CAREC
Central Asia Regional Economic Cooperation Program

ASIA-PACIFIC ROAD SAFETY OBSERVATORY

Road Crash Data Review and Reporting

Training on improvement to crash data management

Istanbul - 25-27 June 2024

ROAD SAFETY DATA REFERENCE STANDARDS

Antonino Tripodi

Road Crash Data Management Expert

FRED Engineering

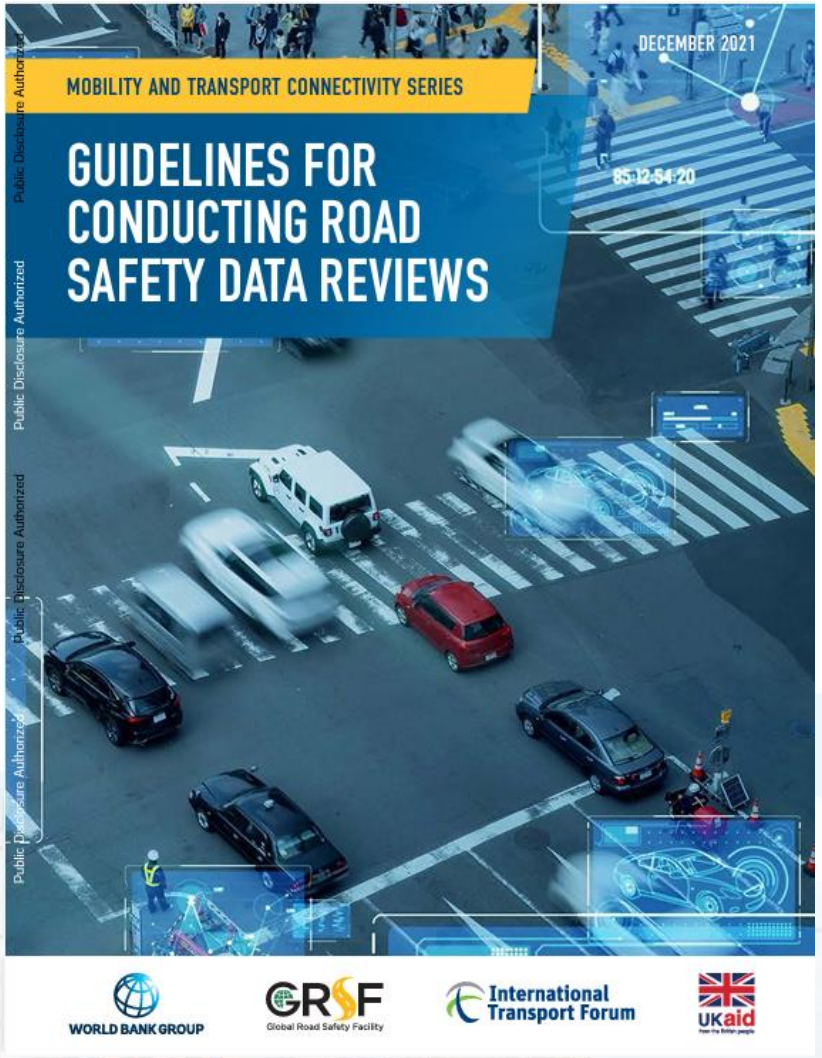
Importance of data-driven approaches

> *Road safety management is in transition. The transition is from action based on experience, intuition, judgment, and tradition, to* ***action based on empirical evidence, science, and technology****; from consideration of road safety that is tacit and qualitative, to consideration of road safety that is explicit and quantitative. Other fields went through the same metamorphosis. It occurred in the military perhaps in the 1940s and in medicine and agriculture even earlier. In road safety, the transition from reliance on intuition to* ***reliance on science*** *is already in progress and is accelerating*.

(Ezra Hauer)

Being comprehensive

- Periodically collect **all road safety data**
- When collecting crash data…
  - Capture all crashes with fatal and serious injuries
  - Provide adequate detail on vehicle, road user, road/environment
  - Include accurate crash location (GIS)
  - Identify data needs for different user groups



