

# HOMICIDES IN THE MALE POPULATION OF THE SÃO PAULO METROPOLITAN AREA – BRAZIL

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## HOMICÍDIOS NA POPULAÇÃO MASCULINA DA REGIÃO METROPOLITANA DE SÃO PAULO – BRASIL

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## HOMICIDIOS EN LA POBLACIÓN MASCULINA DE LA REGIÓN METROPOLITANA DE SÃO PAULO – BRASIL

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**Objective:** to describe the trend in homicides among male dwellers of the São Paulo metropolitan area between 1979 and 2013. **Method:** environmental and exploratory study of time trends, with description of the evolution and space distribution of the homicides. We analyzed the deaths and the homicide-related mortality coefficients among the male population of the São Paulo metropolitan area. **Results:** the deaths prevailed among adolescents and young adults, with an increase after the age of 14. The mortality coefficient for male homicides was higher than the country's average until 2005. After that year, it became lower than the Brazilian average. **Conclusion:** the homicides in the São Paulo metropolitan area had a peculiar behavior in comparison with Brazil and the state of São Paulo until early 2005, deserving careful and detailed investigation of the events that led to the reduction in the homicides in the area.

**Descriptors:** Homicide. Victims of homicide. Violence. Mortality. Male population.

*Objetivo:* descrever a tendência dos homicídios na população masculina residente na Região Metropolitana de São Paulo, Brasil, entre os anos de 1979 e 2013. *Método:* estudo ecológico, exploratório de tendência temporal com descrição da evolução temporal e distribuição espacial dos óbitos por homicídios. *Analisou-se as mortes e os coeficientes de mortalidade da população masculina ocorrida na Região Metropolitana de São Paulo decorrentes de homicídios. Resultados:* as mortes predominaram entre adolescentes e adultos jovens, com aumento a partir dos 14 anos de idade. O coeficiente de mortalidade por homicídios masculinos foi maior do que a média nacional até 2005, invertendo-se a partir desse ano. *Conclusão:* os homicídios na Região Metropolitana de São Paulo tiveram um comportamento peculiar em relação ao Brasil e ao estado de São Paulo até o início de 2005, merecendo um estudo detalhado e minucioso dos eventos que cooperaram para a redução dos homicídios nesta região.

*Descritores:* Homicídio. Vítimas de homicídio. Violência. Mortalidade. Homens.

*Objetivo:* describir la tendencia de los homicidios en la población masculina residente en la Región Metropolitana de São Paulo, Brasil, entre los años 1979 y 2013. *Método:* estudio ecológico, exploratorio de tendencia temporal con descripción de la evolución temporal y distribución espacial de las muertes por homicidios. *Fueron analizadas las muertes y los coeficientes de mortalidad de la población masculina ocurrida en la Región Metropolitana de São Paulo decurrentes de homicidios. Resultados:* las muertes predominaron entre adolescentes y adultos jóvenes, con

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*augmenta a partir de los 14 años de edad. El coeficiente de mortalidad por homicidios masculinos fue mayor que la media nacional hasta 2005, invirtiéndose a partir de ese año. Conclusión: los homicidios en la Región Metropolitana de São Paulo tuvieron un comportamiento peculiar en relación a Brasil y al estado de São Paulo hasta el inicio de 2005, mereciendo un estudio detallado y minucioso de los eventos que cooperaron para la reducción de los homicidios en esta región.*

*Descriptor: Homicidio. Víctimas de homicidio. Violencia. Mortalidad. Hombres.*

## Introduction

Violence is described as any situation where an individual is removed from his or her rightful place through physical force or any another element of deprivation. Considered as an inseparable part of human history, violence has had several representations and perceptions over the years. Additionally, people's attitudes towards it have also changed, so violence cannot be dealt with as it were in the past. Understood as a social phenomenon in the level of social relations, it has significant physical and psychological impact, which means it is a serious problem for the healthcare sector. In view of this, violence has become an important matter for some areas, such as Public Health, due to its strong relationship with morbimortality rates<sup>(1,2,3)</sup>.

