

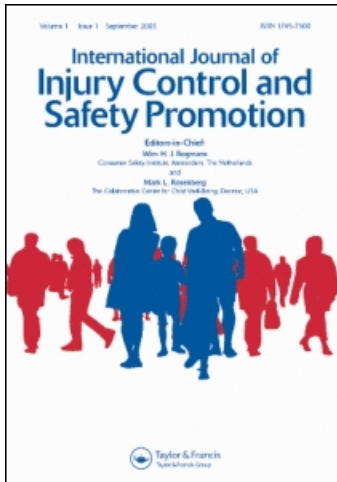
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## Homicide death in Dar es Salaam, Tanzania 2005

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Violence disproportionately affects low- and middle-income countries. Deeper understanding is needed in areas where little research has occurred. The objectives of the study were to: (a) ascertain rate of homicide death; (b) describe the victims and circumstances surrounding their deaths in Dar es Salaam, Tanzania in 2005. This study was developed by adapting the WHO/CDC *Injury Surveillance Guidelines* (Holder et al., 2001). Data on 12 variables were collected on all homicide deaths. Descriptive statistics and hypothesis tests were done when appropriate. Age standardised, age-specific and cause-specific mortality rates are presented. The overall homicide rate was 12.57 (males and females respectively: 22.26 and 2.64). Homicide deaths were 93.4% male, mostly unemployed, with a mean age of 28.2 years. Most deaths occurred in urban areas. Mob violence was the cause of 57% of deaths. The risk of homicide death for males was greater than the world average, but for females it was less. Most homicides were committed by community members policing against thieves.

**Keywords:** homicide; surveillance; Africa; Tanzania; mob violence

### 1. Background and rationale

Violence is a worldwide health problem with manifestations of many kinds. It is predicted that violence is increasing dramatically (Murray & Lopez, 1997) and disproportionately affects low- and middle-income countries (Krug, Dahlberg, Mercy, Zwi & Lozano, 2002). In order to create a more peaceful world, a deeper understanding is urgently needed, especially in areas where little research has been done and causes are unknown as is the case in low-income countries and Africa in particular.

In Africa, reliable data on violent death are scant (Outwater, Campbell, Webster & Mgaya, 2007). Homicide, since it is the most obvious and easily quantifiable manifestation of interpersonal violence, is often used as a marker for overall violence. Since national and city level surveillance has only been gathered in South Africa, most estimates of violence in Africa are extrapolated from South African data. South Africa, with its unique political history, is acknowledged to be an especially violent country (Norman, Matzopoulos, Groenewald & Bradshaw,

2007). In 2005, in the cities of Cape Town, Durban, Johannesburg and Tshwane/Pretoria the age-standardised homicide rates were 60.0, 53.8, 36.4 and 20.7 per hundred thousand population (Prinsloo & Project Team, 2007).

A country such as Tanzania (TZ) has two important risk factors for violence: economic poverty (Krug et al., 2002) and a plenitude of natural resources (Le Billon, 2001). TZ is one of two countries in the 18 nations comprising Eastern and Central Africa that has maintained a history of peace and stability (the other being Zambia). That it has remained politically peaceful in spite of these risk factors merits special study (Butchart & Engstrom, 2002). It was not known how the low level of violence at the national level would be reflected in homicide rates at interpersonal and community levels. This research was designed to explore that relationship.

TZ, the land of Mount Kilimanjaro and the Serengeti Plains, is an East African country of more than 38 million people. It is a low-income nation; in 2005 per capita gross national income-purchasing

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power parity was \$730 (as compared to a world average of \$9420) (World Bank, 2005). Life expectancy at birth was 44 years; 43 years for males and 45 years for females (Population Reference Bureau, 2006).

TZ is relatively egalitarian. There was near gender balance at primary school entry, with a slightly greater percentage of girls attending than boys (ratio 0.98) (Research & Analysis Working Group, 2002). Secondary school enrolment for females was 5.0% and for males 6.0% (Population Reference Bureau, 2006). Female-headed households in the Dar es Salaam (DSM) region have increased from 14.1% in 1991/1992 to 20.9% in 2000/2001 (National Bureau of Statistics, 2002, p. 11). While in 1991/1992 male-headed households were slightly more likely to be poor; in 2000/2001 female-headed and male-headed households were equally likely to be poor (National Bureau of Statistics, 2002, p. 90).

TZ's most prominent region, DSM, is inhabited by 2.84 million people. Administratively, DSM is divided into three districts and 73 wards; 12 wards were considered rural, nine peri-urban and the rest urban.

### 1.1. Objectives

To: (a) ascertain the rate of homicide; (b) describe the victims and the circumstances surrounding their deaths in DSM region, Tanzania in 2005.

## 2. Methods

### 2.1. Study design

A cross-sectional survey was developed by adapting the WHO/CDC *Injury Surveillance Guidelines* (Holder et al., 2001) to capture data on all those who died a violent death (including homicide, suicide and legal (police perpetrated) deaths) in DSM in 2005. A two-page survey questionnaire was designed based on variables suggested in the *Guidelines*. Translation of the variables was done by the first, third and sixth authors using a team approach (Harkness, Pennell & Schoua-Glusberg, 2004). The variables were coded to maximise their relevance to: (1) the setting in DSM; (2) the exploratory intent of the research. Codes were based on relevant literature and experience. Quantitative and qualitative data were collected. The qualitative data are reported elsewhere and only reported here when needed to clarify the quantitative homicide results.

