



# Road Safety Data in Africa – Evidences from SaferAfrica

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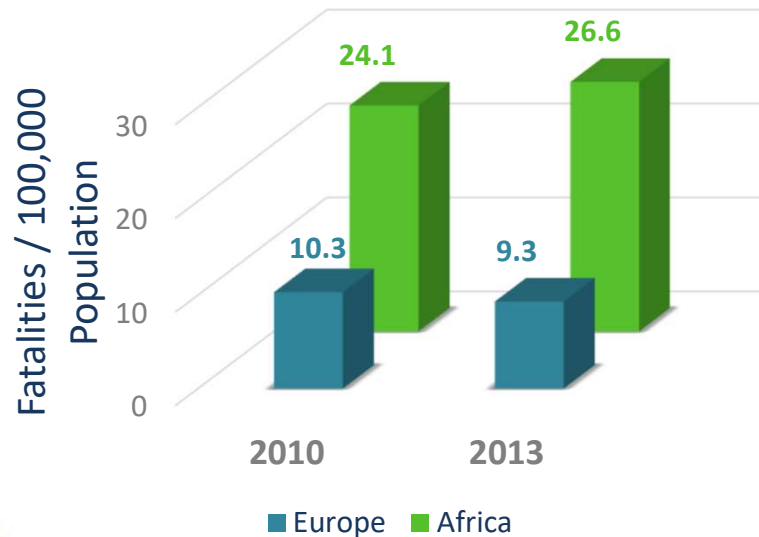


Webinar No3, 20 December 2018  
Co-funded by the Horizon 2020 Framework Programme of the EU under Grant Agreement No 724029

African-European Dialogue Platform on Road Safety

# 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**



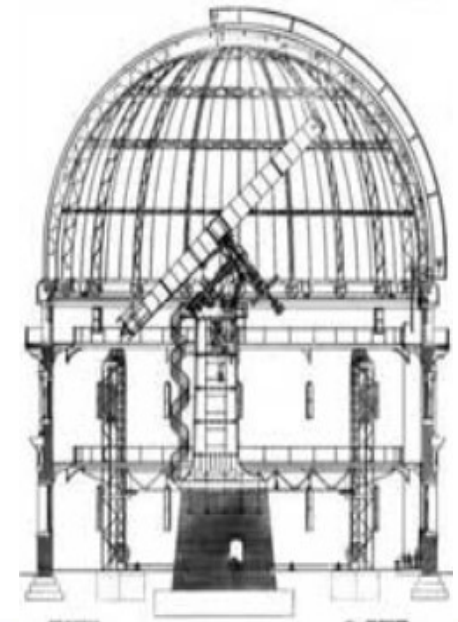
	Partner	Country
1	CTL	Italy
2	NTUA	Greece
3	IBSR	Belgium
4	IRF	Switzerland
5	IFSTTAR	France
6	LOUGH	UK
7	LNEC	Portugal
8	SWOV	Netherlands
9	SITRASS	France
10	APRE	Italy
11	SAFER	Sweden
12	ENSTP	Cameroon
13	HI	Belgium
14	OCAL	Benin
15	ICI	Burkina Faso
16	CITA	Belgium

# Pan-African Road Safety Knowledge and Data Centre



# Pan-African Road Safety Knowledge and Data Centre (WP4)

- ❑ **Develop** knowledge and management tools for setting up an **African Road Safety Observatory**  
<http://www.africanroadsafetyobservatory.org/>
- ❑ **Expand** the knowledge, **support** and **increase** the awareness of African stakeholders, policy makers and end users on road safety
  - Collect, analyze and facilitate the dissemination of road safety data including safety performance indicators
  - Identify risk factors
  - Support the definition of effective and efficient policies – measures
  - Provide specialized information - opinions on specific issues for users



# Barriers - Prerequisites

- ❑ Substantial lack of detailed knowledge on road casualties
  - ❑ Number
  - ❑ Associated factors
    - Leading to road accidents
    - Affecting their consequences
- ❑ Collection - analysis of road safety data and safety performance indicators
- ❑ **Concrete data and information** to be **accessible** by all stakeholders involved in road safety, either directly or indirectly
- ❑ **Assess thoroughly the needs of these actors in terms of knowledge, data and information tools**





# WP4 Activities

- ❑ **D4.1** - Review of road safety data collection systems and definitions
- ❑ **D4.2** - Recommendations for a minimum set of harmonised data collection procedures and definitions applied in the short- to medium –term
- ❑ **D4.3** - Data analysis and identification of risk factors



# Review of Road Safety Data Collection Systems and Definitions





# Objectives

- ❑ Assess the **needs** of stakeholders involved in road safety in terms of **knowledge** and **information** tools
- ❑ Convey a clear view of **current road safety practices** followed in Africa
- ❑ Identify **good practices** and priority areas for **improvement**



