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## The panorama of urban violence in Brazil and its capitals

Panorama da violência urbana no Brasil e suas capitais

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**Abstract** *This article presents a descriptive epidemiological analysis of accidents and violence in Brazil and in the Brazilian capitals in recent years. The data used were made available by several sources: the Mortality Information System and the Hospital Information System of the Ministry of Health; the National Safety Department of the Ministry of Justice and the National Department of Transit of the Ministry of the Cities. The population data for the years 2002 and 2003 were made available by the DATASUS of the Ministry of Health. The authors emphasize some already known aspects: the high homicide rates and high death rates due to traffic accidents, the concentration of these events in the population of young black males and the complexity and multiplicity of determinants of these phenomena. The text points to a new scenery involving the spreading of homicides to neighbor communities of metropolitan areas and to the inner regions of the States. They further verify higher morbidity than mortality rates. It calls attention to Porto Velho, Macapá, Vitória, Rio de Janeiro and Cuiabá with the highest indicators for intentional violence – high rates of homicides and injuries – and to Palmas, with high death rates from traffic accidents and non-fatal victims per 10 thousand vehicles.*

**Key words** *External causes, Homicides, Traffic accidents, Violence and Health*

**Resumo** *Faz-se uma análise epidemiológica descritiva da morbidade e da mortalidade por acidentes e violência no Brasil e suas capitais, em anos mais recentes para os quais as informações estão disponíveis. Usam-se dados dos Sistemas de Informações sobre Mortalidade e de Internações Hospitalares, do Ministério da Saúde; da Secretaria Nacional de Segurança, do Ministério da Justiça; e do Departamento Nacional de Trânsito, do Ministério das Cidades. Os dados populacionais de 2002 e 2003 são os disponibilizados pelo Datasus/MS. Destacam-se algumas situações que persistem no Brasil: elevadas taxas de homicídios e de mortes por acidentes de trânsito, concentração dos eventos na população jovem, negra e do sexo masculino e a complexidade e multiterminação desses fenômenos. Como novo, aponta-se um processo de disseminação de homicídios para outros municípios das regiões metropolitanas e do interior dos Estados. Destaca-se a magnitude da morbidade em relação à mortalidade. Destacam-se Porto Velho, Macapá, Vitória, Rio de Janeiro e Cuiabá, com os maiores indicadores de violência intencional – elevadas taxas de homicídios e de lesões corporais e Palmas, onde ocorrem altas taxas de mortalidade por acidentes de transporte e de vítimas não fatais por 10 mil veículos.*

**Palavras-chave** *Causas externas, Homicídios, Acidentes de transporte, Violência e Saúde*

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## Introduction

The unprecedented magnitude and intensity of social violence in Brazil, expressed in the epidemiological and criminal indicators based on lethal and nonlethal events, is even greater than in countries in state of war.

The death rates from violence in the main urban centers in Brazil show a continuously increasing trend since the 80s<sup>1</sup> and rank today among the highest in the American continent. According to data from the Ministry of Health, Brazil passed from 59.0 deaths from external causes (accidents and violence) per 100 thousand inhabitants in the 80s to 75.2 in 2002. West-European countries show rates lower than 3 premeditated deaths per 100 thousand inhabitants and the United States show rates between 5 and 6 premeditated deaths per 100 thousand inhabitants<sup>2</sup>.

Different studies carried out in the country showed that violence does not affect the population uniformly, the risk varies according to gender, race, color, age and social space<sup>3, 4, 5</sup>. The death rates from violence however, even taking under-recording into consideration, show only the tip of an enormous iceberg, in fact representing a much higher number of violent deaths.

Although being clearly more intense in urban areas with high population density where about 75% of the total of deaths from external causes are concentrated<sup>1, 6</sup>, recent studies revealed another process, a dynamic some authors call the "interiorization of violence", in the sense of violence being taken to the inner regions of the country<sup>7</sup>. In part this is due to the route illegal drugs trade is taking through the inner regions of different Brazilian States, where some municipalities participate as producers and others serving as corridors for the transport of drugs<sup>8, 9</sup>.

This article presents a picture of urban violence in Brazil, analyzing mortality and morbidity rates from external causes focusing on traffic and transportation accidents and homicides according to differences in relation to sex, age and capitals.

## Methods

This study represents a descriptive epidemiological analysis of morbimortality due to accidents and violence in Brazilian capitals in recent years.

