

Pilot study to collect more robust accident data for Sierra Leone

2nd Workshop Report



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Abstract

This report provides an overview of the stakeholder workshop held in Freetown on 16th July 2018 (hosted by Sierra Leone Road Safety Authority) to present and get approval for the accident data management system. The system is proposed by the consultant based on his experience in other African countries and on an in-depth analysis of Sierra Leone stakeholder needs. The system has been adapted to the local conditions of the country and to the needs expressed by the stakeholders. Outcomes of the workshop also allowed the team to further refine the road traffic crash data collection forms proposed in the project to better fit with the needs of the police force.

Key words

Road crash; Data collection; Workshop; Accident data management system; Stakeholders

Research for Community Access Partnership (ReCAP)

Safe and sustainable transport for rural communities

ReCAP is a research programme, funded by UK Aid, with the aim of promoting safe and sustainable transport for rural communities in Africa and Asia. ReCAP comprises the Africa Community Access Partnership (AfCAP) and the Asia Community Access Partnership (AsCAP). These partnerships support knowledge sharing between participating countries in order to enhance the uptake of low cost, proven solutions for rural access that maximise the use of local resources. The ReCAP programme is managed by Cardno Emerging Markets (UK) Ltd.

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Acronyms, Units and Currencies

\$	United States Dollar (US\$ 1.00 ≈ provide conversion to local currencies)
ADB	Asian Development Bank
AfCAP	Africa Community Access Partnership
AsCAP	Asia Community Access Partnership
CADaS	Common Accident Dataset
GPS	Global positioning system
ITPSIP	Integrated Transport Policy, Strategy and Investment Strategy
LVRs	Low Volume Roads
MoHS	Ministry of Health and Sanitation
ONISR	French Inter-ministerial Observatory for Road Safety
PRSP-III	Third Poverty Reduction Strategy Paper
ReCAP	Research for Community Access Partnership
RTC	Road Traffic Crash
SLICOM	Sierra Leone Insurance Commission
SLRA	Sierra Leone Roads Authority
SLRSA	Sierra Leone Road Safety Authority
SLP	Sierra Leone Police
SSL	Sierra Leone Statistics
ToR	Terms of Reference
UNECA	United Nations Economic Commission for Africa
UK	United Kingdom (of Great Britain and Northern Ireland)
UKAid	United Kingdom Aid (Department for International Development, UK)
WB	World Bank
WHO	World Health Organization

Executive summary

Following the approval of the road traffic crash (RTC) data collection and management framework proposed for Sierra Leone, a pilot data collection has been held in three ecological regions of the country.

To complete the pilot study, an accident data management system has been selected and adapted to the main needs of Sierra Leone. It is especially composed of two interacting software components that have been made fully consistent with the RTC data collection and management framework.

A stakeholder workshop has been organised to demonstrate the accident data management system and to get approval for its installation and training.

The following stakeholders attended the workshop (held on 16th July 2018 at Sierra Leone Road Safety Authority):

- Sierra Leone Road Safety Authority (SLRSA).
- Road Safety Corps of SLRSA
- Sierra Leone Roads Authority (SLRA).
- Sierra Leone Police (SLP).
- Statistics Sierra Leone (SSL).
- Gberray Village.
- BangaBety Village.
- Connaugh hospital (mortuary department).
- Transnation Insurance.

The consultant made presentations on the following aspects:

- Current status of the study and next steps.
- Main results of the pilot data collection, including challenges and recommendations.
- Demonstration of the accident data management system (i.e. SFINGE software and SAFETY MANAGER).

The accident data management system was approved by the road safety stakeholders. Following questions, clarifications were provided regarding:

- Inclusion of all data elements proposed in the RTC data collection forms into the accident data management system.
- Possibility to analyse the causes of RTC using the system.
- How social costs are considered into the system for decision making about road safety interventions.
- Possibility to include information about relatives of persons injured into the module for health services.
- How different methods currently used by SLP and SLRSA are considered in the system.
- How duplications of collected data can be avoided.
- Possibility to include in-depth investigation data in the national database.
- What is the process of involvement of various stakeholders during data collection.

1 Introduction

The pilot study to collect more robust accident data in Sierra Leone has two main objectives:

- Set up a methodology for road traffic crash (RTC) data collection using sample data on a pilot basis with relevant attributes and related protocols for the management of road safety on low volume roads (LVRs) in Sierra Leone.
- Develop and implement an electronic data management system for RTC data storage, analysis and retrieval for LVRs in Sierra Leone.

Activities have been conducted in the initial phase of the study to understand the current situation in Sierra Leone for RTC data collection, management and analysis. Consultations have been held with stakeholders involved in data collection and analysis (namely Sierra Leone Road Safety Authority, Sierra Leone Police, Health services (hospitals, emergency centres, mortuary department), Sierra Leone Roads Authority, Statistics Sierra Leone).

Based on the outcomes of consultations and on the analysis of stakeholder needs, a framework for RTC data collection adapted to Sierra Leone has been defined and discussed with stakeholders during a workshop.

This framework included two RTC data collection forms to be used by police officers and health services personnel to collect information about RTC data elements and about persons injured in RTC.

The two data collection forms were successively tested during a pilot RTC data collection exercise. During two weeks, three enumerators collected RTC data in three different ecological areas of Sierra Leone.

Following the approval of the data collection framework, an accident data management system has been selected and adapted to Sierra Leone conditions and needs. Before its implementation at Sierra Leone Road Safety Authority, a second stakeholder workshop has been organised with the aim of demonstrating and validating the accident data management system.

Results of the 2nd Stakeholder Workshop are summarised in this report.

2 2nd Stakeholder Workshop

The Stakeholder Workshop was held on 16th July 2018 in Freetown, hosted by Sierra Leone Road Safety Authority (SLRSA).

Table 1 shows the workshop agenda. After a brief welcome and presentation of participants by the representative of SLRSA, Mr Amara from Sierra Leone Roads Authority (SLRA) introduced the Africa Community Access Partnership (AfCAP) to the participants.

Mr Antonino Tripodi, team leader of the study, made a presentation on the current status of pilot study activities. He especially presented the main objectives and activities undertaken, the main results of the pilot RTC data collection and the next activities to be performed. The presentation is available in Annex 1.

Ms Nadia Wurie, the local engineer on the team, made a presentation on the pilot RTC data collection activity. She presented to stakeholders how data collection has been carried out, the results of the activity and the main challenges and recommendations made from this pilot exercise. The presentation is available in Annex 2.

Mr Massimo Robibaro, the computer scientist on the team, demonstrated the accident data management system implemented for Sierra Leone. The system is composed of two interacting software:

- SFINGE, used for RTC data collection by police officers and health services personnel.
- SAFETY MANAGER, used by road safety technicians (from SLRSA) to manage the national database on RTC, analyse the data and recommend road safety mitigation interventions.

Presentations are available in Annex 3.

Table 1 Agenda of the 2nd Stakeholder Workshop

Time	Title	Speaker
9:00	Welcome and presentation of participants	Ms Memunatu KOROMA Deputy Executive Director Sierra Leone Road Safety Authority
9:15	Introduction on AfCAP	Mr Tamba K. AMARA Chief Engineer – Feeder Roads Sierra Leone Roads Authority
9:30	Pilot study to collect more robust accident data in Sierra Leone: state of play	Mr Antonino TRIPODI Team Leader / Road Safety specialist FRED Engineering
9:45	Pilot road traffic data collection: activities performed and challenges	Ms Nadia WURIE Local Engineer CTL
10:00	Accident data management system part 1: SFINGE	Mr Massimo ROBIBARO Computer Scientist CTL
11:00	Accident data management system part 2: SAFETY MANAGER	Mr Massimo ROBIBARO Computer Scientist CTL
12:00	Open discussion	
13:00	Refreshment	

The workshop was attended by the following stakeholders (16 persons). All of them participated actively in the open discussion (the attendance list is available in Annex 4):

- Sierra Leone Road Safety Authority (SLRSA).
- Road Safety Corps of SLRSA
- Sierra Leone Roads Authority (SLRA).
- Sierra Leone Police (SLP).
- Statistics Sierra Leone (SSL).
- Gberray Village.
- BangaBety Village.
- Connaugh hospital (mortuary department).
- Transnation Insurance.

During the open discussion with stakeholders some questions were raised, and interesting inputs were provided. The accident data management system was approved by stakeholders. No changes were requested.

The views and inputs of stakeholders on the proposed accident data management system for Sierra Leone are summarised in Table 2, together with feedback from the consultant.

Table 2 Views and inputs from the stakeholders

Views / Inputs	Feedback from the consultant
<p>Are the data elements included in the proposed RTC data collection forms also included in the accident data management system? Is it possible for police officers to know and analyse the causes of RTC by using the system?</p>	<ul style="list-style-type: none"> • Yes. All the data elements proposed have been included both in SFINGE (for data collection) and in SAFETY MANAGER (for data analysis). • Actually, the main customisation of the software consisted in adapting them according to the agreed RTC data collection and management framework (including data collection forms). • One of the fields included in the data collection form to be used by police officers (and as a consequence in the software) relates with RTC causes as usually collected by police officers (for instance, over-speeding, tyre burst, etc.). • Police officers can also make analyses of RTC causes (as well as for any other data element).
<p>How RTC social costs are considered during the cost-benefit analysis of possible road safety interventions carried out through SAFETY MANAGER?</p>	<ul style="list-style-type: none"> • The social cost of RTC is used to estimate the benefits of a potential road safety intervention. Knowing the potential reduction of RTC and victims, it is possible to estimate a potential reduction of road safety social cost (i.e. a benefit). • The social costs of an RTC, of injuries and deaths, are an input embedded into the system. • For the moment, since an estimation of such costs does not exist for Sierra Leone, average costs taken from literature for similar countries are considered.
<p>In the data collection form used for health services (and in the accident data management system) it could be useful to also include information about relatives (parents) of persons injured or dead. It can happen that police officers do not correctly collect the persons' name and age or that they cannot collect them (because the person is dead or other). Often relatives provide useful information on persons injured.</p>	<ul style="list-style-type: none"> • The data collection form for health services is independent on who provides the information (name, age, sex or other). • The source of the information is not important. What is important is that the information is collected and stored into the accident data management system. • Revision of the form and of the system is possible.
<p>Regarding the pilot data collection undertaken in the selected provinces, the relatively low number of RTC cases collected could be due to the focus of the project on rural roads. Many RTC occur on non-rural roads.</p>	<ul style="list-style-type: none"> • We are aware that many RTC have not been considered due to the area selection. However, the pilot study focuses on low volume roads. For this reason, urban environments have not been considered. • Clearly the probability of RTC occurrence on LVRs is much lower than on other roads.
<p>At present RTC data are collected with different methods by SLP and SLRSA. Does the accident data management system take them into consideration?</p>	<ul style="list-style-type: none"> • This is something mainly related to the RTC data collection framework and the data collection form proposed for police officers. • During the study the data collection forms currently used by SLP and SLRSA have been analysed. They have been used as a starting point, together with international literature, to prepare the new form for Sierra Leone. • SLP and SLRSA will use in the future a unique form (identical) in which the information already collected will still be included.
<p>It could happen that SLP and SLRSA collect information on the same RTC. How can</p>	<ul style="list-style-type: none"> • The accident data management system (especially SAFETY MANAGER) includes a

Views / Inputs	Feedback from the consultant
<p>duplications of information in the national RTC database be avoided?</p>	<p>function that compares the data provided by different sources (e.g. SLP and SLRSA).</p> <ul style="list-style-type: none"> • When potential duplications are found by the system, a warning is given to the system user that can correct the information and avoid duplications. • When required, feedback should be sent to SLP and SLRSA to decide what information is correct. • Generally speaking, a process should be in place in the country to avoid that SLP and SLRSA attend the same RTC scene. • Validation of RTC data collected is important. All entities should assign personnel in charge of checking the data correctness and completeness.
<p>Sometimes SLRSA performs in-depth investigations of RTC to better understand the contributing factors of RTC. Are in-depth investigations included in the system?</p>	<ul style="list-style-type: none"> • In-depth investigations are very different from normal RTC data collection. • When an RTC occurs police officers should attend the scene to collect basic data elements such as those included in the proposed data collection form. This must be done for all RTC situations. • In some cases, in-depth investigations can be carried out to collect more data elements in order to understand the contributing factors. This is done only for some very important RTC (usually the fatal ones). • However in-depth investigations have a high cost and require highly skilled personnel and various types of equipment. • In Europe, for instance, in-depth investigations are still not done frequently. • The accident data management system is developed to deal with the first practice (thus to collect and analyse statistical information about all RTC).
<p>Regarding the pilot data collection, do you have information about the response time for attending the RTC scenes?</p>	<ul style="list-style-type: none"> • During the pilot exercise all RTC were attended immediately. There was no significant delay in attending the RTC scenes.
<p>Can you please clarify what is the process for collecting data about the same RTC by the various stakeholders involved? For instance, when do the health services intervene in the process?</p>	<ul style="list-style-type: none"> • The data collection process is not precisely timed. Police officers collect information when a crash occurs. Health services collect information when a person is admitted into a hospital or when the deceased are sent to the mortuary. • Data will always be collected in different periods and health services will often collect data after the police officers. • However, they perform their tasks independently. When information is sent to the national database, data are merged.

3 Conclusions

Various activities have been performed so far for the pilot study to collect more robust accident data in Sierra Leone.

Consultations with stakeholders have been held to identify current practices and their main needs to improve these practices. A framework for collection and management of road traffic crash data has been prepared and discussed with stakeholders to agree on.

The framework (especially the proposed RTC data collection form template) has been tested during pilot data collection in three different ecological regions of Sierra Leone (some examples of completed data collection forms are provided in Annex 5).

Then an accident data management system allowing for RTC data collection, management and analysis has been adapted to Sierra Leone needs. Especially it has been customised based on the agreed RTC data collection and management framework.

The accident data management system has been presented to the Sierra Leone stakeholders during a workshop organised on 16th July 2018, hosted by SLRSA. Various stakeholders attended the workshop: SLRSA, SLP, Connaugh hospital, SSL, etc. All the stakeholders agreed on the proposed accident data management system.

Since the system has been approved by stakeholders, it will be installed at SLRSA and a training of trainers session will be implemented to educate users about the data collection forms and of the systems operation.

During the training the concerns and comments from stakeholders will be collected and used to upgrade the system and configure it to suit the specific needs of Sierra Leone.

Annex 1 Presentation from Mr. Tripodi

PILOT STUDY TO COLLECT MORE ROBUST ACCIDENT DATA FOR SIERRA LEONE

State of play

Freetown, July 16th 2018





PURPOSE AND ACTIVITIES OF THE STUDY

Objectives

- To establish a framework for an efficient RTC data collection system on LVRs in Sierra Leone on a pilot basis
 - Set up a methodology for RTC data collection using sample data on a pilot basis with relevant attributes and related protocols for the management of road safety on LVRs in Sierra Leone
 - Develop and implement an electronic data management system for road traffic crash data storage, analysis and retrieval for LVRs in Sierra Leone

Activities of the services

- 1 • Situation analysis
- 2 • Literature review of similar studies
- 3 • Stakeholder consultations
- 4 • Framework for RTC data collection & management
- 5 • Stakeholder workshops
- 6 • Data collection
- 7 • Data analysis framework
- 8 • Accident data management system
- 9 • Training and capacity development
- 10 • Final report

Main outcomes

A conceptual framework for RTC data collection & management



A set of RTC data collected on a pilot base in three locations across the Country



A framework for RTC data analysis



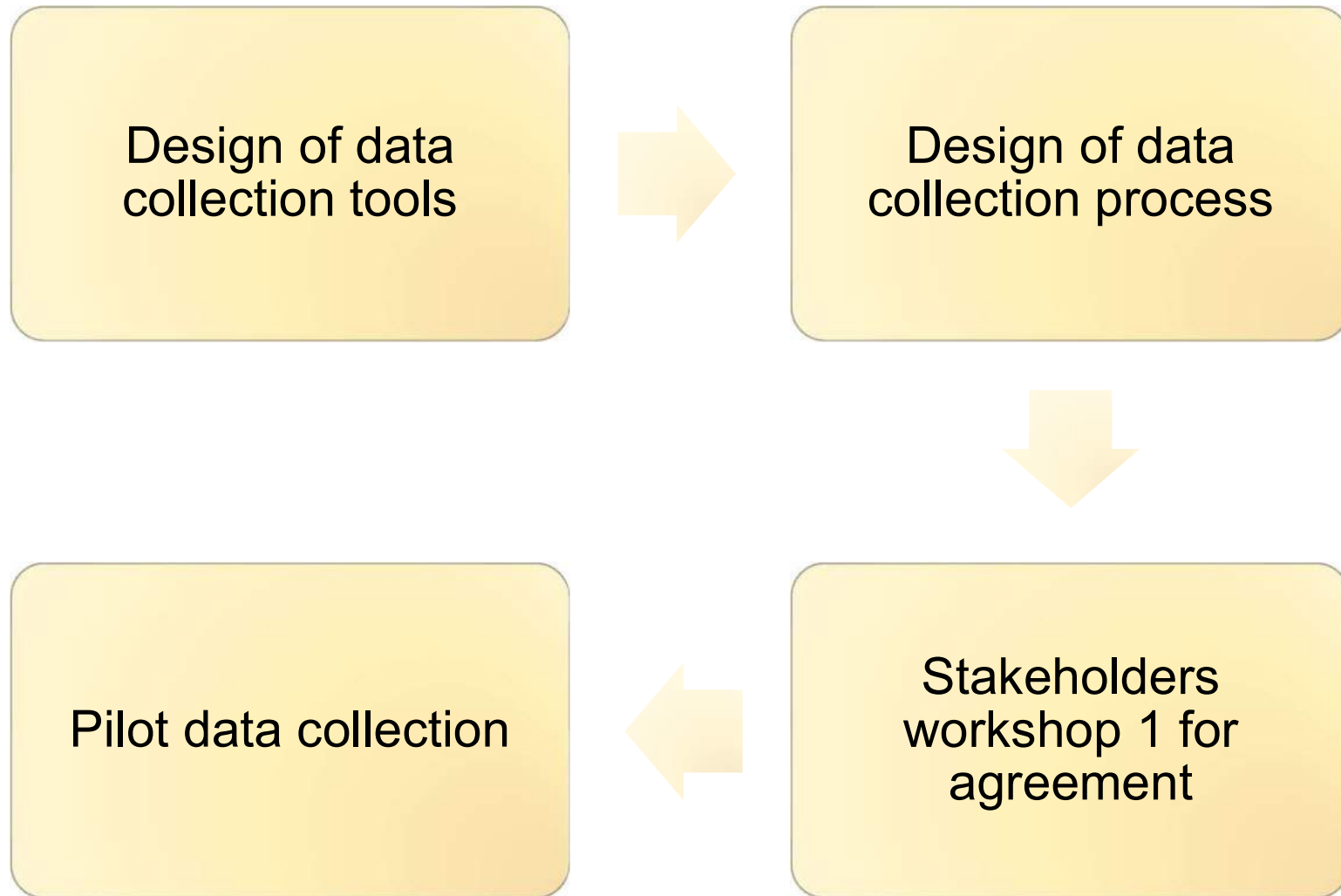
An accident data management system (software)



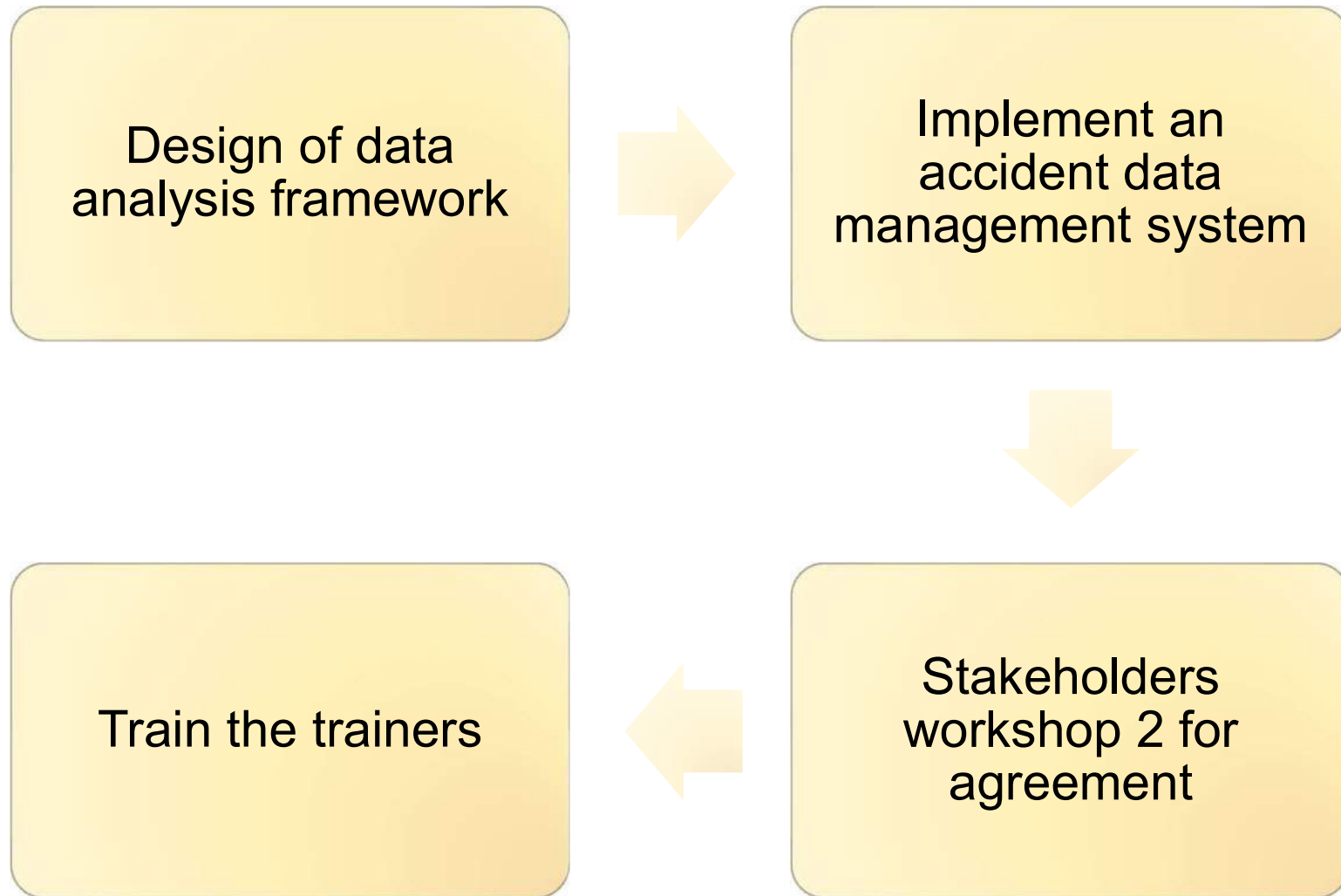
Train the trainers in data collection and use of the system

