.79	3.04	3.06	3.12	1.28
15 to 19	10.50	11.40	11.61	9.82	10.78	10.08	11.14	11.82	11.85	12.33	17.42
20 to 29	14.94	15.46	15.90	15.86	14.51	13.22	14.78	16.43	17.95	19.53	30.70
30 to 39	14.75	12.85	12.93	12.70	12.32	11.73	12.38	13.35	13.15	13.09	-11.29
40 to 49	9.64	12.71	11.63	10.27	11.15	9.17	11.09	12.52	11.21	11.23	16.58
50 to 59	13.25	14.83	14.63	11.61	13.53	10.61	12.54	12.19	13.70	13.09	-1.20
60 and over	10.62	11.95	10.11	12.01	12.66	11.98	10.94	15.32	13.80	12.11	13.95

Source: Mortality Information System (SIM), Ministry of Health, Brazil

B. Brazilian states

B.1. Percentages: The magnitude of firearm-related deaths in relation to all external causes

B.1.1. Northern region

When we consider the data from the different Brazilian states, we can find significant intra-regional differences. In Table 37 we note that, despite the fact that for the Northern region as a entire we observed a drop in the percentage of firearm-related deaths from 1991 to the year 2000, in three of its seven states it increased in the same period. The most significant increase was found in Amapá and Tocantins, where the percentage went from 6.8% (n=13) to 12.1% (n=41), and from 12.1% (n=34) to 18.4% (n=119), respectively.

For the male population (Table 40), the highest percentages were found in Rondônia (27.4%), Amazonas (21.5%), Pará (26.6%), and Tocantins (21.5%). Nevertheless, it increased only

in Roraima, Amapá, and Tocantins, the most significant increase being found in Tocantins (76.4%), and Amapá (53.7%). Considering the data according to age groups (Tables 42 to 44), we also note a much higher increase for the 15-19 and 20-29 male age groups, when compared with the entire male population of Tocantins and Amapá. In Rondônia, while for the entire male group (Table 40), the percentage of firearm-related deaths dropped in the period, it increased slightly in the 20-29 age group (Table 43). In the three male age groups, the percentage of firearm-related deaths was over 30% in Rondônia, considering the data for the year 2000. It is important also to highlight that for Acre, while the percentage of male firearm-related deaths dropped 40% in the period (Table 40), it increased 32% in the 30-39 age group, firearms being responsible for more than 27% of all external cause deaths in the group in the year 2000 (Table 44).

For the female population of Amapá only the percentage of firearm-related deaths increased in the period, from 2.6% (n=1) to 10.3% (n=3), with a relative increase of 303.4% (Table 41). The highest percentage of female firearm-related deaths was found in Roraima, Rondônia, and Acre. In the latter, it exceeded 20% in 1991, 1992, 1995, and 1999. For the female population, we should draw attention to the high increase found for the 15-19 age group of Rondônia (350%), and for the 20-29 age group of Amapá (350%) (Tables 45 and 46). In Rondônia, the percentage of female firearm-related deaths increased from 5.6% (n=1) in 1991 to 25% (n=6) in the year 2000 for the 15-19 age group. In Amapá, it increased from 11% (n=1) in 1991 to 50% (n=2) in the year 2000, for the 20-29 female age group. For both states the increase pattern was very irregular, probably due to the low number of cases. This can make comparisons difficult, since even a very small change in the absolute number of cases can imply a high relative increase.

B.1.2. Northeastern region

In the Northeastern region the percentage of firearm-related deaths dropped only in Maranhão, from 16.2% (n=212) to 13.4% (n=210), considering the entire population (Table 37). It increased in all the other eight states of the Northeastern region, especially in Piauí, Paraíba, and Alagoas. In Paraíba, the percentage of firearm-related deaths increased almost 100%, going from 14.6% (n=189) to 28.1% (n=383) of all external cause deaths. Despite the fact that the growth in Pernambuco had been smaller than that found for other Northeastern states, we find the highest figures there. In Pernambuco the percentage of firearm-related deaths went from 37.8% (n=2,104) in 1991 to 50.6% (n=3,703) in the year 2000, meaning that during the year, half of the external cause deaths in the state were related to the use of firearms.

The percentage of male firearm-related deaths increased in all the Northeastern states, with the exception of Maranhão (Table 40). Paraíba presented the most significant increase (88.7%), with figures surpassing 20% since 1997. High increases were also found in Piauí (76.4%), where the percentage of firearm-related deaths exceeded 10% in 1995, reaching its peak in the year 2000 (14.4%, n=125). Alagoas also presented a significant growth in the period (66.6%), and since 1995 has been showing percentages of firearm-related deaths equal to or over 30%.

Comparing the data for the entire male population and three age groups (Tables 40, 42, 43 and 44), we can see that for Piauí and Maranhão the most significant increases were found for the 30-39 age group, having surpassed 100% in the former. Paraíba presented a very substantial increase for both the 15-19 and 20-29 age groups, the topmost percentage being found, however, in the 15-19 age group, where it exceeded 40% in the year 2000. Alagoas also presented a high percentage of firearm-related deaths in all three age groups, with results of over 40% in the 15-19, and 20-29 age groups since 1999, and over 30% in the 30-39 age group since 1993. In Alagoas, firearm-related deaths presented the most important increase in the 15-19 age group (128%). In

Pernambuco, the percentage of male firearm-related deaths in 1998 exceeded 50% of all external cause deaths (Table 40). In the 15-19, and 20-29 age groups (Tables 42 and 43) the figures had exceeded 60% in Pernambuco by the end of the decade, the peak percentage being found in 1998 and 1999, when firearms were responsible for more than 70% of all male external cause deaths in the 15-19 age group.

In the female population (Table 41) the percentage of firearm-related deaths increased in Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, and Bahia, and dropped in Maranhão and Piauí. The most relevant increases were observed in Rio Grande do Norte, Alagoas, Sergipe, and Paraíba. Comparing the data in Tables 37, 40 and 41 we observe that the female increases were extremely significant in Rio Grande do Norte and in Sergipe. In Rio Grande do Norte, the percentage increased 39.5% for the entire population (from 13.1% (n=132) to 18.2% (n=273)). But while it grew by 30% for the male population (from 15.5% (n=125) to 20.2% (n=253)), it increased 140% for the female population (from 3.4% (n=7) to 8.3% (n=20)). In Sergipe, the total increase was 28.5% – from 20.5% (n=192) to 26.3% (n=308) –; for males, the increase was 22.5% – from 23.7% (n=180) to 29% (n=288) –, and for females 94.4%, from 5.8% (n=9) to 11.4% (n=20). We should consider this data carefully since the absolute number of external cause deaths in the female population of the Northeastern states was small, and therefore, even a small absolute change, when compared with the male and total population, may represent a high relative change.

This problem is even bigger when we consider age-specific data. Comparing the data for the entire female population with those according to age groups, (Tables 41, 45, 46 and 47) we note that for Alagoas and Bahia only, the increase was higher for the 15-19 age group. In Paraíba and Sergipe, while firearm-related deaths grew, respectively, 86% and 94% for the entire female population (Table 41), the growth was on the order of 196% in Paraíba and 214% in Sergipe for the 30-39 age group (Table 47). We should also stress the high percentages of firearm-related deaths found for Pernambuco, which had exceeded 30% of all female external cause deaths in the 15-19, 20-29, and 30-39 age groups by the end of the decade.

Comparing the data in Tables 42 to 47 for the year the 2000 we can see that the percentage of male firearm-related deaths exceeds the female firearm-related deaths in all states of the Northeastern region except in Paraíba, where the percentage of female firearm-related deaths for the 30-39 year old population exceeds the male. We should notice also that the female increase for the Northeastern region was more than twice the male increase, for both the 20-29, and 30-39 year-old groups, while it was only slightly higher in the 15-19 year-old male population.

B.1.3. Southeastern region

In the Southeastern region the percentage of firearm-related deaths increased in all the states, for the total population and for sex groups (Tables 37, 40, and 41). For the entire population, the most significant increase was in São Paulo and Minas Gerais (Table 37). In São Paulo the percentage of firearm-related deaths grew 144% in the period. In Minas Gerais the increase was on the order of 92.4%, from 10.6% (n=864) to 20.4% (n=1,638). Despite the fact that Rio de Janeiro presented the lowest relative increase in the period (9.4%), this is the state with the highest percentage of firearm-related deaths in the region, followed by Espírito Santo.

In Tables 40 and 41 we can observe that the increase pattern was constant for both male and female populations in all the states, with the exception of Rio de Janeiro where the percentage of firearm-related deaths dropped slightly from 1991 to 1996, and then started to climb, reaching the highest result in 2000. Rio de Janeiro presented substantial figures during the entire period with

a relative decrease between 1995 and 1996, when the percentage went from 48.1% (n=7,231) to 41.2% (n=5,857) for the male (Table 40), and from 19.2% (n=509) to 16.2% (n=462) for the female population (Table 41). In the year 2000 the percentage of male firearm-related deaths in Rio de Janeiro reached 50%, which means that half of the male external cause deaths in the state are related to the use of firearms. In the 15-19 and 20-29 male age groups the percentages are even higher, exceeding 50% throughout the entire period, reaching, respectively, the figures of 70% and 66%, in the year 2000 (Tables 42 and 43).

In the female population of Rio de Janeiro, firearms were responsible for 19% of all external cause deaths (Table 41), 47% in the 15-19, 36% in the 20-29, and 35% in the 30-39 age groups (Tables 45 to 47).

In São Paulo the percentage of male firearm-related deaths went from 14.2% (n=3,282) to 34.3% (n=9,918), with a relative increase of 141% (Table 40). The increase was higher than 100% for the three male age groups, exceeding 150% in the 30-39 year-old population (Table 42 to 44). In São Paulo's male population the greatest figures were found in the 15-19 and 20-29 age groups, where they reached, respectively, 49%, and 45% of all external cause deaths. Still considering the data for São Paulo, the percentage of female firearm-related deaths increased 132% in the period, from 6.3% (n=280) to 14.5% (n=675) (Table 41), and exceeded 20% in all three age groups by the end of the decade (Tables 45 to 47).

Espírito Santo presented considerable figures during the entire period for both male and female populations, with higher values in the three age groups (Tables 42 to 47). Comparing the data in Tables 42 to 47, we can see that while the male percentage was greater than the female in all age groups of the Southeastern states, the female increase surpassed the male increase in Rio de Janeiro and São Paulo for the 15-19 age groups, for the 20-29 age group in Rio de Janeiro, and for the 30-39 age group, in all four states.

B.1.4. Southern region

In the Southern region the percentage of firearm-related deaths increased in all states among both the male and female populations. The only exception was Santa Catarina's female population, where it dropped 18.8% in the period (Tables 37, 40, and 41). Santa Catarina presented the lowest increase, followed by Rio Grande do Sul and Paraná (Table 37). In the latter, the percentage of firearm-related deaths increased 47% in the period, from 13.3% (n=785) to 19.6% (n=1,319). In Rio Grande do Sul the increase was on the order of 24.7%, from 20.5% (n=1,336) to 25.6% (n=1,665).

In Table 40 we can observe the increasing pattern for the male population. Despite the fact that Paraná and Santa Catarina presented an overall increase from 1991 to 2000, it was constant only in Paraná, where the percentage increased 48.7%, from 14.7% (n=689) to 21.9% (n=1,210). Considering the data in Tables 42, 43, and 44, we can observe that the most important increase in Paraná was in the 15-19 and 20-29 age groups, on the order of 88.4% and 60.8%, respectively. While percentages of firearm-related deaths in the entire male population of Paraná did not exceed 22% in the period, they were over 30% in the 15-19 and 20-29 age groups at the end of the decade.

In Santa Catarina an irregular growth pattern can be noted (Table 40), with percentages ranging from 7.9% (n=189) in 1992 to 10.9% (n=291) in the year 2000, the increase in the period being on the order of 7.3%. Considering the data by male age groups (Tables 42 to 44) we observe that in Santa Catarina firearm-related deaths are growing more in the 20-29, and 30-39, and dropping in the 15-19 age groups. However, the figures were quite similar and do not exceed 16% during the entire period.

In Rio Grande do Sul the percentage of male firearm-related deaths dropped from 1991 to 1994, and then started to grow, reaching the maximum figure in the year 2000 (Table 40). While the increase for the entire male population of the state was on the order of 24% in the period, it was over 40% in the 20-29 male age group, where figures exceeded 30% and reached 43% in the year 2000. In all three age groups the male percentage of firearm-related deaths was higher than that found for the entire male population (Tables 40, 42, 43, and 44).

In the female population firearm-related deaths increased in Paraná and Rio Grande do Sul and decreased in Santa Catarina (Table 41). The increase pattern was irregular for both Rio Grande do Sul and Paraná. In the former, the percentage of firearm-related deaths increased from 1991 to 1997, when it reached its highest point. In 1991 the female percentage of firearm-related deaths was 9.9% (n=131), increasing to 14.8% (n=188) in 1997 and than falling to 12.1% (n=148) in the year 2000. We should highlight the important increase found for Rio Grande do Sul's female population in the 30-39 age group, on the order of 107%, from 10.6% (n=18) to 22.1% (n=36) (Table 47).

In Paraná the percentage of female firearm-related deaths dropped from 1991 to 1993 and started to increase in 1994, having remained stable since 1998 (Table 41). Considering the entire female population of Paraná the figure did not exceed 9%, while for the three age groups it had reached 16% by the end of the decade. We should notice that despite the fact that lower percentages were found in the 30-39 age groups, they presented the most significant increase in the period, on the order of 80.9%, far above those found for the entire female population (12%) (Table 47).

Comparing the data in Tables 42 to 47 we can observe that in all three states of the Southern region the female increase was higher than the male in the 30-39 age group, and in Santa Catarina and Rio Grande do Sul in the 15-19 age group. Rio Grande do Sul presented the greatest proportion of firearm-related deaths in the region, for both male and female populations in all age groups.

B.1.5. Central-western region

In the Central-western region an increase was seen in all the states and in the Federal District (Table 37). The increase found in Mato Grosso, on the order of 330% for the entire population, is striking; there, the percentage of firearm-related deaths went from 7.3% (n=109) in 1991 to 31.4% (n=742) in the year 2000. The most significant change in the state was from 1994 to 1995, when the percentage went from 4% (n=66) to 18.7% (n=347), continuing to increase up to the end of the decade.

In the male population the proportion of firearm-related deaths grew in all states of the region. In Mato Grosso it grew 327% for the entire male population (Table 40), whereas it grew 550% and 400% in the 15-19 and 20-29 male age groups, respectively (Tables 42 and 43). In both age groups, the figures exceeded 40% in the year 2000. Higher percentages, however, were found in the Federal District, where figures have surpassed 30% for the entire male population since 1995, having exceeded 50% in the 15-19 and 20-29 age groups by the end of the decade.

In the female population the percentage of firearm-related deaths also increased in all the states and in the Federal District in all age groups, except for the 15-19 age group in Mato Grosso do Sul, where it fell 41.7% (Tables 41, 45, 46, and 47). The greatest increase was found in Mato Grosso (310%), where values have exceeded those found for the Federal District since 1996 (Table 41). In that state, the highest increase in the female population was found for the 30-39 age group (614%), where the proportion of firearm-related deaths increased from 4.8% (n=2) in 1991 to 34% (n=17) in the year 2000, the first in the region and the third in the country (Table 47). In Mato Grosso, despite the high increase found for the entire female population (310%), it only grew 31% in the 15-19 age group, being the lowest in this age group, considering all the states of

the region (Table 45). In the 15-19 age group, the most important increase was found in the Federal District (179%), where the percentage of female firearm-related deaths exceeded 30% in 1994, being the first in the region and the fourth in the country (Table 45).

B.2. Firearm-related mortality rates

Firearm-related mortality rates presented a growing tendency in four of the five Brazilian regions with the exception of the Northern region, considering the entire male and female populations (Tables 48 to 50). Analyzing the data for the states, we observe some differences that should be considered.

B.2.1. Northern region

In the Northern region, despite the fact that the global firearm-related mortality rate fell in the period (Table 48), it increased in three of its seven states especially in Tocantins, where it went from 5.2/100,000 to 11/100,000 inhabitants. Tocantins is one of the Brazilian states that presented the highest increase in the firearm-related mortality rate (110%), which was more than twice that found for other states in the Northern region. This is also true when we consider the firearm-related mortality rate for the male population (Table 49). In Tocantins, the male firearm-related mortality rate increased almost 200% in the period, from 6.2/100,000 to 18.4/100,000 inhabitants. Rates are much higher when we consider specific age groups. The increase of the firearm-related mortality rate in the male population of the state was over 300% in both the 15-19 and 20-29 age groups (Tables 51 and 52). The highest rates were found in the 20-29 year-old male population, exceeding 40/100,000 inhabitants in the year 2000. In the entire female population of Tocantins the firearm-related mortality rate increase was on the order of 59.5%, from 1.1/100,000 to 1.8/100,000 inhabitants (Table 50). It fell in all three age groups except in the 15-19 age group, where the firearm-related mortality rate grew 22% from 1992 to the year 2000 (Tables 54 to 56). The low number of firearm-related deaths in the female population and the resulting instability of the rates make comparisons difficult. This is true for all the Brazilian states.

In Amapá, despite the fact that the firearm-related mortality rate grew only 24% in the period, from 6.1/100,000 in 1991 to 7.6/100,000 in the year 2000, the rates were over 13/100,000 from 1992 to 1999 (Table 48). The top figure was found in 1996, when it exceeded 20/100,000 inhabitants. The increases were higher in the male population (92%) (Table 49), where the highest figure was over 42/100,000 in 1996. The enormous increase in the male firearm-related mortality rate for the 15-19 year-old population of Amapá (600%) should be pointed out, where rates grew dramatically during the period, reaching figures of 118/100,000 in 1995 (Table 51). The increase was also significant for the 20-29 year-old male population (152%) (Table 52). We should consider the possibility of some information and classification problems in Amapá, particularly at the beginning of the decade. In the female population, we find very irregular patterns for the entire and for the age group populations, especially in the 15-19 and 30-39 age groups (Tables 50, 54, 55, and 56), probably due to the low number of cases.

Roraima also presented an increasing pattern for the entire population (46.2%) (Table 48). We must stress that Roraima ended the period with one of the highest rates of the Northern region, being exceeded only by Rondônia, considering the entire and male populations (Tables 48 and 49). In Roraima, the firearm-related mortality rate increased 195% in the 15-19 year-old male population, having exceeded 60/100,000 in 1998, becoming the first in the region (Table 51). Despite this significant increase in the 15-19 year-old male population, higher rates were found in the 20-29 age group, especially in 1998 (103.9/100,000), and 1999 (97.4/100,000) (Table 52). In

the female population, while the firearm-related mortality rate fell 18% in the period (Table 50), it grew 90% in the 20-29 age group. In this group, Roraima has presented the highest rates of the region since 1998 (Table 55).

Rondônia is the Northern region state that presented the highest firearm-related mortality rates throughout the entire period, considering the entire population, with values ranging from 21.5/100,000 in 1997 to 30.4/100,000 in 1998 (Table 48). Despite the fact that the firearm-related mortality rate fell for the entire, and for the male and female populations in the state (Tables 48, 49 and 50), it increased substantially in the 15-19 female age group (394%), reaching its peak in 1996 (11.6/100,000) (Table 54). In the male population Rondônia also presented higher rates when compared with other Northern region states (Table 49), reaching its maximum figure in 1998 (48.9/100,000). We should observe that rates were higher in the 20-29 and 30-39 age groups, with values being over 70/100,000 by the end of the decade (Tables 52 and 53).

In the other states of the Northern region (Acre, Amazonas, and Pará) firearm-related mortality rates are falling in the entire, and for male and female populations of all age groups, with the exception of the 15-19 year-old female population of Amazonas, where rates increased 45% over the period (Tables 48 to 56).

B.2.2. Northeastern region

In the Northeastern region the global firearm-related mortality rate increased in all the states, with the exception of Maranhão (Table 48). Despite the fact that Piauí presented low rates during the entire period, the increase was significant for both total (162.8%), and male (223%) populations (Tables 48 and 49). Rates in Piauí and Maranhão did not exceed 5/100,000 and were lower than 9/100,000 for both the entire and male populations, respectively, throughout the period. When compared with the other states of the Northeastern region, both states presented lower rates in all age groups, for the male and female populations (Tables 51 to 56). It bears emphasizing that the increase in the firearm-related mortality rate was significant in all three age groups for the male population of Piauí.

We should draw attention to Pernambuco, which presented very high firearm-related mortality rates throughout the entire period (Table 48). From 1991 to 1996 it ranked second in the country, being exceeded only by Rio de Janeiro. From 1997 onwards it has maintained the first position, with rates of over 40/100,000 for the entire population. Considering the male population (Table 49), Pernambuco's firearm-related mortality rate was even higher, reaching its peak in 1998 (98/100,000) when it surpassed that found for Rio de Janeiro. Considering the data by age groups for the male population (Tables 51 to 53), greater rates were found in the 20-29 and 30-39 age groups, exceeding 100/100,000 during the entire period. In the 20-29 year-old male population, rates have exceeded 200/100,000 since 1997. Considering all the Northeastern region states, Pernambuco presented the highest female firearm-related mortality rate for the entire population and age groups (Tables 50, 54, 55, and 56). While the firearm-related mortality rate increased 46% in the female population of Pernambuco, not exceeding 5/100,000, increases were higher in the 15-19 (72%) and 20-29 (91%) age groups, where rates reached 10/100.00 at the end of the decade.

Three other states of the Northeastern region presented high rates – Alagoas, Sergipe, and Bahia – all of them, however, with much lower figures than those found for Pernambuco (Table 48). In the entire population of Alagoas the peak values were found in 1995 and 1996 (21.9/100,000), exceeding 30/100,000 in 1995 for the male population (Table 49). In the male population higher rates were found for the 20-29 and 30-39 age groups, where the increase was over 100% in the former, and 50% in the latter, during the entire period (Tables 52 and 53). In the

20-29 male age group rates have risen above 50/100,000 since 1992, reaching 79.7/100,000 in the year 2000. In the 30-39 age group the highest rate was found in 1996 (87.2/100,000), falling then to 60.4/100,000 in the year 2000. Despite the fact that rates in the 15-19 age group were lower, an enormous increase was found in this group (274%) (Table 51). For the female population of Alagoas rates have been increasing in all the three age groups especially in the 15-19 where the increase in the period was on the order of 715%, from 0.67/100,000 in 1991 to 5.48/100,000 in the year 2000 (Table 54 to 56).

In Sergipe the rates increased 23.6% in the period, from 14.1/100,000 to 17.4/100,000, the increase being on the order of 33% for the male and 86.4% for the female population (Tables 48 to 50). In the male population the most important increase was observed in the 15-19 age group (150%), where rates reached 50/100,000 in 1992 becoming the first in the region, falling then to 39/100,000 in the year 2000 (Table 51). In Sergipe, rates rose in the 20-29 male age groups, especially in 1992 (90/100,000), and in the year 2000 (81.3/100,000), when they ranked second in the region (Table 52). In the female population of Sergipe the most significant growth was observed in the 30-39 age group (180%) (Tables 54 to 56).

In Bahia the firearm-related mortality rate increased 19% for the entire, 23% for the male, and 65% for the female populations (Tables 48 to 50). Higher rates were found for the 20-29 male population, ranging from 41.2/100,000 in 1995, to 62.2/100,000 in 1998 (Table 52).

B.2.3. Southeastern region

In the Southeastern region firearm-related mortality rates increased in three of the four states, considering the entire, male and female populations, with the exception of Rio de Janeiro (Tables 48 to 50). Rio de Janeiro presented the highest rate in the region, exceeding 40/100,000 for the entire population during the entire period. It was the state that presented the highest rate in the country until 1996, when it was surpassed by Pernambuco. In the male population the firearm-related mortality rate increased to over 100/100,000 from 1991 to 1995, falling to 90.8 in 1996 (Table 49). When we consider the data by age groups (Tables 51 to 53) rates are extremely high in the 20-29 male population, exceeding 200/100,000 from 1991 to 1995, and from 1997 to 2000, the peak being found in 1994 (240.2/100,000). In the 15-19 male age group, the rate was over160/100,000 from 1991 to 1995, in 1998 and in the year 2000, reaching its apex in 1995 (193.21/100,000). In the entire female population the firearm-related mortality rate fell 10% in the period but increased 6.7% in the 30-39 age group (Tables 50 and 56). The greatest rates were found in the 15-19 female age group, ranging from 9.01/100,000 in 1993 to 13.22/100,000 in 1994 (Table 54). During the entire period rates were over 9/100,000, becoming Brazil's highest in this group.

Espírito Santo reached the end of the decade with the second highest rate in the region and the third in the country for the entire (31.4/100,000), male (62.5/100,000), and female (4.4/100,000) populations (Tables 48 to 50). In the male population, considering the data by age groups (Tables 51 to 53), the most important increase was found in the 15-19 year-old population (219%), where it increased from 31.9/100,000 in 1991 to 101.8/100,000 in the year 2000. The topmost rates were found in the 20-29 male age group, having exceeded 130/100,000 since 1997. In the female population of Espírito Santo, despite the fact that the most important increase was found for the 15-19 age group (142%), the highest rates were found in the 20-29 age group, exceeding those found for Rio de Janeiro from 1996 up to 1999 (Tables 54 and 55).

São Paulo is the state in the Southeastern region that presented the most significant increase (146%) in the period, going from 10.5/100,000 in 1991 to 25.8/100,000 inhabitants in the year 2000 (Table 48). This is also true when we consider data for the male and female populations,

where the increase was, respectively, 160% and 104% (Tables 49 and 50). For the male population rates increased from 21/100,000 in 1991 to 54.7/100,000 in the year 2000, while the highest value for the female population was 3.6/100,000 in the year 2000. Despite this increase pattern São Paulo continues in the third position in the region. However, if we consider data by age groups (Tables 51 to 53), male firearm-related mortality rates for the 15-19 age group exceeded those found for Espírito Santo in the year 2000, moving São Paulo to the second position in the Southeastern region. For both the 15-19 and 20-29 male age groups we should observe that a significant increase in firearm-related mortality rates occurred from 1999 to the year 2000, going from 81.22/100,000 to 104.26/100,000 in the former, and from 107.7/100,000 to 130.7/100,000 in the latter. Increases rose above 150% in all age groups for the male population. An increase pattern is also present in the female population in all age groups, especially in the 15-19, where rates increased 177% in the period (Tables 50, 54 to 56).

B.2.4. Southern region

In two of the three states of the Southern region the firearm-related mortality rate increased from 1991 to the year 2000, remaining stable in Santa Catarina considering the entire and male populations (Table 48 and 49). Higher rates were found in Rio Grande do Sul throughout the period, especially in the 20-29 male age group where they were over 50/100,000 (Table 52). In the male population the greatest increase was found in Paraná in the 15-19 age group, where rates had exceeded those found for Rio Grande do Sul by the end of the decade (Table 51). In the female population rates were stable in Paraná and Rio Grande do Sul and dropped 20% in Santa Catarina (Table 50). For the 30-39 female age group rates have been increasing in all three states of the Southern region, being less than 5/100,000, however, during the entire period (Table 56).

B.2.5. Central-western region

In the Central-western region the firearm-related mortality rate increased in all the states (Table 48). The most important increase was in Mato Grosso (371%), where it went from 6.1/100,000 to 28.9/100,000, having presented the highest rates in the region since 1998, considering the entire population. The increase in Mato Grosso was on the order of 460% for the male, and 370% for the female population (Tables 49 and 50). Analyzing the data by age groups we can observe that the increase in Mato Grosso was substantial for all three male age groups, especially in the 15-19 age group (798%) (Tables 51 to 53). The most significant rates were found for the 20-29 male age group, reaching 100/100,000 in the year 2000. We should also observe that despite this high increase found for Mato Grosso in all male age groups, higher rates were found in the Federal District for both the 15-19 and 20-29 age groups, and in Mato Grosso do Sul for the 20-29 male age group in the year 2000 (Tables 51 and 52).

The Federal District ranked first in the region at the beginning of the decade for the entire population, and during the entire period for the male population (Tables 48 and 49). For the 15-19 and 20-29 male age groups the Federal District also presented the topmost rates in the region, especially in the 15-19 age group where they have been higher than 100/100,000 since 1993 (with the exception of 1996) (Tables 51 and 52).

Mato Grosso do Sul presented the most significant rates in the region from 1995 to 1997, moving since then to the third position and remaining there until the end of the decade (Table 48). Rates varied from a minimum of 17.7/100,000 in 1991 to a maximum of 29.3/100,000 in 1996. In the male population the rates for Mato Grosso do Sul ranked second in the region from 1991 to 1996, and first in 1997 (Table 49), period in which we can observe a very clear increase

pattern in the state. From 1998 until the end of the decade rates fell in the state, without reaching those figures found at the beginning of the period. Mato Grosso do Sul ended the decade with the third highest male rate of the Central-western region, being exceeded by Mato Grosso and the Federal District. Rates increased in the 15-19 (63%), and 20-29 (103%) age groups, with peak figures in the latter exceeding 100/100,000 in the period (Tables 51 and 52). In the 20-29 age group rates in Mato Grosso do Sul were above those found for Mato Grosso for the entire period, except for 1999. In the 15-19 male age group rates were only lower than those found for the Federal District during the entire period, with the exception of the year 2000, when Mato Grosso rose to the second place in the region (Table 51). In the 30-39 male age group Mato Grosso do Sul presented the highest figures in the region, with the exception of 1993, 1999 and 2000, when they were exceeded by the Federal District and Mato Grosso, respectively (Table 53).

In the female population, rates have been growing in all the states of the Central-western region except in the Federal District, where they dropped 17% in the period (Table 50). We should observe the significant increase found for the Mato Grosso female population (370%), where rates moved from the fourth to the second position considering all the states in the region. During the entire period, except for 1993 and 1994, Mato Grosso do Sul presented the highest female rates in the Central-western region, without exceeding 5/100,000. Considering the data for the year 2000, Mato Grosso do Sul presented the second highest female rate in the country, being exceeded only by Pernambuco and Rio de Janeiro. Considering both global (Table 48) and male (Table 49) firearm-related mortality rates in all Brazilian states, Mato Grosso do Sul is in the sixth and seventh positions, respectively. This suggests that female firearm-related deaths, or in a larger sense, violence against women, gains an additional relevance in the state.

B.2.6. Mortality rates in 20 Brazilian states: A comparative view

In Figures 21 and 22 we see the 20 Brazilian states that presented the highest firearm-related mortality rates in 1991 and in the year 2000. Rio de Janeiro and Pernambuco changed their position in the period, maintaining the first and second places, however. Espírito Santo was in the sixth place in 1991 and climbed to the third in 2000. The most important change in position was seen in Mato Grosso, which was in the 20th place in 1991 rising to the fourth in 2000, and São Paulo, that ranked fifteenth in 1991 moving to the fifth in 2000. Rondônia went from the second to the seventh place, Rio Grande do Sul moved downwards from the eighth to the twelfth, and Acre, which presented the most significant downwards change, went from the fourth to the twentieth position in the year 2000. Considering the ten highest firearm-related mortality rates for both years, changes were observed in only four of the positions: Acre, Rio Grande do Sul, Sergipe, and Goiás, that were among the ten highest in 1991, having moved to the lowest places in the year 2000, and Roraima, Alagoas, São Paulo, and Mato Grosso, that moved upwards, being part of the ten highest-rate-states in the year 2000. Three of the five highest rates in the country are from the Southeastern region states (Rio de Janeiro, Espírito Santo and São Paulo).

