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

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CAREC ROAD CRASH INVESTIGATION MANUAL

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Introduction

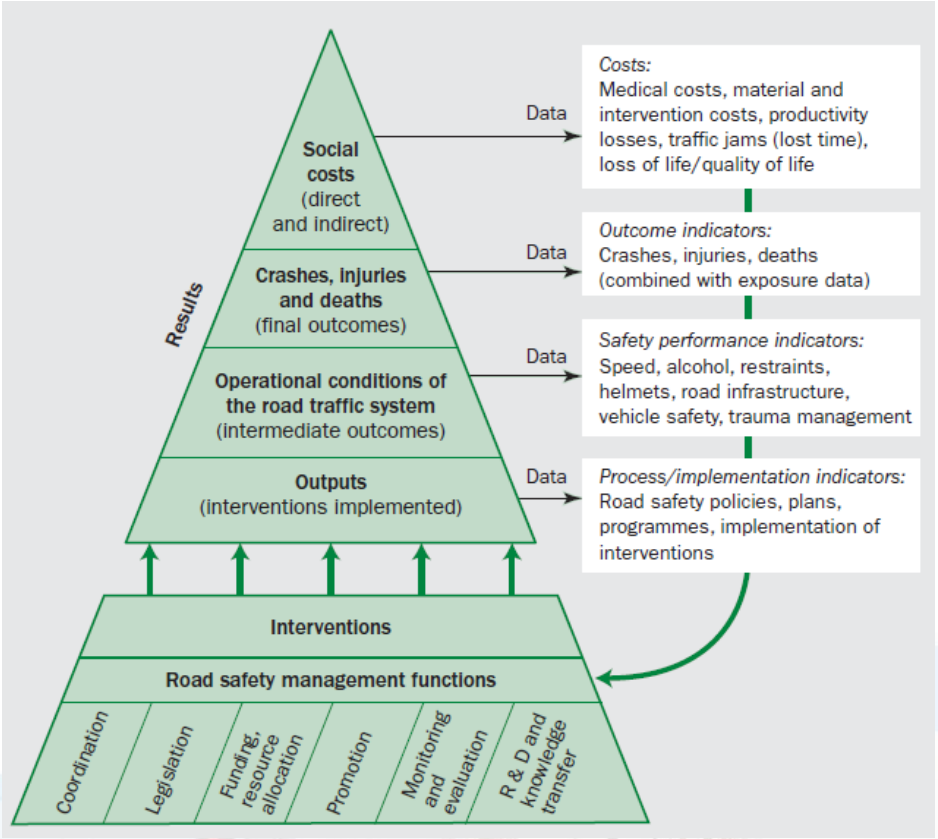
A manual aimed to improve the procedures for **collecting, investigating, and analyzing road crash data** in CAREC countries

For any agency involved in road safety (police, health sector, ministries, etc.)