MAIN ACTIVITIES

Data collection framework and pilot



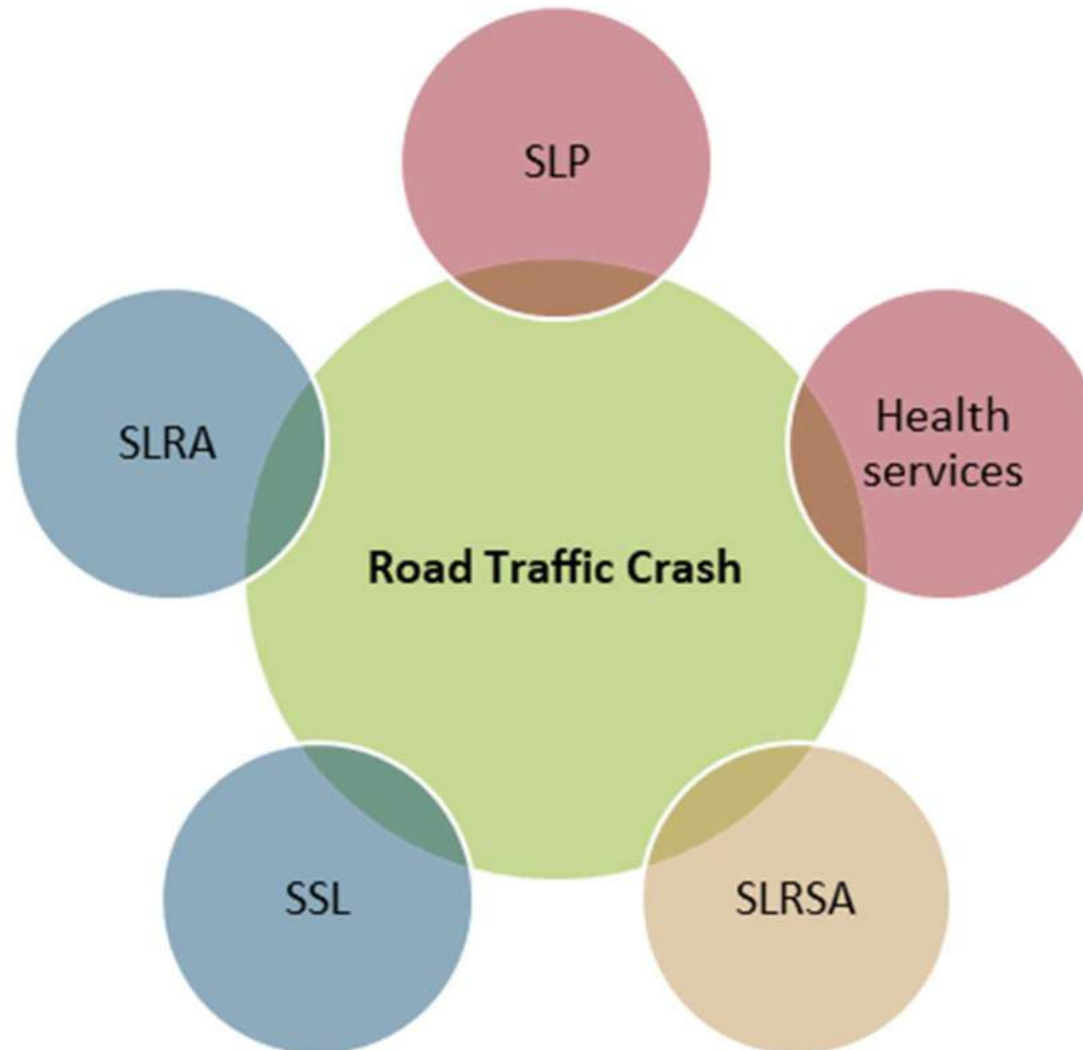
Data analysis framework and system





FRAMEWORK FOR DATA COLLECTION & MANAGEMENT

Actors involved in RTC data process

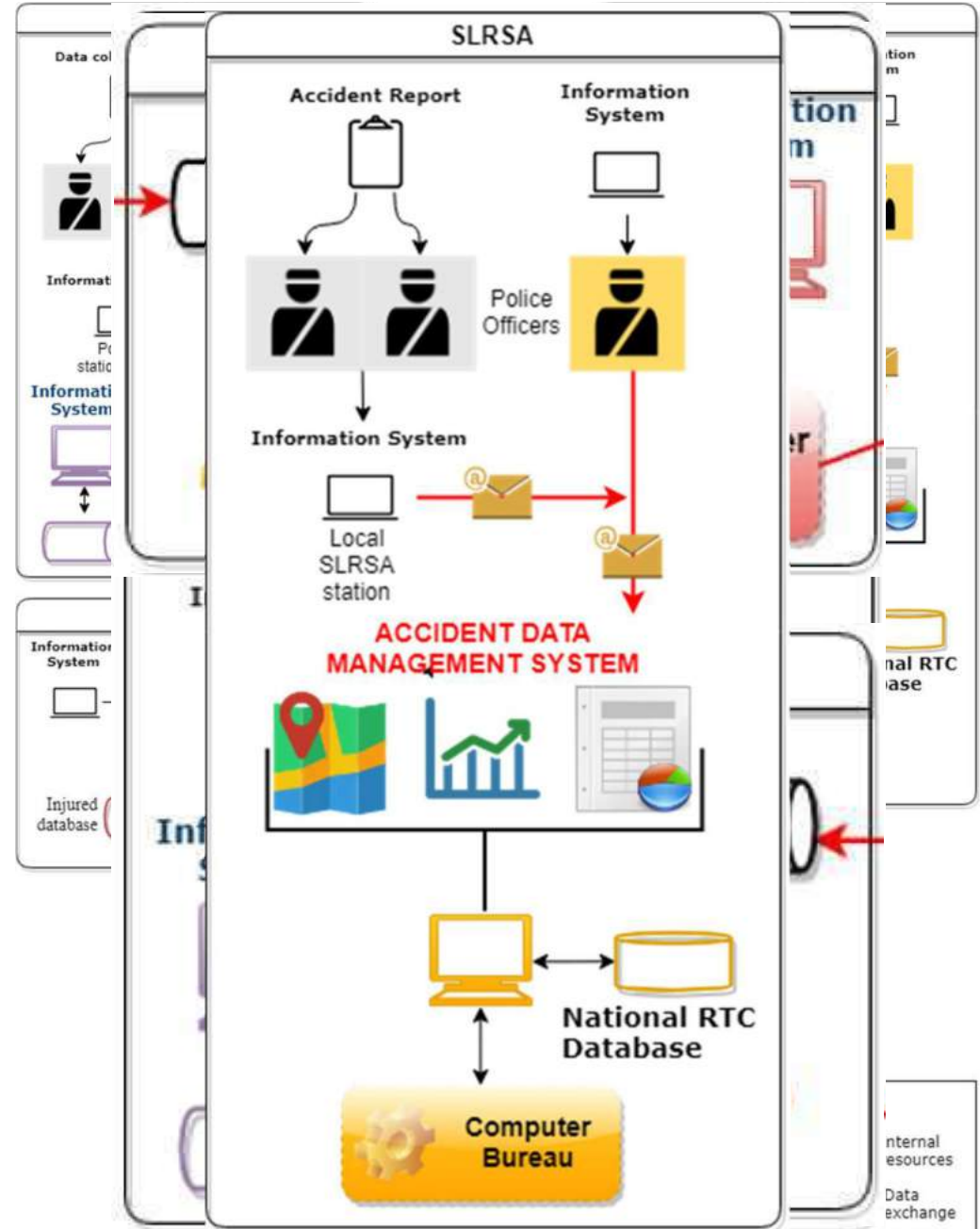


Recommended definitions

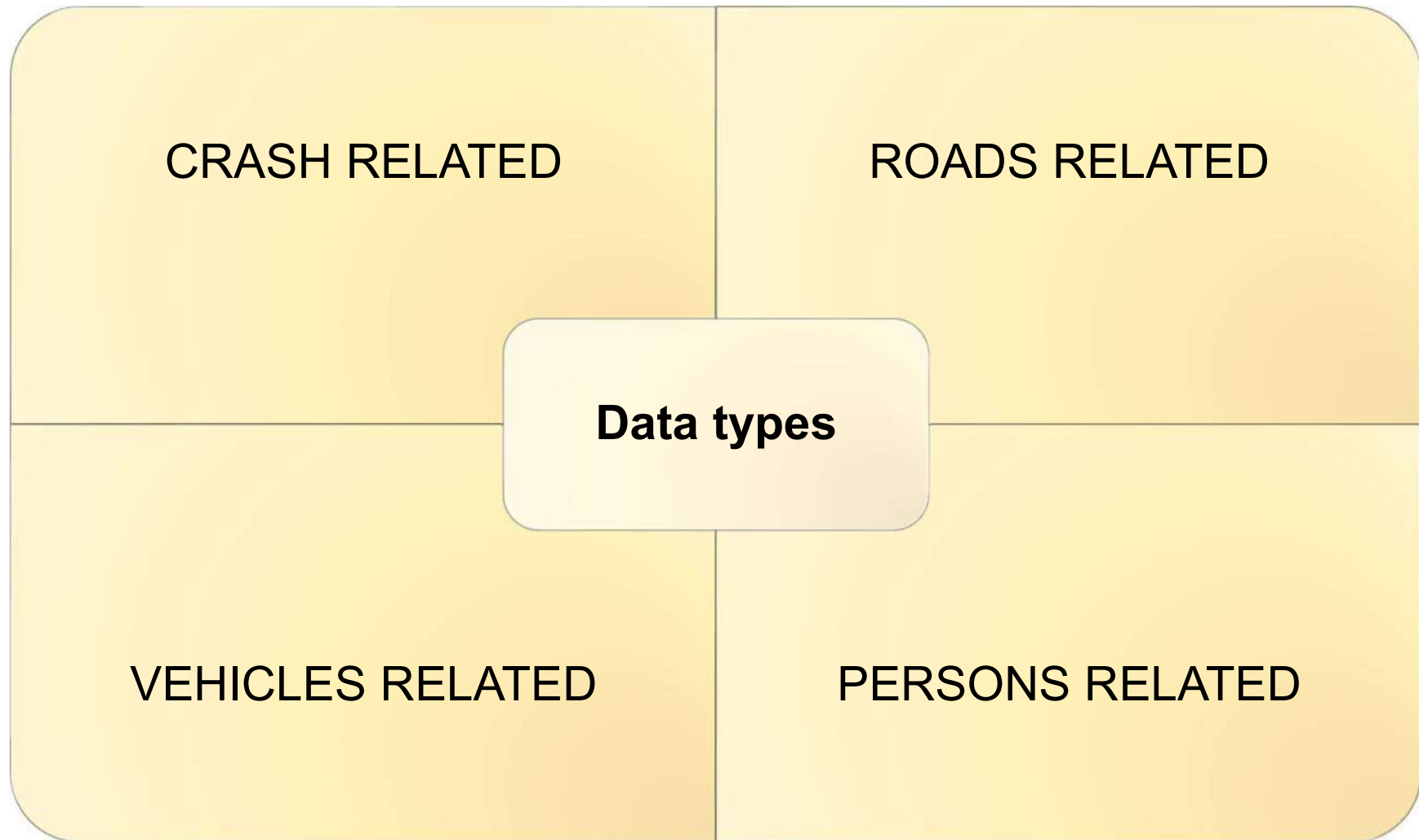
Category	Internationally agreed definition
Fatality	Person killed immediately or died within 30 days because of a road traffic injury.
Serious Injury	Injury that requires admission to hospital for at least 24 hours, or specialist attention
Casualty	A person who has sustained physical injury because of an RTC (including death).
Fatal Crash	Any RTC resulting in a person killed immediately or dying within 30 days because of the crash
Casualty Crash	A person who has sustained physical damage because of an RTC (including death)

Data collection framework

- Ideally all data should be collected electronically
- The process to set a complete data collection process can take several years
- Pilot activities are useful to adapt the process



RTC data needed



Data collection forms

- Two data collection forms:
 - Police forces, to collect data elements on the field
 - Health services, to collect information on victims of RTC
- Detailed information and user manuals are provided to explain what kind of information must be collected and how
- GPS equipment would be needed for collection of location (Police)

Data elements from Police (1)

CRASH RELATED

- Identifier
- Date
- Time
- City / place
- Location
- Crash Type
- Impact type
- Weather conditions
- Light conditions
- Crash severity

ROAD RELATED

- Type of roadway
- Road functional class
- Speed limit
- Road obstacles
- Surface conditions
- Junction
- Traffic control
- Road curve
- Road segment grade

Data elements from Police (2)

VEHICLES RELATED

- Vehicle ID
- Vehicle plate
- **Type**
- **Make**
- **Model**
- **Model year**
- **Engine size**
- Vehicle special function
- Vehicle manoeuvre

PERSONS RELATED

- Person ID
- Person's vehicle ID
- **Date of birth**
- **Sex**
- Type of road user
- Seating position
- Injury severity
- Safety equipment
- Pedestrian manoeuvre
- Alcohol use
- Licence issue date

Data from other databases

- Some data can be provided by merging of crash database with SLRSA databases on vehicles and driving licences:
 - VEHICLES DATABASE
 - Vehicle type (car, bus, truck, etc.)
 - Vehicle make
 - Vehicle model
 - Vehicle model year
 - Engine size
 - DRIVING LICENCE DATABASE
 - Drivers' date of birth
 - Drivers' sex
 - Driving licence issue date

Data elements from Health

CRASH RELATED

- Identifier
- Date of crash
- Time of crash
- Date of admission
- Time of admission
- Location

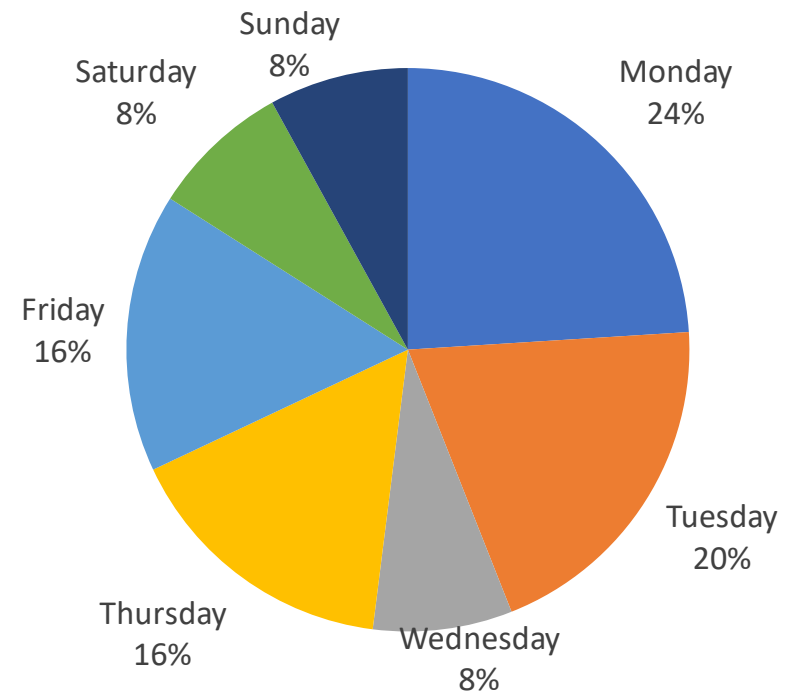
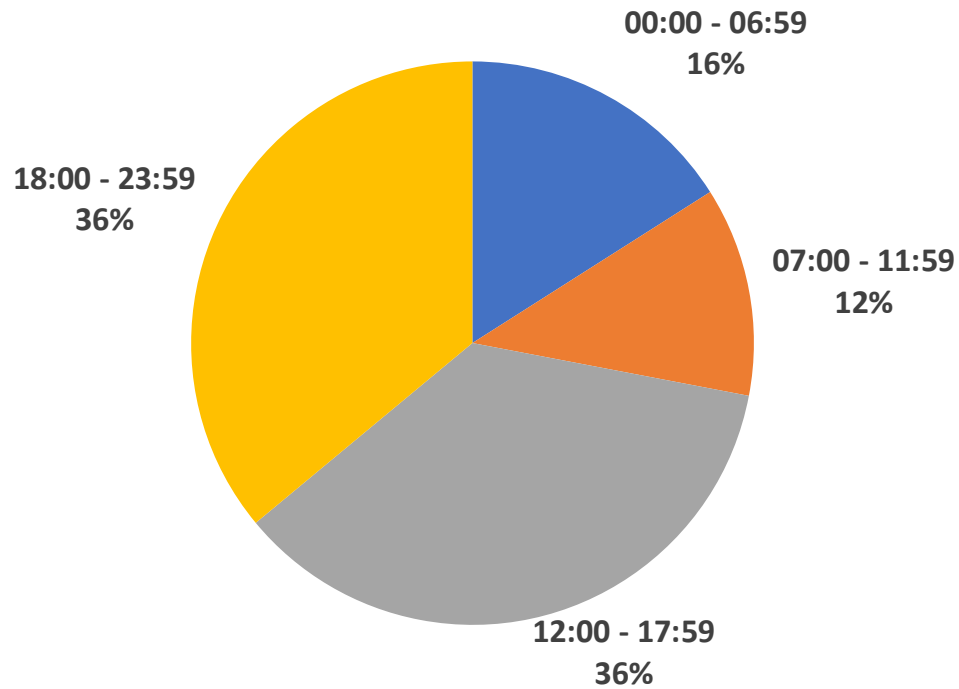
PERSON RELATED

- Person ID
- Person name
- Sex
- Birth date
- Type of injury
- Final diagnosis
- Date of exit

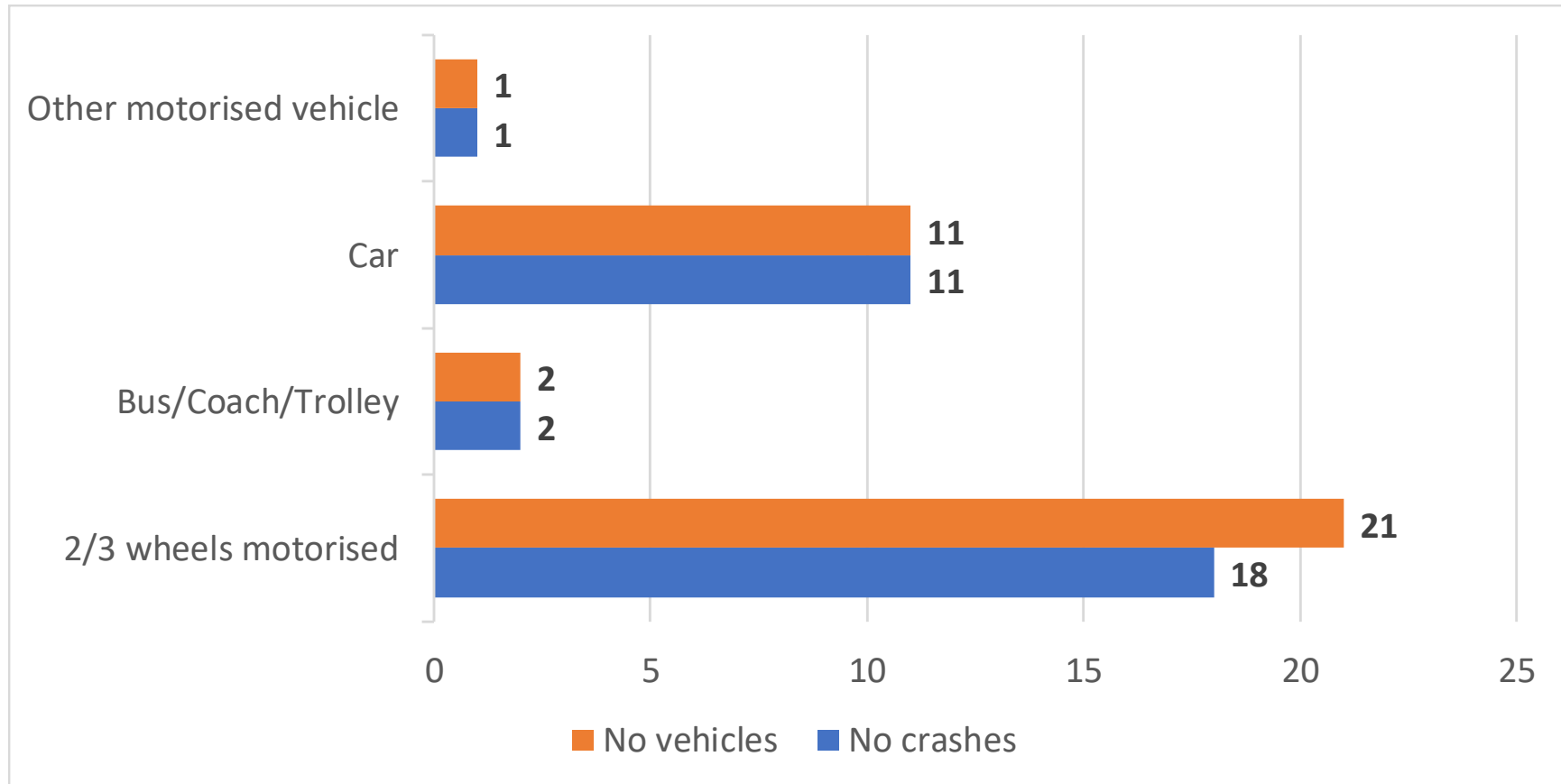
Pilot data collection

- 3 enumerators collected RTC data for 2 weeks in 3 area of Sierra Leone (low volume roads)
 - They used both the data collection forms
- 25 RTC collected (12 day-time – 13 night-time)
- 44 persons involved in these RTC
 - No injuries: 10 persons
 - Minor injuries: 15 persons
 - **Serious injuries: 14 persons**
 - **Fatal injuries: 5 persons**

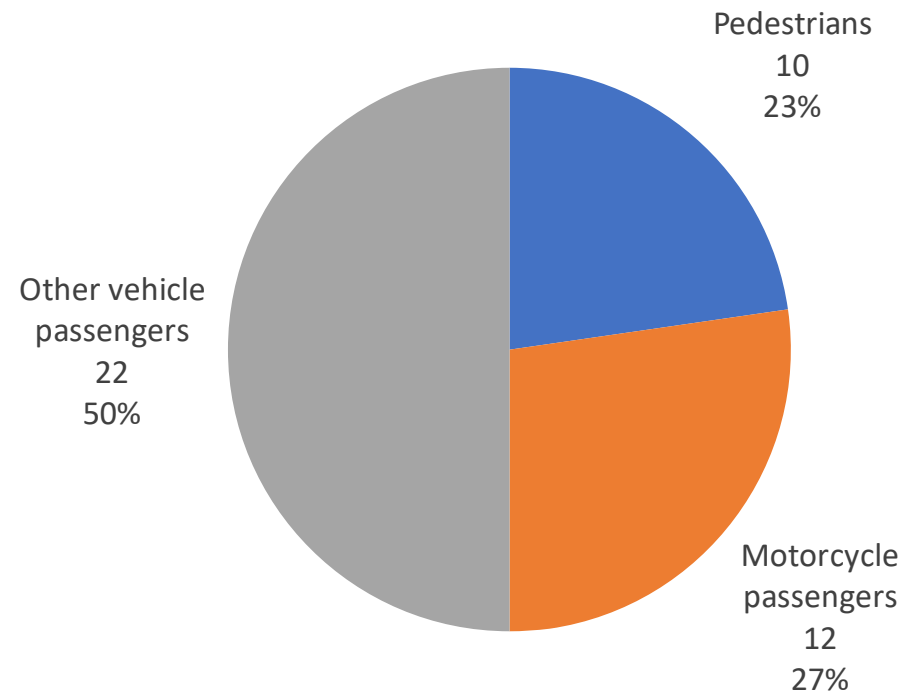
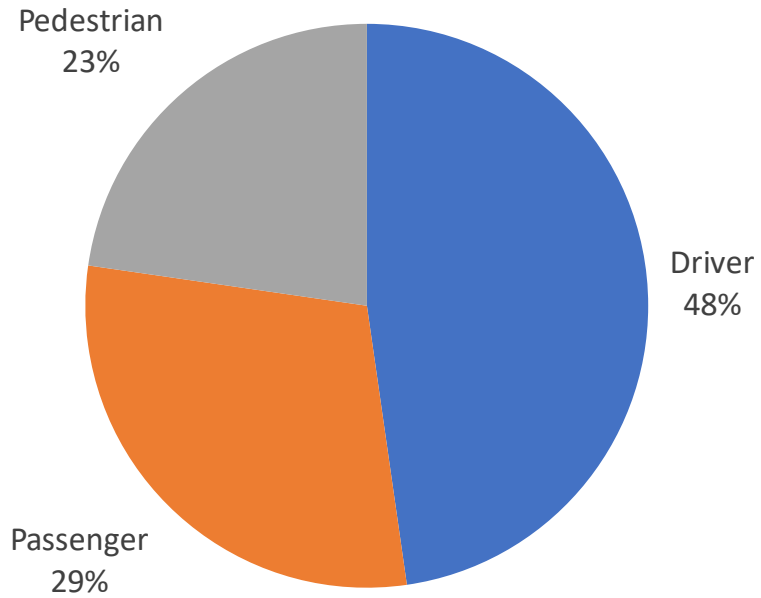
Pilot data collection