Figure 21: Standardized firearm-related mortality rate (/100.000) in 20 Brazilian states, 1991

State	Rate
Rio de Janeiro	45.4
Pernambuco	30.9
Rondônia	27.2
Acre	21.7
Federal district	20.4
Espírito Santo	19.9
Mato Grosso do Sul	17.7
Rio Grande do Sul	14.5
Sergipe	14.1
Brazil	14.0
Goiás	13.9
Alagoas	12.6
Amazonas	12.3
Pará	12.0
Roraima	12.0
São Paulo	10.5
Paraná	9.6
Bahia	9.6
Paraíba	7.1
Santa Catarina	6.3
Mato Grosso	6.1
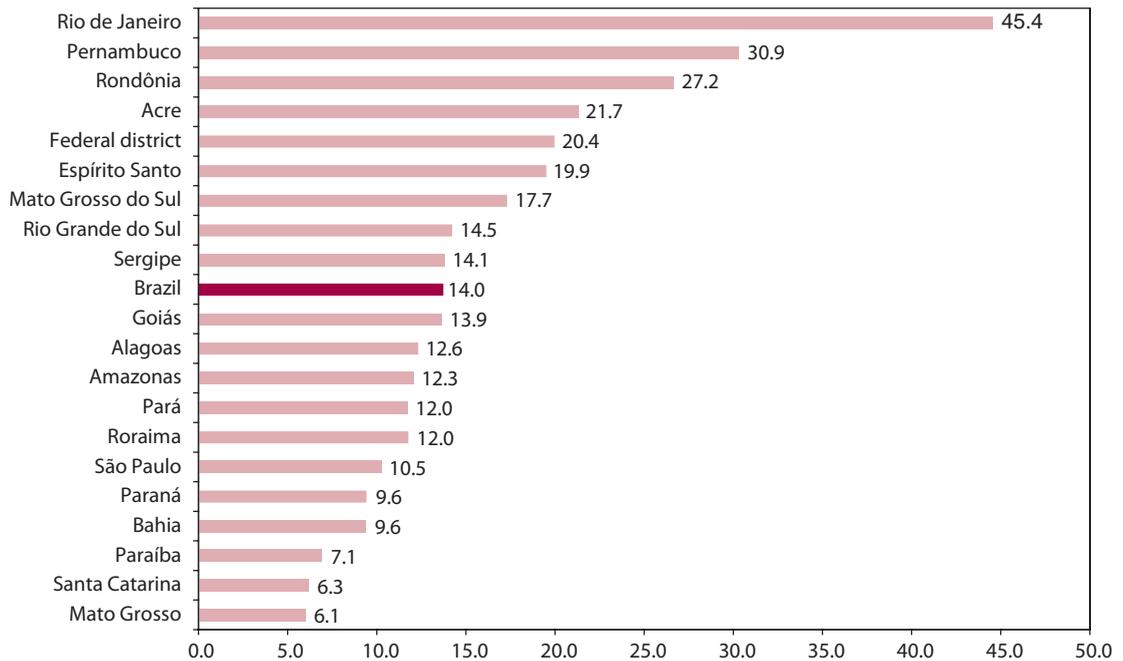
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Figure 22: Standardized firearm-related mortality rate (/100.000) in 20 Brazilian states, 2000

State	Rate
Pernambuco	45.6
Rio de Janeiro	41.2
Espírito Santo	31.4
Mato Grosso	28.9
São Paulo	25.8
Mato Grosso do Sul	23.5
Rondônia	22.8
Federal district	22.4
Brazil	19.4
Alagoas	18.3
Roraima	17.5
Sergipe	17.4
Rio Grande do Sul	16.1
Goiás	15.6
Paraná	13.1
Bahia	11.4
Paraíba	11.1
Tocantins	11.0
Ceará	9.9
Rio Grande do Norte	9.8
Acre	9.4
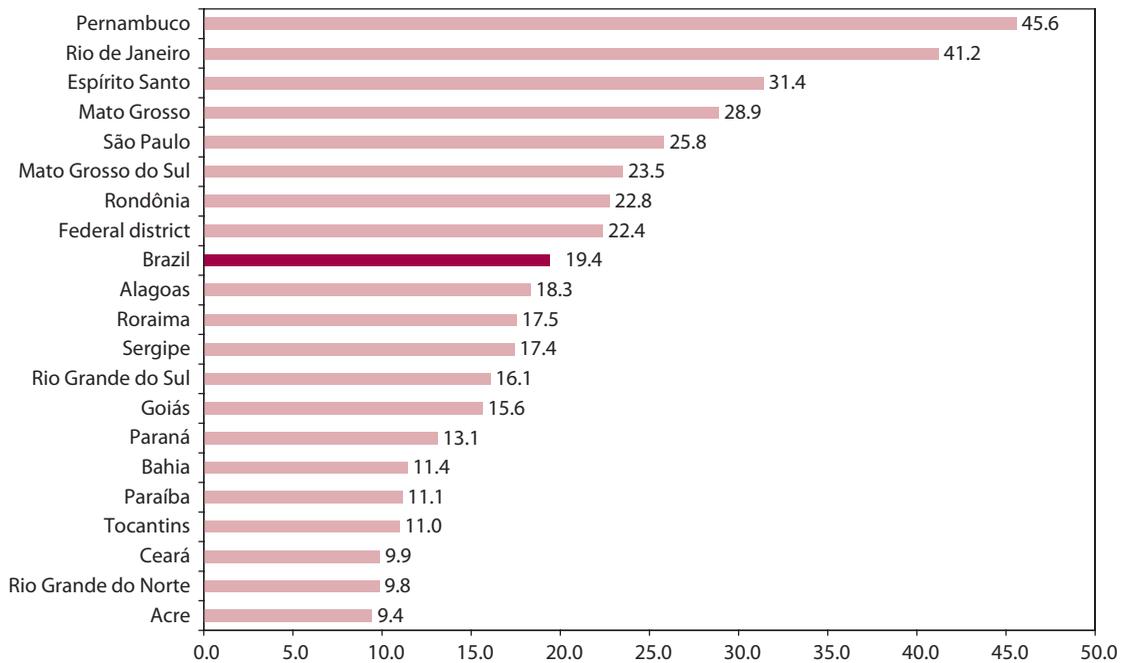
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

C. Brazilian state capitals

C.1. Percentages: The magnitude of firearm-related deaths in relation to all external causes

The percentage of firearm-related deaths increased in twenty-two of the twenty-six Brazilian state capitals, from 1991 to the year 2000 (Table 59). In twelve of them – João Pessoa, Recife, Maceió, Aracaju, Salvador, Belo Horizonte, Vitória, Rio de Janeiro, São Paulo, Porto Alegre, Campo Grande, and Cuiabá – percentages surpassed those found for Brazil, which means that firearms have a higher contribution in the total of external cause deaths in these capitals, when compared with the country as a whole.

The most significant increase was in Cuiabá, where the proportion of firearm-related deaths went from 5.8% (n=21) in 1991 to 48.96% (n=260) in the year 2000, with an increase on the order of 746% for the entire population (Table 59). In four other capitals the increase was higher than 150% (João Pessoa, Maceió, Belo Horizonte, and São Paulo), and in two it was over 100% (Porto Alegre and Campo Grande). Despite the fact that Vitória, Recife, and Rio de Janeiro presented a low increase in the period, when compared with the results presented above, in these capitals we found the greatest percentage of firearm-related deaths (Table 59).

In Recife, capital of Pernambuco, firearms were involved in more than 40% of all external cause deaths during the entire period, and for almost 60% in the year 2000 (Table 59). In Vitória, capital of Espírito Santo, the percentage reached its highest point in 1999, exceeding 60% of all external cause deaths. There, it started to grow in 1993 and continued until 1999. In the state capital of Rio de Janeiro the proportion of firearm-related deaths fell consistently from 1991 until 1996, going from 46.5% (n=2,865) to 31.5% (n=2,088). Since 1997 the percentage of firearm-related deaths has been growing in Rio de Janeiro, with its highest point in the year 2000 (48.2%, n= 2,671).

In the male population the percentage of firearm-related deaths increased in twenty-three of the twenty-six state capitals, with the exception of Rio Branco, Manaus, and São Luis (Table 60). The first two are the capitals of Acre and Amazonas respectively, and the latter is the capital of Maranhão. The most significant increase was in Cuiabá, capital of Mato Grosso (675%), from 6.83% (n=20) to 52.9% (n=245). There, the percentage of firearm-related deaths was the lowest in 1991, considering all other state capitals, whereas in the year 2000 it had become one of the highest in the country. Examining the data by age groups in the male population we can observe that the most significant increase was in the 20-29 and 15-19 age groups, where the proportion of firearm-related deaths increased, respectively, 1,259% and 906% in Cuiabá, with values exceeding 60% since 1999 for the 15-19, and in the year 2000, for the 20-29 male age groups (Tables 61 to 63).

In three other state capitals (São Paulo, João Pessoa, and Belo Horizonte), the male increase was over 150%, and in Maceió it surpassed 100% (Table 60). The proportion of firearm-related deaths increased in all three age groups (15-19, 20-29, and 30-39) in all the four capitals (Tables 61 to 63). In São Paulo the increase for the male population was on the order of 158% (Table 60), whereas it grew 180% in the 30-39 male age group (Table 63). Higher proportions, however, are found for the 15-19 and 20-29 male age groups, respectively. In the former, the percentage of firearm-related deaths did not reach 50% until the year 2000.

In João Pessoa the most important increase was seen in the 15-19 (184%) and 20-29 (183%) male age groups (Tables 61 and 62). While the percentage of global male firearm-related deaths reached 40% only at the end of the decade in João Pessoa (Table 60), it has been higher than 50% since 1997 in the 15-19 age group, and since 1998 in the 20-29 age group, where it reached 60% in the year 2000.

Table 59: Proportion of firearm-related deaths in relation to all external causes and increase (%), Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	20.90	21.32	21.86	22.63	23.29	22.44	23.44	25.93	27.02	29.95	43.3
Porto Velho	23.98	24.83	18.01	22.71	19.21	29.93	23.17	33.01	31.15	25.87	7.9
Rio Branco	32.86	23.97	26.16	20.90	21.79	25.11	25.95	29.05	25.84	16.81	-48.8
Manaus	25.75	21.18	20.97	20.23	18.65	22.45	19.27	20.79	20.91	21.53	-16.4
Boa Vista	14.84	21.15	23.23	21.94	25.82	19.16	16.04	18.61	18.47	15.06	1.5
Belém	26.14	23.32	19.54	23.17	22.35	17.77	20.12	23.48	22.30	27.57	5.5
Macapá	7.95	23.78	18.03	13.48	21.33	28.57	23.29	22.92	17.86	12.17	53.1
Palmas	14.29	11.11	7.41	6.67	12.00	11.76	12.07	12.31	19.72	16.53	15.7
São Luís	21.61	20.38	14.90	18.37	16.96	22.04	20.58	20.70	16.71	17.12	-20.8
Teresina	8.57	9.93	7.14	8.86	13.50	10.37	10.14	9.37	11.62	14.57	70.0
Fortaleza	14.45	13.60	16.70	16.98	18.70	17.02	17.57	19.98	18.11	23.49	62.6
Natal	14.72	14.78	22.71	23.14	22.80	23.08	29.91	19.94	24.79	26.70	81.4
João Pessoa	14.47	25.26	19.57	16.81	24.67	18.02	35.51	41.07	36.57	43.19	198.4
Recife	44.04	40.93	40.35	42.45	47.85	45.39	57.78	59.91	57.76	59.11	34.2
Maceió	15.02	18.66	28.25	27.07	35.21	34.32	33.33	29.96	33.78	38.53	156.5
Aracaju	24.65	27.72	21.88	22.07	18.88	23.38	23.29	19.65	26.72	33.85	37.3
Salvador	35.74	32.86	35.10	34.23	36.44	42.84	39.96	41.99	40.52	40.05	12.1
Belo Horizonte	12.88	13.71	15.47	14.61	18.76	17.84	18.88	26.00	21.22	36.75	185.3
Vitória	26.02	20.43	33.54	37.50	36.41	39.81	50.00	51.47	62.27	46.32	78.0
Rio de Janeiro	46.52	48.13	45.81	45.57	41.53	31.51	35.74	38.93	41.94	48.16	3.5
São Paulo	14.07	15.01	20.51	23.19	25.99	23.98	24.33	27.03	32.62	37.50	166.6
Curitiba	13.93	13.31	14.98	16.90	20.28	18.07	20.10	22.62	26.37	23.67	70.0
Florianópolis	7.28	6.12	7.94	6.19	7.21	9.50	11.48	13.97	18.75	12.22	67.7
Porto Alegre	20.86	26.27	25.33	24.89	30.54	31.03	33.07	33.79	37.25	43.34	107.7
Campo Grande	20.76	23.82	20.59	21.26	29.08	31.56	31.55	37.14	30.87	42.17	103.1
Cuiabá	5.79	5.13	3.88	5.14	22.71	32.29	23.17	37.24	35.80	48.96	746.4
Goiânia	21.11	17.21	17.23	19.72	18.47	17.87	17.86	17.39	24.19	24.87	17.8

In Belo Horizonte, the capital of Minas Gerais, the percentage of male firearm-related deaths increased 160% in the period, ranging from 15.9% (n=182) in 1991 to 41.4% (n=552) in the year 2000 (Table 60). The highest increases are found in the 15-19 (231%) and 30-39 (178%) male age groups (Tables 60 to 63). In the former, the proportion reached its highest point in the year 2000 (71.6%, n= 111), being lower than 50% from 1991 to 1999.

In Maceió, while the male global increase was on the order of 131% (Table 60), it increased

256% in the 15-19 (Table 61), and 157% in the 20-29 male age groups (Table 62). In Table 60 we can observe that the percentage has been over 30% since 1993, considering the entire male population, with the highest figures in the 15-19 age group, which reached 62.3% in the year 2000 (Table 61).

In Campo Grande, capital of Mato Grosso do Sul, increases were on the order of 96% for the entire, and 114% for the 20-29 year-old male population (Tables 60 and 62). In the entire male population percentages ranged from a minimum of 21.4% (n= 186) in 1993 to a maximum of 45.6% (n=218) in the year 2000. In the 15-19 male age group (Table 61) the proportion of firearm-related deaths exceeded 40% (n=24) in 1992, and in the year 2000 it was over 60% (n=36).

In Porto Alegre, capital of Rio Grande do Sul, the male global increase was on the order of 93%, with values exceeding 40% since 1998 (Table 60). The increase was higher only in the 20-29 age group, where the proportion exceeded 50% and had reached 60% by the end of the decade (Table 62). Higher proportions were found, however, in the 15-19 male age group, where they have been over 60% since 1997 (Table 61).

Despite the fact that we found a lower increase in Recife, Rio de Janeiro and Vitória when compared with the results shown above, these capitals presented very high percentages of male firearm-related deaths during the entire period (Table 60). In Recife's male population percentages have exceeded 60% since 1997, reaching the peak figure in 1998 (65.5%). When we consider the data by age groups we can see that the highest contribution of firearms in the total of external cause deaths is in the 15-19 male age group (Tables 61 to 63). In Table 61 we note that in this group the percentage of firearm-related deaths was over 60% during the entire period, having exceeded 80% since 1998. This means that considering all deaths due to external causes in the 15-19 male age group of Recife, 80% are related to the use of firearms. Numbers higher than these were found only in Vitória in 1997 and 1999. In the 20-29 male age group in Recife, the percentage was also above 60% during the entire period, reaching 80% in the year 2000 (Table 62). We should also draw attention to the significant proportions found for the 30-39 male population of Recife, which have exceeded 60% since 1998 (Table 63).

In Rio de Janeiro's state capital the increase was very small for both the entire male population and age groups (Tables 60 to 63). Nevertheless, we should note the high numbers found. In the 15-19 age group the percentage was over 70% at the beginning of the decade, falling to 50.4% (n=344) in 1996, when it started to increase again, reaching its peak in the year 2000 (75.2%, n=480). In the 20-29 male age group the percentage only reached 70% in the year 2000, being, however, over 60% from 1991 to 1995 and again in 1999. Rio de Janeiro ended the decade with the highest proportion of male firearm-related deaths in the 30-39 age group, exceeding that found for Vitória from 1991 to 1995 and in the year 2000.

We should note the high percentage of male firearm-related deaths found in Vitória (Tables 60 to 63). In Table 60, we can observe that Vitória presented a percentage of firearm-related deaths for the entire male population exceeding 55% in 1997, 1998 and 1999, dropping to 49.8% (n= 82) in the year 2000. The most elevated figures and a constant increase from 1991 to 1999 can be noted, with the most significant increase in the city occurring between 1998 and 1999 when the proportion of firearm-related deaths went from 55.9% (n=160) to 66.8% (n=189). While increases did not exceed 73% in the entire and in the 20-29 and 30-39 age group male populations in the city, they exceeded 100% in the 15-19 male age group. In the 15-19 male age group the percentage of firearm-related deaths has been over 60% since1993, except for 1996, and had surpassed 70% by the end of the decade. Percentages of more than 50% were also found for the 20-29 and 30-39 male age groups. In the former the percentage of firearm-related deaths reached 81.5% (n=88) in 1999, falling then to 67.5% (n=52) in the year 2000.

Table 60: Proportion of male firearm-related deaths in relation to all external causes and increase (%), Brazil and state capitals, 1991 - 2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	23.32	23.83	24.52	25.25	25.93	24.85	25.82	28.70	29.76	33.02	41.6
Porto Velho	26.06	26.94	20.60	23.31	20.00	32.08	24.77	34.87	33.63	29.26	12.3
Rio Branco	34.24	24.40	27.86	24.47	22.22	27.55	26.94	31.75	26.45	17.71	-48.3
Manaus	28.76	23.49	22.79	22.06	20.62	24.29	20.74	22.37	21.95	23.80	-17.2
Boa Vista	15.15	20.59	24.06	25.15	28.75	21.18	16.77	19.12	20.29	16.26	7.3
Belém	28.33	26.87	22.95	26.49	25.45	20.41	23.26	26.59	24.70	30.98	9.3
Macapá	9.40	25.53	22.14	14.95	23.20	30.49	24.59	24.38	18.75	12.08	28.5
Palmas	16.67	9.52	8.00	5.88	14.29	11.90	13.46	12.28	22.81	19.00	14.0
São Luís	24.18	21.94	17.01	21.45	19.90	26.02	23.44	22.55	19.43	18.97	-21.6
Teresina	9.50	11.50	7.58	9.62	15.63	11.79	10.78	10.46	13.38	16.98	78.7
Fortaleza	16.57	14.93	18.48	18.63	20.72	18.43	19.06	22.34	19.91	25.55	54.2
Natal	17.78	16.26	25.19	27.86	24.93	26.46	32.44	22.04	27.87	30.15	69.6
João Pessoa	16.53	26.96	22.43	19.50	26.94	19.35	38.18	43.62	39.71	45.66	176.2
Recife	50.31	46.93	45.44	47.60	53.64	50.54	62.78	65.52	62.28	63.57	26.4
Maceió	18.18	21.36	32.11	29.92	38.99	37.23	35.43	33.12	37.47	42.16	131.9
Aracaju	29.74	33.26	25.94	23.47	21.97	26.38	26.14	22.22	29.70	38.41	29.2
Salvador	40.20	38.34	39.99	38.63	42.50	47.79	45.09	47.13	45.74	44.90	11.7
Belo Horizonte	15.91	16.83	18.66	17.24	21.98	21.08	21.96	30.61	24.09	41.37	160.0
Vitória	28.87	25.97	36.94	40.69	41.24	44.26	55.81	55.94	66.78	49.80	72.5
Rio de Janeiro	52.26	53.89	51.67	50.57	46.66	36.14	40.97	44.29	47.33	54.56	4.4
São Paulo	15.64	16.69	22.86	25.62	28.44	26.19	26.20	29.06	34.92	40.37	158.1
Curitiba	15.46	15.03	18.16	19.28	22.59	20.04	23.05	24.77	29.68	26.84	73.6
Florianópolis	8.26	7.41	8.70	6.79	8.02	10.23	15.13	16.91	23.36	15.69	89.8
Porto Alegre	25.03	30.17	30.21	29.12	36.56	36.71	37.06	40.35	43.03	48.39	93.3
Campo Grande	23.32	25.07	21.43	24.81	31.49	33.88	35.86	40.14	33.56	45.66	95.8
Cuiabá	6.83	5.70	4.39	5.72	25.07	36.59	25.67	40.98	39.81	52.92	675.2
Goiânia	22.61	18.27	18.27	21.94	20.07	19.11	19.68	20.43	26.73	26.89	18.9

Source: Mortality Information System (SIM), Ministry of Health, Brazil

It is important to consider the low number of external cause and firearm-related deaths in the female population, especially when we analyze data by age groups. This can explain the irregular pattern and influence the results found, making it difficult to compare the data in different years and locations, as well as with those numbers found for the male population. Percentages of female firearm-related deaths increased in sixteen of the twenty-six Brazilian state capitals, decreased in seven and remained relatively constant in two (Curitiba and Goiânia) (Table 64). What should be noted in the table is the growth in nine of the sixteen state capitals – Macapá,

Natal, João Pessoa, Maceió, Belo Horizonte, São Paulo, Porto Alegre, Campo Grande, and Cuiabá. In the year 2000 twelve capitals (João Pessoa, Recife, Maceió, Salvador, Belo Horizonte, Vitória, Rio de Janeiro, São Paulo, Porto Alegre, Campo Grande, Cuiabá, and Goiânia) presented a percentage of female firearm-related deaths higher than that found for Brazil. We should note the high proportion of firearm-related deaths in the female population of Recife, over 20% since 1997, reaching 30% (n=44) in the year 2000, the highest in the country.

Table 61: Proportion of male firearm-related deaths in relation to all external causes and increase (%), age 15-19, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	31.46	31.32	35.10	34.26	35.97	34.03	36.12	40.92	42.46	47.77	51.9
Porto Velho	51.28	24.00	37.14	30.77	28.57	39.29	34.62	58.33	58.33	39.02	-23.9
Rio Branco	38.24	16.13	42.86	31.82	54.84	40.00	42.86	46.67	30.00	19.23	-49.7
Manaus	36.03	20.93	29.00	26.61	25.19	30.88	26.49	28.87	27.27	33.88	-6.0
Boa Vista	22.22	23.08	14.29	22.22	23.08	11.54	25.00	28.00	30.30	25.81	16.1
Belém	29.41	32.31	33.33	38.46	27.12	23.29	29.41	39.02	32.47	37.11	26.2
Macapá	0.00	38.10	47.37	31.03	45.45	32.35	33.33	39.47	26.42	23.26	-39.0
Palmas	0.00	0.00	0.00	0.00	50.00	16.67	33.33	0.00	28.57	27.27	**
São Luís	24.32	14.29	16.28	35.71	30.36	29.09	30.77	31.25	30.56	37.50	54.2
Teresina	20.00	12.00	13.51	10.00	17.78	17.95	13.04	10.20	13.33	26.00	30.0
Fortaleza	23.38	19.70	27.17	20.48	32.08	22.46	23.72	33.60	31.93	40.85	74.7
Natal	31.25	24.14	52.00	43.90	47.62	30.00	52.54	55.17	43.59	48.94	56.6
João Pessoa	19.23	21.05	38.71	40.54	46.55	40.00	56.25	47.92	51.06	54.69	184.4
Recife	66.14	63.16	68.97	64.42	69.14	74.86	79.07	83.67	80.69	80.30	21.4
Maceió	17.50	28.21	28.00	30.16	54.90	39.06	42.19	50.00	54.24	62.32	256.1
Aracaju	50.00	42.59	45.83	41.67	34.78	28.57	35.29	31.25	48.28	51.11	2.2
Salvador	53.89	60.11	57.59	54.50	54.64	64.00	65.95	67.84	65.93	65.79	22.1
Belo Horizonte	21.59	26.09	30.00	28.70	30.00	28.46	33.33	48.65	29.29	71.61	231.7
Vitória	31.25	37.50	64.29	66.67	64.29	51.61	83.33	77.14	85.71	70.37	125.2
Rio de Janeiro	71.96	72.96	71.77	67.70	63.33	50.44	55.45	64.21	67.46	75.18	4.5
São Paulo	22.03	21.42	31.09	33.55	36.32	33.50	33.01	35.33	44.20	53.24	141.6
Curitiba	32.32	30.00	31.71	37.11	23.30	25.96	32.73	32.10	43.88	42.50	31.5
Florianópolis	22.22	14.29	36.36	8.33	22.22	18.75	11.11	33.33	42.86	20.00	-10.0
Porto Alegre	42.65	45.12	43.84	46.88	64.20	56.16	61.36	59.52	68.35	66.27	55.4
Campo Grande	31.58	44.12	27.78	44.00	55.56	43.33	49.18	58.33	53.97	64.29	103.6
Cuiabá	6.67	6.25	2.00	5.71	44.83	40.48	28.13	54.10	61.02	67.12	906.8
Goiânia	28.99	23.94	22.06	31.43	28.85	20.78	25.35	28.13	33.33	50.00	72.5

Source: Mortality Information System (SIM), Ministry of Health, Brazil
*** It was not possible to calculate the increment.*

Table 62: Proportion of male firearm-related deaths in relation to all external causes and increase (%), age 20-29, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	31.59	31.93	33.51	34.43	35.32	33.74	35.12	38.61	40.54	45.09	42.8
Porto Velho	29.03	34.48	26.19	29.49	38.30	37.31	35.44	39.24	41.57	37.69	29.8
Rio Branco	57.14	39.68	32.47	25.00	20.90	34.33	32.14	40.98	42.22	21.54	-62.3
Manaus	32.60	27.92	32.28	27.40	31.52	31.66	27.14	25.47	28.41	30.70	-5.8
Boa Vista	17.86	21.43	27.27	28.57	38.98	29.17	28.26	25.32	24.24	20.31	13.8
Belém	42.72	40.61	31.94	36.14	37.65	34.43	29.70	34.93	32.69	40.53	-5.1
Macapá	7.50	31.37	37.50	15.09	18.37	42.86	21.54	27.54	20.48	14.67	95.6
Palmas	0.00	0.00	28.57	0.00	0.00	11.11	22.22	0.00	30.43	40.91	**
São Luís	37.90	26.72	28.04	30.00	23.81	37.69	30.77	35.29	26.92	17.65	-53.4
Teresina	12.96	23.08	13.64	13.89	28.77	17.33	10.98	16.05	21.84	25.00	92.9
Fortaleza	22.57	20.23	26.17	24.32	26.14	24.94	26.39	27.91	25.97	32.51	44.0
Natal	26.32	26.39	38.37	44.71	31.11	39.67	44.17	31.11	42.03	49.04	86.3
João Pessoa	21.52	39.71	25.00	22.22	32.69	20.83	45.54	57.94	54.55	60.98	183.4
Recife	62.92	60.59	61.46	65.20	71.61	67.97	76.52	78.82	79.96	80.35	27.7
Maceió	22.31	27.61	45.04	36.88	47.95	46.29	37.14	44.53	51.45	57.49	157.6
Aracaju	42.86	48.46	31.08	35.00	30.58	41.84	30.38	27.52	31.62	55.74	30.1
Salvador	57.42	56.68	59.92	57.61	58.89	67.55	63.11	65.60	63.97	60.00	4.5
Belo Horizonte	28.48	24.49	28.00	27.85	34.05	31.73	32.02	45.89	35.91	55.37	94.5
Vitória	39.33	33.93	50.59	49.48	59.41	59.42	64.00	75.26	81.48	67.53	71.7
Rio de Janeiro	68.60	69.67	69.44	68.28	64.11	50.57	54.99	58.23	63.24	70.83	3.3
São Paulo	20.68	22.00	30.46	34.53	36.89	34.29	33.95	36.84	43.90	49.03	137.0
Curitiba	21.74	22.75	30.19	23.67	38.80	31.06	35.69	36.19	40.96	38.81	78.5
Florianópolis	12.50	13.33	12.20	6.98	4.55	16.67	11.90	22.58	23.81	15.22	21.7
Porto Alegre	32.52	43.92	47.65	41.11	46.70	39.57	48.24	55.22	60.09	65.08	100.1
Campo Grande	29.07	29.89	29.90	25.45	38.94	41.86	44.77	50.77	40.32	62.24	114.1
Cuiabá	4.60	9.46	4.11	5.56	21.74	48.15	34.21	52.45	51.52	62.50	1259.4
Goiânia	30.09	23.76	25.39	34.33	15.77	26.89	23.70	29.41	35.47	33.33	10.8

Source: Mortality Information System (SIM), Ministry of Health, Brazil
*** It was not possible to calculate the increment.*

Table 63: Proportion of male firearm-related deaths in relation to all external causes and increase (%), age 30-39, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	24.59	24.69	25.24	26.05	26.39	26.11	26.55	29.15	30.38	33.24	35.2
Porto Velho	31.75	30.77	17.86	28.13	5.00	32.65	28.57	28.13	39.08	26.37	-16.9
Rio Branco	18.92	22.45	32.43	30.56	15.63	26.47	21.43	20.45	24.24	27.78	46.8
Manaus	35.17	32.09	22.58	31.90	21.08	27.78	23.53	26.00	21.64	16.58	-52.9
Boa Vista	16.67	32.00	36.11	34.78	31.43	26.83	8.82	15.91	20.83	11.63	-30.2
Belém	32.85	25.89	29.13	25.69	22.78	19.23	26.36	27.86	20.00	35.45	7.9
Macapá	17.39	30.00	11.11	21.05	12.50	38.89	33.33	17.65	20.83	8.51	-51.1
Palmas	33.33	9.09	0.00	12.50	20.00	12.50	7.69	27.27	20.00	13.79	-58.6
São Luís	17.91	28.36	20.83	24.14	26.83	29.90	24.72	18.39	20.78	15.94	-11.0
Teresina	6.38	14.63	4.35	7.14	10.17	6.67	15.69	10.71	16.28	17.39	172.5
Fortaleza	17.37	18.29	18.18	19.14	16.89	19.44	18.25	18.69	18.59	19.12	10.1
Natal	12.96	16.67	23.08	20.29	27.40	22.81	26.23	16.92	30.56	22.39	72.7
João Pessoa	21.31	29.63	31.91	20.63	20.63	14.29	31.03	42.11	37.80	39.13	83.6
Recife	56.31	53.29	44.30	44.13	53.30	50.59	59.00	61.71	61.13	64.37	14.3
Maceió	25.56	22.86	37.62	37.61	38.52	42.14	44.34	31.73	36.59	31.25	22.3
Aracaju	32.26	36.25	18.00	21.18	22.37	17.39	26.98	21.28	34.29	30.56	-5.3
Salvador	38.31	34.71	32.03	35.69	40.28	42.91	37.22	40.47	43.17	46.37	21.1
Belo Horizonte	13.41	16.73	17.90	17.43	25.10	25.31	24.91	32.14	24.78	37.34	178.5
Vitória	35.85	32.35	31.67	29.69	25.40	46.67	56.34	53.45	66.07	56.60	57.9
Rio de Janeiro	55.64	56.81	55.37	54.17	48.75	40.32	42.87	46.30	51.47	57.95	4.2
São Paulo	14.40	17.53	24.37	25.58	28.99	26.01	26.64	30.10	35.77	40.37	180.3
Curitiba	15.24	19.12	14.63	20.34	22.66	25.25	25.35	28.74	28.75	27.98	83.5
Florianópolis	8.70	7.14	3.33	7.32	11.43	6.98	23.53	3.70	31.43	21.05	142.1
Porto Alegre	25.95	33.10	29.41	26.28	34.87	46.10	35.57	42.06	38.06	45.39	74.9
Campo Grande	30.12	29.33	18.67	26.88	38.89	36.94	30.00	37.14	36.25	41.67	38.3
Cuiabá	9.26	7.58	3.70	7.59	29.76	37.21	27.87	38.24	33.33	53.85	481.5
Goiânia	20.44	18.40	19.72	18.90	28.22	22.45	25.00	17.65	31.14	26.32	28.8