The World Health Organization (WHO) defines violence as the intentional use of physical force or power, threatened or actual. It can frequently be predictable and preventable; therefore, governments can create and monitor plans to prevent violence and its consequences to the society. Violence has several nuances and, with that in mind, homicides are its ultimate expression, defined as the illegal death intentionally caused to a person by another person<sup>(4)</sup>.

According to the *Global Report on Violence Prevention*, in its 2014 issue, there are many types of homicides, but not all are considered intentional. In 2012, about 475,000 people worldwide were killed, including a rate of 6.7 per 100,000 inhabitants. About 60 percent of these murders were among men aged 15-44, making homicide the third leading cause of death among men in this age group. Low- and middle-income countries have concentrated the highest homicide rates, which are also mostly concentrated in the Americas and the African continent. For families and friends, these

deaths have a deep impact on their mental, physical, sexual, and reproductive health<sup>(5)</sup>.

In Brazil, since the 1980s, the homicide mortality coefficient has grown steadily and consistently in most Brazilian capitals, and the metropolitan area of the city of São Paulo stands out in this scenario. Between 1979 and 2008 there was a 352% increase in the number of homicides in this region, with the majority of the victims being adolescents and young adults, most of them male. In the first half of the 1970s, with a population of roughly 3.8 million inhabitants, homicide rates had already recorded between 5 and 10 cases per 100,000 inhabitants<sup>(6)</sup>.

In 1999, the State System of Data Analysis Foundation of the state of São Paulo (Seade) recorded a rate of 65 homicides per 100,000 inhabitants, that is, in that year alone, the city of São Paulo recorded 31.67% of the homicides of the country, in which the majority of the victims were black. In 2000, the São Paulo metropolitan area (RMSP) recorded a rate of 63.3 homicides per 100,000 inhabitants, while the rate in Brazil was 26.7 per 100,000 inhabitants<sup>(7,8)</sup>.

According to the 2012–2015 São Paulo state health plan, homicides were the third major cause of death in 2009, with a prevalence of men (5,481 cases) over women (568 cases), in the age group between 15 and 24 years old. There was, however, a surprising change in this scenario between 2000 and 2007, with a sharp decline followed by stabilization in the number of homicides<sup>(9)</sup>.

Within the Brazilian context, according to data from the Project Management Methodology of the Department of IT of the Unified Health System (Datusus) of the Ministry of Health, in 2011, deaths from external causes accounted for 8.6% of total hospitalizations in the Brazilian Unified Health System (SUS), ranking fifth among

the main causes. The highest rates of hospitalizations due to violence occurred among men aged 20–39 (89.7 per 10,000 men). Among women, most were 60 years old or more (74.3 per 10,000 women)<sup>(10)</sup>. Between 2002 and 2011, there was a 19.3% increase in the hospitalization rate for such incidents. Data such as this contributes significantly to the reduction of the life expectancy of adolescents and young people, with a dramatic impact on the quality of life of the population<sup>(11)</sup>.

The 2014 Brazilian Violence Map revealed that homicides represent the main cause of death among young people aged 15–29, mainly among black male youths living in the working class suburbs of the metropolitan areas of Brazil's big cities<sup>(12)</sup>.

Finally, as a serious public health issue, homicide affects all levels of society indiscriminately. In addition to family suffering reaching thousands of parents, wives, children, and the very communities where these murdered youths lived, violence entails a heavy atmosphere of insecurity, fear, changing living standards, and a clear, constant and daily violation of human rights<sup>(13)</sup>.

In addition to the human loss, violence requires heavy expenditure on healthcare. In 2007, the expenditure with violence-related health treatments represented 1.9% of the Brazilian Gross Domestic Product (GDP)<sup>(14,15)</sup>. Attempted murders leave victims agonizing for hours or even days. The Brazilian Public Security Forum announced in its yearbook that Brazil invested a total of 1.26% of its GDP in this sector in 2013. For 2014, this percentage was 1.29%. In that same year, the homicide rate in Brazil was 26 deaths per 100 thousand inhabitants, with absolute numbers of 53,289 homicides<sup>(16)</sup>.

