OECD - IRTAD
International Seminar on Road Traffic and Accident Data Needs for the New Century
Vienna, 25-26 September 2000

# TRAFFIC AND ACCIDENT ANALYSIS PRIORITIES AND DATA AVAILABILITY IN EUROPEAN COUNTRIES

Dr. George Yannis
Department of Transportation Planning and Engineering
National Technical University of Athens.

## Abstract

Using the results of two questionnaire-based surveys, this research aims to show the traffic and accident analysis priorities prevailing today in the European countries in conjunction with the availability of data on accident and exposure at European level. The analysis of the surveys' results through detailed comparative Tables showed that, today, model-based road accident analysis at European level has a great potential. Priorities and necessities for model-based road accident analysis at European level are rather well defined and sufficiently converging among experts from the various countries. Moreover, a lot of useful accident data variables are available nowadays for all or almost all countries, providing sufficient information in order to fulfil these priorities and necessities for modelling in road accident analysis. However, further work is required, especially in the field of availability and compatibility of accident, exposure and additional information variables and the respective values contained in these variables.

Key-words: road accident data, road traffic data, road accident analysis, exposure data

## 1. Introduction

In the framework of COST 329 research action[1] (models for traffic and safety developments and interventions), **two questionnaire-based surveys** have been conducted. These surveys focused on the accident analysis priorities and on the availability of accident and exposure data at national level to be used in model-based road accident analysis. Experts from European countries have responded to two questionnaires specially designed for this survey.

In the **first survey**, experts from nine European countries filled in a questionnaire by giving marks to the priority and the necessity of a number of issues concerning model-based road accident analysis. In the **second survey**, experts from fifteen countries filled in an extensive questionnaire on the availability and usefulness of a number of variables and their values concerning accidents, exposure and additional information to be used in model-based road accident analysis. It is noted that the results of the two surveys reflect the opinion of the experts, consisting of a qualitative evaluation of the current situation on road accident and traffic data availability and usefulness as well as on the accident analysis priorities, in the framework of COST 329 research action. Especially, as far as the data availability at national level is concerned, the existing situation could differ to the one proposed by the experts.

The analysis of the results from the two surveys had a **two-fold objective**. On one hand it was aiming to show the traffic and accident analysis priorities prevailing today in the European countries, and on the other, it was aiming to describe the availability of data on accident and exposure at European level[2].

## 2. The survey on the analysis priorities

### 2.1. The survey and the elaboration of the answers

In the survey on traffic and accident analysis priorities, experts from European countries filled in a questionnaire by giving marks to the priority and the necessity of a number of issues to be treated within model-based road accident analysis. These issues concerned the aim of accident analysis, the criterion values, the type of variables, data aggregation and disaggregation, the time basis, the model types, the time horizon for prognosis and the basic variables. Within each of these eight issues, all listed topics were given marks.

Experts from the following **nine countries** filled in the questionnaire: Germany, Denmark, France, Italy, Norway, The Netherlands, Finland, Sweden, and the United Kingdom.

For the analysis of the questionnaire answers **the mean and the frequency** were calculated. The mean is equal to the sum of the scores, divided by nine (9), which is the number of the countries filled in the questionnaire. The frequency is the number of times a certain ranking was observed for each answer. The questionnaire of this survey was not always fully completed by the participating countries. In the phase of preparation of the homogeneous comparative Table of answers, all blank answers (e.g. no priority attributed) were assumed to be given the worst, in each case, score, allowing thus for a comparative analysis.

2.2. Priorities for accident and traffic analysis

At the following summary Table 1. all the answers concerning the **priorities for traffic accident analysis**, filled in by the experts, are presented. The following analysis of the results contained in this summary Table draws a comprehensive picture of the prevailing characteristics of traffic accident analysis priorities.

Opinions on the **aim** of model-based accident analysis vary between countries. More precisely, four countries (Germany, Denmark, France, United Kingdom) out of nine consider as first priority the monitoring of traffic safety, three countries (Finland, Netherlands, Norway) consider as first priority the prognosis of traffic safety, Sweden considers as primary aim the international comparisons and Italy's first choice is the reference to interventions. On the basis of mean ratings, monitoring of traffic safety seems to be the leading choice as the aim of road accident analysis.

Six countries (Germany, France, Finland, Netherlands, Norway, Sweden) out of nine consider that the number of fatalities is the **main criterion** for model-based road accident, whereas the number of hospitalised persons is the second criterion.

Concerning the **type of variables** to be used in road accident analysis, the priority is given to the number of casualties, considered as first priority by four countries (France, Netherlands, Sweden, United Kingdom). The number of accidents followed, as it was selected by three Nordic countries (Denmark, Finland and Norway). Risk figures were considered as first priority only by two countries (Germany, Italy) and as third priority by almost all other countries.
As far as **disaggregation of values** to be used in accident analysis is concerned, disaggregation by country is considered as first priority by six out of eight countries (UK did not fill in this section). Four other types of disaggregation follow, namely the traffic mode (vehicle type), the road type, the age/sex and the conflict type (e.g. car-pedestrian) with similar priority ranking results.

Five countries (Germany, France, Netherlands, Norway, Sweden) out of nine consider that the most appropriate **time basis** for traffic accident analysis is by year, whereas the four other countries (Denmark, Finland, Italy, United Kingdom) consider that the time basis should be by month instead. It is interesting to note that all countries, except Germany, rate the time basis of day as having the lowest priority.

Priorities in **model type** to be used in road accident analysis are shared between causal model type (five countries) and descriptive/prognostic model type (four countries).

As far as the **time horizon for prognosis** is concerned, three countries (Finland, Sweden, United Kingdom) consider that it should be from four to ten years, while four countries (Germany, Denmark, France, Italy) consider that it should be from one to three years. Based on the mean ranking, the first case (four to ten years) emerges as first priority for the time horizon for prognosis.

