Road crash and road crash injury data for setting and monitoring targets

UNECE Seminar on Improving Global Road Safety
Bishkek 1-3 December, 2009
Gayle Di Pietro, Global Road Safety Partnership
The Global Road Safety Partnership is a not-for-profit organisation dedicated to the sustainable reduction of road death and injury in low- and middle-income countries.
Partnership – the core of GRSP

- Business
- Government
- Civil Society

Improved Road Safety

- Health
- Transport
- Education
- Police
- Roads
- Justice
Partnership – at every level

Global

Regional

Community

National
What we do – implementation

Good Practice

Knowledge Share

Global Advocacy

Regional Workshops

Project Guidelines

Demonstration Projects

Professional Development

2009

Seat Belts

Safe routes to school

Drink Driving

City Awards

Fleet Safety
Safe System

Cannot be seen, heard, touched, tasted or smelt
Is a relative energy rather than absolute

movement
energy

ROADS

Poor design
Poor construction
Poor maintenance

Low Country standards
Individual poor choices
Poor maintenance

VEHICLES

Helmets, Seat belts
Speed, Drink Drive
Vulnerable people

PEOPLE

Low country standards
Poor individual choices

TRAUMA CARE

Immediate Death or Injury

delayed Death or Injury
GRSP Focus on Good Practice

Filling the holes With good practice

PEOPLE DEFENCE

 movement energy

ROADS
Poor design
Poor construction
Poor maintenance
Low Country standards
Individual poor choices
Poor maintenance

VELOCES
Helmets, Seat belts
Speed, Drink Drive
Vulnerable people

PEOPLE
Immediate death
TRAUMA CARE
delayed death

Low country standards
Poor individual choices
UN Road Safety Collaboration

- GRSP, WHO, the FIA foundation and WB have developed a series of manuals on:
  - helmets
  - drinking and driving
  - speed management
  - seatbelts
  - road safety management
  - data collection

www.who.int/roadsafety
DATA SYSTEMS

A ROAD SAFETY MANUAL
FOR DECISION-MAKERS
AND PRACTITIONERS
Why collect data and build evidence on road crashes and road crash injuries?
Why data is important?

- Understand the problem and social and economic burden of road crashes and injury
- Plan effective interventions
- Advocate action and investment in road crash and road crash injury prevention programmes
Planning—data can help with:

- understanding the scope of the problem, also in comparison to other public health issues
- understanding crash and injury trends
- identifying high risk groups and locations
- identifying main risk factors (crash and injury)
- designing effective strategies, interventions
- facilitating objective decision-making about resource allocation (time, money)
- monitoring and evaluating effectiveness towards achievement of targets
Advocacy—data can help with ...

- illustrating to politicians and the public the magnitude of the problem and burden vs other (competing) social and economic issues
- aiding politicians demonstrate the value of unpopular policies (e.g. speed limits) to the public and solidly face opposition
- winning public support and demand for safer roads
Indicators are important tools for

- measuring the magnitude of a problem,
- setting targets and
- assessing performance
What are common indicators?

Number of injuries: Absolute figure of people injured. Serious or slight injuries.

Number of deaths: Absolute figure of people killed.

Fatalities per 10,000 vehicles: Ratio fatalities per vehicles.

Fatalities per 100,000 population: Ratio fatalities to population.

Fatalities per vehicle km travelled: Ratio fatalities to vkm travelled.

Disability adjusted live years (DALYS): Healthy life years lost due to disability and mortality.
### What are common data sources?

<table>
<thead>
<tr>
<th>Source</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Police</td>
<td>Crash, victim, location, injury related information</td>
</tr>
<tr>
<td>Health sector</td>
<td>Injury severity and costs, victim related information</td>
</tr>
<tr>
<td>Insurance firms</td>
<td>Crash, victim, location, injury related information</td>
</tr>
<tr>
<td>Companies with vehicle fleets</td>
<td>Same + damage and losses</td>
</tr>
<tr>
<td>Government planning departments</td>
<td>Population, exposure, health, economic, fuel, pollution</td>
</tr>
<tr>
<td>Special interest groups</td>
<td>Research, advocacy, unions, institutions involved in safety activities</td>
</tr>
<tr>
<td>International databases</td>
<td>IRTAD, CARE</td>
</tr>
</tbody>
</table>
Other sources - Special surveys

- In-depth crash investigations
- Community based surveys eg Red Cross
- Road user surveys - conflicts, seat belt and helmet wearing, speeds, drink-drive, violations
- Travel surveys and origin destination
- Crash costing
- Private sector studies – crashes involving people travelling for work purposes
## Brazil - Health sector indicators

