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New
Data Systems
Manual
September 2010

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Background

- Good data are needed to correctly identify problems, risk factors and priority areas, and to formulate strategy, set targets and monitor performance.

- A good road crash data system should capture nearly all crashes, provide adequate detail on vehicle, road user, environment, and accurate location.

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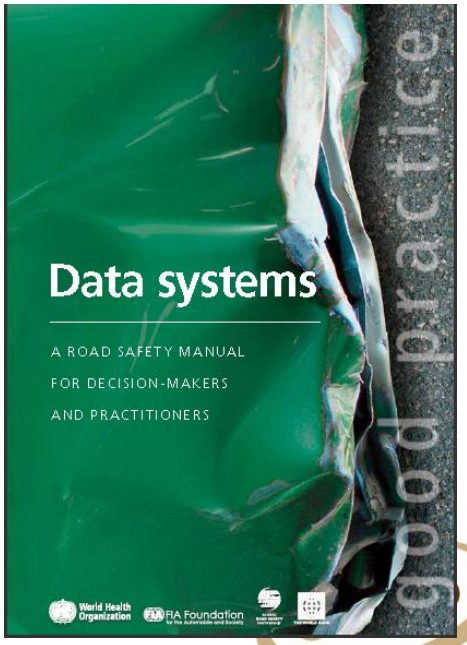
- UN Road Safety Collaboration published a new Good practice manual on data in recognition of the importance of good data to target and monitoring road safety activities. 5th manual in the series.



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Why are road safety data systems needed?

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Importance of data

- Road safety is a critical public issue. Good data are needed to raise awareness about the magnitude of road traffic injuries and to convince policymakers of the need for action.

- Effective road safety management requires data that users can rely on for accuracy, to define road safety problems, identify risks, formulate strategy and develop interventions, set targets and monitor performance.

- Data relevant to road safety are collected every day in most countries, but these data are not useful for informing road safety practice unless they are properly coded, processed and analysed in a computerized database system.

Importance of data

- Road crash data systems should process information in a way that allows for analysis at an aggregate level and facilitates data-driven action. At a minimum, good road crash data systems should:
  - capture nearly all crashes that result in death and a significant proportion of those that result in serious injuries;
  - provide adequate detail on the vehicle, the road user and the road/environment to assist with identification of causes, and selection of countermeasures;
  - **include accurate crash location information**;
  - provide reliable output in a timely manner to facilitate evidence-based decisions.
- Comprehensive assessment and monitoring of road safety performance requires mechanisms for data collection and analysis that cover
  - not only road traffic deaths and injuries (final outcomes),
  - but also exposure measures (e.g. traffic volume, number of licensed drivers), intermediate outcomes (e.g. seat-belt wearing rates), outputs (e.g. number of citations issued for traffic violations, population covered by seat-belt wearing campaign) and socio-economic costs associated with road traffic injuries.

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Components of situational analysis

- **Step 1:** Identify people and agencies involved in collection, management and use of road safety data. Describe their roles, responsibilities and relationships. Begin a dialogue with key stakeholders.
- **Step 2:** Identify existing data sources and systems. Describe their characteristics and assess data quality, with a focus on definitions, accuracy, completeness and under-reporting.
- **Step 3:** Describe the needs and expectations of end-users of road safety data.
- **Step 4:** Identify factors in the political environment that will facilitate or hinder proposals for improvements to road safety data systems.

Practical situational analysis

- Objective
  - To assess the availability, scope and quality of crash data available
  - To assess the current roles of stakeholders relative to the collection, storing, analysis and utilisation of data

Practical situational analysis

- Open discussion and description of the basic crash collection system in Botswana (traffic police reports, capturing and analysis)
- The crash system and usefulness in Gaborone context

Practical situational analysis

- Who else?
  - Identify current and potential stakeholders within the context of data collection, data storing, analysis and interpretation and data usage
  - Description of current roles and activities
  - Potential roles within data context

Practical situational analysis

Organisation	Road safety function	Type of crash data	Availability / Key role player
DRTS Different departments			
Police Accident Bureau Police stations			
City of Gaborone			
MVA			

Practical situational analysis

Organisation	Road safety function	Type of crash data	Availability Key role player
Dept Health			
Hospitals			
NGOs			

Practical situational analysis

Organisation	Road safety function	Type of crash data	Availability Key role player

Practical situational analysis

Organisation	Contact person	Contact number	


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How to design, improve and implement data systems

Design, improve, implement data systems

- **Establishing a working group**
- **Choosing a course of action**
- **Recommended minimum data elements and definitions**
- **Improving an existing system.**
  - Strategies to improve data quality
  - Strategies to improve data system performance
- **Designing and implementing a new system**
- **Considerations for non-fatal data**