**Table 1.** Priorities of traffic accident analysis

| | | COUNTRIES | | | | | | | | | | FREQUENCY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | D | DK | F | FI | I | NL | N | S | UK | mean | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| a. | Aim of the study | | | | | | | | | | | | | | | | | | |
| 1. | monitoring traffic safety | 1 | 1 | 1 | 4 | 3 | 2 | 6 | 2 | 1 | 2,3 | 4 | 2 | 1 | 1 | 0 | 1 | 0 | - |
| 2. | prognosis of traffic safety | 3 | 6 | 2 | 1 | 6 | 1 | 1 | 4 | 4 | 3,1 | 3 | 1 | 1 | 2 | 0 | 2 | 0 | - |
| 3. | international comparisons | 2 | 6 | 3 | 3 | 5 | 3 | 4 | 1 | 3 | 3,3 | 1 | 1 | 4 | 1 | 1 | 1 | 0 | - |
| 4. | reference for interventions | 4 | 3 | 6 | 6 | 1 | 6 | 6 | 6 | 2 | 4,4 | 1 | 1 | 1 | 1 | 0 | 5 | 0 | - |
| 5. | reference for safety targets | 5 | 2 | 6 | 5 | 2 | 5 | 2 | 3 | 5 | 3,9 | 0 | 3 | 1 | 0 | 4 | 1 | 0 | - |
| 6. | reference for traffic/safety scenarios | 6 | 4 | 6 | 2 | 4 | 4 | 3 | 5 | 6 | 4,4 | 0 | 1 | 1 | 3 | 1 | 3 | 0 | - |
| 7. | other (...) | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7,0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | - |
| b. | Criterion values | | | | | | | | | | | | | | | | | | |
| 1. | fatalities | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 1,4 | 6 | 2 | 1 | - | - | - | - | - |
| 2. | hospitalized | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2,6 | 0 | 4 | 5 | - | - | - | - | - |
| 3. | other (...) | 3 | 1 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2,4 | 2 | 1 | 6 | - | - | - | - | - |
| c. | Type of variables | | | | | | | | | | | | | | | | | | |
| 1. | number of accidents | 3 | 1 | 2 | 1 | 2 | 3 | 1 | 2 | 2 | 1,9 | 3 | 4 | 2 | 0 | - | - | - | - |
| 2. | number of casualties | 2 | 2 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | 1,7 | 4 | 4 | 1 | 0 | - | - | - | - |
| 3. | risk figures | 1 | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2,4 | 2 | 1 | 6 | 0 | - | - | - | - |
| 4. | other (...) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4,0 | 0 | 0 | 0 | 9 | - | - | - | - |
| d. | (Dis)aggregation | | | | | | | | | | | | | | | | | | |
| 1. | national total | 1 | 1 | 1 | 5 | 8 | 1 | 1 | 1 | 8 | 3,0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| 2. | traffic mode (veh. type) | 4 | 2 | 3 | 3 | 1 | 2 | 8 | 8 | 8 | 4,3 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 3 |
| 3. | road type | 2 | 5 | 2 | 7 | 2 | 4 | 8 | 3 | 8 | 4,6 | 0 | 3 | 1 | 1 | 1 | 0 | 1 | 2 |
| 4. | age/sex | 3 | 3 | 8 | 4 | 4 | 3 | 4 | 4 | 8 | 4,6 | 0 | 0 | 3 | 4 | 0 | 0 | 0 | 2 |
| 5. | region | 7 | 6 | 8 | 1 | 7 | 5 | 2 | 8 | 8 | 5,8 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 3 |
| 6. | conflict type (e.g. car-pedestrian) | 8 | 4 | 8 | 2 | 3 | 6 | 3 | 2 | 8 | 4,9 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 3 |
| 7. | weather | 6 | 8 | 8 | 6 | 6 | 8 | 8 | 5 | 8 | 7,0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 5 |
| 8. | time of day | 5 | 8 | 8 | 8 | 5 | 8 | 8 | 8 | 8 | 7,3 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 7 |
| e. | Time basis | | | | | | | | | | | | | | | | | | |
| 1. | year | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1,6 | 5 | 3 | 1 | 0 | - | - | - | - |
| 2. | season | 4 | 2 | 4 | 4 | 3 | 2 | 4 | 4 | 3 | 3,3 | 0 | 2 | 2 | 5 | - | - | - | - |
| 3. | month | 2 | 1 | 2 | 1 | 1 | 3 | 2 | 2 | 1 | 1,7 | 4 | 4 | 1 | 0 | - | - | - | - |
| 4. | day | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3,9 | 0 | 0 | 1 | 8 | - | - | - | - |
| f. | Model type | | | | | | | | | | | | | | | | | | |
| 1. | descriptive/prognostic | 1 | 2 | 2 | 2 | 3 | 1 | 2 | 1 | 1 | 1,7 | 4 | 4 | 1 | - | - | - | - | - |
| 2. | causal | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1,4 | 5 | 4 | 0 | - | - | - | - | - |
| 3. | other (...) | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2,9 | 0 | 1 | 8 | - | - | - | - | - |
| g. | Time horizon for prognosis | | | | | | | | | | | | | | | | | | |
| 1. | one to three years/36 months | 1 | 1 | 1 | 2 | 1 | 3 | 3 | 2 | 3 | 1,9 | 4 | 2 | 3 | - | - | - | - | - |
| 2. | four to ten years | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1,8 | 3 | 5 | 1 | - | - | - | - | - |
| 3. | ten to twenty years | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 3 | 2 | 2,4 | 2 | 1 | 6 | - | - | - | - | - |
| h. | Basic variables | | | | | | | | | | | | | | | | | | |
| 1. | exposure (vkm's) | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 | 1,8 | 7 | 1 | 0 | 0 | 0 | 0 | 1 | - |
| 2. | risk | 1 | 7 | 7 | 7 | 7 | 2 | 7 | 7 | 7 | 5,8 | 1 | 1 | 0 | 0 | 0 | 0 | 7 | - |
| 3. | demographic factors | 3 | 2 | 2 | 4 | 7 | 3 | 2 | 2 | 7 | 3,6 | 0 | 4 | 2 | 1 | 0 | 0 | 2 | - |
| 4. | weather | 5 | 4 | 5 | 2 | 3 | 6 | 7 | 4 | 7 | 4,8 | 0 | 1 | 1 | 2 | 2 | 1 | 2 | - |
| 5. | safety measures | 4 | 3 | 3 | 5 | 2 | 5 | 4 | 7 | 7 | 4,4 | 0 | 1 | 2 | 2 | 2 | 0 | 2 | - |
| 6. | economic factors | 6 | 5 | 4 | 6 | 7 | 4 | 3 | 3 | 7 | 5,0 | 0 | 0 | 2 | 2 | 1 | 2 | 2 | - |
| 7. | other (...) | 7 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 6,7 | 0 | 0 | 0 | 1 | 0 | 0 | 8 | - |