### 2.2. Setting

Most data were collected at the Muhimbili National Hospital Mortuary where the bodies of all medico-legal cases were supposed to go. All other mortuaries in DSM and relevant police posts were monitored;

data of four cases were gathered by the District Medical Officer at a district hospital. All other data were collected by three nurses with experience in data collection, including the first and fifth authors.

### 2.3. Data sources

Data were gathered through interviewing relatives of the deceased in Swahili. Recruitment took place as soon as possible following the death, although interviews usually took place several days later as they waited at the mortuary to take the body for burial. Data on unclaimed bodies were gathered from police data entered in the mortuary registry ledger and visual autopsies.

### 2.4. Variables

The definition of homicide death included ICD-10 codes X85-Y09: 'due to injuries inflicted by another person with intent to injure or kill, by any means' (World Health Organization, 2003), excluding deaths as a result of war and legal interventions. The quantitative variables measured were sex, year of birth, date of death, place (by region, district, ward and street) of residence, place and spatial site where injury leading to death occurred, occupation, cause of death, activity at time of death, weapon(s) used, alleged reason behind death and relationship of alleged perpetrators to the deceased. The qualitative data were responses to the last question: 'Is there anything else you would like us to know?'

### 2.5. Analysis

Frequency distributions, means, standard deviations, proportions and rates were calculated to describe the characteristics of the homicide victims. Both marginal and stratified analyses were done. Age-specific and cause-specific mortality rates were also calculated. T-tests,  $\chi^2$  and Fisher's exact were used to determine statistically significant differences between groups of victims or between victims and the general population. (Three neonates with unrecorded sex were proportionately distributed for analysis: two as males and one as female. One group of five outliers was not included in analysis beyond the crude homicide rate: an adult female and four children died in a fire in their room in an undetermined incident that was possibly politically motivated. They were omitted because the incident was undetermined as to whether it was accident or homicide and the results would have been biased.) Age-standardised mortality rates per 100,000 homicide deaths for DSM were calculated by applying the WHO standard world population (Ahmad, et al., 2007). To analyse the geographic data, maps were created with

ArcGIS version 9.2. Analysis was done for all homicides, children (<15 years), adult males and adult females (15+ years).

### 3. Results

In DSM in 2005, 458 intentional injury deaths (including deaths resulting from homicide (367), suicide (65) and law enforcement (26)) occurred. Of all violent deaths, 80% were homicides, for a crude homicide rate of 12.95/100,000.

#### 3.1. Descriptive data

Of the homicide victims, 338 (93.4%) were male and 24 (6.6%) were female (Table 1). Their ages ranged from less than one day to 78 years. A total of 99% of those killed were native Tanzanians; the others were long-term residents (a Kenyan, a European and two

Indians). The crude homicide rate for all males was 23.7/100,000; and for all females was 1.7/100,000. The age-standardised rates for males and females respectively were 22.26 and 2.65.

The homicide rate for DSM was 6.72/100,000 in the 0–4 year group. For the age group 5–14 years there were very few homicides (Figure 1). The rate escalated sharply at around age 17 and peaked at a mean of 28.12 (SD 12.0) years. Two-thirds of homicide deaths (66.85%) were in the 20–35 year age group. The homicide rate decreased until age 50–54, after which time it increased to around 10 per 100,000 population/year.

A variety of weapons were used. The final causes for 50% of homicide deaths were caused by blunt (such as cement blocks, iron bars and sticks) or sharp (machetes, knives and razors) objects, (24.3% and 23.2% respectively). Being killed by kicks and punches (14.4%), strangling or asphyxiation (9.7%), fire (12.4%) or firearms (12.2%) were less common.

Table 1. Dar-es-Salaam (DSM), Tanzania 2005, characteristics of homicide victims by sex.