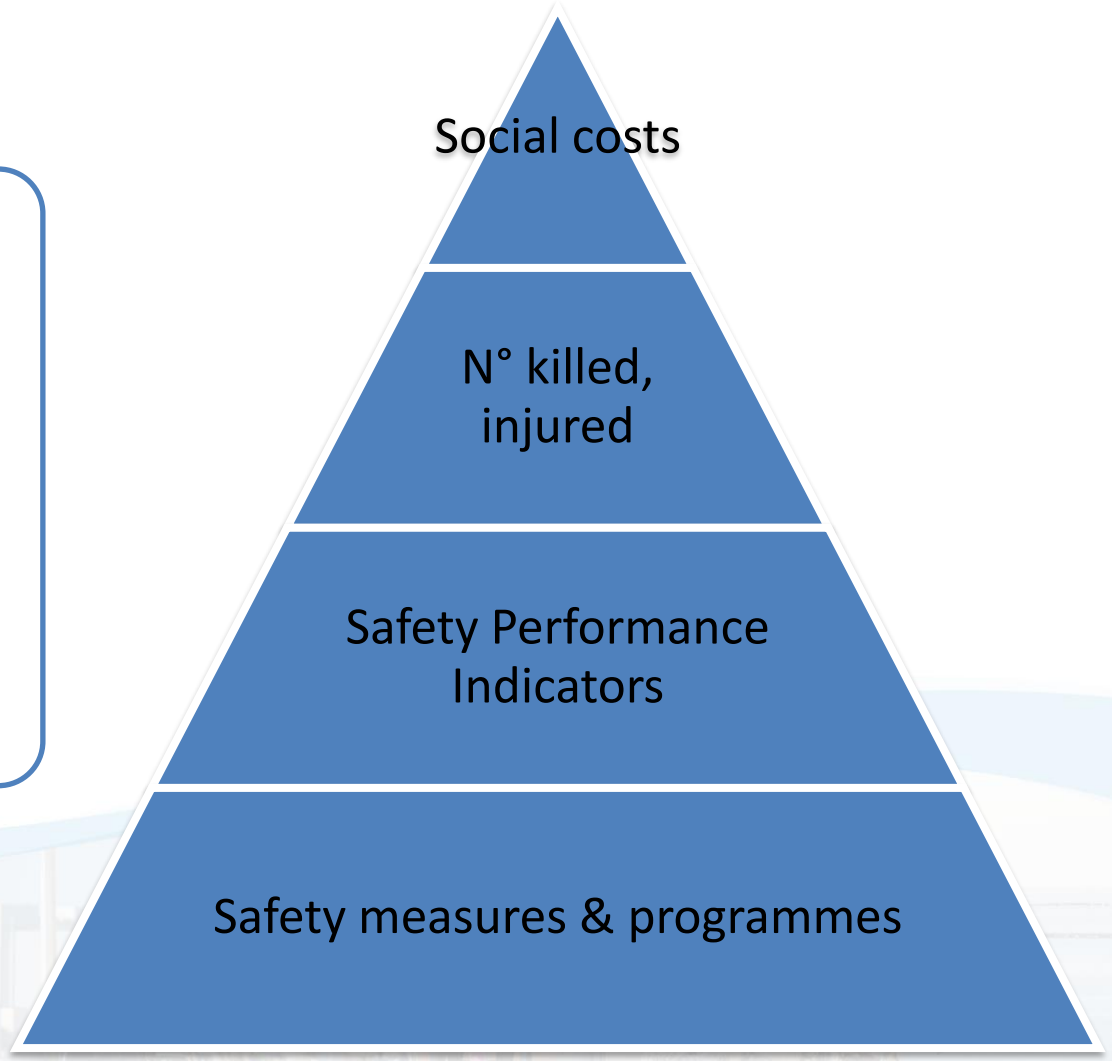
Essential elements

From

- Single focus on crash data recording

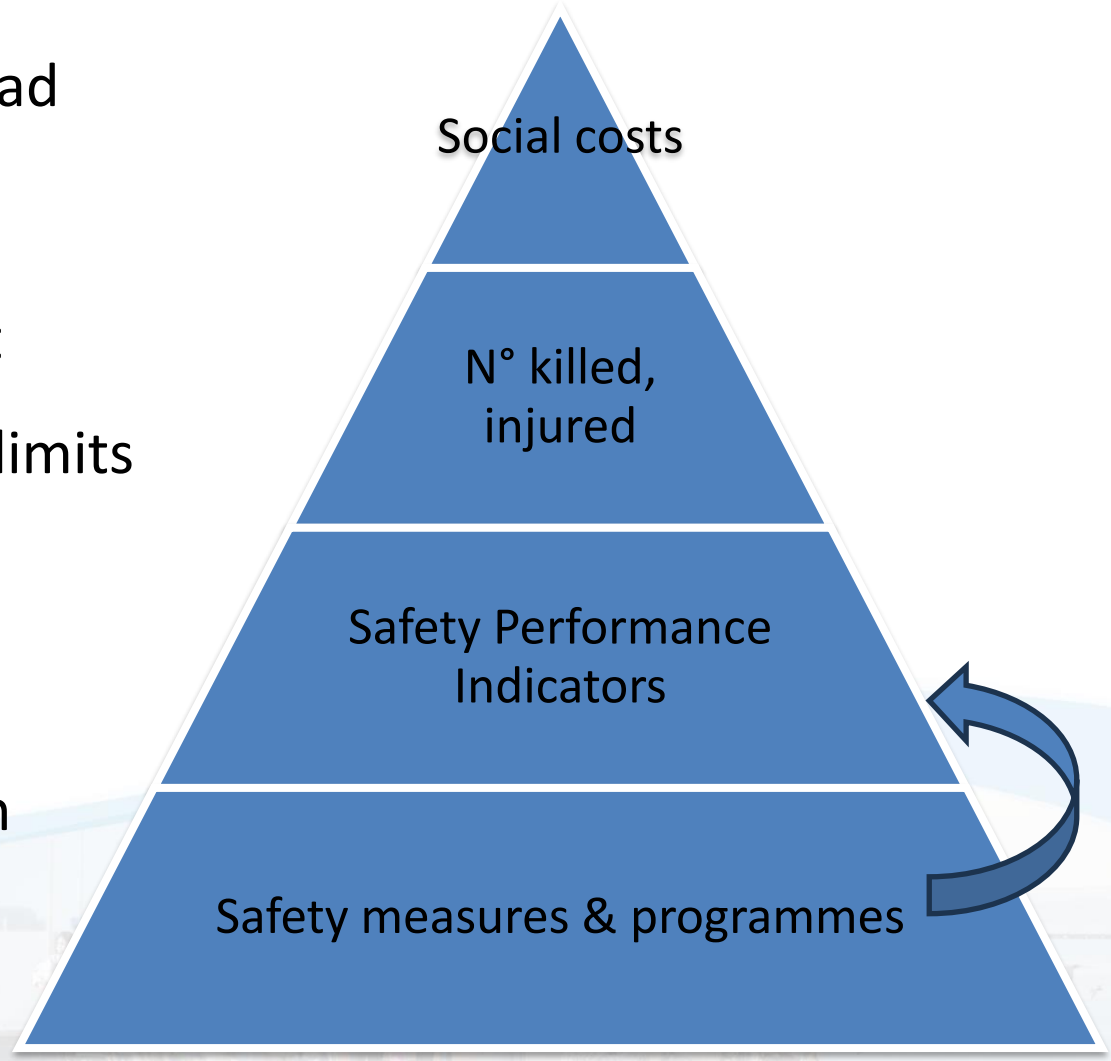
To

- Data and information to support different levels of the road safety management system



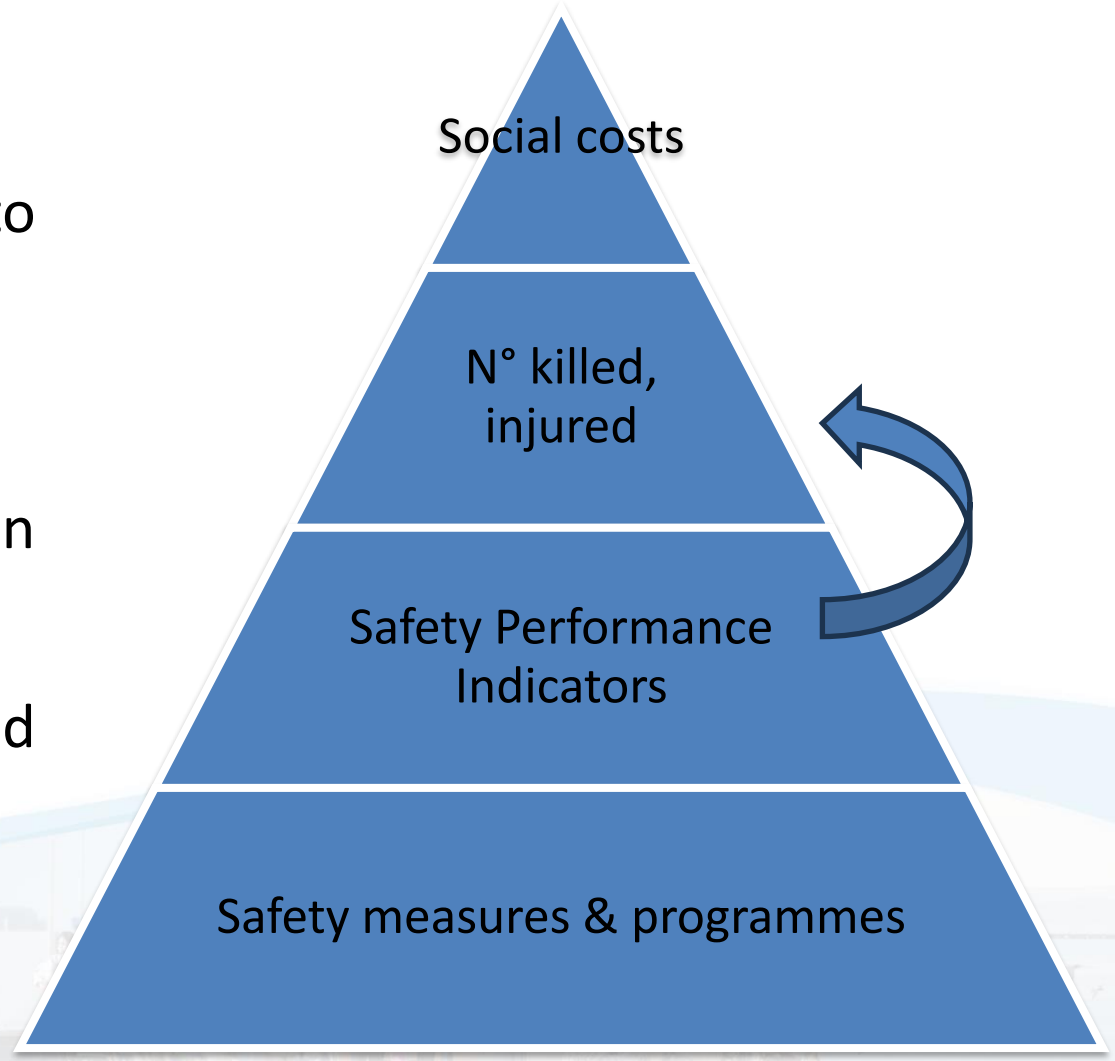
From interventions to intermediate outcomes

- Safety measures / programs result in changes in road traffic
  - A lower percentage of drivers and passengers travelling without wearing a helmet or seatbelt
  - A higher proportion of vehicles obeying speed limits
  - Etc.
- These are known as Safety Performance Indicators
  - Parameters that have a causal relationship with crashes and casualties/victims
  - Used in addition to crash and injury data



