IRTAD and the Cities
Methodological approach for the development of the “IRTAD and the Cities” network and database

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The IRTAD Group

• IRTAD is an international group of road safety experts and statisticians, operated by the Transport Research Centre of the International Transport Forum at the OECD.

• Its members include research institutes, transport ministries, the industry, NGOs, etc. It is open to all countries.

• IRTAD currently includes more than 70 members from 35 countries. The World Bank, the FIA Foundation, the Association of European Car Manufacturers, etc. are also members.

• The IRTAD Group is a forum for exchange of knowledge on safety trends, recent safety measures, data collection and analysis methodologies.
Background

• By 2050, around two thirds of the population will live in urban areas.
• 45% of global deaths occur in urban areas.

• The recently adopted UN Sustainable Development Goals 2030, clearly identify road safety as a main target for cities: "By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons”.

• There is a demand and interest from cities to benefit from:
  • A forum of experts on safety in urban areas
  • A safety database
Pilot project

• Undertaken in 2012-2014

• 9 cities:
  New York, Paris, London, Bogota, Barcelona
  Chicago, Lisbon, Copenhagen, Lyon

• Conclusions:
  • Genuine interest, added value for such a network

• Key challenges:
  • Defining a city
  • Identifying relevant exposure data: passenger-km
  • Collecting injury data
  • City grouping
IRTAD and the cities Work Plan

• Developing a **methodological approach** (1st quarter 2016)

• **Recruiting a first set of cities** (on going)
  • Starting with capital cities and cities above 1 million
  • Smaller cities in a second stage

• Finalising the methodologies, including **defining variables**

• **First meeting**: later in 2016

• **Database**: 1st version by the end of 2016 (~ 25 cities targeted)
Literature review

• Review of city definitions:
  - Municipality
  - Urban agglomeration
  - Metropolitan area
  - City Proper (UN definitions)
  - Classification of urban areas (Eurostat, UN, Oecd/EC definitions)

• Review of more than 25 major projects and research studies on road safety in cities

• Review of international initiatives on road safety in cities e.g.:
  - POLIS network
  - WRI Sustainable Cities
  - CIVITAS
  - EUROCITIES
  - EcoMobility Alliance
  - Global Road Safety Partnership

• Sources of international traffic and road safety data in cities:
  - CARE
  - Eurostat
  - UITP
  - NHTSA
  - Elltis – the urban mobility observatory
  - Urban Mobility Observatory (SMO)-CAF
Road safety situation and data challenges in urban areas

- Few international projects or initiatives dedicated to road safety in cities.

- Fatality data alone may not be sufficient, especially for cities of small or medium size.
- Most countries/cities have not yet implemented the dedicated studies required to estimate the number of serious injuries on the basis of the MAIS3+ definition.

- Little usable data available in international road safety databases (e.g. number of fatalities at administrative unit level).
- Lack of traffic/exposure data and safety performance indicators.
- Data availability and comparability issues are expected to be considerable.
Proposed city definition

- The **City** is defined as the area with clear administrative boundaries containing the historical city centre and the inhabited area. A minimum population density ranging between 100 - 150 inhabitants per km$^2$ is proposed for defining the inhabited area.
- The **Greater City** is defined as the area outside the “City” (as defined above), containing an inhabited area with minimum population density ranging between 50 - 100 inhabitants per km$^2$.  

![City A, City B, City C diagrams](image)
City grouping criteria:

- Geographical (UN World regions)
- City size (OECD, 2012)
Data needs

- Data is recommended to be collected mainly from the cities themselves.
- To be complemented with existing data from international databases.
- Fatality data and serious injury data (preferably on the basis of the MAIS3+ definition).
- For small and medium size cities, the average of 3 to 5 last years may provide the necessary statistical significance.
- Local safety performance indicators are preferred.
- A two-level data collection, with “core data” and “additional data”.
- Additional background information will be exploited (demographic and socio-economic aspects).
Data framework

Data
1. Road safety outcomes; e.g. fatalities and serious injuries per road type and road user type.
2. Safety performance indicators; e.g. road user protection indicators (seat belt and helmet use), road infrastructure indicators.
3. Transport demand and exposure; e.g. modal split/share of trips (also for non-motorised travel), person-kilometres, vehicle fleet.
4. Demographic and socio-economic indicators; e.g. GDP per capita, unemployment rate, population/population density, road length.