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 64: Proportion of female firearm-related deaths in relation to all external causes and increase (%),
Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	9.27	9.08	9.32	10.40	10.71	11.10	11.30	11.65	12.31	13.32	43.6
Porto Velho	14.29	15.79	5.66	20.41	13.64	22.58	13.51	23.53	12.77	6.06	-57.6
Rio Branco	25.00	21.88	15.63	8.93	21.21	12.82	20.93	10.00	21.74	11.76	-52.9
Manaus	7.94	6.25	11.76	10.60	8.38	12.08	10.39	12.57	15.04	7.69	-3.1
Boa Vista	13.04	25.00	15.79	6.67	4.55	11.36	11.54	14.81	9.52	8.33	-36.1
Belém	16.03	8.45	3.70	9.02	7.62	7.79	7.50	10.20	10.66	6.67	-58.4
Macapá	3.03	13.04	4.65	5.56	10.00	20.00	16.67	15.38	12.50	13.04	330.4
Palmas	0.00	20.00	0.00	9.09	6.67	11.11	0.00	12.50	7.14	4.76	-76.2
São Luís	12.62	11.29	4.05	5.41	4.40	4.17	8.33	11.25	4.00	8.00	-36.6
Teresina	4.55	3.64	5.63	5.45	5.41	4.55	6.25	4.29	1.92	1.45	-68.1
Fortaleza	6.10	6.59	9.30	10.05	6.54	10.89	9.05	6.43	8.61	11.46	87.7
Natal	2.56	9.86	13.04	7.69	15.22	8.54	17.33	8.77	11.76	12.00	368.0
João Pessoa	5.36	18.18	6.90	7.35	15.56	12.00	19.57	21.05	15.38	23.26	334.1
Recife	16.99	12.56	19.01	15.58	19.40	19.50	22.61	23.35	24.43	31.43	85.0
Maceió	3.64	9.01	12.50	11.83	17.43	19.64	19.74	15.15	15.12	16.25	346.9
Aracaju	4.35	3.42	4.84	14.29	6.17	4.17	9.80	8.06	11.11	7.14	64.3
Salvador	11.34	9.15	8.30	12.19	10.83	17.47	14.43	13.77	13.67	13.66	20.5
Belo Horizonte	3.01	4.18	5.99	6.94	8.06	7.00	7.76	9.20	11.31	16.06	433.1
Vitória	12.07	1.89	17.54	20.37	15.15	23.08	16.67	27.78	32.56	23.68	96.2
Rio de Janeiro	16.85	16.56	16.79	20.86	15.58	11.78	11.38	13.89	15.02	18.38	9.1
São Paulo	5.79	5.35	8.08	9.21	11.72	10.89	13.10	13.52	16.37	18.09	212.5
Curitiba	9.38	7.98	6.04	8.61	10.87	11.35	9.26	13.30	13.02	9.77	4.2
Florianópolis	3.45	2.56	5.88	4.17	4.35	6.67	1.75	4.65	2.56	4.41	27.9
Porto Alegre	7.39	12.50	7.34	11.63	12.28	12.50	17.56	11.50	13.04	21.51	191.0
Campo Grande	9.21	18.81	13.79	8.49	19.09	21.14	11.01	19.12	16.25	22.78	147.4
Cuiabá	1.43	1.92	1.59	1.89	11.43	12.50	9.59	16.44	11.59	22.06	1444.1
Goiânia	14.57	13.25	12.79	11.60	12.09	12.50	10.30	4.03	13.04	14.73	1.1

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	16.49	15.59	16.64	17.99	17.88	17.22	19.40	20.49	22.58	24.65
Porto Velho	50.00	16.67	20.00	40.00	0.00	20.00	0.00	0.00	40.00	33.33
Rio Branco	75.00	0.00	0.00	10.00	25.00	0.00	28.57	33.33	0.00	40.00
Manaus	13.33	15.38	18.18	20.69	4.76	10.34	22.22	27.59	32.14	15.00
Boa Vista	40.00	33.33	100.00	0.00	0.00	20.00	28.57	0.00	0.00	33.33
Belém	27.78	9.09	14.29	18.75	12.50	11.11	18.75	11.54	23.08	0.00
Macapá	0.00	33.33	0.00	0.00	0.00	30.00	0.00	16.67	33.33	25.00
Palmas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
São Luís	30.00	0.00	14.29	15.38	0.00	0.00	12.50	11.11	0.00	14.29
Teresina	0.00	0.00	14.29	0.00	22.22	0.00	0.00	9.09	0.00	0.00
Fortaleza	18.18	15.38	20.83	21.05	8.33	17.39	14.29	6.67	12.50	20.83
Natal	25.00	0.00	0.00	18.18	0.00	25.00	66.67	20.00	33.33	0.00
João Pessoa	0.00	0.00	0.00	16.67	20.00	10.00	37.50	60.00	25.00	60.00
Recife	28.57	28.57	47.37	61.54	31.03	33.33	52.63	55.00	46.15	59.09
Maceió	0.00	10.00	16.67	0.00	17.65	60.00	36.36	20.00	33.33	26.67
Aracaju	20.00	14.29	14.29	0.00	0.00	28.57	0.00	0.00	12.50	0.00
Salvador	44.44	30.00	20.83	25.64	27.27	45.83	25.93	38.71	36.36	38.89
Belo Horizonte	12.50	16.13	6.67	15.00	13.79	7.69	23.33	16.67	24.32	37.04
Vitória	0.00	0.00	0.00	60.00	50.00	25.00	20.00	33.33	66.67	75.00
Rio de Janeiro	42.86	40.68	36.67	42.27	32.89	24.69	23.29	42.03	28.79	58.62
São Paulo	4.05	9.47	14.29	12.34	22.46	17.42	21.33	25.52	28.08	32.31
Curitiba	20.00	20.83	15.79	37.50	27.78	14.81	17.39	19.05	38.46	31.25
Florianópolis	25.00	0.00	20.00	14.29	33.33	0.00	0.00	0.00	0.00	16.67
Porto Alegre	10.53	10.00	25.00	23.53	12.50	42.11	26.67	21.43	28.57	42.86
Campo Grande	33.33	22.22	33.33	6.67	63.64	25.00	22.22	50.00	35.71	55.56
Cuiabá	0.00	16.67	0.00	0.00	12.50	20.00	33.33	27.27	20.00	40.00
Goiânia	6.25	25.00	43.75	27.27	13.33	13.04	14.29	6.67	38.46	25.00

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 66: Proportion of female firearm-related deaths in relation to all external causes (%), age 20-29, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	16.59	16.71	16.79	17.50	19.84	19.85	21.06	21.00	22.08	23.23
Porto Velho	27.27	33.33	0.00	36.36	0.00	30.77	37.50	25.00	0.00	0.00
Rio Branco	40.00	60.00	0.00	25.00	28.57	20.00	50.00	66.67	66.67	0.00
Manaus	20.83	8.33	20.00	7.69	20.00	32.00	18.42	17.95	11.11	8.33
Boa Vista	14.29	20.00	50.00	16.67	11.11	20.00	0.00	0.00	20.00	16.67
Belém	26.47	15.15	4.00	17.39	5.56	11.76	12.90	10.71	7.41	12.50
Macapá	16.67	33.33	14.29	10.00	33.33	45.45	25.00	28.57	33.33	50.00
Palmas	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	14.29	25.00
São Luís	27.27	30.77	6.25	0.00	6.25	15.00	7.14	17.65	0.00	15.79
Teresina	33.33	7.14	23.08	12.50	7.69	16.67	12.50	0.00	9.09	8.33
Fortaleza	15.22	15.63	15.91	15.22	17.50	17.86	21.05	12.12	13.33	15.15
Natal	0.00	20.00	23.08	0.00	28.57	0.00	41.67	16.67	28.57	44.44
João Pessoa	16.67	33.33	9.09	13.33	31.82	30.77	41.67	25.00	18.18	66.67
Recife	28.81	34.38	45.83	18.52	40.00	43.24	45.71	41.67	34.48	64.10
Maceió	15.38	22.73	14.81	50.00	53.85	26.92	26.67	31.25	33.33	16.67
Aracaju	0.00	0.00	12.50	38.89	16.67	0.00	11.11	14.29	11.76	10.00
Salvador	16.98	25.49	9.30	27.08	19.05	37.50	30.43	21.15	25.00	30.00
Belo Horizonte	5.56	8.51	16.67	12.50	17.02	20.75	10.42	25.00	14.29	27.66
Vitória	41.67	0.00	40.00	28.57	21.43	45.00	40.00	66.67	70.00	42.86
Rio de Janeiro	28.74	31.30	33.58	43.92	37.93	25.73	29.20	32.00	36.11	38.18
São Paulo	11.59	7.93	15.97	19.19	19.62	15.76	28.67	25.10	31.66	32.94
Curitiba	20.93	5.71	10.53	10.81	22.22	33.33	14.71	35.29	12.12	13.89
Florianópolis	0.00	0.00	16.67	0.00	0.00	28.57	11.11	11.11	0.00	0.00
Porto Alegre	22.50	19.23	10.34	34.48	23.53	14.29	19.23	25.00	27.78	41.94
Campo Grande	6.25	34.78	15.38	4.76	20.00	25.00	7.69	20.00	10.53	27.27
Cuiabá	5.88	0.00	0.00	0.00	17.65	42.86	27.27	40.00	16.67	33.33
Goiânia	32.26	14.81	14.63	8.57	20.83	17.24	16.00	11.11	24.14	28.00

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 67: Proportion of female firearm-related deaths in relation to all external causes (%),
age 30-39, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	12.48	13.89	14.33	15.10	15.10	16.04	16.25	17.15	18.29	20.88
Porto Velho	25.00	21.43	11.11	25.00	0.00	35.71	0.00	44.44	7.69	10.00
Rio Branco	0.00	25.00	33.33	0.00	25.00	12.50	11.11	0.00	0.00	14.29
Manaus	7.14	8.70	20.00	11.76	17.39	15.79	8.33	10.53	25.00	0.00
Boa Vista	0.00	33.33	0.00	0.00	0.00	28.57	50.00	75.00	28.57	0.00
Belém	19.23	10.53	0.00	13.33	30.77	7.69	3.85	22.22	18.75	0.00
Macapá	0.00	0.00	0.00	11.11	40.00	20.00	25.00	20.00	25.00	0.00
Palmas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
São Luís	11.11	33.33	0.00	10.00	12.50	6.25	28.57	10.00	18.18	11.11
Teresina	0.00	0.00	0.00	16.67	12.50	18.18	25.00	11.11	0.00	0.00
Fortaleza	13.33	0.00	8.82	16.13	3.03	18.75	4.88	3.57	23.08	12.00
Natal	0.00	11.11	33.33	0.00	35.71	0.00	0.00	27.27	8.33	8.33
João Pessoa	9.09	25.00	9.09	28.57	20.00	10.00	16.67	20.00	33.33	28.57
Recife	25.00	13.79	13.89	29.17	18.42	29.03	24.32	32.26	44.83	40.00
Maceió	7.69	10.53	31.25	11.76	26.32	23.53	16.67	23.08	30.77	27.27
Aracaju	0.00	9.09	0.00	28.57	0.00	0.00	22.22	0.00	14.29	10.00
Salvador	20.00	8.82	14.29	15.56	19.35	25.00	32.56	20.83	15.15	13.16
Belo Horizonte	4.00	6.67	6.52	10.17	10.20	14.89	17.65	12.28	22.45	22.86
Vitória	0.00	25.00	42.86	16.67	20.00	50.00	25.00	66.67	25.00	25.00
Rio de Janeiro	28.13	23.33	35.95	34.44	24.50	29.41	23.53	22.92	34.55	44.33
São Paulo	9.35	11.64	10.75	14.69	18.48	17.05	14.88	18.97	20.19	28.93
Curitiba	10.71	25.00	13.04	13.89	12.90	10.26	20.00	10.71	30.56	13.51
Florianópolis	0.00	0.00	8.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Porto Alegre	7.69	12.50	15.79	20.00	29.17	22.22	32.26	34.78	25.00	35.00
Campo Grande	20.00	14.29	30.77	10.00	11.76	23.81	21.05	41.67	37.50	25.00
Cuiabá	0.00	0.00	9.09	14.29	0.00	0.00	5.56	28.57	22.22	38.46
Goiânia	18.92	27.59	10.53	20.83	21.43	20.83	6.90	5.00	16.00	21.05

Source: Mortality Information System (SIM), Ministry of Health, Brazil

C.2. Firearm-related mortality rates

Considering all Brazilian state capitals, thirteen of them present firearm-related mortality rates higher than those found for Brazil (Table 68). In the table we observe that the firearm-related mortality rates increased in nineteen of the twenty-six Brazilian state capitals, and decreased in seven (Rio Branco, Manaus, Belém, São Luis, Salvador, Rio de Janeiro, and Goiânia). The most significant increase occurred in Cuiabá (690%) and Palmas (208%), followed by Teresina, João Pessoa, Maceió, Belo Horizonte, and São Paulo, where it was over 100%. Despite the fact that we observe lower increases in Recife and Vitória, these two capitals present elevated rates during the entire period. The same can be said of Rio de Janeiro, which presented a decrease in firearm-related mortality rates, maintaining, however, very high numbers from 1991 to the year 2000. We should also note the values found for Porto Velho – capital of Rondônia, which presents the greatest rates considering all the other capitals of the Northern region states – and Porto Alegre – capital of Rio Grande do Sul, where rates exceeded those found in other capitals of the Southern region. Teresina and Palmas, despite the high increase observed (115% and 208%), presented low rates during the entire period, without surpassing 14/100,000.

In Recife we find the highest rates in the country from 1996 to the year 2000, with the exception of 1999 when they were surpassed by Vitória (Table 68). Rates in Recife have been over 55/100,000 since 1997, the highest value being found in 1998 (67.6/100,000). In the male population firearm-related mortality rates presented the most elevated figures during the entire period, surpassing 100/100,000 from 1997 onwards (Table 69). When we consider data by age groups we find strikingly high rates for the three age groups, especially the 20-29 year old age group (Tables 70 to 72). In this group rates were over 200/100,000 in 1991, 1995, 1996 and 1999 and surpassed 300/100,000 in 1997, 1998 and 2000. Recife ranks first in all three age groups, considering the data for the year 2000. We should also emphasize that rates are increasing in all three age groups, the increase, however, being lower than that found for other capitals. The female population in Recife also presented the highest rates in the country in the year 2000, surpassing 5/100,000 during the entire period (Table 73). Since the rates in the female age groups are somewhat unstable due to the lower number of cases, it is difficult to interpret observed increases for the female age groups. We can say, however, that in Recife higher rates were found in the 20-29 female age group (Tables 74 to 76).

In Cuiabá, capital of Mato Grosso, rates varied from 6.1/100,000 in 1991 to 48.4/100,000 inhabitants in the year 2000, exceeding values found in Rio de Janeiro and Vitória (Table 68). When we consider data by sex groups (Tables 69 and 73), we can observe that in both the male and female populations rates for Cuiabá are the second highest, surpassing 100/100,000 in the male population in the year 2000, while rates did not exceed 10/100,000 from 1991 to 1994 in the same group. In Tables 70 to 72 we can see age-specific rates for the male population in Cuiabá. It is important to note the extremely high rates and the increase found in the 20-29 age group, where they increased 1,830% in the period, from 10.1/100,000 in 1991 to 206.5/100,000 in the year 2000. Despite these elevated rates found in the 20-29 male age group in Cuiabá, it is the country's fourth highest, being exceeded by those found for Recife, Vitória, and Rio de Janeiro. In the 15-19 and 30-39 age groups Cuiabá ended the period ranking third in the country (181.9/100,000 and 134.65/100,000, respectively), presenting the most significant increase in the group (1,178% and 711%, respectively). In the female population rates are higher in the 20-29 age group, exceeding 13/100,000 in 1996 and 1998 (Tables 73 to 76). Misclassification during completion of death certificates could partially account for the increases observed in Cuiabá.

Rio de Janeiro ended the decade ranking third in the country, despite the fact that rates

dropped a little in the period, from 48.5/100,000 in 1991 to 43.4/100,000 in the year 2000 (Table 68). Analyzing the data in the table, we can observe that rates in Rio de Janeiro increased from 1991 to 1994, dropped from 1995 to 1996, and started to grow again as of 1997, without reaching the figures found at the beginning of the period. Considering the data by sex groups, the same pattern is found (Tables 69 and 73). In the male population of the Rio de Janeiro state capital rates were over 100/100,000 at the beginning of the decade, when they then dropped to 74/100,000 in 1996, increasing again at the end of the decade, the rate for the year 2000 being on the order of 90/100,000. Very high rates were found in the three age groups of the male population (Tables 70 to 72), especially in the 20-29 age group, where they surpassed 200/100,000 during the entire period, with the exception of 1996 and 1997. In the year 2000 the 20-29 male rate for Rio de Janeiro was the second highest in the country, being exceeded only by that found for Recife. The female rates for Rio de Janeiro are in the fourth position, being exceeded by those found for Recife, Cuiabá and Vitória (Table 73). Rates ranged from a maximum of 7.74/100,000 in 1994 to a minimum of 4.27/100,000 in 1999. The highest figures were found in the 15-19 female age group (Table 74).

The fourth highest rate for the year 2000 was found in Vitória (40.8/100,000). Vitória presented elevated rates during the entire period, especially from 1994 to 1999 when it ranked second and first in the country, the peak being found in 1999 (68.4/100,000) (Table 68). In the male population rates in Vitória exceeded 100/100,000 in 1997, 1998 and 1999, falling then to 89/100,000 (Table 69). When we consider age-specific rates for the male population (Tables 70 to 72) the highest were found for the 20-29 age group, which have exceeded 200/100,000 since 1994, being over 300/100,000 in 1998 and 1999. The most important increases, however, were found in the 15-19 and 30-39 male age groups. Female rates were also high in Vitória, being exceeded only by those found for Recife and Cuiabá (Table 73). Considering the data by age groups, the female rate in Vitória rose to the first position in the 20-29 age group (27.2/100,000), considering data for 1999 (Table 75).

Porto Velho ended the period with a global rate of 35.4/100,000, the fifth considering all other state capitals (Table 68). In Table 69 we can see the male-specific mortality rate, the highest being found in 1999 (72/100,000). Porto Velho presented an irregular pattern with a decreasing tendency at the beginning of the decade, the most significant increase being from 1998 to 2000. The top rates were found in the 20-29 male age group, more than 100/100,000 since 1997 (Table 71). This is the sole age group that presented an increase in the period, which was on the order of 70%. In the 15-19 and 30-39 male age groups patterns were very irregular, with a relative decrease considering the entire period (Tables 70 and 72). In the female population of Porto Velho the firearm-related mortality rate in the year 2000 was the fifteenth, considering all other capitals (Table 73).

In São Paulo what should be noted is the increase found in the period, on the order of 165% for the entire, 174% for the male, and 153% for the female populations (Tables 68, 69, and 73). São Paulo presented the sixth rate of all state capitals considering the entire population. In the male population the firearm-related mortality rate in São Paulo exceeded that found for Porto Velho in the year 2000. Considering the data by age groups (Tables 70 to 72), rates in São Paulo were higher in the 20-29 male age group, having been over 100/100,000 since 1994. The female rate in São Paulo for the year 2000 was in the seventh position (Table 73), the greatest being found for the 15-19 and 20-29 age groups (Tables 74 and 75).

Campo Grande, Porto Alegre, Maceió, and João Pessoa presented the seventh, eighth, ninth and tenth highest rates, respectively, of all state capitals in the year 2000. All four capitals presented an increase in the period, the lowest being found in Porto Alegre (80%) and the highest in João Pessoa (187%) (Table 68). Global rates in Campo Grande did not reach 40/100,000, ranging from a minimum of 16/100,000 in 1991 and 1993, to a maximum of 34.7/100,000 in 1996. In the male population the largest increases and rates were found for the 15-19 and 20-29 age groups (Tables

70 and 71). In the female population rates for Campo Grande were the fifth as compared to all other capitals, being exceeded only by Recife, Cuiabá, Vitória, and Rio de Janeiro (Table 73). The highest results were found in the 15-19 female age group. In Porto Alegre, Maceió, and João Pessoa, rates did not reach 30/100,000 for the entire population (Table 68), exceeding 50/100,000 by the end of the decade for the male population (Table 69). The highest rates were found in the 20-29 male age group for all three capitals (Table 71). We must note the strong increase found for the 15-19 male age group, however, on the order of 428% in João Pessoa, and 395% in Maceió (Table 70). In the Porto Alegre male population the increase was more important for the 20-29 age group (126%) (Table 71). Female increase also surpassed 100% in all three capitals (Table 73).

Aracaju, Belo Horizonte, and Salvador are the other three capitals that presented rates above those found for Brazil in the year 2000. Considering all other capitals, they rank eleventh, twelfth, and thirteenth, respectively. We should observe the significant increase found for Belo Horizonte, on the order of 161% for the entire, 167% for the male, and 295% for the female populations (Tables 68, 69, 73). Rates however, did not exceed 22/100,000 for the entire population and 48/100,000 for the male population. In the 15-19 and 20-29 year-old male population of Belo Horizonte only, rates exceeded 100/100,000 for the year 2000 (Tables 70 and 71). Considering the female population Belo Horizonte presented the eighth highest rate in relation to all other capitals (Table 73).

Firearm-related mortality rates increased in nineteen capitals for the male population, and in fourteen for the female population (Tables 69 and 73). In the male population the increase was higher in Cuiabá (931%), followed by Palmas (260%), and João Pessoa (217%). In four other capitals (Teresina, Maceió, Belo Horizonte and São Paulo) the male increase was higher than 100%. In the female population, the most important growth was found in Cuiabá (1,134%). The increase was over 200% in Natal and Belo Horizonte and over 100% in João Pessoa, Maceió, São Paulo, Florianópolis, Porto Alegre, and Campo Grande for the female population.

Figure 23: Male relative risk of firearm-related death in 13 Brazilian state capitals, 2000
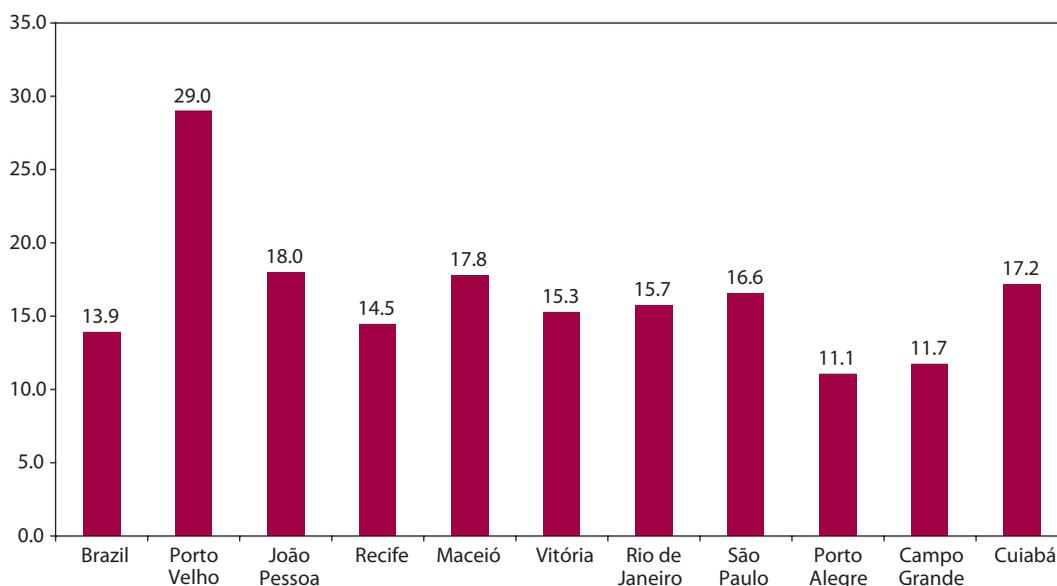
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Despite the growth in female rates, male rates remained much higher, with the RR of male firearm-related deaths in Brazil being on the order of 13.9 in the year 2000. In figure 23, we can see the RR of male firearm-related deaths in the ten capitals that presented the highest rates in the year 2000. Despite the fact that male risk of firearm-related deaths is more than 10 in all the capitals, we should note that the variability among them is very strong. The lowest RR was found in Porto Alegre (11.1), and highest in Porto Velho (29). This means that males have a fourteen times higher chance of dying from firearms than women in the entire country, this chance being on the order of eleven in Porto Alegre, and twenty-nine in Porto Velho.

Table 68: Standardized firearm-related mortality rate (/100.000) and increase (%), Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	14.0	13.3	14.0	15.2	16.6	16.1	16.3	17.8	18.2	19.4	38.05
Porto Velho	27.3	26.8	19.6	25.5	12.6	29.0	19.6	36.2	40.7	35.4	29.99
Rio Branco	37.7	29.9	29.4	28.1	26.0	23.7	28.4	29.2	18.4	14.7	-61.02
Manaus	22.2	16.6	15.2	17.1	16.9	17.9	15.9	17.6	14.6	14.2	-35.79
Boa Vista	13.5	22.7	21.1	26.5	29.9	27.4	16.8	27.4	26.9	17.9	32.64
Belém	16.7	14.3	8.9	10.5	9.3	10.3	13.2	13.8	12.5	12.2	-27.08
Macapá	9.1	19.7	16.3	19.1	26.4	32.8	22.6	22.2	18.2	9.5	4.31
Palmas	4.1	12.2	3.2	8.9	11.6	6.6	5.4	14.7	10.0	12.7	208.06
São Luís	13.6	11.8	8.8	9.3	11.7	14.5	12.6	10.7	8.1	8.4	-38.09
Teresina	3.8	4.2	3.5	5.5	8.2	5.1	5.6	5.9	6.3	8.1	115.26
Fortaleza	8.5	7.5	9.7	10.2	15.1	12.4	12.4	11.0	11.3	13.9	63.25
Natal	9.9	7.5	11.4	12.1	15.9	14.9	18.5	9.7	12.0	14.1	43.11
João Pessoa	8.7	14.4	11.7	11.0	20.6	13.4	19.2	22.4	23.7	25.1	187.87
Recife	41.7	28.0	39.3	36.3	45.4	44.5	61.6	67.6	56.6	56.5	35.42
Maceió	12.4	13.9	23.9	24.1	31.2	29.8	25.2	22.2	21.1	25.1	102.85
Aracaju	15.9	33.1	16.1	25.0	17.9	18.1	14.3	13.9	22.3	24.1	51.83
Salvador	25.2	21.0	23.7	25.8	21.0	26.6	26.9	28.0	24.2	20.2	-19.70
Belo Horizonte	8.4	9.0	9.5	9.1	12.4	11.8	13.1	17.5	13.1	22.0	161.27
Vitória	33.4	17.4	37.6	44.8	42.5	43.0	61.6	60.2	68.4	40.8	21.95
Rio de Janeiro	48.5	48.3	49.7	50.3	44.4	35.4	38.1	41.1	40.7	43.4	-10.55
São Paulo	12.4	12.2	16.9	19.5	25.3	24.4	23.0	25.0	32.0	33.0	165.42
Curitiba	10.9	10.0	12.0	14.4	15.8	13.7	15.1	14.3	16.6	15.7	43.79
Florianópolis	4.1	3.6	5.2	5.2	5.7	7.0	8.3	8.9	10.8	7.2	77.87
Porto Alegre	15.5	18.3	15.9	16.6	21.0	22.1	24.5	22.0	22.9	28.0	80.24
Campo Grande	16.0	20.7	15.9	18.7	27.0	34.7	31.4	26.8	23.5	30.9	93.17
Cuiabá	6.1	4.2	4.1	5.2	24.0	30.8	18.6	36.7	36.1	48.4	690.32
Goiânia	18.3	13.5	14.9	16.2	20.6	14.0	14.6	12.3	17.7	15.9	-13.45

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 69: Male firearm-related mortality rate (/100.000) and increase (%), Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	26.9	26.5	27.7	29.1	31.7	31.2	32.5	35.1	35.8	39.0	44.91
Porto Velho	50.7	47.9	36.5	39.6	22.2	46.3	36.8	59.9	72.5	69.0	36.01
Rio Branco	64.3	54.3	57.6	46.4	43.5	48.1	50.0	54.6	32.2	27.6	-57.12
Manaus	45.0	33.0	28.9	33.4	32.5	36.3	31.9	34.3	29.2	30.4	-32.48
Boa Vista	25.7	35.5	37.1	45.5	49.0	43.1	33.9	47.7	50.1	32.9	27.88
Belém	34.6	31.4	18.7	21.9	19.7	22.0	27.3	30.1	26.0	28.1	-18.66
Macapá	12.4	41.0	35.0	31.8	48.1	62.4	39.0	40.6	35.6	20.8	67.96
Palmas	7.7	10.8	7.9	7.7	18.9	11.4	13.9	12.5	21.0	27.6	260.37
São Luís	27.4	23.9	16.9	19.5	23.2	31.7	26.3	24.2	17.5	17.2	-37.24
Teresina	6.8	9.2	6.8	8.4	14.8	10.8	10.6	10.7	13.0	19.1	179.50
Fortaleza	17.0	14.7	19.3	19.4	30.8	24.8	25.5	22.9	22.8	28.8	70.05
Natal	19.8	13.9	22.9	25.8	30.0	31.0	38.7	21.1	24.8	30.2	52.42
João Pessoa	17.8	26.4	24.3	22.4	39.1	27.8	40.1	48.7	51.2	56.5	217.23
Recife	93.6	75.6	82.3	80.2	98.1	96.8	138.9	152.3	126.2	125.3	33.83
Maceió	25.0	27.9	47.3	46.6	61.6	61.7	49.8	42.7	44.1	55.0	120.14
Aracaju	36.6	79.2	35.0	49.9	37.3	40.4	31.0	30.1	47.0	58.4	59.41
Salvador	57.1	51.1	57.7	60.8	48.9	63.4	63.6	67.5	55.6	48.3	-15.50
Belo Horizonte	18.0	18.0	19.1	18.2	25.2	24.6	27.7	37.7	26.9	48.1	167.09
Vitória	67.1	38.3	78.4	92.0	92.1	86.0	136.9	125.9	147.9	89.2	32.81
Rio de Janeiro	104.4	104.3	105.2	104.3	94.0	74.4	80.8	85.7	86.0	90.6	-13.22
São Paulo	26.3	26.0	35.7	42.1	54.0	53.0	49.8	54.7	70.4	72.2	174.85
Curitiba	20.0	19.3	23.6	27.5	33.2	27.2	31.3	29.5	34.2	33.5	67.52
Florianópolis	8.1	6.4	9.3	8.4	9.8	13.7	17.3	17.0	23.4	14.5	78.99
Porto Alegre	31.6	36.2	33.0	32.5	41.4	44.5	48.6	44.9	47.2	56.6	79.46
Campo Grande	31.0	34.5	29.2	35.1	49.6	63.8	62.5	54.5	46.0	62.0	99.68
Cuiabá	10.1	8.5	6.1	7.7	37.7	63.6	39.8	76.7	74.7	104.0	931.75
Goiânia	33.8	25.0	27.3	31.6	36.2	28.8	27.6	27.0	37.5	34.2	1.01