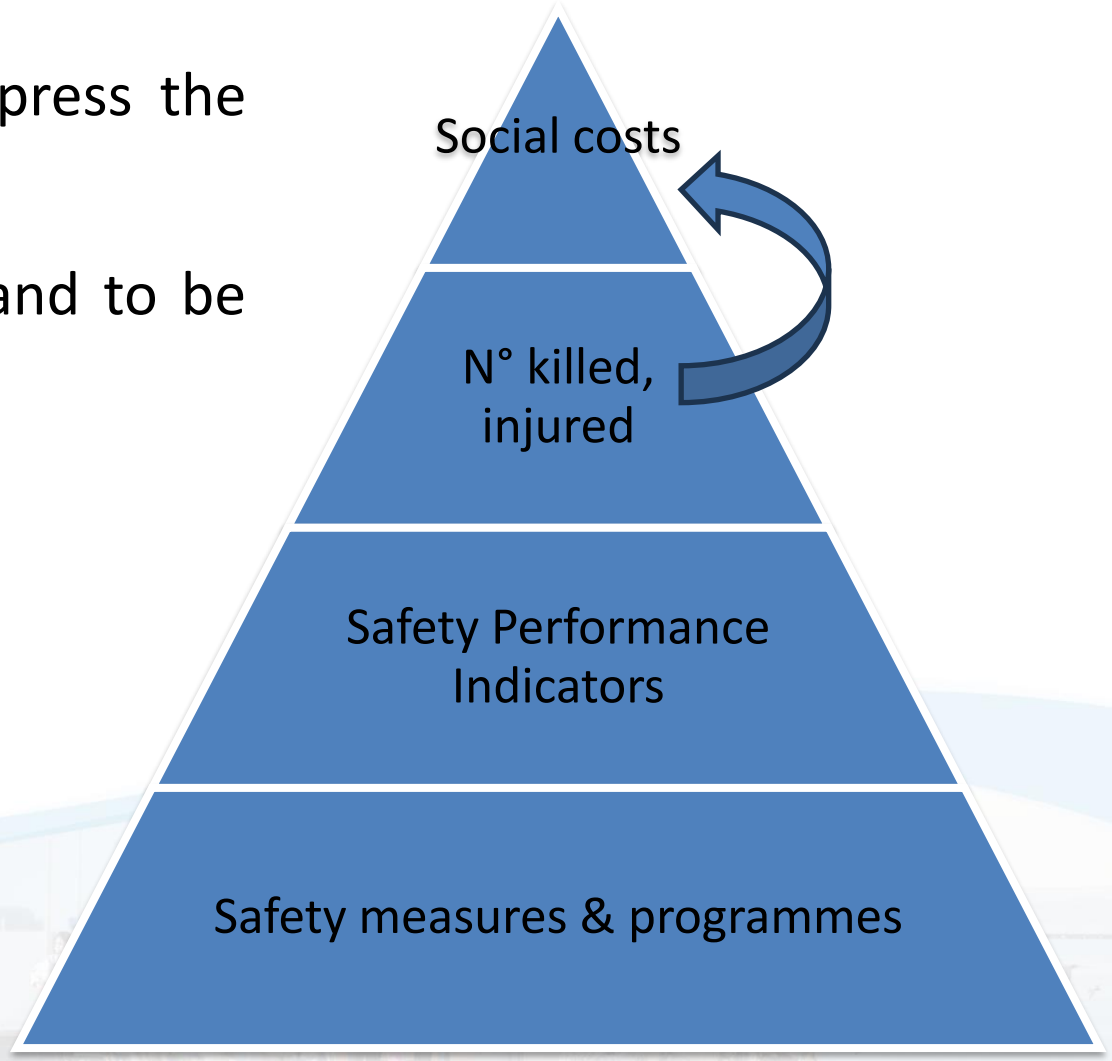
From intermediate to final outcomes

- Number of crashes and victims
  - Possibly related to exposure quantities to calculate road safety risks
  - These contain crash registration data
  - Nearly everywhere in the world, is based on police crash data
  - This data is then processed into national road crash statistics



From final outcomes to social costs

- Top level of the pyramid contains data that express the social cost of crashes
  - Damage that society judges to be negative and to be prevented
  - Hospitalisation cost, loss of earnings, etc.



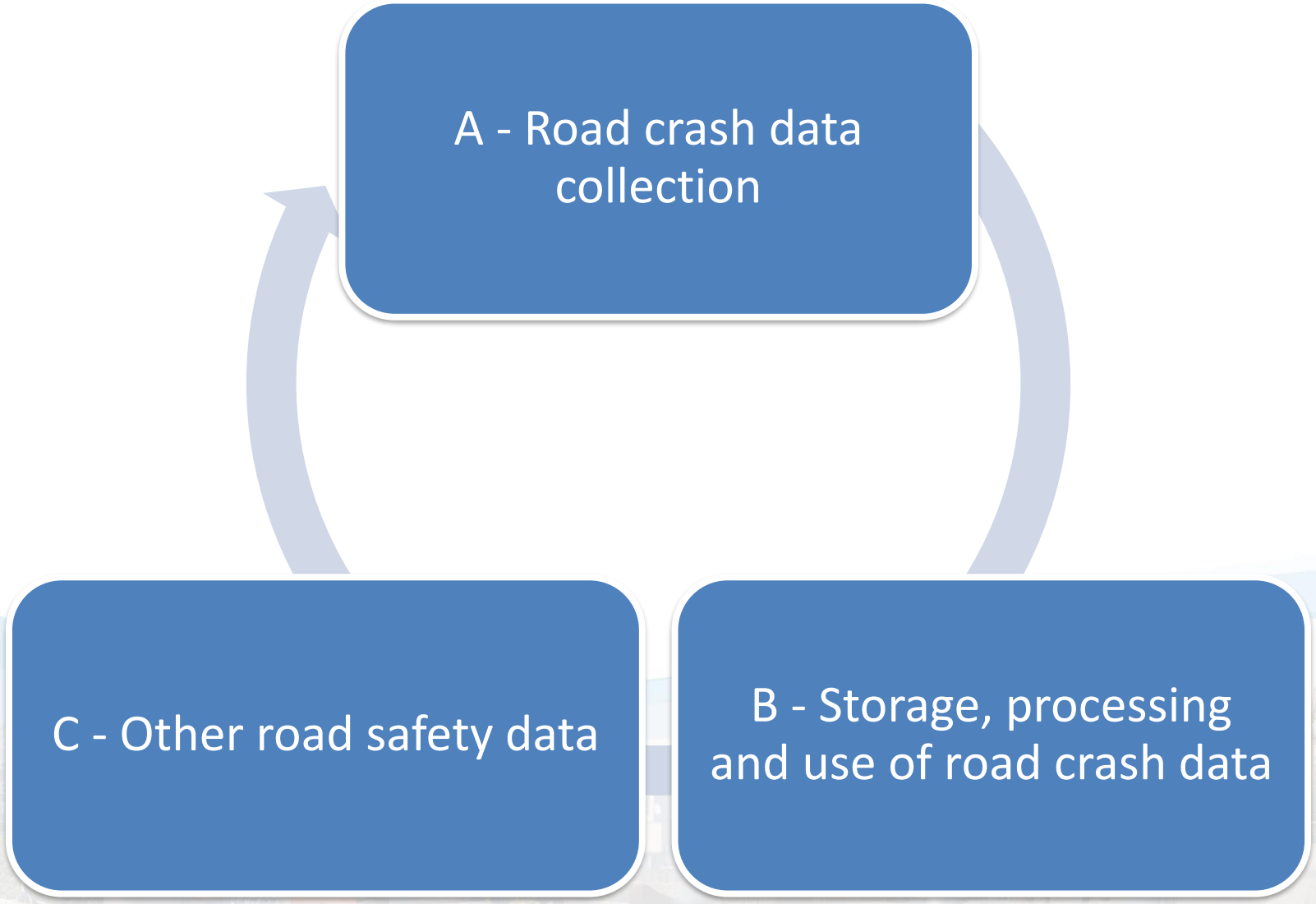
Ultimate purpose

Support the process of improving road safety

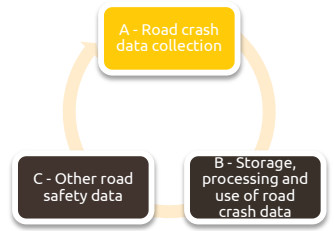
Data collection system safety orientation

- Make data accessible to road safety managers
- Be able to provide relevant information
  - locate road crashes on the road network
  - understanding crash patterns and contributory factors
  - understand the outcomes of crashes
- Be able to provide complete and reliable information in a timely manner
- Allow linkage between different data sources
  - Police, health services, insurance, etc.