# Methodology

- ❑ Exploitation
  - ❑ Brief questionnaire  
(basic road safety aspects and definitions)
  - ❑ Extensive survey  
(road accident data, risk exposure, SPIs)
  - ❑ Existing road safety analysis documents (WHO, 2015 – IRF, 2016)
- ❑ Pilot study with 5 selected countries
  - ❑ Assess the effects of current practice in managing road safety data
- ❑ Comparative analysis and findings synthesis



# SaferAfrica Brief Questionnaire

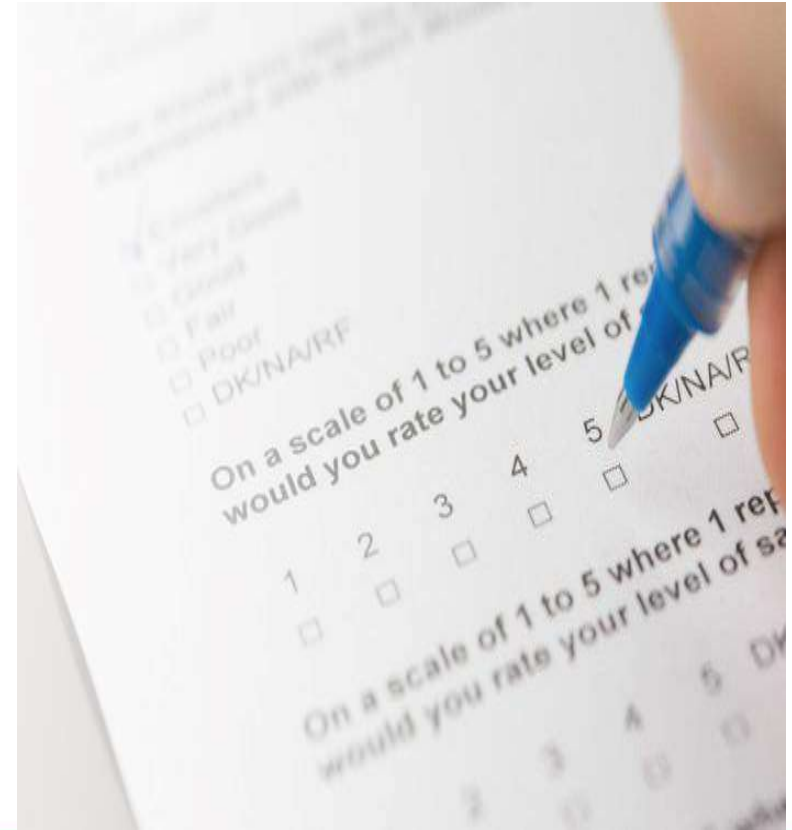
- ☐ Delivered  
Nairobi, Kenya (WB/IRTAD Workshop)
- ☐ When  
13-15 December, 2016
- ☐ Feedback by  
20 African Countries
- ☐ 10 Questions



a/a	Country	a/a	Country
1	Ethiopia	11	Botswana
2	Kenya	12	Lesotho
3	Malawi	13	Namibia
4	Mauritius	14	South Africa
5	Mozambique	15	Swaziland
6	South Sudan	16	The Gambia
7	Tanzania	17	Ghana
8	Uganda	18	Liberia
9	Zimbabwe	19	Nigeria
10	Cameroon	20	Sierra Leone

# SaferAfrica Extensive Questionnaire (1/3)

- ☐ Assess **current status** regarding basic aspects of road safety data and definitions
- ☐ **Determine**
  - ☐ National data collection systems (e.g. accident forms processing)
  - ☐ Definitions of basic variables (e.g. fatalities)
- ☐ **Join information on data**
  - ☐ Collection (e.g. fatality data, exposure data and SPI data)
  - ☐ Processing and storage (e.g. practices for recording road accident casualties)
- ☐ **Analyse results – deliver recommendations**



# SaferAfrica Extensive Questionnaire (2/3)

- ☐ Delivered
  - ☐ Nairobi, Kenya  
(WB/IRTAD Workshop, Dec.2016)
  - ☐ Marrakesh, Morocco  
(WB/IRTAD Workshop, Mar.2017))
  - ☐ Tunis, Tunisia  
(13th PRI World Congress, May2017)
  - ☐ Through e-mails to contacts
- ☐ When  
December 2016 – mid July 2017
- ☐ Feedback  
21 African Countries,  
29 African Stakeholders



no	Country	Governmental Representative	Independent Expert	Total
1	Tunisia	1		1
2	Kenya		1	1
3	Malawi	1		1
4	Mauritius	2		2
5	South Sudan	2		2
6	Tanzania	2		2
7	Cameroon	2		2
8	D. R. of the Congo	1		1
9	Botswana	1		1
10	Lesotho	1		1
11	South Africa		1	1
12	Swaziland	1		1
13	Benin	1	1	2
14	Burkina Faso	2		2
15	The Gambia	1		1
16	Guinea	1		1
17	Mali	2		2
18	Nigeria	1		1
19	Senegal	1		1
20	Sierra Leone	1		1
21	Togo	2		2
Total		21	3	29