Based on **Safe System approach**

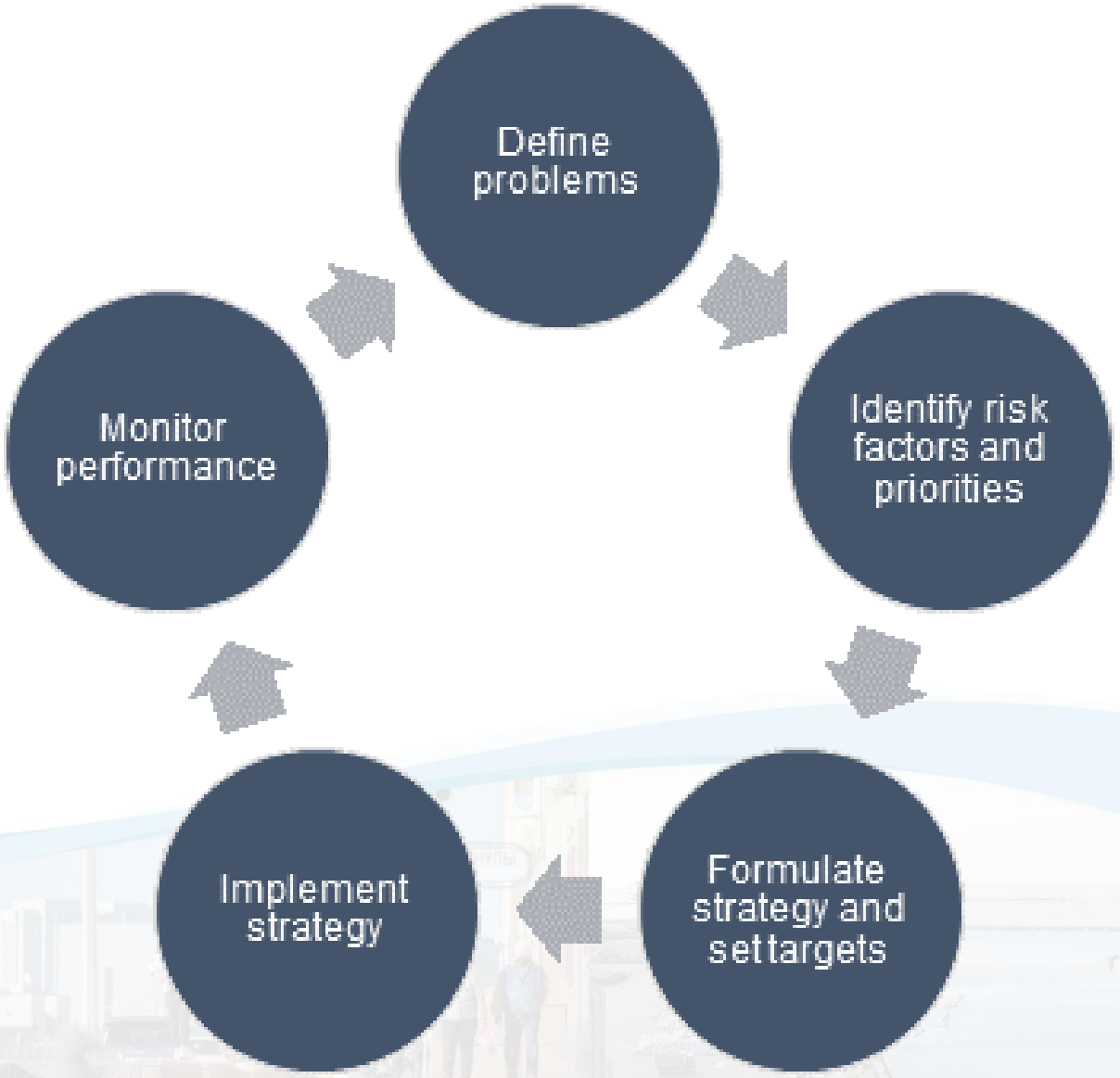
Background

Effective **road safety management framework** is needed for road safety improvements



Background

Outcome and **output data** are at the heart of any evidence-based decision-making process



Structure of the manual

Data collection

- Crash and casualty data
- Risk exposure data
- Safety Performance Indicators
- Procedures and common database

Data analysis

- Macro analysis
- Heatmaps and risk mapping
- Critical locations
- Contributing factors
- Interventions

Reporting and presentation of results

- Development of reports and dissemination of data
- Use of data to inform road safety initiatives