Elements of a RTC data system

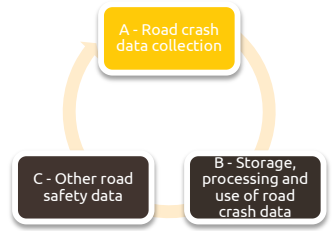


Road crash data collection



- Basic function to be ensured
  - Information about the final outcomes' indicators (crashes, injuries, deaths)
- Stakeholders concerned (can vary depending on country rules)
  - Police bodies attending scenes of crashes with victims
  - Health services (mainly hospitals) for data on casualties and victims follow up
  - Insurance companies for complementary information about history of vehicles and drivers, road crashes without victims

Reliability elements



Notification system

- Ensure police and emergency are rapidly informed
- Use of a central emergency number

Resources

- Police / emergency have sufficient resources to attend all crash scenes

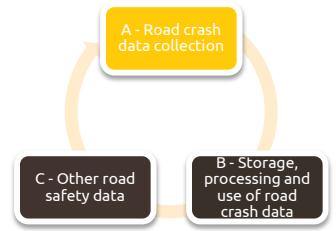
Registration system

- Unique / comprehensive
- Collection of a minimum set of crash attributes
- IT devices rather than paper-based

Training

- Ensure knowledge about importance of crash data

What can affect quality?

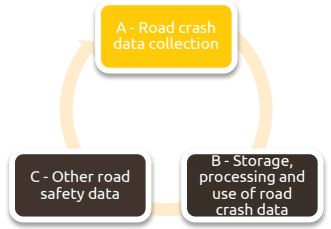


Definitions Used

Non reporting/ under-reporting

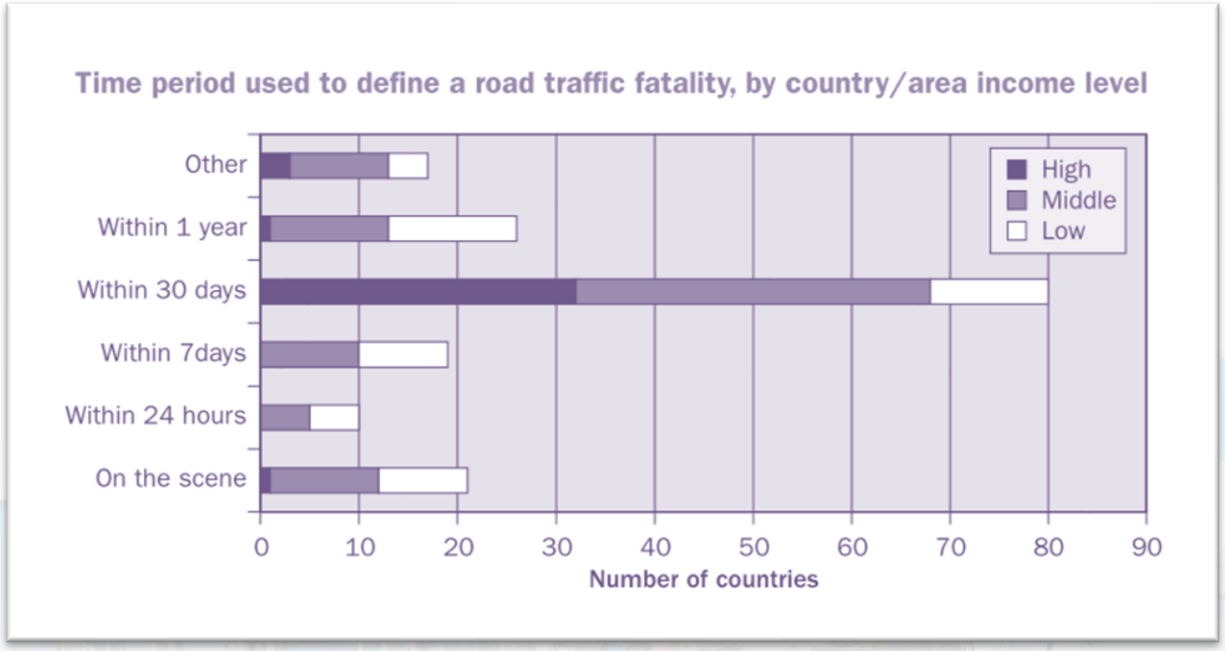
Missing data

Errors

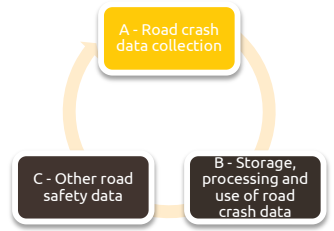


Importance of definition

- The classification of the severity of injuries and crashes varies among countries
- Endorsed best practice definition of a road traffic fatality:
  - “any person killed immediately or dying within 30 days as a result of a road traffic injury crash, excluding suicides” (WHO, 2009)

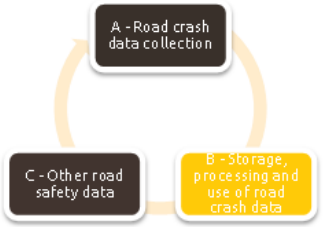


Recommendations



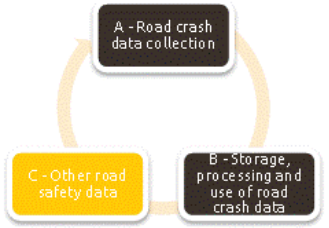
- Attend at least every crash scene resulting in serious or fatal injuries
- Record causation and aggravation factors such as speeding, driving under the influence, seatbelt use, and other violations
- Report the severity of the victims' injuries since the initial data collection at the scene and update the initial assessment based on medical records
- Ensure the road crash fatality count includes the victims who die in hospital
- Record a minimum set of information on road crashes without victims

Storage, processing, and use of data

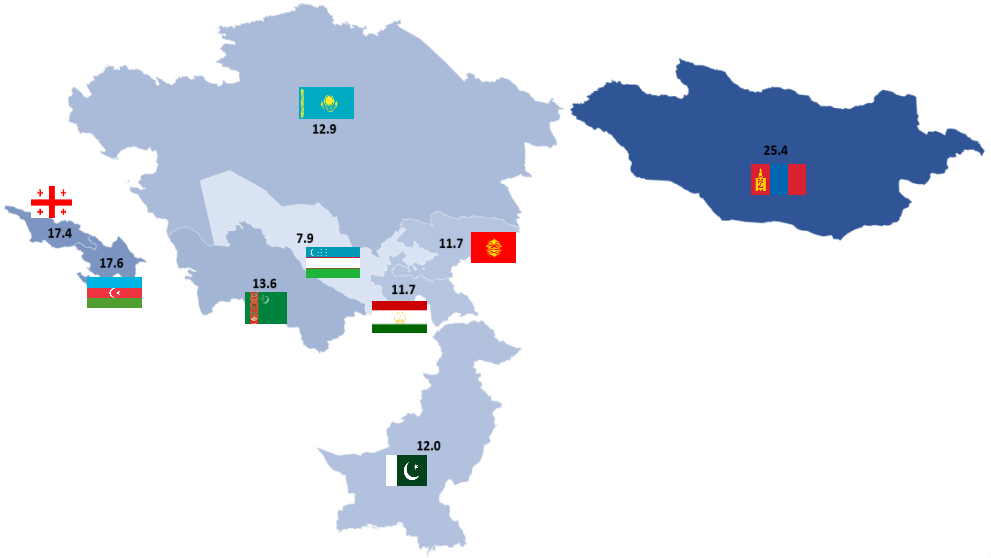


- Data recorded in a common system
- Data regularly transferred to a central data repository where all crash data are consolidated (national road crash database)
- System accessible both by actors charged of data collection and road safety policies
- Feed into analysis tools
  - Data are useless if not analyzed and used to inform decision-makers
  - Querying of data, mapping, assessing single crash data, obtaining graphics and reports, etc.