Pilot data collection



Pilot data collection



Pilot data collection: considerations

- High percentage of VRUs involved in RTC
 - 23% of road users are pedestrians
 - 27% of road users are driver / passenger of moto
- High number of motos (21 out of 35 vehicles)
- A lot of vehicles are used as taxi: 18 out of 35 (11 motos)
- 8 out of 21 drivers run away
- 10 out of 35 vehicles involved were unregistered

Accident data management system

DATA COLLECTION

- Filling in of RTC data elements
- Use in office (transfer from paper to PC)
- Use on the field (input on mobile device)
- Real time verification of data completeness

DATA STORAGE

- Data collected are stored into a database (local)
- Backup features available

SFINGE

DATA TRANSMISSION

- Sending data packages to the national database (automatically or manually)
- Web connection needed

DATA ANALYSIS

- Selection of data elements to be analysed (filters)
- Results on tables, graphs, maps
- Mapping of data
- Exportation of results in excel, pdf

Accident data management system

DATA STORAGE

- Data received from external sources are stored into a database (national)
- Backup features available

DATA QUALITY CHECK

- Statistics about the data included in the database
- Information on data completeness
- Possibility of analysing single RTC data

SAFETY MANAGER

DATA MERGING

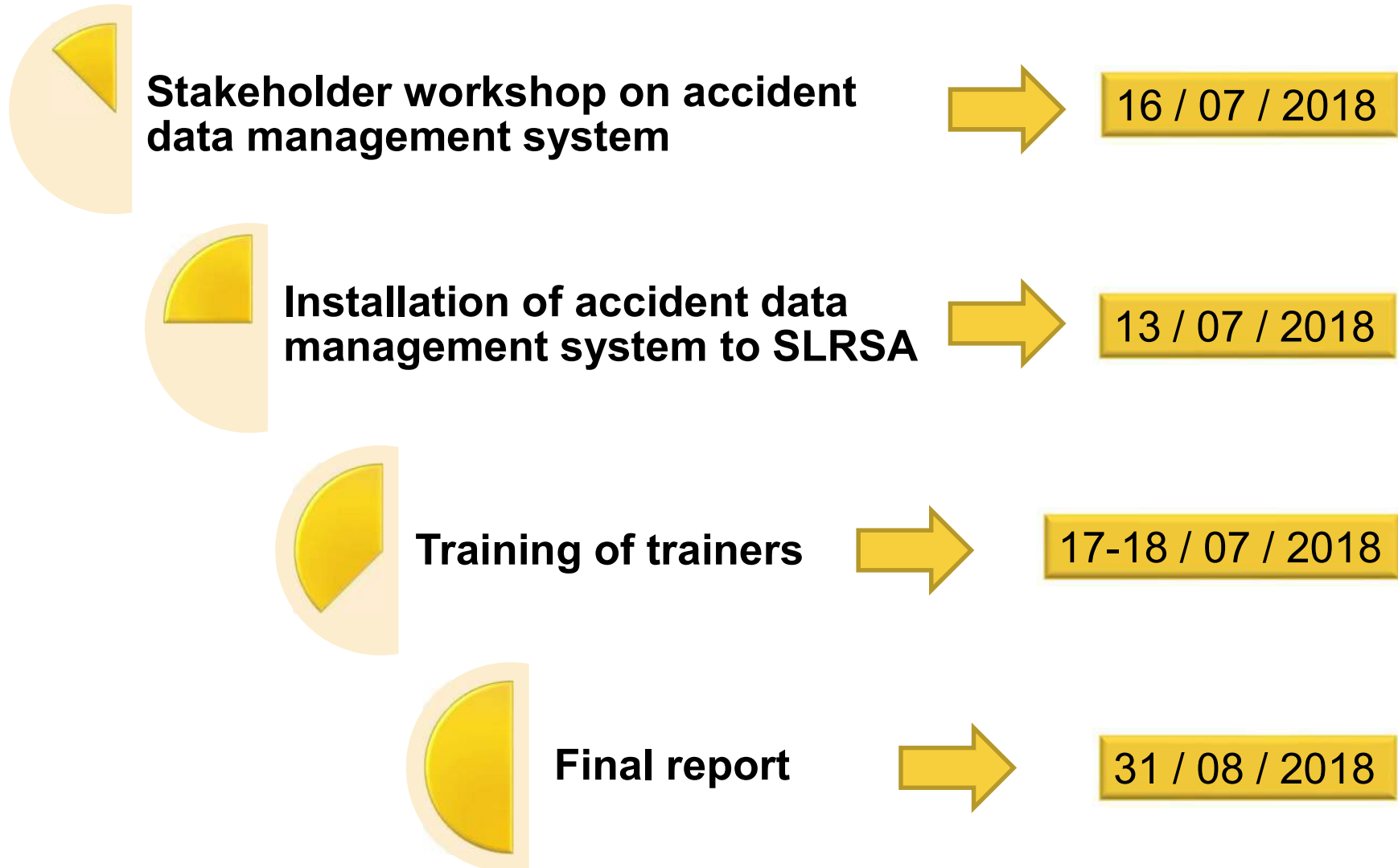
- Identification of same RTC in Police and Health services databases
- Merging of data from Police and Health services (creation of the national database)
- Data merging with those from other sources

DATA ANALYSIS

- Selection of data elements to be analysed (filters)
- Results on tables, graphs, maps
- Mapping of data
- Exportation of results in excel, pdf

NEXT STEPS

Activities towards finalisation





THANK YOU FOR
THE ATTENTION!



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Annex 2 Presentation from Mrs. Wurie

PRESENTATION ON PILOT DATA COLLECTION EXERCISE

by


Ing. (Mrs.) Nadia Wurie

Local Consultant CTL/FRED

July 2018

Study Justification

- To Review & Protect the integrity of SL's Transport System:

Increased Vehicle-Km travelled  Increased Road Traffic Crashes (RTC's)





Scope of Study

- 3 Low Volume Roads (LVRs) selected for RTCs:
 - Eastern Region - Mano Junction Links (Kenema, Daru, Lago)
 - Northern Region – Matotoka Links (Magburaka, Masingbi, Mapaki, Matamp)
 - Southern Region - Blama Links (Kenema, Bo, Boajibu, Potoru)

Aims & Objectives of Study

- Aim:

 - To establish a framework for an efficient RTC data collection system on LVRs in Sierra Leone

- Objectives:

 - Setting up a methodology for RTC data collection using sample data on a pilot basis for the management of road safety on LVRs in SL; and
 - Develop and implement an electronic data management system for RTC data storage, analysis and retrieval for LVRs in SL.



Data Collection

- ❑ Data Collection Period: (13 – 27 June 2018)
- ❑ Recruitment of one enumerator per region
- ❑ A target of 12 data sets per region – accident data forms

- ❑ Input Fields for Data Analysis:
 - ❑ Road Surface and Mechanical Condition of Vehicle
 - ❑ Time of Day, Climatic Condition, Driver's Action or Inaction
 - ❑ types and numbers of vehicles
 - ❑ Accident location and severity of RTC
 - ❑ Geometric Characteristics of Roadway etc. etc.



Challenges

- ❑ Lack of Cooperation:
 - ❑ Fear of Prosecution
 - ❑ Low Literacy Level

- ❑ Remoteness of RTC sites
- ❑ Identification of Vehicle Registration Plates
- ❑ Difficulty in ascertaining the status of Drivers
- ❑ Chaotic RTC sites



Data Validation

- Independent verification of Records from victims, eyewitnesses and law enforcement agents
- Follow-up interviews conducted after medical stabilization of victims
- Accident data form entries checked against enumerators' verbal account – Accident Scene Reconstruction Technique

Survey Results – Eastern Region

CRASH CATEGORY	NUMBER OF DATA SET
V – M	3
V	2
M	2
M - M	2
M - P	4

Table 1: Eastern Province - Crash Category Vs. Number of Data Set

Categories of RTCs:

- ❑ vehicle–motorcycle (V – M)
- ❑ vehicle alone (V)
- ❑ motorcycle alone (M)
- ❑ motorcycle–motorcycle (M – M)
- ❑ and motorcycle–pedestrian (M- P)

Survey Results – Northern Region

CRASH CATEGORY	NUMBER OF DATA SET
V – M	3
V	1
M - P	2

Table 2: Northern Province - Crash Category Vs. Number of Data Set

Categories of RTCs:

- vehicle–motorcycle (V – M)
- vehicle alone (V)
- motorcycle–pedestrian (M – P)

Survey Results – Southern Region

CRASH CATEGORY	NUMBER OF DATA SET
V -M	<u>2</u>
V	<u>2</u>
M	<u>1</u>
M - M	<u>1</u>

Table 3: Southern Province - Crash Category Vs. Number of Data Set

Categories of RTCs:

- vehicle–motorcycle (V – M)
- vehicle alone (V)
- motorcycle alone (M)
- motorcycle – motorcycle (M - M).



Findings – Eastern Region

- ❑ Daylight RTCs; not on gradient
- ❑ Vehicle type – motor cycles
- ❑ 2 fatalities – passengers without protective gears
- ❑ Overtaking & over speeding
- ❑ Location - Main carriage way and away from Junctions
- ❑ Road and weather condition – not much effect



Findings – Northern Region

- ❑ Daylight RTCs; not on gradient,
- ❑ Vehicle type – Vehicle and motor cycle but mostly vehicle
- ❑ 2 Pedestrians crossing both hit in and out of main carriage way and away from Junctions and one animal
- ❑ Passengers without protective gears but drivers had seatbelts on
- ❑ Overtaking & over speeding
- ❑ Road and weather condition – not much effect, speed limits on some and others; police provided on request



Findings – Southern Region

- ❑ Daylight RTCs; not on gradient
- ❑ Vehicle types – vehicles and motor cycles
- ❑ 2 fatalities – vehicle passengers and motor cycle rider
- ❑ Overtaking & over speeding
- ❑ Location - Main carriage way and away from Junctions
- ❑ Road and weather condition – not much effect

Conclusions:

- Crashes in all 3 regions were vehicular/motor cycle related, - overtaking or over-speeding; few mechanical failures
- Drivers mostly go unhurt in RTCs (they protect themselves – less severe injuries)
- Drivers runaway for fear of being lynched, and being prosecuted
- Victims prefer to consult herbalists or native doctors instead of going to a hospital or health facilities



Conclusions cont'd:

- ❑ Post-crash fatality rate and complications can increase as a result of accident victims consulting herbalists or native doctors
- ❑ In locations where traffic signs were mounted, drivers drive without paying due attention to speed limit signs or other cautionary signs.
- ❑ Alcohol use did not have much effect on RTCs as most drivers were not under the influence of alcohol.
- ❑ Most RTCs occur along the main carriage way on roads and highways
- ❑ RTCs on less trafficked rural roads are hardly reported because those areas are remote and less policed, drivers and victims leave the scene before policemen and traffic wardens arrive at the accident scene.



Conclusions cont'd:

- Policemen and traffic wardens are ill-equipped (in terms of logistics) to work in remote areas and under adverse climatic conditions
- Relatively low RTCs were recorded in all three regions, but the north and south recorded even lower RTCs - increased policing, increased road user sensitization and unreported RTCs



Recommendations:

- Routine road worthy checks and issuance of road worthiness certificates
- More periodic nationwide road safety sensitization campaigns on road safety – accident prevention measures
- Victims and on-lookers must be sensitized on the implications of roadside justice - drivers or riders running away from accident scenes after RTCs
- More sensitization should be done on the advantages of victims of RTCs accessing hospitals and medical health facilities immediately after RTCs to reduce post-crash fatalities and health complications



Recommendations cont'd:

- Policemen and traffic wardens to be specifically provided with alcohol and drug testing kits for use at RTC scenes, to investigate alcohol and drug use related-accidents
- More policing to be done along the main carriage way of roads and highways and not just at junctions
- Local community empowerment for policing of remote rural roads. Consideration for same to assist in recording and reporting RTCs



Thank
you

Annex 3 Presentations from Mr. Robibaro

SfingeWEB

A web application for collection and analysis of accidents data

CENTRO DI RICERCA
PER IL
TRASPORTO E LA LOGISTICA



SAPIENZA
UNIVERSITÀ DI ROMA

Workshop in Freetown

16 July 2018

Dr. Massimo Robibaro



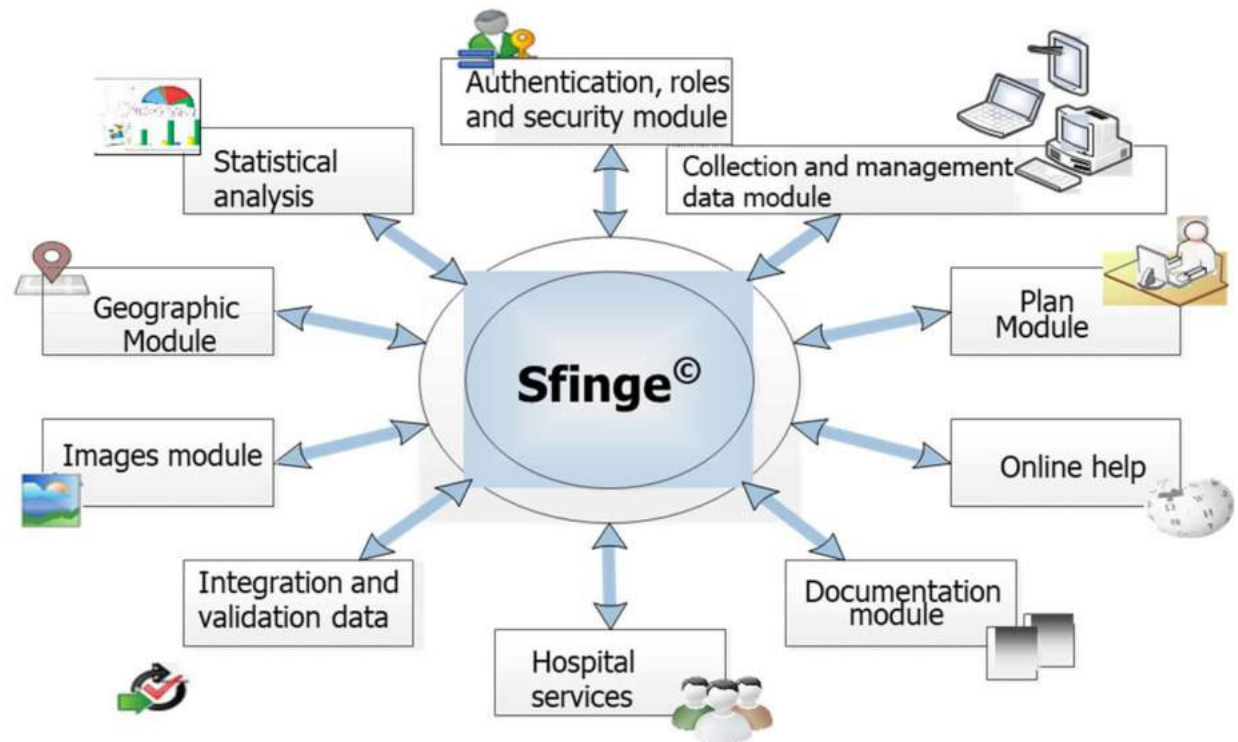
www.ctl.uniroma1.it
info@ctl.uniroma1.it

Main features in Sfinge©

- You can use it with a common browser
- It uses online mapping service such as **Google Maps e Bing Maps**
- Allows multi-user access
- Is multilanguage
- Has a user friendly interface
- No further license is needed

Modular architecture

- The system is based on a modular architecture where each module has been developed to implement a set of specific functions



System requirements

- **Server**
 - Windows Server 2012 R2
 - Microsoft SQL Server 2014
 - Internet Information Services (IIS)
- **Client**
 - A browser web (Microsoft Edge, Mozilla Firefox, Google Chrome, ecc.)
 - Internet connection

Sfinge -> Safety Manager



- **Safety Manager** is an **information system** supporting the activities of the Monitoring Center of Road Safety at Yaounde:
 - Collecting accident data from **Police**
 - Collecting **hospitalization data** from **Hospital**
 - **Matching data** between **people involved** in accident and **people hospitalized**





Login form



The SFINGE logo features a stylized blue and white geometric design above the word "SFINGE" in a bold, black, sans-serif font.

User name

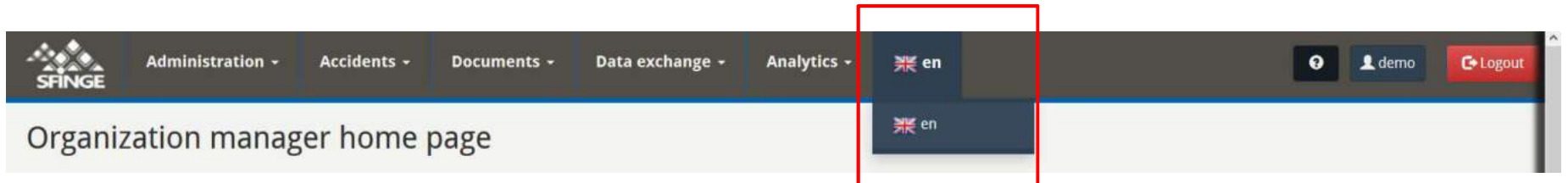
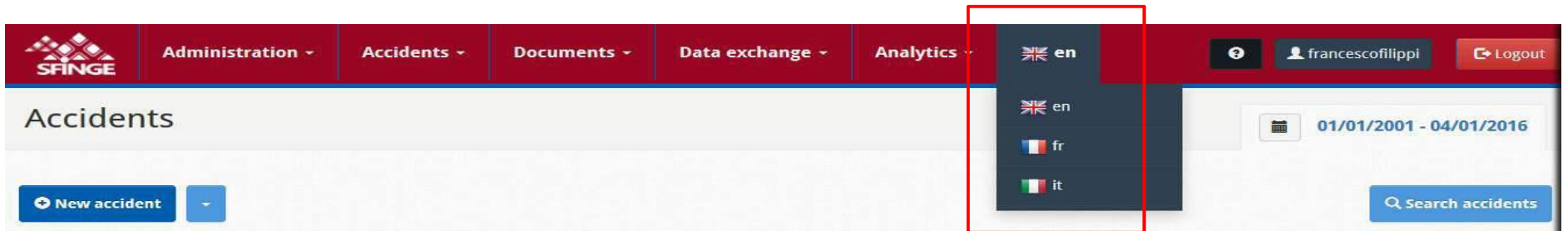
Password

Remember account credentials

Home Page (dashboard)



Change the language (English is the default language)



List of accidents

Accidents 01/01/2001 - 04/01/2016

[New accident](#) [Search accidents](#)

View 10 Accidents | From 1 To 10 Of 26

« 1 2 3 »

Outcome U I D P VRU State

Prog.	Protocol	Date/Time	Municipality	Site	Outcome	Pedestrian	Vehicles	Media	Actions	State
2016/30	00009/2016	31/03/2016 14:49	yaounde	cit?? des cadres	U	0	1	0	View	
2016/29		31/03/2016 14:15	yaounde	rue 4.909 rue 4.884	U	0	0	0	Edit	
2016/28		31/03/2016 11:45	yaounde	rue 4.585 rue 4.561	U	0	0	0	Edit	
2016/4	00004/2016	03/03/2016 22:30	bamenda		D	0	2	0	View	

List of accidents

Accidents 1 01/01/2001 - 04/01/2016

New accident - 2 3 Search accidents

View 10 Accidents | From 1 To 10 Of 26

« 1 2 3 » Outcome U I D P VRU % ↑ State

Prog.	Protocol	Date/Time	Municipality	Site	Outcome	Pedestrian	Vehicles	Media	Actions	State
2016/30	00009/2016	31/03/2016 14:49	yaounde	cit?? des cadres	U	0	1	0	View	✓
2016/29		31/03/2016 14:15	yaounde	rue 4.909 rue 4.884	U	0	0	0	Edit	✎
2016/28		31/03/2016 11:45	yaounde	rue 4.585 rue 4.561	U	0	0	0	Edit	✎
2016/4	00004/2016	03/03/2016 22:30	bamenda		D	0	2	0	View	👁

5

List of accidents: some explanation

1. Selected date range
2. Button “Create new accident”
3. Button “Advanced search”
4. Pagination and filters bar
5. The list of accidents

Advanced search

Date
From 12/09/2016 To 03/09/2017

Site

Outcome **State**

Officer

Progressive

Person involved


Vehicle type


Vehicle plate **Vehicle model**

New accident wizard

New accident ×

Date/Time **Vehicles** **Pedestrians**

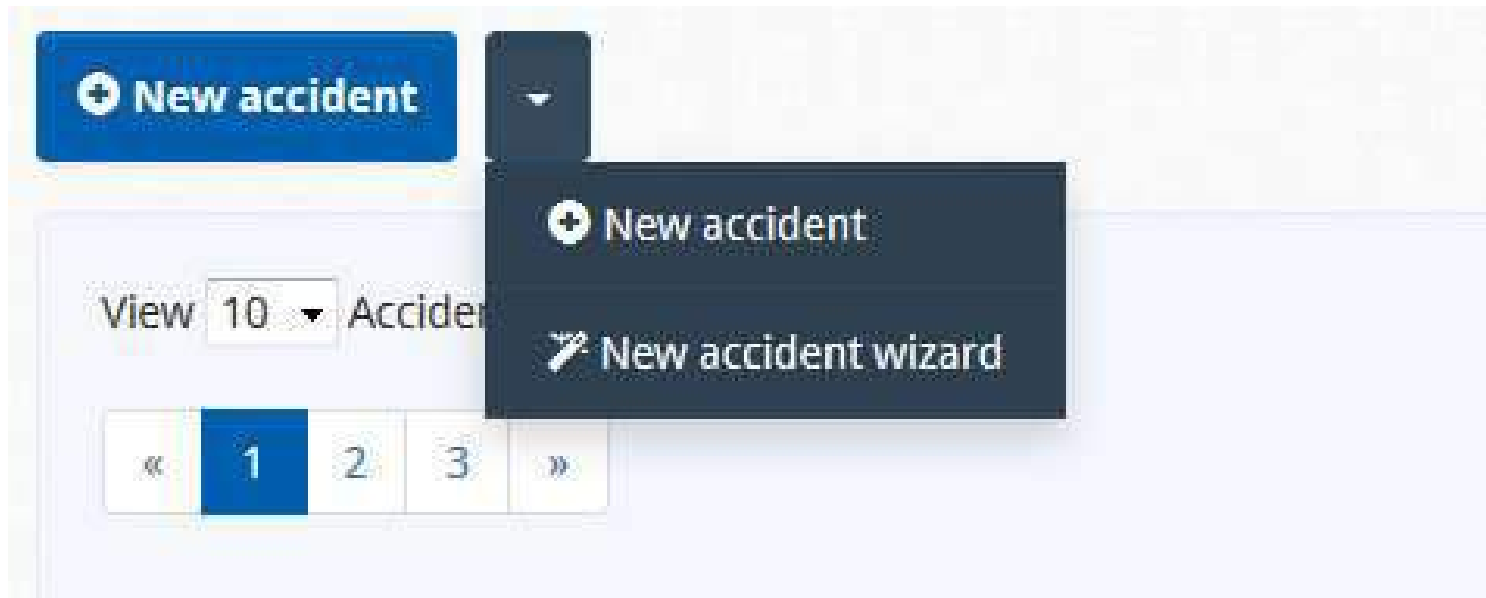
Label	Plate	Driver
V1		<input checked="" type="checkbox"/> On board 
1		

 Add vehicle

Loading accident data...



