

# **ROAD TRAFFIC INJURY DATA SYSTEMS IN GHANA: The key to safety improvement and control**

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# Introduction

In order to improve the safety of the road systems in Ghana, the road safety experts must have a reliable data on the location, frequency, severity and types of road traffic crashes that are occur on the road network. There can be no hope of determining why such crashes occur, and of developing corrective measures, unless details describing their occurrence are recorded. For any individual traffic crash to be useful, it must be linked to a specific location on the road network over a specified time period. This allows patterns in the types, times and circumstances of road traffic crashes occurring at the location to be examined for the relevant interventions to be developed.

# The Purpose for Road Traffic Injury Data

## Reasons for collecting RTI data

- to establish the extent of the road safety problem, develop policies, strategies and road safety action plans for road safety improvement
- to monitor trends and make international comparisons
- to identify high risk road user groups and hazardous locations (blackspots) for interventions.
- to find risk factors and circumstances influencing road traffic crashes.
- to obtain a pool of data for road safety education and enforcement programmes
- to enable objective planning and resource management
- to evaluate effectiveness and monitor achievement of road safety targets.

# Traffic injury data systems

Generally, the essential components of a crash/casualty data system are:

- 1) Standard accident report form for data collection
- 2) Means of data storage and retrieval, and
- 3) Means of data analysis and dissemination

In Ghana road traffic crash/casualty data are managed using a Microcomputer Accident Analysis Package (MAAP) developed by the UK Transport Research Laboratory (TRL). A road traffic accident database has been developed at the BRRI of the CSIR, Ghana, with information on road traffic crashes and casualties from 1991 to 2005.