Finally, concerning the **basic variables** to be combined with accident data in accident analysis, it is noted that all the countries except Germany (and UK who did not fill in this section) consider exposure variables (veh-kms) as those with the highest priority. Second most important variables are those concerning demographic factors. Variables concerning safety measures, weather and economic factors follow in decreasing order of priority. It is worth mentioning that risk variables were attributed the lowest priority by all countries except Germany (first priority) and the Netherlands (second priority).

## 2.3. Necessary analysis factors

At the following summary Table 2. all the answers concerning the **necessary factors** for traffic accident analysis, filled in by the experts, are presented. The following analysis of the results contained in this summary Table draws a comprehensive picture of the characteristics of traffic accident analysis necessities.

The necessity of the possible **aims of road accident analysis** is very much similar to the priorities attributed by the various experts. On the basis of the mean calculated, monitoring of traffic safety is considered as the most necessary accident analysis aim, followed by prognosis of traffic safety, international comparisons, reference for interventions, reference for safety targets and reference for traffic/safety scenarios.

Additionally, necessities attributed for the **main criterion** and the **type of variables** to be used for accident analysis are identical to the priorities attributed by the experts. More precisely, fatalities are the most necessary main criterion for accident analysis and the numbers of casualties and accidents are considered as the most necessary types of variables to be used in accident analysis.

As far as the necessary **disaggregations of values** for accident analysis are concerned, they follow, in general, the same order as the one attributed by the experts for the priorities of disaggregation. Disaggregation by country is also considered as the first necessity, followed by traffic mode (vehicle type), road type, age/sex and conflict type (e.g. car-pedestrian). It is worth mentioning that disaggregation of values for weather and time of the day were considered by all countries as not necessary at all.

The ranking of **time basis** necessities for traffic accident analysis is similar to that of the priorities attributed by the experts. More precisely, year and month are the two leading necessary time bases for traffic accident analysis, whereas day as time basis for analysis has been attributed with the lowest necessity by all countries.

Additionally, necessities attributed for the **model type** and the **time horizon for prognosis** to be used for road accident analysis are identical to the priorities attributed by the experts. More precisely, causal model type (five countries) and descriptive/prognostic model type (four countries) are considered as the most necessary model types, whereas the most necessary time horizons for prognosis seems to be four to ten years (three countries) and one to three years (four countries).