Create a new accident



Create a new accident, first thing: the date

New accident ×

< March 2017 >

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
9	26	27	28	01	02	03	04
10	05	06	07	08	09	10	11
11	12	13	14	15	16	17	18
12	19	20	21	22	23	24	25
13	26	27	28	29	30	31	01
14	02	03	04	05	06	07	08

✕ Cancel ⚡ Create

A new accident

ROAD TRAFFIC CRASH DATA COLLECTION FORM - POLICE FORCES

Edit accident

- Review 8
- Accident data
- Vehicles
- Images

Close accident

Back to accidents list

Show only stat fields

CRASH RELATED INFORMATION										
Information about Officer compiling the form	C1 - Crash ID	C6 - Crash Type	1	2	3	4	5	6	7	8
Name	C2 - Date	C7 - Impact type	1	2	3	4	5	6	7	8
Designation	C3 - Time	C8 - Weather cond.	1	2	3	4	5	6	7	8
Police station of	C4 - City / place	C9 - Light conditions	1	2	3	4	5	6	7	8
Service no	C5a - Location	C10 - Crash cause								
Signature	C5b - GPS longitude									
	C5b - GPS latitude									

Id Accident (C1) **Accident date** (C2) **Accident time** (C3)

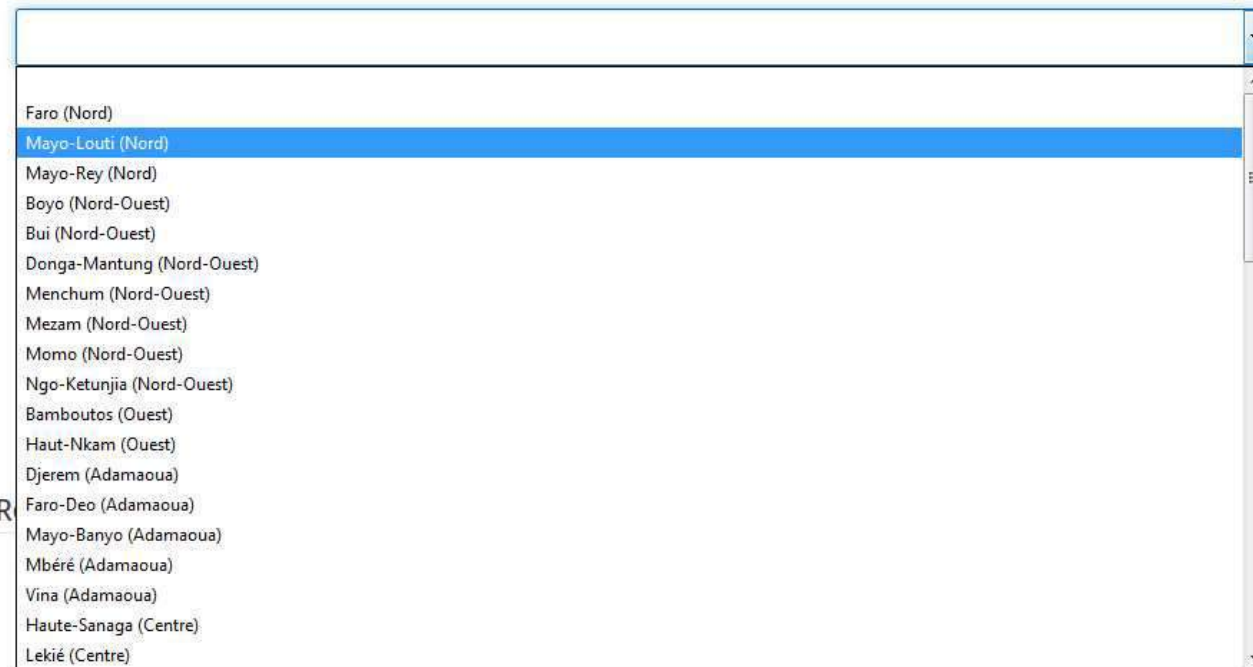
Patrol name **Agent taker**

Department

Municipality

Some help

Department



A dropdown menu titled 'Department' is shown. The menu is open, displaying a list of departments. The option 'Mayo-Louti (Nord)' is selected and highlighted in blue. The other options are listed below it.

Faro (Nord)
Mayo-Louti (Nord)
Mayo-Rey (Nord)
Boyo (Nord-Ouest)
Bui (Nord-Ouest)
Donga-Mantung (Nord-Ouest)
Menchum (Nord-Ouest)
Mezam (Nord-Ouest)
Momo (Nord-Ouest)
Ngo-Ketunjia (Nord-Ouest)
Bamboutos (Ouest)
Haut-Nkam (Ouest)
Djerem (Adamaoua)
Faro-Deo (Adamaoua)
Mayo-Banyo (Adamaoua)
Mbéré (Adamaoua)
Vina (Adamaoua)
Haute-Sanaga (Centre)
Lekié (Centre)

R

Locate on cartography

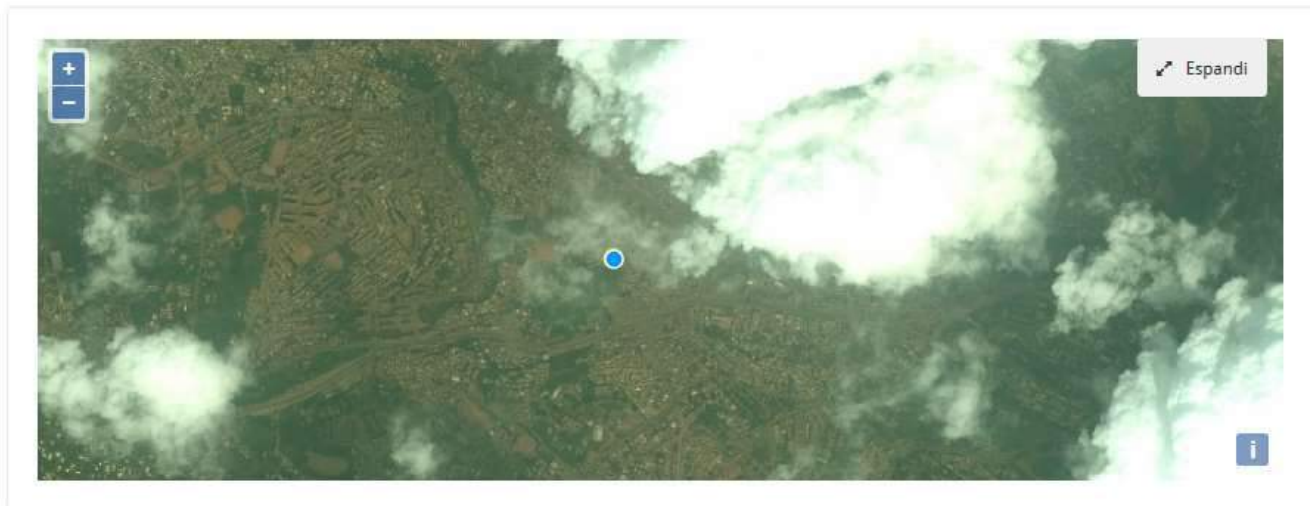
📍 Locate on cartography

Latitude (R-1)

3.874162591133853

Longitude (R-2)

11.496645212173464



Adding a new vehicle

The screenshot shows the 'Edit accident' interface in the SFINGE system. The top navigation bar includes 'Administration', 'Accidents', 'Documents', 'Data exchange', 'Analytics', and 'en'. The user is logged in as 'demo' and can click 'Logout'. The main content area is titled 'Edit accident' and contains a sidebar with 'Review', 'Accident data', 'Vehicles', and 'Images'. The 'Vehicles' section is expanded, and a modal window titled 'Accident data' is open. In this modal, the 'Add vehicle' button (a red square with a white car icon) is highlighted by a red arrow and labeled 'Add a vehicle'. The form fields include: 'Id Accident (C1)' with value '1', 'Accident date (C2)' with value '16/06/2018', 'Accident time (C3)' with value '19:30', 'Patrol name' with value '-', 'Agent taker' with value 'demo demo', 'Department', and 'Municipality'.

Administration - Accidents - Documents - Data exchange - Analytics - en

demo Logout

Edit accident

Review

Accident data

Vehicles

Images

Close accident

Back to accidents list

Show only stat fields

Accident data

Add vehicle

Add vehicle

Id Accident (C1) 1

Accident date (C2) 16/06/2018

Accident time (C3) 19:30

Patrol name -

Agent taker demo demo

Department

Municipality

Vehicle data

VEHICLE RELATED INFORMATION [VEH 1]

V1 - Vehicle number		V3 - Vehicle special function	1	2	3	4	5	6	7						
V2 - Vehicle plate no		V4 - Vehicle manoeuvre	1	2	3	4	5	6	7	8	9	10	11	12	13

Review

Accident data

Vehicles ▼

Pedestrian ▼

Images

Close accident

Back to accidents list

Show only stat fields

Vehicle data (U-1)

+
+

Delete vehicle

Vehicle

Vehicle make

Vehicle model

Vehicle type (V5)

Plate (V2)

Further vehicle data

Vehicle special function (V3)

Vehicle manoeuvre (V4)

Add people related to vehicle

The screenshot shows a web interface for managing vehicle data. On the left is a sidebar with navigation options: Review, Accident data, Vehicles, Pedestrian, and Images. Below these are three buttons: 'Close accident', 'Back to accidents list', and 'Show only stat fields'. The main content area is titled 'Vehicle data (U-1)' and contains a 'Delete vehicle' button. Below the title are two icons: a red one with a plus sign and a car, and a blue one with a plus sign and a person. A red arrow points from the text 'Add the driver' to the red icon. Below the icons is an 'Add driver' button. The 'Vehicle' section contains fields for 'Vehicle make' (TOYOTA), 'Vehicle model' (YARIS), 'Vehicle type (V5)' (Passenger car), and 'Plate (V2)' (AA123BB). The 'Further vehicle data' section contains 'Vehicle special function (V3)' (Taxi) and 'Vehicle manoeuvre (V4)' (Straight forward/normal driving).

Vehicle data (U-1)

Delete vehicle

Add driver

Add the driver

Vehicle

Vehicle make: TOYOTA

Vehicle model: YARIS

Vehicle type (V5): Passenger car

Plate (V2): AA123BB

Further vehicle data



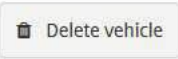
Vehicle special function (V3): Taxi

Vehicle manoeuvre (V4): Straight forward/normal driving

Add people related to vehicle

The screenshot shows a web interface for entering vehicle data. On the left is a sidebar with navigation options: Review, Accident data, Vehicles, Pedestrian, and Images. Below these are three blue buttons: 'Close accident', 'Back to accidents list', and 'Show only stat fields'. The main content area is titled 'Vehicle data (U-1)'. At the top left of this area are two icons: a blue one with a car and a plus sign, and a red one with a person and a plus sign. A red arrow points from the text 'Add the passenger' to the red icon. Below these icons is a button labeled 'Add passenger'. To the right is a 'Delete vehicle' button. The 'Vehicle' section contains several input fields: 'Vehicle make' (TOYOTA), 'Vehicle model' (YARIS), 'Vehicle type (V5)' (Passenger car), and 'Plate (V2)' (AA123BB). The 'Further vehicle data' section contains 'Vehicle special function (V3)' (Taxi) and 'Vehicle manoeuvre (V4)' (Straight forward/normal driving).

Vehicle data (U-1)

  **Add the passenger** 

Vehicle

Vehicle make: TOYOTA

Vehicle model: YARIS

Vehicle type (V5): Passenger car

Plate (V2): AA123BB

Further vehicle data

Vehicle special function (V3): Taxi

Vehicle manoeuvre (V4): Straight forward/normal driving

Driver data

PERSON RELATED INFORMATION [PER 1]

P1 - Person ID		P5 - Sex	1	2	3		P9 - Safety equipment	1	2	3	4			
P2 - Occupant veh no		P6 - Type of road user	1	2	3	4	5	P10 - Pedestrian manoeuvre	1	2	3	4	5	6
P3 - Pedestrian veh no		P7 - Seating position	1	2	3	4	5	P11 - Alcohol use	1	2	3	4		
P4 - Birth date		P8 - Injury severity	1	2	3	4	5	P12 - Drug use	1	2	3	4		

P13 - Blood group
P14 - Person name

Review

Accident data

Vehicles ▼

- ↳ TOYOTA YARIS
- ↳ Daniel bekono
- ↳ TOYOTA COROLLA
- ↳ Pierre Wome

Pedestrian ▼

Images

✓ Close accident

← Back to accidents list

Driver informations (P-1)

Delete person

First name
(P14)

Last name
(P14)

Birth date
(P4)

Nation Id card

Driving license

Date release driving license

Sex (P5)

Injury severity (P8)

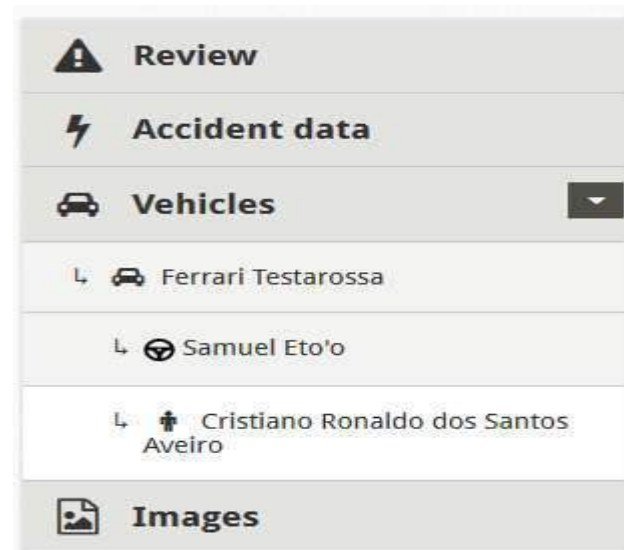
Remember!

- Remember: Always save the changes



Lateral treeview

- Data inserted has been automatically reported in lateral treeview



Adding a pedestrian

The screenshot shows a web interface for managing accident data. On the left is a sidebar with navigation options: Review, Accident data, Vehicles, Pedestrian, and Images. Below these are three buttons: 'Close accident', 'Back to accidents list', and 'Show only stat fields'. The main area is titled 'Accident data' and contains a form. At the top of the form, there are two buttons: a blue one with a car icon and a red one with a pedestrian icon. A red arrow points to the red button, which is labeled 'Add pedestrian' above it. Below the buttons, the form has several fields: 'Id Accident' (value: 1), 'Accident date' (value: 23/05/2017), and 'Accident time' (value: 10:57). There are also dropdown menus for 'Patrol name' (value: Shark2), 'Agent taker' (value: demo demo), 'Department', and 'Municipality'.

Accident data Add a pedestrian

Id Accident (C1) **Accident date** (C2) **Accident time** (C3)

1 23/05/2017 10:57

Patrol name **Agent taker**

Shark2 demo demo

Department

Municipality

Pedestrian data

PERSON RELATED INFORMATION [PER 1]

P1 - Person ID		P5 - Sex	1	2	3		P9 - Safety equipment	1	2	3	4			
P2 - Occupant veh no		P6 - Type of road user	1	2	3	4	5	P10 - Pedestrian manoeuvre	1	2	3	4	5	6
P3 - Pedestrian veh no		P7 - Seating position	1	2	3	4	5	P11 - Alcohol use	1	2	3	4		
P4 - Birth date		P8 - Injury severity	1	2	3	4	5	P12 - Drug use	1	2	3	4		

P13 - Blood group
P14 - Person name

Vehicles ▼

Pedestrian ▼

George Weah

Images

Pedestrian informations (P-1)

First name
(P14)

Last name
(P14)

Birth date
(P4)

Nation Id card

Sex (P5)

Injury severity (P8)

Add images



Add an image file – STEP 1

Accident images

Select an image to add :

Sfogli...

Nessun file selezionato.



Ferrari.jpg

Size: 284 x 177, Date: 3/2/2017 4:30:49 PM

image/jpeg

11 kB

 View

 Delete

Add an image file – STEP 2

Accident images

Select an image to add :

Sfoggia...

Messi2.jpg

Send image




Ferrari.jpg

Size: 284 x 177, Date: 3/2/2017 4:30:49 PM

image/jpeg

11 kB

 View

 Delete

Manage images

Accident images

Select an image to add :

Nessun file selezionato.

	Ferrari.jpg Size: 284 x 177, Date: 3/2/2017 4:30:49 PM	<i>image/jpeg</i> 11 kB	<input type="button" value="View"/>	<input type="button" value="Delete"/>
	Messi2.jpg Size: 292 x 173, Date: 3/2/2017 4:38:22 PM	<i>image/jpeg</i> 6 kB	<input type="button" value="View"/>	<input type="button" value="Delete"/>

Review

Accident of 11/29/2016 1:19 PM

Site:

Outcome:

Involved vehicles: 0

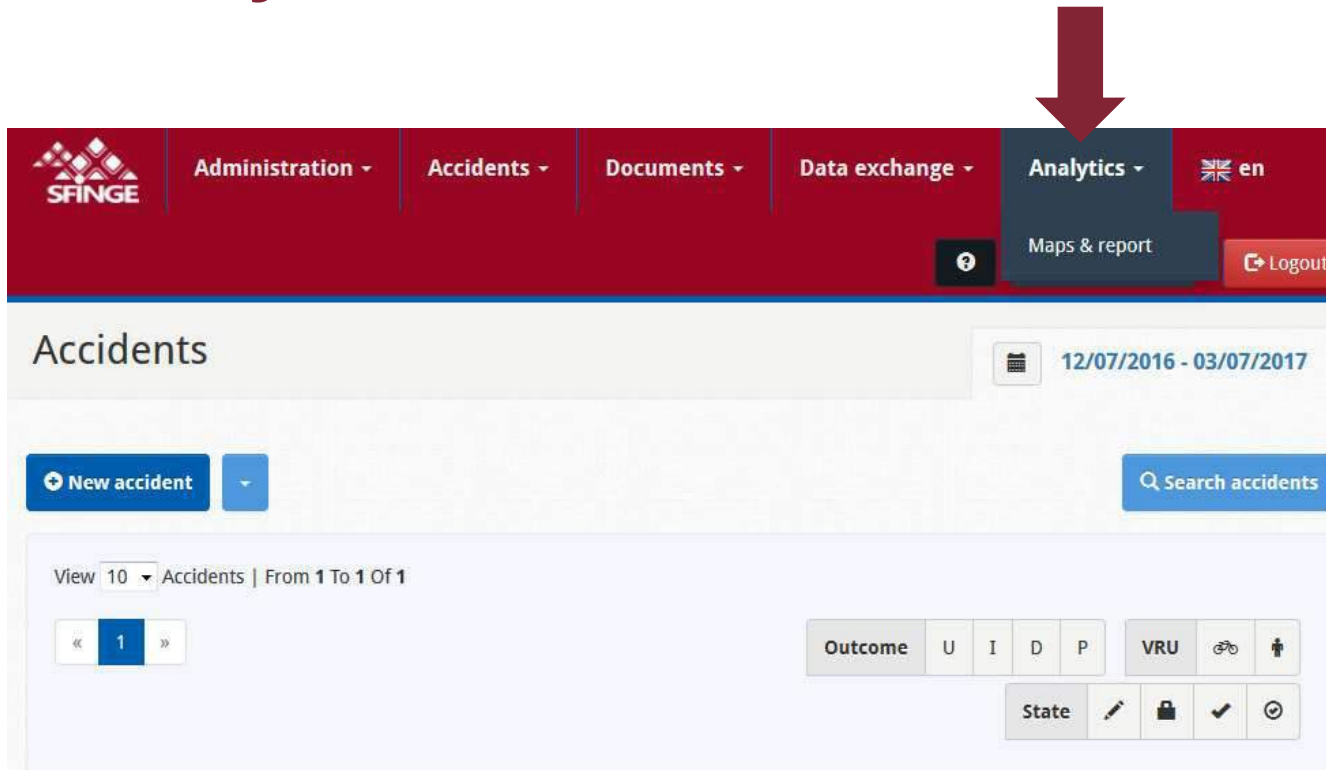
Involved pedestrians: 0

Involved passengers: 0

Issues and incongruencies review

Priority	Issue	Actions
1	Accident id is not defined <i>You need to assign a unique identifier to the accident.</i>	Correct
2	The accident city is not defined <i>The accident city is not defined.</i>	Correct
1	The specified vehicles number is invalid <i>The specified vehicles number is invalid.</i>	Correct

Analyse data



The screenshot displays the SFINGE web application interface. The top navigation bar is dark red and contains the SFINGE logo on the left, followed by menu items: Administration, Accidents, Documents, Data exchange, Analytics, and en. A red arrow points to the 'Analytics' menu item. Below the navigation bar, the main content area is titled 'Accidents' and shows a date range of 12/07/2016 - 03/07/2017. There are buttons for 'New accident' and 'Search accidents'. The interface also includes a pagination control showing 'View 10 Accidents | From 1 To 1 Of 1' and a table with columns for 'Outcome' (U, I, D, P), 'VRU' (with bicycle and person icons), and 'State' (with edit, lock, check, and refresh icons).


Map

Filters

No filter selected.