Background Information
Road safety background: e.g. road safety management indicators, road safety measures, mobility plans etc.
### Crash data

- **Number of road crash fatalities**
- **Number of serious injuries in road crashes**

<table>
<thead>
<tr>
<th>Core data</th>
<th>Additional data</th>
<th>Calculated indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fatalities per road user type</td>
<td>Number of fatalities per road type, accident type</td>
<td>Fatalities / serious injuries per person-kilometres (per road user type)</td>
</tr>
<tr>
<td>Number of serious injuries per road user type</td>
<td>Number of serious injuries per road type, accident type</td>
<td>Fatalities / serious injuries per road length (per road type)</td>
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<tr>
<td>Evolution of fatalities / serious injuries (time series)</td>
<td></td>
<td>Fatalities / serious injuries per number of vehicles</td>
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<td></td>
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<td>Fatalities / injuries per population (per road user type)</td>
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</tbody>
</table>
## Road Safety Performance Indicators

- **Road User protection**
- **Road Infrastructure**
- **Vehicles**
- **Alcohol**
- **Speeds**
- **Post-crash care**

### Core data
- Daytime helmet wearing rates for PTW driver and for passenger (mopeds and motorcycles)
- Daytime seat belt wearing rates on front seats of cars (aggregated for driver and front passenger)
- Daytime seat belt wearing rates on rear seats of cars

### Additional data
- Percentage of drivers above legal alcohol limit in roadside checks
- Mean age of the passenger car fleet
- Mean age of the motorcycle fleet
- Mean speed on principal arterial roads
- 85% percentile of speed on principal arterial roads
- Standard deviation of speed on main urban roads
- Share of High Risk Sites treated
- Length of road sections treated - traffic calming
- Mean EMS response time

### Calculated indicators
- Length of motorways per 1000Km of road network
- Length of non-paved roads per 1000Km of road network
- Length of rail public transport network per 1000Km of road network
## Transport demand and Exposure

- **Modal split - number of trips**
- **Traffic - person-kilometres of travel**
- **Vehicle fleet**

### Core data
- Share of public vs. private transport (number of trips)
- Share of pedestrian trips
- Share of bicycle trips
- Total number of person-kilometres travelled
- Person-kilometres travelled by passenger cars
- Person-kilometres travelled by Powered Two-Wheelers
- Person-kilometres travelled by pedestrians
- Person-kilometres travelled by bicyclists
- Total number of vehicles registered at city
- Motorcycles registered
- Mopeds registered

### Additional data
- Share of road transport vs. rail transport (number of trips)
- Person-kilometres travelled by males
- Person-kilometres travelled by females
- Person-kilometres travelled by age group
Demographics and socio-economics

- Population
- Urbanisation
- Road length
- Socio-economic indicators
- Post-crash care

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<tr>
<td>GDP per capita</td>
<td>Length of principal arterial roads</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>Length of secondary arterial roads</td>
</tr>
<tr>
<td>Population density</td>
<td>Length of residential roads</td>
</tr>
<tr>
<td>Public transport network length</td>
<td>Number of hospitals / doctors / Intensive Care (IC) beds per population</td>
</tr>
<tr>
<td>Total length of the road network</td>
<td></td>
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<tr>
<td>Length of urban motorways</td>
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<tr>
<td>Length of unpaved roads</td>
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<tr>
<td>Total number of inhabitants per age and gender</td>
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Outputs of the project

- The on-line database, accessible to all participants for visualising the data and obtaining aggregate statistics.

- The Annual Report, with city comparisons and city profiles.

- Joint Research Reports, with thematic analyses and dedicated statistical analyses (city profiles, benchmarking, etc.).
Network of experts - Participants

• **Participating cities representatives**, either members or external experts appointed by the city authorities.

• **Other data providers**, representatives of international databases with data at city level.

• **Other experts** from research Institutes and other national or international organisations interested in contributing to the project.
Summary

• A **city definition**, tailored to the data availability and analysis needs of IRTAD and the cities.

• A **data framework** for cities’ road safety.

• An **annual survey** among city representatives / network members for data collection.

• Data distinguished into “**core data**” and “**additional data**”.

• **Data availability and comparability** may be challenging at the early stages of the project.

• Different types of **analyses** suggested.
Challenges

• IRTAD and the cities is a highly challenging project with methodological and data analysis complexities.

• The added value of the project is to establish a network of experts and a database to support analysis of road safety in cities worldwide.

• New opportunities for more and better data and insights for the understanding of urban road safety problems and respective countermeasures.
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