Contrary to what some may think urban violence is not justified by poverty. The African continent is home to the poorest communities on the planet and does not report extreme cases of urban violence. Likewise, the North and Northeast regions of Brazil should record the highest rates of urban violence if poverty were a preponderant factor. However, we notice that violence is more related to social inequality, since social factors play an important role in the scenario of urban violence. This cycle is worsened by

unequal access to public services such as health-care, education, leisure, culture, and security<sup>(17)</sup>.

Data from a survey carried out in 1997 by the Mortality Information Improvement Program (PRO-AIM) in the city of São Paulo showed that homicides were the second cause of death among individuals with unknown or elementary education, whereas it ranked tenth among individuals with higher education<sup>(18)</sup>. It is estimated that an average 5.0% increase in upper-level graduation rates could mean a considerable 16.5% reduction in homicide rates<sup>(19,20)</sup>.

Violence is a complex product of human, social, cultural, and environmental relations<sup>(14)</sup>. In this sense, considering the homicide rates in the RMSP, their sharp increase and subsequent decline, and the Public Health objective to reduce actions that cause harm or injury in the population, it becomes relevant to understand the expression of the elements that conditioned the behavior of the homicides in the area. This may provide important data for us to address and understand this reality in Public Health.

The overall objective of this study was to describe the occurrence of homicides among male dwellers of the São Paulo metropolitan area between 1979 and 2013. We also sought to identify the mortality coefficient for homicides in the metro area according to the age of the victims and to compare the time trend of homicide coefficients in the São Paulo metro area and in Brazil.

## Method

This is an environmental investigation of trends over time, which described the timeline and the spatial distribution of homicides in the São Paulo metro area between January 1, 1979, to December 31, 2013, i.e. 35 years. The investigated region was the São Paulo metropolitan area, with its 38 municipalities: Arujá, Barueri, Biritiba-Mirim, Caieiras, Cajamar, Carapicuíba, Cotia, Diadema, Embu, Embu-Guaçu, Ferraz de Vasconcelos, Francisco Morato, Franco da Rocha, Guararema, Guarulhos, Itapeverica da Serra, Itapevi, Itaquaquecetuba, Jandira, Mairiporã, Mauá, Mogi das Cruzes, Osasco, Pirapora

do Bom Jesus, Poá, Ribeirão Pires, Rio Grande da Serra, Salesópolis, Santa Isabel, Santana do Parnaíba, Santo André, São Bernardo, São Caetano do Sul, São Lourenço da Serra, São Paulo, Suzano, Taboão da Serra and Vargem Grande Paulista. Moreover, to contextualize the findings in the São Paulo metropolitan area, we also compared the surveyed data with Brazil, with the state of São Paulo, and with Brazil without the state of São Paulo.

Male population deaths caused by extended homicides, that is, deaths whose basic causes were homicides, injuries inflicted by the police or injuries of unknown or unspecified intention, were analyzed. These causes correspond to codes E960 to E989 in the Ninth Revision of the International Classification of Diseases (ICD-9) and to codes X85 to Y35 corresponding to chapter XX – External causes of morbidity and mortality – of the ICD-10 (ICD-10). Deaths corresponding to codes Y06 (Neglect and Abandonment) and Y07 (Other maltreatment syndromes) were excluded from the study. The age group of the individuals, at the time of death, was considered to be between 0 and 75 years old.