Characteristics	Male n (%)	Female n (%)	Both sexes n (%)	p-value
Population	1430,718 (50.48)	1403,511 (49.52)	2834,229	
<b>Homicide victims</b>	338 (93.4) CL95% 90.2–95.6%	24 (6.6) CL95% 4.4–9.8%	362 (100)	
<b>Age (years)</b>				
Range	<1–78	<1–62	<1–78	0.09*
mean (median)	28.4 (27)	24.1 (24)	28.1 (27)	
SD	11.4	18.7	12	
<b>Status in DSM</b>				<0.0001†
Residents, Tanzanian	327 (96.7)	23 (95.8)	350 (96.6)	
Non-Tanzanian	3 (0.8)	0 (0.0)	3 (0.9)	
Visitors, Tanzanian	7 (2.1)	1 (4.2)	8 (2.2)	
Non-Tanzanian	1 (0.3)	0 (0.0)	1 (0.3)	
<b>Occupation</b>				<0.0001†
Farmer	7 (2.1)	2 (8.3)	9 (2.5)	
Self-employed w/ employee	4 (1.2)	0 (0.0)	4 (1.1)	
Self-employed w/o employee	57 (16.9)	5 (20.8)	62 (17.1)	
Employee	57 (16.9)	4 (16.7)	61 (16.9)	
Housemaker	0 (0.0)	2 (8.3)	2 (0.55)	
Student	4 (1.2)	2 (8.3)	6 (1.65)	
Child <15 years	17 (5.0)	7 (29.2)	24 (6.6)	
Unemployed	39 (11.5)	0 (0.0)	39 (10.8)	
Retired	3 (0.8)	0 (0.0)	3 (0.8)	
Other	78 (23.1)	0 (0.0)	78 (21.6)	
Buried by the City	72 (21.3)	2 (8.4)	74 (20.4)	
<b>Primary weapon</b>				<0.0001†
Bodily force	50 (14.8)	2 (8.3)	52 (14.4)	
Asphyxia	25 (7.5)	10 (41.7)	35 (9.7)	
Blunt	86 (25.4)	2 (8.3)	88 (24.3)	
Sharp	80 (23.7)	4 (16.7)	84 (23.2)	
Fire	44 (13.0)	1 (4.2)	45 (12.4)	
Firearm	39 (11.5)	5 (20.8)	44 (12.2)	
Other, unknown	14 (4.1)	0 (0.0)	14 (3.9)	

\*t Statistic.

†Chi-square.

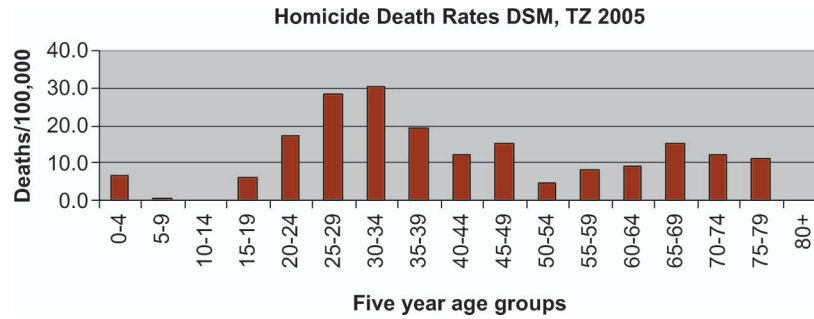


Figure 1. Homicide deaths per 100,000 in Dar-es-Salaam (DSM), Tanzania (TZ) 2005, by age group. Available in colour online.

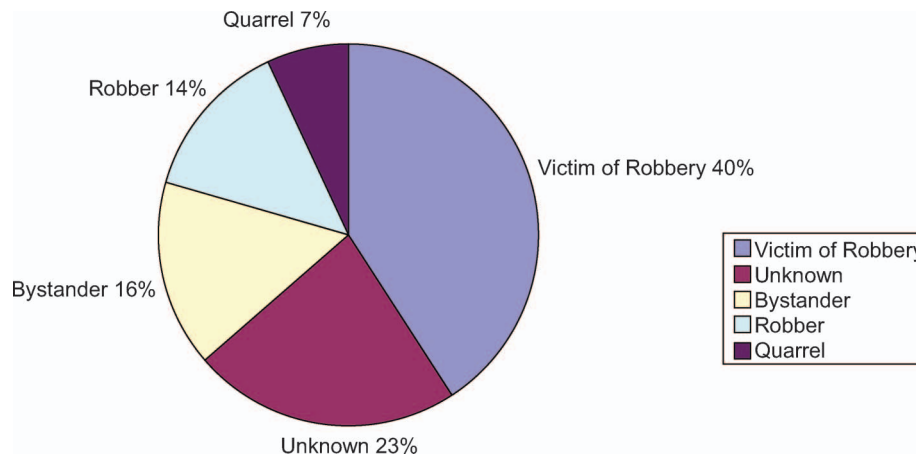


Figure 2. Dar-es-Salaam, Tanzania, 2005: Firearm deaths ( $n = 43$ ) by reason (%). Available in colour online.

Firearm deaths were most often associated with robbery and included the victims being robbed, bystanders and robbers killed by their fellows (Figure 2). Guns were never wielded against relatives.

### 3.2. Outcome data

The age-standardised (to the WHO population, Ahmed et al., 2007) rate was 12.57. Excluding visitors (eight) and those whose residence was not known (50), 91.1% of homicide victims died in the district in which they lived.

Of the 273 victims for whom the ward where they had lived and where they were fatally injured was known, 67.4% (184) were killed in the ward in which they had lived. The overall rate of murder ranged from zero deaths in 22 wards to 89.1 per 100,000 in Jangwani ward. A total of 11 wards had more than 10 fatal events, including two wards with 28 deaths each. Within these 11 wards lived 18.6% of the population of DSM; 46.3% of all homicide deaths occurred there. Very few urban wards experienced no homicide deaths; few rural areas experienced any. Areas of high homicide risk were along major roads and new construction. The geographic

centre of homicide deaths was located near the urban centre ( $z$ -score = 0.01).

### 3.3. Main results

There were three types of homicide:

- (1) Assault (in which an individual or small group (<10 people) kills an individual).
- (2) Mob violence (in which a medium to large group (dozens to hundreds) of people, using multiple weapons, acting on a continuum from spontaneous to planned action, in concert kills an individual or a small group).
- (3) First-day neonaticide (killing or abandonment resulting in the death of a neonate on its first day of life).