# SaferAfrica Extensive Questionnaire (3/3)

## Structure

### ☐ **Section 1 – Road Safety Activities**

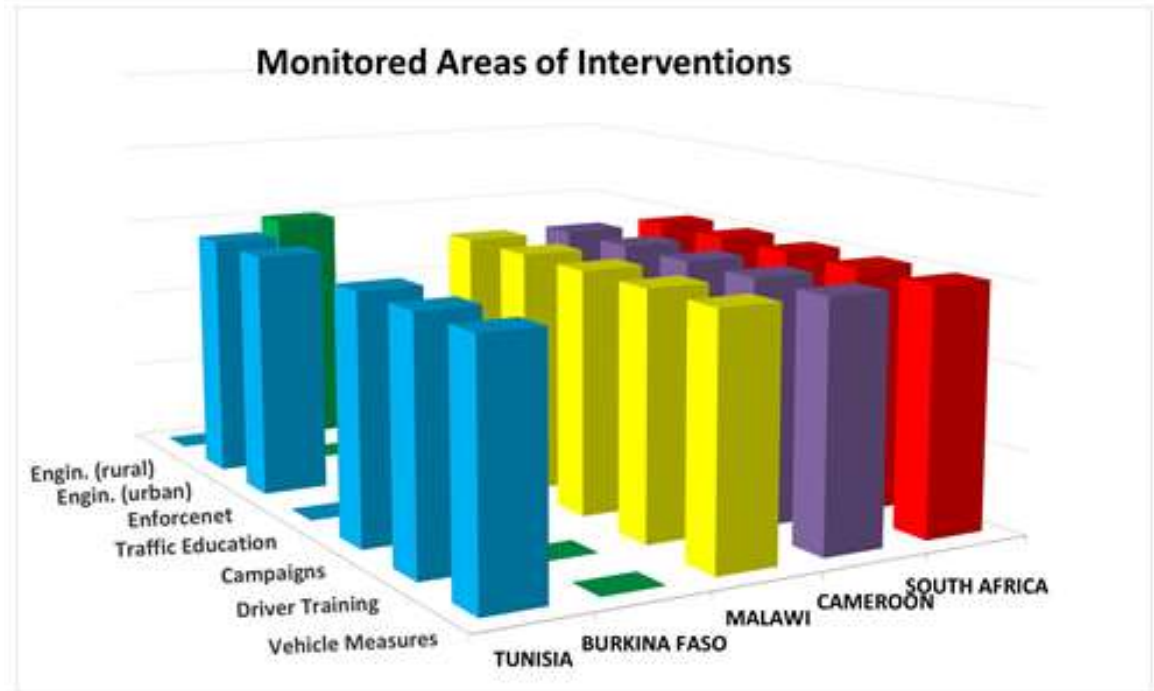
- ☐ Activity in the field of road safety  
(Part A)
- ☐ Road safety management practices per country  
(Part B)
- ☐ Key road safety resources utilized in questioned person's daily work  
(Part C)

### ☐ **Section 2 – Data and Data Practices**

- ☐ Data collection practice  
(Part D)
- ☐ Basic road safety data per country  
(Part E)

# Pilot Study - Results (1/3)

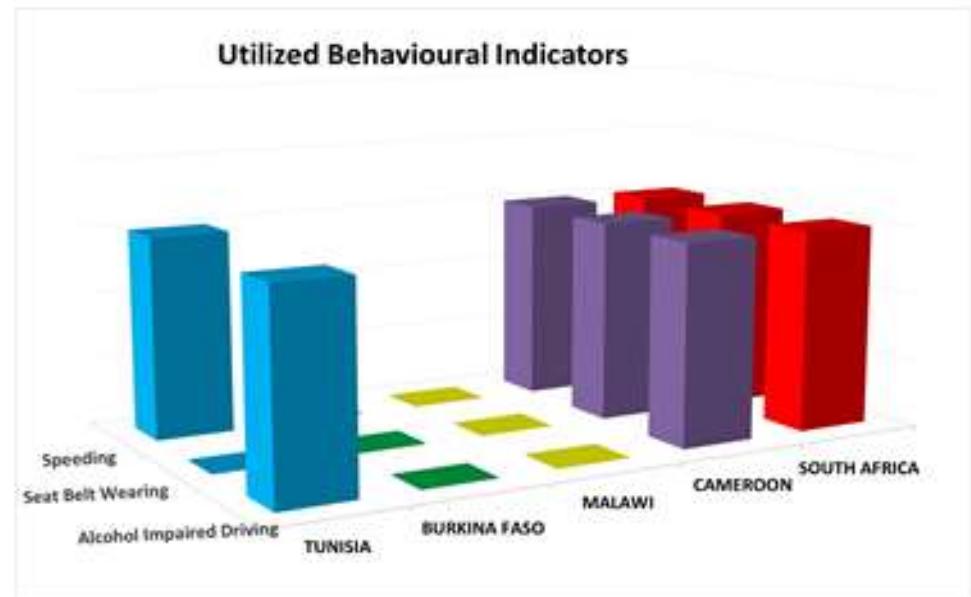
- Main areas for monitoring road safety interventions



Note: The raised bars imply existence – utilization of the relevant item.