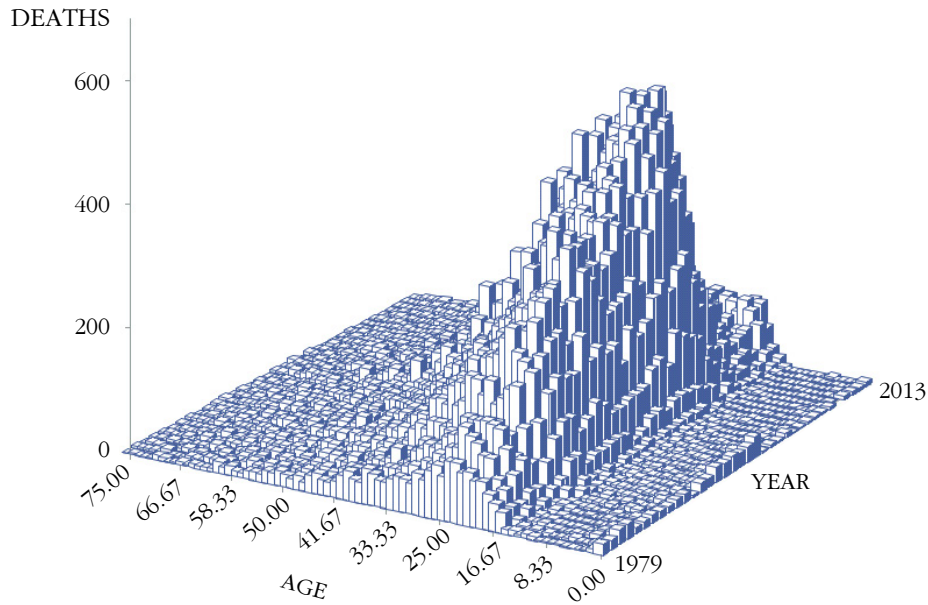
Death-related information was retrieved from the Mortality Information System (SIM) of the Ministry of Health. For the Administrative Regions of the city of São Paulo, the files of the PRO-AIM of the City Hall were obtained at the São Paulo city website<sup>(18)</sup>. The source populations of these deaths were obtained by consulting the databases of the 1980, 1991, 2000, and 2010 censuses of the Brazilian Institute of Geography and Statistics (IBGE), as well as the Population Count of 1996<sup>(21)</sup>. For the inter-census years, estimates were made through interpolation by geometric progression. For 2013, we considered the estimated population according to the availability of IBGE data for that year.

After the collection, the data was tabulated and exported to SAS 9.4 for Windows, which calculated the absolute number of male deaths from extended homicides and the mortality rate (per 100,000 male residents) for the metro area's male population. The data is presented in 2D or 3D figures, which in turn are presented in three

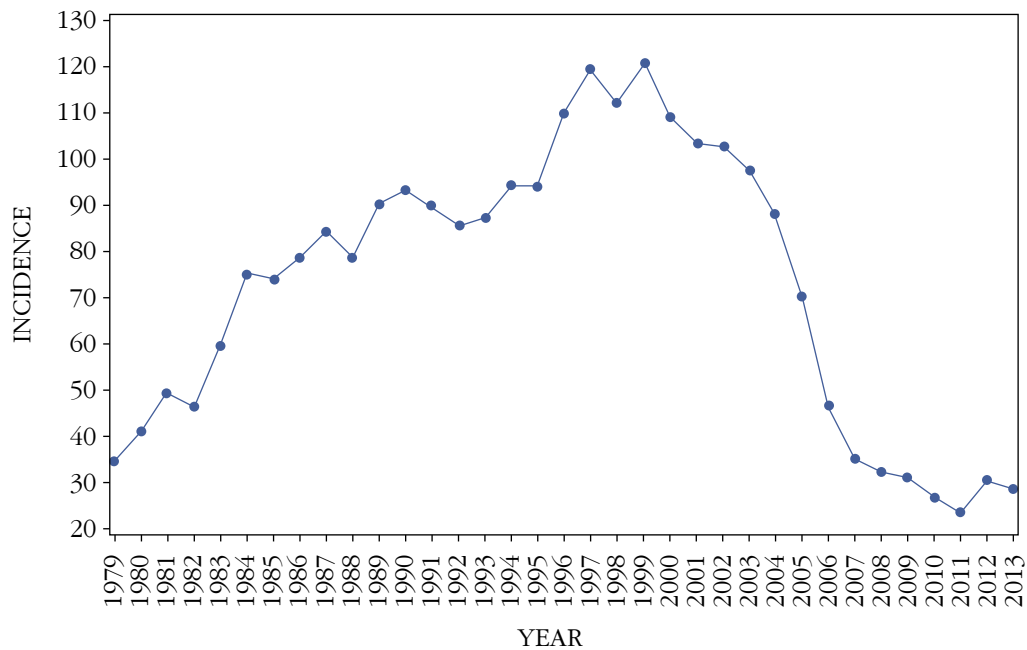
axes orthogonal to each other. The figures were produced with the Proc G3GRID and Proc G3D features of the aforementioned SAS software. The variables represented in the base axes are: age (unit ranges from 0 to 75 years) and calendar year (from 1979 to 2013). In the vertical axis, the absolute number and the coefficient of mortality are plotted against the base variables. To complement the results, a figure was generated to show the coefficients of mortality by extended homicide of the male population in Brazil, in the state of São Paulo and in Brazil without the state of São Paulo, between 1980 and 2012. To represent the coefficients of homicide mortality among male residents of each of the 96 Administrative Districts of the city of São Paulo, a linear regression line was adjusted considering the time elapsed between 2001 and 2006 (predictor variable), and the mortality coefficient homicides (variable response). The “linear trend” of the evolution of the male homicide mortality coefficient of the Administrative Districts was defined as the coefficient obtained in this adjustment in each Administrative District. The same adjustment was made for the municipality of São Paulo as a whole. The relative linear trend was defined as the ratio between the linear trend of each Administrative District and the linear trend of the municipality.