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 70: Male firearm-related mortality rate (/100.000) and increase (%), age 15-19, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	36.97	33.81	40.29	42.05	46.51	42.34	46.92	52.85	54.99	61.66	66.79
Porto Velho	134.06	38.67	84.43	49.96	48.16	66.65	53.50	122.92	80.58	84.11	-37.26
Rio Branco	121.36	45.70	112.85	64.50	153.62	61.35	87.61	98.29	40.58	34.81	-71.31
Manaus	86.21	30.54	47.86	53.22	52.05	61.76	57.03	56.99	56.96	51.97	-39.72
Boa Vista	26.79	38.46	24.16	46.26	33.32	32.41	45.15	77.02	107.29	70.50	163.17
Belém	35.87	33.87	23.40	40.37	21.07	26.25	38.08	48.18	37.22	51.39	43.26
Macapá	0.00	76.09	88.09	85.64	185.31	84.69	87.29	104.17	93.03	60.34	-20.70
Palmas	0.00	0.00	0.00	0.00	37.75	21.09	18.27	0.00	29.79	39.89	**
São Luís	24.12	12.92	17.70	37.39	41.81	35.75	26.10	31.92	22.91	35.25	46.14
Teresina	12.70	9.19	14.94	8.85	23.31	18.56	15.61	12.78	15.07	31.57	148.63
Fortaleza	21.42	14.97	28.48	19.13	56.68	31.25	36.38	40.47	35.89	51.58	140.83
Natal	34.63	23.46	42.75	58.26	63.76	44.00	89.27	45.37	47.49	60.24	73.94
João Pessoa	20.96	16.14	47.58	58.87	104.94	69.24	60.89	76.33	78.16	110.80	428.66
Recife	125.81	89.32	147.88	153.67	175.32	190.36	293.84	351.74	231.35	222.13	76.56
Maceió	20.73	31.72	39.04	52.16	75.73	64.63	67.60	56.10	76.09	102.74	395.55
Aracaju	47.66	106.89	100.23	111.94	35.23	67.09	49.58	40.80	56.42	90.18	89.20
Salvador	100.77	102.33	119.31	110.24	89.80	113.77	119.05	132.92	91.05	72.92	-27.64
Belo Horizonte	20.49	25.14	28.54	32.40	34.12	32.51	35.92	49.38	37.23	102.20	398.82
Vitória	85.15	49.48	148.30	178.31	215.43	115.54	286.92	192.62	255.41	126.17	48.17
Rio de Janeiro	214.59	204.78	198.77	200.95	206.17	143.96	169.78	195.54	187.55	202.84	-5.47
São Paulo	62.51	54.68	73.99	85.39	101.07	85.60	81.29	92.80	125.02	152.13	143.36
Curitiba	52.30	33.13	40.96	56.30	37.27	36.88	47.87	33.82	54.73	67.09	28.27
Florianópolis	16.36	8.01	31.31	7.71	15.21	22.05	7.24	28.63	21.22	11.49	-29.79
Porto Alegre	56.81	64.22	61.87	57.35	98.35	69.61	91.02	83.78	89.92	87.53	54.08
Campo Grande	46.67	56.28	36.16	78.20	104.91	84.45	94.54	86.08	102.02	104.50	123.92
Cuiabá	14.23	9.20	4.39	8.51	53.69	68.84	35.82	129.44	139.21	181.93	1178.20
Goiânia	41.92	34.82	30.28	43.69	58.64	29.73	32.81	32.27	49.42	75.51	80.13

*** It was not possible to calculate the increment.*
Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 71: Male firearm-related mortality rate (/100.000) and increase (%), age 20-29, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	60.59	57.99	61.07	65.42	70.24	69.31	73.56	80.15	83.03	91.26	50.61
Porto Velho	94.87	80.13	74.90	75.30	56.80	94.17	103.48	112.80	132.38	161.90	70.65
Rio Branco	159.13	143.42	143.11	89.75	77.02	110.71	123.72	110.16	80.64	60.18	-62.18
Manaus	90.42	66.26	58.13	71.70	73.78	72.87	62.89	68.88	61.46	71.94	-20.43
Boa Vista	52.54	64.93	42.64	54.43	100.18	88.12	85.08	127.56	99.51	67.65	28.75
Belém	77.68	63.97	37.67	48.03	47.79	57.60	54.10	65.08	59.94	61.96	-20.23
Macapá	19.68	92.50	98.66	51.16	56.04	140.40	61.89	80.21	68.67	40.69	106.82
Palmas	0.00	0.00	37.94	0.00	0.00	10.65	18.44	0.00	52.64	59.30	**
São Luís	74.26	47.90	44.71	39.68	43.49	69.14	60.46	64.53	36.83	25.64	-65.48
Teresina	13.91	29.37	16.83	18.46	38.29	23.91	16.23	23.04	33.09	46.69	235.71
Fortaleza	39.82	31.55	45.75	41.70	58.94	60.63	56.88	46.81	47.52	63.60	59.74
Natal	44.56	33.82	55.85	63.30	45.94	85.14	92.29	48.01	48.98	82.91	86.07
João Pessoa	38.17	60.06	42.47	37.84	70.78	53.48	96.15	127.13	120.74	142.80	274.15
Recife	210.12	138.82	192.28	186.13	227.24	220.03	337.59	355.02	295.61	327.39	55.81
Maceió	45.75	61.32	94.14	81.68	108.32	122.41	76.10	86.97	98.68	132.12	188.78
Aracaju	94.85	164.82	57.93	103.96	90.08	104.33	60.17	74.28	90.48	158.73	67.34
Salvador	151.65	117.20	145.74	152.29	121.90	151.69	158.67	168.24	142.82	118.35	-21.96
Belo Horizonte	45.19	31.59	39.66	42.27	55.92	52.66	60.12	90.60	67.60	114.46	153.30
Vitória	155.38	84.83	184.71	202.84	249.59	188.02	291.57	330.72	396.47	206.99	33.21
Rio de Janeiro	241.57	251.22	250.68	257.80	230.11	180.46	196.98	211.92	208.90	220.62	-8.67
São Paulo	61.58	61.32	82.37	104.49	121.31	123.13	115.59	125.31	163.13	169.14	174.66
Curitiba	36.07	37.76	49.45	44.48	73.87	59.56	71.42	64.32	75.13	70.28	94.85
Florianópolis	16.49	16.45	19.73	11.66	7.66	36.70	20.10	27.80	39.24	21.60	30.96
Porto Alegre	64.35	84.22	67.30	69.36	85.31	73.45	94.61	108.74	127.54	145.93	126.79
Campo Grande	50.41	51.71	54.36	51.60	79.77	135.33	140.41	117.41	86.82	149.36	196.31
Cuiabá	10.70	18.51	7.42	9.59	46.57	131.17	96.68	183.25	163.79	206.48	1829.87
Goiânia	71.78	46.89	52.11	72.18	39.13	58.92	50.70	59.83	81.49	59.46	-17.16

*** It was not possible to calculate the increment.*
Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 72: Male firearm-related mortality rate (/100.000) and increase (%), age 30-39, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment (%)
BRAZIL	43.04	39.95	43.79	45.87	49.21	48.68	48.66	50.80	52.29	55.29	28.47
Porto Velho	93.19	112.11	45.14	78.14	8.37	70.28	51.71	76.37	141.86	92.29	-0.96
Rio Branco	55.51	86.13	95.85	86.11	38.39	59.12	56.28	54.12	46.34	59.16	6.57
Manaus	74.50	60.20	38.37	69.62	51.08	59.27	45.97	43.70	31.70	30.17	-59.51
Boa Vista	40.45	64.67	94.83	111.76	73.78	89.17	25.17	57.23	79.72	33.13	-18.10
Belém	54.67	38.06	34.96	31.90	20.07	25.14	42.15	47.80	29.08	42.48	-22.31
Macapá	37.64	76.30	28.31	73.39	35.73	96.08	71.31	37.14	59.22	20.77	-44.80
Palmas	50.30	34.93	0.00	25.21	24.80	14.69	12.72	34.29	20.75	35.87	-28.70
São Luís	28.12	42.90	22.10	30.51	47.30	56.52	41.75	29.70	29.07	18.60	-33.88
Teresina	8.33	16.10	5.23	7.74	15.29	7.01	18.32	13.50	15.48	25.32	203.94
Fortaleza	26.48	27.87	29.73	34.54	43.50	35.40	36.65	25.55	33.84	33.21	25.42
Natal	17.70	17.07	28.81	33.09	46.55	27.40	33.11	22.42	44.16	28.77	62.55
João Pessoa	41.29	48.67	45.07	38.67	38.29	25.57	44.97	58.83	74.57	61.71	49.44
Recife	147.28	93.08	117.50	108.23	137.93	133.72	158.24	169.32	175.17	162.48	10.32
Maceió	55.36	36.92	86.12	98.18	114.30	115.02	88.73	60.69	53.79	61.05	10.27
Aracaju	38.80	109.33	33.38	65.61	60.95	26.83	56.17	32.64	77.36	67.11	72.94
Salvador	64.27	55.56	52.96	67.43	54.55	63.85	58.73	60.92	56.69	62.37	-2.97
Belo Horizonte	23.10	26.71	26.52	24.31	37.96	38.21	40.34	54.62	34.35	52.57	127.60
Vitória	95.52	55.00	92.43	90.92	75.37	136.76	194.07	149.58	177.54	139.87	46.43
Rio de Janeiro	145.45	139.25	151.40	146.83	120.85	101.61	98.73	104.73	105.15	107.73	-25.93
São Paulo	30.32	33.30	49.14	53.52	75.04	72.26	67.59	73.25	94.97	91.40	201.49
Curitiba	25.06	25.29	23.19	34.53	43.81	43.76	45.10	40.85	36.78	42.78	70.67
Florianópolis	10.02	9.84	4.79	14.16	18.62	13.69	35.99	4.44	48.31	29.54	195.00
Porto Alegre	41.66	49.38	40.12	35.70	52.00	71.45	68.94	52.64	50.34	70.88	70.12
Campo Grande	64.54	54.80	33.60	58.99	81.25	88.45	69.07	79.63	57.80	69.27	7.33
Cuiabá	16.60	16.32	6.14	17.85	72.24	97.50	50.90	76.73	75.64	134.65	711.26
Goiânia	42.10	33.65	40.55	34.19	64.50	43.09	42.28	26.46	64.51	41.98	-0.30

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 73: Female firearm-related mortality rate (/100.000) and increase (%), Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	increment* (%)
BRAZIL	2.2	2.0	2.2	2.5	2.7	2.9	2.7	2.7	2.7	2.8	28.44
Porto Velho	5.65	6.5	2.05	6.58	1.9	9.5	3.33	7.86	3.87	2.38	-57.88
Rio Branco	7.04	7.17	5.06	4.96	6.81	4.29	7.35	2.36	3.78	3.08	-56.25
Manaus	1.93	1.5	2.9	2.83	2.43	3.02	2.61	3.49	3.1	1.53	-20.73
Boa Vista	4.51	7.21	4.07	2.6	1.25	6.09	3.79	4.92	4.8	2.99	-33.70
Belém	3.82	2.08	0.59	1.58	1.12	1.99	1.96	2.43	2.08	0.89	-76.70
Macapá	1.1	3.33	2.2	2.14	3.13	8.93	5.06	4.83	3.85	2.08	89.09
Palmas	0	5.91	0	4.43	4.36	2.36	0	1.84	1.67	1.46	-75.30
São Luís	3.49	1.84	0.76	1	0.99	0.96	1.86	2.05	0.67	1.29	-63.04
Teresina	0.62	0.61	1.17	0.87	1.14	0.86	0.84	0.83	0.27	0.26	-58.06
Fortaleza	1.37	1.14	2.02	2.09	1.38	2.68	1.87	1.01	1.61	1.93	40.88
Natal	0.62	2.13	2.63	1.73	3.97	2	3.65	1.38	2.18	2.38	283.87
João Pessoa	1.12	3.67	1.41	1.75	4.85	3.06	2.99	2.61	2.56	3.14	180.36
Recife	6.33	3.72	7.11	4.36	6.27	6.53	6.2	7.24	5.83	8.67	36.97
Maceió	1.2	2.93	3.96	3.06	5.21	5.75	3.79	3.7	3.12	3.09	157.50
Aracaju	0.94	1.85	1.34	5.71	2.16	0.88	2.16	2.14	2.95	1.63	73.40
Salvador	2.55	2.43	2	3.34	2.53	4.01	3.61	3.15	2.87	2.4	-5.88
Belo Horizonte	0.94	1.31	1.84	2.19	2.43	2.18	2.43	2.77	3.28	3.72	295.74
Vitória	5.12	0.73	7.08	7.66	6.86	10.69	6.37	10.56	9.8	5.83	13.87
Rio de Janeiro	5.76	5.2	6.07	7.74	5.53	5.03	4.27	5.1	4.85	5.76	0.00
São Paulo	1.72	1.36	2.22	2.46	3.56	3.44	3.81	3.53	4.32	4.36	153.49
Curitiba	3.5	2.71	2.53	3.21	3.47	4.17	3.17	3.35	3.4	2.54	-27.43
Florianópolis	0.76	0.75	2.18	1.43	1.41	2.15	0.7	1.39	0.69	1.7	123.68
Porto Alegre	2.52	3.73	1.9	3.62	4.01	4.08	5.21	3.31	3	5.11	102.78
Campo Grande	2.61	6.9	4.16	3.06	7.03	8.47	3.79	4.01	3.91	5.28	102.30
Cuiabá	0.49	0.48	0.45	0.44	3.41	4.52	3.11	5.26	3.46	6.05	1134.69
Goiânia	4.57	4.09	4.4	4.13	5.03	4.01	3.18	1.1	3.81	3.32	-27.35

For Palmas, increment was calculated from 1992 - 2000.
Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 74: Female firearm-related mortality rate (/100.000), age 15-19, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	3.52	2.96	3.47	4.28	4.31	4.20	4.21	4.47	4.64	5.00
Porto Velho	6.24	6.12	12.09	11.62	0.00	11.51	0.00	0.00	10.93	15.89
Rio Branco	25.43	0.00	0.00	8.37	8.21	0.00	12.92	6.21	0.00	13.08
Manaus	3.10	3.01	5.82	8.53	1.39	4.00	5.17	10.07	11.06	3.52
Boa Vista	26.27	12.45	11.85	0.00	0.00	10.11	20.70	0.00	0.00	8.31
Belém	6.11	1.41	2.34	3.44	1.12	2.69	3.98	3.94	3.89	0.00
Macapá	0.00	8.54	0.00	0.00	0.00	20.73	0.00	6.23	5.96	5.62
Palmas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
São Luís	6.10	0.00	1.92	3.78	0.00	0.00	1.72	1.69	0.00	1.67
Teresina	0.00	0.00	2.33	0.00	4.55	0.00	0.00	2.16	0.00	0.00
Fortaleza	1.92	1.88	4.59	3.63	1.79	3.51	2.57	0.84	1.64	4.05
Natal	5.67	0.00	0.00	5.30	0.00	5.23	10.27	2.53	2.49	0.00
João Pessoa	0.00	0.00	0.00	3.17	6.29	3.06	8.97	8.80	2.88	8.90
Recife	11.01	5.50	12.23	10.76	11.99	13.78	13.66	14.92	8.08	17.58
Maceió	0.00	2.49	2.38	0.00	6.94	13.88	8.96	4.37	4.26	8.95
Aracaju	3.95	3.90	3.77	0.00	0.00	7.41	0.00	0.00	3.56	0.00
Salvador	6.61	4.82	3.94	7.77	4.60	7.83	4.91	8.31	5.47	4.83
Belo Horizonte	2.96	4.81	0.97	2.87	3.78	1.75	6.07	5.16	7.69	8.82
Vitória	0.00	0.00	0.00	21.01	6.90	6.54	6.49	12.91	12.84	19.19
Rio de Janeiro	14.17	10.20	9.33	17.24	10.42	8.16	6.91	11.76	7.68	13.36
São Paulo	1.36	2.00	4.44	4.15	6.68	6.42	6.59	7.59	8.38	8.30
Curitiba	6.09	7.40	4.40	13.12	7.23	5.26	5.12	5.01	6.13	6.46
Florianópolis	7.97	0.00	7.63	7.52	7.41	0.00	0.00	0.00	0.00	5.73
Porto Alegre	3.79	3.40	5.61	7.40	3.66	13.30	6.60	4.92	3.26	4.81
Campo Grande	14.41	7.00	13.40	3.29	22.67	9.32	6.03	5.88	14.35	14.26
Cuiabá	0.00	4.28	0.00	0.00	3.82	3.84	7.54	11.15	3.66	7.16
Goiânia	1.81	8.96	12.23	10.31	6.76	5.11	5.02	1.64	8.09	6.55

Table 75: Female firearm-related mortality rate (/100.000), age 20-29, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	4.06	3.75	3.84	4.12	4.84	5.24	4.98	4.88	4.62	4.67
Porto Velho	10.24	14.50	0.00	12.72	0.00	13.64	10.04	6.59	0.00	0.00
Rio Branco	10.62	31.47	0.00	10.48	10.28	13.20	12.57	8.06	7.76	0.00
Manaus	4.81	1.86	5.41	1.76	6.03	6.49	5.51	5.37	2.24	1.31
Boa Vista	7.29	7.08	13.15	6.30	6.05	12.55	0.00	0.00	12.17	9.83
Belém	6.85	4.25	0.73	2.86	0.70	3.25	3.21	2.38	1.57	1.45
Macapá	6.24	5.53	6.26	6.08	5.92	22.37	8.45	8.07	11.58	6.78
Palmas	0.00	0.00	0.00	0.00	20.06	0.00	0.00	8.09	7.35	6.07
São Luís	7.82	5.08	1.23	0.00	1.20	3.44	1.12	3.27	0.00	3.06
Teresina	3.07	1.52	4.34	1.43	1.41	1.46	1.44	0.00	1.39	1.30
Fortaleza	3.58	2.54	3.43	3.39	3.35	4.94	3.86	1.89	1.85	2.32
Natal	0.00	3.04	4.33	0.00	5.60	0.00	7.50	1.48	5.82	5.78
João Pessoa	3.71	11.03	1.76	3.47	12.04	7.08	8.64	5.09	3.33	3.32
Recife	12.70	8.21	16.22	3.65	13.01	11.93	11.82	14.67	7.28	17.97
Maceió	2.89	7.07	5.45	8.04	9.25	9.01	4.98	6.07	5.92	2.40
Aracaju	0.00	0.00	2.14	14.74	6.21	0.00	2.14	4.22	4.17	2.00
Salvador	3.99	5.72	1.69	5.42	3.29	7.70	5.90	4.58	4.11	4.49
Belo Horizonte	1.43	1.92	4.20	3.23	3.65	5.43	2.45	5.35	3.86	5.83
Vitória	18.96	0.00	22.01	7.22	10.66	36.53	16.13	24.06	27.92	10.61
Rio de Janeiro	10.13	8.37	9.01	12.89	10.82	9.33	8.46	10.12	8.20	8.29
São Paulo	3.68	1.89	4.33	5.28	6.21	5.18	8.84	6.92	8.56	8.27
Curitiba	6.63	1.46	2.84	2.82	7.00	10.37	3.37	7.90	2.58	3.23
Florianópolis	0.00	0.00	3.73	0.00	0.00	7.90	3.89	3.85	0.00	0.00
Porto Alegre	7.84	4.77	2.58	8.50	6.73	4.67	4.63	6.45	4.58	11.06
Campo Grande	1.87	14.76	3.47	1.71	6.72	10.54	1.70	3.32	3.24	4.73
Cuiabá	2.42	0.00	0.00	0.00	6.31	13.80	6.78	13.37	6.59	6.01
Goiânia	9.72	3.85	5.62	2.76	9.07	4.63	3.63	2.68	6.15	5.94

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 76: Female firearm-related mortality rate (/100.000), age 30-39, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	2.92	3.11	3.39	3.61	3.99	4.15	3.93	3.81	3.98	4.22
Porto Velho	9.96	13.96	4.83	9.28	0.00	21.89	0.00	16.91	4.16	3.73
Rio Branco	0.00	7.42	23.39	0.00	7.49	6.22	5.92	0.00	0.00	5.42
Manaus	1.39	2.67	3.92	2.56	5.00	3.40	2.20	2.14	4.18	0.00
Boa Vista	0.00	20.51	0.00	0.00	0.00	16.70	8.55	25.01	16.26	0.00
Belém	5.42	2.33	0.00	2.03	3.98	2.23	1.10	6.53	3.23	0.00
Macapá	0.00	0.00	0.00	8.88	17.30	6.70	12.66	6.04	5.78	0.00
Palmas	0.00	40.31	0.00	31.32	0.00	0.00	0.00	0.00	0.00	0.00
São Luís	2.06	3.93	0.00	1.91	1.89	1.65	6.41	1.57	3.07	1.39
Teresina	0.00	0.00	0.00	2.13	2.10	3.76	1.85	1.81	0.00	0.00
Fortaleza	2.99	0.00	2.15	3.54	0.70	3.66	1.19	0.58	3.43	1.64
Natal	0.00	2.06	6.07	0.00	9.81	0.00	0.00	5.17	1.70	1.64
João Pessoa	2.61	2.51	2.47	4.89	7.26	2.16	2.11	2.07	6.10	3.86
Recife	6.79	3.80	4.79	6.63	6.57	7.83	7.76	8.56	11.04	8.20
Maceió	2.08	3.98	9.79	3.85	9.49	6.68	3.24	4.73	6.15	4.45
Aracaju	0.00	3.21	0.00	6.23	0.00	0.00	5.52	0.00	2.69	2.54
Salvador	3.55	1.73	2.82	3.89	3.29	4.63	7.09	2.50	2.47	2.33
Belo Horizonte	1.16	1.71	1.70	3.36	2.77	3.78	4.81	3.72	5.80	4.15
Vitória	0.00	4.31	12.61	8.27	12.21	16.65	8.27	24.67	4.09	3.99
Rio de Janeiro	7.40	7.19	11.17	10.47	7.39	10.27	6.55	6.74	7.74	8.99
São Paulo	2.37	2.60	2.33	3.55	5.76	5.10	3.69	4.25	4.92	6.42
Curitiba	2.63	5.97	5.07	4.20	3.33	3.03	6.65	2.17	7.78	3.58
Florianópolis	0.00	0.00	4.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Porto Alegre	1.75	2.68	2.58	5.11	5.90	5.23	8.66	6.89	4.28	6.32
Campo Grande	4.74	4.56	8.82	4.33	4.26	9.75	7.57	9.23	5.40	5.33
Cuiabá	0.00	0.00	2.95	2.86	0.00	0.00	2.73	5.37	10.60	12.36
Goiânia	9.14	10.17	2.52	6.19	7.31	5.66	2.22	1.09	4.30	4.18

Source: Mortality Information System (SIM), Ministry of Health, Brazil

C.2.1. Mortality rates in Brazilian capitals: A comparative view

In Figures 24 and 25 we can observe the change in the firearm-related mortality rate in nineteen Brazilian state capitals over the years from 1991 to 2000. The most significant change was observed in Cuiabá, the capital that presented the second highest firearm-related mortality rate in the year 2000 and that was not present in the group in 1991. João Pessoa and Belo Horizonte were also absent in 1991, and in the year 2000 these capitals present, respectively, the tenth and twelfth highest rates. São Paulo went from the fifteenth position to the sixth in the year

2000. A significant increase is also observed in Porto Alegre, Maceió and Campo Grande. Recife, Rio de Janeiro, Vitória, and Porto Velho remain in the group of the five capitals with the most elevated rates in the country. In 1991 Rio Branco was in the third position, dropping to the seventeenth in 2000. Significant decreases were observed in Salvador, Goiânia and Manaus.

Figure 24: Standardized firearm-related mortality rate (/100.000), Brazilian state capitals, 1991
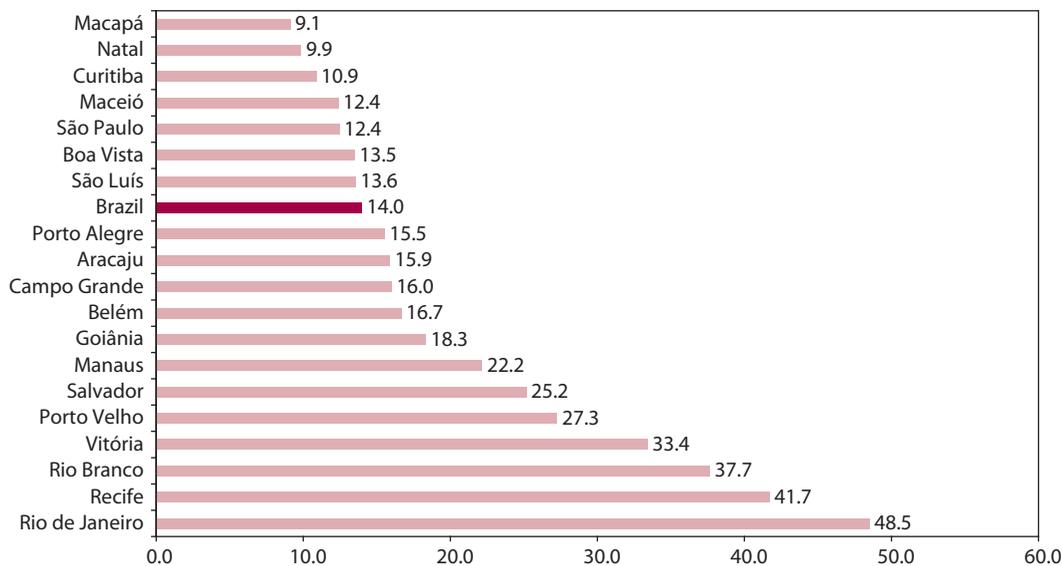
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Figure 25: Standardized firearm-related mortality rate (/100.000), Brazilian state capitals, 2000
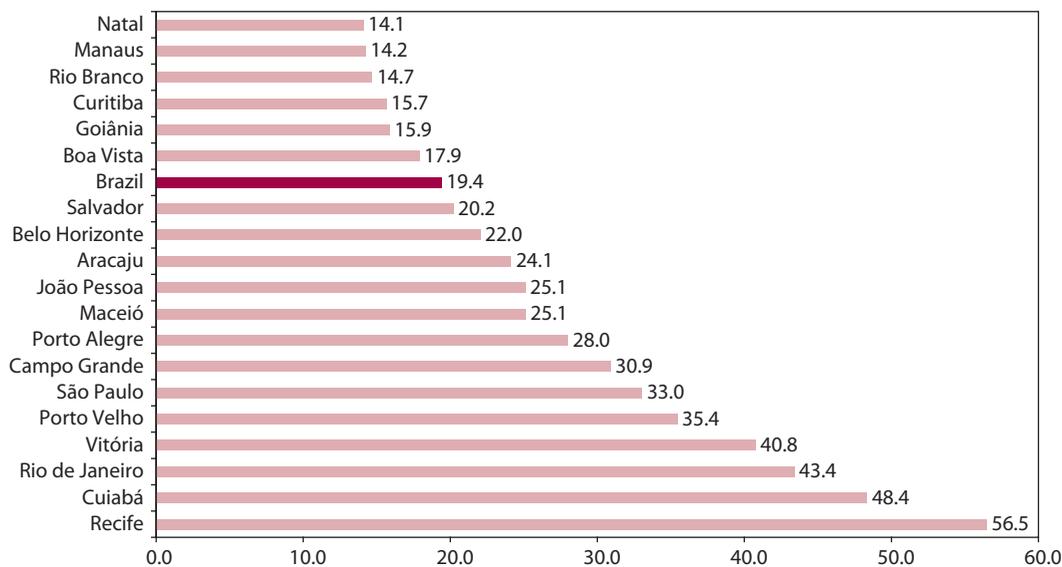
Source: Mortality Information System (SIM)/Ministry of Health, Brazil.

Firearm-related mortality and socioeconomic development in Brazilian states

The differences in firearm-related mortality rates found among the Brazilian states show us that the risk of firearm-related deaths is not equally distributed throughout the country. Since the principal aim of violence prevention programs is to avoid and consequently reduce the occurrence of violent events, which in our study is firearm-related mortality, it is important to understand why such differences occur. What are the characteristics of the states that contribute towards the occurrence of firearm-related deaths? Answering this question is not an easy task since violence is not the result of the action of a single causal factor but of a dynamic set of determinants, which include individual, relational, community, and sociostructural characteristics (Krug, 2002). To study all these factors it is necessary not only to develop sophisticated methodological and analytical approaches, but also to collect primary data, which is beyond the scope of this report.

Researchers point out the relationship between socioeconomic development and homicide mortality rates in many Brazilian capitals (Barata et al. 1998, 2002; Beato at al. 2001, Cardia & Schifer, 2002; Cardia et al. 2003; Lima & Ximenes, 1998; Macedo et al. 2001; Paim et al. 2001; Santos et al. 2001). This means that the majority of homicide deaths are concentrated in areas characterized by low socioeconomic development and poor access to public services. With this in mind we pose a new question: are firearm-related mortality rates related to socioeconomic development in Brazilian states?

In this section we will try to answer this question through the analysis of the correlation between mortality rates and socioeconomic indicators. The correlation analysis shows us to what extent the two dimensions/variables (firearm-related mortality and socioeconomic indicators) are related and results are expressed through a coefficient (r). The coefficient (r) is a summary measure that shows us the extent of changes in the mortality rates related to the changes in socioeconomic indicators, with r ranging from +1 to −1. Positive results mean that both dimensions vary in the same way, which means that with the growth of the socioeconomic indicators, mortality rates also grow; negative results mean that the two dimensions vary in different ways, which means that with the growth of the socioeconomic indicators, the mortality rates drop. The closer the coefficient (r) is to +1 or −1, the stronger is the relation between the two variables.

In the correlation analysis the variables are defined as independent or exposure variables and dependent or effect variables. In our study, independent variables are domicile density, garbage collection, family leaders without income, nominal income of family leaders, schooling, family structure and the Human Development Index (HDI). All of these socioeconomic indicators were organized from the worst to the best condition and a value was attributed to the State regarding its position after this ordering. Thus, the worst State received value 1 and the best value 27. This way the increase in the value of each of the socioeconomic indicators implies a better socioeconomic condition. Our dependent or effect variables are firearm-related mortality rates, homicide mortality rates, firearm-related homicide mortality rates and non-firearm-related homicide mortality rates. It is important to observe that the existence of a correlation between the two variables does not imply that they are involved in a causal relationship, which means that this does not imply that the socioeconomic condition is the cause of the mortality.

The independent variables express different dimensions of socioeconomic development, which are related to the incidence of violent events more generally, and to homicides more specifically. Domicile density – number of persons per room – and garbage collection – percentage of houses without garbage collection – express living conditions as well as access to public services and policies. Researchers point out that high domicile density is related to higher violence indices in the home

environment and also in the community. This can be explained by the fact that it works as a stressful element in relation to living conditions, facilitating the development of interpersonal conflicts. Furthermore, high domicile density and low garbage collection percentages may be considered good indicators of lack of habitation policies and of a disorganized urbanization process, which is evident in the greater part of Brazilian metropolitan areas. Areas with high domicile density are more commonly found in peripheral neighborhoods characterized also by poor access to public services such as health, security, education, judicial system, and sanitation (Cardia et al. 2003). In this sense, both the variables express living conditions and the presence or absence of public policies.

In Table 77 we can observe that the states with higher domicile density are those with a greater number of houses without garbage collection. Domicile density varies from 3.32 in Rio Grande do Sul to 4.86 in Amazonas. Higher values are found in the Northern and Northeastern states. The proportion of houses without garbage collection varies from a minimum of 3,9% in the Federal District to a maximum of 66% in Maranhão. Higher values were also concentrated in the Northern and Northeastern states. As can be seen in Table 78 garbage collection and domicile density are strongly and significantly correlated (r=0.781), which is in accordance with the fact that the states with high domicile density also possess a high proportion of houses without garbage collection.

