Data Capturing and Management Challenges in Africa

Stergios Mavromatis, George Yannis, Katerina Folla, Alexandra Laiou

National Technical University of Athens, Greece,
Department of Transportation Planning and Engineering
email: stemavro@central.ntua.gr

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Road Safety in Africa

Road traffic fatality rates per 100,000 population (WHO 2015)

Africa presents the highest traffic fatality rates globally, with almost three times higher fatality risk than Europe.
The SaferAfrica Project

- Funded under the Horizon 2020 Mobility for Growth
- Title: SaferAfrica - *Innovating Dialogue and Problems Appraisal for a Safer Africa*
- Duration: **36 months** (Oct 2016 – Sep 2019)
- Project Leader: *University of Roma – La Sapienza*

**SaferAfrica Objectives:**
Create favorable conditions and opportunities for the effective implementation of actions for road safety and traffic management in African countries, by setting up:
- a *Dialogue Platform* between Africa and Europe
- the African *Road Safety Observatory*

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<thead>
<tr>
<th>Partner</th>
<th>Country</th>
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<tbody>
<tr>
<td>1 CTL</td>
<td>Italy</td>
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<td>2 NTUA</td>
<td>Greece</td>
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<td>3 IBSR</td>
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<td>16 SSATP</td>
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</tr>
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<td>17 CITA</td>
<td>Belgium</td>
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Objective - Methodology

• The **objective** of this research is to examine the road safety phenomenon in Africa by presenting basic road safety facts

• **Road accident fatalities** for the decade 2005-2014, as well as data on **characteristics of road network, exposure and road safety performance indicators** for the latest available year have been collected

• The **international databases** International Road Federation (IRF) and the World Health Organisation (WHO) were used
Importance of Road Safety Data Collection and Storage

- Highlight high-risk sites, hierarchize needs and plan necessary improvements
- Investigate the impact of various factors (geometric characteristics, parking, driver training, enforcements, etc.) on accidents reduction
- In the documentation of projects (e.g. signaling, lighting, signage, etc.) and actions (e.g. increased enforcement, parking ban) in order to improve road safety
- In "before and after" studies in order to determine the effect of an intervention at a road section or intersection
- Performing an expert's report on a particular accident
Problems when Recording Road Accidents

• Unclear determination of road accident location

• Insufficient or incorrect recording

• Insufficient accident coverage
Road Safety Data in African Countries

- There is a serious lack of road safety data in African countries
- Only a few countries have full-time series of fatality data
- Little information exists concerning data collection systems, data definitions, etc.
Road Fatality Data in Africa – WHO (1/2)

- Three types of fatality data are included in the WHO reports:
  1. Reported numbers of road deaths
  2. Reported numbers of road deaths adjusted to 30-days definition
  3. Estimated number of road deaths based on statistical modelling

- In the WHO database there are available data only for 2013
- Data on the number of road fatalities for 2010 and 2007 are available in the published WHO reports
- 43 out of 47 African countries have participated in the last WHO report (2015)
Road Fatality Data in Africa – WHO (2/2)

• **Distribution** of road deaths
  • By road user type
    • drivers/passengers of 4-wheeled vehicles
    • drivers/passengers of 2- or 3- wheeled vehicles
    • cyclists, pedestrians and other
    • unspecified user
  • By gender

• **Different road fatality definitions** are used by African authorities, according to WHO report

<table>
<thead>
<tr>
<th>Definitions used by African Authorities</th>
<th>Number of African countries</th>
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<td>at crash scene</td>
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<tr>
<td>24 hours</td>
<td>1</td>
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<tr>
<td>48 hours</td>
<td>2</td>
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<td>7 days</td>
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</tr>
<tr>
<td>1 year</td>
<td>4</td>
</tr>
<tr>
<td>unlimited time period</td>
<td>5</td>
</tr>
<tr>
<td>no definition</td>
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</table>
Road Fatality Rates in Africa

- The estimated number of fatalities is much higher compared to the respective reported number in almost all countries.

- For Angola, Botswana, Egypt, Libya, Mauritius, Seychelles, and South Africa, the estimated number of fatalities is close to the reported one.

- For the remaining countries, the estimation of WHO is about 2 to 13 times higher than the reported number of fatalities.

- For Djibouti, the estimated number of fatalities by WHO is 20% of the reported.

- These differences affect the ranking of the countries concerning their road safety performance.
Road Fatality Rates in African Regions

- In **North Africa**, fatality rates ranged between 59 – 142 killed persons per million population in Sudan and Algeria respectively.

- In **Eastern Africa**, fatality rates ranged between 15 – 188 killed persons per million population in Somalia and Zimbabwe respectively.

- In **Central Africa**, fatality rates ranged between 7 – 238 killed persons per million population in D.R. of the Congo and Angola respectively.

- In **Southern Africa**, fatality rates ranged between 153 – 270 killed persons per million population in Swaziland and Namibia respectively.