## Results

This study sought to emphasize the relevance of visual analysis as a tool for epidemiological analysis. A brief glance at the figures enables us to grasp the main characteristics of the homicide mortality evolution among men in the metropolitan area over the last 35 years. The analysis of the results has shown that homicides prevailed among adolescents and young adults, with a particularly sharp increase after the age of 14. Age limits spread to both younger (under 18) and, especially, older ages (over 30) in the last decade of the century. We also noted that the evolution showed two trends: continued growth to the year 2000, followed by a sharp decline in the following years, particularly between 2001 and 2006 (Figures 1 and 2).



**Figure 1** – Deaths by extended homicide in the male population of the São Paulo Metropolitan Area between 1979 and 2013, per age group.



**Figure 2** – Incidence of mortality by extended homicide in the male population of the São Paulo Metropolitan Area between 1979 and 2013, per 100,000 inhabitants.

The figures show that until the year 2000, from the fourth decade of age the incidence seems to reduce its decrease rate after reaching its peak in the middle of the second decade of life. It remains at worrisome levels and even increases in more advanced age brackets. From the 2000s on, this trend disappears, with a tendency

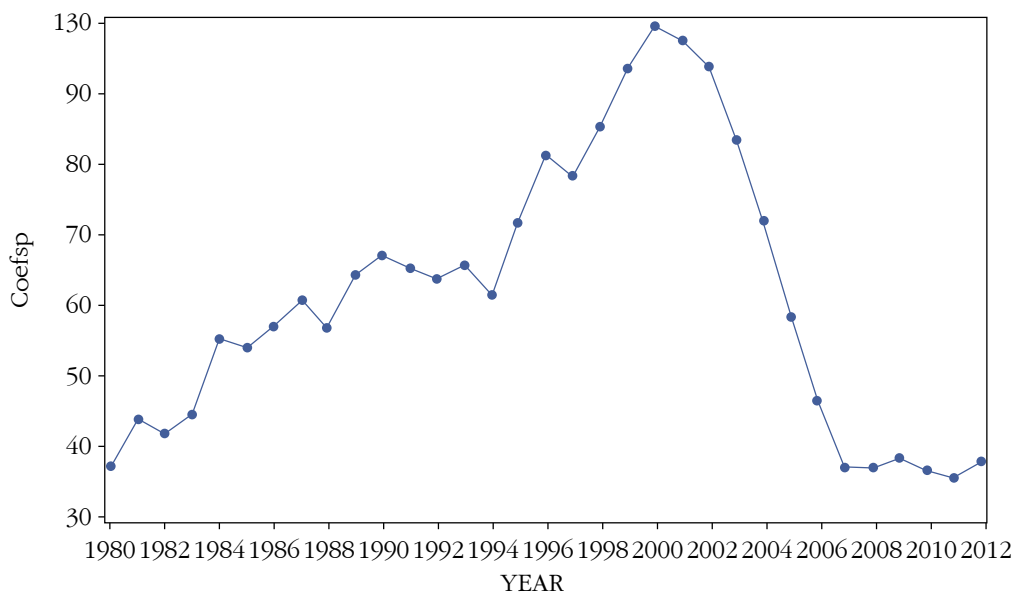
to decrease the risk of homicides as age and calendar year advance.