<table>
<thead>
<tr>
<th>Sao Jose dos Campos</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities and serious injuries (per/10,000 vehicles)</td>
<td>14.04</td>
<td>12.49</td>
</tr>
<tr>
<td>Hospital admissions from road crashes</td>
<td>866</td>
<td>569</td>
</tr>
</tbody>
</table>

**Guaiba**

- 48% reduction in hospital occupancies due to road crashes
- 63% reduction in related social, medical etc costs

*Data for 2007 vs 2008*
What data is needed to set and achieve targets that are evidence based?
Data needs for setting targets

What can be measured can be managed!

Minimum data needs for general road crash and casualty reduction target setting

Data needs vary by type of intervention

- Common indicators (slide 6)
- Injury severity (slight, serious)
- Demographic (age, gender, population)
- Traffic volume (by mode)
- Safety indicators (speed, seatbelts)
- Crash location
- Vehicle registration
- Social, health economic costs
Accurate data is critical for setting achievable targets

Shortfalls and under-reporting influence understanding of the situation.

complicate monitoring and evaluation, also for target setting purposes.

Netherlands comparison of police and health data (2007)

Up to 6% fatalities, 40% of in-patients and 86% of minor injuries were not reported by police.
Other data concerns

- Poor quality and missing data
- Burden on police and health ‘collectors’
  - Police are not always sufficiently trained for data collection, e.g. injury definitions
  - Health sector sometimes lacks the tools and systems
- Inadequate analysis system
- Access to information restricted
  - This hinders proper planning, monitoring and evaluation of prevention interventions
Other data concerns

• Use of vehicle registration can be problematical due to
  delays in adding or removing vehicles
  changes in definitions

• Changes in traffic system and economic factors (e.g. rise in oil price) can lead to changes in
  choice of traffic mode
  crash exposure

What happened between 2007 and 2008?

- 24.09.2008 Verkhovna Rada of Ukraine approved higher fines
- Economic crisis

Sources: GNI/capita at PPP (US$): World Bank except 2008 CIA. Road deaths World Road Statistics / DerzhavtotransDorNDI, except 2008 - DAI
Fatalities have increased more slowly than motorization rates but more quickly than growth in population

Definitions

• Road accident
  Involves moving vehicle or not?
  Involves injury or not?

• Death
  Police definition varies from dead on the spot to unlimited time
  WHO recommendation within 30 days of crash
  Note theory and practice often different

• Injury severity
  Several definitions
Improving data quality

- Mandatory reporting requirement
- Regular training for police and health
- Standard definitions
- Simplify data requirements
- Quality control system
- Consider sampling
UN Collaboration Good Practice Manuals

Build on the recommendations of the World report

Recipe books for good practice on main risk factors implemented via a systems and partnership approach

Data Systems (expected 2010)

Translations into many languages
GRSP in Brazil - Data Collection, Analysis

Crash re-assessment

Window of Reliable Crash Data

- Victims at site
- Confirmed serious injuries

Feedback to Police and other users

- Crashes
- Police Data Set
- Hospital Admissions
- Health Data Set
- Legal Records
- Legal Medical Institutes Data

Fatal Crashes (30 days)
Mapping reliable data
**Additional indicators?**

What data is needed for effective interventions and target setting on the main risks and risk groups?

- Seat-belts and child restraints
- Drink-drive
- Speed
- Vulnerable road users: (pedestrians, cyclists, elderly, children)
- Young drivers
- Professional drivers (fleet safety)
Discussion in small groups

- What kind of road safety data is collected in your country?
- Who is responsible for data collection, analysis, maintenance?
- How is the data reported? – public through media?
- Who has access to the data?
- What should data help you do?
- If you were to develop a strategy on the following issues, what data would you collect?
  - Seat-belts and child restraints?
  - Drink drive prevention?
  - Speed management?
  - A pedestrian safety?
Example indicators

- Police crash data
- BAC or BrAC levels – day, time, location, gender, age, vehicle type
- Health sector data on BAC, gender, age
- Crash type (single vehicle)
- Public opinion survey

You can collect this data through surveys
See UNRSC manual
## Objectives and performance indicators (Olsztyn, Poland)