# Pilot Study - Results (2/3)

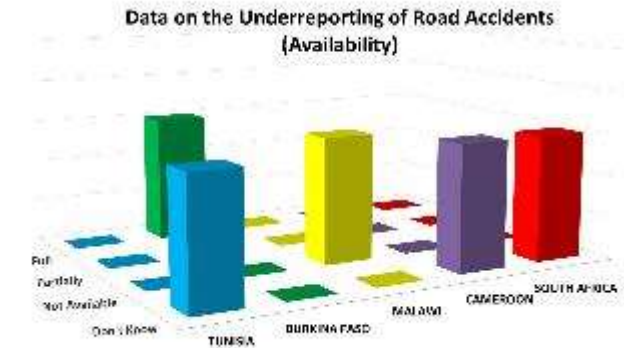
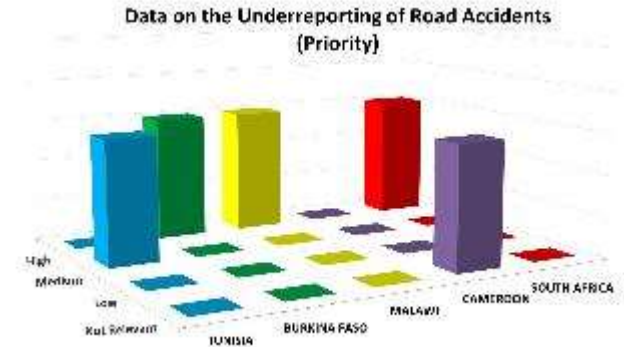
- Utilized behavioural indicators



Note: The raised bars imply existence – utilization of the relevant item.

# Pilot Study - Results (3/3)

- Data on the underreporting of road accidents
- priority
- availability



Note: The raised bars imply existence – utilization of the relevant item

# Road Safety Data Collection Systems and Definitions

- General remarks
- Road safety data collection systems
- Road safety data definitions
- Road safety data





# General Conclusions

- ❑ Important **deficiencies of current practices** were revealed, which partially explain poor road safety performance
- ❑ For many African countries such questioned issues are **collected for the first time** and can be useful to road safety decision-makers
- ❑ Stakeholders **revealed significant demand for data and knowledge**, which can be used for road safety decision making

BUT

- ❑ Due to the low number of answers to the two-fold surveys, the conclusions have to be confirmed in the future by in depth analysis and additional incoming questionnaires



# Conclusions on Road Safety Data Collection Systems

- ❑ Data collection practices from **road safety monitoring** and **evaluation** points of view are addressed in various ways
  - ❑ **sustainable systems to collect and manage data** on road accidents, fatalities and injuries are in place for many but not all countries examined
  - ❑ 50% of the examined countries have a **national observatory** centralizing data systems for road safety as well as a reporting procedure to monitor road safety interventions
  - ❑ 35% of the examined countries adopt **process evaluation** during the implementation period of a road safety programme, mainly addressing road safety campaigns
- ❑ **Exposure indicators** were found in the examined countries' national observatories, where 5 countries out of 10 seem to include exposure data in their national road safety observatories
- ❑ Approximately 50% of the examined countries use **behavioural indicators** emphasizing on speeding and alcohol impaired driving, where safety belt wearing rates were found to be lower

# Conclusions on Road Safety Data Definitions

- ❑ The existence of a **common fatality definition** was highly prioritized
- ❑ **Underreporting** of road accidents was regarded as a priority of great importance for most stakeholders, however, accessibility to such data is partially available
  - ❑ road accident databases linking police and hospital data may serve as a potential solution
- ❑ Identifying **high-risk sites** is considered more important compared to performing in-depth accident analysis, where regarding the latter, the existence of a common methodology seems limited
- ❑ **Exposure data** although appreciated by more than 50% of the stakeholders are fully available to approximately 20% of them
- ❑ Information on road users' **behavioural aspects and attitudes** was found to be highly prioritized by more than 70% of road safety stakeholders, however, availability of such information is rather limited to almost 30% of stakeholders

# Conclusions on Road Safety Data (1/2)

- ❑ Only few countries dispose suitable **time series of road fatality data**
- ❑ Greatest **lack in data** concerns risk exposure and safety performance indicators
- ❑ **Comparability** issues of the data and the potential of using different databases in a complementary way are reported:

## WHO

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

## IRF

- although the 30-days definition for the killed persons in road accidents is utilized, published data are given by the national sources, which have different definitions

## Conclusions on Road Safety Data (2/2)

- ❑ Data comparability on **exposure** and **road safety performance indicators**, for countries with available data is not totally reliable
  - ❑ Data refer to different years (cases with more than 10 years difference)
  - ❑ Not much information on the collection methods
- ❑ Presented data should be treated as an approximate picture of the road safety situation in African countries