The indicators family leaders without income and average nominal income of family leaders give us information on the income distribution in Brazilian states. In a study conducted in the São Paulo municipality (Cardia et al. 2003) the authors found a significant correlation between average income of the population and homicide mortality rates. This does not mean that poverty alone is responsible for the higher rates. It is a set of characteristics of disadvantages in neighborhoods, of which income is one element, that influences social cohesion and facilitates conflicts in vulnerable groups. In Table 77 we can observe the extreme differences found among Brazilian states. While in Santa Catarina 4.66% of family leaders have no income, in Amazonas 17.5% of them are in the same condition. The average nominal income of family leaders also expresses a huge inequity among states. While in Maranhão the average nominal income of family leaders is R$ 343,22 (US$114.41), in the Federal District it is R$ 1.498,71 (US$499,6)[5]. The highest percentage of family leaders without income and lowest average nominal incomes are also found in the Northern and Northeastern region states.

It is important to note that these two socioeconomic indicators are not entirely coincident. In Table 77 we can observe that the percentage of family leaders without income in the Federal District – which presents the highest average nominal income – is almost the same as that found for Maranhão – which is the state with the lowest average nominal income. São Paulo presents the country's second highest average nominal income but the proportion of family leaders without income exceeds the one found for Maranhão. In Table 78 we can see that these two variables present a weak but significant correlation (r=0.454, p <0.05). The comparison between these two indicators permits us to see the huge inequity that exists among the states in Brazil, in the sense that the high average nominal income does not necessarily imply a more equitable income distribution. Family leaders without income is weakly and positively correlated with the other socioeconomic indicators. On the other hand, average nominal income of family leaders is strongly and positively correlated with all the other socioeconomic indicators except for family structure.

Schooling gives us information on the adult illiteracy rate, which means the proportion of those over 15 years old who are illiterate. Illiteracy is one of the socioeconomic indicators that characterize a social vulnerability condition, since it is related to low access to work posts, lower incomes, and living in poor neighborhoods with high domicile density and low access to public services and policies. In Table 77 we observe that schooling values range from a minimum of 5.1% in the Federal District to a maximum of 32.8% in Alagoas. The highest values are found in the Northeastern states.

However, we should consider that because of difficulties in access, the values for the Northern region states do not include rural areas, where the greater part of the poor population is concentrated. In this sense, we should expect that schooling data for the Northern region are somewhat skewed towards overstating the degree of schooling. Nevertheless, this indicator is positively correlated with all the others, with the exception of family structure. A very strong and significant correlation between schooling and average nominal income of family leaders can be seen in Table 78.

Table 77: Social economic indicators of Brazilian states, 2000

	Domiciliary density[1]	Houses without garbage collection[1] (%)	Family leaders without income[1] (%)	Nominal income of family leaders[1]	Schooling[1]* (%)	Family structure[1] (%)	HDI[2]
Northern region							
Rondônia	3.92	42.72	10.32	662.19	9.6	18.58	0.729
Acre	4.26	44.15	11.13	526.36	15.5	24.69	0.692
Amazonas	4.86	35.26	17.51	627.06	8.8	25.06	0.717
Roraima	4.26	31.07	12.20	684.74	8.6	23.26	0.749
Pará	4.67	46.56	11.76	536.41	12.4	22.80	0.720
Amapá	4.78	28.25	12.57	683.36	9.5	28.85	0.751
Tocantins	4.08	43.14	12.85	519.72	21.0	21.09	0.721
Notheastern region							
Maranhão	4.54	65.68	7.09	343.22	28.8	23.80	0.647
Piauí	4.28	56.27	5.93	362.67	31.6	23.13	0.673
Ceará	4.21	38.52	10.64	448.01	27.8	24.53	0.699
Rio Grande do Norte	4.11	26.34	13.53	512.99	25.5	23.54	0.702
Paraíba	4.03	34.09	10.56	422.72	25.9	25.35	0.678
Pernambuco	3.99	31.35	12.98	516.92	24.7	28.27	0.692
Alagoas	4.30	31.11	16.88	453.96	32.8	25.02	0.633
Sergipe	4.05	30.16	11.33	461.80	23.9	27.94	0.687
Bahia	4.09	38.33	13.88	459.97	24.7	27.11	0.693
Southeastern region							
Minas Gerais	3.73	21.65	7.63	680.54	12.2	24.22	0.766
Espírito Santo	3.66	22.43	7.22	721.57	11.1	23.31	0.767
Rio de Janeiro	3.36	7.18	9.11	969.55	6.0	31.25	0.802
São Paulo	3.54	4.17	8.94	1 076.21	6.2	24.08	0.814
Southern region							
Paraná	3.56	16.78	6.44	781.79	10.2	21.44	0.786
Santa Catarina	3.55	16.95	4.66	814.25	6.8	19.36	0.806
Rio Grande do Sul	3.32	15.91	5.11	799.85	6.1	25.20	0.809
Central-western region							
Mato Grosso do Sul	3.64	19.40	7.94	731.26	10.9	22.23	0.769
Mato Grosso	3.78	28.32	9.86	774.60	11.8	18.97	0.767
Goiás	3.54	18.86	7.58	688.80	12.5	24.01	0.770
Federal District	3.72	3.86	6.94	1 498.71	5.1	32.76	0.844

Source: (1) IBGE. Brazilian Institute of Geography and Statistics.
Source: (2) IPEA/PNUD, Applied Economic research Institute/United Nation Program for the Development
* Data refers to year 1999 and does not include rural area of Northern region

		Domiciliary density[1]	Houses without garbage collection[1] (%)	Family leaders without income[1] (%)	Nominal income of family leaders[1]	Schooling[1]* (%)	Family structure[1] (%)	HDI[2]
Domiciliary density[1]	r	1						
	p	.						
Garbage collection[1]	r	0.781	1					
	p	0	.					
Family leaders without income[1]	r	0.617	0.422	1				
	p	0.001	0.028	.				
Nominal income of family leaders[1]	r	0.707	0.828	0.454	1			
	p	0	0	0.017	.			
Schooling[1]*	r	0.515	0.679	0.327	0.914	1		
	p	0.006	0	0.096	0	.		
Family structure[1]	r	0.069	-0.194	0.259	0.079	-0.035	1	
	p	0.732	0.332	0.192	0.696	0.861	.	
HDI[2]	r	0.749	0.825	0.524	0.962	0.869	0.123	1
	p	0	0	0.005	0	0	0.542	.

Family structure represents the percentage of women as family leaders. According to Piquet-Carneiro (2000) in a study carried out in Rio de Janeiro and São Paulo, this variable is related to homicide rates. According to the author, the proportion of women as family leaders is an indicator of social disorganization and "has a relevant role in the increase of homicide rates. The proportion of women who are heads of households is an efficient predictor of homicide rates" (Piquet-Carneiro, 1999). This could be explained by the fact that in most of the cases where women are in charge of the family, the other parent is absent. Furthermore, we should consider that women as family leaders have to work and have no support in the way of childcare, especially in poorer neighborhoods where public services such as day-care centers and kindergartens are scarce. Low parental supervision would thus act as a risk factor for violent behavior, as well as for drug use.

According to our data the percentage of women as family leaders varies from 18.6% in Rondônia to a maximum of 32.8% in the Federal District (Table 77). Values do not present a strong variability when compared with the other socioeconomic indicators used. In Table 78 we can observe that family structure is weakly and non-significantly correlated with all the other socioeconomic indicators. This suggests that the percentage of women as family leaders is not, in fact, a good socioeconomic indicator. It can represent both social disorganization or rupture of the family structure, but it can also represent the changing of gender roles and behaviors, as well as the woman's emancipation. The high proportion of women as family leaders in states with better socioeconomic indicators should be more related to this "cultural change". But we cannot forget the fact that the high proportion of women as family leaders can also point to a rupture in the family structure, which added to the lack of public policies for children and adolescents can in fact make parenting and supervision difficult.

The Human Development Index (HDI) is a composite index that includes the dimensions of longevity, schooling and income (UNDP, 2000). In Table 77 we can observe that the HDI varied from a minimum of 0.633 in Alagoas to a maximum of 0.844 in the Federal District. The closer the value of HDI is to one (1), the better the social development of the state. The worst HDI was

found in the Northern and Northeastern states. The HDI is strongly and significantly correlated with all the other socioeconomic indicators except for family structure (Table 78). The strongest correlation was found for HDI and schooling and average nominal income of family leaders, which can be explained by the fact that these two indicators are part of the composite HDI. A strong correlation was also found between garbage collection and domicile density. This suggests that these two indicators are good predictors of social development.

The correlation between mortality rates and socioeconomic indicators can be seen in Tables 79, 80 and 81. In Table 79, we can observe that the correlations between firearm-related mortality and domicile density, firearm-related mortality and garbage collection, and firearm-related mortality and average nominal income were both positive and significant. The correlation between firearm-related mortality and HDI was also positive but presented a borderline significance level ($p=0.052$). Analyzing the data by sex groups (Tables 80 and 81) we found the same pattern. However, the correlation between firearm-related mortality and domicile density, average nominal income and HDI found for the female population was a little stronger than the one found for the male and entire populations. This means that the states with better socioeconomic conditions regarding the variables mentioned above also present higher firearm-related mortality rates, especially in relation to the female population.

If we analyze the correlation between homicide mortality and socioeconomic indicators we find that it is significant only for average nominal income and schooling, and presents a borderline significance for garbage collection (Table 79). We should consider, however, that the correlation coefficients found between these variables are very small, which means that both dimensions are weakly correlated. In fact, we can say that the improvement of social conditions related to domicile density, garbage collection and average nominal income accounts for less than 40% of the changes in homicide mortality. This means that other factors are responsible for the greater part of the changes, when we consider the states as units of analysis. Considering the data by sex groups (Tables 80 and 81) the same pattern is found. Weak and significant correlations were found for garbage collection, average nominal income and schooling for the male population and between domicile density and average nominal income for the female population.

Firearm-related homicides as well as non-firearm-related homicides are weakly correlated with socioeconomic indicators in the entire, male and female populations (Tables 79 to 81). Firearm-related homicides present a positive and significant correlation with domicile density, garbage collection, average nominal income and schooling, while non-firearm-related homicides are significantly correlated only with average nominal income and schooling. In the male population firearm-related homicides are significantly correlated with domicile density, garbage collection, average nominal income, schooling, and HDI, while non-firearm-related homicides are significantly correlated only with schooling. In the female population a significant correlation was found for firearm-related homicides and domicile density, garbage collection, average nominal income, and HDI, while non-firearm-related homicides are significantly correlated only with average nominal income and schooling.

It is important to observe that all correlations found were weak and only the positive ones presented statistical significance. The strongest correlation found, considering firearm-related mortality for the entire, male and female populations, was between domicile density and garbage collection. It is also important to remark that the coefficients were positive, which implies that the improvement of the socioeconomic conditions is related to the higher mortality rates. These results are discordant with those found for Brazilian capitals, where areas with low socioeconomic development present higher mortality rates. This is almost certainly explained by the fact that Brazilian states present a huge internal inequity in relation to socioeconomic development and,

therefore, general average indicators are not representative of social conditions for the entire population. States such as São Paulo and Rio de Janeiro both present good socioeconomic indicators and an immense internal inequity, especially when considering relative socioeconomic conditions found within the state capitals. When the analysis units are smaller – as is the case for urban districts in Brazilian state capitals – the internal inequity/variability is also smaller and thus, socioeconomic indicators represent the average socioeconomic development much better. Furthermore, while socioeconomic indicators consider the entire state, homicide and firearm-related deaths are concentrated in state capitals, a fact that can influence correlation analysis results.

When analyzing homicide mortality rates in different municipalities of the state of São Paulo, Barata (2002) found higher rates in those municipalities with better socioeconomic indicators. A possible explanation for this result, similar to the one found when considering states as units of analysis, is that it is not poverty that explains high mortality rates, but rather the existence of huge relative social disparities. It was precisely in the municipalities with better average socioeconomic indicators that the author found the highest parameters indicating social inequity. This can be a possible explanation for the results presented above: the states with better average socioeconomic indicators may also present a marked internal inequity with regard to access to public policies, income, schooling, and living conditions. Moreover, it is important to consider that violence is the result of a complex set of determinants not captured within the socioeconomic determinants considered here, such as the presence of organized crime and drug trafficking, effectiveness of the police system, impunity, as well as cultural norms and individual characteristics.

Table 79: Correlation between firearm and homicide mortality rates and socioeconomic indicators, Brazilian states, 2000

	Firearm Mortality		Homicide Mortality		Firearm Homicides		Non-firearm Homicides	
	r	p	r	p	r	p	r	p
Domiciliary density	0.468*	0.014	0.480*	0.011	0.489**	0.010	0.383*	0.049
Garbage collection	0.524**	0.005	0.379	0.051	0.475*	0.012	0.158	0.431
Family leaders without income	- 0.007	0.973	- 0.143	0.475	0.014	0.943	- 0.201	0.315
Nominal income of family leaders	0.468*	0.014	0.480*	0.011	0.489**	0.010	0.383*	0.049
Schooling	0.331	0.092	0.454*	0.017	0.386*	0.047	0.419*	0.029
Family structure	- 0.170	0.396	- 0.210	0.293	- 0.150	0.455	- 0.014	0.945
HDI	0.377	0.052	0.334	0.089	0.376	0.054	0.245	0.218

*** Correlation significant at 0.01 level (2-tailed).*
** Correlation significant at 0.05 level (2-tailed).*

Table 80: Correlation between male firearm and homicide mortality rates and socioeconomic indicators, Brazilian states, 2000

	Firearm mortality		Homicide mortality		Firearm homicides		Non-firearm homicides	
	r	p	r	p	r	p	r	p
Domiciliary density	0.585**	0.001	0.304	0.123	0.518**	0.006	- 0.097	0.631
Garbage collection	0.539**	0.004	0.428*	0.026	0.482*	0.011	0.111	0.580
Family leaders without income	- 0.012	0.954	- 0.116	0.565	0.015	0.940	- 0.214	0.283
Nominal income of family leaders	0.475**	0.012	0.501**	0.008	0.489**	0.010	0.335	0.088
Schooling	0.348	0.075	0.459*	0.016	0.386*	0.047	0.385*	0.047
Family structure	- 0.181	0.367	- 0.244	0.221	- 0.154	0.444	- 0.024	0.905
HDI	0.388**	0.046	0.358	0.067	0.380	0.050	0.190	0.344

*** Correlation significant at 0.01 level (2-tailed).*
** Correlation significant at 0.05 level (2-tailed).*

Table 81: Correlation between female firearm and homicide mortality rates and socioeconomic indicators, Brazilian states, 2000.

	Firearm mortality		Homicide mortality		Firearm homicides		Non-firearm homicides	
	r	p	r	p	r	p	r	p
Domiciliary density	0.662**	0.000	0.455**	0.017	0.617**	0.001	0.346	0.077
Garbage collection	0.533**	0.004	0.333	0.089	0.474*	0.013	0.253	0.203
Family leaders without income	0.110	0.584	- 0.023	0.911	0.083	0.679	- 0.024	0.906
Nominal income of family leaders	0.536**	0.004	0.452*	0.018	0.486*	0.010	0.464*	0.015
Schooling	0.371	0.057	0.363	0.063	0.344	0.079	0.383*	0.048
Family structure	- 0.115	0.567	0.020	0.921	- 0.059	0.771	0.175	0.382
HDI	0.445*	0.020	0.322	0.102	0.383*	0.048	0.322	0.101

*** Correlation significant at 0.01 level (2-tailed).*
** Correlation significant at 0.05 level (2-tailed).*

Chapter 4

Limits of interpretation:
The quality of information regarding firearms on death certificates

Lack of quality in the information produced by state departments of security, as previously discussed, is one of the major obstacles for research on violence in Brazil. Mortality information provided by the Ministry of Heath on external cause deaths is widely used by researchers in the field, and is considered a more reliable data source, since the collection procedure is standardized and information is coded according to ICD-9 and ICD-10. Nevertheless, many authors point out some problems that compromise the quality of the information provided, especially regarding the kind of violence that resulted in death (Souza, 1994, Mello Jorge, 1997, Njaine, 1997). In relation to the kind of weapon used, death certificates also present important limitations (Gawryszewski, 2002).

In Tables 82 and 83 we can observe the magnitude of the problem in Brazilian state capitals and states, when considering death due to homicides. As previously seen in our data homicide is the major cause of firearm-related deaths in the entire country and in all its regions and states. According to the SIM data source almost 15% of all the homicides that occurred in Brazil in the 1990´s were committed with an unknown weapon, which suggests that firearm-related homicides are likely underreported. Considering the data for the states (Table 83) higher percentages were found in Espírito Santo, São Paulo, Maranhão, Minas Gerais, Tocantins, and Pará. The very high proportion of homicides with an unknown weapon in São Paulo should be noted, more than 50% of all homicides in 1991, dropping to 25% in the year 2000. Considering the data for state capitals (Table 82), in the 1990's only São Paulo presented percentages of homicides with an unknown weapon higher than the percentages found for Brazil.

Comparing the data in Tables 82 and 83 we can see that in all states except Tocantins and São Paulo, higher percentages were found for the entire state rather than for the capitals. The higher quality of information in the capitals may be the result of better technological and human resources in the Medico-Legal Institutes located in state capitals. In São Paulo and Tocantins, however, higher percentages were found in their capitals - Palmas and São Paulo respectively – in 1991, 1996, and 2000. The very high percentages found for the São Paulo state capital should be noted, more than 60% in 1991, dropping to 29% in the year 2000. São Paulo is the most highly populated and developed state of Brazil and, therefore, the lack of necessary technology or adequate human resources is unlikely to account for these high percentages of homicides with an unknown weapon. Serious problems regarding the filing of death certificates in the Medico-Legal Institute should be better evaluated.

We should also note that from 1991 to 2000 the percentage of homicides with an unknown weapon fell in the country and in all the states except in Maranhão, and in all state capitals except Porto Velho, São Luis, Fortaleza, and Porto Alegre. Thus, it is possible to see an improvement in the quality of information provided by the SIM. In 1991, nineteen of the twenty-seven states presented percentages higher than 10%, while in the year 2000 this occurred only in three states – Maranhão, São Paulo, and Espírito Santo. Considering the state capitals, in 1991, twelve of the twenty-six presented percentages higher than 10% while in 2000 only three did – Porto Velho, Palmas, and São Paulo. This can influence the time-series analysis since the increase may reflect

not only a real increase in firearm-related mortality but also an improvement in the quality of the information.

The lack of quality of mortality data information regarding the kind of weapon used is a problem of major concern, as this fact compromises and limits use of these data for planning, research, and policy development purposes.

Table 82: Homicide deaths with unknown instrument in relation to all homicide deaths, Brazil and state capitals, 1991-2000

	1991		1996		2000		1990´s	
	n	%	n	%	n	%	n	%
BRAZIL	8029	26.1	4818	12.39	5381	11.9	54873	14.9
Porto Velho	12	7.7	12	13.64	24	11.8	152	11.7
Rio Branco	6	6.5	4	5.00	1	1.1	43	5.1
Manaus	31	8.1	27	6.78	3	0.7	220	5.6
Boa Vista	9	16.1	0	0.00	0	0.0	15	2.1
Belém	35	10.9	23	10.65	20	7.1	306	12.6
Macapá	2	4.9	3	2.29	3	2.4	52	5.3
Palmas	1	50.0	1	12.50	1	3.3	14	12.5
São Luís	11	5.9	16	9.70	20	15.4	169	11.5
Teresina	4	7.4	8	10.81	6	4.1	57	7.2
Fortaleza	9	3.0	57	13.04	40	7.7	430	10.5
Natal	9	10.6	2	2.06	1	2.1	41	4.9
João Pessoa	10	12.2	1	0.54	0	0.0	65	4.4
Recife	1	0.1	3	0.42	4	0.4	22	0.3
Maceió	9	4.4	1	0.33	0	0.0	47	2.0
Aracaju	3	3.3	4	4.55	1	0.6	57	4.9
Salvador	4	10.3	6	0.79	5	1.7	155	3.3
Belo Horizonte	10	3.6	20	5.95	20	3.2	247	6.7
Vitória	38	27.3	18	12.33	6	3.8	158	9.6
Rio de Janeiro	73	4.7	235	7.90	94	3.2	1353	6.0
São Paulo	2566	60.9	853	15.59	1776	29.1	12251	23.9
Curitiba	19	12.3	15	5.66	9	2.7	171	6.5
Florianópolis	2	15.4	1	3.85	1	2.6	10	4.4
Porto Alegre	5	2.0	4	1.39	11	2.7	84	2.9
Campo Grande	3	2.5	3	1.24	5	2.0	68	3.7
Cuiabá	14	28.0	1	0.59	0	0.0	54	3.4
Goiânia	33	16.2	9	4.46	4	1.6	167	8.2

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Table 83: Homicide deaths with unknown instruments in relation to all homicide deaths, Brazil, regions and states, 1991-2000

	1991		1996		2000		1990´s	
	n	%	n	%	n	%	n	%
BRAZIL	8029	26.1	4818	12.4	5381	11.9	54873	14.9
Northern region	220	10.8	226	11.6	127	5.3	2193	10.8
Rondônia	51	10.4	40	13.3	40	8.6	445	10.7
Acre	8	7.5	6	5.8	2	1.9	58	5.9
Amazonas	39	9.7	31	6.9	7	1.3	275	6.2
Roraima	12	15.2	0	0.0	7	5.4	47	4.6
Pará	88	10.9	134	19.1	63	7.8	1121	15.4
Amapá	3	5.7	3	1.9	4	2.6	68	5.5
Tocantins	19	20.9	12	9.5	4	2.3	179	16.1
Northeastern region	771	12.2	442	5.4	332	3.6	5518	7.2
Maranhão	95	20.2	65	18.0	70	19.9	768	21.5
Piauí	17	16.5	13	11.1	21	9.1	160	12.4
Ceará	83	13.7	164	18.6	62	5.0	1143	13.4
Rio Grande do Norte	39	17.9	12	5.0	12	4.7	160	7.0
Paraíba	54	13.5	2	0.3	13	2.6	290	6.6
Pernambuco	225	7.6	63	2.1	18	0.4	895	2.7
Alagoas	50	7.5	4	0.5	3	0.4	259	4.0
Sergipe	16	5.0	7	2.9	12	2.9	173	5.7
Bahia	192	32.2	112	5.9	121	9.7	1670	12.4
Southeastern region	6340	37.4	3670	16.1	4659	17.6	41887	19.6
Minas Gerais	310	25.2	213	16.9	144	6.8	2580	18.8
Espírito Santo	307	31.7	410	34.5	279	19.5	3354	26.9
Rio de Janeiro	660	13.1	612	7.6	340	4.6	5788	8.5
São Paulo	5063	52.3	2435	19.8	3896	25.0	30165	25.2
Southern region	315	9.6	279	8.6	158	4.1	2800	8.4
Paraná	155	12.7	93	6.8	56	3.1	1034	7.3
Santa Catarina	69	19.4	39	9.6	36	8.5	478	12.4
Rio Grande do Sul	91	5.4	147	10.0	66	4.0	1288	8.6
Central-western region	383	17.6	201	7.2	105	3.1	2475	9.6
Mato Grosso do Sul	50	12.9	76	10.5	26	4.0	610	10.6
Mato Grosso	128	28.3	24	3.7	20	2.0	632	10.3
Goiás	203	23.8	98	12.6	57	5.3	1181	14.5
Federal District	2	0.4	3	0.5	2	0.3	52	0.9

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Chapter 4 - Limits of interpretation

Chapter 5

Final remarks and recommendations

Violence is a complex phenomenon, the occurrence of which is influenced by a set of factors that can usefully be situated at the individual, relational, community and social levels (Krug, 2002). Social determinants including forms of deprivation and inequity such as variation in unemployment rates, low income and literacy, poor access to public services such as hospitals, schools and justice, precarious living conditions, high domiciliary density, inefficacy of security and judicial institutions, and growth of illegal drug market and criminal organizations are pointed out by many researchers in the field as important determinants related to the growth of violence in Brazil. Similarly, Brazilian cultural norms and values regarding gender roles, the use of violence to resolve conflicts, and the effectiveness of public security and judicial institutions also play a role. In addition, factors at the level of relationships, such as the prominent role of gangs in some forms of Brazilian violence, as well as individual characteristics, such as personality traits, use of alcohol, and drugs, are important potential determinants of the grim magnitude of armed violence within Brazilian society that we have outlined here.

Given this ecological framework, it follows that coherent recommendations to prevent firearm-related violence must address a wide range of factors, including those that influence both the ready availability of, and demand for, firearms. The preventive approaches must be multsectoral and integrated and inevitably include structural measures for reducing inequalities. As Cardia et al. (2003) state "In Brazil at least, the growth of violence in urban areas cannot be properly understood – and consequently prevented – if the abyss that characterizes the access to socioeconomic rights for large sectors of the population is not taken into consideration"[6].

Despite the fact that violence is a problem of major concern for both the public opinion and academic and research institutions within Brazil, relatively little is known about the impact of firearms on criminal activities and violence-related morbidity and mortality. This effort has been an initial step to help understand the role of firearms in Brazilian violence by studying its magnitude and distribution across sex and age groups, across geographic units, and over time. The following section will briefly summarize the principal findings of this effort, prior to developing the report's recommendations.

6. *"No Brasil, ao menos, o crescimento da violência nas áreas urbanas não pode ser adequadamente compreendido - e conseqüentemente prevenido-se o abismo que caracteriza o acesso aos direitos econômico-sociais, para largos setores da população, não for levado em consideração" (Cardia et al. 2003: 43)*

Summary of major findings

During the 1990's firearm-related events - the vast majority homicides - killed almost as many people as those who died following road traffic crashes in Brazil. The overall number of people who died of firearm-related causes increased steadily over the course of the 1990s and by the year 2000 exceeded road traffic crashes as a cause of death. The burden of firearm-related mortality was particularly high for the Northeastern and Southeastern regions, and analysis of data by states reveals notably high levels of firearm-related mortality in the states of Rio de Janeiro and Pernambuco. This impact of firearm-related mortality within Brazil shows striking differences between the sexes - for every female who died of firearm-related causes during the 1990's there were over 12 males who died. Furthermore, the degree of this sex related vulnerability increases dramatically after adolescence.

Firearm-related mortality rates increased in Brazil between 1991 and 2000. There were important differences in the extent to which these rates increased with states and state capitals of the Central-western and Southeastern regions showing particular increases, although some states and state capitals in other regions also registered significant rate increases. Rates tended to be globally higher in urban areas, reflecting the fact that firearm-related death is predominantly an urban problem in Brazil. Generally firearm-related mortality rate increases among males were notably higher than those observed for females. Finally, the highest increases in rates tended to be observed among those age groups already affected by high rates of firearm-related mortality - those aged 5-29. A more detailed look at the temporal changes in firearm-related mortality rates concludes this summary section below.

The majority of homicides in Brazil during the 1990´s were committed with firearms. Across jurisdictions, there are variable proportions of homicide deaths where a weapon is not specified on the death certificate, and this is a source of misclassification of homicide deaths with, in general, a potential of resulting in underestimation of firearm-related homicides. This limits interpretation that can be attached to secular changes within the data and, owing to the variability across regions, states, and state capitals, limits the extent to which data can be compared. The state of São Paulo and the state capital, São Paulo appear to be particularly affected by this potential source of misclassification, and other work in São Paulo by Gawryszewski (2002) has identified important differences in completeness of weapon specification across three São Paulo reporting sources.

Another source of potential misclassification arises from those firearm-related deaths which were not classified as homicides, but either as undetermined intention or legal interventions. These two categories represented just under 11% and less than 1% of firearm-related deaths during the 1990's respectively. In the case of the former, it is likely that a substantial number were in fact firearm-related homicides, and in the case of the latter the consensus view of researchers involved in studying violence in Brazil is that many more firearm-related deaths result from legal interventions than are officially recorded.

The extent of this is latter source of misclassification deserves further comment. As a potential source of misclassification, it's magnitude and relevance is made more evident if one considers data from the Second National Report on Human Rights in Brazil (Mesquita Neto, 2002), which would suggest the number of firearm-related deaths arising as a result of legal intervention would be many more times what is provided by the Ministry of Health mortality database. Additionally, a number of researchers studying violence in Brazil have drawn attention to the issue of police violence within the country, and commented on organized links that drive this violence (Adorno, 1996; Neme, 2000; Mesquita Neto, 2002).

Firearm-related suicides were a much smaller component of firearm-related mortality than homicides, but worth noting and of significance particularly in the Federal District. In all major Brazilian regions and states, however, the majority of suicides that occurred in the 1990´s were committed with other weapons/instruments.

Finally with respect to impact on mortality, it should be noted that firearm-related causes played a very minor role in unintentional deaths. Nevertheless those deaths which did occur were over 9 times as likely to occur in males than females - likely related to wider access to firearms among males and related to the firearm as a symbol of power and means for a male to impose his will (Zaluar, 1994).

As stated previously, this section summarizing our main findings will conclude with a brief presentation of the major temporal changes observed in firearm-related mortality rates between 1991 and 2000. The foregoing remarks about potential sources of misclassification error should

make clear that interpretations of the observed trends must take into account potential sources of classification error and underreporting as possible factors influencing observed trends. With this caveat in mind it is possible to divide the trends observed into four different patterns of rate change that can be discerned, and which are presented in Chart 3.

Chart 3: Evolution of firearm-related mortality rates in Brazilian states and state capitals, 1991 – 2000

Evolution pattern	States	State capitals
Lower rates and decreasing tendency	Acre, Amazonas, Pará, Maranhão and Santa Catarina.	Rio Branco, Manaus, Belém, São Luis and Goiânia.
Higher rates and decreasing tendency	Rondônia and Rio de Janeiro	Salvador and Rio de Janeiro
Lower rates and increasing tendency	Tocantins, Paraíba, Alagoas, Piauí, Ceará, Rio Grande do Norte, Sergipe, Bahia, Minas Gerais, Paraná, Rio Grande do Sul and Goiás.	Palmas, Teresina, Fortaleza, Natal, Curitiba e Florianópolis.
Higher rates and increasing tendency	Amapá, Roraima, Pernambuco, Espírito Santo, São Paulo, Mato Grosso do Sul, Mato Grosso and Distrito Federal.	Boa Vista, Macapá, Porto Velho, João Pessoa, Recife, Maceió, Aracaju, Belo Horizonte, Vitória, São Paulo, Porto Alegre, Campo Grande and Cuiabá.

Lower rates and decreasing tendency

Once again, artefactual explanations need to be considered, however a number of states in the Northern and Northeastern regions demonstrated lower rates and a trend towards declining rates over the time period. While the state capital of São Luis had lower rates during the entire period the other four capitals presented in Chart 3 are of particular interest as they began the period with rates higher than those found for the country which then dropped to lower figures at the end of the decade.

Higher rates and decreasing tendency

In states such as Rondônia in the Northern region and Rio de Janeiro in the Southeastern region, firearm-related mortality rates were higher than those found for Brazil during the entire period but they are dropping. This does not imply that the situation is under control, indeed Rio de Janeiro has firearm-related mortality rates that are double those of the national rate. As mentioned earlier, artefactual factors need to be taken into account as possible partial explanations for the observed trend changes. However, if these are unlikely to be substantive explanations of the trend observed, then these settings (states and state capitals) are of interest inasmuch as a potential explanation for the rate changes may be specific strategies implemented to prevent violence, or strategies with broader effects of which contributing to a decline in firearm-related violence may be one outcome.