<table>
<thead>
<tr>
<th>Possible Objectives</th>
<th>Possible Performance Indicators</th>
<th>Possible Measurement tools</th>
</tr>
</thead>
</table>
| Reduce the number of deaths, injuries drink-drive crashes | Fewer deaths, injuries from crashes involving driver with illegal BAC | • Police crash data  
|                    |                                 | • Health sector data       |
| Reduce the number of drivers who are drinking and driving | Fewer drivers over the legal BAC limit | • Police breath test data  
| Increase action in community to prevent drinking and driving | More community drink-drive prevention activities | • Health sector data  
|                    |                                 | ... by gender, age         |
| Increase number of drivers prosecuted for drink-driving | • Number of court cases for drink-drive  
|                    |                                 | • Fewer drunk drivers      |
|                    |                                 | • Pre – post campaign data from justice  
|                    |                                 | • Increase in (RBT)        |
Seat-belts, child restraints

You can collect this data through surveys
See UNRSC manual

Sakhalin Island, Russia

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>City Roads</td>
<td>4%</td>
<td>14%</td>
<td>14%</td>
<td>22%</td>
<td>31%</td>
<td>44%</td>
<td>79%</td>
</tr>
<tr>
<td>Rural Roads</td>
<td>26%</td>
<td>51%</td>
<td>56%</td>
<td>77%</td>
<td>72%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Speed trends at specific locations on the road network, days, times, vehicle types

- Crash type
- Injury data from hospitals
- Changes in public opinion

You can collect this data through surveys

See UNRSC manual

The blue line corresponds to the speed limit fixed by the law on national road

GRSP Speed Survey
Niger
- Crash location, time, day of week
- Road user (pedestrian, cyclist, age, gender)
- Average speed at location
- Observational survey
- Road crossing behavior

You can collect this data through surveys

**GRSP VRU project, Beijing**

<table>
<thead>
<tr>
<th>Pedestrians cross the street from the surface of the road per hour</th>
<th>Before project</th>
<th>After project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>27</td>
<td>12</td>
</tr>
</tbody>
</table>
Work related road safety

- Management policy on road safety
- Crash data
- Injury severity
- Damage claims
- Fuel costs
- Vehicle km travelled
- Number of vehicles in fleet

You can collect this data through surveys

www.fleetsafetbenchmarking.net
www.orsa.org.uk

Also, global good practice manual on fleet safety in production (possible pilot testing 2010)
DATA SYSTEMS

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Common database content

Annual statistics - 500 data items - aggregated on country level:

- Injury accidents by road network areas
- Fatality figures by road usage / gender / age bands or network
- Hospitalization by road usage, age bands or network areas
- Accident involvement by road usage
- Population figures by age bands
- Vehicle population by vehicle types
- Mileage by road network areas or vehicle types
- Network length by road type
- Seat belt wearing rates by road network
- General indicators (area, modal split)
- Rates: casualty data related to population or kilometrage etc.
- Key accident data on monthly basis

New variables will be included soon.
Using data

- Gather relevant data
- Analyze key crash types and behavioral issues
- Focus on these crash types and behavioral issues.
- Use the Safe Systems and Haddon as your framework
Key questions around data

Why are data systems important?

Why do we need to do a Situational Assessment?

How do we implement or improve a road safety data system?

How do we use data to improve road safety?
Quality data systems are needed to:

- Measure incidence of crashes and injuries
- Identify characteristics (risk/protective factors)
- Develop and test interventions
- Link data within and across sectors
- Facilitate multi-sectoral collaboration
- Monitor impact
Situational Assessment

- Why assess the situation?
- Who are the stakeholders?
- What are the objectives for data collection?
- What data are available, what systems?
- What are the quality of the data?
- What resources are available?
Situational Assessment

Situation Assessment:
- Preliminary objectives
- Data sources and accessibility
- Data quality
- Resource availability

Stakeholder mobilization:
- Data collectors and users convened
- Partners for data system identified
- Objectives refined

Choose appropriate course of action:
Do existing data sources provide the data you require? 
Does existing system meet your requirements? If not, is it feasible to modify/improve?
Design and implementation

- Mobilizing stakeholders
- Improve an existing system
  - Evaluation
  - Data collection and entry
  - Data management and analysis
- Implement a new data collection system
  - Plan for the system
  - Choose and define minimum data elements
  - Choose data collection tools
  - Designing the database
  - Develop a data management and analysis plan
  - Collect, process, disseminate and use data
  - Implement quality assurance measures
Using data to improve road safety

- Dissemination
- Road safety indicators
- Target setting
- Assessing the impact of interventions
Thank you for your attention!

www.grsproadsafety.org

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