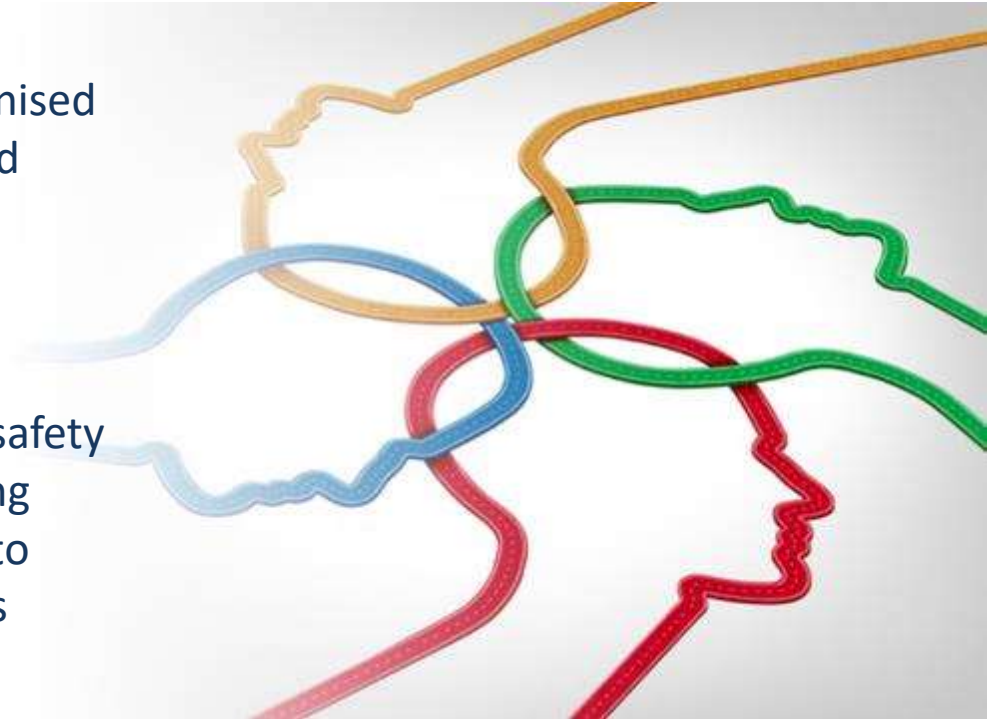


# Recommendations for a Minimum Set of Harmonised Data Collection Procedures and Definitions



# Objectives

- ❑ Provision of recommendations and guidelines for a minimum set of harmonised data collection procedures and standard definitions
  - ❑ minimum set of data elements
  - ❑ common collection system
- ❑ Deliver accurate and comparable road safety data for evidence-based decision making
- ❑ Applied in the short- to medium term to improve African data collection systems



# Methodology

- ❑ Exploitation of existing road safety analysis reports – survey findings
  - ❑ Manual of the WHO on Data Systems (2010)
  - ❑ EU-funded research project SafetyNet (2008)
- ❑ Survey in the context of Safer Africa project
  - ❑ road safety data
  - ❑ data collection systems
  - ❑ definitions



# Types of Data Assessed

- ❑ 3 types of data
  - ❑ Accident data
  - ❑ Exposure data
  - ❑ Road safety performance indicators
- ❑ Limitations in the collection process
  - ❑ experience
  - ❑ unavailability
  - ❑ lack of standardization
- ❑ 2-fold priorities scenario / data type proposed
  - ❑ usefulness
  - ❑ ease to collect





# Limitations for International Comparisons of Road Accident Data (1/3)

- ❑ **Incompatibility of data**
  - ❑ different collection procedures
  - ❑ different definitions of the variables and values utilized
- ❑ **Sources of data incompatibility**
  - ❑ missing or incomplete national definitions (e.g. for weather conditions)
  - ❑ different definitions in different countries (e.g. for road types)





## Limitations for International Comparisons of Road Accident Data (2/3)

- ❑ Underreporting
  - ❑ issue of **general concern** in Africa
  - ❑ affects the degree to which the statistical output of a country's data system **reveals the actual situation** of road safety
  - ❑ road accident databases **linking Police and hospital data** may serve as a potential solution



## Limitations for International Comparisons of Road Accident Data (3/3)

- ❑ Additional inaccuracies
  - ❑ **conditions** under which the primary **information** is **collected** by the police officer
  - ❑ the **way** this **information** is **filled-in** later on
  - ❑ **inadequate training** of the **Police** collecting the information



# Accident Data Proposal

- ❑ Common dataset composed of minimum data elements (variables) acts as key tool for ensuring the appropriateness of data captured
- ❑ Uniformity of accident data crucial for subnational - international comparisons
- ❑ 2-step approach for developing common data collection system
  - ❑ improvement and harmonisation of existing data and methods
  - ❑ collection of new harmonised data