Minimum data elements

Table 3.1 Minimum data elements: overview

Crash related	Road related	Vehicle related	Person related
▪ Crash identifier (unique reference number assigned to the crash, usually by police) ▪ Crash data ▪ Crash time ▪ Crash municipality/ place ▪ Crash location ▪ Crash type ▪ Impact type ▪ Weather conditions ▪ Light conditions ▪ Crash severity°	▪ Type of roadway* ▪ Road functional class* ▪ Speed limit* ▪ Road obstacles ▪ Road surface conditions* ▪ Junction ▪ Traffic control at junction* ▪ Road curve* ▪ Road segment grade*	▪ Vehicle number ▪ Vehicle type† ▪ Vehicle make† ▪ Vehicle model† ▪ Vehicle model year† ▪ Engine size† ▪ Vehicle special function† ▪ Vehicle manoeuvre (what the vehicle was doing at the time of the crash)	▪ Person ID ▪ Occupant's vehicle number ▪ Pedestrian's linked vehicle number ▪ Date of birth ▪ Sex ▪ Type of road user ▪ Seating position ▪ Injury severity ▪ Safety equipment ▪ Pedestrian manoeuvre ▪ Alcohol use suspected ▪ Alcohol test ▪ Drug use ▪ Driving licence issue date ▪ Age°

Design, improve, implement data systems

- Establish a working group of key stakeholders with technical responsibility for implementation. The working group should

- Police are key stakeholders. Efforts to improve final outcome data will not succeed without them. Involve the police in all stages of project planning, and ensure police participation in decisions that will affect their workload and methods of working.

- The specification of minimum data elements allows a common dataset for describing road traffic crashes, their characteristics and resulting injuries. The common dataset provides the information necessary for national analysis and road safety planning. This module proposes a set of minimum data elements and specifies uniform definitions and data values.

Design, improve, implement data systems

- Implement a 30-day definition for road traffic fatality. If it is not possible to apply this definition for data collection purposes, identify the appropriate correction factors and apply it to fatality data during data processing.

- Data quality can be improved by implementing minimum data elements, refining definitions, legal requirements to report injury crashes, improving data collection tools and procedures, improving methods used to identify and record crash location, training, and implementing quality assurance measures.

- Road crash data system performance can be strengthened by improving the flow of data through the system (from crash scene to final output), inclusion of useful features in the database system, and implementing a data management plan.

Design, improve, implement data systems

- Linkage to other databases can improve data quality if the other source is accurate, up-to-date, stable and in an accessible format.
  - However, this is often not feasible because of issues such as incompatibilities in databases or privacy concerns.
  - In situations where other key databases (e.g. road inventory, vehicle registration, injury surveillance) are also in development, it may be easier to link databases or integrate data from other sources into the main crash database.

Design, improve, implement data systems

- Selection of consultants and suppliers requires research and careful consideration.

- ‘Off-the-shelf ’ software platforms can be an effective solution for new systems and can often be rapidly implemented. Products should be widely pre-tested and proven, and come with appropriate levels of support for database installation and support beyond the initial implementation period.

- The quality of non-fatal road traffic injury data can be improved by using appropriate definitions of severity for police reporting, organizing a follow-up mechanism between police and hospitals, periodic assessments of the accuracy of police-reported severity, periodic assessments of police under-reporting of non-fatal injuries (allowing estimation of conversion factors), implementing a hospital-based injury surveillance system, linking databases (where feasible), and conducting population-based surveys.

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Using data to improve road safety

- **4.1 Dissemination**
- **4.2 Using road safety data**
- 4.2.1 Advocacy
- 4.2.2 Technical uses of road safety data
- **4.3 Monitoring road safety performance**
- 4.3.1 Social costs
- 4.3.2 Outcome indicators
- 4.3.3 Safety performance indicators
- 4.3.4 Process/implementation indicators
- 4.3.5 Setting targets
- **4.4 Assessing interventions**
- 4.4.1 Study types for impact and outcome evaluation
- 4.4.2 Conducting an economic evaluation
- **4.5 International cooperation on road safety data**

Using data to improve road safety

- Data collected but not used represent a misuse of scarce resources.

- Data should be disseminated through diverse mechanisms such as statistical reports, newsletters, websites, online databases and workshops, to a variety of stakeholders, including the police, traffic engineers, public health specialists and health planners, and road safety policy-makers.

- Road safety data should be used by policy-makers responsible for road traffic injury prevention, as well as traffic engineers, to identify priority issues and geographic areas, and to select and evaluate appropriate, cost-effective interventions.

Using data to improve road safety

- Assessment of impact should be seen as an integral component of all road safety interventions.
- Determining the aims of the evaluation will help to decide how best to carry out the evaluation. There are a number of different methods that can be used to evaluate road safety interventions. Each method has advantages and disadvantages, and the choice of which to use will depend on the main objectives of the intervention, the evaluation questions, and the resources available.

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