Data collection

Main data collected in the field are **crash** and **casualty data**

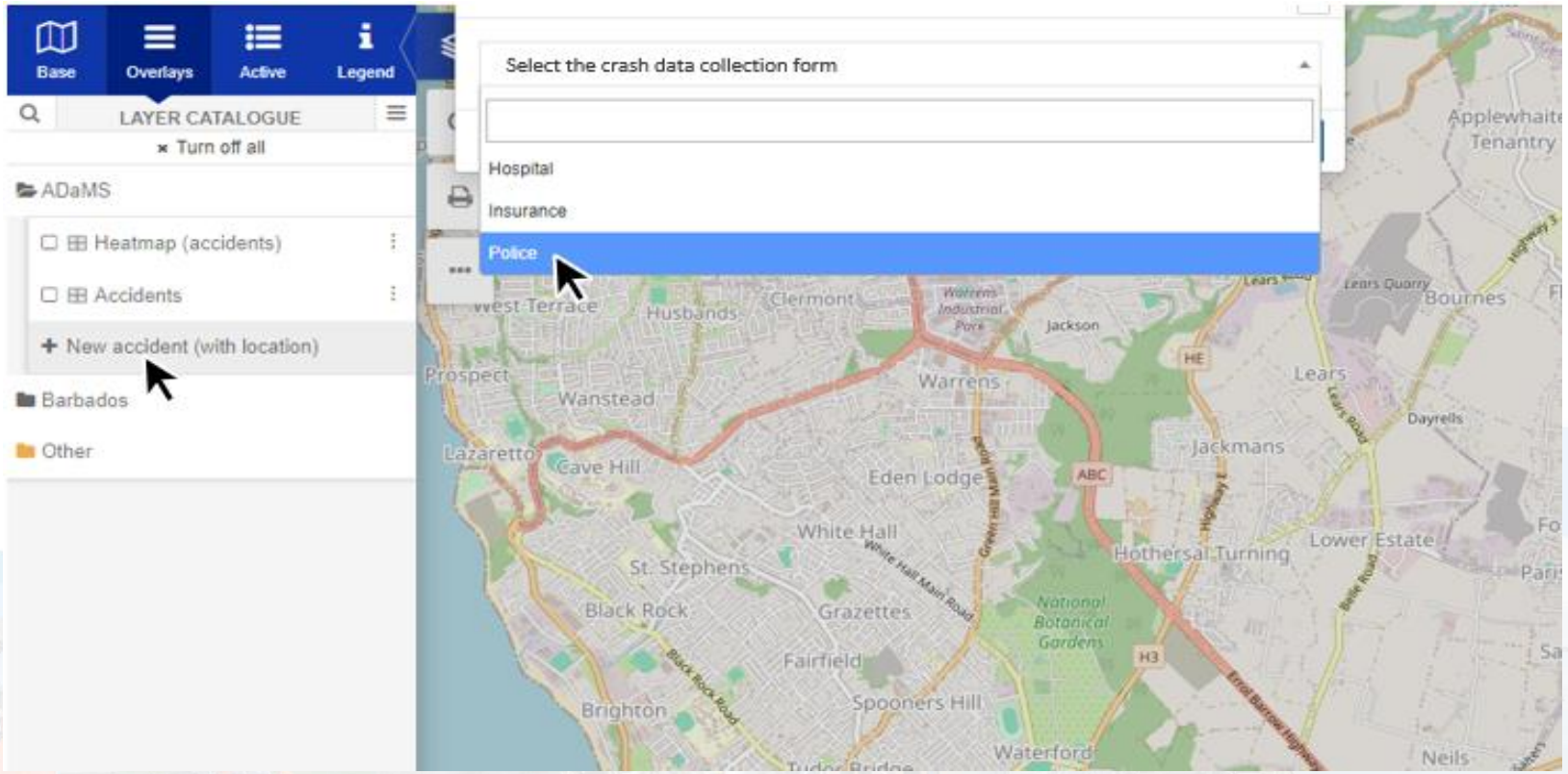
Data must be:

- Accurate
- Complex
- Available
- Uniform

Crash and casualty data

- Collected by police forces, hospitals/health care, insurance companies
- Used by government and road agencies to develop road safety strategies and interventions