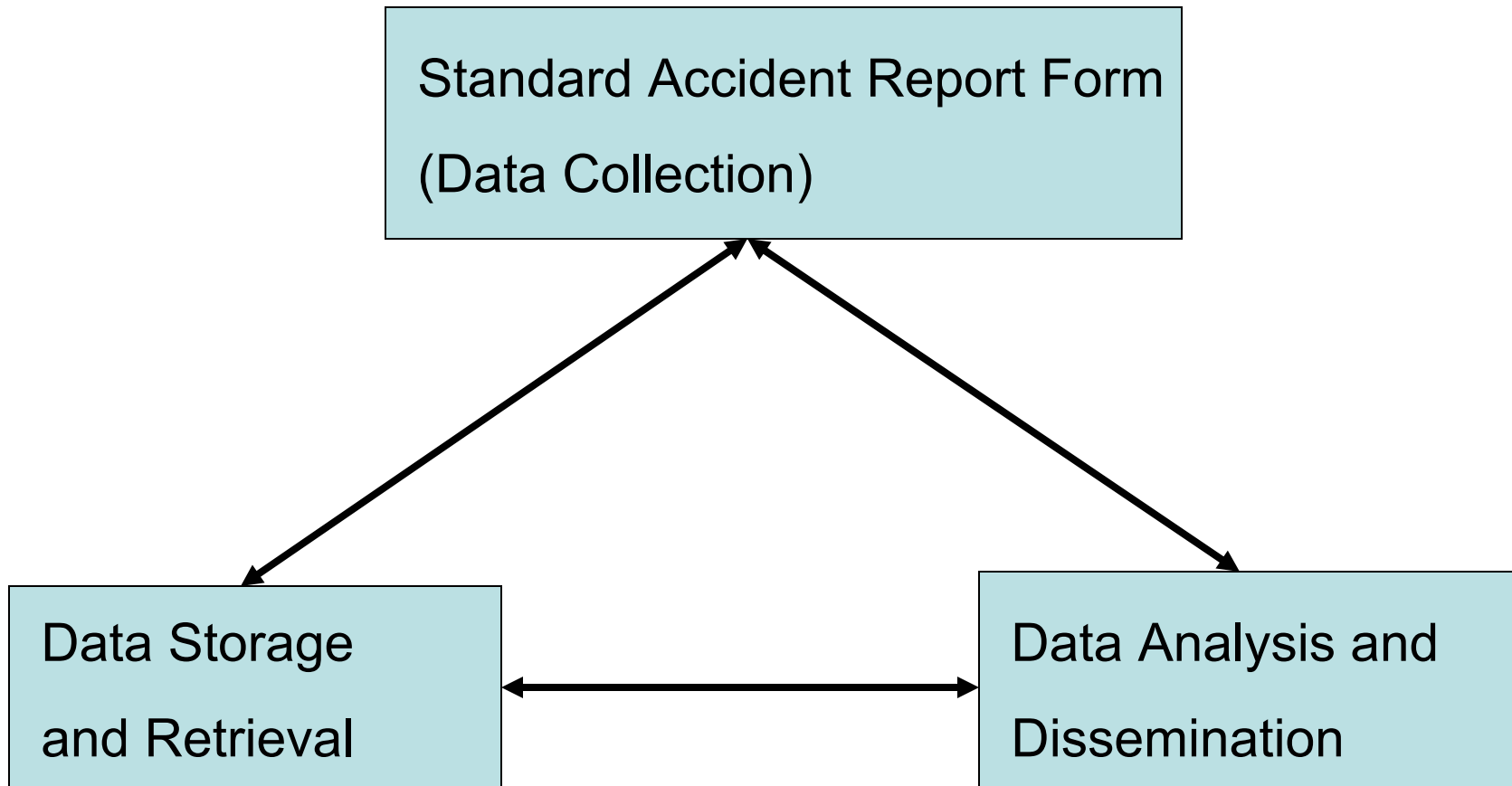


Fig 1. A Simplified Traffic Injury Data System

# **Sources of Road Traffic Injury Data in Ghana**

The main sources of road traffic crash/injury data in Ghana are:

- Police data
- Hospital and medical data
- Insurance data
- Special surveys

## **The elements of Road Traffic Crash Data**

Road traffic crash data collection in Ghana covers the following components (see Table 1):

Table 1. Basic Elements of Road Traffic Crash/Injury Data in Ghana

<b>Component</b>	<b>Basic information collected</b>
General Information	<ul style="list-style-type: none"> <li>• Hour of day; Day of week; Month; Year</li> <li>• Region; City/Town</li> <li>• Crash type (fatal, serious, slight, property damage)</li> <li>• Injury severity and outcomes</li> </ul> <p><b><i>Where, when, how did the crash/injury occur?</i></b></p>
Road Users Involved	<ul style="list-style-type: none"> <li>• Road user class (passenger, driver, cyclist, pedestrians)</li> <li>• Age and Sex of Casualty</li> <li>• Other information (eg. Pedestrian action, injury severity, human error, drink-driving, speeding, etc.)</li> </ul> <p><b><i>Who was involved and why did the crash/injury occur?</i></b></p>
Road Environment	<ul style="list-style-type: none"> <li>• Location (urban/rural/junction type, etc.)</li> <li>• Road type/class; Road condition; Lighting/weather condition</li> </ul> <p><b><i>Where and under what circumstances did the crash/injury occur?</i></b></p>
Vehicles Involved	<ul style="list-style-type: none"> <li>• Vehicle type; Vehicle direction; Vehicle manoeuvre;</li> <li>• Vehicle defect</li> </ul> <p><b><i>How did the crash occur?</i></b></p>