The mortality data refer to deaths of residents from external causes (V01-Y98 of the International Classification of Diseases/ICD10) occurred in 2003, and were extracted from the Mortality Information System (SIM) available at the DATASUS. The coverage and quality of the data of the SIM varies. They are more reliable in the States in the South and Southeast of the country, where more than 80% of municipalities count on regular death registries, while in the municipalities of the regions North, Northeast and Center-West this percentage, although gradually improving, is only of about 60%<sup>10</sup>. In the capitals, on the other hand, practically all deaths are recorded.

The morbidity rates were collected from three sources: The Hospital Information System of the Ministry of Health, the National Department of Transit of the Ministry of Cities and the National Safety Department linked to the Ministry of Justice. The data refer to recent years, for which information was available.

The information regarding hospital admissions due to injuries and some other consequences of external causes (S00-T98 of the ICD10) were collected from the AIH/SUS, in charge of processing the Hospital Admission Authorization forms (AIH). This system however shows some limitations: it does not consider acute health problems with quick evolution and requiring less than 48 h of inpatient care. There is also no control as refers to multiple admissions, a fact capable of compromising the information by generating more than one admission registry for the same patient. Finally, the data produced by this system only include admissions in hospitals belonging to the network of the Unified Health System or facilities linked to this system through agreements and the reliability of the data depends on the nature of the data processing system<sup>11, 12, 13, 14, 15</sup>.

We also analyzed the information regarding traffic accidents for the year 2002, published by the National Department of Transit in its *Annual Statistics of Traffic Accidents*<sup>16</sup>. In spite of the sub-recording due to under-notification from some State Departments of Transit, this system provides indicators allowing for evaluating and establishing the dimension of morbidity and the seriousness of traffic accidents in the greater part of Brazilian States and capitals. Finally, the data about injuries were collected from the statistics of the National Department of Transit, based on the number of occurrences registered in the National System

of Public Safety and Criminal Justice Statistics for the year 2003<sup>17</sup>. A possible limitation of this system is under-registration as a result of under-notification from some police departments. The variations in the number of occurrences were also due to the different procedures and systems adopted for the collection and recording of criminal information by each of the 27 civil police forces of the country. The under-registration of occurrences by the public safety authorities varies in intensity among the different capitals studied in this paper.

The population data for the years 2002 and 2003 were based on estimations drawn from the 2002 census, made available by the DATASUS/Ministry of Health<sup>18</sup>.

## Results and discussion

### Mortality: the tip of the iceberg of Brazilian violence

In 2002, 126,657 individuals died in Brazil from accidents and violence. This number represents 12.5% of all-cause deaths, with a mortality rate from external causes of 71.6% per 100 thousand inhabitants. The scale of violence does not stop ascending: the death risk increased in 17% in relation to the 80s and in 3.4% in relation to the 90s of the past century.

Among specific external causes, aggressions (homicides) and traffic accidents show the highest rates in 2003: 28.9 and 19.0 per 100 thousand inhabitants respectively. These two subgroups concentrate 66,8% of all deaths from

external causes (Table 1), turning them into a priority with respect to interventions and justifying the special attention given to them in this article.

In 2003, the mortality rate from external causes varied from 53.8 to 120.1 per 100 thousand inhabitants among the Brazilian capitals (Table 2). Seven of the 27 capitals showed death rates from external causes higher than 90 per 100 thousand inhabitants (Porto Velho, Boa Vista, Macapá, Recife, Vitória, Rio de Janeiro and Cuiabá); eight capitals (Manaus, Belém, São Luís, Teresina, Natal, João Pessoa, Florianópolis and Porto Alegre) showed lower rates (between 50 and 69 per 100 thousand inhabitants) and the other 12 showed rates between 70 and 89 per 100 thousand inhabitants. Anyway, the distribution of deaths from external causes in Brazil shows the same characteristics found in other countries but it also has specific and peculiar aspects, which need to be understood for being able to face the problem.

### Homicide in Brazil and its characteristics

Fifty-one thousand and forty-three Brazilians were murdered in 2003, nearly 140 deaths per day! The worst is that neither the daily reports on homicides in the communication media nor the knowledge produced in the studies on the issue carried out in the country have led to the development of solid mechanisms for facing the problem.

To the contrary, the shy measures taken by the authorities have led to a fatalistic view of

**Table 1**

Distribution of mortality (number, proportion and rate) from specific external causes. Brazil, 2003.