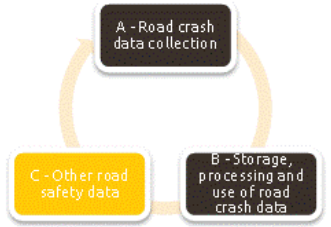
Other road safety data



- Risk exposure data
  - Crashes or victims by population, number of vehicles, road length, distance travelled, traffic volumes, etc.
  - A common indicator is the fatality rate expressed as number of RTC fatalities per 100,000 inhabitants

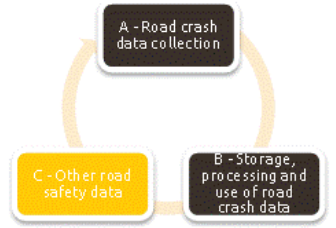


Other road safety data



- Safety Performance Indicators
  - Conditions of road infrastructure, vehicle used, road user behaviour, post-crash care
  - Road infrastructure: level of risk related to road attributes (e.g. iRAP star rating)
  - Road users: % of vehicles' occupants wearing a seatbelt, % of motorcycles' riders wearing a helmet, etc.
  - Vehicles: % of vehicles equipped with active safety features

Other road safety data



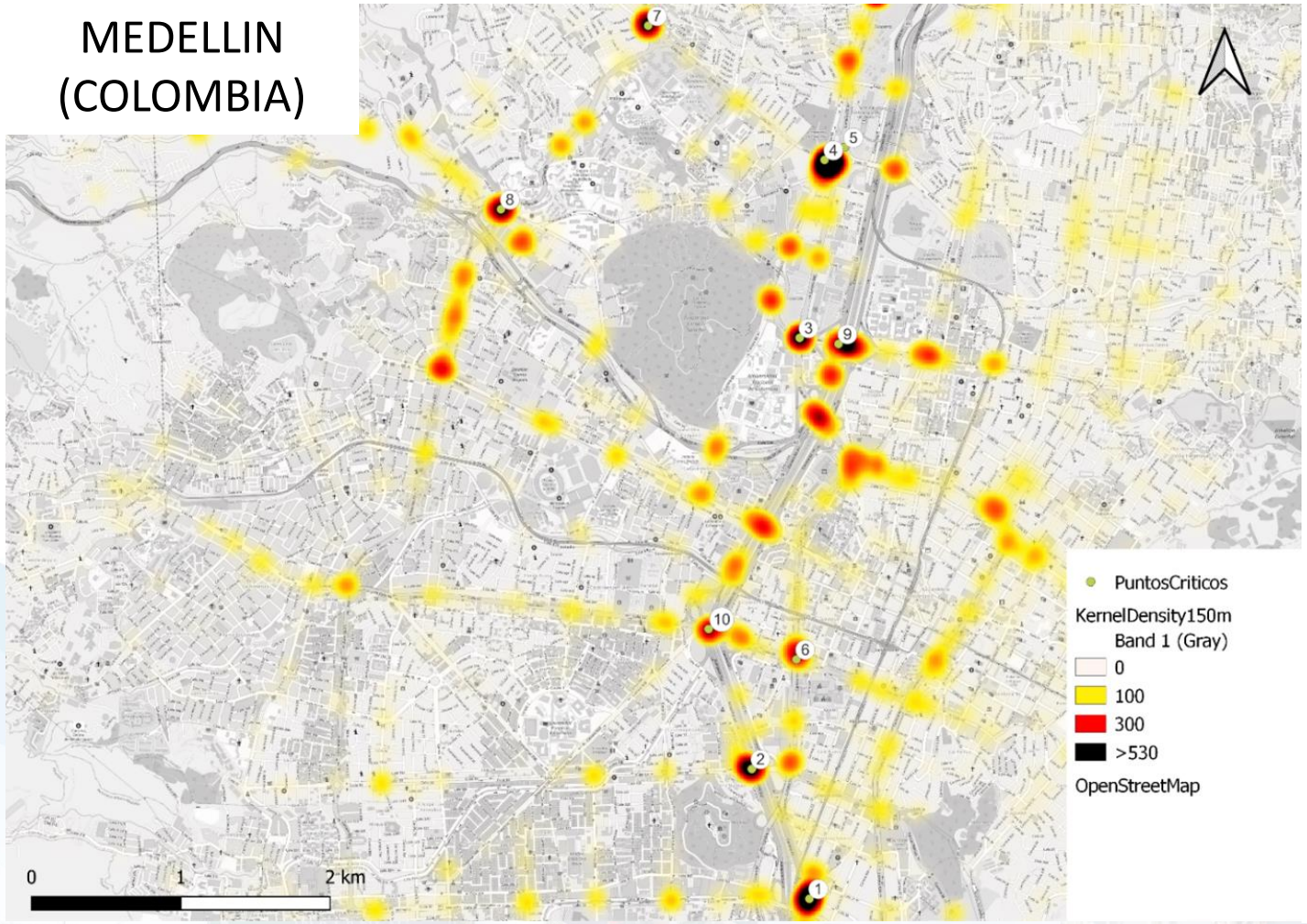
- These data can be difficult to collect on a regular basis
- When available in a country they can lack a full national coverage or in some cases being outdated
- To be treated carefully and coherently with the road crash data available to avoid misleading interpretations of road crash contributory factors

Data analysis

- Road safety data are useful only if they can be analyzed
  - Comprehensive analysis of road crash data and other road safety data oriented to planning and decision-making
  - We need to understand details (to penetrate the mountain)

Data analysis: high-risk section analysis

MEDELLIN (COLOMBIA)



