

## TI-UP Enquiry: Gender and Road Safety

Prepared by Jeff Turner, independent consultant, and John Fletcher, TRL

### Introduction

This note has been prepared in response to the following request for TI-UP assistance:

*"We know that most at risk in LDCs are vulnerable road users and that pedestrians account for 40-70% of road fatalities. Do we have a data on the gender break-down for fatalities and injuries for Africa? We suspect that a lot of the drivers will be men, but a lot of the passengers and pedestrians will be women and children. This data may be limited for Africa; can comparisons be made from other developing regions where data is better (men/women/children breakdowns)?"*

### Gender Breakdown of Accident Data

It is possible to obtain figures from the WHO that provide a breakdown by age and sex of those killed in road traffic accidents (RTAs) for different World Bank regions of the world. It can be seen that across all regions the majority of victims are male and the ratio is consistently around 74% male, 26% female (Table 1). This appears reasonably consistent across the different regions.

<b>World Bank region</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>% Male</b>	<b>% Female</b>
SSA	203067	139135	63932	68.5	31.5
South Asia	240149	177758	62391	74.0	26.0
MENA	97148	72592	24556	74.7	25.3
LAC	207133	156270	50863	75.4	24.6
EUCentrAsia	404016	305742	98274	75.7	24.3

**Table 1 Gender difference in road accident deaths by World Bank region, 2002**

Source: WHO Global Burden of Diseases 2002

<http://www.who.int/healthinfo/bodgbd2002revised/en/index.html>

This data, however, does not give any detail on how the victims were travelling or for those incidents that didn't result in fatality. So we are not able to say what means of transport victims were travelling and hence whether they are vulnerable road users or not.

It is also clear from gender and transport research (SSATP, 2007) that men and women adopt different journey patterns and this will differentially change their exposure to risk of involvement in road accidents. Typically women are less likely to make long journeys and may not use busy roads as frequently as men, thus accident statistics for men and women will tend to show different patterns. Women and girls may also adopt more risk adverse behaviour that will reduce their exposure to road danger.

Whereas many papers have stated that the burden of RTAs affect Low Income Countries (LICs) disproportionately (notably WHO 2003), Nantulya and Reich (2003) indicate that younger people (15-44 years old) account for the majority of those killed in RTAs. They also stated that a 1997 review of 46 published sources reported that more males than females were consistently reported killed, the proportion varying from 67% to 99.5% male.

Ameratunga et al. (2006) also summarise and emphasise the injury burden on LICs. They likewise state that males and the young are more likely to be injured and that is seldom taken into account in economic calculations. They also state that published summary data of injury numbers is seldom disaggregated to look at patterns in factors such as gender.

The short WHO report "Gender and Road Traffic Injuries" (2002) is on the subject of sex and RTAs. It

reiterates that males are more at risk than females of injury in RTAs and this is due to their higher levels of risk taking and risky behaviour (alcohol and drug abuse, for example) as well as their greater exposure. It reports that males are still at greater risk of injury as pedestrians, even when exposure is taken into account, because of this riskier behaviour (no ref cited).

It also states that the general shorter stature of women compared with men, put them at greater risk of more severe injury in an RTA, all things being equal, and access to health care following such injuries is likely to follow other patterns of gender inequality.

More detailed gender comparative data is available in only a very small number of recent studies of the impact of road safety on the poor.

One of the few reports available that explores the relative impact of road safety on poor households and between men and women has been the work of TRL, which looked at detailed case studies in Bangalore in India and Bangladesh (Aeron-Thomas et al. 2004)

This report highlights that from overall deaths, whilst in some case the poor had a significantly greater incidence of being killed, it is only when one considers the differences in the amount of travel between poor and non-poor people does one appreciate that the poor may well be at greater risk from road accidents.

The report summarised that males in the prime of life were the most common road death victims. Furthermore it stated that these male victims were likely to be the significant providers of overall household income. Vulnerable road users accounted for most victims.

Significantly, it did analyse road accident data by gender and found that, in Bangladesh, girls accounted for a larger share of total female deaths and serious injuries (32%) than boys did for total males (12%).