Specific external causes	n	%	Rate <sup>1</sup>
Traffic accidents	33,620	26.5	19.0
Falls	6,017	4.8	3.4
Accidental drowning and submersion	5,972	4.7	3.4
Exposure to smoke, fire and flames	1,007	0.8	0.6
Poisoning, intoxication or exposure to noxious substances	258	0.2	0.1
Intentionally self-inflicted injury	7,861	6.2	4.4
Aggressions	51,043	40.3	28.9
Indeterminate intention cases	11,101	8.8	6.3
Legal interventions and warfare	491	0.4	0.3
All other external causes	9,287	7.3	5.3
<b>Total</b>	<b>126,657</b>	<b>100.0</b>	<b>71.6</b>

(1) Rates per 100 thousand inhabitants

**Table 2**Mortality rates<sup>1</sup> from external causes, homicides and traffic accidents according to sex. Brazilian capitals, 2003.

Capitals	External causes			Homicides			Traffic accidents		
	M	F	Total	M	F	Total	M	F	Total
<b>North Region</b>									
Porto Velho/RO	210.4	30.4	120.1	93.6	7.3	50.3	45.9	11.8	28.8
Rio Branco/AC	146.6	21.3	82.3	64.3	7.1	35.0	41.9	5.7	23.3
Manaus/AM	112.4	17.6	63.8	55.9	3.4	29.0	26.1	7.0	16.3
Boa Vista/RR	168.2	25.3	96.8	68.7	4.5	36.6	39.8	9.1	24.4
Belém/PA	97.9	13.9	53.8	52.5	3.1	26.6	25.4	4.7	14.5
Macapá/AP	158.0	26.0	90.9	79.3	5.0	41.5	43.5	9.9	26.4
Palmas/TO	121.9	30.2	76.1	39.5	3.5	21.5	47.6	20.9	34.3
<b>Northeast Region</b>									
São Luís/MA	101.8	20.1	58.3	51.2	3.7	25.9	22.7	5.3	13.4
Teresina/PI	118.7	19.5	66.0	48.8	2.5	24.2	40.6	7.3	22.9
Fortaleza/CE	133.3	21.4	73.8	59.2	4.1	29.9	36.6	6.8	20.7
Natal/RN	107.0	19.0	60.3	37.2	2.0	18.5	12.9	3.8	8.1
João Pessoa/PB	127.9	13.7	67.1	71.1	1.8	34.2	36.1	7.5	20.8
Recife/PE	192.5	21.2	100.9	134.6	7.0	66.4	26.3	4.5	14.6
Maceió/AL	162.8	15.8	85.2	103.7	4.2	51.2	28.9	5.3	16.5
Aracaju/SE	142.1	24.3	79.4	73.5	3.1	36.1	33.0	7.0	19.2
Salvador/BA	134.5	21.2	74.6	54.1	2.5	26.8	8.4	2.4	5.2
<b>Southeast Region</b>									
Belo Horizonte/MG	156.8	27.8	88.7	93.8	6.9	48.0	28.6	7.2	17.3
Vitória/ES	180.0	23.8	97.5	111.3	6.3	55.8	38.5	5.0	20.8
Rio de Janeiro/RJ	172.9	33.8	99.1	95.7	5.3	47.7	25.4	6.8	15.6
São Paulo/SP	149.8	23.0	83.4	91.7	6.4	47.0	22.4	6.0	13.8
<b>South Region</b>									
Curitiba/PR	128.0	27.0	75.4	54.8	4.4	28.5	37.0	9.2	22.5
Florianópolis/SC	122.0	15.2	66.9	52.1	2.1	26.3	37.5	7.9	22.2
Porto Alegre/RS	112.2	23.7	65.1	58.0	3.2	28.8	23.9	7.9	15.4
<b>Center-West Region</b>									
Campo Grande/MS	134.3	25.4	78.3	62.6	3.9	32.4	44.6	11.3	27.5
Cuiabá/MT	169.2	27.3	96.4	86.0	8.4	46.2	42.4	9.2	25.4
Goiânia/GO	146.1	26.8	83.7	53.4	4.5	27.8	60.6	13.0	35.7
Brasília/DF	137.2	24.9	78.6	64.7	5.4	33.8	43.3	11.7	26.9

(1) Rates per 100 thousand inhabitants

this problem and fortified the idea of the State and its institutions being too weak for facing criminality. The result is fear and a sensation of unsafety in the citizens and in the collective imagination.

The present analyses evidenced the tendencies, distributions and dynamics of homicide on national, regional and local level presented below.

