SafetyNet
Building The European Road Safety Observatory

Work Package 5
In-Depth Accident Databases
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In-depth Data to Support Policy, Active Safety and eSafety

- Effectiveness of existing regulations
- New priorities in regulation
- Assessment of non-regulatory actions
- Support for Industry and eSafety – new products and technologies
In-depth Data to Support Policy – Highway Design

- Highway design requirements
- System interactions eg vehicle and barrier
- Requirements for ITS
In-depth Data to Support Policy – Road Users

- Effectiveness of enforcement measures
- Understanding driver decision making
- New priorities in accident prevention
In-Depth Accident Analysis
WP 5
Microscopic Data From In-depth Investigations

- What happened?
- Why did it happen?
- How could this crash have been avoided?
- What could we learn from this crash that will prevent future crashes?
- What else should we consider for future accident avoidance?
- How can we Eradicate ‘road safety systems failure’
The purpose of WP5:
To collect microscopic data from in-depth investigations, to record the findings in a database, to conduct analysis, and to form recommendations for policy and practice
VSRC (Loughborough, UK, Co-ordinators)
TNO (Delft, NL)
INRETS (Lyon, FR)
Chalmers (Gothenburg, SE)
MUH (Hannover, GE)
VALT (Helsinki, FI)
DITS (Rome, IT)
WP 5 Accident Databases

Task 5.1
- Develop new fatal accident database with 1300 cases using Police Data (intermediate level data)

Task 5.2
- Develop new accident causation database with ~1000 cases concentrating on infrastructure safety and eSafety (in-depth data)
Accident Data Spectrum

Macroscopic

little detail, large numbers (,000,000)

Intermediate level of detail

Microscopic

very detailed, “small” numbers (,000)

CARE

Task 5.1

Task 5.2

Loughborough University
Task 5.1 – Fatal Accident Database
Task 5.1 - What Data???
Task 5.1 - Data Levels

• Accident level (approx 10 data fields or ‘variables’)
• Vehicle level (approx 25 data fields or ‘variables’)
• Roadway Level (approx 25 data fields)
• Road-user (including driver) level (approx 40 data fields or ‘variables’)

VSRC Vehicle Safety Research Centre
SafetyNet Task 5.1 – Pilot Study Example Cases
The accident occurred on Friday the 13th August 2004 at 1825hrs, the road layout was a gentle but gradually tightening bend from both directions, the accident involved a car and a coach.

Driver of Peugeot loses control in the left hand bend when the vehicle begins rotate anticlockwise, the driver then overcorrects the slide presenting the near-side of the vehicle to the front of the oncoming coach.
Vehicle Level

Vehicle 1
- Vehicle 1: Peugeot 306 Meridian
- Manufactured 2000
- 2.0HDI Diesel (66Kw), Manual
- Front wheel drive
- Equipped with ABS
- One female driver

Vehicle 2
- Volvo Coach
- Manufactured 1990
- Rear wheel drive
- Equipped with TELMA electromagnetic retardation device
- One male driver and 19 passengers
Roadway Level

- Accident occurred on an unclassified rural road
- Speed limit was 100km/h, the coach was restricted to 80km/h
- Local ‘cut through’ between two major roads
- Road conditions were wet but drying rapidly
- Weather conditions were fine and dry - it was daylight
- Peugeot approach was downhill into gently tightening left hand bend
- Coach approach was also slightly downhill into a right hand bend

- Both vehicles would have had good early visibility across the bend, obscured at accident scene by hedgerow
- Only one sign present indicating a sharp bend warning for Peugeot
Scene Photographs
Vehicle Photographs
Road user Level

- Peugeot - 26 year old female driver
- Seatbelt worn
- Drivers hub airbag deployed along with struck side seat ‘bag’
- Died in hospital 8 days after the accident from head injuries

- Coach - 40 year old male driver
- Seat belt worn, no airbags fitted
- Applied TELMA system before impact (data from Tachograph)
- All passengers and driver uninjured
Key Accident Event Data

- The Peugeots rear brake disks and pads had been changed earlier in the day, was this causative?
- A witness at the scene had found an unlit cigarette and lighter on the lap of the Peugeot driver, was this distraction?
- Coach Tachograph trace shows 40km/h at impact point
- Road surface and Signing renewed shortly after accident
Case 2  Accident Level

The collision occurred on Monday 12\textsuperscript{th} July 2004, The road layout consisted of a large roundabout with three exits, the accident being sited at one of these; a truck-tractor unit and a bicycle were involved.

The cyclist collides with the truck as they both negotiate a large two lane roundabout.
Vehicle Level

Vehicle 1
- Red Raleigh Max Cro Mo III Mountain Bike
- One male rider

Vehicle 2
- Blue Scania Truck-Tractor Unit
- Manufactured 1998
- Rear wheel drive
- One male driver
Accident occurred on a private two lane one way road
Speed limit was 30km/h
Main road runs North West to South East
Avenues 1st, 2nd, 3rd…..8th run off main road at right angles
Weather conditions were fine and dry; it was daylight
Truck and cyclist both travelling South west
Cyclist intending to turn towards right exit from roundabout
Truck continuing along main road
Scene Photographs

Lane priorities

Lane and road restrictions
Vehicle Photographs

Collision point for Cyclist

Damage found to saddle, handlebar-end, derailleur, wheel and pedal
The male rider of the bicycle died at the scene from chest injuries sustained from contact with the rear truck wheel. He was a resident of the country and familiar with the road layout. The rider was not wearing any protective or reflective equipment. No accident avoidance manoeuvre was evident.

The driver of the Scania truck was uninjured. The driver applied the foot brake, no marks due to low speed. The driver was a resident of the country although it is unclear whether he was familiar with the road layout.
Key Accident Event Data

- The bicycle’s front wheel bearings were excessively worn and the front brake efficiency reduced to a level where they would not lock
- The cyclist did not wear conspicuous or protective clothing
- The road layout indicates that a right turn is possible from both lanes, straight on (main road) is only available from the left lane
Task 5.1 – Summary

- Intermediate data from fatal accident reports collected by the Police in 7 EU Member States
- A common protocol is being used
- The data are being used to determine several factors related to the accident
- Data on approximately 1,400 cases will be collected
- Representativity of the data will be determined by linking the data to a number of CARE data variables later in the study
WP5 Conclusions

• WP 5 deals with in-depth accident data; two separate databases are being developed although there is some commonality between the two;
• Full data collection begins this month after successful trialling of the protocols;
• The protocols and data collection systems have been developed specifically so that the maximum amount of data can be collected from each crash;
• Information collected can be used by the eSafety and road infrastructure communities for the development of safer roads and vehicles.