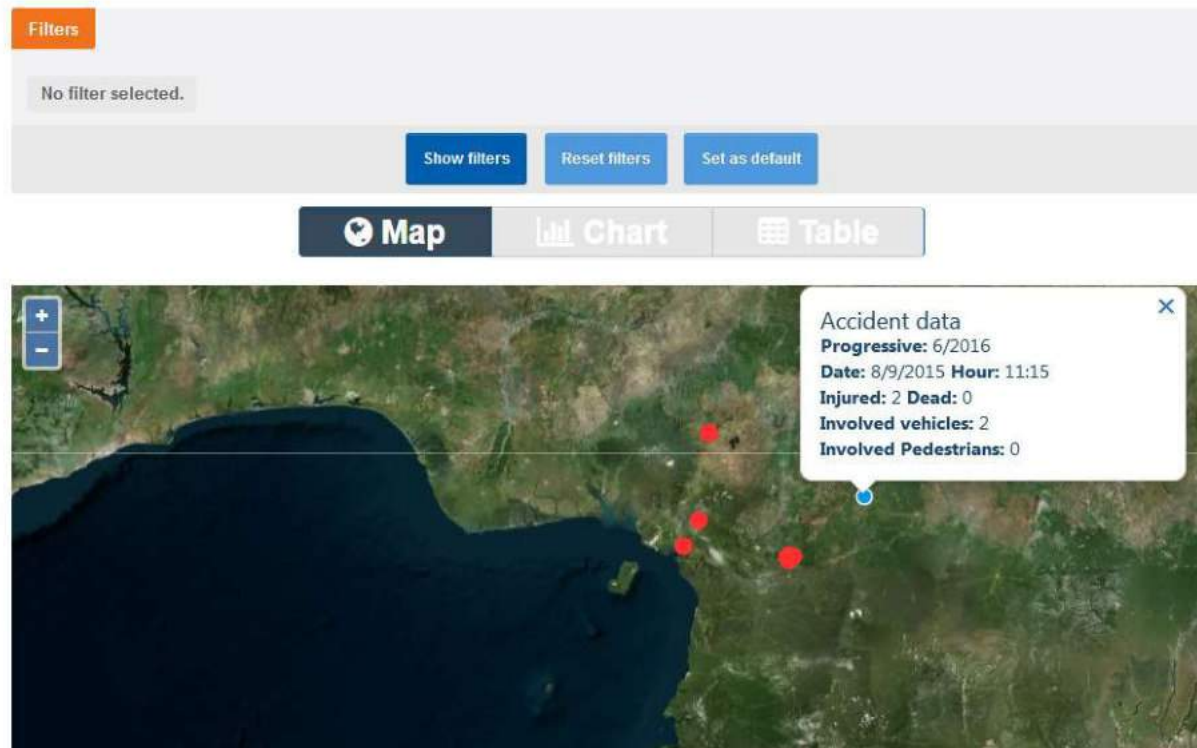
Show filters Reset filters Set as default

Map Chart Table



The image displays a user interface for a data visualization tool. At the top, there is a 'Filters' section with a status message 'No filter selected.' and three buttons: 'Show filters', 'Reset filters', and 'Set as default'. Below this is a navigation bar with three tabs: 'Map', 'Chart', and 'Table'. The 'Map' tab is highlighted with a red border. The main area shows a satellite map of a coastal region with several red and blue markers. The map includes zoom in (+) and zoom out (-) controls in the top left corner.

Details on the map



Filters bar



Show filters

- Select the filters and apply with “Apply” button
- Select “Close” button to hide filters panel

Apply Close

Accident

Road type
No filter

Accident type
No filter

Weather conditions
No filter

Junction
No filter

Time range
No filter

Day of the week
No filter

Age range
No filter

Gender
No filter

Severity

- Fatal
- With injured

With involvement of

- Pedestrian
- Cyclist
- Motorcyclist
- Car
- Bus
- Truck
- Other

Filters applied

The screenshot shows a filter interface with the following elements:

- Filters** (orange tab)
- Road type** filter: Interurban
- Accident type** filter: Head-on side collision
- Show filters** button
- Reset filters** button
- Set as default** button

Charts

- To view a chart, first choose a distribution type



Example of a chart



View list

Select elements to view



View with selected elements



Example of table



Hide table percentage

Map Chart **Table**

Distribution types

Weather conditions

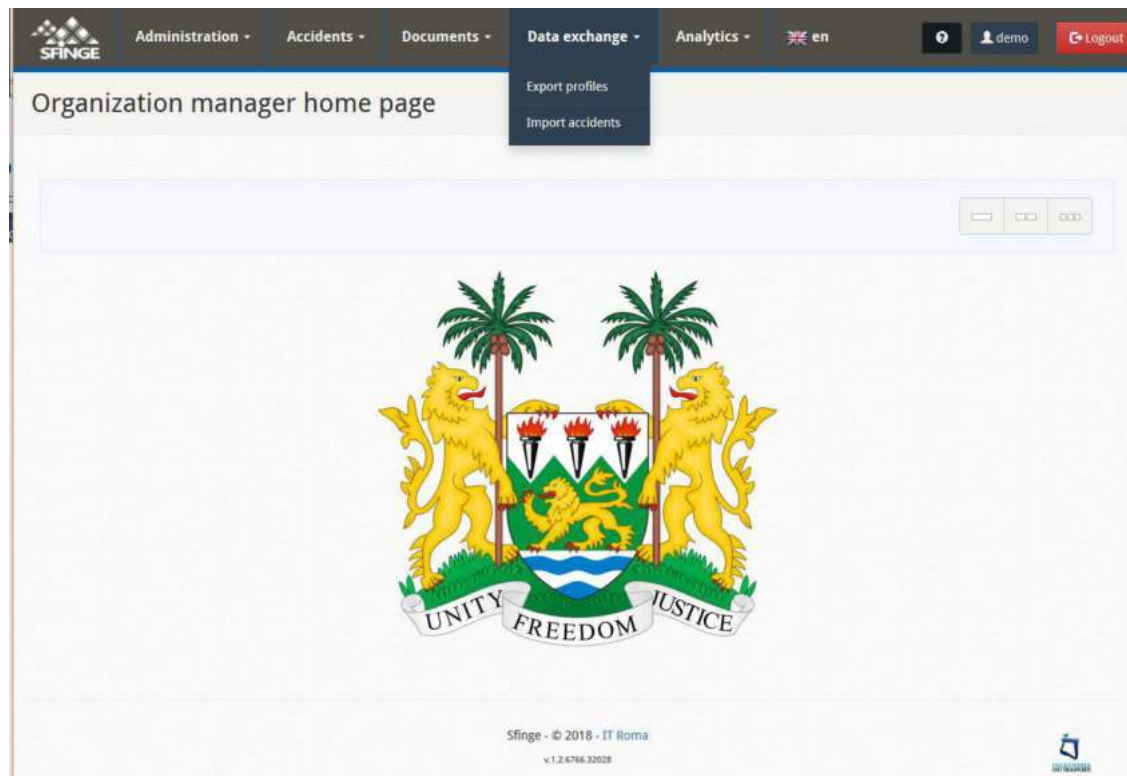
View

- # of deaths (tot)
- # of injureds
- # of injureds (tot)
- # of involved
- # of involved (tot)

Show percentages

	# acc. with injureds	# of fatal accidents	# of accidents	# of deaths	# of deaths (tot)	# of injureds	# of injureds (tot)	# of involved	# of involved (tot)
Clear	3	6	10	7	7	6	6	10	18
Rain	6	7	13	7	7	13	13	13	24
Hailstorm	2	2	4	2	2	6	6	4	9
Undefined	1	0	21	0	0	2	2	21	3
Total	12	15	48	16	16	27	27	48	54

Export Data versus Safety Manager



Export profiles

Administration ▾ Accidents ▾ Documents ▾ Data exchange ▾ Analytics ▾ en ? demo Logout

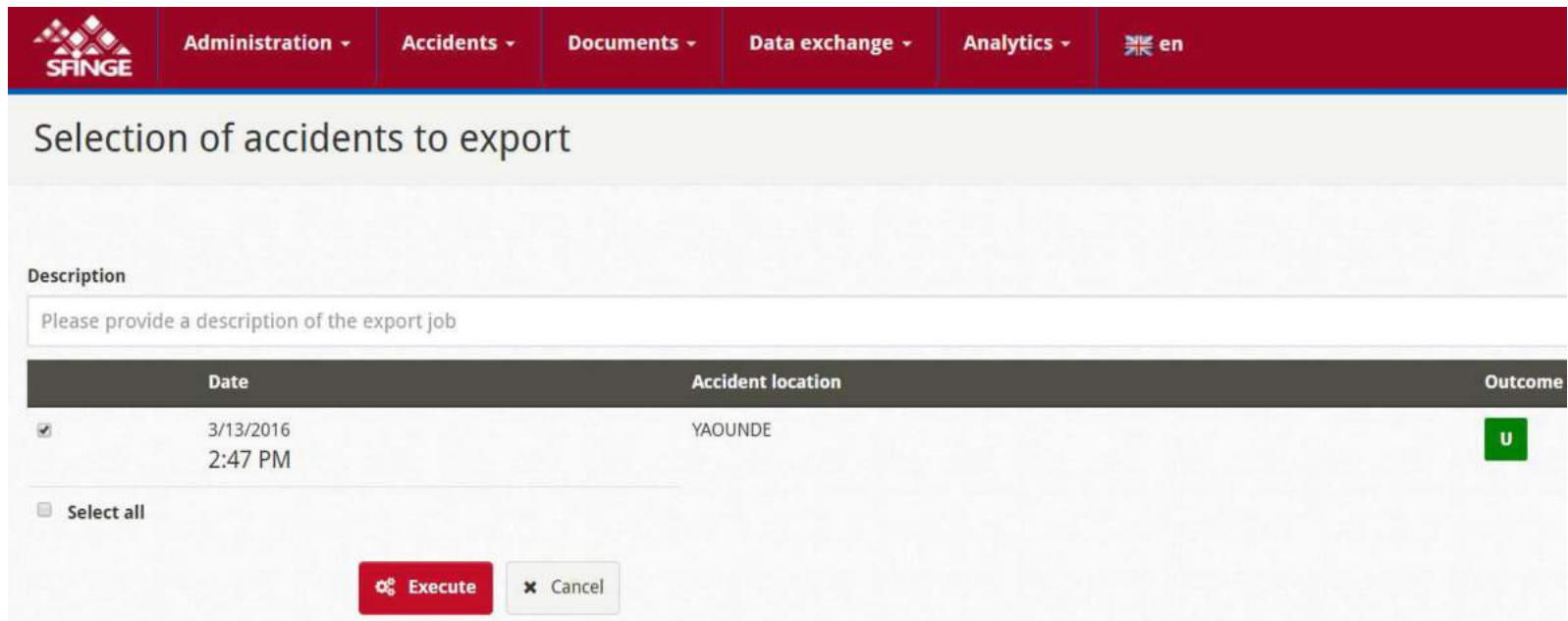
Export profiles

+ New profile

Profile	Last run	Entities	Actions
Accident Data Safety Manager <i>Export accident data towards Safety Manager</i>	5/23/2017 12:20 PM demo		Execute Edit Delete

Sfinge - © 2018 - IT Roma
v.1.2.6766.32028

Selection of accident to export



The screenshot shows the SFINGE web application interface. The top navigation bar includes the SFINGE logo and menu items: Administration, Accidents, Documents, Data exchange, Analytics, and a language selector set to 'en'. The main heading is 'Selection of accidents to export'. Below this is a 'Description' section with a text input field containing the placeholder text 'Please provide a description of the export job'. A table displays a list of accidents with columns for 'Date', 'Accident location', and 'Outcome'. One accident is listed with a checked checkbox, a date of '3/13/2016 2:47 PM', a location of 'YAOUNDE', and an outcome of 'U'. Below the table is a 'Select all' checkbox. At the bottom, there are two buttons: a red 'Execute' button with a gear icon and a grey 'Cancel' button with an 'x' icon.

SFINGE Administration ▾ Accidents ▾ Documents ▾ Data exchange ▾ Analytics ▾ en



Selection of accidents to export

Description

Please provide a description of the export job

	Date	Accident location	Outcome
<input checked="" type="checkbox"/>	3/13/2016 2:47 PM	YAOUNDE	U

Select all

 Execute  Cancel

Export data completed successfully



The screenshot displays the SPINGE web application interface. At the top, a dark red navigation bar contains the SPINGE logo on the left and several menu items: Administration, Accidents, Documents, Data exchange, Analytics, and a language selector set to 'en'. Below the navigation bar, the page title 'Export profiles' is visible. A prominent green message box with a checkmark icon contains the text 'Export profile has been correctly executed.' Below this message, there is a blue button with a plus sign and the text 'New profile'.

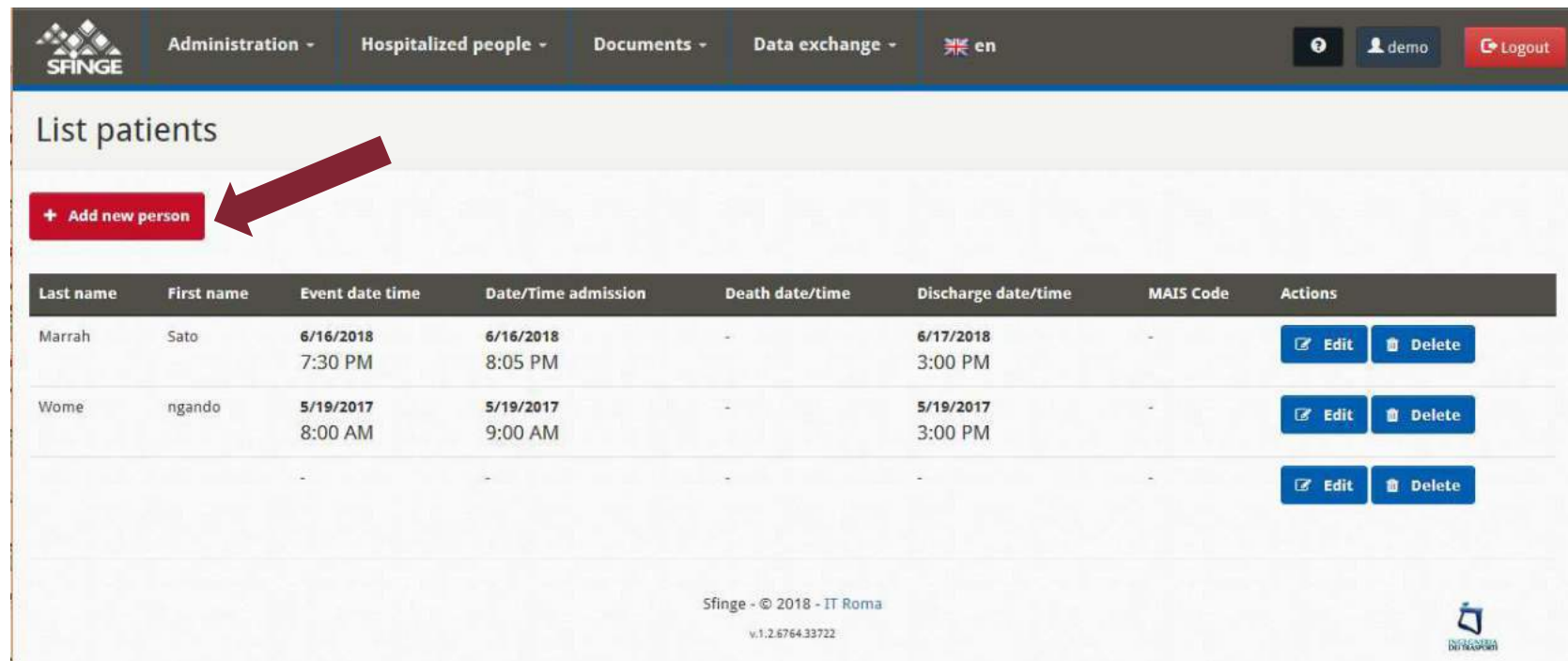


Hospital mode

Home Page: Health Services

The screenshot displays the SFINGE Organization manager home page. The main header includes the SFINGE logo and navigation links for Administration, Hospitalized people, Documents, and Data exchange, along with a language selector set to 'en'. A user profile 'demo' and a 'Logout' button are also visible. The page title is 'Organization manager home page'. A large, light blue rectangular area is present below the header. The national coat of arms of Guyana is centered on the page, featuring two golden lions, two palm trees, and a shield with three torches, with the motto 'UNITY FREEDOM JUSTICE' on a banner below. An inset shows a dark navigation menu with 'Hospitalized people' selected, and a red arrow points from this menu to the main page content.

List patients: Health Services




The screenshot displays the SFINGE web application interface. At the top, there is a navigation bar with the SFINGE logo and menu items: Administration, Hospitalized people, Documents, and Data exchange. A language selector shows 'en'. On the right, there are icons for help, a user profile labeled 'demo', and a red 'Logout' button.

List patients

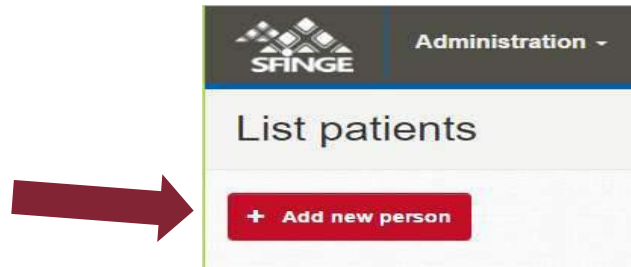
[+ Add new person](#)

Last name	First name	Event date time	Date/Time admission	Death date/time	Discharge date/time	MAIS Code	Actions
Marrah	Sato	6/16/2018 7:30 PM	6/16/2018 8:05 PM	-	6/17/2018 3:00 PM	-	Edit Delete
Wome	ngando	5/19/2017 8:00 AM	5/19/2017 9:00 AM	-	5/19/2017 3:00 PM	-	Edit Delete
		-	-	-	-	-	Edit Delete

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v.1.2.6764.33722



Create a new hospitalized person



Person data

SFINGE Administration - Hospitalized people - Documents - Data exchange -

Title

Person data

Discharge

Back to people list

Hospital name

Admission date (C4) 16/06/2018

Admission time (C5) 20:05

Name (P2) Sato

Last name (P2) Marrah

Birth date (P4) dd/mm/yyyy

Sex (P3) Male

Accident data

Accident date (C2) 16/06/2018

Accident time (C3) 19:30

Location (C6) Masingbi

CRASH RELATED INFORMATION			
Information about person compiling the form		C1 - Crash ID	
Name		C2 - Date of crash	
Designation		C3 - Time of crash	
Hospital of		C4 - Date admission	
Service no		C5 - Time admission	
Signature		C6 - Location	
PERSON RELATED INFORMATION			
P1 - Person ID		P4 - Birth date	
P2 - Person name		P5 - Type of injury	1 2 3 4 5 6
P3 - Sex		P6 - Final diagnosis	1 2 3
		P7 - Date exit	

Discharge

SFINGE Administration - Hospitalized people - Documents - Data exchange -

Title

Person data

Discharge

Back to people list

Date exit (P7) 17/06/2018

Discharge time (P7) 15:00

Diagnoses

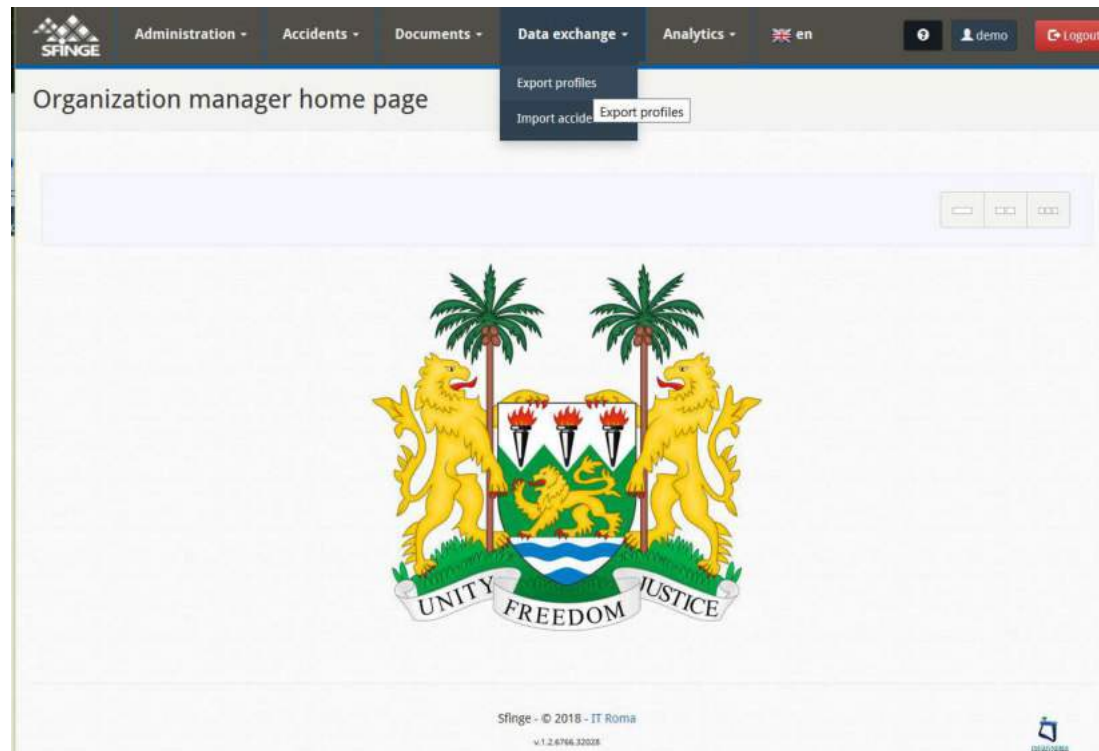
Type of injury (P5) Head Injury

Final diagnosis (P6) Serious Injury

Save

CRASH RELATED INFORMATION			
Information about person compiling the form		C1 - Crash ID	
Name		C2 - Date of crash	
Designation		C3 - Time of crash	
Hospital of		C4 - Date admission	
Service no		C5 - Time admission	
Signature		C6 - Location	
PERSON RELATED INFORMATION			
P1 - Person ID		P4 - Birth date	
P2 - Person name		P5 - Type of injury	1 2 3 4 5 6
P3 - Sex		P6 - Final diagnosis	1 2 3
		P7 - Date exit	

Export Data versus Safety Manager



Export profiles

The screenshot shows the SFINGE web application interface. At the top, there is a navigation bar with the SFINGE logo and several menu items: Administration, Accidents, Documents, Data exchange, and Analytics. The current page is titled 'Export profiles'. Below the title, there is a '+ New profile' button. A table displays the existing export profiles. The table has columns for Profile, Last run, Entities, and Actions. One profile is listed: 'Accident Data Safety Manager' with the description 'Export accident data towards Safety Manager'. Its last run was on 5/23/2017 at 12:20 PM. The Actions column for this profile contains three buttons: 'Execute', 'Edit', and 'Delete'. At the bottom of the page, there is a footer with the text 'Sfinge - © 2018 - IT Roma' and 'v.1.2.6766.32028', along with a small logo on the right.

Profile	Last run	Entities	Actions
Accident Data Safety Manager <i>Export accident data towards Safety Manager</i>	5/23/2017 12:20 PM demo		Execute Edit Delete

Selection of people to export

The screenshot shows the SFINGE web application interface. The top navigation bar includes the SFINGE logo, menu items for Administration, Hospitalized people, Documents, and Data exchange, a language selector set to 'en', and user information for 'demo' with a Logout button. The main heading is 'Selection of people to export'. A blue button labeled 'Recover all the people' is located in the top right. Below this is a 'Description' section with a text input field containing the placeholder text 'Please provide a description of the export job'. A table with three columns: 'Name', 'Admission date', and 'Discharge date' is displayed. The table contains one row for 'Marrah Sato' with an admission date of '6/16/2018 8:05 PM' and a discharge date of '6/17/2018 3:00 PM'. A checkbox is checked next to the name. Below the table is a 'Select all' checkbox which is currently unchecked. At the bottom, there are two buttons: 'Execute' (with a gear icon) and 'Cancel' (with an 'x' icon).