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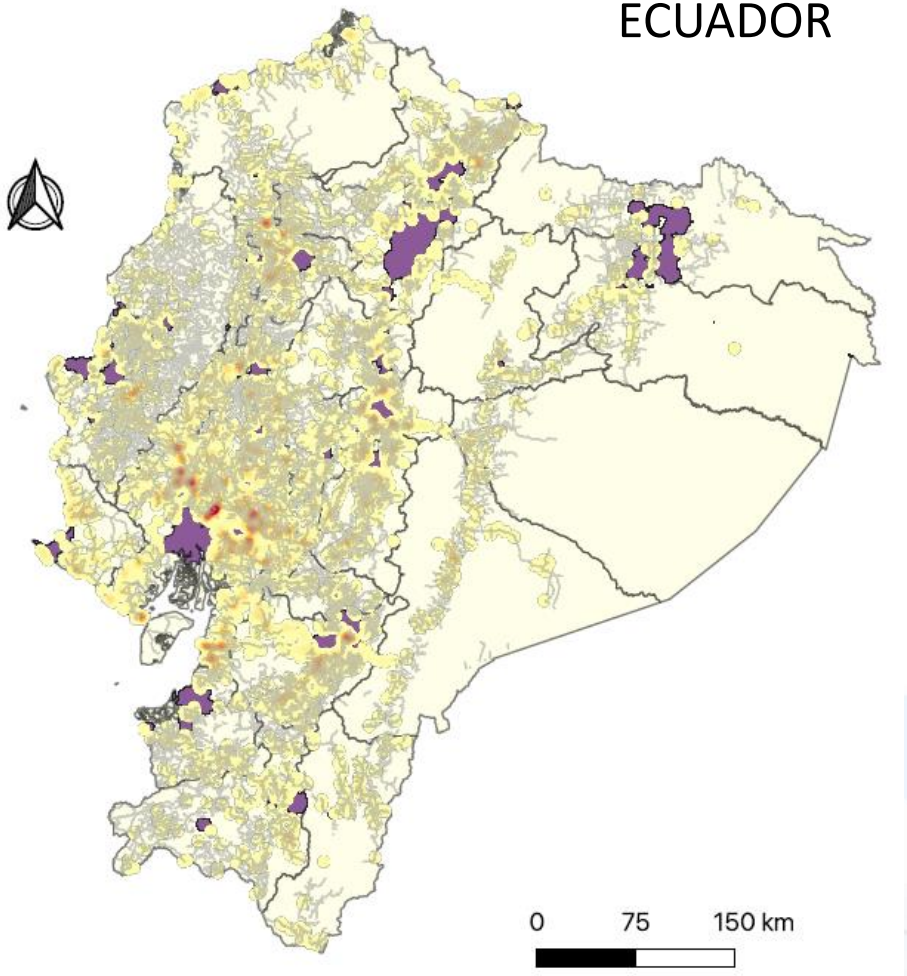
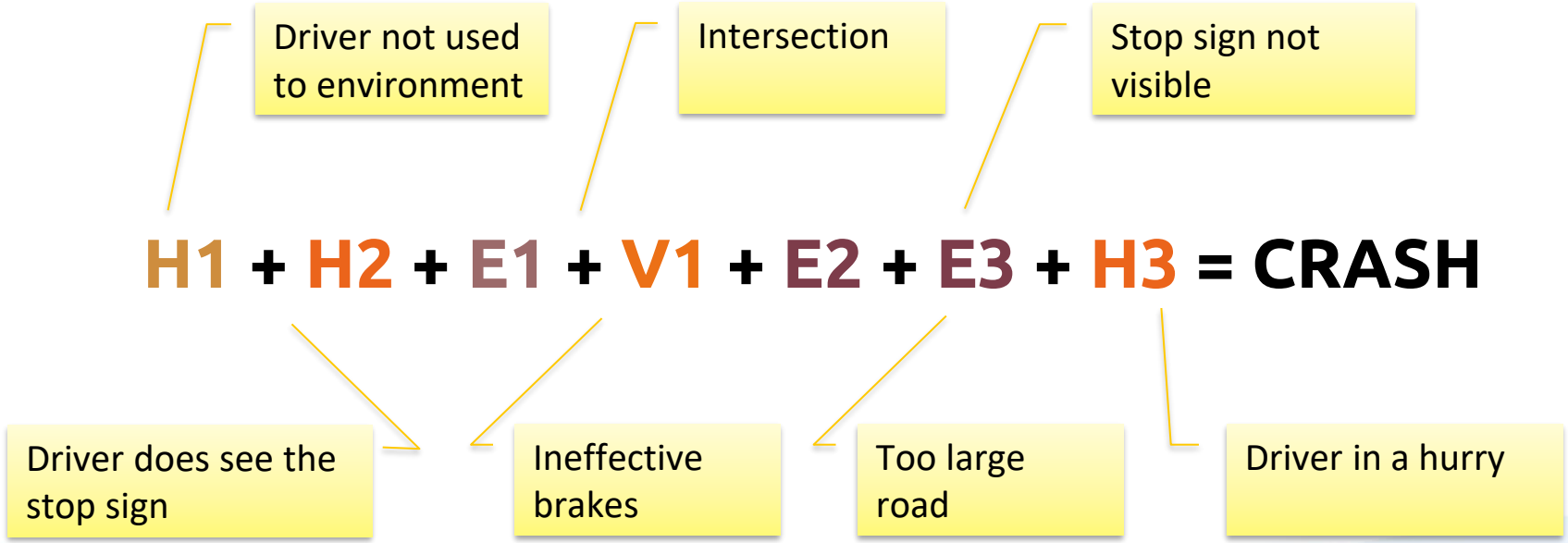


Data analysis: what to do with high-risk sections?

- How do we select the interventions to be applied?
- Can we trigger solutions uniquely from a risk mapping?
  - Sure no!
- If not, what do we miss?

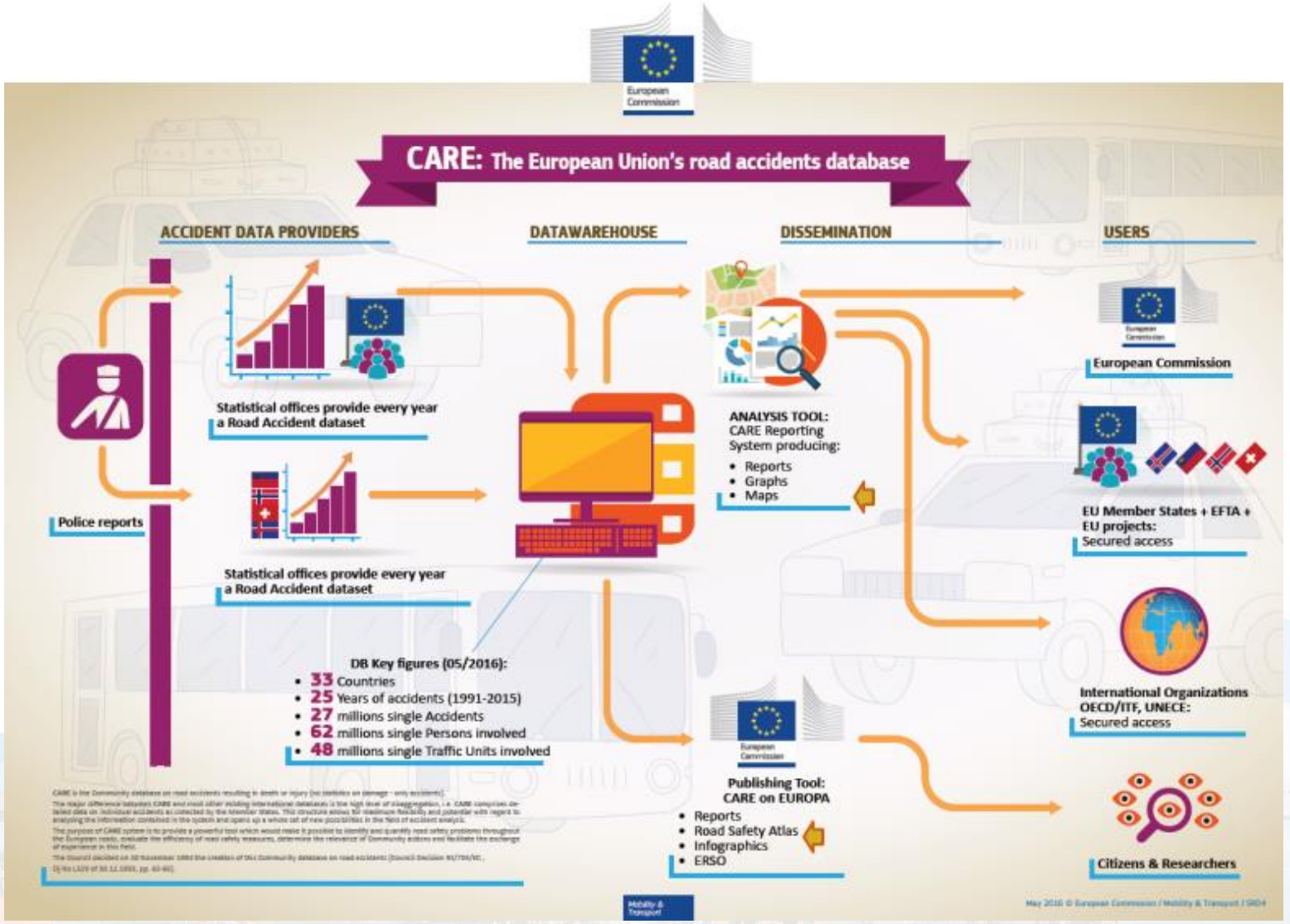
- **Understanding the contributory factors!**
  - A road traffic collision is a rare, random, **multi-factorial event** preceded by a situation in which one or more road users fail to manage their environment

How a crash occurs?