**Table 2.** Necessary factors for traffic accident analysis

| | | COUNTRIES | | | | | | | | | | FREQUENCY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | D | DK | F | FI | I | NL | N | S | UK | mean | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| a. | Aim of the study | | | | | | | | | | | | | | | | | | |
| 1. | monitoring traffic safety | 1 | 1 | 1 | 4 | 3 | 2 | 6 | 6 | 1 | 2,8 | 4 | 1 | 1 | 1 | 0 | 2 | 0 | - |
| 2. | prognosis of traffic safety | 3 | 6 | 2 | 1 | 6 | 1 | 1 | 6 | 4 | 3,3 | 3 | 1 | 1 | 1 | 0 | 3 | 0 | - |
| 3. | international comparisons | 2 | 6 | 3 | 3 | 6 | 3 | 4 | 1 | 3 | 3,4 | 1 | 1 | 4 | 1 | 0 | 2 | 0 | - |
| 4. | reference for interventions | 4 | 3 | 6 | 6 | 1 | 6 | 6 | 6 | 2 | 4,4 | 1 | 1 | 1 | 1 | 0 | 5 | 0 | - |
| 5. | reference for safety targets | 6 | 2 | 6 | 6 | 2 | 6 | 2 | 6 | 5 | 4,6 | 0 | 3 | 0 | 0 | 1 | 5 | 0 | - |
| 6. | reference for traffic/safety scenarios | 6 | 4 | 6 | 2 | 6 | 4 | 3 | 6 | 6 | 4,8 | 0 | 1 | 1 | 2 | 0 | 5 | 0 | - |
| 7. | other (...) | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7,0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | - |
| b. | Criterion values | | | | | | | | | | | | | | | | | | |
| 1. | fatalities | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 3 | 1,4 | 6 | 2 | 1 | - | - | - | - | - |
| 2. | hospitalized | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2,6 | 0 | 4 | 5 | - | - | - | - | - |
| 3. | other (...) | 3 | 1 | 3 | 3 | 1 | 3 | 2 | 3 | 3 | 2,4 | 2 | 1 | 6 | - | - | - | - | - |
| c. | Type of variables | | | | | | | | | | | | | | | | | | |
| 1. | number of accidents | 3 | 1 | 2 | 1 | 2 | 3 | 1 | 2 | 2 | 1,9 | 3 | 4 | 2 | 0 | - | - | - | - |
| 2. | number of casualties | 2 | 2 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | 1,7 | 4 | 4 | 1 | 0 | - | - | - | - |
| 3. | risk figures | 1 | 3 | 3 | 3 | 1 | 2 | 3 | 3 | 3 | 2,4 | 2 | 1 | 6 | 0 | - | - | - | - |
| 4. | other (...) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4,0 | 0 | 0 | 0 | 9 | - | - | - | - |
| d. | (Dis)aggregation | | | | | | | | | | | | | | | | | | |
| 1. | national total | 1 | 1 | 1 | 8 | 8 | 1 | 1 | 1 | 8 | 3,3 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 2. | traffic mode (veh. type) | 4 | 2 | 3 | 3 | 1 | 2 | 8 | 8 | 8 | 4,3 | 1 | 2 | 2 | 1 | 0 | 0 | 0 | 3 |
| 3. | road type | 2 | 5 | 2 | 8 | 2 | 4 | 8 | 8 | 8 | 5,2 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 4 |
| 4. | age/sex | 3 | 3 | 8 | 8 | 4 | 3 | 4 | 8 | 8 | 5,4 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 4 |
| 5. | region | 8 | 8 | 8 | 1 | 8 | 5 | 2 | 8 | 8 | 6,2 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 6 |
| 6. | conflict type (e.g. car-pedestrian) | 8 | 4 | 8 | 2 | 3 | 8 | 3 | 2 | 8 | 5,1 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 4 |
| 7. | weather | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 8. | time of day | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8,0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| e. | Time basis | | | | | | | | | | | | | | | | | | |
| 1. | year | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 1,6 | 5 | 3 | 1 | 0 | - | - | - | - |
| 2. | season | 4 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3,7 | 0 | 1 | 1 | 7 | - | - | - | - |
| 3. | month | 4 | 1 | 2 | 1 | 1 | 4 | 2 | 4 | 1 | 2,2 | 4 | 2 | 0 | 3 | - | - | - | - |
| 4. | day | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4,0 | 0 | 0 | 0 | 9 | - | - | - | - |
| f. | Model type | | | | | | | | | | | | | | | | | | |
| 1. | descriptive/prognostic | 1 | 2 | 2 | 2 | 3 | 1 | 2 | 1 | 1 | 1,7 | 4 | 4 | 1 | - | - | - | - | - |
| 2. | causal | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1,4 | 5 | 4 | 0 | - | - | - | - | - |
| 3. | other (...) | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 2,9 | 0 | 1 | 8 | - | - | - | - | - |
| g. | Time horizon for prognosis | | | | | | | | | | | | | | | | | | |
| 1. | one to three years/36 months | 1 | 1 | 1 | 2 | 1 | 3 | 3 | 2 | 3 | 1,9 | 4 | 2 | 3 | - | - | - | - | - |
| 2. | four to ten years | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 1 | 1 | 1,8 | 3 | 5 | 1 | - | - | - | - | - |
| 3. | ten to twenty years | 3 | 3 | 3 | 3 | 3 | 1 | 1 | 3 | 2 | 2,4 | 2 | 1 | 6 | - | - | - | - | - |
| h. | Basic variables | | | | | | | | | | | | | | | | | | |
| 1. | exposure (vkm's) | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 | 1,8 | 7 | 1 | 0 | 0 | 0 | 0 | 1 | - |
| 2. | risk | 1 | 7 | 7 | 7 | 7 | 2 | 7 | 7 | 7 | 5,8 | 1 | 1 | 0 | 0 | 0 | 0 | 7 | - |
| 3. | demographic factors | 3 | 2 | 2 | 4 | 7 | 3 | 2 | 7 | 7 | 4,1 | 0 | 3 | 2 | 1 | 0 | 0 | 3 | - |
| 4. | weather | 7 | 7 | 5 | 2 | 7 | 7 | 7 | 7 | 7 | 6,2 | 0 | 1 | 0 | 0 | 1 | 0 | 7 | - |
| 5. | safety measures | 7 | 3 | 3 | 5 | 3 | 7 | 4 | 7 | 7 | 5,1 | 0 | 0 | 3 | 1 | 1 | 0 | 4 | - |
| 6. | economic factors | 7 | 7 | 4 | 6 | 7 | 7 | 3 | 7 | 7 | 6,1 | 0 | 0 | 1 | 1 | 0 | 1 | 6 | - |
| 7. | other (...) | 7 | 7 | 7 | 3 | 4 | 7 | 7 | 7 | 7 | 6,2 | 0 | 0 | 1 | 1 | 0 | 0 | 7 | - |

Exposure (veh-kms) is by far the most necessary **basic variable** to be combined with accident data in accident analysis, as it has been ranked at the top by all countries except Germany (and UK who did not fill in this section). The demographic factors are considered as the second most necessary basic variable and the risk variables as the third most necessary ones. It is worth mentioning that weather variables, which were attributed relatively high priority, were ranked as being of rather low necessity.

## 3. The survey on data availability and usefulness

### 3.1. The survey and the elaboration of the answers

In the second survey, experts from European countries filled in an extensive questionnaire on the availability and usefulness of a number of variables and values concerning accident, exposure and additional information to be used in model-based road accident analysis. More precisely, eight Tables were filled in with evaluation on each set of data for their availability [for each level of disaggregation and the available time series (starting year)], their usefulness for accident analysis (acceptable, questionable, not useful) as well as related remarks. The eight Tables filled in concerned the following information: accident data (1. accident variables, 2. disaggregation of accidents and victims, 3. disaggregation for victims, 4. crossed disaggregations for accidents and victims), exposure data (5. exposure, 6. weather condition) and additional information (7. economic factors, 8. safety factors).

Experts from the following **fifteen countries** filled in the questionnaire: Belgium, Czech Republic, Germany, Denmark, Spain, France, Greece, Italy, Norway, The Netherlands, Portugal, Poland, Finland, Sweden, and the United Kingdom.

All the answers to the questionnaire have been coded and introduced into **comparative Tables**. To each one of the comparative Tables, summary statistics were added (frequency of answers, decade bands, etc.), facilitating thus the comparative analysis. Furthermore, all related remarks (as provided by the experts) have been put next to each comparative Table providing thus a comprehensive picture of the availability and usefulness for accident analysis of the specific data. On the basis of these Tables, **summary comparative Tables** have been produced, which are presented and commented below. Each one of these summary comparative Tables contains three sections: a) data availability b) first year of available data and c) usefulness of data for analysis.

### 3.2. Availability and usefulness of accident data

#### *3.2.1. Accident variables*

Data concerning accident variables are available in most countries when they refer to fatalities, injuries and respective accidents, whereas they are available in less countries when they refer to hospitalised persons, respective accidents and material damage accidents.

Data concerning accident variables are, in general, found on a daily basis and less frequently on a monthly basis. The average starting year of available data is 1970, with the time series of the United Kingdom starting on 1949 and those of Poland starting on 1990. The usefulness

for analysis of data concerning the accident variables is acceptable in most of the cases (120 out of 134).