Need for a **unique and comprehensive road crash registration system**



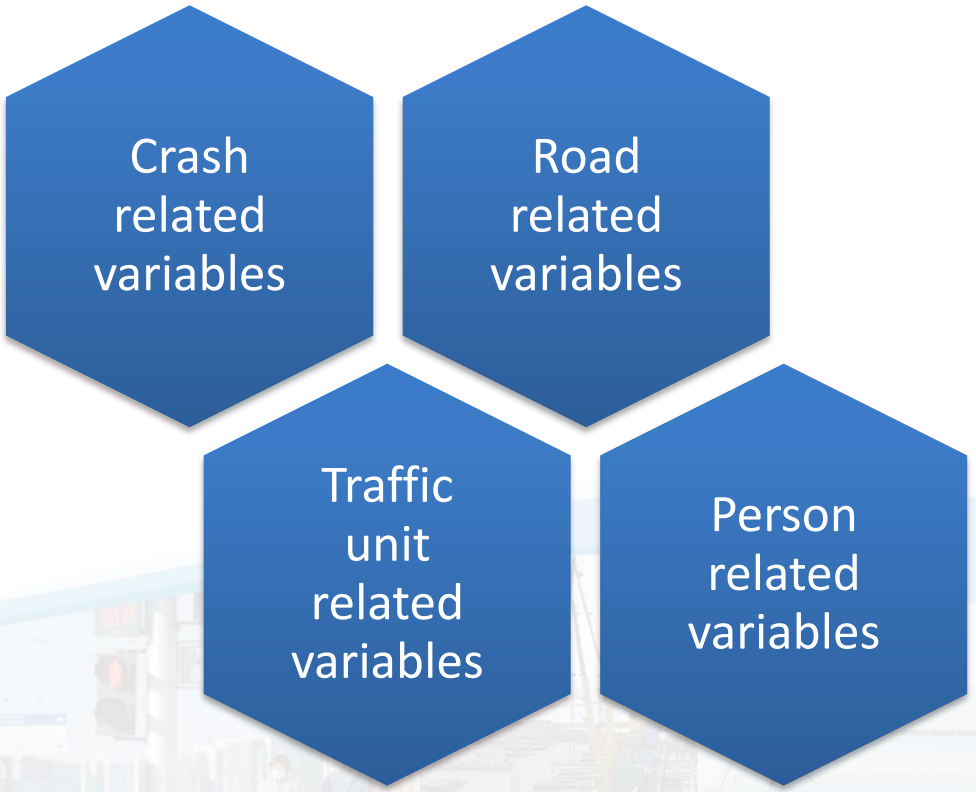
Standard crash and casualty definition

Category	Internationally agreed definition
Fatalities	People who die immediately or within 30 days as a result of a road traffic crash.
Serious injuries	People with a Maximum Abbreviated Injury Scale (MAIS) equal or higher than three. If MAIS is not available: people hospitalised for more than 24 hours.
Minor injuries	People with a Maximum Abbreviated Injury Scale (MAIS) lower than three. If MAIS is not available: people given first aid at scene or treated in a medical facility as outpatient or discharged from hospital within 24 hours.

Collision classification system

Crash data collection forms standardized at national level (and at regional level)