Some bodies were found already dead and were never identified. Sometimes, although obviously a homicide death, it could not be determined if the wounds were inflicted by a few people or many.

### 3.3.1. Adult males

Adult males died by assault (108), mob violence (205) or an undetermined type (eight) of violence resulting in a rate of 36.9 per 100,000 adult male population. Vulnerable groups for assault included taxi drivers (16) and small retail businessmen (19). Mob violence victims were usually alleged petty thieves but there were also cases of murderers (between three and five) and rapists (two) being killed, as well as five to 10 vigilante-type actions. The victims of mob violence were significantly different than the victims of assault, in age, occupation, weapons used and injury site. The mean age (27.5) for those who were victims of mob violence was 7 years younger than those who died from assault, ( $p = <0001$ ). In total 74%

of mob decedents vs. 31.5% of assault decedents were unemployed, alleged thieves or buried by the city as unknowns ( $p$ -value =  $<0001$ ).

### 3.3.2. Adult females

In DSM in 2005, 17 adult females (ages 20–62 years) were murdered (4.7% of all homicide deaths) for a rate of 1.82 per 100,000 adult females. Their mean age of death was 33.5. In total 94% died in the district and 76.5% died in the ward in which they had lived. The ward with the most male homicide deaths had no female homicide deaths; in Mbagala the rate of being murdered and male was 69.62/100,000, while the rate of being female and murdered was 00.00/100,000. Femicides

Table 2. DSM, Tanzania 2005: Homicide assault deaths, incident characteristics  $\geq 15$  years, by sex.

Assault Death Characteristics	Male n (%)	Female n (%)	Total n (%)	<i>p</i> -value
<b>Age (years)</b>				
Mean ( $\pm$ SD)	34.5 (13.13)	32.7 (12.67)	34.3 (13.04)	0.5984*
Range	17–78	20–62	17–78	
<b>Perpetrator</b>				
				<0.0001†
Spouse	2 (1.9)	1 (6.25)	3 (3.2)	
Relative, not parent	4 (3.7)	0 (0.0)	4 (3.2)	
Intimate friend	0 (0.0)	4 (25.0)	4 (3.2)	
Acquaintance	24 (22.2)	0 (0.0)	24 (19.4)	
Stranger	4 (3.7)	0 (0.0)	4 (3.2)	
Group: mob + gang	51 (47.2)	11 (68.7)	62 (50.0)	
Unknown	23 (21.3)	0 (0.0)	23 (18.5)	
<b>Primary weapon</b>				
				0.6431†
Bodily force	13 (12)	2 (12.5)	15 (12.1)	
Asphyxia	10 (9.3)	4 (25.0)	14 (1.1)	
Blunt	19 (17.6)	2 (12.5)	21 (16.9)	
Sharp	31 (28.7)	4 (25.0)	35 (28.2)	
Fire	3 (2.8)	0 (0.0)	3 (2.4)	
Firearm	29 (26.8)	4 (25.0)	33 (26.6)	
Unknown	3 (2.8)	0 (0.0)	3 (2.4)	
<b>Characteristics</b>				
	Male n (%)	Female n (%)	Total n (%)	<i>p</i> -value
<b>Injury Site</b>				
Home	11 (10)	7 (43.75)	18 (14.5)	
Other residential	8 (7.4)	1 (6.25)	9 (7.2)	
Place of business	36 (33.3)	3 (19.0)	39 (31.4)	
Street/public place	30 (27.8)	1 (6.25)	31 (25.0)	
Farm/countryside	5 (4.6)	2 (12.5)	7 (5.6)	
Unknown	18 (2.8)	2 (12.5)	20 (16.1)	
<b>Reason</b>				
				<0.0001†
Argument	28 (25.9)	6 (50.0)	34 (27.4)	
Robber, burglar	10 (9.3)	0 (0.0)	10 (8.1)	
Bystander	4 (3.7)	4 (25.0)	8 (6.5)	
Victim of robbers	41 (38.0)	2 (12.5)	43 (34.7)	
Sexual assault	0 (0.0)	2 (12.5)	2 (1.6)	
Other/unknown	25 (23.1)	2 (12.5)	27 (21.8)	

\*t Statistic.

†Chi square.

occurred in 13 different wards and no more than two women died in any one ward. With the exception of one who died of mob violence, all females died of assault.

When female assault victims are compared to male assault victims (thereby not including mob victims) (Table 2), no significant differences are found for mean age ( $p = 0.5984$ ) or primary weapon used ( $p = 0.6431$ ). Equal numbers of men and women died as bystanders to robberies, as could be expected from an apparently random event. Large differences between males and females were found for perpetrator ( $p = <0.0001$ ), injury site ( $p = 0.0067$ ) and reason for death ( $p = <0.0001$ ) respectively. Males were most likely to be killed by acquaintances and strangers, while females were most likely to be killed by intimate partners. Males were more likely to be killed in the street, other people's homes and places of business. Females were proportionately more likely to be killed at home (although more men died at home (11) than women (eight)). Males more often died as victims of robbers, while females were proportionately more likely to die as a result of arguments and as bystanders. No females were killed as a result of stealing.