	Death				Serious Injury			
	Urban		Rural		Urban		Rural	
	poor	non-poor	Poor	non-poor	poor	non-poor	poor	non-poor
<b>Bangladesh</b>								
Sex								
Male	92	88	83	74	80	85	84	86
Female	8	12	17	26	20	15	16	14
<b>Bangalore, India</b>								
Sex								
Male	83	77	77	89	79	78	88	80
Female	17	23	23	11	21	22	12	20

**Table 2 Sex of Bangladesh and Bangalore case study road casualties**

The vast majority of those killed and seriously injured were male (Table 2), regardless of location and income group.

### **Gender, Road Safety and Poverty**

There is clearly a gender dimension to road accidents and that has consequences for victims and their families. It is worth remembering that even if accident victims are predominantly male, the impact on household livelihood of death or injury places significantly more burden on women and children as they need to care for injured and from loss of the significant male income.

The work undertaken in the report by TRL is very informative on the financial and social consequences of road accidents on the family unit. It found that road accidents were a significant shock to households making even well-off households vulnerable to a decline into poverty and that crash involvement threatens sustainable livelihoods. A surprisingly large number of poor households post-crash were estimated to have not been poor before the death or serious injury, including approximately half of the rural poor households in the Bangladesh and Bangalore case studies. This has significant implications for how we think of road safety as part of an overall strategy to reduce poverty.

Even more significant is the substantial impact that was found amongst already poor households. Consequences included reduced household income and reduced food consumption for the victim's family. In addition, most poor households went into debt by borrowing money to cope with the additional costs and lack of income following a road crash. Some also reduced their financial security by selling an asset while few chose or were able to take on extra work.

There is no similar work for Africa, where the consequences and impacts may be different or more severe. Table 1 indicates that a greater proportion of females are involved in crashes in Africa compared with other regions of the world.

### **Published Information on gender differences in crashes in Africa**

There are published or available reports which give some indication of the differences in the patterns and numbers of deaths and injuries from road crashes between the sexes. There are three main sources of basic data: hospital statistics; morgue statistics (obviously specifically relating to deaths); and police collected road accident data. It is widely accepted that none of these sources are ideal: each has strengths and weaknesses and also this kind of data from LICs is generally poor.

The commonest data source reported is police crash data. This is known to suffer from under reporting in High Income Countries (HICs) (especially for the less severe injury crashes) and this problem is significantly worse in LICs and specifically Africa (see Khayesi and Peden, 2005 and Jacobs and Aeron-Thomas, 2000).

There is a general perception that certain types of crashes are subject to greater under-reporting than others such as those involving pedestrians and cyclists and also those occurring in rural areas. It is possible that crashes involving female casualties are also specifically subject to under reporting, although no published data has been identified to support this possibility.

### South Africa

Norman et al (2007) used a variety of models, methodologies and data sources to look at the impact of various fatal injuries in South Africa. These figures were examined/expressed by gender. Homicide/interpersonal violence and Road Traffic Injuries (from RTAs) dominate the statistics, with no other injury category representing more than 10% of the numbers (see Table 3, extract of their Table 1).

More than three times more men were killed by injuries than women. Notably RTAs were the chief cause of injury death for women (32.6%) and the second most common cause for men (24.8%). This means that of the total road death number as percentages by gender were 77% were male and 23% female, closely matching the figures in Table 1, above.

The death rates from RTAs were contrasted with global rates and these were stated as being 1.8 times higher for males and 2 times higher for females in South Africa (see Table 4, extract of their Table 2).

They also report that road traffic injuries were responsible for almost 0.5 million (3.0% of all) DALYs in South Africa. They also state that 52% of road deaths in South Africa occur to pedestrians, but there is no specific indication of how many of the reported deaths are to other vulnerable road users.

Table 1. Percentage of injury deaths by cause, South Africa 2000

Males n = 45 237			Females n = 14 698		Persons n = 59 935	
Rank	Cause of injury death	%	Cause of injury death	%	Cause of injury death	%
1	Homicide/interpersonal violence <sup>a</sup>	50.9	Road traffic injuries	32.6	Homicide/interpersonal violence <sup>a</sup>	46.0
2	Road traffic injuries	24.8	Homicide/interpersonal violence <sup>a</sup>	30.8	Road traffic injuries	26.7

Table 3 Extract from Table 1, Norman et al (2007)

Table 2. Estimated South African and global self-inflicted, interpersonal violence and road traffic injury mortality rates by age and sex for 2000