# Establishment of Common Rules for Africa

- ❑ Based on recommendations from relevant international projects (e.g. CARE system)
  - ❑ data structure, definitions and formats for the most common variables in road safety analyses can be used as a basis for the development of an African common data set
- ❑ However,
  - ❑ changes to definitions and values of existing data elements should be minimized
  - ❑ in case of such changes, the date should be clearly noted in official records





# Accident Data Collection Process

- ❑ Police reports
  - ❑ key role in the accident data collection process
  - ❑ responsible for providing the authorities with the collected data
  - ❑ main tool: accident data collection form with clear instructions
    - filling process
    - data transmission process to the national data file
- ❑ Hospital data
  - ❑ necessity for clear guidelines on the collection and coding of variables to be included in hospital data
  - ❑ identifiers should match hospital and police data
- ❑ In-depth accident investigations
  - ❑ high level of detail about each accident and how this can be related to a number of outcomes
  - ❑ aimed at the cause of the accident, not who was to blame



# Accident Data Collection Priorities

- ☐ Common road accident database in a uniform format
  - ☐ continuously updated (compatible - comparable data)
  - ☐ allowing for more reliable analyses and assessments across the African countries
- ☐ Selection criteria for defining minimum data elements
  - ☐ data elements - values useful for road accident analysis at both national and international level
  - ☐ level of detail of the variables - values corresponds to all data useful for macroscopic data analysis
  - ☐ data elements - values comprehensive and concise
  - ☐ data difficult to collect should not be included
  - ☐ all variables and values refer to casualty road accident
- ☐ Data structure to follow the structure proposed in the WHO (2011) Manual





# Proposed Data Structure of the Common Road Accident Data Set

Accident related variables		Road related variables		Vehicle related variables		Person related variables	
1 <sup>st</sup> priority	2 <sup>nd</sup> priority	1 <sup>st</sup> priority	2 <sup>nd</sup> priority	1 <sup>st</sup> priority	2 <sup>nd</sup> priority	1 <sup>st</sup> priority	2 <sup>nd</sup> priority
Accident ID	Impact type	Type of roadway	Speed limit	Vehicle number	Engine size	Date of birth	Person ID
Accident date		Road functional class	Road obstacles	Vehicle type	Vehicle special function	Gender	Occupant's vehicle number
Accident time		Junction	Road surface conditions	Vehicle make		Type of road user	Pedestrian's linked vehicle number
Accident region - municipality			Traffic control at junction	Vehicle model		Seating position	Safety equipment
Accident location			Road curve	Vehicle model year		Injury severity	Pedestrian manoeuvre
Accident type			Road segment grade	Vehicle manoeuvre		Driving licence issue date	Alcohol use suspected
Weather conditions						Age	Alcohol test
Light conditions							Drug use
Accident severity							

# Exposure Data (1/2)

- ☐ Road traffic estimates
  - ☐ road length
  - ☐ vehicle kilometres
  - ☐ vehicle fleet
  
- ☐ Road user at risk estimates
  - ☐ person kilometres
  - ☐ population
  - ☐ number of trips
  - ☐ time in traffic
  - ☐ driver population
  
- ☐ Data recorded systematically by most countries
  - ☐ vehicle fleet, driver population and road length



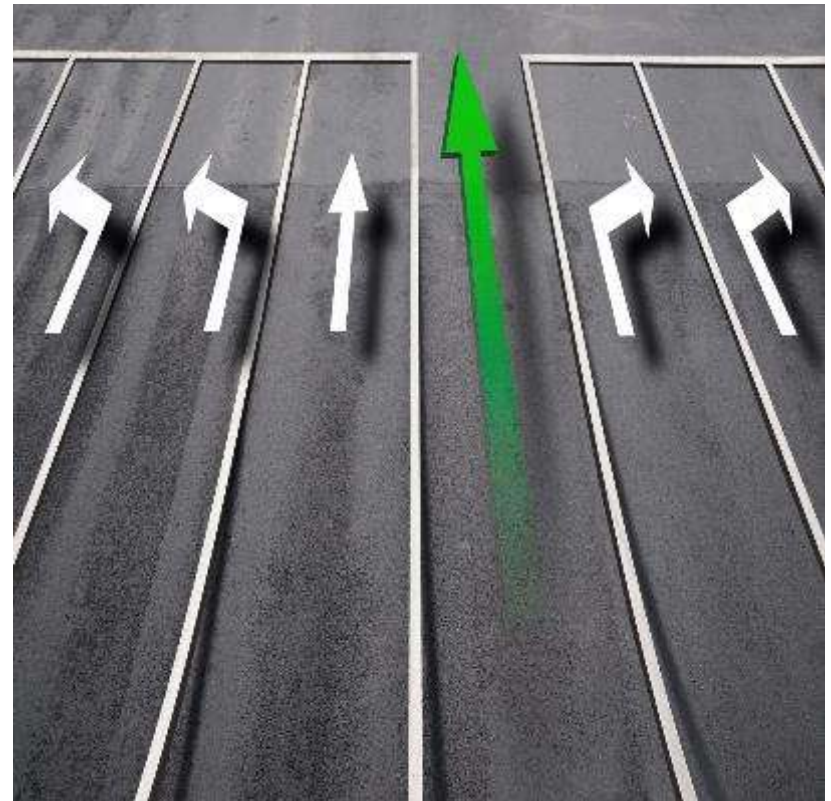
# Exposure Data (2/2)