Lower rates and increasing tendency

A number of states began the period with firearm-related mortality rates which were low relative to those found for Brazil and showed a trend towards increasing rates over the period. Given the general global improvement in classification that seems to have occurred over our study period this pattern of change perhaps more than others may be due to underreporting of firearm-related mortality at the start of the period. Nevertheless, these states and state capitals

should be examined and monitored more closely and efforts taken to ensure that this data based monitoring is as standardised as is practical. The extent of increase in rates was particularly marked for the state capitals of Palmas and Teresina.

Higher rates and increasing tendency

In a number of states rates began high and increased to still higher levels. Pernambuco state stands out - not so much because it's rate of increase was the highest, but because the increase occurred on top of firearm-related mortality rates which were already extremely high. The states and state capitals of São Paulo and Mato Grosso also presented with substantial rate increases and finished the period with very high rates. Clearly the settings falling into this category require concerted attention and efforts to prevent armed violence.

In sum, our findings paint a grim picture. Firearm-related injury and death - the vast majority of it due to interpersonal violence - is a fact of everyday life in Brazil and in a number of settings is the principal driver of external cause mortality. There is ample evidence from the victimization studies reviewed here that the level of violence experienced affects day to day living and individual decision making across residents of Brazilian cities. On the whole the situation is worsening, and particularly among young males in urban areas, the threat of death or critical injury from firearm-related violence is a significant and everpresent danger.

Recommendations

Five recommendations emerge from our analysis:

Recommendations
1. Improve the quality of the information on violence in the country and promote information exchange among the different agencies.
2. Provide support to research in the area, especially in relation to the causes, consequences, costs and the development of evaluation methods and indicators.
3. Develop strategies for reducing impunity and improving the Public Security agencies and access to justice.
4. Develop primary prevention strategies and reduction of inequalities.
5. Create mechanisms for the implementation of integrated and multi-sectoral actions for the prevention of violence with the state and municipal authorities.

1. Improve the quality of the information on violence in the country and promote information exchange among the different agencies

There are many institutions in Brazil that collect information on violence, among which the most important are police institutions, the medico-legal institutes and health institutions that provide care to victims. In addition to official information gathered by public agencies, there are also important sources of information resulting from victimization studies, where typically a sample of the population is surveyed and asked to answer specific questions regarding acts of violence suffered, their perceptions regarding violence and safety, as well as other questions.

When sources of data such as the foregoing are collected routinely and in a standardized form with minimal changes to factors that influence validity of the data, they become a source of

valuable information, contributing towards the knowledge of the frequency and distribution of events in population groups and allowing a basis for evidence guided policy formation. Sadly however, there are a number of important deficiencies to be found in data collection, processing, analysis, and availability within Brazil. For sufficiently detailed understanding of firearm-related violence to allow for coherent development of preventive strategies, it is essential that the information be reliable, available, and shared in a digestible fashion among those who need to develop and implement preventive strategies. In order for preventive strategies to be developed the information required need not be detailed for the entire country but does, in some settings, need to provide sufficient detail on factors such as victims' and aggressors' socio-demographic characteristics, use and type of weapon, day, time and circumstance of the event, motivation and intention, indications of alcohol and/or drug use involved, etc. in order to allow for accurate diagnosis and planning of actions for control and prevention (Conha-Eastman & Villaveces, 2001; Concha-Eastman & Guerrero, 1999).

Efforts should therefore be made to improve the information already collected, taking into account the major existing problems with data sources documented here and elsewhere. An important obstacle to overcome is the view that data collection is merely a bureaucratic activity, as well as the tendency for information to be housed and used within a single sector of government. Thus, the development of integrated systems to make use of firearm-related violence data is of fundamental importance for planning, monitoring and evaluation of preventive strategies. In order to develop such an integrated system to allow for a better understanding of such a serious social problem within Brazil, it is essential that data, including data related to firearm seizures and registration, be made available in a transparent manner, with due respect being given to confidential information.

Sensitizing Medico-Legal Institutes to the policy relevance of their data, and working with them on training and standardization of approaches to improve completeness of death certificate data would be a strategic first step for improving the databases on mortality in the country, particularly in relation to external cause deaths.

There is still no information system in Brazil regarding external cause morbidity (Mello Jorge, 2000). Isolated experiences have been conducted in some areas, which can serve as a basis for broad discussions towards establishing a system on a nationwide basis, something that is essential for generating a profile of the full dimension of firearm-related violence.

In addition to technical improvements and consolidation required within existing systems, there needs to be an exchange of information among the different sectors and agencies involved in the collection of data relevant to violence in Brazil. An integrated system involving public administrators who regularly exchange processed data would be an important component enabling the construction of multi-sectored interventions for violence prevention and control. Given the growth of firearm-related mortality in Brazil, the implementation of a surveillance system of firearm injuries could become an important tool for the planning and monitoring of prevention and control actions, as well as for a more in-depth knowledge of the problem at a local level. A firearm-related injuries surveillance system could moreover serve as a pilot experience for the integration of the different official data collection agencies (Conha-Eastman & Villaveces, 2001; Concha-Eastman & Guerrero, 1999).

This does not mean creating exhaustive and inoperable information systems, but rather creating systems that are practical, standardized and informative, and ensuring that the data developed within various systems can be and is shared within a policy shaping network.

2. Provide support to research in the area, especially in relation to the causes, consequences, costs and the development of evaluation methods and indicators

Little is known in Brazil regarding the role that firearms play in the growth of violence, the costs related to firearm-related violence as well as the number and type of firearms circulating in the country. Even more disturbingly, desperately little is known regarding the effectiveness of preventive actions, despite the fact that the high rates of firearm-related violence have led to an array of governmental and non-governmental attempts to prevent armed violence. Given the obvious need to understand the magnitude and distribution of firearm-related violence, as well as its social determinants in order to plan effective control and prevention actions, academic and research institutions have a vital role to play in providing this knowledge. In view of the results presented here it would seem particularly important to support research and research institutions that have a particular interest in establishment and evaluation of strategies to prevent violence, particularly those focused on the young population in the large urban centers.

Many initiatives towards violence prevention and control in specific areas of the country are being taken in an isolated and fragmented manner. However, very little is known about the effectiveness of these efforts, and in particular there is a lack of methodologically rigorous evaluation studies. Evaluation of violence prevention programs is an area of research that is still in development, but the Brazilian context provides an excellent setting in which to advance this vital area.

It is important to stress that the knowledge required for addressing a problem of such complexity should go beyond quantitative analyses, and needs also to understand the role of violence in social relationships, the unequal distribution of violence within urban areas, and reason for the use of firearms and the perception of young individuals relative to their personal risk and vulnerability.

3. Develop strategies for reducing impunity and improving the Public Security agencies and access to justice

A number of studies reviewed for this research stress that the feeling of insecurity is one of the major concerns of the Brazilian population and is associated with an array of behavioral changes and the search for individual defense mechanisms (Cardia, 1999; Kahn, 2002). Lack of confidence in the police force and the justice institutions is one of the factors that contributes towards this sentiment. Impunity and violence perpetrated by police, together with difficult access to justice faced by large segments of the Brazilian population, and the crisis in the penitentiary system, contribute towards the population's low level of confidence in government security systems (Adorno, 1996; Caldeira, 2000; Peralva, 2000). One of the consequences attributed to this problem is the increase in demand for firearms as a means of individual protection. Reforms in the police, prison and justice systems are important steps for improving perceptions of safety in the population, thus contributing towards the reduction in the demand for firearms. Reducing impunity through improvements in the police, prison and justice institutions is therefore a central and strategic challenge for armed violence prevention and control within Brazil.

4. Develop primary prevention strategies and reduction of inequalities

Many studies document the link between social inequities and homicide mortality (Butchart & Engström, 2002; Kennedy et al. 1998; Kennedy et al, 1996, Kaplan et al, 1996, Cardia et al, 2003, Barata, 2002, 2999, 1998; Macedo et al, 2001). Lack of access to public goods and services, low efficacy of services in disadvantaged regions of large cities, and associated low socioeconomic indicators, all partially explain the concentration of homicides in these areas and contribute towards the population's feeling of insecurity. Besides social inequities, differences in gender and

ethnicity that sustain discriminatory practices are also important factors that contribute to the perpetration of violence (Butchart & Engström, 2002; Blau & Blau, 1982). Investments in measures for the promotion of equality are in this sense, fundamental for the prevention of violence. This does not mean transforming social policies into policies of which the ultimate goal is violence reduction. Promoting equality and reduction of inequality must be considered as ends in themselves, justifiable even in the absence of high violence rates. However, it is important to consider that violence is a part of and contributes towards group insecurity and vulnerability in areas of exclusion, especially in the young Brazilian population strata.

In addition to primary prevention strategies aimed at the social level there are also other strategies that can contribute to primary prevention of violence. Many of these have been comprehensively documented in the WHO's *World report on violence and health* (Krug et al. 2002), and it is important to point out that there can be important mutual reinforcing effects of primary prevention interventions.

5. Create mechanisms for the implementation of integrated and multi-sectoral actions for the prevention of violence with the state and municipal authorities

This report has made a contribution to documenting, in a comprehensive manner, the complexity and magnitude of the impact of firearm-related violence within Brazil. There are important sex and age effects, and there are important regional and urban level factors resulting in pockets of the country's population living in conditions characterised by alarmingly high levels of armed violence. This variation in levels of armed violence exists not for one reason, but for many, and a number of studies reviewed here plus the original data analysed for this report lead to a central conclusion that contextual and socio-structural elements are of fundamental importance in determining rates of armed violence. This poses a central challenge to the task of planning and implementing measures for the prevention and control of violence. There is a broad consensus that preventing violence, in particular firearm-related violence, necessarily calls for broad and integrated measures, which begin with a local understanding of the problem and develop from this understanding direction for preventive actions and establishing priorities (Krug et al. 2002). In Brazil, efforts are being made in this sense, through nationwide plans and policies. However, to date progress in this direction has unfortunately been limited.

Public policies in Brazil are traditionally fragmented, be it among the different government levels – municipal, state and federal – or among the different public administrative bodies – departments and ministries. The creation of mechanisms for the integration of these different sectors among themselves and with the organized civil society, such as courts, boards, working groups or others, - due respect being given to their competencies and responsibilities - is extremely important. A broad diagnosis of the preventive interventions already under development as well as of the local capacities for the collection, processing and analysis of the information are initial steps towards integrated actions, by allowing for the identification of the actions underway and for identifying existing gaps. Establishment of a consensus regarding the priorities and the development of integrated plans of action that define the objectives, aims, activities, roles and responsibilities, monitoring mechanisms and outcome indicators, are essential for addressing armed violence in a coherent and evidence guided manner. For a problem of the scale of what has been shown in this report, it would seem of fundamental importance to move all relevant stakeholders towards such a multi-sectoral collaboration to prevent armed violence.

Bibliography

ADORNO, S. *A gestão urbana do medo e da insegurança: violência, crime e justiça penal na sociedade brasileira contemporânea.* São Paulo, 1996. [Tese de Livre Docência]. São Paulo: Faculdade de Filosofia, Letras e Ciências Humanas da USP, 1996.

ALMEIDA FO, N. & ROUQUAIROL, M. Z. *Introdução à Epidemiologia Moderna.* BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992.

AZEVEDO-LIRA, M. T. & DRUMMOND-JR., M. Anos potenciais de vida perdidos no Brasil em 1980 e 1997. In: *Estudos Epidemiológicos*, FUNASA, Ministério da Saúde, DF, pp. 7–46, 2000.

BARATA, R. Violência Urbana e Saúde Pública. *Revista da Saúde*, III, 3: pp. 22-24, dez. 2002.

BARATA, R. et al. Desigualdades sociais e homicídios em adolescentes e adultos jovens na cidade de São Paulo em 1995. *Revista Brasileira de Epidemiologia*, 2 (1/2): 50 – 59, 1999.

BARATA, R. et al. Intra-urban differentials in death rates from homicide in the city of São Paulo, Brazil, 1988-1994. *Social Science and medicine* 47 (1): 19-23, 1998.

BARATA, R. et al. Tendência temporal da mortalidade por homicídios na cidade de São Paulo, 1979-1994. *Cadernos de Saúde Pública*, 15(4): 711-718, 1999.

BEATO-FO, C. et al. Conglomerados de homicídios e o tráfico de drogas em Belo Horizonte, Minas Gerais, Brasil, de 1995 a 1999. *Cadernos de Saúde Pública*, 17(5):1163-1171, 2001.

BEATO-FO, C. Fontes de Dados Policiais em Estudos Criminológicos: limites e potenciais. Fórum de Debates: Criminalidade, Violência e Segurança Pública no Brasil: uma discussão sobre as bases de dados e questões metodológicas. IPEA, Rio de Janeiro, 2000.

BERQUÓ, E. et al. *Bioestatística*. São Paulo: EPU, 1981.

BLAU, J. R. & BLAU, P. M. The cost of inequality: metropolitan structure and violent crime. *American Sociological Review*, 47 (1): 114-129, 1982.

BUTCHART, A. & ENGSTRÖM, K. Sex- and age-specific relations between economic development, economic inequality and homicide rates in people aged 0-24 years: a cross-sectional analysis. Bulletin of World Health Organization; 80(10): 797-805, 2002.

CALDEIRA, T. *Cidade de Muros – crime, segregação e cidadania em São Paulo*. São Paulo, Edusp/ Editora 34, 2000.

CANO, I. Registros Criminais da Polícia no Rio de Janeiro: problemas de confiabilidade e validade. Fórum de Debates: Criminalidade, Violência e Segurança Pública no Brasil: uma discussão sobre as bases de dados e questões metodológicas. IPEA, Rio de Janeiro, 2000.

CARDIA, N. & SCHIFFER, S. Violência e desigualdade social. *Ciência e Cultura*, 54(1):25-31, 2002.

CARDIA, N. et al. Homicídio e violação dos Direitos Humanos em São Paulo. *Estudos Avançados*, 17(47): 43-73, 2003.

CARDIA, N. A violência urbana e os jovens. In: *São Paulo sem medo*, São Paulo, Garamond, pp. 133 – 154, 1998.

CARDIA, N. *Atitudes, Normas Culturais e valores em relação à violência em 10 capitais brasileiras*. Ministério da Justiça, Secretaria de Estado de Direitos Humanos, Brasília, 1999.

CATÃO, Y. *Mortes violentas – um panorama dos homicídios no Brasil*. Instituto Brasileiro de Geografia e Estatística (IBGE), 1999.

CEPES/Sarah. *Mapa da Morbidade por Causas Externas*. Centro de pesquisa e estudos em prevenção e educação da rede Sarah. http://www.sarah.br, 2000.

CONCHA-EASTMAN, A & GUERRERO, R. Vigilancia epidemiologica para la prevención e el control de la violencia en las ciudades. *Revista Panamericana de Salud Publica,* 5(4/5): 322-331, 1999.

CONCHA-EASTMAN, A. & VILLAVECES, A. *Guidelines for the design, implementation and evaluation of epidemiological surveillance systems on violence and injuries.* Washington DC, PAHO,2001

COOK, P. J. The effect of gun availability on robbery and robbery murder: a cross-section study of fifty cities. Police Studies Review Annual, 2: 743-781,1978

CRM-SP/APM/Sindimed. *A Epidemia da Violência*, 1998.

ELWOOD, J. M. Causal relationships in medicine – a practical system for critical appraisal. Oxford University Press, 1988.

FAGAN, J. *Social Contagion of Violence.* Work in Progress presented at the Fortunoff Colloquium, New York University, School of law, April 19th, 1999.

FERNANDES, R. C et al. *The impact of firearms injuries on the young population in the city of Rio de Janeiro, Brazil – Viva Rio Activities and Strategies.* Report presented at the 6th World conference in Injury Prevention and Control. Montreal, Quebec, Canadá, *Mimeo,* May 9-16 2002.

FREITAS, E. D. et al. Evolução e distribuição espacial da mortalidade por causas externas em Salvador, Bahia, Brasil. *Cadernos de Saúde Pública*, 16(4):1059-1070, 2000.

GARDNER, J. W. & SANBORN, J. S. Years of Potential life Lost (YPLL) – What does it means? *Epidemiology*, 1 (4): 322-329, 1990.

GAWRYSZEWSKI, V. *Homicídios no Município de São Paulo: perfil e subsídios para um sistema de vigilância epiemiológica*, Tese de Doutorado, Universidade de São Paulo, 2002.

HENNEKENS, C.H. et al., *Epidemiology in Medicine*. Boston: Little, Bowon & Co., 1987.

IBGE. Instituto Brasileiro de Geografia e Estatística. http://www.ibge.org.br

ILANUD/Datafolha. PAULINO, Mauro Francisco & HERNANDES, Alessandro Janoni (1997). Radiografia da Vitimização em São Paulo, *mimeo*, 1997.

IPEA. Instituto de pesquisa econômica aplicada. http://www.ipea.gov.br/

KAHN, T. et al. *Pesquisa de vitimização 2002 e avaliação do PIAPS*. Ilanud/FIA-USP, Gabinete de segurança Institucional. http://www.conjunturacriminal.com.br, 2002.

KAHN, T. Armas de Fogo: argumentos para o debate. *Boletim Conjuntura Criminal*, http://www. conjunturacriminal.com.br/boletins/html, 2002b.

KAPLAN, G. et al. Inequality in income and mortality in the United states: analysis of mortality and potential pathways. British Medical Journal,312:999-1003, 1996.

KELLERMAN, A. Gun ownership as a risk factor for homicide in the home. The New England journal of medicine, 329:1084-1091, 1993.

KENNEDY, B. P. et al. Social Capital, Income inequality and firearm violent crime. Social Science and Medicine, 47(1): 7-17, 1998.

KENNEDY, B. P. et al. Income distribution and mortality: cross sectional ecological study of the Robin Hood index in the United states. Briths Medical Journal, 312:1004-1007, 1996.

KLEINBAUM, D. G. et al. *Epidemiologic Research – Principles and Quantitative Methods*. Lifetime Learning Publications, California, 1982.

Krug, E. et al. (Eds.) *Relatório mundial sobre violência e saúde*. Organização Mundial de Saúde, Genebra, 2002.

Krug, E et al. Firearm-related deaths in the United states and 35 other high- and upper-middle income countries. *International Journal of Epidemiology*, 27: 214-221, 1998.

Levin, J. *Bases de dados de saúde: informações sobre a violência*. Fórum de Debates: Criminalidade, Violência e Segurança Pública no Brasil: uma discussão sobre as bases de dados e questões metodológicas. IPEA, Rio de Janeiro, 2000.

Lima, M. L. & Ximenes, R. Violência e morte: diferenciais da mortalidade por causas externas no espaço urbano do Recife, 1991. *Cadernos de Saúde Pública*, 14(4):829-840, 1998.

Lima, R. S. Conflitos sociais e criminalidade urbana: uma análise dos homicídios cometidos no Município de São Paulo. Dissertação de Mestrado, Universidade de São Paulo, 2000.

Lima, R. S. et al. Também morre quem atira. Risco de uma pessoa que possui arma de fogo ser vitima fatal de um roubo. *Revista Brasileira de Ciências Criminais*, 8(29): 365-373, 2000.

Lisboa, M. B. et al. As Exportações Brasileiras de Armas Leves – 1989-2000. http://www.iser.org.br /portug/segpub_texto_rubem.pdf, 2001.

Macedo, A. C. et al. Violência e desigualdade social: mortalidade por homicídios e condições de vida em Salvador, Brasil. *Revista de Saúde Pública*, 35(6):515-522, 2001.

Medronho, R. et al. *Epidemiologia*. São Paulo: Atheneu, 2003.

Mello-Jorge, M. H. et al. Análise dos dados de mortalidade. *Revista de Saúde Pública*, 31(4s): 5-25, 1997.

Mello-Jorge, M. H. *Acidentes e violências no Brasil: Breve análise de suas fontes de dados*. Fórum de Debates Criminalidade, Violência e Segurança Pública no Brasil: uma discussão sobre as bases de dados e questões metodológicas. IPEA, Rio de Janeiro, 2000.

Mello-Jorge, M. H. *Investigação sobre a mortalidade por acidentes e violências na infância*. Tese de livre docência. Universidade de São Paulo, Faculdade de Saúde Püblica, São Paulo, 1988.

Mello-Jorge, M H. Situação atual das estatísticas oficiais relativas à mortalidade por causas externas. *Revista de Saúde Pública*, 24(3):217-23, 1990.

Mesquita-Neto, P. Segundo Relatório Nacional sobre Direitos Humanos no Brasil. São Paulo, Comissão Teotônio Vilela de Direitos Humanos, 2002.

Mesquita-Neto, P. Crime, Violence and Political Uncertainty in Brazil. Seminar Report: Crime and policing in transitional societies. http://www.kas.org.za/Publications/SeminarReports-/Crimeandpolicingintransitionalsocieties/deMesquita.pdf, 2002b.

Miller, M. A. D. & Hamenway, D. Rates of firearm ownership and homicide across United states regions and states, 1988-1997. *Am J pub health*; 92(12):1988-1993, dec. 2002.

Minayo, M. C. & Souza, E. R. É Possível prevenir a violência? Reflexões a partir do campo da saúde pública, *Ciências e Saúde Coletiva*, 4 (1): 7–23, 1999.

Minayo, M. C. & Souza, E. R. Violência e saúde como um campo interdisciplinar e de ação coletiva. *História, Ciências, Saúde – Manguinhos*, IV (3):513-531, 1997.

MS/Funasa/Cenepi - Sistema de Informações sobre Mortalidade (SIM). http://www.datasus.gov.br/

Neme, C. *A instituição policial na ordem democrática: o caso da Política Militar do Estado de São Paulo*. Dissertação de mestrado, Faculdade de Filosofia, letras e ciências Humanas, Universidade de São Paulo, 2000.

Njaine, K. et al. A produção da (des)informação sobre violência: análise de uma prática discriminatória. *Cadernos de Saúde Pública*, 13(3): 405-414, 1997.

Paim, J. S. et al. Distribuição espacial da violência: mortalidade por causas externas em salvador (Bahia), Brasil. *Revista Panamericana de Salud Publica*, 6(5):321-332, 1999.

PCV/SEADE. Pesquisa de Condições de Vida – Pesquisa de Vitimização, Estado de São Paulo. http://www.seade.gov.br, 1998.

Peralva, A. Violência e Democracia. O paradoxo Brasileiro. São Paulo, Paz e Terra, 2000.

Piquet-Carneiro, L. Firearms in Rio de Janeiro: Culture, Prevalence and Control. In: connecting weapons with violence. The South American Experience, Monography 25. http://www.iss.co.za/Pubs/Monographs/No25/PartIII.html, May 1998.

Piquet-Carneiro, L. Pesquisa de vitimização. Região Metropolitana de São Paulo. Relatório de Pesquisa. http://lnweb18.worldbank.org/LAC/lacinfoclient.nsf/0/b6669423a4023b8785256895005c7d8c/$FILE/suplemento.pdf, outubro de 1999.

Piquet-Carneiro, L. Violent crime in Latin American cities: Rio de Janeiro and São Paulo. Research Report. http://wbln0018.worldbank.org/lac/lacinfoclient.nsf/0/9a4d6bea7b4b6ddb852568b90075f48d/$FILE/g8dp6irb54pb6irrccln66pava9kmu9ijc5nl0obldhng.pdf, January 2000.

Reiss, A J & Roth, J. Firearms and violence. In: Albert J. Reiss & Jeffrey A. Roth. *Understanding and Preventing Violence*. National Academy Press, Washington DC, pp. 255-287, 1993.

Rivero, P. Some general characteristics about firearms in Rio de Janeiro State. Report presented at the 6th World conference in Injury Prevention and Control. Montreal, Quebec, Canadá, *Mimeo,* May 9-16 2002.

Rosner, B. *Fundamentals of Biostatistics*. Boston: PWS-Kent Publishing Company, 1990

Rothman, K. J. *Modern Epidemiology*. Boston: Little, Brown and Co., 1986.

Rouquairol, MZ & Almeida Fo., N. *Epidemiologia e Saúde*. 5a. Ed., Rio de Janeiro: MEDSI, 1999.

Santos, S. M. et al. Detecção de aglomerados espaciais de óbitos por causas violentas em Porto Alegre, Rio Grande do Sul, Brasil, 1996. *Cadernos de Saúde Pública*, 17(5):1141-1151, 2001.

Souza, E. R. Homicídios no Brasil: o grande vilão da saúde pública na década de 80. *Cadernos de Saúde Pública* 10(1s): 45-60, 1994.

UNICRI, 1992. Rios, J. A. Rio de Janeiro (BRAZIL). In: Alvazzi del Frate, Anna, Zvekic, Ugljesa, Dijk, Jan J.M. van (eds) *'Understanding Crime, Experiences of Crime and Crime Control, Acts of the International Conference'*. Rome. UN publication No.49. http://www.unicri.it, 18-20 November 1992.

Waiselfisz, J. J. *Mapa da Violência III – Os jovens do Brasil. Juventude, Violência e Cidadania*. Brasília, UNESCO/Instituto Ayrton Senna/Ministério da Justiça/SEDH, 2002.

WHO. Small Arms and Global Health. WHO Contribution to the UN Conference on Illicit Trade in Small Arms and Light Weapons, July 9-20, 2001.

Wiebe, D. J. Homicide and suicide risk associated with firearms in the home: a national case-control study. *Ann emerg med*, june 2003; 41(6): 771-782.

Zaluar, A. O condomínio do Diabo. Rio de Janeiro, Ed. UFRJ/Revan, 1994.

Appendix

1. Methodology

This study follows a mixed ecological design with descriptive time-series for the period of 1991 to 2000, and a spatial correlation analysis for the year 2000. Ecological studies are characterized by the use of aggregate measures of disease and exposure, the unit of analysis being a population defined by geographical and socio-cultural limits. These characteristics can be considered as both a source of advantages and disadvantages. Ecological designs are the first step in the study of health problems, providing information regarding distribution of health events in the population and possible exposure relationships, which can be used to raise causal hypothesis (Kleinbaum et al. 1982; Hennekens, 1987).

a. Units of analysis

Units of analysis are defined as politico-administrative and geographical areas of Brazil, its five regions, twenty-six federal states and the Federal District, and twenty-six state capitals. For the descriptive time-series analysis, the country, regions, states and state capitals were considered. For the spatial correlation analysis, the twenty-six states and the Federal District were considered (Chart 6). Brazil is a Federative Republic with its twenty-six states defined as politico-administrative units. States are divided into five major regions with a relative homogeneity regarding social, cultural and economic features.

b. Source of data and variables

Mortality: Data from the Ministry of Health Mortality Information System (SIM) were obtained for the period from 1991 to 2000. Data are codified following the International Classification of diseases, revision IX from 1991 through 1995, and revision X from 1996 through 2000. Deaths by place of residence, codified as external cause, were extracted from a CD-Rom database for the total population, by sex and age groups. Deaths were initially classified according to sub-codes in nineteen variables (Chart 4).

To diminish the difficulties of data comparability due to the use of different categories and also to diminish possible effects of classification systems regarding the identification of weapons/instruments, we excluded all the sub-categories of "late effects of external cause deaths"[7]. This can be explained by the fact that these sub-codes do not specify the kind of instrument or means that resulted in death, but only if it was suicide, homicide/aggression, undetermined intention or traffic accident. Thus, it is not possible to know the number of firearm or non-firearm injuries that resulted in death. Since the proportion of firearm-related deaths in the total of external cause deaths is extremely high, this suggests that a high proportion of these cases were due to the use of firearms. It is also known, however, that firearms have a higher lethality when compared with other weapons, which can suggest a lower proportion of firearms in the cases of later deaths due to external causes. For that reason, it is difficult to estimate the proportion of firearms in these cases. Since in this study the information concerning the weapon or instrument is extremely important, we decided to exclude these categories to avoid distortion of the rates and proportions of firearm and non-firearm related deaths. Furthermore, the differences between ICD-9 and ICD-10 regarding the use and definition of these sub-codes may have influence in their use and, therefore, may render the comparability of the data provided difficult.

7. ICD-9 sub-codes are: E929, E959, E969, E977, E989, E999. ICD-10 sub-codes are: Y85-Y89.

We also excluded the ICD-9 and ICD-10 sub-codes used to classify deaths due to medical intervention and to the use of medical substances for treatment purposes. We consider that these categories reflect and are extremely influenced by the quality of medical assistance much more than by the problem of violence.

Chart 4: Variables according to ICD-9 and ICD-10

Variable	ICD-9 sub-codes	ICD-10 sub-codes
External Causes	E800–E869; E880–E928; E950–E958; E960–E968; E970–E976; E980–E988.	V01 a Y36
Road traffic crashes	E800–E848	V01 a V99
Firearm-related deaths	E922; E955.0–E955.4; E965.0–E965.4; E970; E985.0–E985.4	W32–W34; X72–X74; X93–X95; Y22–Y24; Y35.0
Non-firearm related deaths	E850–E869; E880–E921; E923–E928; E950–E954; E955.5–E958; E960–E964; E965.5–E968; E971–E976; E980–E984; E985.5–E988	W00–W31; W35–X59; X60–X71; X75–X92; X96–Y09; Y10–Y21; Y25–Y34; Y35.1–Y35.7
Homicides	E960–E968	X85–Y09
Firearm-related homicides	E965.0–E965.4	X93–X95
Non-firearm-related homicides	E960–E964; E965.5–E968	X85–X92; X96–Y09
Suicides	E950–E958	X60–X84
Firearm-related suicides	E955.9–E955.4	X72–X74
Non-firearm-related suicides	E950–E 954; E955.5–E958	X60–X71; X75–X84
Legal interventions	E970–E976	Y35
Firearm legal interventions	E970	Y35.0
Non-firearm legal interventions	E971–E976	Y35.1–Y35.7
Deaths of undetermined intention	E980–E988	Y10–Y34
Firearm-related deaths of undetermined intention	E985.0–E985.4	Y22–Y24
Non-firearm-related deaths of undetermined intention	E980–E984; E985.5–E988	Y10–Y21; Y25–Y34
Other accidents	E850–E869; E880–E928	W00–X59
Firearm-related accidents	E922	W32–W34
Non-firearm-related accidents	E850–E869;E880–E921;E923–E928	W00–W31; W35–X59

Population: Population data were obtained from the Brazilian Institute of Geography and Statistics (IBGE) census for the years 1991 and 2000, and population count for 1996. For the other years, population estimates from the Ministry of Health were used (www.datasus.gov.br).

Socioeconomic indicators: Socioeconomic indicators for the twenty-six states and the Federal District were obtained from the IBGE and from the Brazilian Institute of Applied Economic Research (IPEA)/PNUD. Socioeconomic indicators from the IBGE were classified in four dimensions of socioeconomic development, which are schooling, urbanization/living conditions, income and familial structure (Chart 5).

The IPEA/PNUD socioeconomic indicator is composed of three dimensions – longevity, income and schooling – and is available as a composed index of human development (HDI) for each of the units of analysis.

Chart 5: Socioeconomic indicators

Dimension	Socioeconomic Indicator	Reference year
IBGE		
Urbanization/ living conditions	Mean number of person per house	2000
	% of houses without garbage collection	2000
Income	Nominal income of family leaders	2000
Schooling	Adult illiteracy rate (> 15 years old)	1999
Familial structure	% of women as family leaders	2000
IPEA/PNUD		
Income Schooling Longevity	Human Development Index	2000

All socioeconomic indicators were ranked from the worst to the best condition in each of the 26 states and in the Federal District, resulting in seven scales with figures varying from 1 to 27.

c. Analysis

Data were processed and analyzed with Minitab Statistical Software 13.0. Deaths from 1991 to 2000 were initially considered all together to describe the magnitude and distribution of firearm-related deaths for Brazil in the 1990's. Road traffic crashes, firearm-related deaths and non-firearm related deaths were considered in relation to total number of deaths from external causes, for the entire population, and for sex and age groups. The contribution of the specific cause of death (homicide, suicide, legal intervention, accident and undetermined intention) in both external cause and firearm related deaths were calculated.