#### Differences according to geographic regions

The homicide rates show important differences among the Brazilian capitals. Analyzing

the year 2003 we observe that the rates are varying between 18.5% per 100 thousand inhabitants in Natal and 66.4% per 100 thousand inhabitants in Recife. Among the capitals in the Northeastern region of the country, Recife stands out with the highest rate in the country, followed by Maceió occupying the 4<sup>th</sup> place in the country. In the Northern region, Porto Velho and Macapá appear as the most violent capitals. In the Southeast, Vitória, Rio de Janeiro and São Paulo are the most violent capitals and in the Center-West, the highest violence rate is found in Cuiabá. Finally, the lowest rates are found in the capitals of the South of the coun-

try. The only exception is the city of Natal situated in the Northeast.

Different hypotheses and variables were used for explaining these spatial differences. The greater part of studies attempts to understand the determinants on the basis of socio-economical indicators, principally as refers to relative poverty (inequality in the distribution of income)<sup>4, 19, 20, 21, 22</sup>.

Lima *et al.*<sup>7</sup> revealed a spread of homicides in the State of Pernambuco involving two distinct poles: one of these poles with high homicide rates is the metropolitan region of Recife and the other is a cluster of municipalities making part of the marijuana polygon in the inner region of the State. This is what the authors call the “interiorization” of violence. In another study also carried out in Pernambuco, Lima *et al.*<sup>21</sup> investigated the hypothesis of an association between high homicide rates and human development indicators, life conditions, inequalities in the distribution of income, access to education etc. They found an inverse association between violence and indicators of poverty and illiteracy, showing that the complexity of violence can neither be explained in a linear way nor by a single cause.

The spatial distribution of deaths from homicide among Brazilian capitals with different population densities, urbanization percentages, Human Development Indicators and Conditions of Life Indicators seems to indicate that this problem, besides being strongly present in the big cities of the country, affects other social spaces as well and involves both common but also distinct determinants. One of these factors

is exactly the internal connection of different cities and capitals in the country with the international illegal trade in narcotics, arms, women and children, precious stones, fauna and flora/wood. These systems – organized in turn of illegal activities, highly dangerous and with established routes in the country – are social potentiators of homicides<sup>23</sup>.

Further to the differences between cities, some studies already demonstrated disparities inside the different cities<sup>4, 20, 24</sup>. An analysis of metropolitan areas in Brazil carried out by Cano & Santos<sup>25</sup> showed a higher number of homicides in poorer neighborhoods and lower numbers in the privileged areas of the cities, evidencing the strong influence of the variable income. Comparing the Brazilian States however the same authors found the impact of the variables income, education and inequality to be less significant for the homicide rates than the variable urbanization. In other words, the higher the population density, the higher the homicide rates.

#### Differences according to age, sex and race/color

A remarkable characteristic of the epidemiological pattern of homicide are the high coefficients in an increasingly younger population. In the age groups including adolescents and young adults, from 15 to 19 years, the rates are extraordinarily higher than those found in the general population (Table 3). In relation to the general rate, the coefficient is 1.5 times higher in the group between 15 and 29 years than in

**Table 3**

Mortality rates<sup>1</sup> from external causes, homicides and traffic accidents according to sex and age. Brazilian capitals, 2003.

Age groups (in years)	External causes			Homicides			Traffic accidents		
	M	F	Total	M	F	Total	M	F	Total
0-9	13.9	8.2	11.1	0.9	0.7	0.8	5.18	3.44	4.3
10-14	20.4	9.1	14.8	4.3	1.7	3.1	7.19	3.69	5.5
15-19	129.5	19.4	74.7	78.2	6.5	42.5	23.86	6.96	15.5
20-24	221.8	21.6	121.4	132.6	7.7	70.0	46.96	7.95	27.4
25-29	205.8	20.8	111.9	115.5	7.4	60.6	47.33	7.20	26.9
30-39	164.3	19.4	90.0	77.5	6.1	40.9	42.70	6.72	24.2
40-49	149.4	21.4	83.4	51.7	4.8	27.5	46.37	8.07	26.6
50-59	136.8	21.9	77.0	36.2	3.3	19.1	44.35	8.78	25.9
60 +	152.5	65.8	104.7	21.9	2.7	11.3	46.80	14.65	29.1
<b>Total</b>	<b>119.7</b>	<b>21.3</b>	<b>69.7</b>	<b>52.8</b>	<b>4.3</b>	<b>28.2</b>	<b>31.05</b>	<b>7.02</b>	<b>18.9</b>

(1) Rates per 100 thousand inhabitants

the population as a whole; in the group between 20 and 24 years of age, the rate is 2.5 times higher and in the group between 25 and 29 years, the risk is 2.1 times higher than in the general population.