Good practice: CARE/CADaS

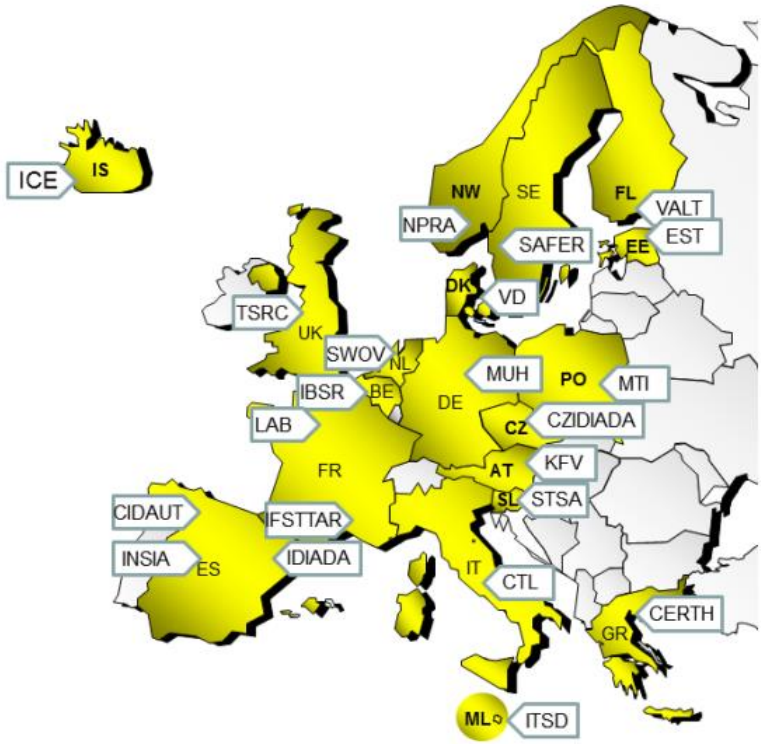
- CARE: Community database on road accidents (crashes resulting in death or injury)
- Disaggregate road crash data since 1991
- Common Accident Data Set (CADaS) consists of a <u>minimum set of standardised data elements</u>



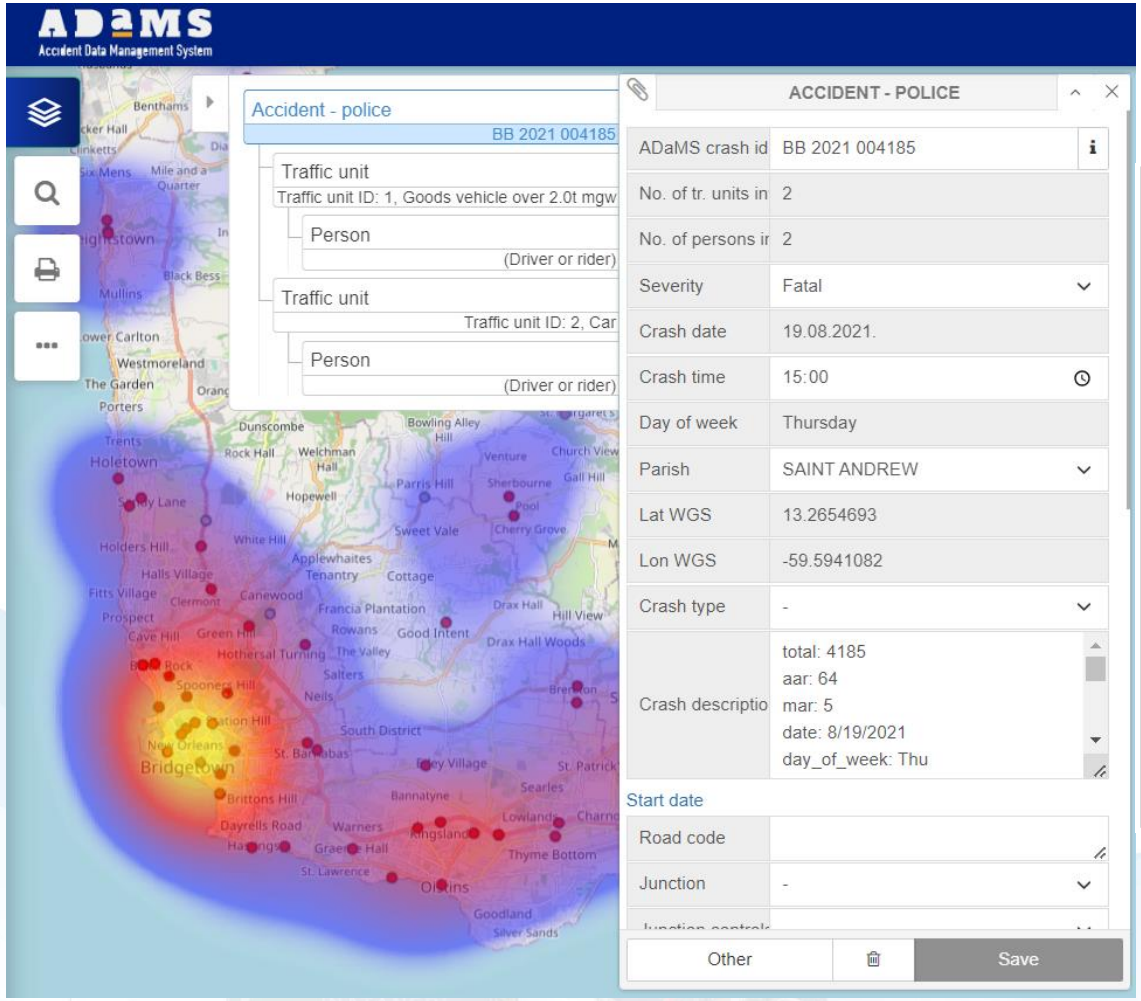
https://road-safety.transport.ec.europa.eu/system/files/2021-07/cadas_glossary_v_3_7.pdf

Good practice: DaCoTa

- On-line manual for in-depth road crash investigators
- https://dacota-investigation-manual.eu/Main/HomePage