Figure 2 shows a theoretical construction, that is, an abstraction that is the actual number of homicides occurred weighted by the exposed population. As of the fourth decade, the population base that gives rise to homicides declines

more sharply than the absolute number of homicides, particularly in the 20th century, therefore incidence slows down its pace and the number of homicides even increases after this age in the studied period.

Figure 3 summarizes the evolution of the mortality coefficient for extended homicides in the male population in the metropolitan area over the analyzed years. It clearly demonstrates

the change in the mortality coefficient trend at the end of the 20th century. The growth of this indicator in the last two decades of the 20th century was virtually offset by its decline in the first half of the first decade of the 21st century. No confidence intervals apply to the incidences presented here, since we did not work with samples, but with the whole of deaths in the studied region.



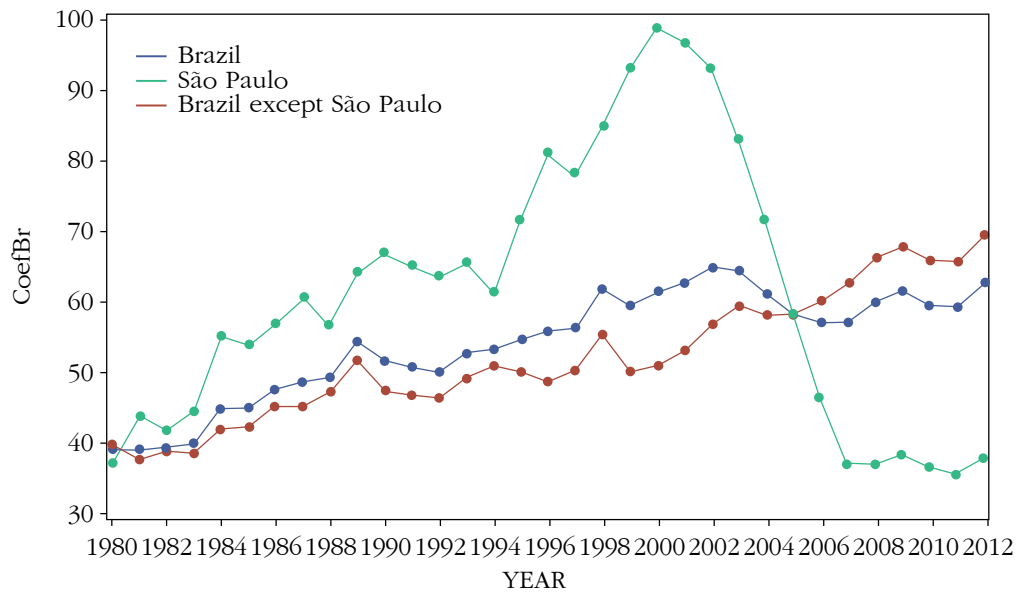
**Figure 3** – Mortality coefficient by extended homicide in the male population of the state of São Paulo between 1980 and 2012, per 100,000 inhabitants.

The evolution of the mortality coefficient by extended homicides in the male population in Brazil, in the state of São Paulo and in the São Paulo metro area is summarized in Figure 4. Possibly the inflection in the upward trend of the coefficient in Brazil observed in 2001, followed by a downward trend in the subsequent years, is due to data from the state of São Paulo. In fact, after removing this state of the analysis, the mortality coefficient always increases in the period. This figure also points out that the coefficient of mortality for male homicides in São Paulo was always higher than the national average until the middle of 2005, when this ratio was reversed.