The difference according to sex reveals invariably higher rates in males. In 2003, the rate in the country was of 52.8/100 thousand male inhabitants in relation to 4.3/100 thousand female inhabitants, a risk ratio 12.3 times higher for males. In some age groups, this ratio is even higher: among young people aged 20 to 24 the ratio men/women is 17.2 and the ratio for young adults from 25 to 29 years is 15.2.

In the capitals, the risks for males are also considerably higher than the risks for females. In the Northeastern cities João Pessoa, Maceió, Aracaju and Salvador, the risk for men dying from homicide were respectively 39.5, 24.7, 23.7 e 21.6 times higher than for the feminine population. The same pattern was observed in Florianópolis, where the rate for men was 24.8 times higher than that for women. Even in Rio Branco, where the lowest risk ratio was observed, the masculine population shows a rate 9.1 higher than the rate for women.

The overmortality of men is a characteristic also observed in other societies. Anyhow, the intensity with which violence is decimating

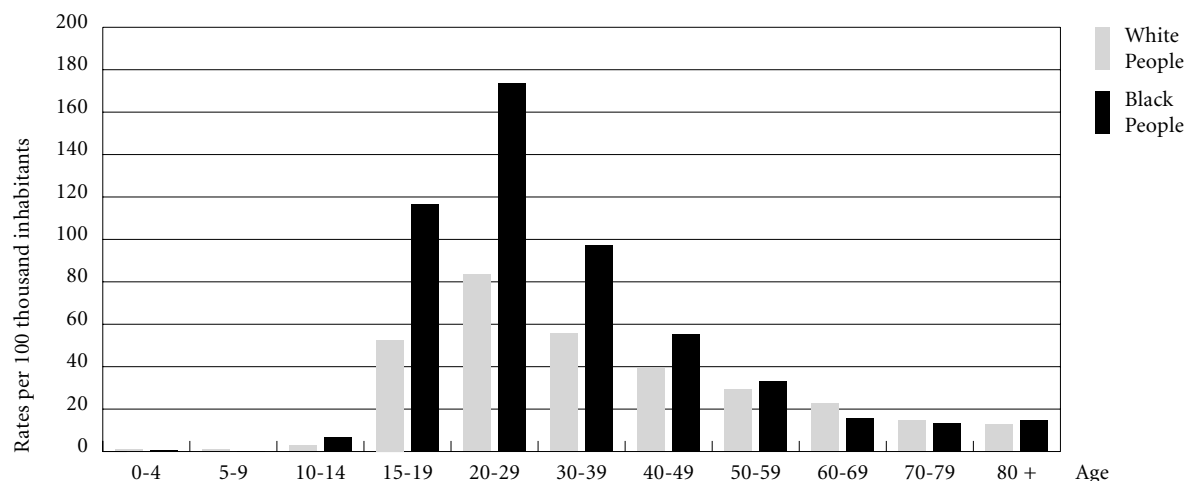
individuals of masculine sex in our country is remarkable and has serious consequences for the economical, social and familiar structure, mainly with respect to adolescents and young adults, the groups with the highest concentrations of homicide.

This problem drew the attention of a number of researchers, who started a gender-related approach to the question for understanding the complex relation between youth, masculine sex and violence<sup>26, 27, 28, 29, 30, 31, 32, 33</sup>.

Further to age and sex one observes a dramatic concentration of risk of homicide in the black population (understood as the sum of people self-identified as black or mulatto). Graph 1 shows higher homicide rates for black people in all age groups, but with the highest concentration between 20 and 29 years. Although the data regarding this variable are compromised by elevated under-registration by the different notification sources, there are indications that the unequal distribution of monetary and access to social resources (education, health, sanitation) among black and white people in Brazil ends up in provoking inequality in the distribution of violent deaths as well. Black young males are thus the main victims of deadly violence. It is known that in Brazil "color" is a social characteristic, a synonym for social

**Graph 1**

Homicide rates (per 100 thousand inhabitants) for males, according to skin color and age in Brazil – 2003.



recognition and access to health, wealth, education and participation in the society. In our country, the greater part of the black population is concentrated in the lower strata of the social pyramid.

