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“Accident Data  
Issues from the  
TRACE  
Perspective”

**Alan Kirk**

**TRACE – eIMPACT  
Conference  
26<sup>th</sup> June 2008  
Paris, France**





## Outline of Presentation

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- **TRACE Approach to Obtaining Data**
  - Exchange of existing data between partners
  - Co-ordination with a dedicated 'Data Supply' Work Package
- **Discussion and Conclusions**
  - Data Use
  - Data Supplied
  - Recommendations for the Future



## TRACE Approach to Obtaining Data

**To understand the outcome of data use in TRACE it is firstly important to understand the approach taken and its inherent properties/features.**

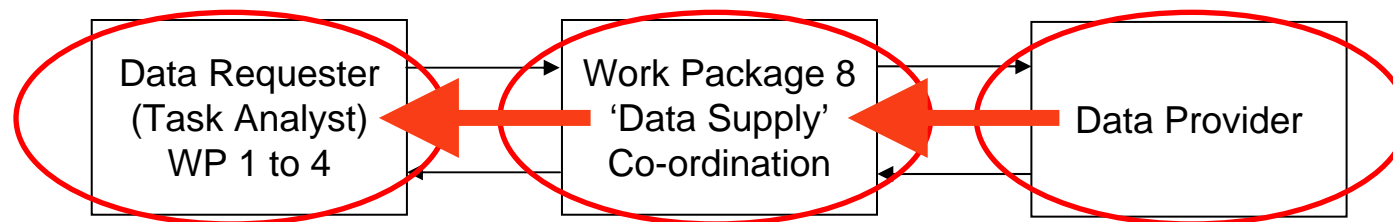
- 1. It is clear that activities are taking place to harmonise data collection in European but that data is not yet available.**
- 2. Therefore TRACE used a wide range of existing data sources for the study of Traffic Accident Causation in Europe.**
- 3. The objective was not to form a new database but to collate and make the best use of existing data sources.**





## TRACE Approach to Obtaining Data

### Overview of TRACE Data Exchange Methodology



- 1) Analysts in the Tasks of TRACE examined their research questions and formed crosstabulation tables of the data that they required.
- 2) Requests were sent to a Data Supply Co-ordinator - guidance was given on the availability of the data, clarity of the request and table layout.
- 3) After liaison between the Analysts and Co-ordinator, requests were sent to selected Data Providers who filled in the tables as completely as possible.
- 4) Tables of data and supporting information were returned to the Co-ordinator for checking and collation, before sending to the Analyst.



## TRACE Approach to Obtaining Data

As the approach was data exchange (no database) - crosstabulations were used.

By Injury

Case selection

Causation factors

	Passenger cars alone (no pedestrians)					
	Overall Accident Severity					
	Fatal	Serious	Slight	Uninjured	Unknown	Total
Total (no factor filter)	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Total number of factors	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Factor 1	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Factor 2	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Factor 3	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Factor 4	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Factor i... etc	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>

The Data Supply activity in TRACE did not analyse or interpret any data.



## Co-ordination to Address Challenges

- **Communication between many requesters and data providers**
  - Addressed with co-ordination by a dedicated Data Supply Work Package (8) and a Co-ordinator for each Data Request.
- **Differences between data sources - definitions and sampling**
  - Improved by understanding of a central coordinator and collated documents giving the important features of each data source.
  - Also, as part of the methodology, there was an information table below each data table (e.g. any recoding of fields, years used, sampling used).



## Co-ordination to Address Challenges

- **A check list of best practice for data request templates was developed to be used by the Data Supply Co-ordinators and give guidance on clarity and table layout.**

Examples:

- clear accident selection and filtering criteria (e.g. were pedestrian accidents included, was it only injury accidents?)
- ensuring that any “double counting” in the tables was highlighted and understood
- definitions of requested table categories (e.g. what is ‘poor’ weather? Are minibuses included in the ‘bus’ category?)





## Data Required by the Analysts in TRACE

### The data were handled as three categories :

- **Descriptive**

- Mainly National Accident Databases where the majority of the injury accidents (in some cases also property damage accidents) investigated by the police are covered.
- To identify the main problems and their magnitude related to the causation of accidents in order to obtain the most relevant situations/scenarios for each analysis approach.