Administration - Hospitalized people - Documents - Data exchange - en demo Logout

Selection of people to export

Recover all the people

Description

Please provide a description of the export job

Name	Admission date	Discharge date
<input checked="" type="checkbox"/> Marrah Sato	6/16/2018 8:05 PM	6/17/2018 3:00 PM

Select all

Execute Cancel

Export data completed successfully

The screenshot shows the SFINGE web application interface. At the top, there is a navigation bar with the SFINGE logo and several menu items: Administration, Hospitalized people, Documents, Data exchange, and a language selector set to 'en'. Below the navigation bar, the page title is 'Export profiles'. A green success message states: 'Export profile has been correctly executed.' Below the message is a blue button labeled '+ New profile'. At the bottom, there is a table header with three columns: 'Profile', 'Last run', and 'Entities'. The 'Last run' column header is highlighted with a red box. The 'Actions' column header is also visible.

Thank you!

Massimo Robibaro

massimo.robibaro@uniroma1.it

SfingeWEB

*A web application for collection and
analysis of accidents data*

CENTRO DI RICERCA
PER IL
TRASPORTO E LA LOGISTICA



SAPIENZA
UNIVERSITÀ DI ROMA



www.ctl.uniroma1.it
info@ctl.uniroma1.it

Safety Manager

Support System for Road Safety Data Analysis

CENTRO DI RICERCA
PER IL
TRASPORTO E LA LOGISTICA



SAPIENZA
UNIVERSITÀ DI ROMA

Workshop in Freetown

16 July 2018

Dr. Massimo Robibaro



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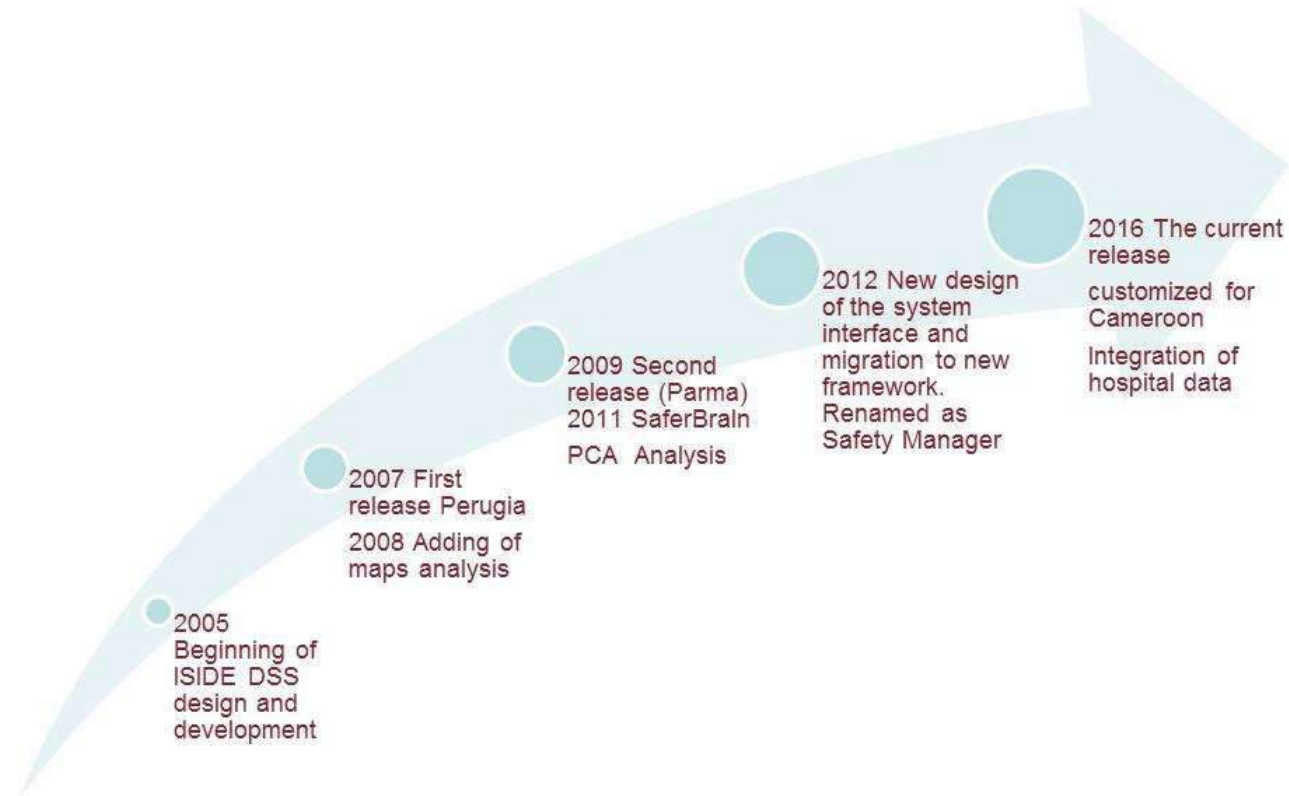
Safety Manager

- It is an **information system** supporting the activities of a Monitoring Center of Road Safety
- It aims to meet the needs of Road Safety **monitoring and analysis**
- It is based on the experience gained in the projects funded by the **Italian National Plan for Road Safety** and in **Europe Projects of Road Safety** where CTL has been involved

The main services of Safety Manager in the Sierra Leone context

- Automatically collecting data from
 - Police, Hospitals
- Do statistical analysis (Maps, Charts, Tables) on Road Safety data - only for authorized users
- Give support to choice of intervention to reduce the number and the gravity of Road Accidents – only for authorized users

Main stages in developing



The “starting” point



The activities of the Monitoring Center

- **Data acquisition and management** → receiving data from: Police, Hospitals, mobility manager, people responsible for the design and implementation of interventions, etc.
- **Road Safety Planning** → *criticality analysis*, development and updating of the Road Safety Plan, *economics evaluations*, monitoring of Road Safety Interventions, etc.

Safety Manager Structure

- The information system is web based and can be used with a standard *web browser*. It is organized in:
 - “reserved area” with the tools available to the staff of the Center for the activities of **Acquisition and Data Management and Road Safety Planning**

Diapositiva 7

AT3

togliere la parte sull'area pubblica

Antonino Tripodi; 02/07/2018

Communication protocols, security and data scope

- The data transfers from Police and Hospital to the Safety Manager will be accepted only from known ip address
- Each analyst user will have a data visibility relative to the scope assigned to him by the System Administrator
- The protocol of communication between client (browser-web) and web server application could be
 - **http** (not secure and not encrypted)
 - **https** to secure and encrypt information going through the client-server communication channel

Customization of Safety Manager for Sierra Leone Context

- Built vector graphs of Sierra Leone (department level)
- Inserted information about cities, departments, regions of Sierra Leone
- Collecting accident data from Police
- Collecting hospitalization data
- Matching data between people involved in accident and people hospitalized

Diapositiva 9

AT4

aggiornare per sierra leone

Antonino Tripodi; 02/07/2018

The reserved area: main purposes

- **Accounting**
 - Roles and Users Management
- **Acquisition and Data Management**
 - Roads
 - Traffic
 - Accidents
 - Interventions on the Road Network
- **Road Safety Planning**
 - Choice of interventions on the Road Network
 - Rating Impact on Road Safety
 - Evaluation of interventions

The "Administrative" Dashboards: users and roles management

The image displays two overlapping screenshots of the 'Safety Manager' web application interface. The top screenshot shows the 'Managing users' dashboard, which includes a header with the application logo and navigation links, a sub-header with instructions, and a table listing 13 users with their names and email addresses. The bottom screenshot shows the 'Managing roles' dashboard, which includes a header, a sub-header with instructions, and three main sections: 'Add new Role' with a form and 'Add' button, 'Cancel role' with a list of roles and a 'Cancel' button, and 'List of users of the role' with a dropdown menu.

Safety Manager
Centre for analysis of road safety data

Home Account

Managing users

To associate a user to the role, select the corresponding user and then click on link Associate Role to user.

Create User | Associate roles to user

Show all Initials:

Number of users: 13

User Name
<input type="radio"/> administrator@itroma.com
<input type="radio"/> analyst@itroma.com
<input type="radio"/> e.castaldi@itroma.com
<input type="radio"/> editor@itroma.com
<input type="radio"/> eleonora.meta@uniroma1.it
<input type="radio"/> g.stelli@itroma.com

Safety Manager
Centre for analysis of road safety data

Home Account

Managing roles

You can add a new role, cancel an existing role and cancel the users associated to the role.

Add new Role

Name of the role

Add

Cancel role

List of roles

- EditorCMG
- Guest
- OperatorManager
- SuperUser
- SurveyManager
- SystemManager

Cancel the role if users are associated?
Do not select

Cancel

List of users of the role

Select the user in the role

[Select Role]

The current roles in Safety Manager

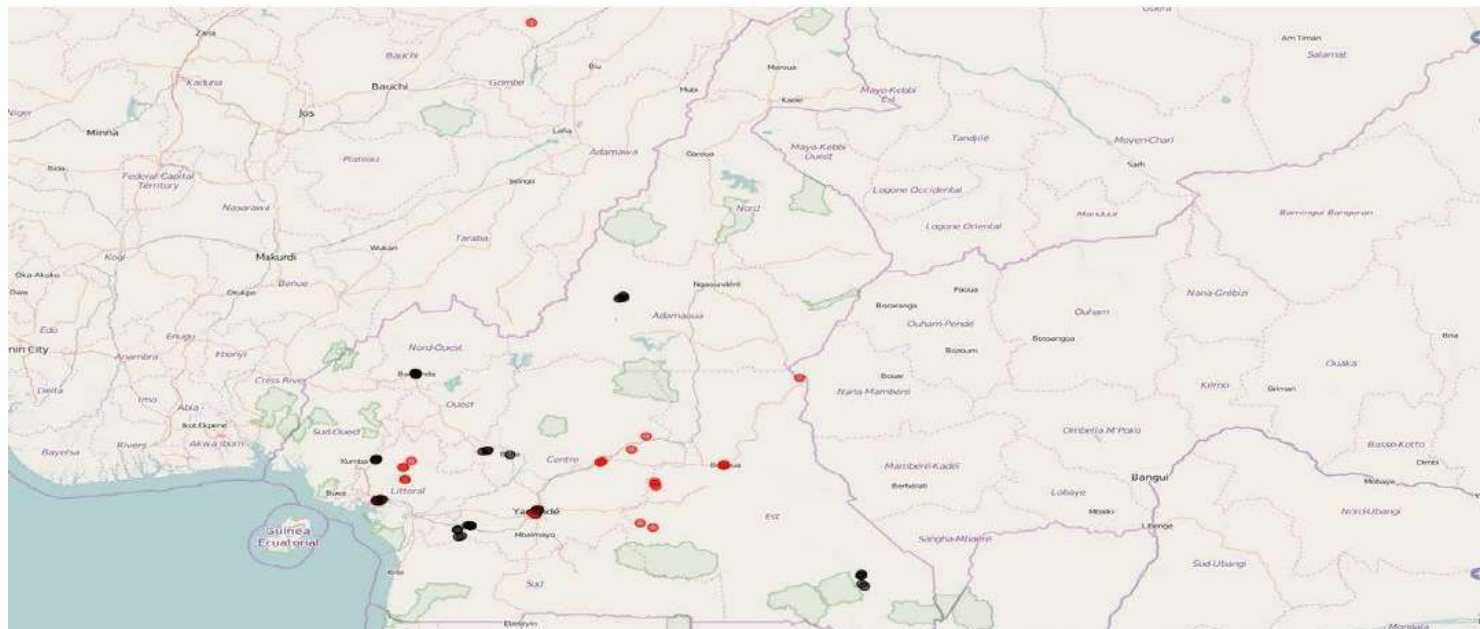
- **Administrator:** reserved area - managing roles and users
- **Analysis:** reserved area - maps, charts, tables and planning
- **SuperUser:** System Administrator

The "engineer" Dashboard

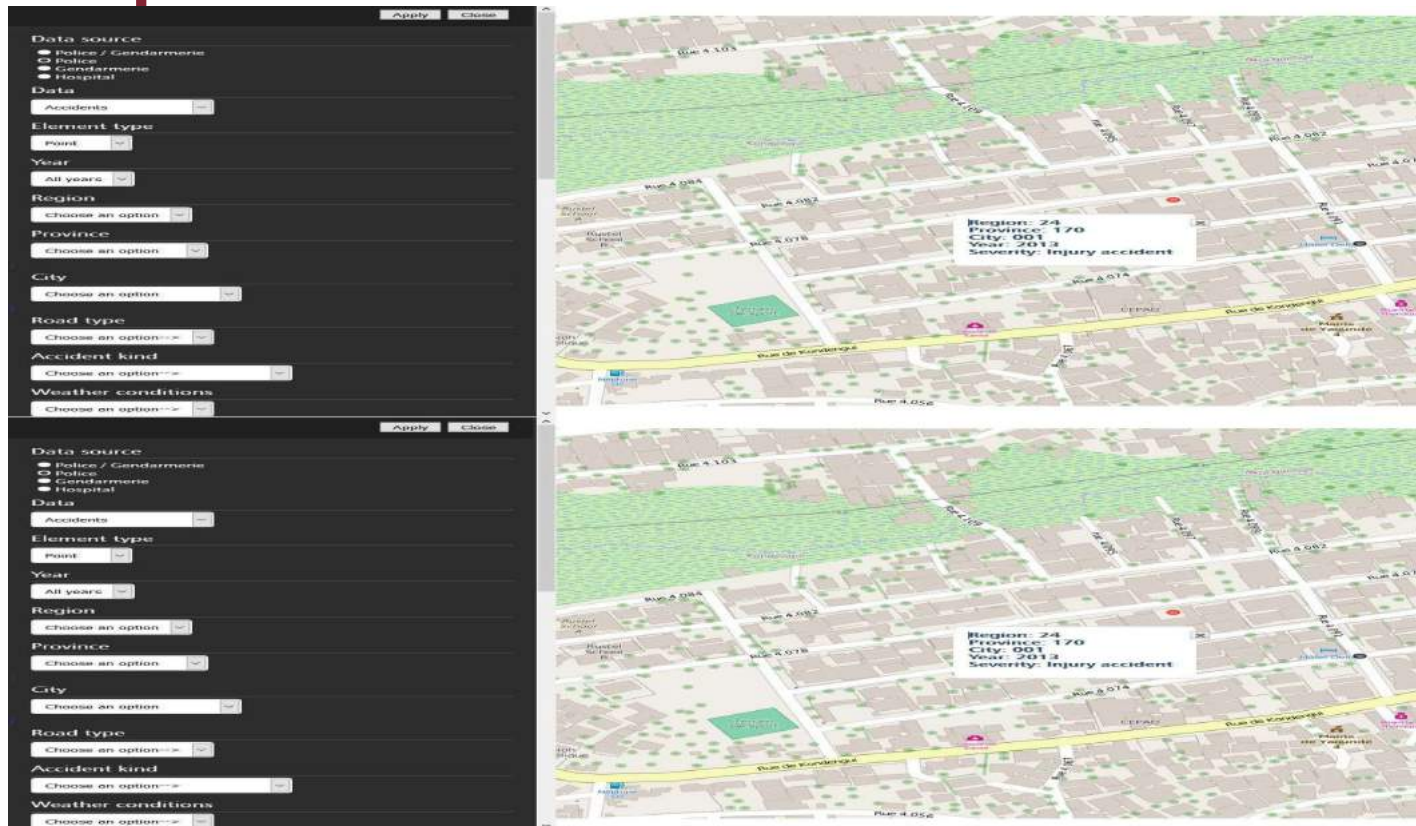


Map: Cameroon Accidents - Test Data

- None
- Road type
- Accident kind
- Weather conditions
- Junction
- Age range
- Gender
- Time range
- Day of the week
- With involvement of
- Year
- Month



Map: Cameroon Accidents – Test Data



21/07/2018

Page 15

The filters panel – Accident data

- It is possible to filter data on **Maps**, **Charts** and **Tables** according to:
 - **Source of data:** police / gendarmerie / hospital
 - **Years**
 - **Administrative area:** Region / Province / City
 - **Road type:** Urban / Interurban / Motorway
 - **Accident kind:** Head–on collision / Collision / ...
 - **Weather condition:** Clear / Fog / Rain / Hailstorm / Snow /...
 - **Junction:** Junction / Not junction
 - **Time range:**
 - **Day of the week:** Monday / Tuesday / Wednesday / ...
 - **Month:** January / February / March / April / May / June / ...
 - **Severity:** Dead / Injured
 - **With involvement of** Pedestrian / Cyclist / Motorcyclist / Car...

The filters panel – Involved in accident data

- It is possible to filter data on **Maps**, **Charts** and **Tables** according to the filters valid for Accident and:
 - **Age range:** < 15 / 15-17 / 18-24 / 25-49 / 50-64 / > 65
 - **Gender:** Male / Female

The filter panel – Hospital data

- It is possible to filter data on Charts and Table disabled all the filters valid for Accident and considering only:
 - **Years**
 - **Age range:** < 15 / 15-17 / 18-24 / 25-49 / 50-64 / > 65
 - **Gender:** Male / Female
 - **Month:** January / February / March / April / May / June / ...
 - **Severity:** Dead / Injured
 - **Hospital:** Youndeé, Doukala, ...
 - **Cost items:** Cost of hospital services / Cost of medicaments / Total cost of hospitalization
 - **Cost range:** 0-64999 CFA / 65000-327999 CFA / 328000-655999 CFA / 656000-3279999 CFA / >=3280000 CFA

Chart: Number of Accidents - Cameroon Distribution «Day of the week» - Test Data

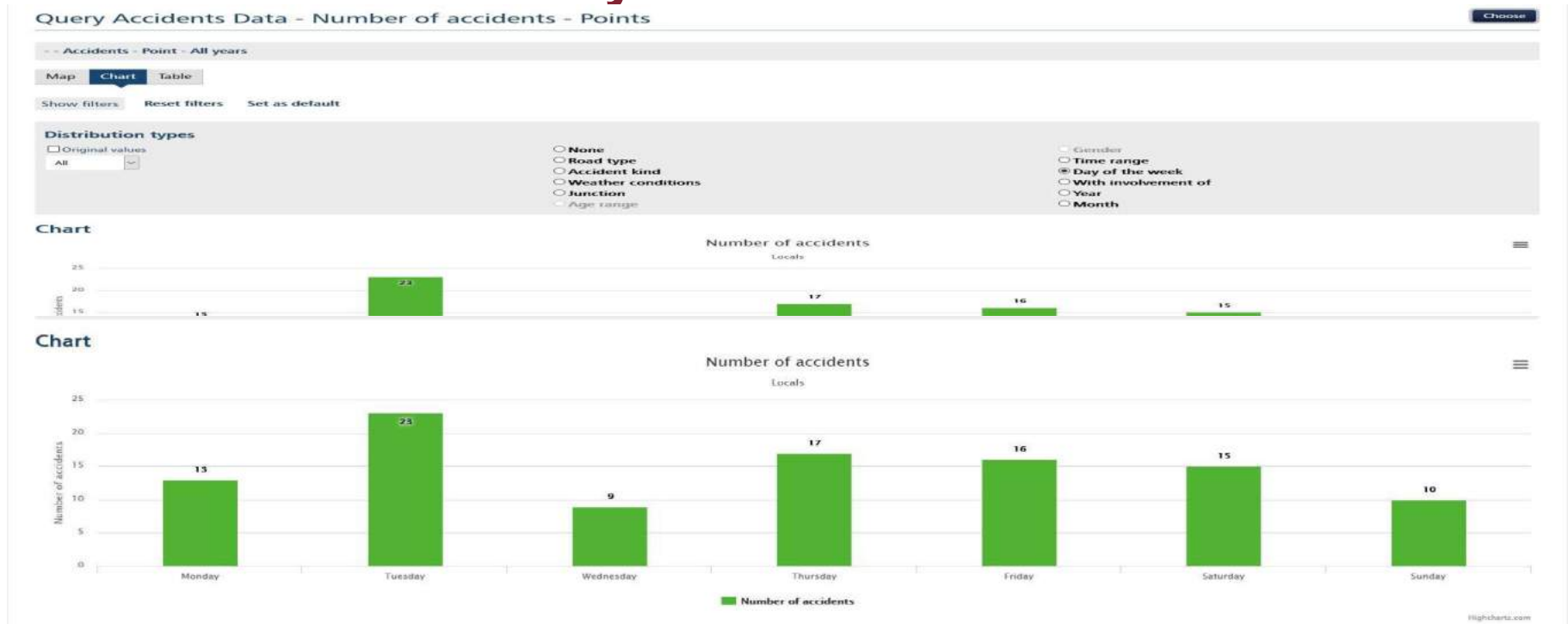


Table: Number of Accidents - Cameroon Distr. «Weather conditions» – Test Data

Distribution types

Original values
All

None
 Road type
 Accident kind
 Weather conditions
 Junction
 Age range

Gender
 Time range
 Day of the week
 With involvement of
 Year
 Month

Table

	Accidents
Clear	38 (36.89 %)
Fog	0 (0 %)
Rain	53 (51.46 %)
Hailstorm	12 (11.65 %)
Snow	0 (0 %)
Rain	53 (51.46 %)
Hailstorm	12 (11.65 %)
Snow	0 (0 %)
Strong wind	0 (0 %)
Other	0 (0 %)
Total	103