### **Traffic accidents and their characteristics in Brazil**

In 2003, 33,619 people were killed in the country due to traffic accidents, a rate of 26.5 deaths per 100 thousand inhabitants. A great part of these events (30%) involves pedestrians hit by a vehicle, followed by occupants of vehicles (19.3%). Disrespect for traffic signals, excess of speed and alcohol consumption not only by the driver but also by the pedestrian besides very bad conservation of roads and highways are some of the factors responsible for the high death rate from traffic accidents in Brazil.

A detail deserving to be pointed out is the appearance of a category, which is extremely victimized in the Brazilian traffic – the motorcyclist – represented by 12.9% of traffic accidents. In 2003, the rate that started at zero in 1980 had already increased to 4.4 and 0.5 deaths of men and women per 100 thousand inhabitants respectively. The increase of these accidents is due to new occupation categories like moto-delivery and moto-taxi.

The two Brazilian capitals with the most outstanding death rates from traffic accidents with figures of over 30 in each 100 thousand inhabitants are Palmas and Goiânia. The first, situated in the North of the country, is undergoing a recent process of emancipation and development; the second, in the Center-West, is among the cities with increasing numbers of deaths from traffic accidents. Eleven capitals show numbers below 20 (Manaus, Belém, São Luís, Recife, Maceió, Aracaju, Salvador, Belo Horizonte, Rio de Janeiro, São Paulo and Porto Alegre). The other 13 capitals show intermediate rates ranging between 20 and 29 deaths per 100 thousand inhabitants from these causes (Table 2).

### **Differences according to sex, age, race/color**

Although more homogeneous, the risk of dying from traffic accidents is also higher for young people. The curve shows peaks around 15 years of age and in the age group between 20 and 24 years. The level then stabilizes until

59 years and increases again at an age of 60 years or more. On the contrary to homicides, traffic accidents victimize principally the elderly; the rates increase with age and the main cause are cars striking pedestrians.

In Brazil, the way it happens with homicides, the main victims of traffic accidents are men; the differences between gender however are smaller. The risk ratio of male overmortality in 2003 was 4.4. The ratio is higher for the group between 25 and 29 years (6.6 men/women) and between 30 and 39 years (6.4). However, more women than men die hit by cars or driving them<sup>34</sup>.

The highest risk ratio for men was found in the capitals Vitória (7.7 men/women) and in Rio Branco (7.4). The lowest ratio (2.3) was found in Palmas.

The differences in the death rate from traffic accidents according to age and race/color show a more homogeneous distribution between sexes, with exception to the group between 20 and 39 years showing a higher concentration of deaths in men.

### **Disease from violence in Brazil: the hidden part of the iceberg**

In Brazil, in 2005, 11,429,133 patients were admitted in the hospitals of the Unified Health System or facilities linked to the system. Complications involving pregnancy, childbirth and childbed (23%) are responsible for the major part (23%) of hospital admissions. Injuries and poisonings due to accidents and violence were responsible for 786,768 admissions (6.8%), occupying the 6<sup>th</sup> place in the general morbidity profile of the country's population. The number of hospital admissions due to injuries and poisonings in the capitals is still higher. These causes have demanded an ever increasing number of hospital beds in the metropolitan regions, where they are ranking in the 2<sup>nd</sup> and 4<sup>th</sup> place.

Traumatisms, with 81.9%, are the main specific cause for hospital admissions due to injuries and poisonings, followed by intoxications from drugs, medicinal and non-medicinal substances (6.5%), other complications due to medical treatment (5.7%), burnings (3.9%) and other causes (1.7%). According to the studies, the greater part of traumatisms is the result of falls and traffic accidents and the young population, like in the case of homicide, is the most affected<sup>17</sup>. Some differences in terms of causes



and groups of higher incidence apart, this profile is observed in all Brazilian capitals.

According to data from the National Department of Transit, traffic accidents produced 337.190 victims in Brazil in 2002, 94.4% of them non-fatal and 5.6% fatal. The rate for victims per 100 thousand inhabitants was 219.5, with a variation between the capitals ranging from 81.5 in São Luís to 528.2 in Boa Vista. Comparing the rates of fatal (12.3 per 100 thousand inhabitants) and non-fatal accidents (207.3 per 100 thousand inhabitants) one observed that each fatal victim corresponded to 17 non-fatal victims. The relation victims of accidents/accidents with victims shows that each accident involves an average of 1.5 victims. The mortality rate in 100 accidents with victims was of 8.5. The non-fatal victims are mainly of masculine sex (70.7%) of 18 to 59 years of age (66.4) and mainly drivers or passengers, followed by motorcyclists. Between 1996 and 2002, the number of vehicles in Brazil increased 28.8% but, seen that the evolution of fatal and non-fatal victims per 100 thousand vehicles is decreasing, no linear relation was found between the increase in the number of vehicles and the number of accidents.