- ❑ Basic requirements
  - ❑ travel/mobility surveys
  - ❑ traffic counts
  - ❑ common vehicle classification
  - ❑ common method for calculating vehicle-kilometres
- ❑ In Africa, only 7 countries were found to have collected exposure data
- ❑ 2-step approach for developing common exposure data collection system
  - ❑ improvement and harmonisation of existing data and methods
  - ❑ collection of new harmonised data



# Exposure Data Collection Priorities

- ❑ Establishment of a common framework for collecting exposure data
  - ❑ consistent
  - ❑ comparable at both continent and international level
- ❑ Main methodologies expensive, difficult to organize, need time to show results
- ❑ Certain exposure indicators more available
  - ❑ collection process is managed systematically from national governmental bodies



# Proposed Exposure Data Collection Structure

1 <sup>st</sup> priority	2 <sup>nd</sup> priority
Population	Road length
Driver population	Vehicle kilometres
Vehicle fleet	Person kilometres

PRIORITIES

- 1.
- 2.
- 3.





# Road Safety Performance Indicators (1/2)

- ❑ Measures, reflecting those operational conditions of the road traffic system, which influence the system's safety performance
- ❑ Serve as tools for
  - ❑ assessing current safety conditions of a road traffic system
  - ❑ monitoring the progress
  - ❑ measuring impacts of various safety interventions
  - ❑ making comparisons
- ❑ Divided into 4 pillars
  - ❑ road
  - ❑ vehicle
  - ❑ road user
  - ❑ post-accident care





## Road Safety Performance Indicators (2/2)

- ❑ In Africa, SPIs focused on behavioural aspects
- ❑ Although highly by the questioned experts, rather limited data available
- ❑ Establishment of a common framework and areas for producing SPIs based on
  - ❑ survey results
  - ❑ minimum requirements based on international practice (WHO, IRF)



# Road Safety Performance Indicators Collection Methodology

- ☐ Observational techniques
  - ☐ sampling frame to be defined
- ☐ National statistics and data
  - ☐ collected centrally by national registers
  - ☐ more easy to implement
  - ☐ far more available in many African countries



# Proposed RSPI Collection Priorities

1 <sup>st</sup> priority	2 <sup>nd</sup> priority
Number of vehicles by year of manufacture (or registration year)	% of drivers over legal limits
Number of vehicles by vehicle type	% of severe or fatally injuries attributed to alcohol
	Speeding
	Daytime wearing rates of seat-belts
	Front seats (passenger cars+vans)
	Rear seats (passenger cars+vans)
	Child restraint systems (children <12 y.o.)
	Front seats (hgvs)
	Daytime wearing rates of helmets
	Motorcyclists
	Moped riders
	Cyclists

# General Implementation Roadmap

- ☐ Establishment of capacity at the authorities
  - ☐ collect, process and analyse data
  - ☐ support decision making
- ☐ overall intention to develop a culture of substantiated decision making on all the organizations involved
- ☐ bodies to be involved
  - ☐ police
  - ☐ hospitals
  - ☐ public organizations involved in surveys for exposure data - SPIs
- ☐ special emphasis in the underreporting of road accident data
  - ☐ tackled by linking Police and hospital data



# General Implementation Roadmap

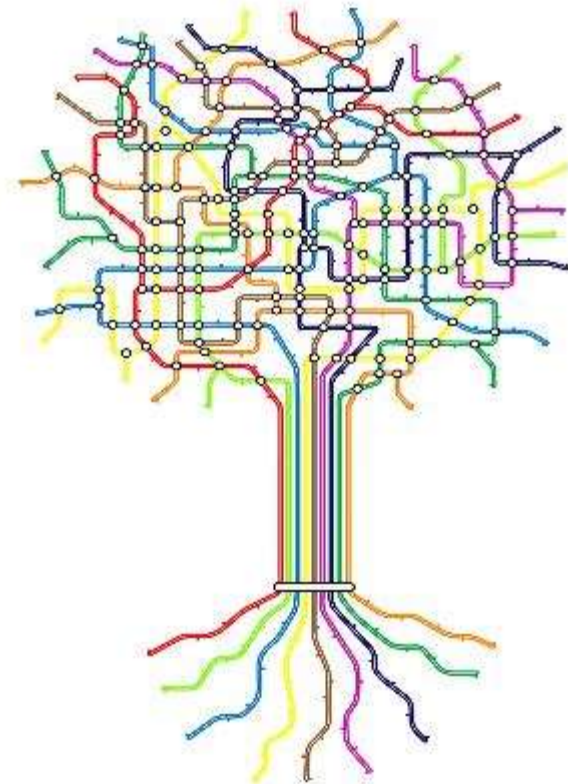
- ❑ Summary sampling and costing
  - ❑ data elements should be comprehensive, concise, and refer to casualty road accidents
  - ❑ demanding data (time, cost, collection barriers etc.) to be avoided regardless of their value for road accident analysis
  - ❑ 2-stage priorities scenarios proposed
- ❑ 1st priority data, no significant cost, data expected to be available in national databases
- ❑ 2nd priority data, cost of surveys depends on country size
- ❑ exposure and SPIs surveys required for the 2nd priority
  - ❑ alcohol survey
  - ❑ speed survey
  - ❑ use of protection systems survey