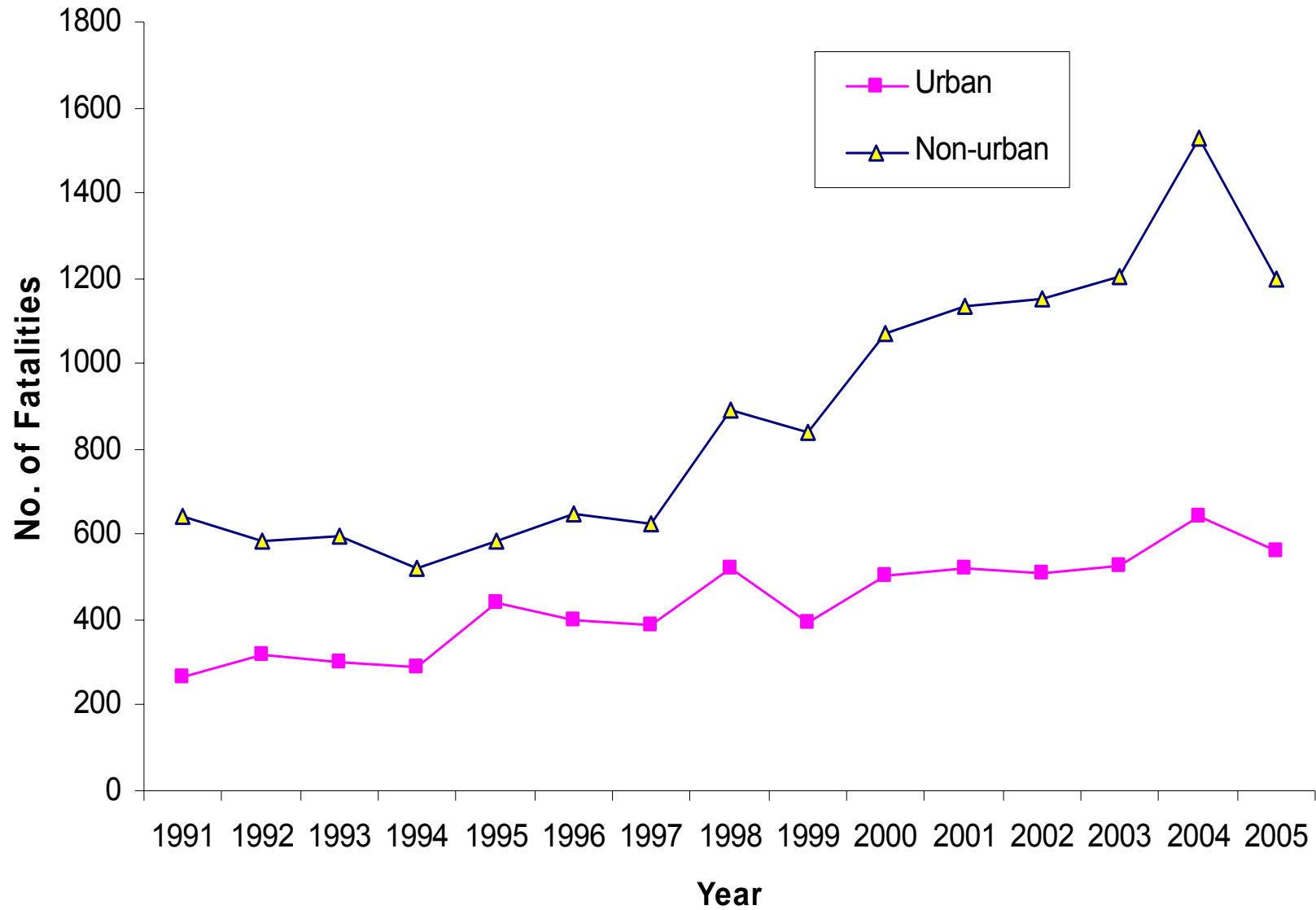
# Data Analysis and Applications

- What is the fatality trend?
- Who are the road users involved and at risk?
- Where do the traffic injuries occur?
- When do serious traffic injuries occur?
- What are the major risk factors?