*3.2.2. Disaggregation for accidents and victims*

Data concerning the disaggregation for accidents and victims are available in at least ten countries, except pavement type data, which are available in only 8 countries.

Data concerning the disaggregation for accidents and victims are, in general, found on a daily basis (in seven or eight countries) and less frequently on a monthly or yearly basis. The average starting year of available data is 1971, with the time series of the United Kingdom starting on 1949 and that of Poland starting on 1990. The usefulness for analysis of data concerning the disaggregation for accidents and victims is acceptable in most of the cases (109 out of 141); Germany and France often considered the usefulness of these data as questionable.

*3.2.3. Disaggregation for victims*

Data concerning the disaggregation for victims are available in thirteen countries, except data for victim age in years (available in only 11 countries). Data concerning the disaggregation for victims are, in general, found on a monthly basis (in seven or eight countries) and less frequently on a daily (three countries) or yearly basis (one to four countries).

The average starting year of available data is 1970, with the time series of the United Kingdom starting on 1949 and that of Poland starting on 1990. The usefulness for model-based analysis of data concerning the disaggregation for victims is acceptable in all countries except Portugal, which considered the usefulness of these data as questionable.

*3.2.4. Crossed disaggregation for accidents and victims*

Data concerning the crossed disaggregation for accidents and victims are available in nine to twelve countries, depending on the cross disaggregation. Data concerning the crossed disaggregation for accidents and victims are, in general, found on a monthly basis (in five or seven countries) and less frequently on a daily (three countries) or yearly basis (one to two countries).

The average starting year of available data is 1970, with the time series of the United Kingdom starting on 1949 and that of Poland starting on 1990. The usefulness for model-based analysis of data concerning the crossed disaggregation for accidents and victims is acceptable in five to seven countries and questionable in two to three countries.

3.3. Availability and usefulness of exposure and additional information data

*3.3.1. Exposure*

Analysis of the exposure data showed a strong variation in the availability of data. Data concerning vehicle fleet, fuel sales, road length and population are available in most countries (eleven to fifteen), whereas data concerning mileage (vehicle and person kilometres) are

available in less countries: in ten to eleven countries for vehicle-kilometres and in five countries for person-kilometres. These data are most often found on a yearly basis.

Even though the usefulness for analysis of data concerning exposure depends on the type of data, it can be argued that, in general, few countries in each case consider data usefulness as questionable or not useful.

*3.3.2. Weather conditions*

Data concerning **weather conditions** present very similar characteristics of availability and usefulness. These weather condition data concern per month and by region: a) average temperature in degrees Celsius, b) precipitation in mm, c) sunshine hours and d) snow/ice days.

More precisely, these data are available in eleven countries (in twelve countries for rain data) and are found on a monthly basis in six countries (seven countries for rain data), on a daily basis in Portugal and Sweden, on yearly basis in the Czech Republic and in Italy and on a fragmentary basis in Denmark. It is noted that Germany, Spain and the UK have no available data on weather conditions.

Weather condition data are available since the fifties in five countries (six countries for rain data) and the average starting year of weather conditions' available data is 1957. Among the countries with available data on weather conditions, nine countries consider these data as acceptable for accident analysis (ten countries for rain data), whereas the Czech Republic considers the usefulness of these data as questionable.

*3.3.3. Economic factors*

The availability of data concerning economic factors varies considerably depending on the economic factor. Basic factors, such as fuel price index, consumer price index, disposable household income, GNP/GDP and percentage of unemployment, are available in almost all countries (fourteen to fifteen), whereas less common factors, such as alcohol consumption per capita and budget for road construction, maintenance and traffic safety are available in three to eleven countries. All these factors are, in general, found on a yearly basis, with the exception of the fuel price index and the consumer price index which are available on a monthly basis.

The average starting year of available data is 1968. The usefulness for analysis of data concerning economic factors is, in general, acceptable by all countries with the exception of the Czech Republic and Germany considering the usefulness of these data as questionable.

*3.3.4. Safety factors*

Data concerning safety factors are available in few countries (four to eight), depending on the factor. These data are only found on a yearly basis. The average starting year of available data is 1979. The usefulness for analysis of data concerning safety belt use is more acceptable than the other safety factors, whose usefulness is considered as questionable.

## 4. Conclusions

The detailed analysis of the results of the two surveys, presented in the previous Sections, made possible the extraction of a number of conclusions on the current trends (priorities for road accident analysis) and potential (data availability and usefulness) for model-based road accident analysis at European level. These conclusions are presented in the following two sections.

### 4.1. Accident analysis priorities

The situation in traffic accident analysis priorities and necessities (presented in Section 2), showed clearly that there is a **strong link between priorities and necessities**. In general, it can be argued that when speaking about means of analysis (criterion values, type of variables, model types, time horizon for prognosis), priorities are identical to the necessities, as the ones define the others. However, when speaking about analysis framework and objectives (aims, disaggregation, other basic variables), priorities and necessities can be different, as priorities concern the will for analysis and necessities concern the analysis potential.

As far as the contributions from the nine experts are concerned, it has been observed that the **opinion of the various experts showed rather converging trends**. More precisely, in three topics (criterion values, disaggregation, basic variables) one single issue was ranked with the highest priority and necessity by almost all countries, in another three topics (type of variables, time basis, model type) two issues were ranked with the highest priority and necessity by almost all countries and in only two topics (aim, time horizon for prognosis) three issues were ranked with the highest priority and necessity by almost all countries.

More precisely, according to the contributions of the experts, model-based road accident analysis can have multiple aims, such as the monitoring and prognosis of traffic safety and the international comparisons. The basic criterion of these analyses are the fatalities, and the type of variables to be analysed should concern the number of casualties and the number of accidents. Priority should be given to disaggregation by country, and to two model types: the descriptive/prognostic ones and the causal ones. The time basis for such model-based analyses can be either yearly or monthly, with a time horizon for prognosis of either one to three years or four to ten years. Finally, the basic additional variables to be combined with accident data are those concerning exposure (vehicle-kilometres).