### 3.3.3. Children

In DSM in 2005, 24 children died from homicide, giving a rate of 2.57 per 100,000 population under 15 years. Only two of these children were older than four years and both of them died as bystanders to other crimes. A 2-year-old boy was found in a graveyard and was believed by relatives and neighbours to have been taken for witchcraft.

In total 21 (87.5%) children were classified as infanticides (killed at  $< 1$  year of age). Of the infanticides, 15 were male and six were female, which is not significantly different, and suggests that girl children were not selectively killed. The infanticides were all aged less than seven months.

A total of 19 of the 21 infants were apparently abandoned or discarded on their first day of life and were categorised as first-day neonaticides for a rate of 27.7/100,000 (43.3/100,000 male births and 17.6/100,000 female births). Only two perpetrators were discovered. Both were employed as domestic servants who believed the fathers of the newborns were their employers.

## 4. Discussion

### 4.1. Gender ratios

The age standardised homicide rate for males, 22.26 per 100,000, is below the rate for most major cities in the United States and comparable with low-income cities in other parts of the world (Figure 3). For males the DSM:global comparative mortality ratio (CMR) was 1.56 and the DSM:Africa ratio was 0.7. The age-standardised ratio of the overall male homicide CMR in DSM and in South Africa (Norman et al., 2007) is 0.19. In other words, for males, risk of homicide is greater in DSM than the world average, but is lower than South Africa or what is estimated for the Africa region.

The sample of 17 femicides was too small for in-depth analysis. For females, the DSM:global CMR was 0.72 and the DSM:Africa CMR was 0.33 (see

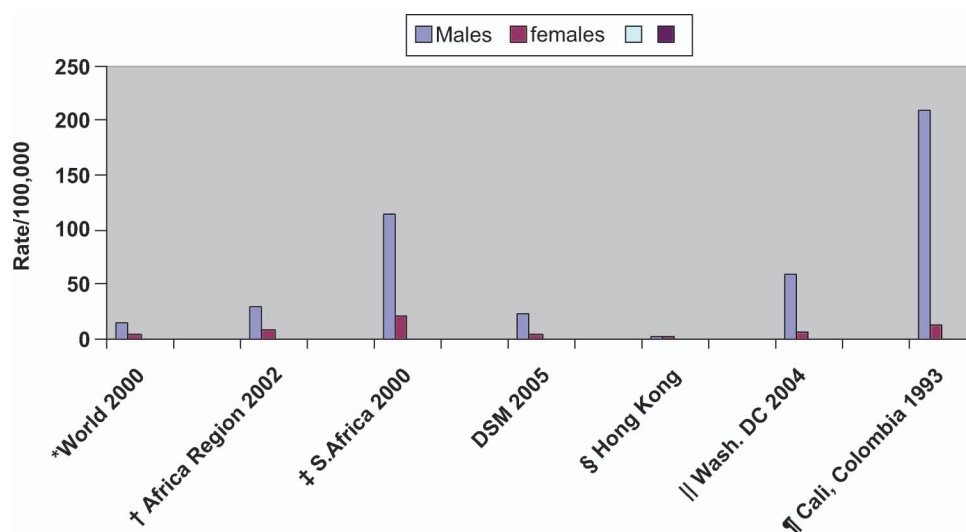


Figure 3. Selected world regions and cities: Homicide death/100,000 by sex. DSM=Dar-es-Salaam. \* Krug et al. (2002); †World Health Organization (2002); ‡Norman et al. (2007); §Broadhurst (n.d.); ||Centers for Disease Control (2004); ¶Concha-Eastman, Espitia, Espinosa and Guerrero (2002). Available in colour online.

World Health Organization, 2002). The CMR with South Africa (Norman et al., 2007) was 0.13. The female CMR is low compared to global and Africa region ratios, suggesting that women are not at high risk of homicide death in DSM.

Because of the large variability and unreliability of data estimates for the Africa region (World Health Organization, 2007), little can be said about comparing Africa and DSM mortality rates at this point except that these data suggest that DSM rates are lower than the rates of at least some regions in Africa.

The gender ratio in the male:female homicide rates of children under 15 years of age was 2.43. However, the rates between the sexes were not significantly different,  $\chi^2(3, 24) = 3.2557, p = 0.354$ . Similarly, it was found that over a 15 year period in Cape Town South Africa, the gender ratio for children's homicide death was 1.3 (Knobel, De Jilliers, Parry & Botha, 1984). For children 0–4 years old, the male:female ratio was estimated to be 1.41 in Africa; in DSM the ratio was 2.66. The difference between the rates of homicide between boys and girls under five years in DSM was not significantly different (Fisher's exact  $p$ -value 0.727).

#### 4.2. Place of injury – Urbanisation

Map analysis in DSM revealed that high levels of homicide deaths clustered around the city centre and the more urbanised areas. Homicides rarely occurred in rural areas. The finding that the death rate is correlated with urbanisation is consistent with other research. Crime rates are generally found to be higher in urban areas in both high- and low-income countries (Leggett, Louw, Schonteich & Sekonyane, 2003). Urbanisation in itself may be an important structural risk factor for interpersonal violence, even as it is also an important factor in driving economic growth and development (Kobusingye et al., 2008). No short-term visitors or refugees were killed.