Map: Cameroon Accidents – Test data

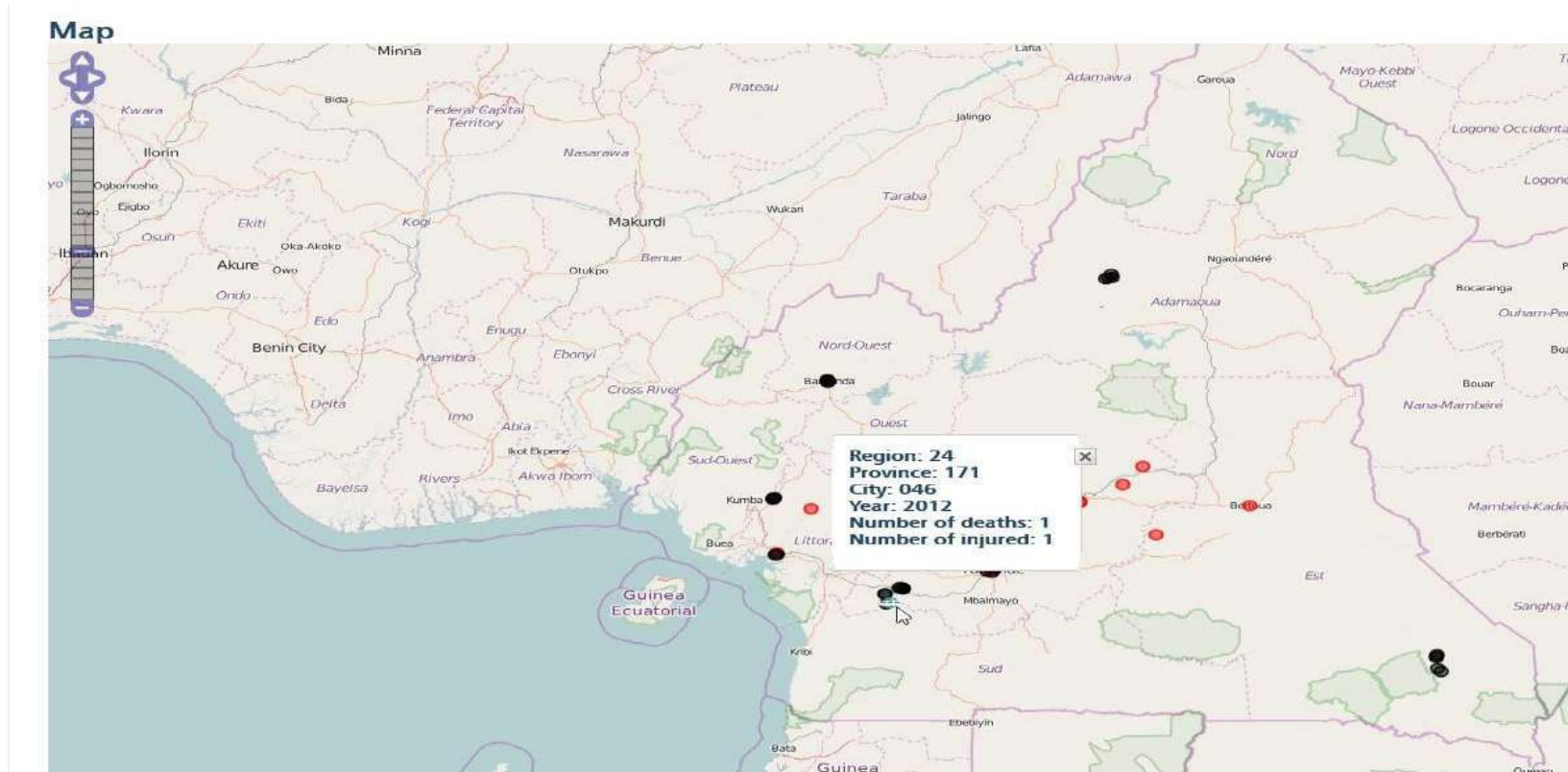


Chart: Involved in Accidents - Cameroon Distribution «Age range» - Test Data

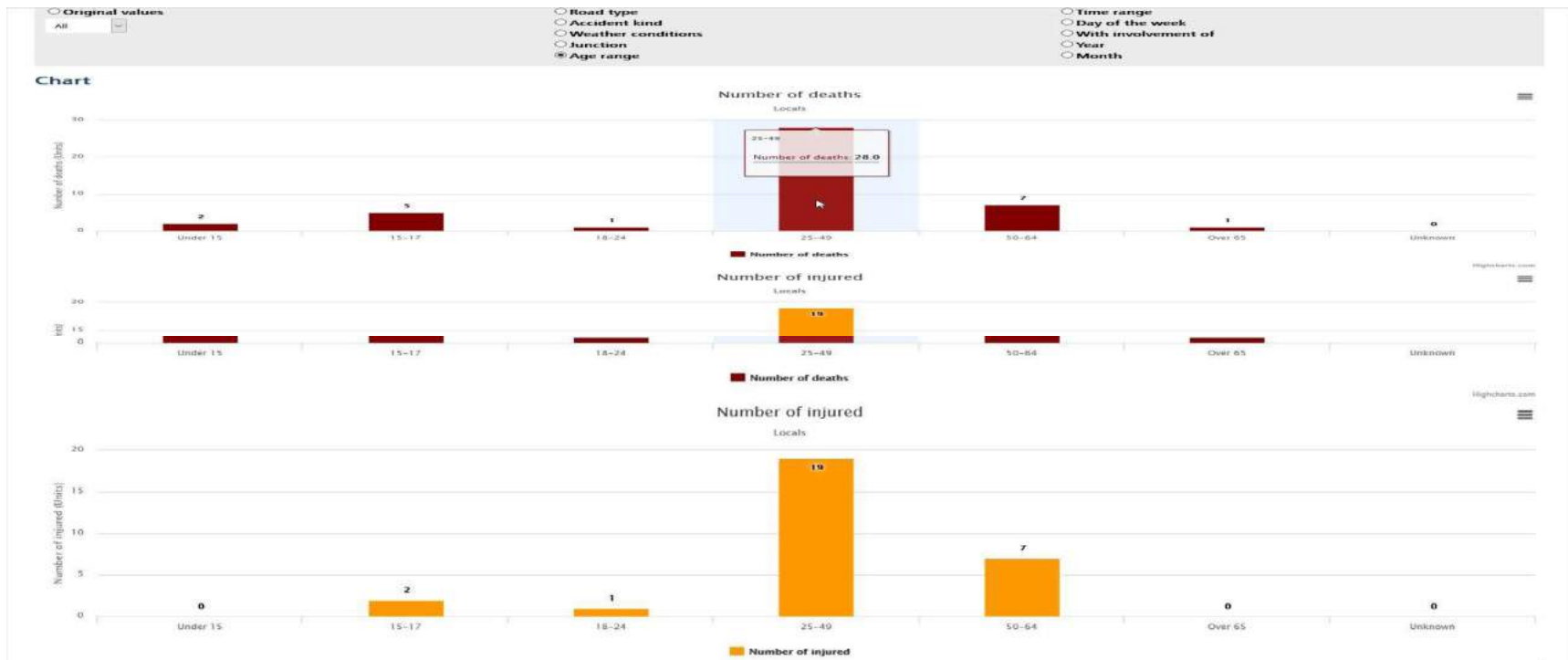


Table: Involved in Accidents - Cameroon Distribution «Age range» – Test Data

Distribution types

Current values

Original values

All

None

Road type

Accident kind

Weather conditions

Junction

Age range

Gender

Time range

Day of the week

With involvement of

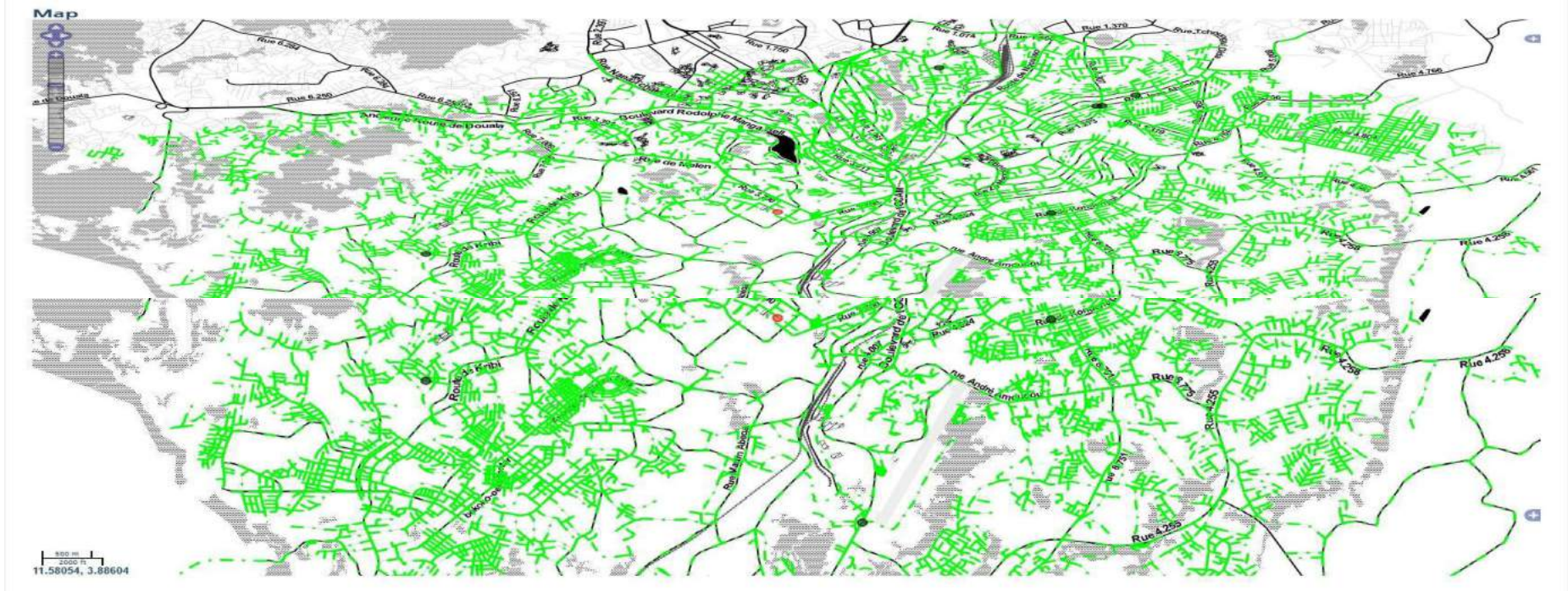
Year

Month

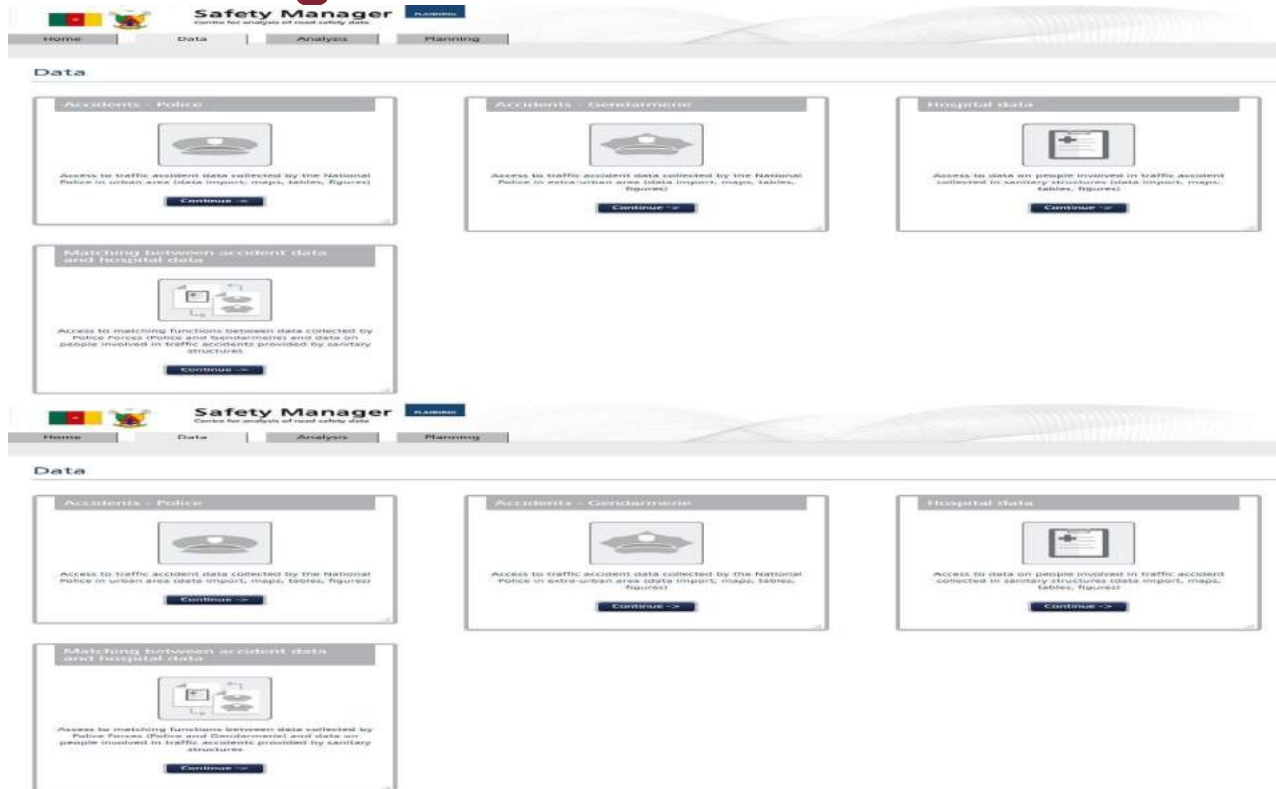
Table

	Deaths	Injured
Under 15	2 (4.5 %)	0 (0 %)
15-17	5 (11.4 %)	2 (6.9 %)
18-24	1 (2.3 %)	1 (3.4 %)
25-49	28 (63.6 %)	19 (65.5 %)
50-64	7 (15.9 %)	7 (24.1 %)
18-24	1 (2.3 %)	1 (3.4 %)
25-49	28 (63.6 %)	19 (65.5 %)
50-64	7 (15.9 %)	7 (24.1 %)
Over 65	1 (2.3 %)	0 (0 %)
Unknown	0 (0 %)	0 (0 %)
Total	44	29

Map: Cameroon accidents – Centre Region – Province Mfoundi with road network



Data Management dashboard



Diapositiva 25

M1

Sostituire immagine con quella della Sierra Leone

Massimo; 12/07/2018

Police and Hospital data dashboards



The header of the dashboard features the South African flag and the national coat of arms on the left. To their right is the text "Safety Manager" in a bold, dark font, with "Centre for analysis of road safety data" in a smaller font below it. A blue "PLANNING" button is positioned to the right of the text. Below this is a horizontal navigation bar with four tabs: "Home", "Data", "Analysis", and "Planning". The "Planning" tab is currently selected and highlighted.

Accidents recorded by the police



Highlights



Synthetic indications on the whole accidents added in the traffic accidents database

[Continue ->](#)



Historical data transfers



Report on transfers between databases and functions for accessing to information

[Continue ->](#)



Historical data acquisitions



Report on acquisitions of information into the databases and functions for accessing to information

[Continue ->](#)

Matching data dashboard



Matching between accident data and hospital data

Matching on going



Matching on going between data collected by Police Forces (Police and Gendarmerie) and data on people involved in traffic accidents provided by sanitary structures

[Continue ->](#)

Archive Accepted Matching



Archive accepted matching between data collected by Police Forces (Police and Gendarmerie) and data on people involved in traffic accidents provided by sanitary structures

[Continue ->](#)

Archive Rejected Matching



Archive rejected matching between data collected by Police Forces (Police and Gendarmerie) and data on people involved in traffic accidents provided by sanitary structures

[Continue ->](#)

The accepted matching Accident data – Hospital data

Archive accepted matching between data collected by Police Forces (Police and Gendarmerie) and data on people involved in traffic accidents provided by sanitary structures]

Highlights

Number of accidents already checked:	103
Number of accidents never checked:	0
Number of in-patients already checked:	2
Number of in-patients never checked:	3
Number of accidents changed over the original data from the Police / Gendarmerie:	3
Number of affected persons compared to the original data from the Police / Gendarmerie:	3

From to

Rescan accident data
Rescan hospital data

Accident date	Person birth date	Original gravity value	Current gravity value	Last updated gravity date	Matching confirmed	Creation matching date	Creation matching user	Actions
16/08/2014	15/02/2004	Injury accident	Fatal accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	12/12/1985	Injury accident	Fatal accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	12/12/1985	Injury accident	Injury accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	03/03/1994	Injury accident	Fatal accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	03/03/1994	Injury accident	Injury accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose

Archive accepted matching between data collected by Police Forces (Police and Gendarmerie) and data on people involved in traffic accidents provided by sanitary structures]

Highlights

Number of accidents already checked:	103
Number of accidents never checked:	0
Number of in-patients already checked:	2
Number of in-patients never checked:	3
Number of accidents changed over the original data from the Police / Gendarmerie:	3
Number of affected persons compared to the original data from the Police / Gendarmerie:	3

From to







Rescan accident data
Rescan hospital data

Accident date	Person birth date	Original gravity value	Current gravity value	Last updated gravity date	Matching confirmed	Creation matching date	Creation matching user	Actions
16/08/2014	15/02/2004	Injury accident	Fatal accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	12/12/1985	Injury accident	Fatal accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	12/12/1985	Injury accident	Injury accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	03/03/1994	Injury accident	Fatal accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose
16/08/2014	03/03/1994	Injury accident	Injury accident	11/04/2016 00:25:09	✓ True	11/04/2016 00:25:09	analyst@troma.com	Choose

Planning dashboard







Planning

Create New Processing Projects List

<p>Interventions Choice</p>  <p>Interventions Choice</p> <p>+ Add new</p>	<p>Maps</p>  <p>This section allows to show on map the traffic accident data included in the database and to look at their information.</p> <p>+ Add new</p>	<p>Graphs</p>  <p>This section allows to realise statistical analysis on the traffic accident data included in the database and to show them graphically.</p> <p>+ Add new</p>
<p>Tables</p>  <p>This section allows to realise statistical analysis on the traffic accident data included in the database and to show them graphically.</p>	<p>Critical Elements</p>  <p>Choice of interventions – Classification of existing</p>	<p>Causes and countermeasures</p>  <p>Choice of interventions – Causes and countermeasures</p>

Planning

Create New Processing Projects List

<p>Interventions Choice</p>  <p>Interventions Choice</p> <p>+ Add new</p>	<p>Maps</p>  <p>This section allows to show on map the traffic accident data included in the database and to look at their information.</p> <p>+ Add new</p>	<p>Graphs</p>  <p>This section allows to realise statistical analysis on the traffic accident data included in the database and to show them graphically.</p> <p>+ Add new</p>
<p>Tables</p>  <p>This section allows to realise statistical analysis on the traffic accident data included in the database and to show them graphically.</p>	<p>Critical Elements</p>  <p>Choice of interventions – Classification of existing</p>	<p>Causes and countermeasures</p>  <p>Choice of interventions – Causes and countermeasures</p>

Analysis projects and new Processing

Home Data Analysis Planning Configuration IT EN FR

Planning

Create New Processing Projects List

Number of projects: 11

ID	Creation Date	Title/Description	State	Processing	Actions
1	08/02/2013	Default project Project folder that contains all processings not explicitly assigned to a specific Project.		17	Choose
2	10/02/2013			2	Choose
3	10/02/2013			4	Choose
4	10/02/2013			8	Choose
5	11/02/2013			16	Choose

Create New Processing

Type
Scelta interventi

Title
Enter name of the new processing

Description
Brief processing description in max 200 chars

Accidents From
Scelta interventi

Title
Enter name of the new processing

Description
Brief processing description in max 200 chars

Accidents From
1 / 1 / 2001

To
1 / 3 / 2011

Filter
-Please select-

Create

Page 1 of 3
1 2 3 >>
Results per page: 5

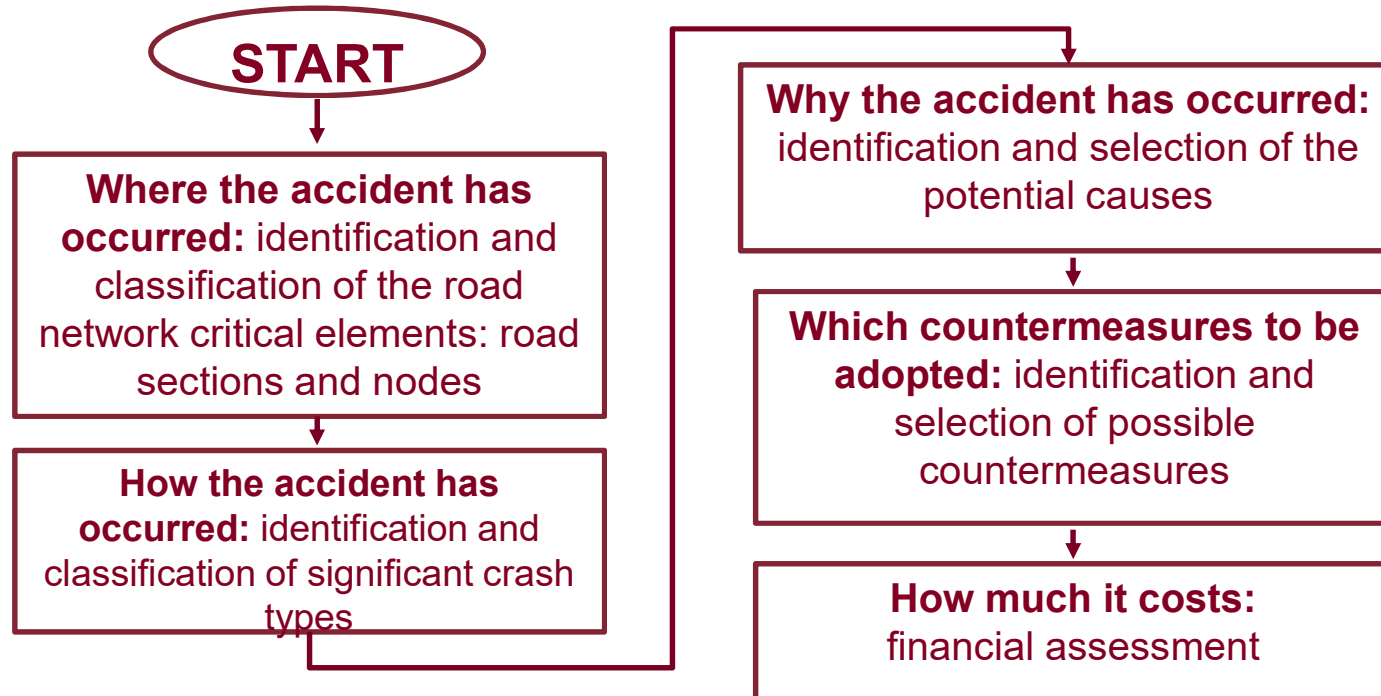
Page 1 of 3
1 2 3 >>
Results per page: 5

The project *Dashboard*

The screenshot displays the 'Safety Manager' dashboard. At the top, there is a navigation bar with 'Home', 'Data', 'Analysis', and 'Planning' tabs. The main header shows '1 | Default project | Project folder that contains all processings not explicitly assigned to a specific Project'. Below this, there are tabs for 'Tutti', 'Interventions Choice', 'Maps', 'Graphs', 'Critical elements', and 'Causes and countermeasures'. The dashboard contains four project cards, each with a table of details:

Project ID	Description	Creation Date	State	Type
588	2013_07_12 test aggregato	7/12/2013 12:31:08 PM	Step 3. Chiuso.	Interventions Choice
628	Elaborazione di prova	5/11/2015 2:44:18 PM	Step 3. Chiuso.	Interventions Choice
676	Esempio n.1 del 27 Maggio 2015	7/12/2013 12:31:08 PM	Step 3. Chiuso.	Interventions Choice
680	Inserisci nome della nuova elaborazione	5/11/2015 2:44:18 PM	Step 3. Chiuso.	Interventions Choice

General flow chart of the process for the selection of the interventions



An example: the process of interventions choice on the network

Settings choosing interventions

Description of the features available in the form

Approach for the analysis
 Aggregate Disaggregate

Type of road elements
 Segments of road Intersections

Result of significance test

The significance test performs the verification of the presence of the necessary data

Total accidents in the database:	14627	Georeferenced:	9246
Segments of road with road accidents:	243	with DTM:	0

Accidents at Segments of road

Total:	720		
With injured:	285	Fatal:	0
No injuries:	435	Not assigned:	0

Identification method of the critical elements

Annual frequency method

Media + Increase of 20%

Media + standard deviation

Critical elements of the network

Interventions Choice Settings Identifying Critical Crash Type Choice Causes Determination Countermeasures Choice Creating packages Compare packages

Step 1 of 6

Identifying Critical

Description of the features available in the form

Selected item title

All elements Only critical elements

Number of items: 243

Choice	Id_FR	FirstRoad	Length	Type	N. accidents	N. acc. damage	N. acc. injured	N. acc. dead	Annually	Map	Chart
<input checked="" type="radio"/>	154317	Via Campo di Marte	100.00	2 corsie	23	17	6	0	2.09	Map	Chart
<input type="radio"/>	82911	Via Cortonese	100.00	2 corsie	22	15	7	0	2.00	Map	Chart
<input type="radio"/>	73821	Via Settevalli	109.46	2 corsie	20	13	7	0	1.66	Map	Chart
<input checked="" type="radio"/>	154317	Via Campo di Marte	100.00	2 corsie	23	17	6	0	2.09	Map	Chart
<input type="radio"/>	82911	Via Cortonese	100.00	2 corsie	22	15	7	0	2.00	Map	Chart
<input type="radio"/>	73821	Via Settevalli	109.46	2 corsie	20	13	7	0	1.66	Map	Chart
<input type="radio"/>	129531	Via Campo di Marte	105.12	2 corsie	15	9	6	0	1.30	Map	Chart
<input type="radio"/>	154309	Via Palermo	174.70	2 corsie	17	12	5	0	0.88	Map	Chart