Finally, it is worth mentioning that in quite a few cases, the experts considered some issues **without priority and/or necessity at all**, for road accident analysis.

### 4.2. Data availability and usefulness

#### *4.2.1. Accident variables*

The following Table 3. summarises the results of the survey on accident data availability and usefulness as presented in detail in Section 3. **Summary statistics** of the total number of countries with available data, together with experts' opinions on the usefulness of these data, are presented in this Table, allowing thus for the drawing a comprehensive picture of accident data availability and usefulness today in Europe.

**Data concerning accident variables are in general available** in the European countries, as twelve to fifteen countries (depending on the type of variable) do have available time series[3]. The only exceptions to this rule are data on material-damage-only accidents, which are available only in seven countries, as well as data on hospitalised accidents and related victims, which are available in nine countries. Furthermore, the values of these accident variables are in general sufficiently disaggregated for model-based road accident analysis. However, it is worth mentioning that except for basic data (number of accidents and victims), complete data availability (data available in all fifteen countries) is not possible[4].

**Data availability** concerning accident variables and the related basic variables (age, sex, accident type, road type, time, weather, lighting, etc.) is in general daily and, less frequently, monthly. Obviously, when daily data are available, monthly and yearly figures can be easily produced by aggregating daily data. However, disaggregated data on victims are found rather on a monthly basis than on a daily basis.

**The average starting year** of available accident data is situated in the -early seventies (accident variables 1970, disaggregation for accidents and victims 1969 and 1970 respectively). In general, the United Kingdom presents the longest time series (starting in 1949), whereas Poland the shortest (starting in 1990).

**Usefulness of accident variables** for accident analysis is in general, acceptable - as, in most of the cases, the wide majority of the countries consider data usefulness as acceptable. It is worth mentioning that the usefulness of data on fatal accidents and respective fatalities are considered as acceptable by all fifteen countries. In some cases (injured victims, material-damage-only accidents, disaggregation for accidents and victims), one or two countries consider the usefulness of the data as questionable, whereas data on road type and crossed disaggregation for accidents and victims are considered to have questionable usefulness by three countries. Finally, one country considers as not useful data on material-damage-only accidents, weather conditions and total disaggregation of age.

**Table 3.** Summary statistics on the availability and usefulness of accident data

| Variable | Availability (Nr. of countries) | | | | | First year | | | Usefulness (Nr. of countries) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | yearly | monthly | daily | not available | fragmentary | earliest | latest | average | acceptable | questionable | not useful |
| ACCIDENT VARIABLES | | | | | | | | | | | |
| 1: Accident variables | | | | | | | | | | | |
| 1.1: Fatal accidents | 0 | 5 | 10 | 0 | 0 | 1949 | 1990 | 1971 | 15 | 0 | 0 |
| 1.2: Fatalities | 0 | 5 | 10 | 0 | 0 | 1949 | 1987 | 1966 | 15 | 0 | 0 |
| 1.3: Accidents with hospitalized victims | 0 | 2 | 7 | 6 | 1 | 1953 | 1987 | 1971 | 9 | 0 | 0 |
| 1.4: Hospitalized victims | 0 | 3 | 6 | 5 | 1 | 1955 | 1993 | 1974 | 10 | 0 | 0 |
| 1.5: Injury accidents | 1 | 3 | 10 | 1 | 0 | 1949 | 1990 | 1971 | 13 | 1 | 0 |
| 1.6: Injured victims | 0 | 6 | 9 | 0 | 0 | 1949 | 1987 | 1967 | 14 | 1 | 0 |
| 1.7: Material damage accidents | 1 | 3 | 2 | 8 | 1 | 1953 | 1990 | 1971 | 4 | 2 | 1 |
| 1.8: Accidents with fi/h driver | 1 | 1 | 7 | 6 | 0 | 1951 | 1990 | 1972 | 8 | 1 | 0 |
| 1.9: Fatally injured drivers | 4 | 3 | 8 | 0 | 0 | 1949 | 1987 | 1969 | 12 | 2 | 0 |
| 1.10: Hospitalized drivers | 2 | 1 | 6 | 5 | 1 | 1957 | 1987 | 1973 | 8 | 2 | 0 |
| 1.11: Injured drivers | 4 | 3 | 8 | 0 | 0 | 1949 | 1987 | 1969 | 12 | 3 | 0 |
| | | | | 31 | | 1949 | 1993 | 1970 | 120 | 12 | 1 |
| 2: Disaggregation for accidents and victims | | | | | | | | | | | |
| 2.1: Accident type A | 3 | 2 | 8 | 2 | 0 | 1949 | 1987 | 1967 | 10 | 2 | 0 |
| 2.2: Accident type B | 2 | 1 | 8 | 4 | 0 | 1949 | 1987 | 1966 | 8 | 2 | 0 |
| 2.3: Type of road | 3 | 2 | 8 | 2 | 0 | 1949 | 1993 | 1969 | 10 | 3 | 0 |
| 2.4: Region | 4 | 1 | 8 | 2 | 0 | 1949 | 1987 | 1965 | 10 | 2 | 0 |
| 2.5: Time of day A | 2 | 3 | 8 | 2 | 0 | 1949 | 1990 | 1970 | 10 | 2 | 0 |
| 2.6: Time of day B | 0 | 3 | 7 | 5 | 0 | 1949 | 1990 | 1970 | 8 | 1 | 0 |
| 2.7: Weather | 4 | 2 | 8 | 1 | 0 | 1949 | 1990 | 1970 | 11 | 1 | 1 |
| 2.8: Light | 3 | 2 | 8 | 2 | 0 | 1949 | 1990 | 1971 | 11 | 1 | 0 |
| 2.9: Location | 3 | 2 | 7 | 3 | 0 | 1949 | 1996 | 1973 | 9 | 2 | 0 |
| 2.10: Pavement | 1 | 2 | 5 | 7 | 0 | 1951 | 1990 | 1972 | 6 | 0 | 0 |
| 2.11: Age of driver (for variables 1,3,5,7,8) | 1 | 1 | 8 | 5 | 0 | 1949 | 1990 | 1971 | 6 | 2 | 0 |
| 2.12: Sex of driver (for variables 1,3,5,7,8) | 2 | 1 | 8 | 4 | 0 | 1949 | 1990 | 1970 | 7 | 2 | 0 |
| | | | | 39 | | 1949 | 1996 | 1969 | 106 | 20 | 1 |
| 3: Disaggregation for victims | | | | | | | | | | | |
| 3.1: Travel mode (for variables 2,4,6,9,10,11) | 4 | 7 | 3 | 1 | 0 | 1949 | 1990 | 1968 | 11 | 1 | 0 |
| 3.2: Age A (for variables 2,4,6,9,10,11) | 1 | 7 | 3 | 4 | 0 | 1949 | 1990 | 1971 | 7 | 1 | 1 |
| 3.3: Age B (for variables 2,4,6,9,10,11) | 2 | 8 | 3 | 2 | 0 | 1949 | 1990 | 1970 | 10 | 1 | 0 |
| 3.4: Sex (for variables 2,4,6,9,10,11) | 2 | 8 | 3 | 2 | 0 | 1949 | 1990 | 1971 | 10 | 1 | 0 |
| | | | | 9 | | 1949 | 1990 | 1970 | 38 | 4 | 1 |
| 4: Crossed disaggregation for accidents and victims | | | | | | | | | | | |
| 4.1: Age x Sex (for variables 2,4,6,9,10,11) | 2 | 7 | 3 | 3 | 0 | 1949 | 1990 | 1970 | 7 | 3 | 0 |
| 4.2: Age x Travel mode (for variables 2,4,6,9,10,11) | 1 | 7 | 3 | 4 | 0 | 1949 | 1990 | 1968 | 6 | 3 | 0 |
| 4.3: Travel mode x Road type (for variables 2,4,6,9,10,11 | 1 | 5 | 3 | 6 | 0 | 1949 | 1990 | 1972 | 5 | 2 | 0 |
| | | | | 13 | | 1949 | 1990 | 1970 | 18 | 8 | 0 |