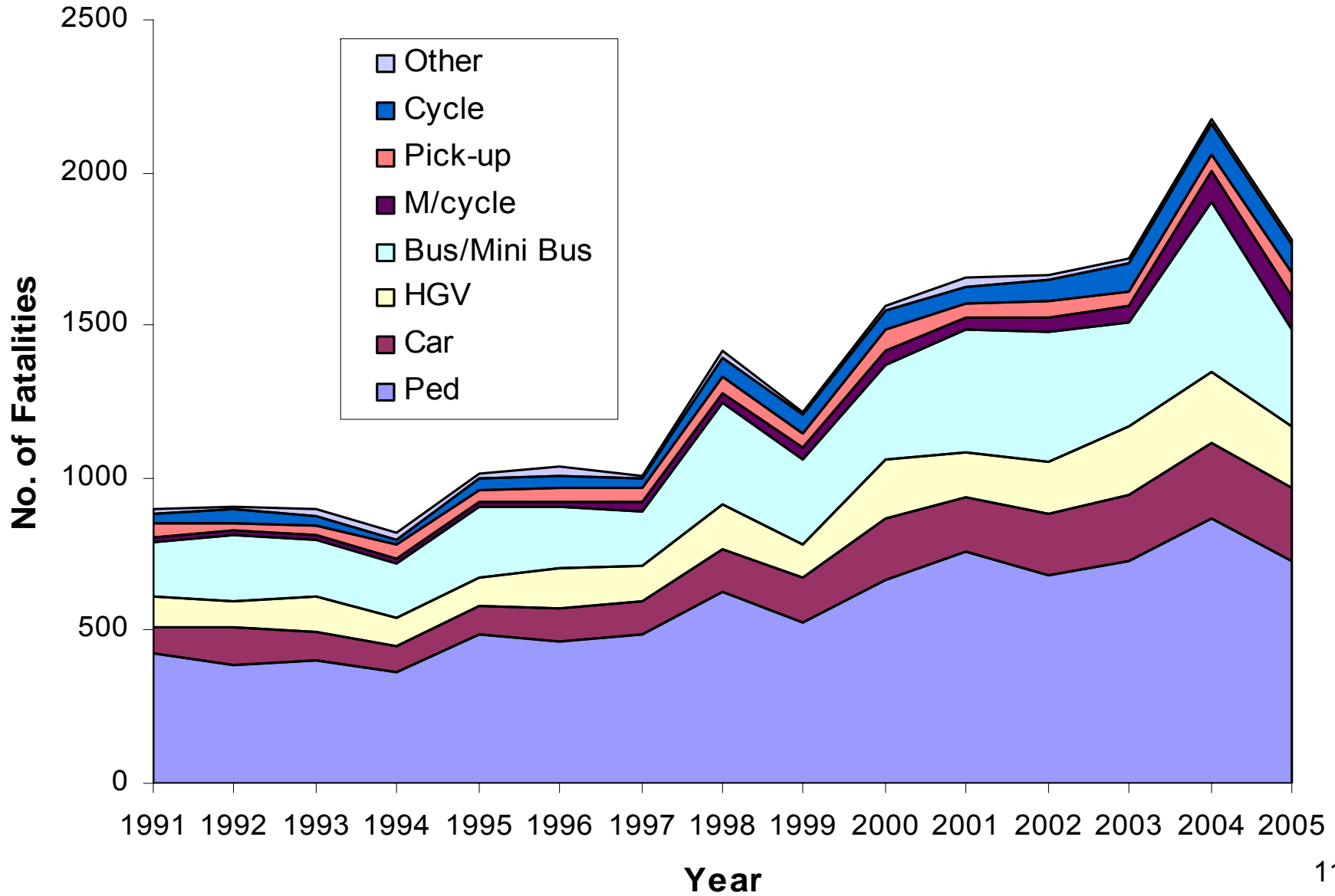
## Possible Applications of Analysis

- Trends; Crash/injury rates; Fatality indices
- Identification of critical risk factors
- Black spot identification and treatment
- Outcomes of road traffic injuries (RTIs)
- Identification of injury types, degree of severity and treatment

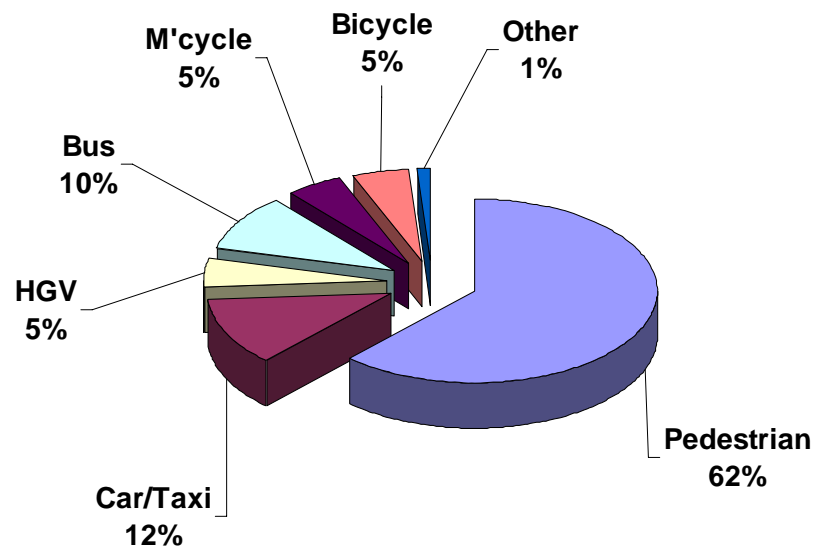
**Figure 2 Changes in Fatalities by Road Environment**