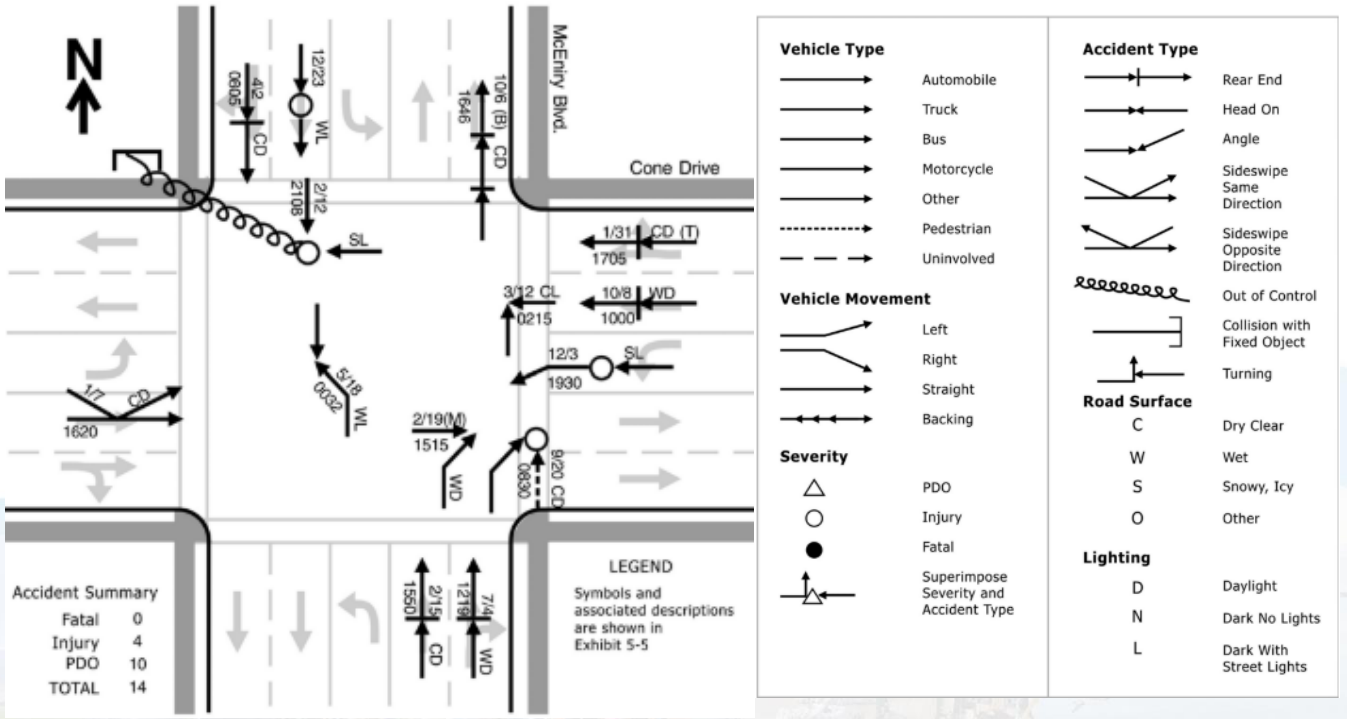
A **paper** or **electronic form** may be used for data collection



Crash data collection forms and collision diagrams

Collision diagrams are useful to determine **crash patterns** on a specific location

Drawn by the data collection specialist (usually a police officer) at the crash site or later in the office, using standardized and uniform symbology



Collection of contributory factors

PHASES	FACTORS		
	Human	Vehicle	Infrastructure
PRE-CRASH	- Information - Attitudes - Impairement - Police enforcement	- Roadworthiness - Working lights - Good brakes - Handling - Speed control	- Road design and layout - Speed limits - Pedestrian facilities
CRASH	- Use of safety systems	- Crash worthiness - Crash protective design - Occupant restraints - Other safety devices	- Crash protective roadside objects
POST-CRASH	- First-aid skill - Access to medics	- Ease of access - Fire risk	- Rescue facilities - Congestion

Risk Exposure Data

To assess **traffic casualties** compared to the **amount of exposure**

Risk exposure category
Road length
Vehicle kilometres
Person kilometres
Fuel consumption
Population
Driver population
Vehicle fleet
Number of trips
Time in traffic

Safety Performance Indicators (SPIs)