*4.2.2. Exposure and additional information variables*

The following Table 4. summarises the results of the survey on the availability and usefulness of data concerning exposure and additional information, to be combined with accident data in road accident analysis. The **summary statistics** (total number of countries, earliest/latest last year of available data, etc) presented in this Table provide a comprehensive picture of the current situation in Europe as far as the availability and usefulness of exposure and additional information data are concerned.

The **availability of exposure and additional information data** is variable. More precisely, data concerning vehicle fleet, fuel sales, road length and population are available in most countries (eleven to fifteen), whereas data concerning mileage (vehicle and person kilometres) are available in fewer countries. Weather data are available in eleven countries and basic economic factors (fuel price index, consumer price index, disposable household income, GNP/GDP, unemployment percentage) are available in almost all countries (fourteen to fifteen), whereas less common economic factors (alcohol consumption per capita, budget for road construction, maintenance and traffic safety) are available in three to eleven countries. Finally, data for most of the safety factors variables are not available for the majority of the countries (seven to eleven countries without available data).

The **availability** of exposure and additional information data is in general yearly, whereas weather data as well as basic economic factors data (fuel price index, consumer price index, wage index) are available on a monthly basis in most of the countries. Finally, safety data - when available - are mainly yearly.

**The first year of available** exposure and additional information data varies considerably depending on the type of data. For example, population data are available since at least the forties and sometimes even since the last century. Data on vehicle and passenger kilometres, where available, are in general dated either in the mid sixties or in the early nineties. Weather conditions data are available on average since the mid fifties, whereas data on economic factors are available since the mid sixties. Finally, data concerning safety factors are available only lately (on average since the late seventies).

**Usefulness** of exposure and additional information variables to be combined with accident data for accident analysis is in general acceptable, as in most of the cases, the wide majority of the countries consider data usefulness as acceptable. It is worth mentioning that for each case there are one to three countries considering that exposure and additional information have questionable usefulness; the Czech Republic was most often among these countries. In a few variables (road length, age distribution of vehicles, new drivers, budget for road construction and maintenance) one country considered that data are not useful for accident analysis.