Comparing the statistical data for 2002 of the Ministry of Health with those of the National Department of Transit/Ministry of Cities, the death rates from traffic accidents, i.e. the rate of fatal victims per 100 thousand inhabitants registered by the MS was 19 instead of the 12.3 registered by the National Department of Transit. This occurs because the traffic department only registers the deaths occurred at the accident site, having no information about the deaths occurred later in the health services. This fact shows clearly the need of integrating the information systems of the traffic department and the health sector.

Analyzing the data shown in table 4, once again one observes that the capitals in the North are showing the highest rates for fatal and non-fatal victims per 10 thousand vehicles, among them Porto Velho, Rio Branco, Manaus, Boa Vista and Palmas. A study carried out by Duarte *et al.*<sup>35</sup> showed this region of the country to be the only one with no change in its mortality trend curve from traffic accidents in the period 1991-2002. These authors did not find a relation between deaths from traffic accidents and the degree of urbanization of the States, on the contrary, they came to the conclusion that Brazilian States with less poverty, lower levels

of illiteracy and higher population growth incline to higher death rates from traffic accidents. It is therefore necessary to specify to which factors of the urbanization process traffic accidents are related.

The highest ratios between the two presented indicators were found in Curitiba (101.4 times more non-fatal victims than fatal victims), Belo Horizonte (a ratio of 74.7) and Campo Grande (65.3). Aracaju, barring some mistake in the informed data, is the only capital presenting a rate of fatal victims higher than that of non-fatal victims, thus showing the highest rate of fatal and the lowest rate of non-fatal victims in the country. This information however must be seen with certain reservations because the data of the SIM show a low mortality rate for this capital.

Seeking for a non-lethal parallel to deaths from homicides, we analyzed injuries based on the data of the National Safety Department. This organ informed that in 2003, 618,097 injuries were registered in Brazil, 25.4% of them in the capitals. This figure represents a national rate of 390.7 injuries per 10 thousand inhabitants, almost 10 times more than the homicide rate found for the same year by the SIM.

About half of the Brazilian capitals are ranging below this national rate and other 14 above this rate. In the Northern region, with exception to Boa Vista, all capitals present high rates with values nearly 4 times higher than the national rate, for example Rio Branco (Table 4). It is noteworthy that Brasília and Porto Alegre show also high rates of injuries. On the contrary, all Northeastern capitals rank below the national rate, especially Fortaleza and Recife with the lowest rates in the country.

Table 4 also shows injuries to be concentrated in the capitals. In four of the seven States situated in the North of the country, the greater part of these events is concentrated in the capitals. An example for this is the city of Manaus concentrating 99% of all injuries registered in the State of Amazonas. The capitals of the Northeastern region Teresina, Fortaleza, Maceió and Aracaju also concentrate the greater part of injuries in 2003.

## Conclusions

This analysis reveals the existence of some unchanged but also some novel facts in morbimortality from accidents and violence in Brazil. The high (and for about three decades increas-

**Table 4**

Proportional distribution of hospital admissions due to injury, poisoning, Rates<sup>1</sup> and concentration of registered injuries. Brazilian capitals, 2003.