Page 1 of 49

1 2 3 4 5 6 7 8 9 10 >>

Results per page: 5

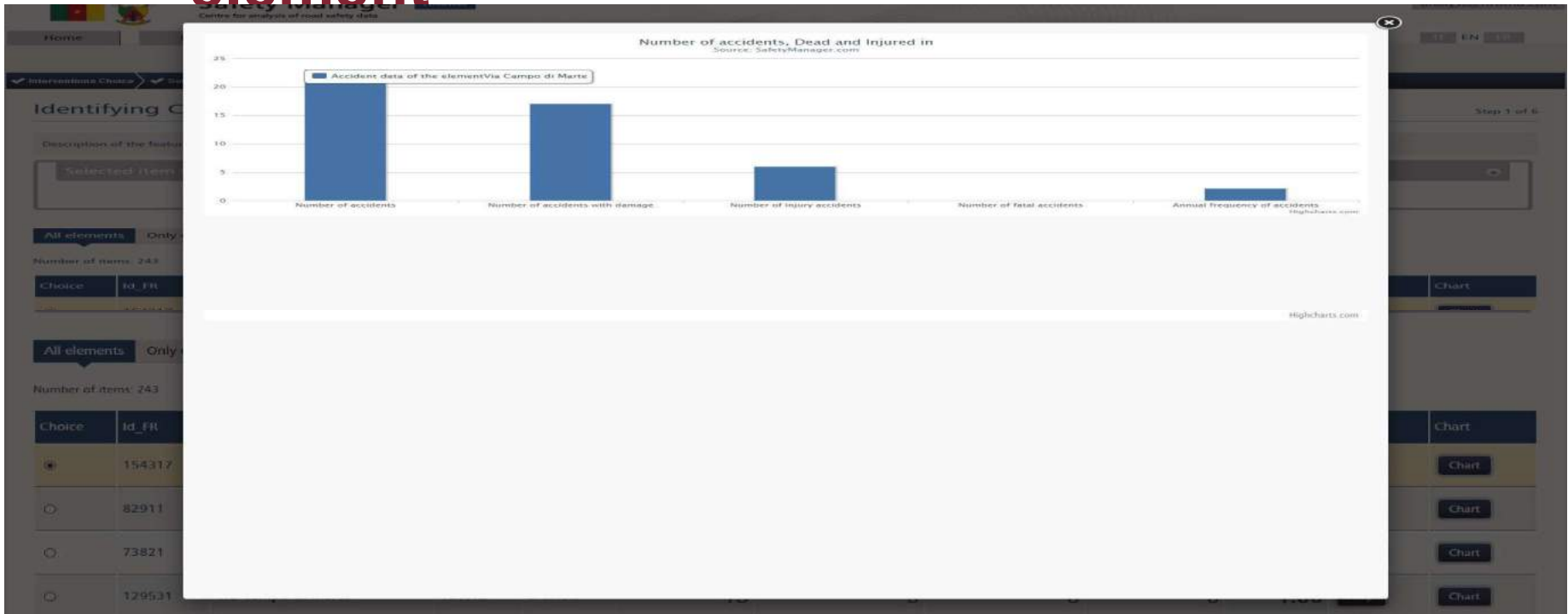
Show on map the selected critical element

The screenshot displays a web application interface for identifying critical elements. On the left, a sidebar titled "Identifying C" contains a table with the following data:

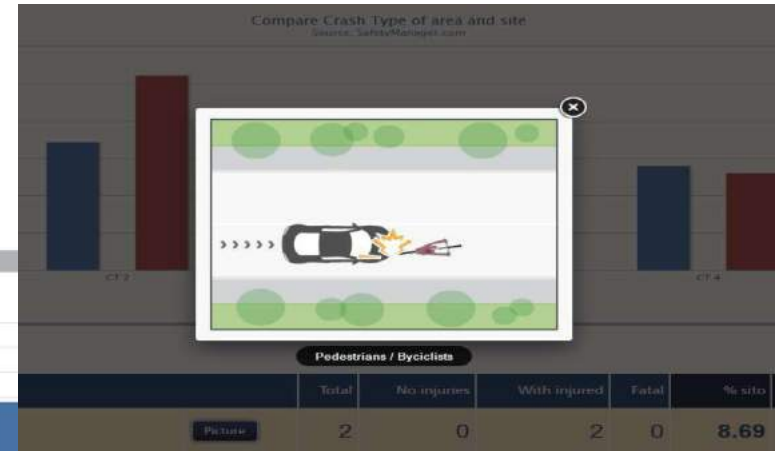
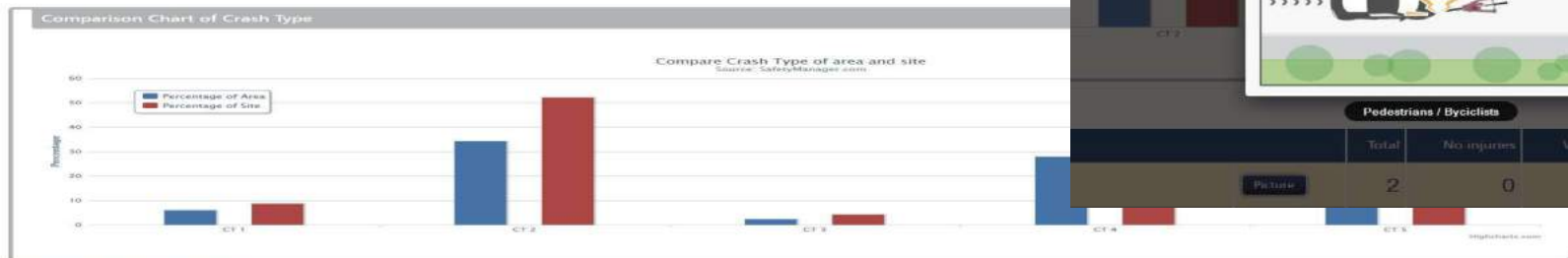
Choice	Id_FIR
<input type="radio"/>	154317
<input type="radio"/>	82911
<input type="radio"/>	73821
<input checked="" type="radio"/>	154317
<input type="radio"/>	82911
<input type="radio"/>	73821
<input type="radio"/>	129531
<input type="radio"/>	154309

Below the table, it indicates "Page 1 of 49" and "Results per page: 5". The main map area shows a street network with a selected element highlighted in blue. The map includes a scale bar (0 to 100m) and a north arrow. The interface also features a "Selected items" section and a "Chart" button on the right side.

Charts of events of selected critical element



Significant Crash Type



Significant Crash Types

Choice	Id	Crash Type	Total	No injuries	With injured	Fatal	% site	% Media area	SW	OOR	PPI
0		CT1									
		CT2									
		CT3									
		CT4									
		CT5									

Significant Crash Types

Choice	Id	Crash Type	Total	No injuries	With injured	Fatal	% site	% Media area	SW	OOR	PPI
10	10	Pedestrians / Bicyclists	2	0	2	0	8.69	6.06	1.00	1.43	6.99
2	2	Head-on Left Turn / Rear end Left Turn crashes	12	8	4	0	52.17	34.36	0.33	1.52	19.94
12	12	Running off road	1	1	0	0	4.34	2.39	0.10	1.82	54.95

NON significant Crash Types

Determine the *possible causes*

Interventions Choice > Settings > Identifying Critical > Crash Type Choice > Causes Determination > Countermeasures Choice > Creating packages > Compare packages

Causes Determination Step 3 of 6

Description of the features available in the form

154317 | Via Campo di Marte

Approach for the analysis: Disaggregate

Type of road elements: Segments of road

Crash Type: 10 | Pedestrians / Bicyclists

Possible causes for selected Crash Type

Choice	Cause	Comment
	Crash Type:	10 Pedestrians / Bicyclists

Possible causes for selected Crash Type

Choice	Cause	Comment
<input checked="" type="checkbox"/>	Restricted Sight Distance Restricted Sight Distance	Verify on site.
<input checked="" type="checkbox"/>	Frequent Pedestrian/Cyclist Crossings Frequent Pedestrian/Cyclist Crossings	

Identification and countermeasures choice

✓ Interventions Choice ✓ Settings ✓ Identifying Critical ✓ Crash Type Choice ✓ Causes Determination Countermeasures Choice Creating packages Compare packages

Countermeasures Choice Step 4 of 6

The first table presents possible countermeasures for the causes selected related to the selected Crash Types. The second table shows the list of possible countermeasures related to the significant Crash Types. Type in the text box your comments of assessment to applicability of the countermeasure to the site in question.

154317 | Via Campo di Marte

Countermeasures related to the selected Crash Type

Cause	Countermeasures to apply
Restricted Sight Distance	<input checked="" type="checkbox"/> Remove/relocate obstacles close to road <input type="text"/>
	<input checked="" type="checkbox"/> Add/improve lighting <input type="text"/>
	<input type="checkbox"/> Eliminate parking <input type="text"/>
	<input checked="" type="checkbox"/> Use crossing guards near schools <input type="text"/>

Creating packages of countermeasures

Countermeasures			
Countermeasure	Construction cost	Maintenance cost	Assign to a package
PE02 Impiegare i vigili o guardiani del traffico vicino alle scuole Possibili Cause: 1002Attraversamento frequente di pedoni / ciclisti Crash Type: 10 Investimento di utenza debole	20000	30000 +	First package of countermeasures ▾ Assign »
MS03 Rimuovere / ricollocare gli ostacoli dalla piattaforma stradale Possibili Cause: 1001Visibilità ridotta Crash Type: 10 Investimento di utenza debole	14000	5000 +	First package of countermeasures ▾ Assign »
MS08 Aggiungere/migliorare l'illuminazione all'intersezione o nei tronchi Possibili Cause: 1001Visibilità ridotta Crash Type: 10 Investimento di utenza debole	0,00	0,00 +	▾ Assign »

Packages		
Package title	Countermeasures	Actions
First package of countermeasures	PE02 Impiegare i vigili o guardiani del traffico vicino alle scuole	Edit Remove
Second package of countermeasures		Edit Remove

Benefit-cost (ABC) or Cost-Effectiveness analysis

Interventions Choice Settings Identifying Critical Crash Type Choice Causes Determination Countermeasures Choice Creating packages Compare packages

Compare packages Step 6 di 6

Compare packages of countermeasures on the economic attractiveness.

154317 | Via Campo di Marte

Settings for the economic evaluation

Indicator

Costs / Benefits

Cost / Effectiveness

Interest rate

20 %

Compare packages

Packages

Package title	Countermeasures	Costs of realization	Maintenance costs	Benefits	Costs / Benefits	Details
Test Package 1	MS03Remove/relocate obstacles close to road PE02Use crossing guards near schools	75000.00	40000.00	185594.18	2.20	Report
Test Package 2	MS03Remove/relocate obstacles close to road MS08Add/improve lighting	35000.00	40000.00	160143.86	1.90	Report

Print report (PDF)

The need of structured data for planning

- **Accident Data must be consistent**
 - No duplication of data
 - No lack of data
 - Respect the Data types
- **Accident Data must be Georeferenced (latitude, longitude)**
- **Accident Data must be linked to Element of Road Network**
 - *Each accident must be coupled to a Road Element (node or segment) of the ROAD NETWORK*
- **Accident Data must contain informations to determine the CRASH TYPE**

Thank you!

Massimo Robibaro

massimo.robibaro@uniroma1.it

Safety Manager

Support System for Road Safety Data Analysis

CENTRO DI RICERCA
PER IL
TRASPORTO E LA LOGISTICA



SAPIENZA
UNIVERSITÀ DI ROMA



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Annex 4 Workshop attendance list

Workshop on Pilot Accident survey
Held at SLRSA on 16th July 2018

Name	Institution/Designation	Phone#	Signature
1 Abdulai Conteh	TRANS World Insure		[Signature]
2 Musa S. Moses	Connaught Hospital		[Signature]
3 Abdul Otunjo Conteh	Connaught Hospital		[Signature]
4 Daniel C. Kitebie	S.L.R.S.A		[Signature]
5 Bernadette K. Mattia	S.L.R.S.A		[Signature]
6 Fredrick A. Kande	SLRSA		[Signature]
7 Saidu Kamara	SLRSA		[Signature]
8 Alimamy Sesay	Bongor Bakery		[Signature]
9 Saidu Khorie Conteh	Gberray Village		[Signature]
10 Salamatu H. Sankoh	Statistics Sierra Leone		[Signature]
11 Mohamed L. Jalloh	RSA Media		[Signature]
12 Iamba K. Amara	AFCAP/SLRA		[Signature]
13 MASSIMO ROBIBARO	CTL "SARIN" - ROME (IT)		[Signature]
14 Nadia Wurie	Local Engineer CTL/Fredeng		[Signature]
15 James S. Williams	SLRSA		[Signature]
16 Abdul K. Manning	SLRSA		[Signature]
17 Ambrose T. Tucker	SLRSA		[Signature]
18 ANTONINO TRIPODI	FRED		[Signature]
19 Anthony Bonney	SLP		[Signature]

Annex 5 Examples of data collection forms completed by enumerators

ROAD TRAFFIC CRASH DATA COLLECTION FORM - POLICE FORCES

CRASH RELATED INFORMATION			
Information about Officer compiling the form			
Name	C1 - Crash ID	C2 - Crash Type	C3 - Impact type
Destination	C4 - Date	C4 - Weather code	C5 - Light conditions
Police station of	C5 - Time	C6 - GPS longitude	C6 - GPS latitude
Service no.	C6 - CRV / piece	C7 - Crash cause	
Signature	C7 - Location		
	C8 - GPS longitude		
	C8 - GPS latitude		

ROAD RELATED INFORMATION			
R1 - Type of roadway	R2 - Road functional class	R3 - Road obstacles	R4 - Surface conditions
R5 - Speed limit	R6 - Junction	R7 - Traffic control	

VEHICLE RELATED INFORMATION [VEH 1]			
V1 - Vehicle number	V2 - Vehicle special function	V3 - Vehicle manoeuvre	
V4 - Vehicle plate no.			

VEHICLE RELATED INFORMATION [VEH 2]			
V1 - Vehicle number	V2 - Vehicle special function	V3 - Vehicle manoeuvre	
V4 - Vehicle plate no.			

VEHICLE RELATED INFORMATION [VEH 3]			
V1 - Vehicle number	V2 - Vehicle special function	V3 - Vehicle manoeuvre	
V4 - Vehicle plate no.			

PERSON RELATED INFORMATION [PER 1]			
LICENCE NO:			
P1 - Person ID	P2 - Occupant veh no.	P3 - Pedestrian veh no.	P4 - Birth date
P5 - Sex	P6 - Type of road user	P7 - Seating position	P8 - Injury severity
P9 - Safety equipment	P10 - Pedestrian manoeuvre	P11 - Alcohol use	P12 - Drug use
P13 - Blood group	P14 - Person name		

PERSON RELATED INFORMATION [PER 2]			
P1 - Person ID	P2 - Occupant veh no.	P3 - Pedestrian veh no.	P4 - Birth date
P5 - Sex	P6 - Type of road user	P7 - Seating position	P8 - Injury severity
P9 - Safety equipment	P10 - Pedestrian manoeuvre	P11 - Alcohol use	P12 - Drug use
P13 - Blood group	P14 - Person name		

PERSON RELATED INFORMATION [PER 3]			
P1 - Person ID	P2 - Occupant veh no.	P3 - Pedestrian veh no.	P4 - Birth date
P5 - Sex	P6 - Type of road user	P7 - Seating position	P8 - Injury severity
P9 - Safety equipment	P10 - Pedestrian manoeuvre	P11 - Alcohol use	P12 - Drug use
P13 - Blood group	P14 - Person name		

(Driver Vehicle)

Mohan Lal GURU-077 659 235

DANIEL GONZALEZ (Passenger of Vehicle)

ROAD TRAFFIC CRASH DATA COLLECTION FORM - HOSPITALS

CRASH RELATED INFORMATION

Information about person compiling the form		C1 - Crash ID	
Name	AMUNIA S. CONTEH	C2 - Date of crash	18/06/2018
Designation	ENUMERATOR	C3 - Time of crash	15:40 PM
Hospital of		C4 - Date admission	18/06/2018
Service no		C5 - Time admission	16:45 PM
Signature		C6 - Location	MAKALI

PERSON RELATED INFORMATION

P1 - Person ID		P4 - Birth date	24 05 1993
P2 - Person name	DANIEL CONTEH	P5 - Type of injury	1 2 3 4 5 6
P3 - Sex	MALE	P6 - Final diagnosis	1 2 3
		P7 - Date exit	19 06 2018

LEGEND

P5 - Type of Injury	1	Spinal Injury	
	2	Head Injury	
	3	Leg Fracture	
	4	Multiple Fracture	
	5	Minor ✓	
	6	Other	
	P6 - Final diagnosis	1 Dead	
		2 Serious injury	
		3 Non-serious injury ✓	

ROAD TRAFFIC CRASH DATA COLLECTION FORM - POLICE FORCES

Information about Officer compiling the form		CRASH RELATED INFORMATION												
Name	Patrick	C1 - Crash ID	02	C6 - Crash Type	1	2	3	4	5	6	7	8		
Designation		C2 - Date	12-06-2018	C7 - Impart type	✓	1	4	5	6	7	8	9	10	11
Police station of		C3 - Time	12:15 PM	C8 - Weather cond	✓	1	2	3	4	5	6	7		
Service no		C4 - City / place	BO	C9 - Sight conditions	✓	1	1	4	3	6				
Signature		C5a - Location	Blama-BO	C10 - Crash cause	Track rod failure lost control									
		C5b - GPS longitude												
		C5c - GPS latitude												

ROAD RELATED INFORMATION											
R1 - Type of roadway	✓	2	3	4	5	6	7	8	R4 - Road obstacles	YES	
R2 - Road functional class	✓	2	3	4	R5 - Surface conditions	✓	2	3	4	5	6
R3 - Speed limit		R6 - Junction	1	2	3	4	5	6	7	8	
		R7 - Traffic control	1	2	3	4	5	6	7	8	

VEHICLE RELATED INFORMATION [VEH 1]															
V1 - Vehicle number		V3 - Vehicle special function	✓	2	3	4	5	6	7						
V2 - Vehicle plate no	ALU 249	V4 - Vehicle manoeuvre	1	2	3	4	5	6	7	8	9	10	11	12	13

VEHICLE RELATED INFORMATION [VEH 2]															
V1 - Vehicle number		V3 - Vehicle special function	1	2	3	4	5	6	7						
V2 - Vehicle plate no		V4 - Vehicle manoeuvre	1	2	3	4	5	6	7	8	9	10	11	12	13

VEHICLE RELATED INFORMATION [VEH 3]															
V1 - Vehicle number		V3 - Vehicle special function	1	2	3	4	5	6	7						
V2 - Vehicle plate no		V4 - Vehicle manoeuvre	1	2	3	4	5	6	7	8	9	10	11	12	13

PERSON RELATED INFORMATION [PER 1]																
P1 - Person ID	1	P5 - Sex	✓	2	3	P9 - Safety equipment	✓	2	3	4	P11 - Blood group					
P2 - Occupant veh no		P6 - Type of road user	✓	2	3	4	5	P10 - Pedestrian manoeuvre	1	2	3	4	5	6	P14 - Person name	
P3 - Pedestrian veh no		P7 - Seating position	✓	2	3	4	5	P11 - Alcohol use	1	✓	3	4	P14 - Person name	Yankuba S. Gander (Driver of vehicle)		
P4 - Birth date	5/08/1990	P8 - Injury severity	1	2	3	✓	5	P12 - Drug use	1	2	3	✓				

PERSON RELATED INFORMATION [PER 2]																
P1 - Person ID	2	P5 - Sex	✓	2	3	P9 - Safety equipment	✓	2	3	4	P11 - Blood group					
P2 - Occupant veh no	2	P6 - Type of road user	1	✓	3	4	5	P10 - Pedestrian manoeuvre	1	2	3	4	5	6	P14 - Person name	
P3 - Pedestrian veh no		P7 - Seating position	1	✓	3	4	5	P11 - Alcohol use	1	✓	3	4	P14 - Person name	Mohamed F. Fitch (Passenger of vehicle)		
P4 - Birth date	15/10/1995	P8 - Injury severity	1	2	3	✓	5	P12 - Drug use	1	2	3	✓				

PERSON RELATED INFORMATION [PER 3]																
P1 - Person ID		P5 - Sex	1	2	3	P9 - Safety equipment	1	2	3	4	P11 - Blood group					
P2 - Occupant veh no		P6 - Type of road user	1	2	3	4	5	P10 - Pedestrian manoeuvre	1	2	3	4	5	6	P14 - Person name	
P3 - Pedestrian veh no		P7 - Seating position	1	2	3	4	5	P11 - Alcohol use	1	2	3	4				
P4 - Birth date		P8 - Injury severity	1	2	3	4	5	P12 - Drug use	1	2	3	4				

02

ROAD TRAFFIC CRASH DATA COLLECTION FORM - HOSPITALS

CRASH RELATED INFORMATION

Information about person compiling the form		C1 - Crash ID	
Name	Patrick	C2 - Date of crash	14-06-2018
Designation		C3 - Time of crash	12:15 PM
Hospital of	Kenema Govt Hosp	C4 - Date admission	14-06-2018
Service no		C5 - Time admission	1:00 PM
Signature		C6 - Location	Kenema Govt Hosp

PERSON RELATED INFORMATION

P1 - Person ID	2	P4 - Birth date	15	10	1995			
P2 - Person name	Mohamed Fallow	P5 - Type of injury	1	2	3	4	5	6
P3 - Sex	Male	P6 - Final diagnosis	1	2	3			
		P7 - Date exit	14	06	2018			

LEGEND

P5 - Type of injury	1	Spinal Injury	P6 - Final diagnosis	1	Dead
	2	Head Injury		2	Serious Injury
	3	Leg Fracture		3	Non-serious injury
	4	Multiple Fracture			
	5	Minor			
	6	Other			

ROAD TRAFFIC CRASH DATA COLLECTION FORM - HOSPITALS

CRASH RELATED INFORMATION

Information about person compiling the form		C1 - Crash ID	
Name	Patrick	C2 - Date of crash	D2 14-06-2018
Designation		C3 - Time of crash	12:15 PM
Hospital of	Kenema	C4 - Date admission	14-06-2018
Service no		C5 - Time admission	1:00 PM
Signature		C6 - Location	Kenema Gov Hospital

PERSON RELATED INFORMATION

P1 - Person ID	1	P4 - Birth date	5 08 1990
P2 - Person name	Yankuba S. Gondo	P5 - Type of injury	1 2 3 4 <input checked="" type="checkbox"/> 6
P3 - Sex	Male	P6 - Final diagnosis	1 2 <input checked="" type="checkbox"/> 3
		P7 - Date exit	14 06 2018

LEGEND

PS - Type of injury	
1	Spinal Injury
2	Head Injury
3	Leg Fracture
4	Multiple Fracture
5	Minor
6	Other

P6 - Final diagnosis	
1	Dead
2	Serious injury
3	Non-serious injury