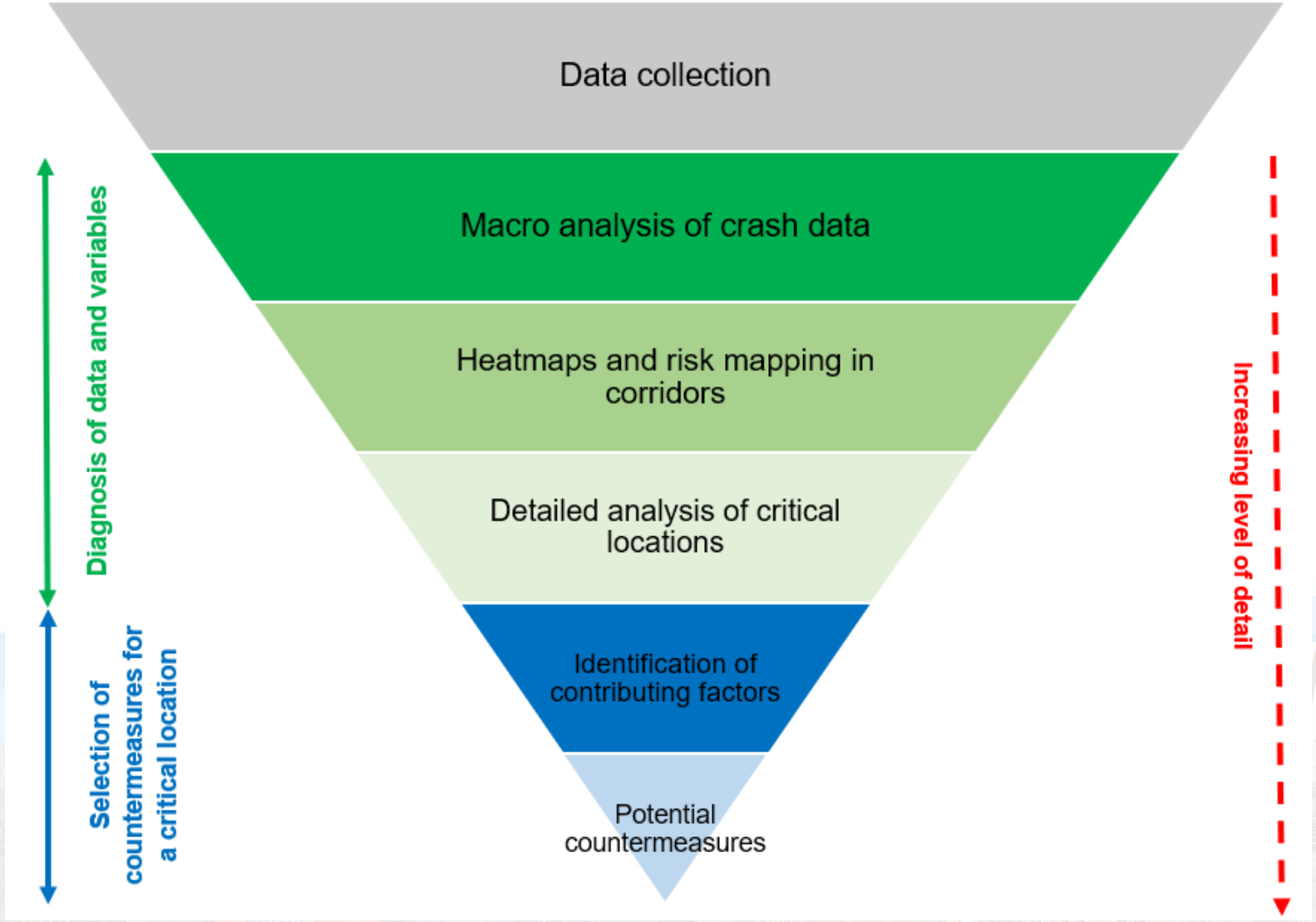
Area	Definition
Speed	% of vehicles travelling within the speed limit
Safety belt	% of vehicle occupants using the safety belt
Protective equipment	% of riders wearing a protective helmet
Alcohol	% of drivers driving within the legal limit for blood alcohol content
Distraction	% of drivers and pedestrians not using a mobile device
Vehicle safety	% of new passenger cars with a EuroNCAP rating equal
Infrastructure	% of distance travelled on roads with a safety score
Post-crash care	Time elapsed between emergency call and arrival of the emergency services at the scene of the collision