Areas	Proportion of hospital admission from injury, poisoning and other external causes (2005) SIM/MS	Injuries registered at the civil police (2003) SENASP/MJ		Traffic accidents (2002) NATRADEP	
		Rates	Concentration of occurrences in the capitals	Rate of non-fatal victims per 10.000 vehicles <sup>2</sup>	Rate of fatal victims per 10.000 vehicles <sup>2</sup>
<b>Brazil</b>	<b>6.88</b>	<b>390.7</b>	<b>25.4%</b>	<b>104.6</b>	<b>6.2</b>
<b>North</b>		<b>771.9</b>	<b>62.5%</b>	<b>159.2</b>	<b>11.1</b>
Porto Velho/RO	8.70	1,118.5	43.6%	284.2	10.7
Rio Branco/AC	9.73	1,538.8	77.3%	329.9	10.6
Manaus/AM	5.55	720.0	99.0%	161.4	10.3
Boa Vista/RR	7.36	271.9	77.7%	344.6	17.4
Belém/PA	10.94	596.2	47.3%	79.4	4.2
Macapá/AP	6.73	1,264.7	62.6%	—	—
Palmas/TO	17.14	400.2	31.1%	232.8	6.4
<b>Northeast</b>		<b>255.4</b>	<b>42.3%</b>	<b>127.8</b>	<b>18.4</b>
São Luís/MA	8.36	521.3	36.4%	105.1	7.8
Teresina/PI	6.64	383.3	92.2%	138.5	5.4
Fortaleza/CE	10.47	48.3	63.4%	205.2	7.9
Natal/RN	8.82	401.5	45.7%	86.7	2.1
João Pessoa/PB	7.24	363.5	43.8%	63.1	8.5
Recife/PE	6.78	61.5	27.1%	114.3	4.8
Maceió/AL	6.62	181.8	81.6%	77.7	2.6
Aracaju/SE	10.74	252.6	58.3%	1.3	44.8
Salvador/BA	8.72	371.2	34.8%	172.9	9.3
<b>Southeast</b>		<b>354.7</b>	<b>21.0%</b>	<b>87.8</b>	<b>3.4</b>
Belo Horizonte/MG	11.79	249.5	9.6%	156.9	2.1
Vitória/ES	10.77	763.0	26.5%	—	—
Rio de Janeiro/RJ	7.36	392.7	36.3%	—	—
São Paulo/SP	9.53	344.5	19.2%	58.4	2.7
<b>South</b>		<b>609.8</b>	<b>15.7%</b>	<b>99.5</b>	<b>4.1</b>
Curitiba/PR	10.08	253.5	18.8%	101.4	1.0
Florianópolis/SC	7.74	774.3	9.5%	87.1	2.1
Porto Alegre/RS	8.00	993.4	17.2%	146.9	3.1
<b>Center-West</b>		<b>303.6</b>	<b>17.8%</b>	<b>170.2</b>	<b>8.5</b>
Campo Grande/MS	11.37	...	...	143.6	2.2
Cuiabá/MT	6.62	470.1	30.5%	—	—
Goiânia/GO	10.81	325.5	28.1%	183.8	4.8
Brasília/DF	7.58	830.6	13.0%	95.6	2.4

(1) Rates per 100 thousand inhabitants

(2) The totals of great regions and Brazil do not include: Amapá, Espírito Santo, Rio de Janeiro and Mato Grosso

(—) Data not informed

(\*) Data incomplete

ing) homicide rates remain and the same refers to the deaths rates from traffic accidents. The latter dropped very little and in some regions they continue increasing even after the implementation in 1997 of the new National Code of Transit.

Mortality and morbidity continue highly concentrated in the population of young males. The studies also show the complexity and variety of causes of these phenomena.

A new aspect in the panorama of violence in Brazil is the spreading of homicides to cities

and municipalities in the inner regions of the States, mostly in connection with narcotics trafficking and illicit trade in other goods but also appearing in regions recently occupied and urbanized.

Some details with regard to the studied events and cities deserve to be emphasized. With respect to events, according to data of the SIM, the number of hospital admissions due to accidents and violence are 6.2 times higher than the number of deaths from these causes. The number of injuries is 8.3 times higher than that of homicides and the ratio between these events is 9.7. Data of the National Department of Transit point to 17 times more non-fatal victims of traffic accidents than fatal victims. All data show a much higher morbidity than mortality. Consequently, there exists much more violence than shown in the morbidity rates, in part due to under-recording and also because many violent events are not perceived as such both by the population and by the agents in charge of notifying the events.

As refers to the cities, it is important to emphasize that Porto Velho, Macapá, Vitória, Rio de Janeiro and Cuiabá are the capitals with the

highest rates of premeditated violence – high rates of homicides and injuries – while Teresina, Fortaleza, João Pessoa, Salvador, Curitiba and Goiânia show the lowest rates of premeditated violence – homicides and injuries.

Recife stands out with its *sui generis* behavior: high homicide rates, low injury rates. This may be due to the low registry of occurrences (27.1%) involving injuries in this capital.

Palmas with its high rates of fatal and non-fatal victims per 10 thousand vehicles is the most problematic city as refers to traffic accidents. On the other hand, São Paulo shows surprisingly low rates as refers to these two indicators.

For explaining the wave of violence invading the Brazilian cities we need to understand the interrelations of factors involving social exclusion, organized crime and the institutional and cultural background for the criminalization of drug use in Brazil.

Factors like unemployment, family disintegration, frustration and unrestrained struggle for social recognition combined with consumerism contribute to delinquency and violence, principally in the big cities.

## Collaborations

ER Souza and MLC Lima have participated to an equal extent in the preparation of the present article.

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