In this study, the incidence and absolute number of deaths are two distinct measures of the occurrence of homicides, with similar

importance, but distinct implications. In epidemiology, incidence is a measure of excellence, since it indicates the occurrence flow of a phenomenon in a socially defined set, thus signaling risk. The notion that the incidence of homicides is high beyond the fourth decade in the SP metro area provides an important element for the global understanding of the phenomenon and the need for specific prevention measures.

However, there are situations in which not only it is necessary to estimate risks, but also to measure the immediate impact of the studied phenomenon. Absolute numbers meet this need because they have direct impact and immediate implications. They are essential, for example, to scale the potential users of a specific program or to estimate expenditures in a healthcare network.



**Figure 4** – Coefficient of mortality by extended homicide in the male population in Brazil, in the male population of the state of São Paulo and in the male population in Brazil, except for the state of São Paulo, between 1980 and 2012, per 100,000 inhabitants.

## Discussion

Data presented suggests the existence of a set of determinants in the state of São Paulo that sets it apart from the rest of the country with regard to the evolution of homicides in the first decade of the present century. A line of interpretation of these results indicates that the reduction in the state of São Paulo is the result of a number of factors: improvement of the educational level, especially of young people; decrease of the young population of the state in absolute and relative numbers; disarmament policy; expansion of the incarceration of criminals; improvements in the public security system, and enhancement of technologies used to fight crime<sup>(22,23,24)</sup>.

On the other hand, it is widely believed that crime is organized in a peculiar manner in the state of São Paulo where, unlike the rest of Brazil, there is a clear centralization of the organization and control of criminal actions, with the First Command of the Capital (PCC) playing a leading role. There is also a strong concern with economic aspects related to the trafficking and commercialization of arms and drugs. That is possibly the root of this difference in the evolution of the homicide mortality coefficient in São Paulo<sup>(25)</sup>.

The increase in homicides in the São Paulo metropolitan area and in other metropolitan regions of Brazil in the last two decades of the twentieth century may also be related to the Brazilian social landscape in this period, with the consolidation of organized crime around drug trafficking, death squads, and even through military intervention. These factors might have been fundamental to increase the homicide rates over this period. In this sense, the action of death squads mainly serves the drug and arms trafficking. Young males, usually black or pardo, of low income and little schooling, are the main victims. Without social perspectives, they are recruited to form the gangs where sooner or later they will become the targets of rival gangs<sup>(4,23,24,25)</sup>.

When analyzing the reduction in the homicide rate in the investigated areas, one must consider the intrinsic factors that contributed to this phenomenon. One possible explanation for the reduction in homicide rates is the effect of the very growth of the homicide rate, also taking into account the strong involvement of criminal organizations and having the First Command of the Capital (CCP) as its leading player. With the omission of public security institutions for years, and in view of the chaotic social situation

experienced by the community, it was possible to provide mechanisms that allowed the increase in homicides. This eventually forced the government to take vigorous measures to stop the increase in murders<sup>(25)</sup>.

## Conclusion

The study enable us to conclude that there was a resurgence of homicides from the beginning of the investigated period until the mid-2000s, followed by a sudden drop in subsequent years, especially between 2001 and 2006. For the total deaths of this period, there was a prevalence of adolescents and young adults, with a considerable increase after the age of 14.

The peculiar behavior of the homicides in the São Paulo metropolitan area determined by the mortality coefficient in relation to Brazil and the state of São Paulo until the middle of 2005 is a phenomenon that deserves to be studied in detail, with a careful assessment of the events that contributed to the decrease in the number of homicides in this region.

## Collaborations

1. design, project, analysis and interpretation of data: Fransley Lima Santos, Ricardo Carlos Cordeiro.

2. article writing and critical review of intellectual content: Fransley Lima Santos, Ricardo Carlos Cordeiro.

3. final approval of the version to be published: Fransley Lima Santos.

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