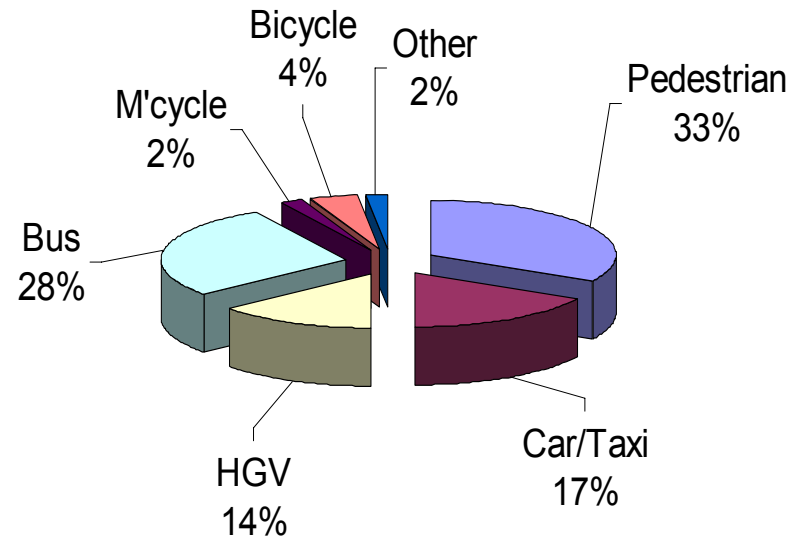
**Figure 3 Fatalities by Class of Road User**



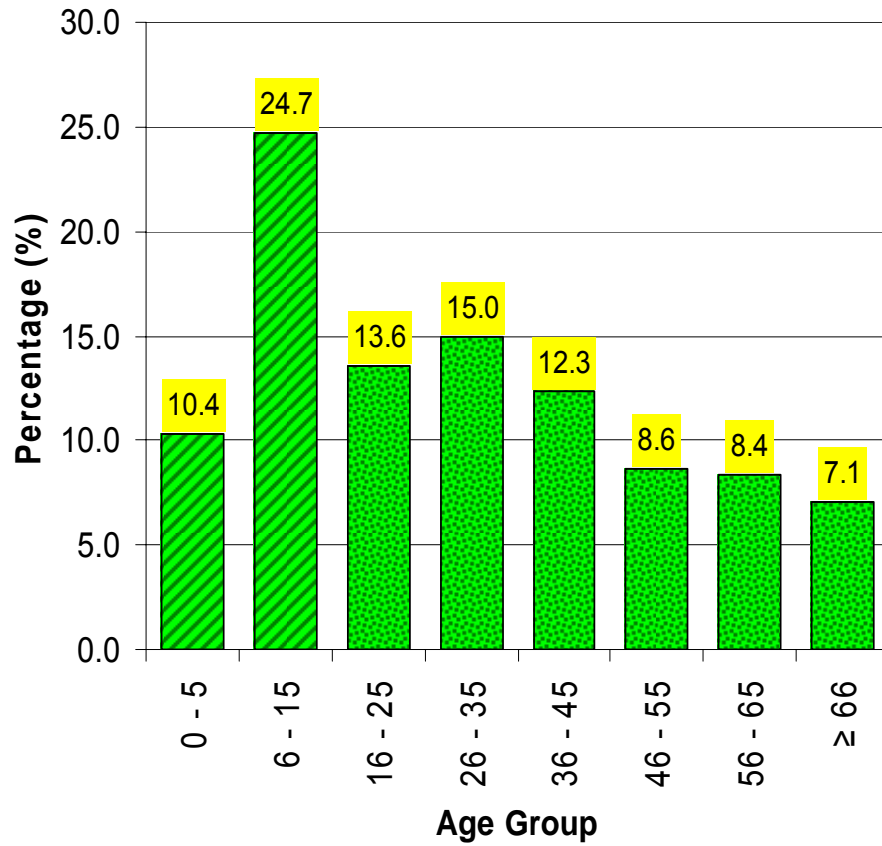
**Fig. 4 Road Traffic Fatalities in Urban Environment, 2001-2005**