#### 4.3. Weapons

Most homicide deaths in DSM were a result of mob violence in which objects at hand such as construction materials and household implements were used. Most homicides in the Africa region are probably committed using sharp weapons and firearms do not appear to have historically been a predominant cause of homicide death (Outwater et al., 2007).

However, it is estimated that the African continent with approximately 10% of the world's population carries approximately 18% of the global burden of firearm deaths – the vast majority of which are homicides (Krug et al. 2002). In the extreme case of

South Africa, gunshot injuries accounted for more than half of all homicides (Matzopoulos, Bowman, Seedat & Sukhai, 2005). In contrast, firearms accounted for 12.2% of homicide deaths in DSM in 2005.

A recent study showed a strong correlation (0.917) between homicide rates and firearm ownership across five African countries (Naude, Prinsloo & Ladikos, 2006). The availability and use of firearms is a strong predictor of higher mortality rates (Teret, 1986; Cook & Moore, 1999). Firearms are generally illegal to own in TZ and cost more than the average per capital annual income. It is believed that firearm ownership in DSM is relatively low, which may be one reason that the homicide mortality rate is not higher.

#### 4.4. Occupation

An extremely high youth unemployment rate in Sub-Saharan Africa is widely acknowledged. Even the official unemployment rate of approximately 20% 'suffers from mis-measurement and does not capture the working poverty and underemployment' (United Nations, 2005). That more than half of male homicide victims were unemployed, buried by the city or described as thieves underscores Naude, Prinsloo and Ladikos's (2006) important observation that petty crime and its associated violence is sharply exacerbated by millions of uneducated, unemployed male youth. In addition, the sexual vulnerability of female domestic servants in DSM was first brought to public attention by the media in 1990s. Some of the neonaticides found in this study support the media reports.

#### 4.5. Mob violence

Mob violence at community level is recorded all over the world. Recent accounts of mob violence in Africa have come from the countries of Benin, Burundi, Cameroon, Central African Republic, Democratic Republic of Congo, Ghana, Kenya, Liberia, Malawi, Nigeria, Rwanda, South Africa, United Republic of TZ, Uganda and Zimbabwe (Kobusingye et al., 2008).

It is not known how many of Africa's homicides are a result of mob violence but it is believed to vary widely. Mob violence is a collective action arising against individuals or small groups, who are perceived as threatening social safety, stability or norms (Mugunga, 2005). The finding that mob violence in DSM is largely directed against male thieves is confirmed by data from neighbouring Uganda (Table 3). Mob violence has also been documented against males and females perceived as practising witchcraft in Burundi, Democratic Republic of



Table 3. Alleged reasons for death due to mob violence in Uganda 2001 and Dar-es-Salaam (DSM), Tanzania TZ) 2005.

Reason	Male		Female		Total	
	Uganda	DSM, TZ	Uganda	DSM, TZ	Uganda	DSM, TZ
Theivery/robbery	185	157	1	0	186	157
Burglary	20	30	3	0	23	30
Murderer	33	3	0	0	33	3
Witchcraft	5	0	3	1	8	1
Other	38	15	0	0	38	15
Total	281	205	7	1	288	206

Note: Uganda statistics are from CID Headquarters, November 2002 in International Federation for Human Rights, 2004 reported by Mugunga (2005). The population from which the Uganda cases were drawn is not known.

Congo, Kenya, South Africa, TZ and Uganda (Kobusingye et al., 2008).

Although it was not possible from these data to reliably differentiate between spontaneous and vigilante violence in every case, the existing data support that most mob killings in DSM were a result of spontaneous citizen action. However, it is possible, for example, that the epileptic woman who was killed as a witch by a mob in her home back yard was the victim of premeditated action.

#### 4.6. First day neonaticide

DSM has a high rate of neonaticide (27.7 per 100,000) but a low rate of homicide incidence for children older than one day to five years (0.91 per 100,000) and from one day to 15 years (0.54 per 100,000). Broad age groupings such as '<1 year' or '0–5 years' masked incidence of first-day neonaticide in DSM and inflated perceived homicide rates for children older than one day. This lack of specificity may be a common occurrence in many data surveillance systems.

#### 4.7. Limitations

##### 4.7.1. Unclaimed bodies

Families and friends were reliable informants and usually knowledgeable about the deceased. However, they were of little help for the 84 (24%) victims whose bodies were unclaimed. Police data on these cases provided date of death, place of injury, cause of injury and weapon used; year of birth was estimated by the mortuary manager or the police. Their place of residence and occupation were usually not known (Kinabo, Outwater, Mgya & Campbell, 2008).

##### 4.7.2. Short time frame

Because of the study's one year time frame, it was not possible to gather a sample size of females or children sufficiently large for detailed analysis. It is

not known how many first day neonaticides were undiscovered. Also, some cases may have been misdiagnosed, e.g. counted as neonaticides but in fact not viable.

##### 4.7.3. Instrumentation

The variable of 'activity at time of injury' proved unreliable because: (a) the coding suggested in the *Surveillance Guidelines* (Holder et al., 2001) was more appropriate for injury morbidity than mortality; (b) the person who knew the activity in certainty was dead. This variable was abandoned (more useful data would have been garnered by asking time of death.)