- In **Western Africa**, fatality rates ranged between 12 – 83 killed persons per million population in Senegal and Burkina Faso respectively.
Road Fatalities by Transport Mode in Africa

- **31 countries** have provided WHO with fatality data by transport mode
- **37%** of people killed in road accidents were travelling by **4-wheeled vehicles**
- **35%** of fatalities in 2013 concerned **pedestrians**
- **11%** of fatalities were **2-wheelers' riders**
- Highest percentages of pedestrian fatalities were recorded in Liberia (66%), Mozambique (56%) and Malawi (49%)
- The **Democratic Republic of Congo** and **Libya** had the most 4-wheelers fatalities
- In **Uganda** only 7% of killed persons were travelling by 4-wheeled vehicles
Road Fatalities by Gender in Africa

- **30 countries** have provided WHO with fatality data by gender
- **76%** of the fatalities were male
- In **12 countries**, the percentage of male fatalities was **higher than 80%**
- **Algeria and Niger** have not provided data on female fatalities
Data published in IRF are those reported by the national sources which use different definitions.

Indicators:
- Reported number of road traffic deaths
- Road accident figures and rates
- Total number of injury accidents
- Total number of persons injured in road accidents
- Total number of persons killed in road accidents
- Persons killed in road accidents per 100,000 people
- Injury accidents per 100,000 people
- Injury accidents per 100 million Veh-Km
6 countries have provided the IRF with road accident data for the whole period 2000-2014 (Botswana, Egypt, Kenya, Mauritius, Morocco and South Africa).

11 countries have no accident data or are not participating in the surveys.

12 countries have more than 60% availability of road accident data over this period, ranging between 93% (Ghana) and 67% (Algeria, Cameroon and Guinea).

However, this is not the case for all road accident indicators, (e.g. data may be available for a country for a specific year on the number of injury accidents but not on the number of killed or injured persons).
Motorization in Africa

• Data on number of vehicles by type come mainly from IRF database
• The latest available data have been used for each country
• 32 out of 45 countries have vehicle rates lower than the average African rate
• Libya has the highest vehicle rate (310 vehicles per 1000 population) followed by Seychelles, Mauritius and South Africa
• Sao Tome and Principe, Togo, Ethiopia and Liberia have the lowest vehicle rate
• 58% of vehicles in Africa are passenger cars and 22% are vans and lorries
• The motorized two-wheelers constitute 15% of the total vehicle fleet
• Gambia has the highest percentage of passenger cars, while in Burkina Faso most vehicles in use are motorized two-wheelers
Road Network Characteristics in Africa

- Data are provided from IRF database
- For each country data refer to the latest available year (year 2000 most common)
- Only 19 countries have provided IRF with data referring to 2010 and later
- Among the large countries, Sudan, Mauritania and Niger have the lowest road network density
- South Africa, Kenya and Nigeria have the highest density road network
- Egypt, Tunisia and Algeria have the highest percentages of paved roads
- The D. R. of the Congo has the lowest percentage of paved roads
Road Safety Performance Indicators in Africa

- Data are provided from the WHO database

- Disaggregate rates may not refer to the same year nor come from the same source

- 16 countries have data on the use of seat-belts for drivers and for front seats

- Total seat-belt and rear seat-belt usage rates are available only for 9 and 7 countries respectively

- Only 16 countries have provided data related to helmet usage

- Helmet usage rates for drivers are above 90% for Eritrea, Seychelles, Swaziland, South Africa and Botswana
Conclusions (1/3)

• Significant differences regarding data availability and collection exist between African countries.

• Only a few countries have full time series of road fatality data, and especially for the latest available decade 2005-2014, only 21 African countries have available data for more than 5 years.

• Reliable comparison of the countries safety performance even regarding fatality rates is not possible, due to different definitions used per country.
Conclusions (2/3)

• **Comparability** issues between international databases

• **WHO**
  - provides the primary data as received by the national sources, which adjust them to the 30-days definition
  - data are not directly comparable due to differences in the quality of data collection process among countries
  - statistical models have been developed to estimate the number of fatalities in order to incorporate under-reporting issues and achieve comparability

• **IRF**
  - although 30-days definition for the fatalities in road accidents is utilized, published data are given by the national sources, which have different definitions
Conclusions (3/3)

- Attention when **using international databases in a complementary way**

- Greatest lack in data concerns **risk exposure and safety performance indicators**

- Risk exposure and safety performance indicators data **not totally reliable**
  - Data refer to different years (cases with more than 10 years difference)
  - Inadequate information on the collection methods
Minimum set of data elements and common collection system for all types of data

- 2 step approach
  - Improvement and harmonisation of the existing data and methods
  - Collection of new harmonised data
- Road accident data
  - Major role of police in collection process
- Road fatalities
  - International 30-days definition to be adopted
  - Countries not currently complying should modify the data collection process and develop appropriate conversion factors
  - Underreporting tackled by linking police data with hospital data
Recommendations (2/4)

Common accident data system

- Define **minimum data elements** based on
  - Selection criteria concerning the usefulness of the selected variables and values
  - Level of disaggregation
  - Difficulty of their collection

- All variables and values should refer to **casualty road accidents**

- **Accident data** structure is suggested to comprise **4 categories** of variables
  - Crash
  - Road
  - Vehicle
  - Road user characteristics
Exposure indicators

- Respective variables and values to be compatible to accident data

- 2 groups of data
  - Road traffic estimates
  - Road user at risk estimates

- Collection processes examined
  - Travel surveys
  - Traffic count systems
Recommendations (4/4)

Road safety performance indicators

- Respective variables and values to be compatible to accident data

- 2 data collection methods
  - Observational techniques
  - National statistics and data collected by national registers

- Define survey requirements (design requirements, etc.)

- Perform data analysis

- Document and report final results
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