Age group (years)	Males			Females		
	South African rate (per 100 000)	Global rate (per 100 000) <sup>a</sup>	Ratio SA rate: global rate	South African rate (per 100 000)	Global rate (per 100 000) <sup>a</sup>	Ratio SA rate: global rate
Road traffic injury						
0-4	26.7	13.4	2.0	21.3	11.3	1.9
5-14	21.4	11.2	1.9	9.9	8.4	1.2
15-29	51.9	35.7	1.5	16.8	9.2	1.8
30-44	84.2	37.6	2.2	24.4	9.8	2.5
45-59	79.9	39.6	2.0	27.0	12.9	2.1
≥60	81.9	49.0	1.7	44.7	19.0	2.4
All ages <sup>c</sup>	59.4	32.1	1.8	22.6	11.1	2.0

Table 4 Extract from Table 2, Norman et al (2007)

### Uganda, Kampala

Kobusingye et al (2002) reported on hospital admissions due to injury in Kampala, Uganda's largest city, from 1998. They reported that most admissions were to young males (73% with a mean age of 24 years old). 50% of admissions were injured in RTAs. It should be noted that most (97%) of the admissions were for very minor injuries but that the authors report these slight injuries impact negatively on care available for more seriously injured patients.

They report that of those injured in RTAs, pedestrians comprised 38% of injuries, other motor vehicle occupants (passengers) 35%, and cyclists 22%. Drivers made up only 5% of the recorded admissions. They

did not though provide any detailed breakdowns by road user class for the numbers of females versus males injured.

### Tanzania

Samples of men and women from the capital (urban) and a rural area of Tanzania were interviewed to assess their own estimates of their chances of involvement in RTAs. The chief result was that men and women both estimated their risk of injury in an RTA to be similar and high, whereas the (relatively) low chance of actually experiencing this kind of injury was significantly higher for males. The authors state that this confirms the idea that males tend to be overly optimistic about their chances of avoiding these kinds of injuries compared to the reality and in contrast to women.

In Dar es Salaam, 75% and 82% of males and females respectively, perceived it as likely that they would experience a traffic injury in general. The corresponding figures in the rural area were 63 and 64%. It was estimated that the risk in Dar es Salaam was higher than in the rural area. These estimates of personal risk were influenced by personal near-misses, family or friends' injury in RTAs or the information on road safety conveyed by health workers.

### African Accident Data Investigation

In addition, some national accident data from Ghana and Botswana was examined to investigate the gender ratio of those reported as being killed or injured in broad vulnerable road user groups.

#### Ghana:

Data: Ghana 1998-2005 Inclusive

Casualty Injury					
Driver	Male	Female	Total	% Male	% Female
Fatal	1429	17	1446	99%	1%
Hospitalised	5222	69	5291	99%	1%
Injured Not-Hospitalised	10587	228	10815	98%	2%
<b>Total</b>	<b>17238</b>	<b>314</b>	<b>17552</b>	<b>98%</b>	<b>2%</b>
Passenger					
	Male	Female	Total	% Male	% Female
Fatal	2537	1144	3681	69%	31%
Hospitalised	9867	6861	16728	59%	41%
Injured Not-Hospitalised	13446	8933	22379	60%	40%
<b>Total</b>	<b>25850</b>	<b>16938</b>	<b>42788</b>	<b>60%</b>	<b>40%</b>
Pedestrian					
	Male	Female	Total	% Male	% Female
Fatal	2557	1297	3854	66%	34%
Hospitalised	4846	3320	8166	59%	41%
Injured Not-Hospitalised	4481	3096	7577	59%	41%
<b>Total</b>	<b>11884</b>	<b>7713</b>	<b>19597</b>	<b>61%</b>	<b>39%</b>

The data from Ghana show that only very insignificant numbers of women are reported as being drivers when killed or injured in RTAs. For fatalities categorised as being passengers or pedestrians when killed, there are slightly fewer females killed compared with those seriously or slightly injured for these travel modes.