The variables concerning 'residence' and 'place of injury' were reliable on the levels of region, district and ward, but not reliable on the level of the street. This is because people did not describe places by street names. Rather they used locally familiar descriptions such as 'mbuyuni' (under the Ficus tree) or 'mbele ya posta mpya' (in front of the new post office). This led to a different 'street' for each victim and the data could not be consolidated. Street names and numbers are often an issue and alternative ways of describing locations should be used, depending on the context.

The 'occupation' variable was difficult to operationalise – partly because the next of kin would describe the deceased as having an unknown occupation when, probably, the deceased had been unemployed. Content analysis of the qualitative data revealed that 90% of those quantitatively coded as 'insufficient data' were qualitatively described by their next of kin or the police as a 'thief'. A person was coded as a thief only when he/she was described as such, and not coded as unemployed or as unknown.

##### 4.7.4. Generalisability

The specific results of this survey are not generalisable to other places in TZ. DSM is representative in that it is believed that members of all TZ's 125 tribes live there, but it is atypical in important ways: (a) the

male:female population ratio is unusually skewed in DSM towards males, who are at higher risk for homicide death; (b) the unemployment rate, another risk factor for violence, is higher in DSM than in other regions; (c) DSM is the most heterogeneous and fastest growing urban area in the country and the present data show that violence is highly correlated with urbanisation. National rates should not be extrapolated directly from these data. These results do, however, provide a research foundation on which to build.

## 5. Conclusions

The age-standardised homicide rate in DSM (12.6 per 100,000 population) is far lower than the four other African cities with comparable data (ranging from 60.0–20.7 per 100,000 population in Cape Town and Tshwane/Pretoria respectively). This new knowledge begins to correct the high violent death estimates of Africa region that have been extrapolated from South African rates.

The DSM homicide rate was probably higher than that of the nation as a whole. In fact, homicide rates in DSM are low except for two groups, which reflect the vulnerability of the poorest men and women. The relatively high rate of neonaticide probably reflects the difficulty of poor women in obtaining birth control and abortions (which are illegal except to save the life of the mother). A change in the availability of abortion has been shown to decrease infanticide (Sekher & Hatti, 2005). It also illustrates the vulnerability of women in poorly paid employment. Recent media coverage in TZ has highlighted the plight of female domestic workers. The Tanzanian minimum wage was increased in 2008 and is being more vigorously enforced, which may decrease their vulnerability.

Most homicide is committed against un- or under-employed males. Punishment for petty theft can be extreme. The proportion of all homicides due to mob violence (57%) is unusual. An inadequate criminal justice system, high community participation and willingness to uphold commonly understood values have led to most homicides being committed by community members policing against thieves. The victims of mob violence are demographically similar to the primary perpetrators and victims of war, in that they are unemployed males between the ages of 15 and 29 years, with low levels of education. It is noted that people with demographics such as these are more susceptible to voluntary and forced recruitment into both armed groups and organised crime (Muggah as cited in Kobusingye et al., 2008). For these reasons alone, it is important to address the issue of unemployed young adult males, which is highlighted by their many deaths at the hand of 'mob justice'.

Since mob violence is directed at habitual thieves caught stealing, an important challenge is that simply decreasing the number of deaths due to mob violence would probably result in an increase in petty crime, further diminishing the quality of life of the community as a whole. Victimization rates in much of Africa are already very high (Naude et al., 2006). Measures to decrease deaths from mob violence must, therefore, simultaneously address the reason that the victim risked his life. Further efforts and research are needed on ways to increase fairly paid employment for this segment of the population, engage community in ways that address the Universal Declaration of Human Rights, as well as the right to live in a safe community, and/or increase legitimate state response to crime.

TZ has historically been a politically peaceful nation. This is reflected in DSM at the household and community levels, except for the most vulnerable of the poor: newborns of poor employed women; and unemployed young adult males who steal petty goods.

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## References

- Ahmad, O.B., Boschi-Pinto, C., Lopez, A.D., Murray, C.J.L., Lozano, R., & Inoue, M. (2007). *Age standardization of rates: a new WHO standard* (GPE Discussion Paper Series: No.31. EIP/GPE/EBD). Geneva: World Health Organization. Retrieved 29 October 2007, from <http://www.who.int/healthinfo/paper31.pdf>.
- Broadhurst, R. (n.d.). *Homicide in Hong Kong: The Homicide Monitoring Data Base (1989–1997)*. University of Hong Kong. Retrieved 12 January 2008, from <http://www.crime.hku.hk/rb-homicide.htm>.
- Butchart, A., & Engstrom, K. (2002). 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 the World Health Organization*, 80, 797–805.
- Centers for Disease Control (2004). *Web-based Injury Statistics Query and Reporting System*. Retrieved July 2007, from [www.cdc.gov/ncipc/wisqars](http://www.cdc.gov/ncipc/wisqars).
- Concha-Eastman, A., Espitia, V.E., Espinosa, R., & Guerrero, R. (2002). La epidemiología de los homicidios en Cali 1993–1998: seis años de un modelo poblacional. *Rev. Panam Salud Publica/Pan-America Journal of Public Health*, 12(4), 230–239.
- Cook, P.J., & Moore, M.H. (1999). Guns, gun control, and homicide. In M.D. Smith & M.A. Zahn (Eds.), *Homicide: A sourcebook of social research*. Thousand Oaks, London, New Delhi: Sage Publications.