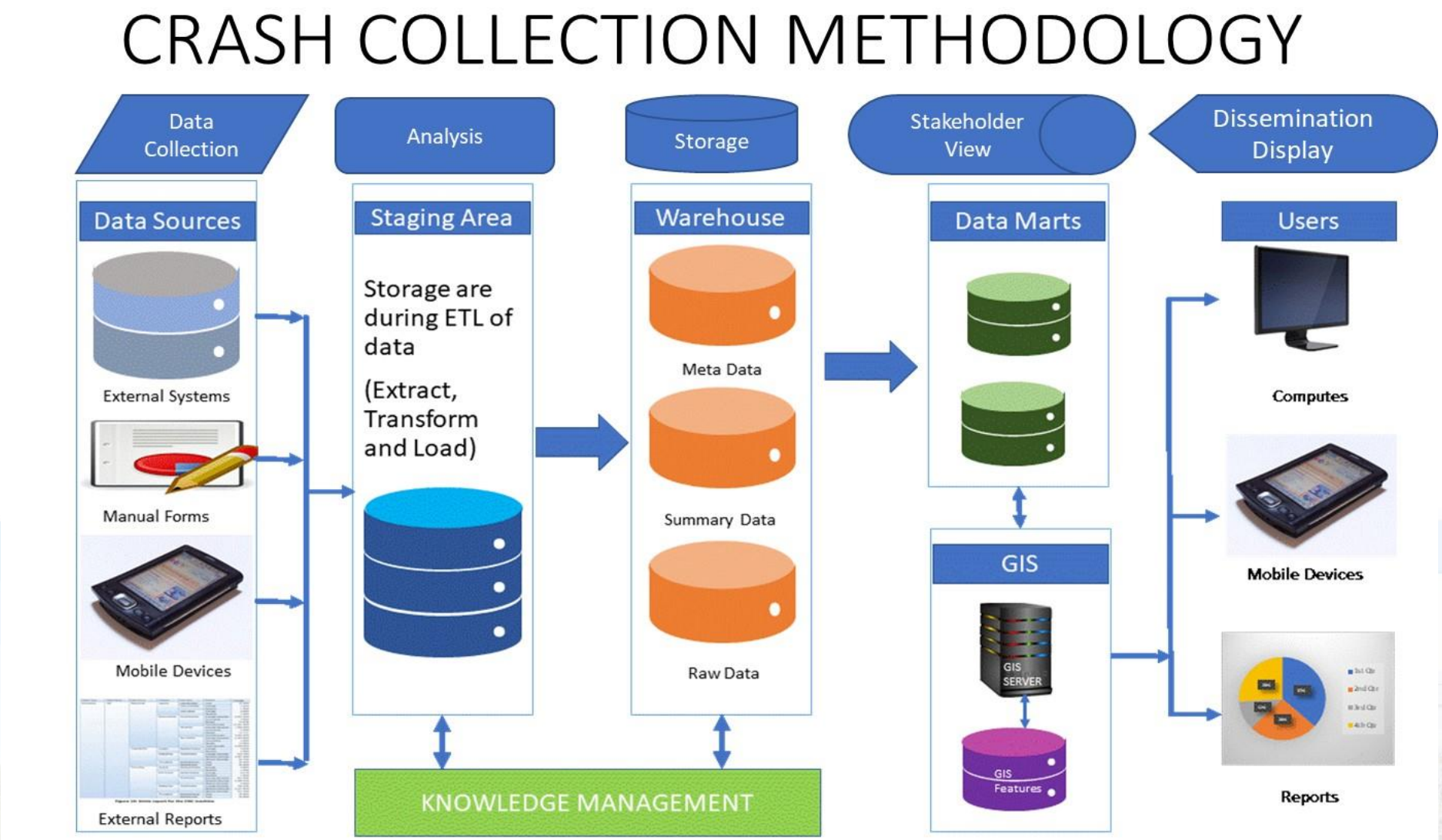


Good practice: Information systems



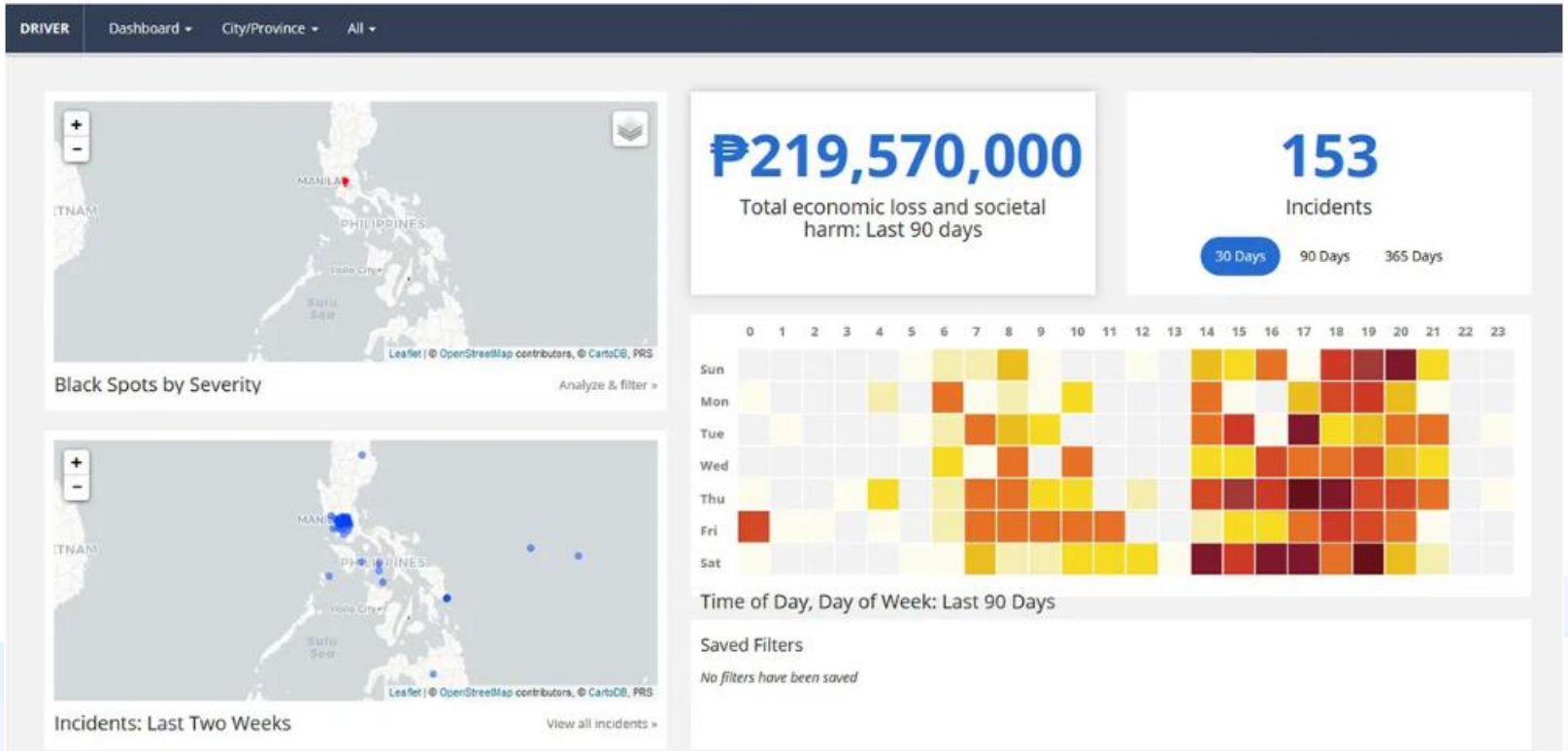
https://www.fredeng.eu/tools/

Good practice: South Africa



Good practice: Low-cost solutions

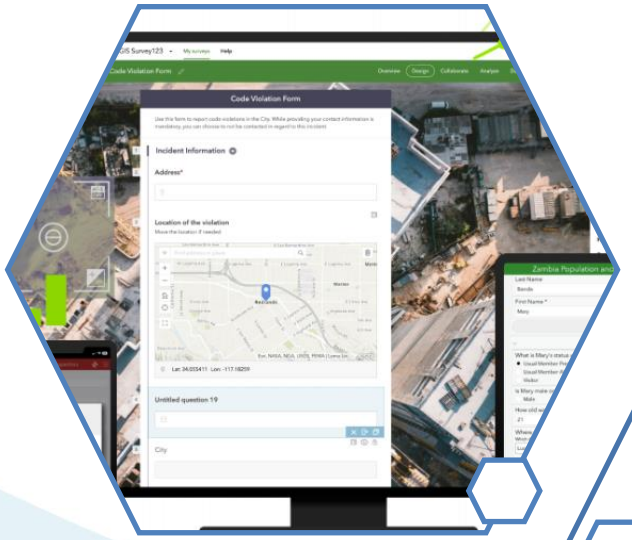
DRIVER – World Bank



https://thedocs.worldbank.org/en/doc/383191522246101256-0090022018/original/GRSFNewsletterSpring032618rev3.pdf

Good practice: Low-cost solutions

- Use of existing Apps in an integrated manner



Data collection tool

ArcGIS Survey 123

Data analysis tool

PowerBI