**Fig. 5 Road Traffic Fatalities in Non-urban Environment, 2001-2005**



**Fig. 6 Pedestrian Fatalities by Age**



**Fig. 7 Distribution of Fatalities by Sex, 2001-2005**

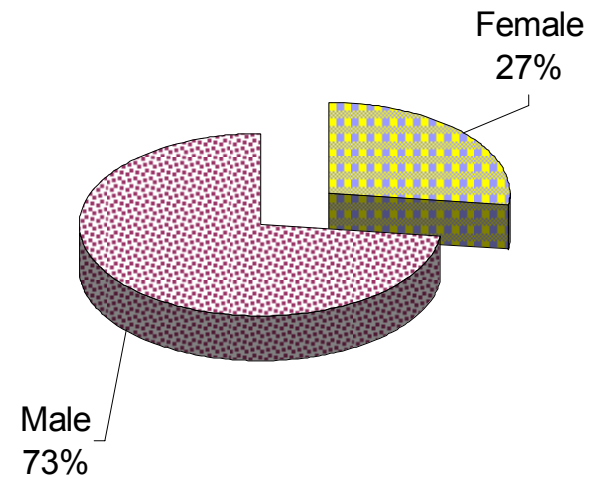
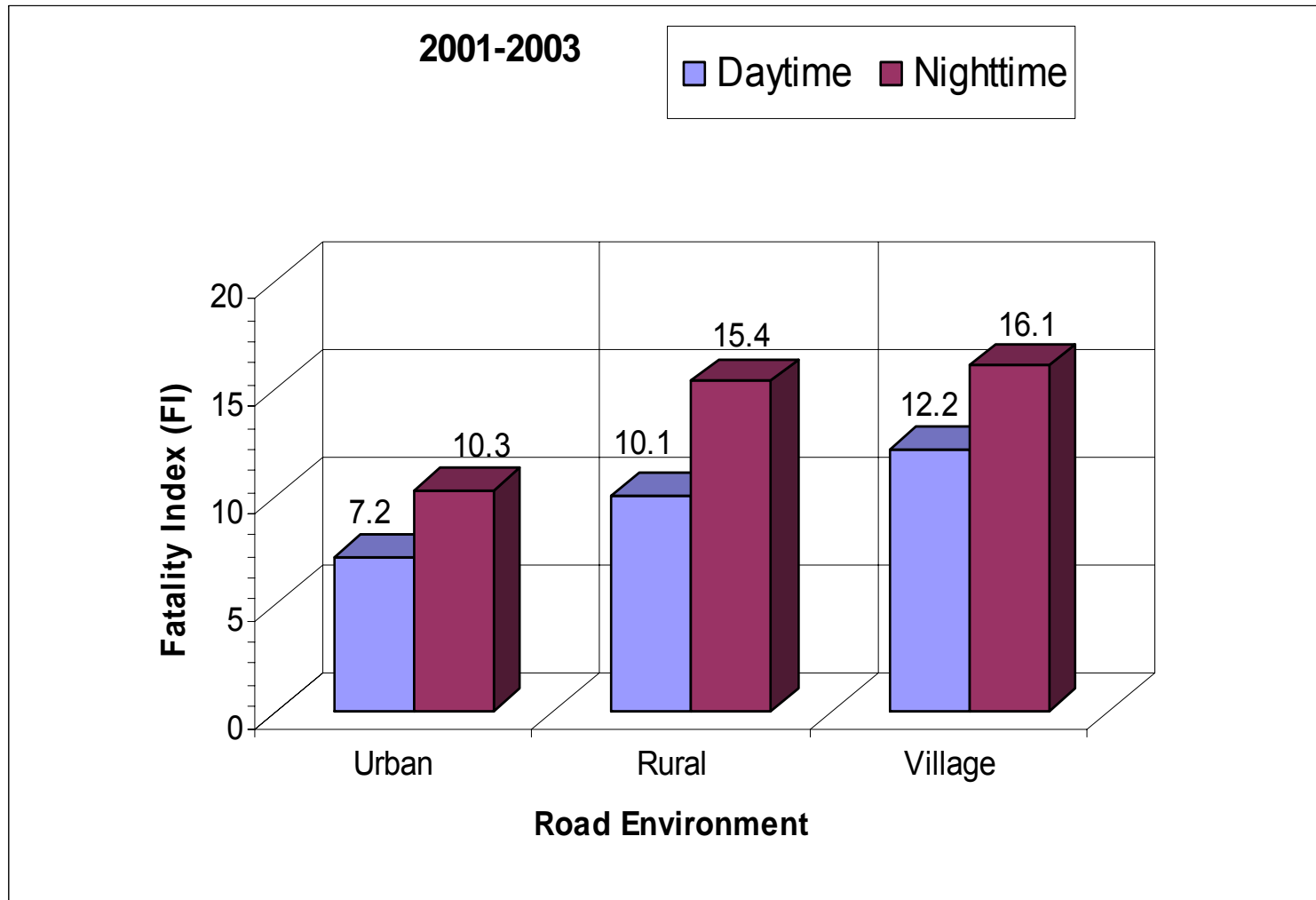