- Harkness, J., Pennell, B.-E., & Schoua-Glusberg, A. (2004). Survey questionnaire translation and assessment. In: S. Presser, J. Rothgeb, M.P. Couper, J.T. Lessler, E. Martin & E. Singer (Eds.), *Methods for testing and evaluating survey questionnaires*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Holder, Y., Peden, M., Krug, E., Lund, J., Gururaj, G., & Kobusingye, O. (2001). *Injury surveillance guidelines*. Geneva: World Health Organization.
- Kinabo, L., Outwater, A.H., Mgaya, E., & Campbell, J.C. (2008). *The unknown homicides of Dar es Salaam region, Tanzania 2005: Who are they?* Poster for 9th world conference on injury prevention and safety promotion, Mexico.
- Knobel, G.J., De Jilliers, J.C., Parry, C.D.H., & Botha, J.L. (1984). The causes of non-natural deaths in children over a 15-year period in greater Cape Town. *South African Medical Journal*, 66, 795–800.
- Kobusingye, O.C., et al. (2008). *Report on violence and health in Africa*. Geneva: World Health Organization.
- Krug, E.G., Dahlberg, L.L., Mercy, J.A., Zwi, A.B., & Lozano, R., (Eds.). (2002). *World report on violence and health*. Geneva: World Health Organization.
- Le Billon, P. (2001). The political ecology of war: natural resources and armed conflicts. *Political Geography*, 20, 561–584.
- Leggett, T., Louw, A., Schonteich, M., & Sekonyane, M. (2003). *Criminal justice in review*. (ISS Monograph Series, no. 88). Pretoria: Institute for Security Studies.
- Matzopoulos, R., Bowman, B., Seedat, M., & Sukhai, A. (2005). Introduction: The National Injury Mortality Surveillance System. In R. Matzopoulos (Ed.), *A profile of fatal injuries in South Africa*. (Fifth Annual Report 2003). Parow: Medical Research Council.
- Mugunga, E.F. (2005). *Rule of law and access to justice: Eliminating rough justice in Uganda*. Unpublished Master of Science Dissertation, University of Birmingham Governance and Development Management.
- Murray, C.J.L. & Lopez, A.D., (Eds.). (1996). *Global burden of disease report*. Harvard, World Health Organization and World Bank.
- National Bureau of Statistics (2002). *Household budget survey 2000/01*. Dar es Salaam, Tanzania: National Bureau of Statistics.
- Naude, C.M.B., Prinsloo, J.H., & Ladikos, A. (2006). *Experiences of crime in thirteen African countries: Results from the International Crime Victim Survey*. (UNICRI-UNODC). Turin: Electronic Publications.
- Norman, R., Matzopoulos, R., Groenewald, P., & Bradshaw, D. (2007). *The high burden of injuries in South Africa*. Bulletin of the World Health Organization.
- Outwater, A., Campbell, J.C., Webster, D., & Mgaya, E. (2007). Homicide death in Sub-Saharan Africa: A review 1970–2004. *African Safety Promotion: A Journal of Injury and Violence Prevention*, 5(1), 31–44.
- Population Reference Bureau (2006). *World population country profiles: Tanzania*. Retrieved August 2007, from <http://www.prb.org/datafind/prjprbdata/wcprdata7>.
- Prinsloo, M. and Project Team: Donson, H., Hendricks, N., Krige, A., Louw, L., Maruping, M., Matzopoulos, R., et al. (2007). *A profile of fatal injuries in South Africa: 7th annual report of the National Injury Mortality Surveillance System, 2005*. South Africa: Medical Research Council and UNISA Institute for Social and Health Sciences.
- Research and Analysis Working Group (2002). *Poverty and human development report*. Tanzania: Mkuki na Nyota.
- Sekher, T.V., & Hatti, N. (2005). *Discrimination of female children in modern India: from conception through childhood*. Presented at International Union for the Scientific Study of Population XXV International Population Conference. Retrieved 17 October 2007, from <http://iussp2005.princeton.edu>.
- Teret, S.P. (1986). Litigating for the public's health. *American Journal of Public Health*, 76, 1027–1029.
- United Nations (2005). *Full employment and decent work for all: Regional highlights*. Retrieved from <http://www.un.org/Depts/rcnyo/newsletter/0623051>. October 2006.
- World Bank (2005). *World development indicators*. Retrieved February 2007, from <http://devdata.worldbank.org>.
- World Health Organization (2002). *Global burden of disease report. WHO Health statistics and health information systems*. Retrieved July 2007, from <http://www.who.int/healthinfo/bodgbd2002revised>.
- World Health Organization (2003). *International statistical classification of diseases and related health problems* (10th revision). Geneva: WHO.
- World Health Organization (2007). *WHO statistical information system*. Retrieved September 2007, from [http://www.who.int/whosis/database/core/core\\_select.cfm](http://www.who.int/whosis/database/core/core_select.cfm).