**Table 4.** Summary statistics on the availability and usefulness of data on exposure and additional information

| Variable | Availability (Nr. of countries) | | | | | First year | | | Usefulness (Nr. of countries) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | yearly | monthly | daily | not available | fragmentary | earliest | latest | average | acceptable | questionable | not useful |
| EXPOSURE DATA | | | | | | | | | | | |
| 5: Exposure | | | | | | | | | | | |
| 5.1: Vehicles by type | 12 | 1 | 1 | 0 | 1 | 1950 | 1981 | 1959 | 13 | 1 | 0 |
| 5.2: Fuel by type | 7 | 5 | 0 | 1 | 2 | 1952 | 1986 | 1966 | 11 | 3 | 0 |
| 5.3: Road length by type | 12 | 0 | 0 | 2 | 1 | 1953 | 1988 | 1966 | 10 | 1 | 1 |
| 5.4: Vehicle kms/year, by vehicle type | 7 | 1 | 0 | 5 | 2 | 1956 | 1992 | 1969 | 7 | 3 | 0 |
| 5.5: Vehicle kms/year, by road type | 6 | 2 | 0 | 4 | 3 | 1960 | 1992 | 1972 | 8 | 3 | 0 |
| 5.6: Person kms/year, by travel mode | 6 | 2 | 0 | 7 | 0 | 1960 | 1992 | 1970 | 4 | 3 | 0 |
| 5.7: Person kms/year, by age and sex | 3 | 2 | 0 | 10 | 0 | 1960 | 1992 | 1975 | 3 | 2 | 0 |
| 5.8: Person kms/year, by road type and travel mode | 3 | 1 | 0 | 11 | 0 | 1960 | 1992 | 1971 | 3 | 1 | 0 |
| 5.9: Person kms/year, by age and travel mode | 3 | 2 | 0 | 10 | 0 | 1960 | 1992 | 1975 | 3 | 2 | 0 |
| 5.10: Population size/year, by age and sex | 11 | 1 | 1 | 0 | 2 | 1846 | 1981 | 1929 | 14 | 0 | 0 |
| 5.11: Age distribution of vehicles/year by type of car | 7 | 0 | 0 | 5 | 3 | 1952 | 1986 | 1967 | 7 | 1 | 1 |
| 5.12: Age distribution of drivers licences/year | 4 | 0 | 0 | 10 | 1 | 1965 | 1967 | 1966 | 4 | 1 | 0 |
| 5.13: Number of new drivers/year | 10 | 0 | 0 | 5 | 0 | 1950 | 1994 | 1971 | 7 | 0 | 1 |
| | | | | 70 | | 1846 | 1994 | 1966 | 94 | 21 | 3 |
| 6: Weather conditions | | | | | | | | | | | |
| 6.1: Temperature | 2 | 6 | 2 | 4 | 1 | 1946 | 1973 | 1959 | 9 | 1 | 0 |
| 6.2: Rain | 2 | 7 | 2 | 3 | 1 | 1946 | 1973 | 1958 | 10 | 1 | 0 |
| 6.3: Sunshine | 2 | 6 | 2 | 4 | 1 | 1917 | 1970 | 1954 | 9 | 1 | 0 |
| 6.4: Snow/ice | 2 | 6 | 2 | 4 | 1 | 1946 | 1973 | 1959 | 9 | 1 | 0 |
| | | | | 15 | | 1917 | 1973 | 1957 | 37 | 4 | 0 |
| ADDITIONAL INFORMATION | | | | | | | | | | | |
| 7: Economic factors | | | | | | | | | | | |
| 7.1: Fuel price index | 5 | 9 | 0 | 0 | 1 | 1953 | 1984 | 1967 | 11 | 2 | 0 |
| 7.2: Consumer price index | 4 | 10 | 0 | 0 | 1 | 1924 | 1984 | 1961 | 10 | 2 | 0 |
| 7.3: Wage index | 7 | 5 | 0 | 2 | 1 | 1950 | 1995 | 1970 | 8 | 3 | 0 |
| 7.4: Disposable household income | 11 | 2 | 0 | 1 | 1 | 1953 | 1985 | 1964 | 9 | 2 | 0 |
| 7.5: Gross national/domestic product per capita | 12 | 1 | 0 | 1 | 1 | 1948 | 1987 | 1965 | 9 | 2 | 0 |
| 7.6: Percentage of unemployment | 6 | 7 | 0 | 0 | 2 | 1950 | 1990 | 1973 | 9 | 3 | 0 |
| 7.7: Alcohol consumption per capita | 10 | 0 | 0 | 4 | 1 | 1948 | 1990 | 1969 | 5 | 3 | 0 |
| 7.8: Budget for road construction | 10 | 0 | 0 | 4 | 1 | 1953 | 1984 | 1966 | 6 | 3 | 1 |
| 7.9: Budget for road maintenance | 10 | 0 | 0 | 4 | 1 | 1953 | 1984 | 1967 | 7 | 2 | 1 |
| 7.10: Budget for traffic safety | 2 | 0 | 0 | 12 | 1 | 1960 | 1990 | 1974 | 2 | 0 | 0 |
| | | | | 28 | | 1924 | 1995 | 1968 | 76 | 22 | 2 |
| 8: Safety factors | | | | | | | | | | | |
| 8.1: Percentages drinking/driving | 5 | 0 | 0 | 10 | 0 | 1970 | 1983 | 1976 | 2 | 1 | 0 |
| 8.2: Use of seat belts in front | 7 | 0 | 0 | 7 | 1 | 1966 | 1983 | 1974 | 5 | 2 | 0 |
| 8.3: Use of seat belts in back | 5 | 0 | 0 | 9 | 1 | 1966 | 1991 | 1984 | 3 | 2 | 0 |
| 8.4: Average speed by road type | 5 | 0 | 0 | 10 | 0 | 1972 | 1991 | 1981 | 1 | 3 | 0 |
| 8.5: Safety helmets | 4 | 0 | 0 | 11 | 0 | 1973 | 1992 | 1979 | 1 | 2 | 0 |
| 8.6: Airbags | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | 62 | | 1966 | 1992 | 1979 | 12 | 10 | 0 |

4.3. Overall evaluation

The above analysis of road accident analysis priorities and data availability and usefulness showed that, **today, model-based road accident analysis at European level has a great potential**. Priorities and necessities for model-based road accident analysis at European level are rather well defined and sufficiently converging among experts from the various countries. Moreover, a lot of useful variables are available nowadays for all or almost all countries[5], providing sufficient information in order to fulfil these priorities and necessities for modelling in road accident analysis.

However, **further work is required, especially in the field of availability and compatibility** of accident, exposure and additional information variables and the respective values contained in these variables[6]. European-level initiatives should be intensified in order to fill in the well known gaps in data availability and compatibility[7]. This process requires a long-term commitment from all national and international parties involved in road accident analysis[8].

## References


1. COST 329, Models for traffic and safety developments and interventions - Final report of the action, European Commission, DG VII - COST Secretariat, Brussels, 1998.
2. YANNIS (G.), Elaboration and analysis of the survey results on traffic and accident analysis priorities and data availability in the COST-329 countries, European Commission, DG VII - COST Secretariat, Athens, October 1998.
3. YANNIS, G., GOLIAS, J., FRANTZESKAKIS, J., Report on national road accident analyses in the EU countries. Journal of IATTS, Vol.20, No.2, 1996.
4. IRTAD, (1992), Definitions and data availability. OECD/IRTAD special report, BASt, Bergisch Gladbach, Germany.
5 . CETE SO, CAREPLUS: A proposal for improving the comparability of road accidents within EU member states using the CARE database. CAREPLUS consortium, Bordeaux, 2000.
6. NATIONAL TECHNICAL UNIVERSITY OF ATHENS / DTPE, Current and future potential of a European road accident data base with dissaggregate data, NTUA/DTPE, Athens, 1996.
7. OECD, (1995), International road traffic and accident databases. OECD Seminar, Helsinki.
8. YANNIS, G., GOLIAS, J., KANELLAIDIS, G., (1998), A comparative analysis of the potential of international road accident data files. IAATS Research, Vol. 22 No. 2.