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Road Accident Causation Indicators

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European Road Safety Conference on Data and Knowledge-based Policy-making
22/23 November 2012
Introduction

Why create a causation Basic Fact Sheet?

• Understanding the causes of accidents
• Decade of Action
• Helps prioritise interventions
• Helps develop countermeasures
• Identifies the need for in-depth data
• Development and monitoring of technical measures
SafetyNet Accident Causation Database

• 977 crashes, 1801 road users.
• Crash investigations carried out in 6 EU countries:
  – Finland (VALT), Germany (MUH), Italy (CTL), the Netherlands (TNO), Sweden (CHALMERS), UK (TSRC).
• In-depth level – at scene/nearly at scene methodology.
• Covers all injury severities.
• Type of data:
  – General variables (crash description, vehicles, roadway environment, road users).
  – Contributory factors (SafetyNet Accident Causation System).
Results

Distribution of Accident Type by Road User Type

- The most common accident types were ‘Driving Accidents’, ‘Turning In/Crossing Accidents’ and ‘Accidents in Lateral Traffic’.

Circumstantial Factors

- 12% of accidents occurred in unfamiliar traffic systems.
- 48% of accidents occurred at junctions.
SafetyNet Accident Causation System (SNACS)

• Philosophy: crash occurs when the dynamic interaction between humans, technology and organisation fail to meet the demands of the current situation.

• Analysing the contributing factors and the relationships between them creating a causation chart.
SNACS Chart – 1 Driver
Critical Events

- ‘Timing’ was the most frequent critical event for all road users.
- Motorcycles had a high proportion of ‘Speed’ accidents.
- Bicycles had a high proportion of ‘Direction’ accidents.
Most Frequently Linked Causes

Motorised Vehicles

- ‘No Action’ was most often a result of ‘Faulty Diagnosis’.
- ‘Excess Speed’ was most often a result of ‘Inadequate Plan’.

Vulnerable Road Users

- ‘Premature Action’ was most often a result of ‘Observation Missed’.
Influence of Substances

- 10% of accidents included influence of substances
- 44% of ‘under influence’ accidents were fatal.

Distribution of Vehicle Types

- Cars and pedestrians represented a higher proportion of ‘under influence’ road users compared with all road users.

Distribution of Causes

- Alcohol accounted for three quarters of ‘under influence’ accidents

![Bar and Pie Chart showing the distribution of vehicle types and causes of accidents](chart.png)
Fatigue

- 8% of accidents included fatigue.
- 25% of fatigue accidents were fatal.

**Distribution of Vehicle Types**
- Drivers of cars represented a higher proportion of fatigued road users when compared with all road users.

**Distribution of Causes**
- Circadian rhythm (unusual hours) or extensive driving spells was associated with half of fatigue accidents
- 8% of accidents included fatigue.
- 25% of fatigue accidents were fatal.
Distraction / Inattention

- 32% of accidents included distraction or inattention
- 13% of distraction / inattention accidents were fatal

Distribution of Vehicle Types
- Distraction: cars and pedestrians represented a higher proportion.
- Inattention: cars and motorcycles represented a higher proportion

Distribution of Causes
- 19% of distraction accidents were attributed to passengers

![Graph showing distribution of vehicle types and causes]
Conclusions

• The SNACS method provides detailed information about the contributory factors in road traffic crashes

• Different contributory factors relate to different crash circumstances and lead to different outcomes – these differences can be examined to allow the creation of specifically targeted countermeasures

• Detailed causation data depends on in depth accident investigations
Further Information

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- Traffic Safety Basic Fact Sheets: http://safetyknowsys.swov.nl/
- DaCoTA Project: http://www.dacota-project.eu
- European Road Safety Observatory www.erso.org
- SNACS: Glossary & Analysis report. In-depth section of: http://erso.swov.nl/safetynet/content/safetynet.htm