Data analysis

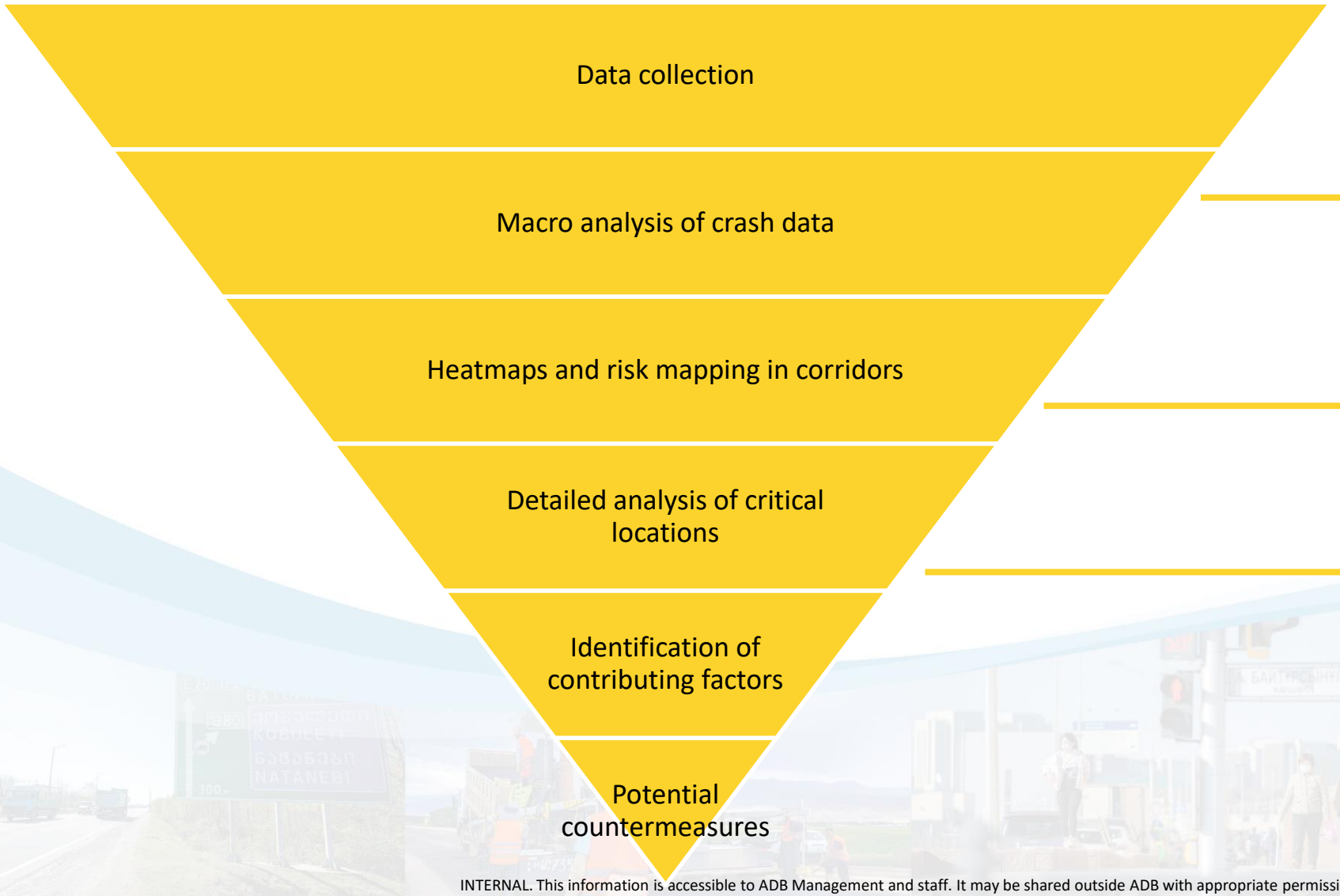
At the heart of **evidence-based decision-making approach**

Data analysis is crucial to understanding the **factors contributing to road crashes**