#### Botswana:

Data: Botswana 1996-2006 Inclusive

Casualty Injury					
	Male	Female	Total	% Male	% Female
Driver					
Fatal	1411	101	1512	93%	7%
Hospitalised	5049	479	5528	91%	9%
Injured Not-Hospitalised	19582	2335	21917	89%	11%
Total	26042	2915	28957	90%	10%
Passenger					
Fatal	1729	1141	2870	60%	40%
Hospitalised	6570	5126	11696	56%	44%
Injured Not-Hospitalised	17111	13495	30606	56%	44%
Total	25410	19762	45172	56%	44%
Pedestrian					
Fatal	1106	518	1624	68%	32%
Hospitalised	2623	1613	4236	62%	38%
Injured Not-Hospitalised	5733	4680	10413	55%	45%
Total	9462	6811	16273	58%	42%

The data from Botswana show again that only relatively small numbers of women are reported as being drivers when killed or injured in RTAs, although there are relatively many more reported from Botswana compared with Ghana. Again, of the fatalities categorised as being passengers or pedestrians when killed, there are fewer females killed than males. The figures for females injured are again higher in comparison for these travel modes.

The highest proportion of females represented were pedestrians in Botswana, but they still only made up 45% of those injuries reported.

Given greater time and resource it may be possible to analyse these data sources in greater detail, looking at the age distributions by gender, looking for year to year changes or looking at vulnerable subsets in more detail. Patterns may become less clear when "drilling down" into the data and smaller numbers are involved.

## Summary

It can be seen from global figures that males are much more likely to be killed in road accidents than females. It is not completely clear why that is. It has been reported as being because of different travel patterns by gender which lead to different levels of exposure. It may also be due to males adopting more risky behaviours. It is not possible to assign conclusive causes in the absence of robust research.

Many papers report that the burden of road traffic injury falls disproportionately on LICs, some report that males are much more likely to be injured or killed than females and that this is a near-global finding.

Some reports also state that vulnerable road users such as pedestrians, those on two wheels and passengers, are more likely to be injured in LICs compared with HICs. No papers identified looked specifically at the gender ratio of different vulnerable road user sub-groups injured or killed in RTAs.

Some research has highlighted the significant gender impact of road accidents. Whilst it may be mostly males that are involved, the impact upon household survival from loss of earnings and the burden of care for long-term illness and disability may fall disproportionately on women and girls. This may have important implications for the interaction between road safety and poverty reduction policy. There is a need for further exploration of this issue as there appears no work available that is appropriate for an African context.

Whether or not the greater proportion of males in the accident data might have influenced the road safety focus of development agencies and other organisations is a contentious question but one that is relevant to this discussion of the gender breakdown of road injuries and fatalities.

There is also an issue of the lack of reliable gender-disaggregated accident data for which analysis has been reported. This issue should be investigated so that a better picture of gender issues associated with road safety can be made. Questions remaining around gender-differentiated under-reporting of certain types of accident should be investigated, ideally through a research project.

Accident data from Ghana and Botswana could be used to look at some of these issues in some greater depth relatively easily and with a degree of reliability.

**Sources:**

Aeron-Thomas, A., et al. (2004) 'The involvement and impact of road crashes on the poor: Bangladesh and India case studies'

[http://www.grsroadsafety.org/themes/default/pdfs/The%20Poor\\_final%20final%20report.pdf](http://www.grsroadsafety.org/themes/default/pdfs/The%20Poor_final%20final%20report.pdf)

Jacobs G and Aeron-Thomas A, Africa Road Safety Review Final Report TRL Report PR/INT/659/2000

Khayesi M and Peden M Road safety in Africa BMJ 2005;331;710-711

Nantulya, VM and Reich MR, Equity dimensions of road traffic injuries in low - and middle – income countries, Injury Control and Safety promotion 2003 Vol 10 No 1-2 pp 13-20

Gender and Road Traffic Injuries, Gender and Health January 2002,

Ameratunga S, Hajar M, Norton R, Road-traffic injuries: confronting disparities to address a global-health problem www.thelancet.com Vol 367 May 6, 2006

SSATP (2007) Gender and Transport Resource Guide

<http://www4.worldbank.org/afr/ssatp/Resources/HTML/Gender-RG/index.html>

Norman R, Matzopoulos R, Groenewald P & Bradshaw D. The high burden of injuries in South Africa, Bulletin of the World Health Organization, 2007; 85:695–702.

Kobusingye OC, Guwatudde D, Owor G, Lett RR. Citywide trauma experience in Kampala, Uganda: a call for intervention, Injury Prevention 2002; 8:133–136

Anne Nordrehaug A° strøm, Candida Moshiro ,Yusuf Hemed, Ivar Heuch, Gunnar Kv°ale Perceived susceptibility to and perceived causes of road traffic injuries in an urban and rural area of Tanzania, Accident Analysis and Prevention 38 (2006) 54–62