Proportional mortality and mortality rates (/100,000 inhabitants) were calculated for each year, for the entire population, by sex and age groups, in each unit of analysis. Global mortality rates were adjusted according to age, through direct standardization (Hennekens, 1987) by the world population (United Nations, 1998) to allow for international comparisons.

Correlations between firearm-related mortality rates and socioeconomic indicators were analyzed for the year 2000. Spearman's coefficient was used to test the correlation between each of the socioeconomic indicators and firearm-related mortality rates, homicide mortality rates, firearm-related homicide mortality rates and non-firearm-related homicide mortality rates.

Chart 6: Unit of analysis

Unit of analysis	Analytical approach	Unit of analysis	Analytical approach	Unit of analysis	Analytical approach	Unit of analysis	Analytical approach
Country		Regions		States		Capitals	
				Rondônia		Porto Velho	
				Amapá		Macapá	
				Roraima		Boa Vista	
		North		Amazonas		Manaus	
				Acre		Rio Branco	
				Pará		Belém	
				Tocantins		Palmas	
				Alagoas		Maceió	
				Maranhão		São Luis	
				Bahia		Salvador	
				Ceará		Fortaleza	
Brazil	Descriptive	Northeast	Descriptive	Sergipe	Descriptive Correlation	Aracaju	Descriptive
				Pernambuco		Recife	
				Paraíba		João Pessoa	
				R. G. Norte		Natal	
				Piauí		Teresina	
				Minas Gerais		Belo Horizonte	
		Southeast		Rio de Janeiro		Rio de janeiro	
				Espírito Santo		Vitória	
				São Paulo		São Paulo	
				R. G. do Sul		Porto Alegre	
		South		Santa Catarina		Florianópolis	
				Paraná		Curitiba	
				Mato Grosso		Cuiabá	
		Central-western		Mato Grosso do Sul		Campo Grande	
				Goiás		Goiânia	
				The Federal District			

2. Tables: Absolute numbers of firearm-related deaths

Appendix 1: Total firearm-related deaths, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	21181	20972	22469	24066	26546	26510	27774	30200	31229	35028
Northern	1227	1165	1134	1129	1136	1222	1228	1447	1349	1355
Rondônia	286	262	315	279	255	283	270	349	342	304
Acre	78	69	70	62	71	76	77	81	52	50
Amazonas	242	191	190	213	216	257	235	251	243	260
Roraima	30	55	44	50	56	53	43	63	67	52
Pará	544	493	424	442	430	382	472	530	481	529
Amapá	13	43	44	43	57	91	61	73	60	41
Tocantins	34	52	47	40	51	80	70	100	104	119
Northeastern	4538	4375	4695	4796	5231	6017	6722	7444	7253	7727
Maranhão	212	216	200	149	186	238	207	255	178	210
Piauí	38	45	46	47	80	61	66	71	78	125
Ceará	290	241	323	322	441	444	526	546	589	701
Rio Grande do Norte	132	126	173	165	217	253	279	209	233	273
Paraíba	189	230	210	202	255	276	342	292	280	383
Pernambuco	2104	1817	2024	2033	2246	2458	3135	3765	3717	3703
Alagoas	268	305	368	411	497	536	488	427	399	498
Sergipe	192	329	169	246	198	226	172	190	270	308
Bahia	1113	1066	1182	1221	1111	1525	1507	1689	1509	1526
Southeastern	11684	11878	12887	14151	15299	14173	14614	16061	17370	20030
Minas Gerais	864	847	901	851	993	1080	1167	1333	1046	1638
Espírito Santo	505	410	604	643	665	739	1006	1209	1160	1027
Rio de Janeiro	6753	7184	7218	7921	7752	6328	6477	6608	6604	6772
São Paulo	3562	3437	4164	4736	5889	6026	5964	6911	8560	10593
Southern	2402	2277	2374	2494	2796	2878	3040	3011	3046	3307
Paraná	785	786	859	948	1075	1075	1116	1203	1237	1319
Santa Catarina	281	205	253	249	335	302	350	315	288	323
Rio Grande do Sul	1336	1286	1262	1297	1386	1501	1574	1493	1521	1665
Central-western	1330	1277	1379	1496	2084	2220	2170	2237	2211	2609
Mato Grosso do Sul	315	317	351	386	544	561	565	461	398	504
Mato Grosso	109	127	79	66	347	499	478	592	520	742
Goiás	553	531	550	618	696	669	645	673	800	834
Federal District	353	302	399	426	497	491	482	511	493	529

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 2: Total firearm-related deaths, Brazil, regions and states, age 15-19, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Brazil	3027	2823	3363	3612	4017	3883	4339	4929	5194	6007
Northern	172	121	145	174	166	167	189	242	210	202
Rondônia	32	21	30	30	30	32	29	39	39	34
Acre	16	7	13	10	23	10	16	17	7	10
Amazonas	53	20	33	42	36	50	47	53	55	50
Roraima	4	5	3	4	4	5	9	9	11	11
Pará	64	53	53	73	47	40	66	92	60	69
Amapá	1	9	11	11	22	17	13	18	17	13
Tocantins	2	6	2	4	4	13	9	14	21	15
Northeastern	542	503	699	689	729	893	1084	1284	1187	1262
Maranhão	24	11	17	27	29	27	21	30	22	34
Piauí	5	4	7	4	11	11	11	10	10	17
Ceará	34	23	48	30	68	54	77	84	83	110
Rio Grande do Norte	17	15	19	26	26	30	54	38	27	40
Paraíba	24	17	28	34	43	48	43	43	39	77
Pernambuco	238	187	293	298	309	375	521	702	644	611
Alagoas	17	24	40	33	45	53	59	50	59	78
Sergipe	16	46	31	37	24	35	25	23	39	42
Bahia	167	176	216	200	174	260	273	304	264	253
Southeastern	1805	1721	1973	2142	2406	2147	2335	2625	2975	3633
Minas Gerais	89	91	113	116	126	142	149	167	145	277
Espírito Santo	47	45	93	90	104	105	170	212	219	185
Rio de Janeiro	1024	1001	1008	1123	1226	967	1068	1092	1088	1143
São Paulo	645	584	759	813	950	933	948	1154	1523	2028
Southern	334	299	314	361	408	376	400	411	438	480
Paraná	95	113	107	144	161	143	150	172	194	227
Santa Catarina	39	19	32	28	34	41	37	36	33	36
Rio Grande do Sul	200	167	175	189	213	192	213	203	211	217
Central-western	172	179	232	246	308	300	331	367	384	430
Mato Grosso do Sul	48	38	52	57	81	71	73	65	70	77
Mato Grosso	8	15	7	5	30	46	50	80	68	92
Goiás	60	58	79	83	90	81	84	80	124	136
Federal District	58	68	94	101	107	102	124	142	122	125

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 3: Total firearm-related death, Brazil, regions and states, age 20-29, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	8355	8016	8637	9383	10183	10099	10814	11873	12412	14273
Northern	440	429	403	391	410	432	448	520	479	537
Rondônia	89	86	108	90	83	70	86	116	96	106
Acre	32	36	30	20	20	26	34	32	22	18
Amazonas	96	75	75	85	95	102	91	98	90	117
Roraima	13	18	14	14	28	19	17	28	26	18
Pará	196	180	142	156	157	155	179	195	186	210
Amapá	4	18	20	14	12	38	18	27	24	16
Tocantins	10	16	14	12	15	22	23	24	35	52
Northeastern	1833	1669	1886	1957	2021	2315	2665	3014	2948	3229
Maranhão	96	68	61	49	64	81	77	102	57	59
Piauí	15	21	18	20	34	21	18	25	35	47
Ceará	123	97	143	124	164	181	207	195	205	255
Rio Grande do Norte	53	52	74	63	68	89	101	75	80	117
Paraíba	59	88	68	70	96	101	126	116	112	153
Pernambuco	848	648	846	832	901	954	1322	1574	1573	1615
Alagoas	88	120	117	144	164	188	141	149	149	202
Sergipe	75	124	65	104	83	92	60	82	106	133
Bahia	476	451	494	551	447	608	613	696	631	648
Southeastern	4711	4658	4994	5603	6018	5540	5898	6501	7063	8320
Minas Gerais	327	304	335	325	364	387	441	541	407	722
Espírito Santo	199	161	227	232	267	279	382	474	462	400
Rio de Janeiro	2637	2696	2652	2915	2902	2331	2481	2509	2541	2617
São Paulo	1548	1497	1780	2131	2485	2543	2594	2977	3653	4581
Southern	853	801	871	889	1004	1028	1049	1050	1127	1186
Paraná	296	275	317	336	414	443	429	447	484	507
Santa Catarina	91	81	95	91	119	103	97	109	85	99
Rio Grande do Sul	466	445	459	462	471	482	523	494	558	580
Central-western	502	459	483	543	730	784	754	788	795	1001
Mato Grosso do Sul	94	104	107	133	203	190	189	160	120	203
Mato Grosso	34	43	21	19	85	177	154	193	168	254
Goiás	213	190	189	217	228	225	222	238	300	322
Federal District	177	122	166	174	214	192	189	197	207	222

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 4: Total firearm-related deaths, Brazil, regions and states, age 30-39, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	4621	4469	4889	5194	5668	6012	6084	6403	6690	7363
Northern	296	286	287	284	258	295	284	303	306	302
Rondônia	94	69	85	67	62	90	84	81	93	82
Acre	10	12	16	14	9	14	11	11	8	15
Amazonas	55	49	38	57	47	59	49	45	43	45
Roraima	6	13	16	19	11	18	6	14	16	9
Pará	120	115	111	102	106	82	103	120	115	127
Amapá	4	11	7	13	7	18	15	11	14	6
Tocantins	7	17	14	12	16	14	16	21	17	18
Northeastern	993	929	983	1053	1123	1351	1450	1508	1568	1712
Maranhão	40	58	56	31	47	70	51	53	47	54
Piauí	10	11	10	9	14	8	15	14	13	34
Ceará	72	59	61	83	82	105	110	116	142	160
Rio Grande do Norte	23	29	32	35	49	47	49	45	68	52
Paraíba	44	61	44	44	49	49	76	64	61	79
Pernambuco	487	388	430	458	516	593	688	774	817	823
Alagoas	58	66	102	120	129	146	143	107	89	112
Sergipe	37	70	29	41	39	43	45	38	57	65
Bahia	222	187	219	232	198	290	273	297	274	333
Southeastern	2497	2420	2810	3009	3229	3191	3107	3430	3701	4026
Minas Gerais	215	226	204	191	231	274	271	316	244	339
Espírito Santo	112	83	137	140	147	187	251	283	272	215
Rio de Janeiro	1460	1429	1546	1638	1495	1334	1253	1305	1316	1308
São Paulo	710	682	923	1040	1357	1396	1332	1526	1869	2164
Southern	541	534	518	518	604	657	748	699	606	757
Paraná	183	191	188	194	226	245	278	276	231	297
Santa Catarina	67	47	56	53	85	67	109	65	74	94
Rio Grande do Sul	291	296	274	271	293	345	361	358	301	366
Central-western	279	300	291	330	454	518	495	463	509	566
Mato Grosso do Sul	88	81	63	97	115	130	131	107	89	107
Mato Grosso	24	23	22	19	109	120	133	119	145	188
Goiás	127	141	138	149	160	167	145	146	192	181
Federal District	55	55	68	65	70	101	86	91	83	90

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 5: Total male firearm-related deaths, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	19511	19412	20749	22110	24397	24195	25546	27967	28969	32599
Northern	1126	1067	1038	1026	1050	1096	1114	1327	1237	1270
Rondônia	266	240	289	252	236	247	245	322	318	285
Acre	71	59	63	57	60	70	67	75	44	44
Amazonas	231	177	173	196	202	233	215	228	221	247
Roraima	27	48	39	48	55	48	39	56	60	48
Pará	490	457	390	401	396	347	429	494	444	499
Amapá	12	40	42	40	54	81	55	66	55	38
Tocantins	29	46	42	32	47	70	64	86	95	109
Northeastern	4201	4081	4342	4428	4820	5518	6252	6987	6757	7193
Maranhão	186	197	185	140	173	221	183	235	165	190
Piauí	34	41	41	44	71	53	62	63	74	122
Ceará	268	218	294	288	417	399	486	511	549	639
Rio Grande do Norte	125	112	155	149	189	231	247	190	208	253
Paraíba	165	205	196	180	227	235	312	267	259	349
Pernambuco	1960	1707	1885	1904	2091	2281	2960	3556	3491	3478
Alagoas	245	283	335	384	457	493	444	398	366	465
Sergipe	180	308	158	219	182	204	156	173	243	288
Bahia	1038	1010	1093	1120	1013	1401	1402	1594	1402	1409
Southeastern	10855	11097	11996	13097	14149	13077	13505	14936	16216	18725
Minas Gerais	776	748	783	747	876	939	1050	1203	938	1499
Espírito Santo	466	375	569	587	600	663	932	1105	1074	959
Rio de Janeiro	6331	6761	6776	7367	7231	5857	6033	6149	6148	6349
São Paulo	3282	3213	3868	4396	5442	5618	5490	6479	8056	9918
Southern	2141	2034	2152	2222	2504	2523	2721	2687	2752	3018
Paraná	689	698	778	847	971	953	1016	1092	1131	1210
Santa Catarina	247	189	234	230	305	265	319	275	251	291
Rio Grande do Sul	1205	1147	1140	1145	1228	1305	1386	1320	1370	1517
Central-western	1188	1133	1221	1337	1874	1981	1954	2030	2007	2393
Mato Grosso do Sul	269	278	314	347	495	498	512	412	356	455
Mato Grosso	101	117	72	59	317	450	432	537	482	695
Goiás	494	456	469	546	601	582	568	606	712	746
Federal District	324	282	366	385	461	451	442	475	457	497

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 6: Total male firearm-related deaths, Brazil, regions and states, age 15-19, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	2758	2591	3091	3273	3670	3533	3979	4543	4790	5561
Northern	151	109	128	152	159	146	168	224	183	181
Rondônia	31	18	26	23	30	24	26	38	35	28
Acre	13	7	13	9	21	10	13	16	6	8
Amazonas	51	18	29	36	35	45	42	45	46	46
Roraima	2	4	2	4	4	4	6	9	11	10
Pará	51	50	46	66	44	37	59	87	52	65
Amapá	1	8	11	11	22	14	13	17	16	12
Tocantins	2	4	1	3	3	12	9	12	17	12
Northeastern	487	460	644	629	675	813	1011	1202	1090	1169
Maranhão	19	9	13	25	29	26	19	28	20	31
Piauí	5	4	6	4	9	11	11	9	9	16
Ceará	30	21	42	26	64	47	71	79	72	102
Rio Grande do Norte	14	13	18	24	26	27	48	33	25	38
Paraíba	21	13	27	29	37	36	39	37	35	73
Pernambuco	216	171	270	277	286	352	492	665	599	570
Alagoas	16	22	36	30	41	45	49	45	56	69
Sergipe	13	43	30	37	23	30	25	22	32	40
Bahia	153	164	202	177	160	239	257	284	242	230
Southeastern	1680	1613	1844	1984	2222	1990	2157	2437	2795	3389
Minas Gerais	80	74	99	103	114	129	128	144	131	255
Espírito Santo	42	41	86	79	92	96	161	202	202	170
Rio de Janeiro	952	944	954	1042	1153	905	1006	1029	1026	1069
São Paulo	606	554	705	760	863	860	862	1062	1436	1895
Southern	290	258	277	298	350	317	348	348	385	431
Paraná	82	87	97	114	137	122	130	147	176	209
Santa Catarina	31	15	29	24	28	31	35	29	26	27
Rio Grande do Sul	177	156	151	160	185	164	183	172	183	195
Central-western	150	151	198	210	264	267	295	332	337	391
Mato Grosso do Sul	34	30	44	48	69	61	64	60	62	66
Mato Grosso	8	13	7	4	25	42	39	66	61	88
Goiás	53	45	59	69	75	69	76	72	104	121
Federal District	55	63	88	89	95	95	116	134	110	116

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 7: Total male firearm-related deaths, Brazil, regions and states, age 20-29, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	7809	7508	8105	8808	9587	9362	10107	11169	11734	13564
Northern	401	387	373	363	384	391	408	481	451	510
Rondônia	82	76	101	84	79	63	79	106	91	103
Acre	30	27	29	18	18	23	31	29	20	17
Amazonas	90	71	69	83	88	92	83	91	87	114
Roraima	12	16	12	13	27	17	17	25	24	15
Pará	177	165	131	143	148	142	163	188	176	197
Amapá	3	17	19	12	11	33	16	24	21	14
Tocantins	7	15	12	10	13	21	19	18	32	50
Northeastern	1744	1546	1770	1850	1879	2164	2520	2870	2804	3057
Maranhão	85	59	56	49	56	74	72	93	56	53
Piauí	12	18	15	19	32	18	17	24	34	45
Ceará	111	85	131	111	156	166	193	186	197	235
Rio Grande do Norte	50	46	66	60	57	84	90	69	72	108
Paraíba	39	78	65	66	85	92	115	107	106	143
Pernambuco	812	605	793	798	842	906	1268	1511	1501	1539
Alagoas	80	108	111	133	150	175	126	136	137	193
Sergipe	73	118	59	95	78	87	57	76	99	129
Bahia	453	429	474	519	423	562	582	668	602	612
Southeastern	4444	4432	4727	5284	5650	5196	5527	6157	6703	7942
Minas Gerais	294	275	297	290	320	330	407	504	375	675
Espírito Santo	187	145	214	217	244	248	356	437	429	382
Rio de Janeiro	2517	2583	2546	2771	2755	2205	2356	2386	2416	2513
São Paulo	1446	1429	1670	2006	2331	2413	2408	2830	3483	4372
Southern	760	733	801	811	914	915	969	952	1040	1120
Paraná	255	250	290	308	385	397	400	408	455	478
Santa Catarina	83	78	87	87	106	95	91	99	75	96
Rio Grande do Sul	422	405	424	416	423	423	478	445	510	546
Central-western	476	410	434	500	660	696	683	709	736	935
Mato Grosso do Sul	83	89	98	123	189	172	174	141	113	188
Mato Grosso	32	40	20	16	76	152	139	169	156	242
Goiás	193	164	161	198	192	197	196	218	271	291
Federal District	168	117	155	163	203	175	174	181	196	214

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 8: Total male firearm-related deaths, Brazil, regions and states, age 30-39, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	4306	4126	4513	4795	5214	5511	5603	5931	6190	6812
Northern	278	264	264	267	231	265	264	275	283	291
Rondônia	87	64	77	63	58	78	76	75	86	76
Acre	10	11	13	14	7	13	10	10	8	13
Amazonas	54	47	34	54	43	55	46	43	39	45
Roraima	6	10	14	19	11	16	5	11	13	9
Pará	110	106	106	96	91	75	99	108	108	126
Amapá	4	11	7	12	5	17	13	10	13	6
Tocantins	7	15	13	9	16	11	15	18	16	16
Northeastern	912	885	916	967	1043	1243	1354	1425	1453	1603
Maranhão	36	54	55	26	45	64	42	50	43	47
Piauí	9	11	10	8	12	6	14	12	12	34
Ceará	68	58	57	75	80	96	106	111	131	146
Rio Grande do Norte	22	28	29	30	42	44	46	41	59	49
Paraíba	105	58	41	39	44	43	69	58	58	68
Pernambuco	462	369	406	427	488	549	652	731	772	785
Alagoas	55	64	90	112	117	136	134	104	75	106
Sergipe	36	67	28	35	37	37	39	36	52	61
Bahia	209	176	200	215	178	268	252	282	251	307
Southeastern	2326	2235	2602	2797	2963	2942	2858	3177	3449	3724
Minas Gerais	197	200	178	169	198	239	241	286	217	308
Espírito Santo	105	79	127	131	130	170	231	250	255	199
Rio de Janeiro	1373	1329	1434	1531	1382	1230	1151	1206	1221	1207
São Paulo	651	627	863	966	1253	1303	1235	1435	1756	2010
Southern	504	472	470	468	555	586	673	634	547	679
Paraná	169	171	167	180	205	222	253	258	205	266
Santa Catarina	62	44	51	47	83	60	98	53	68	83
Rio Grande do Sul	273	257	252	241	267	304	322	323	274	330
Central-western	262	270	261	296	422	475	454	420	458	515
Mato Grosso do Sul	79	77	57	94	108	122	121	96	78	97
Mato Grosso	22	21	18	18	105	114	126	109	134	171
Goiás	112	121	126	126	142	144	129	127	172	162
Federal District	49	51	60	58	67	95	78	88	74	85

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 9: Total female firearm-related deaths, Brazil, regions and states, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	1622	1522	1676	1930	2103	2290	2199	2201	2230	2414
Northern	99	93	93	101	85	125	112	120	110	85
Rondônia	19	22	26	25	18	35	25	27	23	19
Acre	7	10	6	5	11	6	10	6	8	6
Amazonas	11	10	16	17	14	24	18	23	22	13
Roraima	3	7	4	2	1	5	4	7	7	4
Pará	53	35	34	41	34	35	43	36	36	30
Amapá	1	3	2	3	3	10	6	7	5	3
Tocantins	5	6	5	8	4	10	6	14	9	10
Northeastern	312	272	331	359	396	492	462	452	489	532
Maranhão	26	17	13	8	12	16	22	20	13	20
Piauí	4	4	5	3	9	8	4	7	4	3
Ceará	22	22	29	33	24	43	40	35	40	62
Rio Grande do Norte	7	14	18	16	28	22	32	19	25	20
Paraíba	24	25	14	22	28	41	29	25	21	34
Pernambuco	139	104	138	129	152	174	170	206	223	225
Alagoas	18	22	33	27	40	43	44	29	32	33
Sergipe	9	10	11	24	15	21	16	17	26	20
Bahia	63	54	70	97	88	124	105	94	105	115
Southeastern	815	772	879	1039	1128	1084	1101	1110	1136	1297
Minas Gerais	85	97	115	101	107	139	117	130	107	139
Espírito Santo	38	34	35	55	65	75	73	101	86	68
Rio de Janeiro	412	417	433	543	509	462	437	447	439	415
São Paulo	280	224	296	340	447	408	474	432	504	675
Southern	261	243	222	272	292	355	319	324	293	287
Paraná	96	88	81	101	104	122	100	111	105	107
Santa Catarina	34	16	19	19	30	37	31	40	37	32
Rio Grande do Sul	131	139	122	152	158	196	188	173	151	148
Central-western	135	142	151	159	202	234	205	195	202	213
Mato Grosso do Sul	40	38	31	39	47	62	49	48	42	49
Mato Grosso	8	9	7	7	29	46	43	54	38	47
Goiás	58	75	80	72	90	87	74	57	86	86
Federal District	29	20	33	41	36	39	39	36	36	31

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 10: Total female firearm-related deaths, Brazil, regions and states, age 15-19, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	266	229	270	338	345	350	357	384	404	446
Northern	19	12	17	22	7	21	21	18	27	21
Rondônia	1	3	4	7	0	8	3	1	4	6
Acre	3	0	0	1	2	0	3	1	1	2
Amazonas	2	2	4	6	1	5	5	8	9	4
Roraima	2	1	1	0	0	1	3	0	0	1
Pará	13	3	7	7	3	3	7	5	8	4
Amapá	0	1	0	0	0	3	0	1	1	1
Tocantins	0	2	1	1	1	1	0	2	4	3
Northeastern	49	41	54	60	53	80	70	81	97	93
Maranhão	5	2	4	2	0	1	2	2	2	3
Piauí	0	0	1	0	2	0	0	1	1	1
Ceará	4	2	6	4	4	7	6	5	11	8
Rio Grande do Norte	3	2	1	2	0	3	6	5	2	2
Paraíba	3	4	1	5	6	12	3	6	4	4
Pernambuco	22	16	22	21	23	23	27	36	45	41
Alagoas	1	2	4	3	4	8	10	5	3	9
Sergipe	3	1	1	0	1	5	0	1	7	2
Bahia	13	12	14	23	13	21	16	20	22	23
Southeastern	126	107	128	157	183	157	178	188	180	244
Minas Gerais	9	16	13	13	12	13	21	23	14	22
Espírito Santo	5	4	7	11	12	9	9	10	17	15
Rio de Janeiro	71	57	54	80	72	62	62	63	62	74
São Paulo	39	30	54	53	87	73	86	92	87	133
Southern	36	41	37	63	58	59	52	63	53	49
Paraná	13	26	10	30	24	21	20	25	18	18
Santa Catarina	8	4	3	4	6	10	2	7	7	9
Rio Grande do Sul	23	11	24	29	28	28	30	31	28	22
Central-western	17	28	34	36	44	33	36	34	47	39
Mato Grosso do Sul	13	8	8	9	12	10	9	5	8	11
Mato Grosso	0	2	0	1	5	4	11	14	7	4
Goiás	7	13	20	14	15	12	8	7	20	15
Federal District	3	5	6	12	12	7	8	8	12	9

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 11: Total female firearm-related deaths, Brazil, regions and states, age 20-29, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	540	501	527	574	683	727	702	698	671	707
Northern	34	41	29	28	26	41	39	39	28	27
Rondônia	7	10	7	6	4	7	7	10	5	3
Acre	2	9	0	2	2	3	3	3	2	1
Amazonas	6	4	6	2	7	10	7	7	3	3
Roraima	1	2	2	1	1	2	0	3	2	3
Pará	19	14	11	13	9	13	16	7	10	13
Amapá	1	1	1	2	1	5	2	3	3	2
Tocantins	3	1	2	2	2	1	4	6	3	2
Northeastern	98	117	114	106	138	148	142	143	139	172
Maranhão	11	9	5	0	8	7	5	9	1	6
Piauí	3	3	3	1	2	3	1	1	1	2
Ceará	12	11	12	12	8	14	14	9	8	20
Rio Grande do Norte	3	6	8	3	11	5	11	6	8	9
Paraíba	7	10	3	4	11	9	11	9	6	10
Pernambuco	35	40	53	34	57	46	51	63	70	76
Alagoas	7	12	6	11	14	13	15	13	11	9
Sergipe	2	4	6	9	5	5	3	6	6	4
Bahia	20	22	18	32	22	46	31	27	28	36
Southeastern	247	226	266	319	363	338	371	343	358	377
Minas Gerais	32	29	38	35	40	55	34	37	31	47
Espírito Santo	12	16	13	15	23	30	26	37	33	18
Rio de Janeiro	120	113	105	144	146	123	125	122	124	103
São Paulo	102	68	110	125	154	130	186	147	170	209
Southern	84	68	70	78	90	113	80	98	87	66
Paraná	41	25	27	28	29	46	29	39	29	29
Santa Catarina	8	3	8	4	13	8	6	10	10	3
Rio Grande do Sul	44	40	35	46	48	59	45	49	48	34
Central-western	37	49	48	43	66	87	70	75	59	65
Mato Grosso do Sul	11	15	8	10	12	18	15	19	7	15
Mato Grosso	2	3	1	3	9	24	15	24	12	12
Goiás	20	26	28	19	34	28	25	16	29	30
Federal District	9	5	11	11	11	17	15	16	11	8

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 12: Total female firearm-related deaths, Brazil, regions and states, age 30-39, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	307	338	367	397	445	496	478	469	497	548
Northern	17	22	21	17	27	30	19	28	21	11
Rondônia	7	5	8	4	4	12	8	6	6	6
Acre	0	1	3	0	2	1	1	1	0	2
Amazonas	1	2	3	3	4	4	2	2	4	0
Roraima	0	3	1	0	0	2	1	3	3	0
Pará	10	9	5	6	15	7	4	12	6	1
Amapá	0	0	0	1	2	1	2	1	1	0
Tocantins	0	2	1	3	0	3	1	3	1	2
Northeastern	51	41	64	86	78	106	96	83	114	108
Maranhão	4	4	1	5	2	6	9	3	4	7
Piauí	1	0	0	1	2	2	1	2	1	0
Ceará	4	1	4	8	2	8	4	5	11	14
Rio Grande do Norte	1	1	3	5	7	3	3	4	9	3
Paraíba	5	3	3	5	5	6	7	6	3	11
Pernambuco	21	17	24	31	28	44	36	43	44	38
Alagoas	3	2	12	8	12	10	9	3	14	6
Sergipe	1	2	1	6	1	5	6	2	5	4
Bahia	13	11	16	17	19	22	21	15	23	25
Southeastern	166	183	205	210	259	246	247	252	252	300
Minas Gerais	18	25	25	21	28	35	30	30	27	31
Espírito Santo	7	4	10	9	17	17	20	32	17	16
Rio de Janeiro	85	99	110	106	110	101	100	99	95	99
São Paulo	59	55	60	74	104	93	97	91	113	154
Southern	35	62	48	50	49	71	75	65	59	78
Paraná	14	20	21	14	21	23	25	18	26	31
Santa Catarina	5	3	5	6	2	7	11	12	6	11
Rio Grande do Sul	18	39	22	30	26	41	39	35	27	36
Central-western	29	30	29	34	32	43	41	41	51	51
Mato Grosso do Sul	7	4	6	3	7	8	10	10	11	10
Mato Grosso	2	2	4	1	4	6	7	10	11	17
Goiás	15	20	11	23	18	23	16	18	20	19
Federal District	6	4	8	7	3	6	8	3	9	5

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 13: Total firearm-related deaths, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	21181	20972	22469	24066	26546	26510	27774	30200	31229	35028
Porto Velho	82	75	58	72	39	82	60	103	119	119
Rio Branco	70	58	62	51	51	59	68	70	46	38
Manaus	232	179	169	196	193	222	202	226	198	219
Boa Vista	23	33	36	43	47	41	30	43	46	36
Belém	229	174	119	149	135	131	162	182	159	177
Macapá	12	39	33	31	48	78	51	55	50	32
Palmas	1	3	2	3	6	6	7	8	14	20
São Luís	102	86	62	72	86	119	106	101	71	76
Teresina	21	28	24	28	49	36	36	37	43	65
Fortaleza	152	135	185	190	284	256	260	231	242	311
Natal	58	47	77	84	106	102	134	72	88	110
João Pessoa	44	72	63	60	111	80	114	138	147	168
Recife	610	485	554	526	657	655	925	1022	852	895
Maceió	79	95	163	160	219	232	190	169	176	220
Aracaju	71	163	72	115	81	83	68	67	105	130
Salvador	589	533	623	675	548	706	714	760	637	586
Belo Horizonte	182	187	206	203	278	267	303	410	309	552
Vitória	89	48	109	129	130	123	182	175	203	132
Rio de Janeiro	2865	2850	2927	2982	2665	2088	2241	2399	2410	2671
São Paulo	1309	1283	1807	2158	2830	2679	2559	2790	3594	3830
Curitiba	150	143	172	204	245	225	253	247	288	276
Florianópolis	11	9	15	13	15	21	24	25	33	27
Porto Alegre	203	238	210	221	281	296	331	297	311	397
Campo Grande	87	111	97	108	164	213	201	182	159	218
Cuiabá	21	18	14	18	95	145	95	181	174	260
Goiânia	171	132	148	168	198	159	152	140	210	197