# General Implementation Roadmap

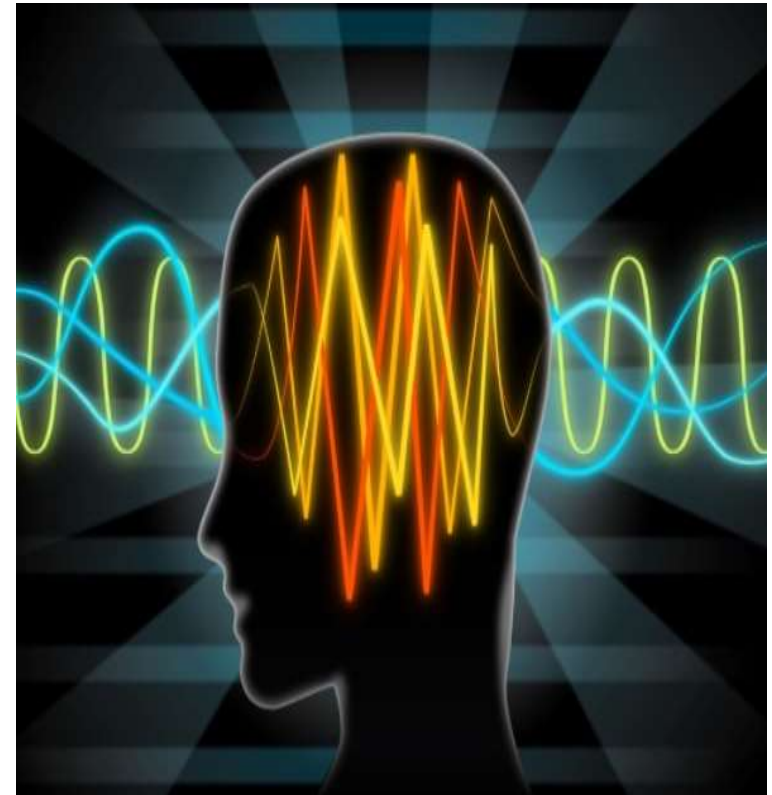
- ❑ Adopt standard data definitions and standard data collection processes
- ❑ data elements - values must be useful for road accident analysis
  - ❑ national level
  - ❑ international level
- ❑ collection process performed and standardised
  - ❑ upon road accident (accident data)
  - ❑ on a periodic basis (exposure data – SPI surveys)





# General Implementation Roadmap

- ❑ Dedicated budget
  - ❑ Countries with dedicated road safety budget → higher operational level of road safety
- ❑ Formation of Pan-African coordinate organization
  - ❑ assess the standardization level of the data collection process
  - ❑ define data collection priority areas for further improvement
  - ❑ coordinate the data collection management
  - ❑ support monitoring, analysis and publishing process of the data



# SaferAfrica Implementation Roadmap

- ❑ Recommendations need to be rapidly conversed to the involved local authorities of each African country through a **network of national experts**
- ❑ SaferAfrica **coordinator** in charge to
  - ❑ manage distribution of recommendations
  - ❑ address needs of the other project activities
- ❑ Steps
  - ❑ identify data set needed as well as costs
  - ❑ secure funding
  - ❑ carry out regular data collection
  - ❑ process (data base) and analyse



# Data Analysis and Identification of Risk Factors



# Objectives

- ❑ Analyse road safety data collected in previous phases
  - ❑ International databases (WHO, IRF)
  - ❑ questionnaires
- ❑ Identify key risk factors affecting road safety based on specific topics





# Statistical Reports – Fact Sheets

- ☐ Annual Statistical Report
- ☐ 7 Thematic Fact Sheets
  - ☐ Gender
  - ☐ Road User Behavior
  - ☐ Infrastructure
  - ☐ Vehicle
  - ☐ Post-crash Care
  - ☐ Road Safety Management
  - ☐ Legislation



# Annual Statistical Report

- ❑ Trends of road accidents and injuries over the decade 2006-2015
- ❑ Characteristics of road accident fatalities (2013)
- ❑ However
  - ❑ serious lack of road safety data in African countries
  - ❑ data not always comparable due to different definitions or under-reporting

ANNUAL STATISTICAL REPORT 2018



<http://www.africanroadsafetyobservatory.org/>



# Thematic Fact Sheets



<http://www.africanroadsafetyobservatory.org/>



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