Data analysis process



Diagnosis of data and variables

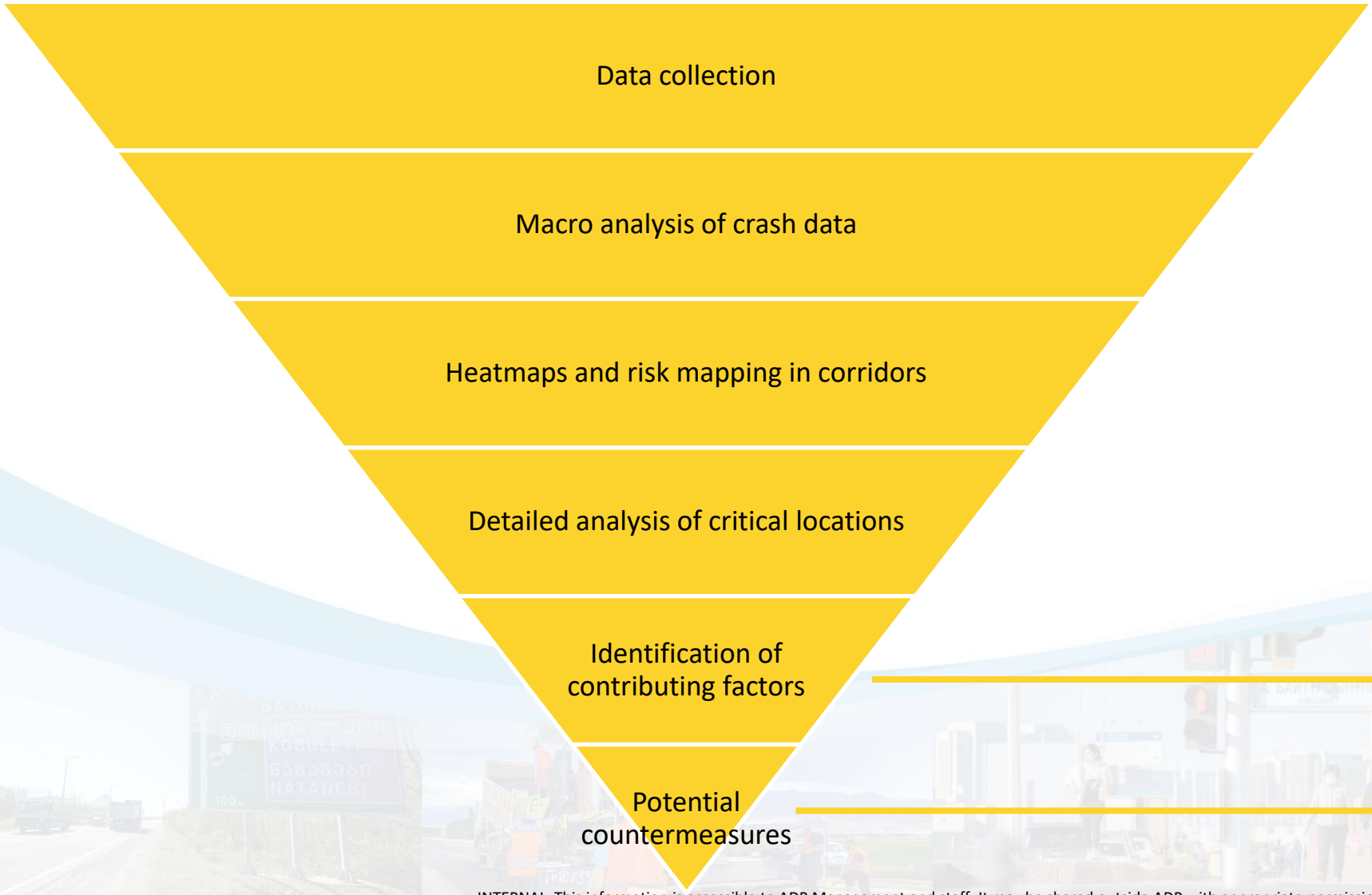


- National/territorial trends
- Territorial comparisons
- Statistics by mode
- Trends in the statistics
- Road crashes by type, age, gender, time period etc.

- Heatmaps suitable for finding critical intersections
- Risk mapping suitable for finding critical road sections

- Crashes by time of the day, weather conditions, light conditions, surface condition, etc.
- Distribution of injuries and fatalities
- Victims by road user type
- Events by collision type

Selection of countermeasures for a critical location



- Main contributing factors: Exposure, crash rate, injury severity
- Haddon matrix

- Countermeasure selection for each identified contributing factor

Reporting and presentation

Reliable and clear reports based on the **systematic analysis** of road crashes and other road safety data enable to identify possible actions to improve road safety