- **In-depth**

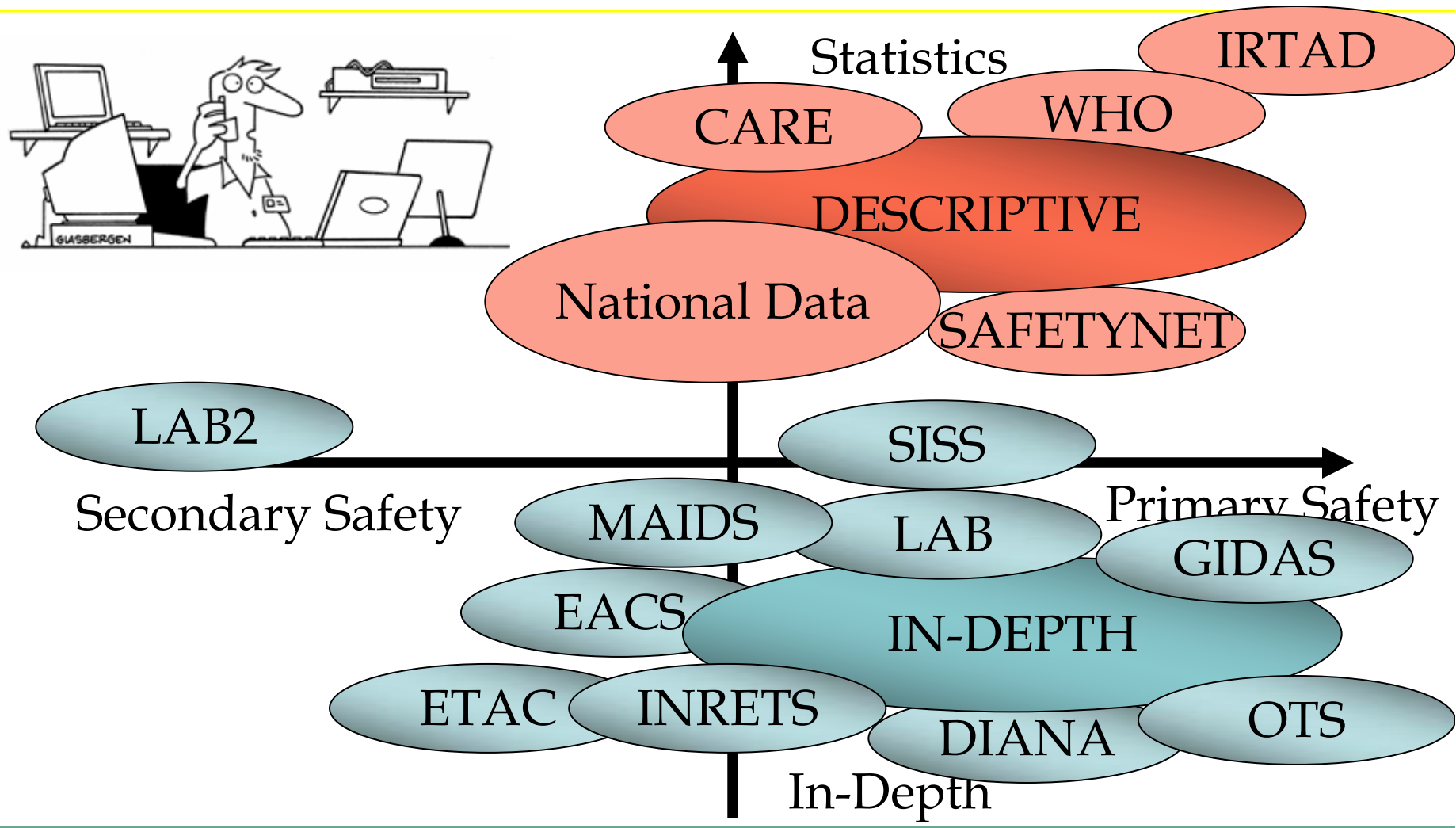
- For a more in-depth look at accident causation and human failure. Generally allows more exact accident scenario classification

- **Risk Exposure**

- To put into context the results of the accident analysis. To calculate risk, defined as road accident data divided by the amount of exposure over a time period.  
(e.g. number of fatal accidents divided by vehicle-kilometres)



## Descriptive and In-depth Data





## Risk Exposure Data Available

- **It was clear that the initial amount of exposure data sources was limited for analysis and/or expanding to EU27-level.**
- **Therefore to take this activity forward:**
  - **Definition of 22 key exposure indicators (e.g. Population, Vehicle Fleet, Road Length).**
  - **Search for more data for key indicators from partners and systematic internet search. Around 300 specific results (varied from 3 to 40 per indicator).**
  - **Spreadsheet enabled analysts of the Operational Work Packages to determine easily if a data source was useful to them.**
  - **Exposure data could be found in a library of files or via a web link – TRACE resource.**



# Discussion and Conclusions



## Data Use

- **Incompatibilities Between Data Sources**

- Lack of commonality between definitions of variables and fields (e.g. types of roads) and sampling (e.g. fatalities not at 30 days).
- A challenge for both data providers in trying to provide data (for instance recoding of variables) and of course analysts when faced with inconsistent data sets.
- For 'Accident Type' Classification large amount of time needed for data preparation to ensure comparing 'like to like' for accident scenarios.
- Missing data. Some databases have a good depth of causation data allowing the investigation of human failure, whilst others are less in-depth.