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 14: Total firearm-related deaths, Brazil and state capitals, age 15-19, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	3027	2823	3363	3612	4017	3883	4339	4929	5194	6007
Porto Velho	21	7	15	10	8	13	9	21	16	19
Rio Branco	16	5	12	8	18	8	14	15	6	7
Manaus	51	20	33	39	34	45	44	49	51	44
Boa Vista	4	4	3	4	3	4	6	7	10	9
Belém	30	22	19	33	17	19	28	35	28	36
Macapá	0	9	9	9	20	14	12	16	15	11
Palmas	0	0	0	0	1	1	1	0	2	3
São Luís	12	5	8	17	17	16	13	16	11	19
Teresina	4	3	6	3	10	7	6	6	6	13
Fortaleza	20	15	30	21	53	35	40	43	40	63
Natal	12	7	13	20	20	17	35	17	18	23
João Pessoa	5	4	12	16	29	21	21	26	25	38
Recife	92	64	110	113	130	141	216	257	169	172
Maceió	7	12	15	19	31	31	31	25	34	47
Aracaju	11	26	23	25	8	18	12	10	15	23
Salvador	113	116	134	131	107	155	160	185	128	107
Belo Horizonte	22	29	28	34	37	37	46	60	50	121
Vitória	10	6	18	25	28	17	41	29	38	22
Rio de Janeiro	514	488	472	501	500	364	424	499	471	543
São Paulo	266	241	334	387	473	425	408	468	624	782
Curitiba	36	26	29	45	29	31	40	30	48	56
Florianópolis	3	1	5	2	3	3	1	4	3	3
Porto Alegre	31	39	35	34	54	49	58	53	56	58
Campo Grande	16	17	14	23	37	29	32	30	39	41
Cuiabá	3	3	1	2	14	18	11	36	37	51
Goiânia	21	22	22	28	34	19	21	19	33	47

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 15: Total firearm-related deaths, Brazil and state capitals, age 20-29, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	8355	8016	8637	9383	10183	10099	10814	11873	12412	14273
Porto Velho	30	24	22	27	18	29	31	33	37	49
Rio Branco	30	31	26	18	16	26	30	27	21	14
Manaus	94	69	67	79	88	90	80	89	78	103
Boa Vista	11	13	11	13	24	16	13	20	18	15
Belém	100	72	47	64	62	67	64	76	70	79
Macapá	4	17	16	9	10	35	16	21	20	13
Palmas	0	0	2	0	1	1	2	1	8	10
São Luís	53	35	31	27	31	52	45	51	28	24
Teresina	9	16	12	11	22	14	10	13	20	31
Fortaleza	72	58	85	80	110	114	108	88	91	123
Natal	25	21	36	38	32	48	58	29	33	55
João Pessoa	19	33	21	20	41	29	51	65	62	77
Recife	263	174	250	228	293	279	421	448	369	438
Maceió	29	42	63	58	77	88	56	66	76	98
Aracaju	36	64	24	49	40	41	25	32	39	69
Salvador	305	242	301	327	263	324	339	360	310	291
Belo Horizonte	89	64	86	90	119	110	119	184	138	250
Vitória	40	19	49	50	63	50	68	79	95	55
Rio de Janeiro	1164	1192	1215	1279	1148	844	916	993	973	1109
São Paulo	597	577	809	1040	1226	1162	1134	1209	1576	1697
Curitiba	54	50	68	62	107	97	106	105	115	109
Florianópolis	4	4	6	3	2	11	6	8	10	7
Porto Alegre	76	88	74	84	100	79	101	118	136	177
Campo Grande	26	34	32	29	49	78	78	68	52	92
Cuiabá	5	7	3	4	23	58	42	81	71	98
Goiânia	75	47	55	72	48	62	54	63	90	71

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 16: Total firearm-related deaths, Brazil and state capitals, age 30-39, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	4621	4469	4889	5194	5668	6012	6084	6403	6690	7363
Porto Velho	22	27	11	20	2	21	12	22	36	25
Rio Branco	7	12	15	11	6	10	10	9	8	11
Manaus	52	45	32	54	43	53	43	41	33	31
Boa Vista	5	10	14	16	11	13	4	10	12	5
Belém	50	31	30	30	22	22	35	45	27	39
Macapá	4	9	3	9	6	15	13	7	11	4
Palmas	1	2	0	2	1	1	1	3	2	4
São Luís	13	21	10	15	23	30	26	17	18	12
Teresina	3	6	2	4	7	5	9	7	7	12
Fortaleza	33	32	37	45	52	55	54	38	56	55
Natal	7	8	15	14	25	13	16	14	23	16
João Pessoa	14	17	16	15	16	11	19	25	34	29
Recife	133	85	106	101	128	138	163	176	186	178
Maceió	24	18	43	46	57	63	49	36	34	38
Aracaju	10	31	9	20	17	8	19	10	25	23
Salvador	101	87	87	113	93	115	113	109	103	120
Belo Horizonte	37	44	44	44	65	69	75	97	68	98
Vitória	19	12	22	21	19	32	42	37	38	31
Rio de Janeiro	653	627	705	688	565	485	456	484	492	503
São Paulo	254	280	407	459	660	611	565	617	798	799
Curitiba	28	33	30	41	50	55	63	53	57	59
Florianópolis	2	2	2	3	4	3	8	1	11	8
Porto Alegre	43	51	43	42	60	77	79	61	56	76
Campo Grande	27	24	18	27	37	46	37	44	32	38
Cuiabá	5	5	3	7	25	32	18	28	30	54
Goiânia	35	31	31	29	52	38	35	22	56	39

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 17: Total male firearm-related deaths, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	19511	19412	20749	22110	24397	24195	25546	27967	28969	32599
Porto Velho	74	66	55	62	36	68	55	91	112	115
Rio Branco	63	51	56	46	44	54	59	67	41	34
Manaus	222	167	152	180	179	204	185	204	178	208
Boa Vista	20	28	32	41	46	36	27	39	42	33
Belém	204	162	115	138	127	119	150	167	146	171
Macapá	11	36	31	29	45	68	45	49	45	29
Palmas	1	2	2	2	5	5	7	7	13	19
São Luís	89	79	58	68	82	115	98	92	68	70
Teresina	19	26	20	25	45	33	33	34	42	64
Fortaleza	139	123	165	168	270	228	240	220	224	289
Natal	56	40	68	78	92	95	121	67	80	101
João Pessoa	41	62	59	55	97	71	105	130	139	158
Recife	565	459	503	495	612	606	877	969	809	829
Maceió	74	85	149	149	200	210	175	154	163	207
Aracaju	69	151	69	100	76	81	63	62	98	126
Salvador	558	505	591	632	516	659	671	722	602	555
Belo Horizonte	172	173	186	179	251	243	276	379	272	508
Vitória	82	47	99	118	120	108	173	160	189	123
Rio de Janeiro	2697	2699	2749	2751	2500	1940	2115	2248	2262	2490
São Paulo	1223	1215	1694	2031	2643	2503	2363	2608	3370	3592
Curitiba	126	124	154	181	220	193	228	220	260	255
Florianópolis	10	8	12	11	13	18	23	23	32	24
Porto Alegre	186	213	197	196	253	268	295	274	290	360
Campo Grande	80	91	81	99	142	187	189	169	146	200
Cuiabá	20	17	13	17	86	135	86	168	166	245
Goiânia	149	112	125	147	171	138	135	134	189	178

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 18: Total male firearm-related deaths, Brazil and state capitals, age 15-19, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	2758	2591	3091	3273	3670	3533	3979	4543	4790	5561
Porto Velho	20	6	13	8	8	11	9	21	14	16
Rio Branco	13	5	12	7	17	8	12	14	6	5
Manaus	49	18	29	33	33	42	40	41	42	41
Boa Vista	2	3	2	4	3	3	4	7	10	8
Belém	25	21	17	30	16	17	25	32	25	36
Macapá	0	8	9	9	20	11	12	15	14	10
Palmas	0	0	0	0	1	1	1	0	2	3
São Luís	9	5	7	15	17	16	12	15	11	18
Teresina	4	3	5	3	8	7	6	5	6	13
Fortaleza	18	13	25	17	51	31	37	42	38	58
Natal	10	7	13	18	20	15	31	16	17	23
João Pessoa	5	4	12	15	27	20	18	23	24	35
Recife	84	60	100	105	121	131	204	246	163	159
Maceió	7	11	14	19	28	25	27	23	32	43
Aracaju	10	23	22	25	8	16	12	10	14	23
Salvador	104	110	129	121	100	144	153	173	120	100
Belo Horizonte	19	24	27	31	33	35	39	54	41	111
Vitória	10	6	18	22	27	16	40	27	36	19
Rio de Janeiro	480	464	450	459	475	344	407	470	452	509
São Paulo	260	232	314	368	442	394	376	431	583	740
Curitiba	32	21	26	36	24	27	36	26	43	51
Florianópolis	2	1	4	1	2	3	1	4	3	2
Porto Alegre	29	37	32	30	52	41	54	50	54	55
Campo Grande	12	15	10	22	30	26	30	28	34	36
Cuiabá	3	2	1	2	13	17	9	33	36	49
Goiânia	20	17	15	22	30	16	18	18	28	43

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 19: Total male firearm-related deaths, Brazil and state capitals, age 20-29, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	7809	7508	8105	8808	9587	9362	10107	11169	11734	13564
Porto Velho	27	20	22	23	18	25	28	31	37	49
Rio Branco	28	25	25	16	14	23	27	25	19	14
Manaus	89	67	61	77	81	82	73	82	75	101
Boa Vista	10	12	9	12	23	14	13	20	16	13
Belém	91	67	46	60	61	63	60	73	68	77
Macapá	3	16	15	8	9	30	14	19	17	11
Palmas	0	0	2	0	0	1	2	0	7	9
São Luís	47	31	30	27	30	49	44	48	28	21
Teresina	7	15	9	10	21	13	9	13	19	30
Fortaleza	65	52	78	72	103	104	100	84	87	118
Natal	25	19	33	38	28	48	53	28	29	51
João Pessoa	17	27	20	18	34	25	46	62	60	75
Recife	246	163	228	223	275	261	404	428	359	413
Maceió	27	37	59	52	70	81	52	61	71	96
Aracaju	36	63	23	42	37	41	24	30	37	68
Salvador	294	229	296	314	255	306	325	349	300	279
Belo Horizonte	86	60	77	83	111	99	114	173	130	237
Vitória	35	19	43	48	60	41	64	73	88	52
Rio de Janeiro	1114	1151	1170	1214	1093	800	876	945	934	1066
São Paulo	562	559	767	988	1164	1113	1050	1143	1494	1613
Curitiba	45	48	64	58	97	82	101	93	111	104
Florianópolis	4	4	5	3	2	9	5	7	10	7
Porto Alegre	67	83	71	74	92	74	96	111	131	164
Campo Grande	25	26	29	28	44	72	77	66	50	89
Cuiabá	4	7	3	4	20	52	39	75	68	95
Goiânia	65	43	49	69	38	57	50	60	83	64

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 20: Total male firearm-related deaths, Brazil and state capitals, age 30-39, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	4306	4126	4513	4795	5214	5511	5603	5931	6190	6812
Porto Velho	20	24	10	18	2	16	12	18	34	24
Rio Branco	7	11	12	11	5	9	9	9	8	10
Manaus	51	43	28	52	39	50	40	39	29	31
Boa Vista	5	8	13	16	11	11	3	7	10	5
Belém	45	29	30	28	18	20	34	39	24	39
Macapá	4	9	3	8	4	14	11	6	10	4
Palmas	1	1	0	1	1	1	1	3	2	4
São Luís	12	19	10	14	22	29	22	16	16	11
Teresina	3	6	2	3	6	3	8	6	7	12
Fortaleza	29	32	34	40	51	49	52	37	50	52
Natal	7	7	12	14	20	13	16	11	22	15
João Pessoa	13	16	15	13	13	10	18	24	31	27
Recife	125	81	101	94	121	129	154	166	173	168
Maceió	23	16	38	44	52	59	47	33	30	35
Aracaju	10	29	9	18	17	8	17	10	24	22
Salvador	95	84	82	106	87	106	99	104	98	115
Belo Horizonte	35	41	41	38	60	62	66	90	57	90
Vitória	19	11	19	19	16	28	40	31	37	30
Rio de Janeiro	617	592	650	636	528	435	424	451	454	459
São Paulo	234	258	387	428	609	567	533	580	755	742
Curitiba	25	26	24	36	46	51	54	50	46	54
Florianópolis	2	2	1	3	4	3	8	1	11	8
Porto Alegre	41	48	40	36	53	71	69	53	51	69
Campo Grande	25	22	14	25	35	41	33	39	29	35
Cuiabá	5	5	2	6	25	32	17	26	26	49
Goiânia	28	23	28	24	46	33	33	21	52	35

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 21: Total female firearm-related deaths, Brazil and state capitals, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	1622	1522	1676	1930	2103	2290	2199	2201	2230	2414
Porto Velho	8	9	3	10	3	14	5	12	6	4
Rio Branco	7	7	5	5	7	5	9	3	5	4
Manaus	10	8	16	16	14	18	16	22	20	11
Boa Vista	3	5	3	2	1	5	3	4	4	3
Belém	25	12	4	11	8	12	12	15	13	6
Macapá	1	3	2	2	3	10	6	6	5	3
Palmas	0	1	0	1	1	1	0	1	1	1
São Luís	13	7	3	4	4	4	8	9	3	6
Teresina	2	2	4	3	4	3	3	3	1	1
Fortaleza	13	11	20	21	14	28	20	11	18	22
Natal	2	7	9	6	14	7	13	5	8	9
João Pessoa	3	10	4	5	14	9	9	8	8	10
Recife	44	26	50	31	45	47	45	53	43	66
Maceió	4	10	14	11	19	22	15	15	13	13
Aracaju	2	4	3	13	5	2	5	5	7	4
Salvador	28	27	23	39	30	47	43	38	35	31
Belo Horizonte	10	14	20	24	27	24	27	31	37	44
Vitória	7	1	10	11	10	15	9	15	14	9
Rio de Janeiro	167	151	178	229	165	148	126	151	144	179
São Paulo	86	68	113	127	187	176	196	182	224	238
Curitiba	24	19	18	23	25	32	25	27	28	21
Florianópolis	1	1	3	2	2	3	1	2	1	3
Porto Alegre	17	25	13	25	28	28	36	23	21	37
Campo Grande	7	19	12	9	21	26	12	13	13	18
Cuiabá	1	1	1	1	8	10	7	12	8	15
Goiânia	22	20	22	21	26	21	17	6	21	19

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 22: Total female firearm-related deaths, Brazil and state capitals, age 15-19, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	266	229	270	338	345	350	357	384	404	446
Porto Velho	1	1	2	2	0	2	0	0	2	3
Rio Branco	3	0	0	1	1	0	2	1	0	2
Manaus	2	2	4	6	1	3	4	8	9	3
Boa Vista	2	1	1	0	0	1	2	0	0	1
Belém	5	1	2	3	1	2	3	3	3	0
Macapá	0	1	0	0	0	3	0	1	1	1
Palmas	0	0	0	0	0	0	0	0	0	0
São Luís	3	0	1	2	0	0	1	1	0	1
Teresina	0	0	1	0	2	0	0	1	0	0
Fortaleza	2	2	5	4	2	4	3	1	2	5
Natal	2	0	0	2	0	2	4	1	1	0
João Pessoa	0	0	0	1	2	1	3	3	1	3
Recife	8	4	9	8	9	10	10	11	6	13
Maceió	0	1	1	0	3	6	4	2	2	4
Aracaju	1	1	1	0	0	2	0	0	1	0
Salvador	8	6	5	10	6	11	7	12	8	7
Belo Horizonte	3	5	1	3	4	2	7	6	9	10
Vitória	0	0	0	3	1	1	1	2	2	3
Rio de Janeiro	33	24	22	41	25	20	17	29	19	34
São Paulo	6	9	20	19	31	31	32	37	41	42
Curitiba	4	5	3	9	5	4	4	4	5	5
Florianópolis	1	0	1	1	1	0	0	0	0	1
Porto Alegre	2	2	3	4	2	8	4	3	2	3
Campo Grande	4	2	4	1	7	3	2	2	5	5
Cuiabá	0	1	0	0	1	1	2	3	1	2
Goiânia	1	5	7	6	4	3	3	1	5	4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 23: Total female firearm-related deaths, Brazil and state capitals, age 20-29, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	540	501	527	574	683	727	702	698	671	707
Porto Velho	3	4	0	4	0	4	3	2	0	0
Rio Branco	2	6	0	2	2	3	3	2	2	0
Manaus	5	2	6	2	7	8	7	7	3	2
Boa Vista	1	1	2	1	1	2	0	0	2	2
Belém	9	5	1	4	1	4	4	3	2	2
Macapá	1	1	1	1	1	5	2	2	3	2
Palmas	0	0	0	0	1	0	0	1	1	1
São Luís	6	4	1	0	1	3	1	3	0	3
Teresina	2	1	3	1	1	1	1	0	1	1
Fortaleza	7	5	7	7	7	10	8	4	4	5
Natal	0	2	3	0	4	0	5	1	4	4
João Pessoa	2	6	1	2	7	4	5	3	2	2
Recife	17	11	22	5	18	16	16	20	10	25
Maceió	2	5	4	6	7	7	4	5	5	2
Aracaju	0	0	1	7	3	0	1	2	2	1
Salvador	9	13	4	13	8	18	14	11	10	12
Belo Horizonte	3	4	9	7	8	11	5	11	8	13
Vitória	5	0	6	2	3	9	4	6	7	3
Rio de Janeiro	50	41	45	65	55	44	40	48	39	42
São Paulo	35	18	42	52	62	49	84	66	82	84
Curitiba	9	2	4	4	10	15	5	12	4	5
Florianópolis	0	0	1	0	0	2	1	1	0	0
Porto Alegre	9	5	3	10	8	5	5	7	5	13
Campo Grande	1	8	2	1	4	6	1	2	2	3
Cuiabá	1	0	0	0	3	6	3	6	3	3
Goiânia	10	4	6	3	10	5	4	3	7	7

Source: Mortality Information System (SIM), Ministry of Health, Brazil

Appendix 24: Total female firearm-related deaths, Brazil and state capitals, age 30-39, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
BRAZIL	307	338	367	397	445	496	478	469	497	548
Porto Velho	2	3	1	2	0	5	0	4	1	1
Rio Branco	0	1	3	0	1	1	1	0	0	1
Manaus	1	2	3	2	4	3	2	2	4	0
Boa Vista	0	2	0	0	0	2	1	3	2	0
Belém	5	2	0	2	4	2	1	6	3	0
Macapá	0	0	0	1	2	1	2	1	1	0
Palmas	0	1	0	1	0	0	0	0	0	0
São Luís	1	2	0	1	1	1	4	1	2	1
Teresina	0	0	0	1	1	2	1	1	0	0
Fortaleza	4	0	3	5	1	6	2	1	6	3
Natal	0	1	3	0	5	0	0	3	1	1
João Pessoa	1	1	1	2	3	1	1	1	3	2
Recife	7	4	5	7	7	9	9	10	13	10
Maceió	1	2	5	2	5	4	2	3	4	3
Aracaju	0	1	0	2	0	0	2	0	1	1
Salvador	6	3	5	7	6	9	14	5	5	5
Belo Horizonte	2	3	3	6	5	7	9	7	11	8
Vitória	0	1	3	2	3	4	2	6	1	1
Rio de Janeiro	36	35	55	52	37	50	32	33	38	43
São Paulo	20	22	20	31	51	44	32	37	43	57
Curitiba	3	7	6	5	4	4	9	3	11	5
Florianópolis	0	0	1	0	0	0	0	0	0	0
Porto Alegre	2	3	3	6	7	6	10	8	5	7
Campo Grande	2	2	4	2	2	5	4	5	3	3
Cuiabá	0	0	1	1	0	0	1	2	4	5
Goiânia	7	8	2	5	6	5	2	1	4	4

Source: Mortality Information System (SIM), Ministry of Health, Brazil

3. Glossary of technical terms and definitions

Accidents, deaths from – Included in this category are deaths classified as "other external causes of accidental injuries". The pertinent codes are: ICD-9: E850 to E869; ICD-10: W00 to X59.

Bias – Bias is defined as a systematic error that may influence the results of a study, leading to incorrect estimates. A bias may be the result of the deviation or distortion of the measuring operation, instrument or applicator, as well as of the sampling selection procedure. Information biases result from the manner in which the information is obtained, either due to problems with the collection instrument or with interviewers. For example, in victimization surveys the manner in which the question is posed may inhibit the interviewee, who may fail to properly report a given violent situation. This influences the results of the research. Recall biases are related to the interviewee's capacity to remember the occurrence of the event under study. Generally, the gravest situations are more easily remembered and, because of this, better reported in victimization surveys (Almeida-Fo., N. & Rouquayrol, M. Z. Introdução à Epidemiologia Moderna.BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992.; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

Consistency – Is an attribute of the data collection instruments that refer to the capacity of not varying the results when used by different people or at different times. A highly consistent instrument produces highly consistent results. Generally, the more structured the instrument is, the better is the consistency of the data produced (Almeida Fo, N. & Rouquayrol, M.Z. Introdução à Epidemiologia Moderna. BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992.; Elwood, J. M. causal relationship in medicine – a practical system for critical appraisal. Oxford University Press, 1988).

Correlation – A statistical parameter that aims to establish whether the behavior of two variables of a study are related so that with a modification of the values of one of the variables (increase or decrease) there will be a modification of the other variable (increase or decrease) (Berquó, E. et al. Bioestatística. São Paulo: EPU, 1981.Rosner, Bernard. Fundamentals of Biostatistics. Boston: PWS-Kent Publishing Company, 1990).

Direct standardization – a strategy used for annulling the effect of differences in the age distribution on mortality coefficients, when the purpose is to establish comparisons between different places or periods of time. By using the age distribution of a reference population (standard) a new "standardized" coefficient is calculated, or rather, artificially adjusted to the standard age distribution. (See: Medronho, et al. Epidemiologia. São Paulo: Atheneu, 2003; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

External causes, deaths from – Deaths resulting from environmental factors, which are not natural, such as accidents, homicides, suicides, etc. which in ICD-9 are presented as a complementary classification (E 800 to E980) and in ICD-10 in chapter -XX (V01 to Y36). For this study, the following sub-categories were excluded: a) death due to medical and surgical complications (ICD-9 – E870 a E879; E930 a E949; ICD-10 – Y40 a Y84); b) Latter effects and sequels of external causes of morbidity and mortality (ICD-9 – E929, E959, E969, E989; ICD-10 – Y85 a Y89). The latter were excluded due to the fact that the type of weapon/instrument that lead to death was not specified.

External validity – The capacity of generalizing the results of a study conducted on the basis of samples (Rouquayrol, MZ e Almeida Fo., N. Epidemiologia e Saúde. 5a. Ed., Rio de Janeiro: MEDSI, 1999; Rothman, KJ. Modern Epidemiology. Boston: Little, Brown and Co., 1986).

Firearm-related, deaths – All deaths that occurred as a result of the use of firearms, be they accidents, homicides, suicides, deaths of undetermined intention or legal intervention. The pertinent codes are ICD – 9: E922, E955.0 a E955.4, E965.0 a E965.4, E970, e985.0 a E985.4; ICD-10: W32 a W34, X72 a X74, X93 a X95, Y22 a Y24, Y35.0.

Homicides, deaths from – According the ICD definition, included in this category, are deaths resulting from intentionally caused injuries by third parties. In ICD-10 these cases are designated under the title of "aggressions". The pertinent codes are: ICD – 9: E960 to E968; ICD-10: X85 to Y09.

Incidence – A health indicator that provides information on the frequency in which new cases of a certain disease or health hazard arises at a determined period of time and place, in relation to a population that is susceptible of developing the disease at the same period of time and in the same place (Almeida Fo, N. & Rouquayrol, M.Z. Introdução à Epidemiologia Moderna. BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

Increment – A relative increase of the rate within a period of time, presented as a percentage.

Infant mortality rate – A health indicator that provides information regarding the risk of death for children under the age of one, being useful for the evaluation of the health levels and existence of regional inequalities. The numerator is made up by the number of deaths of children under the age of one and the denominator is comprised of the total number of live births, in a specific place and period (Almeida Fo, N. & Rouquayrol, M.Z. Introdução à Epidemiologia Moderna. BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992.)

International classification of diseases – A system of classification of the diseases and health hazards proposed by the World Health Organization, for international standardization purposes.

Legal intervention, deaths from – According the ICD-9 definition, these refer to "deaths resulting from injuries inflicted by the police or other agents of the law, including military personnel in service, during detention or attempt of detention due to a law infraction, for the purpose of repressing disorders in order to maintain public order and other legal actions". For this study we considered: ICD-9: E970 to E976; ICD-10: Y35.

Male to female ratio of deaths – Ratio is a measure that provides us with information regarding the frequency of a certain group of events (ex.: deaths in the male population) in relation to the frequency of another group of events (ex.: deaths in the female population). The result indicates to what extent the events of one group are more frequent.

Morbidity – Refers to a group of individuals that succumbed to a disease in a given period of time, in a certain place. The measures of morbidity are incidence and prevalence (Almeida Fo, N. & Rouquayrol, M.Z. Introdução à Epidemiologia Moderna. BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

Morbidity-mortality – Refers to a group of individuals that died and/or became ill in a determined period of time, in a given place.

Mortality – An epidemiological term that defines a group of individuals that died in a specific population group, in a certain period of time. The measures of mortality are mortality coefficient – general or specific – and proportional mortality (Almeida Fo, N. & Rouquayrol, M.Z. Introdução à Epidemiologia Moderna. BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992; Medronho, et al. Epidemiologia. São Paulo: Atheneu, 2003; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

Mortality rate/coefficient – A health indicator that provides information on the number of

deaths in a determined area (city, state, country) and in a determined period of time (year, month), in relation to the total population of that area, during that period of time. The result is presented by multiplying it generally by 1,000 or 100,000. It can be calculated for the total population or by sex and age groups, and can also be calculated considering all the deaths or deaths from external causes, such as for example, firearm deaths, homicides, etc. The utilization of the mortality rate for comparisons in time and among different areas must be conducted carefully, since this indicator suffers from the influence of the population age distribution (Almeida Fo, N. & Rouquayrol, M.Z. Introdução à Epidemiologia Moderna. BH/SSA/Rio de Janeiro: Coopmed/Apce/Abrasco, 1992.; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

Percentage/proportion of deaths – Similar to proportional mortality, we used in this study the proportion of deaths from specific external causes (homicides, suicides, firearm deaths, etc) considering the total of deaths from external causes in a certain place and period of time. The result is presented as a percentage and its utility is to allow for the identification of priorities.

Potential years of life lost – According to Rouquayrol & Almeida Filho (1999) this is the "indicator that expresses the occurrence of early deaths in relation to the life expectancy of a specified population (...)," that is, the life expectancy of a specific country is considered as a reference and it is verified how a specific cause of death affects the population considering the different age groups. The higher the contribution of the cause of death for the younger age groups, the more the potential years of life lost will be related to the cause of death (Medronho, R. et al. Epidemiologia. São Paulo: Atheneu, 2003.; Gardner, J. W. & Sanborn, J. S. Years of Potential Life Lost (YPLL) – What does it means? Epidemiology, 1 (4): 322-329, 1990).

Prevalence – A measure of morbidity that expresses the frequency of cases of a certain disease existing in a given place and at the given period of time. It uses as a reference the population of the place, and is generally expressed under the form of percentages (Medronho, et al. Epidemiologia. São Paulo: Atheneu, 2003; Hennekens, C.H. et al., Epidemiology in Medicine. Boston: Little, Bowon & Co., 1987).

Prevention – A characteristic Public Health mode of action that assumes the knowledge of the natural history of diseases and the identification of risk factors. The preventive action aims at avoiding the occurrence, impeding its evolution and minimizing the consequences of a certain hazard. The preventive measures are classified as primary, secondary and tertiary according to the phases of application (Rouquayrol, MZ e Almeida Fo., N. Epidemiologia e Saúde. 5a. Ed., Rio de Janeiro: MEDSI, 1999).

Primary data – Primary data are considered as those that were produced specifically for providing answers to the objectives of a study, based on the utilization of collection instruments designed for the study in question. For example, in the victimization surveys, questions are put forth to a sample of the population, using for this purpose a structured questionnaire designed specifically for the study. Another way of obtaining information would be through secondary data, that is, data that already exists, collected for other purposes but which can provide information for what we want to study. As example we have the hospital records, police occurrence reports, etc.

Primary prevention – Primary prevention measures are considered as those that are conducted before the occurrence of the offense, the objective of which being to avoid said occurrence. In this group, specific protection measures are included – that aim towards specific risk factors – and measures for promoting health conditions – general measures that cause positive impacts in health conditions, such as measures related to housing, schooling, nutrition, etc. (Rouquayrol, MZ e Almeida Fo., N. Epidemiologia e Saúde. 5a. Ed., Rio de Janeiro: MEDSI, 1999).

Proportional mortality – A health indicator that measures the proportion of deaths from a specific cause or cause group, in relation to the total of deaths that occurred in a certain place and at a certain period of time. Usually expressed as percentage, it is a useful indicator for identifying priorities in the area of health and analysis of mortality profiles. The calculation is simple and does not require knowledge of population parameters (Medronho, et al. Epidemiologia. São Paulo: Atheneu, 2003).

Relative risk (RR) – The relation between two incidence coefficients (ex: mortality coefficient) with one being from a group that is exposed and the other from a group that is not exposed to a certain risk factor. For example, the male sex being a risk factor of firearm deaths, the relative risk is the result of the division between the male and female mortality coefficient. The RR indicates how much more frequent the occurrence of an offense is to those exposed as compared to those not exposed. If the RR is equal to one (01) this indicates that there is no difference between the two groups (Rouquayrol, MZ e Almeida Fo., N. Epidemiologia e Saúde. 5a. Ed., Rio de Janeiro: MEDSI, 1999; Rothman, KJ. Modern Epidemiology. Boston: Little, Brown and Co., 1986.)

Risk – Probability, the chance of an offense occurring (ex: homicide, death from a firearm) in a given population group.

Risk factor – A characteristic or circumstance, that when present, is found associated to a greater chance that an offense/hazard may occur (Rouquayrol, MZ e Almeida Fo., N. Epidemiologia e Saúde. 5a. Ed., Rio de Janeiro: MEDSI, 1999).

Road traffic accidents, deaths from – According to the International Classification of Diseases definition (ICD-10) "it is any accident that involves a vehicle destined, or used at the time of the accident, especially for the transportation of people or goods from one place to another". The pertinent codes are: ICD-9: E800 to E848; ICD-10: V01 to V99.

Sampling – A procedure through which part of a specific population is selected (sampling), that will be the direct object of the study. This selection is made in accordance with precise methodological procedures, so as to guarantee that the group selected will represent the population of which it is a part. Generally, population studies are conducted based on sampling (Berquó, E. et al. Bioestatística. São Paulo: EPU, 1981. Rosner, Bernard. Fundamentals of Biostatistics. Boston: PWS-Kent Publishing Company, 1990).

Suicides, deaths from – According to the ICD definition, included in this category are the deaths resulting from intentionally caused self-aggression. The pertinent codes are: ICD-9: E950 to E958; ICD-10: X60 to Y84.

Undetermined intention, deaths of – A death where it was not possible to define whether it was due to an accident, suicide, or homicide. The pertinent codes are:ICD-9: E980 to E988; ICD-10: Y10 to Y34.

Victimization rates – Indicates the relation between the number of people that were victimized in a certain place and period of time, and the total population in the same place and period of time. Generally, it is expressed in percentages.

Victimization surveys – Population studies, the object of which is to know the distribution and frequency of the occurrence of crimes in the population, the population's awareness regarding violence and security, among other information related to the theme. Individuals of a certain population group are randomly selected to answer questionnaires with questions about crimes suffered in a determined period of time, as well as other relevant information for the study.

Firearm-related violence in Brazil

NEV/USP