Fig 8. Severity of Night-time and Day-time Traffic Injuries by Road Environment



## **Evaluation of Road Safety Interventions**

Any effective monitoring and evaluation to track the safety impact of any intervention requires credible data for the “before” and “after” situations.

### ***Before and After Studies***

- To evaluate the effects of the traffic safety measure on the occurrence of road traffic crashes at a study site, a ‘before-and-after’ study is undertaken in which at least 3-year crash information ‘before’ installation of the intervention (e.g. speed humps/rumble strips) is compared with the crash situation 3 years ‘after’ implementation of the traffic safety measure. The outcomes of the crashes are similarly compared.

**Table 2. Results of Before and After study at Ejisu on the Accra – Kumasi Highway, Ghana**

Crash Nature	<i>Before Situation(B)</i>					<i>After Situation(A)</i>					% Change B vs A
	Fatal	Ser	Sli.	Dam	Total	Fatal	Ser.	Sli.	Dam	Total	
<b><u>Multi Vehicle</u></b>											
Head on	1	1	1	0	<b>3</b>	0	0	0	0	<b>0</b>	- 100.0
Rear end	0	1	3	5	<b>9</b>	0	0	2	0	<b>2</b>	- 77.8
Right angle	0	1	0	0	<b>1</b>	0	0	0	0	<b>0</b>	- 100.0
Side swipe	0	0	1	4	<b>5</b>	0	0	0	0	<b>0</b>	- 100.0
<b><i>Total Multi Veh.</i></b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	-88.9
<b><u>Single Vehicle</u></b>											
Hit Pedestrian	3	10	9	-	<b>22</b>	2	4	3	-	<b>9</b>	- 59.1
Hit Parked Veh.	0	0	0	1	<b>1</b>	0	1	0	0	<b>1</b>	0.0
Hit Object	0	0	0	1	<b>1</b>	0	0	0	0	<b>0</b>	- 100.0
Run off Road	0	0	0	12	<b>12</b>	0	0	0	0	<b>0</b>	- 100.0
<b><i>Total Single Veh.</i></b>	<b>3</b>	<b>10</b>	<b>9</b>	<b>14</b>	<b>36</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>10</b>	-72.2
<b>All Crashes</b>	<b>4</b>	<b>13</b>	<b>14</b>	<b>23</b>	<b>54</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>12</b>	- 77.8



## Effect of speed humps on crash outcomes

The distribution of crashes and casualties by severity for the 'before' and 'after' situations at the study site are as shown in Table 3.

Table 3. **Effect estimate of speed humps on crash outcomes**

<b>Outcome</b>	<i>Before</i>	<i>After</i>	<i>% Change</i>
<b><u>Crashes</u></b>			
Fatal	4	2	-50.0
Serious	13	5	-61.5
Slight	14	5	-64.3
<b><i>Inj. Crashes</i></b>	<b>31</b>	<b>12</b>	<b>-61.3</b>
Damage only	23	0	-100.0
<b><i>All Crashes</i></b>	<b>54</b>	<b>12</b>	<b>-77.8</b>
<b><u>Casualties</u></b>			
Killed	5	2	-60.0
Hospitalized	18	6	-66.7
Not Hosp.	27	6	-77.8
<b><i>All Injuries</i></b>	<b>50</b>	<b>14</b>	<b>-72.0</b>

# Conclusions

- Accident data is a crucial element of all road traffic safety activity and is essential for the diagnosis of the crash problem.
- Data forms the basis for monitoring and evaluation of any road safety action plan and a major tool for the decision making process for remedial actions.
- Any efficient road safety improvement program is based on traffic crash data, since realistic targets can only be established by using crash/casualty-related information.
- Road traffic injury data systems are the key to safety improvement and control in Ghana.

**THANK YOU FOR YOUR ATTENTION**