## Data Use

- **Accident Causation**

- Across the data sources available for selection in TRACE there is no common method of collection for accident causation.



- Generally 3 different levels of causation data were requested,
  - no recoding,
  - some recoding into causation groups (able to rank frequency),
  - recoding to Work Package 5 Methodology (although not planned for Data Supply so not always possible).

- **Such limitations generally meant that the different analyses carried out in the TRACE tasks have relied mainly on 4 or 5 countries for accident causation investigation.**



## Data Use

- **Exposure Data**
  - Similarly, the exposure data found for Europe is very general and not usually designed for the detailed examinations of the TRACE tasks.
  - A review found a lack of European data from field operational trials and naturalistic driving studies that could further the investigation of human interaction issues for new safety technologies.
- **Disaggregated Data (case by case) was not Possible**
  - It was clear that some partners would have valued disaggregated data rather than aggregated tables for their studies.
  - Generally in TRACE the data owners would not allow disaggregated data to be available on such a large scale.



# Data Supplied





## Data Supplied

- **Big challenge to bring so many sources of data and so many organisations together in harmony, but this was important for the success of TRACE.**
- **Harmonised data from the SafetyNet project is not yet available and the approach taken in TRACE has enabled the project to make the best use of existing data, as specified at the start of the project.**
- **To do this an effective Data Exchange Methodology that is both understandable and suitable has been put in place.**



## Data Supplied

- **Despite the challenges large complex sets of data tables for the analysts in the Operational Work Packages have been prepared.**
- **At least 940 requested tables, in 83 worksheets, as part of 23 data requests have been handled.**
- **Approximately 3,700 tables of data have been prepared and returned to analysts.**
- **The volume of data exchange is as large, if not more, than originally planned.**
- **Data has also been supplied to the eIMPACT project.**





# Recommendations



## Recommendations for Future Activities

(and support for those currently underway from a TRACE perspective)

- **Continuing harmonisation of variables and definitions, for accident data collection.**
  - This would allow both easier data provision and analysis.
  - Guides countries developing accident data sources.
- **Development of a Pan-European accident classification coding system.**
  - Accident classification is an important step in understanding both accident causation and evaluating the potential of new safety systems.
- **Harmonisation of accident causation coding systems.**
  - Any proposed systems should be tested against the broad and in-depth questions posed in the TRACE tasks. The Work Package 5 Methodology has been tested during TRACE.



## Recommendations for Future Activities

- **Development of European field operational trials.**
  - An understanding of human interaction with new vehicle technologies (both for safety and comfort) will allow a fuller evaluation of the potential effect of such devices on safety.
- **Development of European risk exposure data.**
  - Greater availability and depth of risk exposure data would allow a new perspective on the analysis of accident causation.
  - Data from naturalistic driving studies will add to this knowledge.
- **Further development of the CARE database and interface.**
  - More countries would allow a better European context, and further development of the interface would give more flexibility when examining specific accident scenarios (a feature of TRACE analysis).



## Further Information....

Further details regarding Data Supply are available in TRACE Deliverables 8.1 and 8.2.

The VSRC would like to acknowledge the considerable help and hard work provided by all the Work Package 8 participants during the data preparation.

### Work Package Leaders:

**VSRC**

**Alan Kirk**

[a.r.kirk@lboro.ac.uk](mailto:a.r.kirk@lboro.ac.uk)

**Julian Hill**

[j.r.hill@lboro.ac.uk](mailto:j.r.hill@lboro.ac.uk)

### Task Leaders:

**CIDAUT**

**Aquilino Molinero Martinez**

[aqumol@cidaut.es](mailto:aqumol@cidaut.es)

**José Miguel Perandonés Peidró**

[jospei@cidaut.es](mailto:jospei@cidaut.es)

**TNO**

**Peter Ruijs**

[peter.ruijs@tno.nl](mailto:peter.ruijs@tno.nl)

**ELASIS**

**Alfonso Grimaldi**

[alfonso.grimaldi@elasis.it](mailto:alfonso.grimaldi@elasis.it)