

NATIONAL AND INTERNATIONAL OFFICIAL PUBLICATIONS FOR ROAD ACCIDENT STATISTICS

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ABSTRACT

This research presents the official use of accident data in national and international level, identifies the possibilities for pan-European comparison and aims to open the discussion for a future European approach on road accident analysis. Official national road accident statistics publications have been analysed and compared revealing that EU-level road accident analysis is limited by the data collected and the restrictions of the collection system used in each EU state. The twelve national road accidents data collection - elaboration processes present significant differences among them and therefore convergence perspectives face important difficulties. This fact is also reflected in the statistics publications of international organisations in which reliable comparisons can be carried out only for limited accident data categories and only by the use of special techniques (correction coefficients, indices, etc.). Standardisation of road accident data to be collected in EU level, is therefore essential for reliable pan-European comparison and monitoring of safety level in the European roads.

1. INTRODUCTION

1.1. The current situation

The European Commission white paper for the future development of common transport policy¹ stated clearly the need for a European road safety policy. Basic part of this European road safety policy² is a EU-level road accident analysis through the creation of a disaggregated road accident data base: the CARE data base³. It is true that the appropriate exploitation of road accidents data could have positive effects on the reduction of the 1.200.000 road accidents and 45.000 related killed persons per year in Europe⁴. The economic and social benefits from a high level analysis and comparison of road accidents in Europe are very important for the future of safety in the European roads⁵.

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level analysis and comparison of road accidents in Europe are very important for the future of safety in the European roads⁵.

However, today it is not possible to make meaningful international comparisons and give reliable answers on how many accidents happen every year in the European road network, how many persons are killed and injured and which are the main reasons for these accidents. Nobody is able today to give a reliable answer because data collection and analysis systems are purely national matters. Maastricht treaty and recent Christofersen group⁶ engaged the European Union to the construction of trans-European networks⁷ and actually nobody is in the position to define the safety level in the existing European road network!

There exist a number of initiatives for European level road accident analysis which for the time being produced rather poor results. European Commission CARE data base with disaggregated data is a promising project⁸ but still in construction phase and no output results are available⁹. The European Conference of Ministers of Transport (ECMT) produces an annual report⁴ with the most reliable European level comparisons. But these comparisons refer to very few accident parameters. The Organisation for Economic Co-operation and Development (OECD) uses the IRTAD data base with aggregated data and interesting results but the system is not finalised yet and is not open to the public. Finally, the United Nations¹⁰, the International Road Federation (IRF)¹¹ and the EC-Eurostat¹² produce annual road accident reports with general figures which in most of the cases are not comparable.

Accident reporting accuracy is of major importance for reliable comparison of road accident data. Important effort has been devoted over the last years in many European countries in proving that injury accident present high underreporting rates and only data for fatal accidents are close to the reality. Recently, important effort regarded the identification of reporting accuracy throughout Europe mainly by initiatives in the framework of IRTAD^{13, 14}.

As far as comparison of accident concepts definitions is concerned, the only large-scale effort took place in the framework of EC-CARE data base. This comparison concerned not only the definition of killed persons¹⁵ but also an important number of accident terms¹⁶. In the framework of OECD/IRTAD data base another effort for definitions comparison was realised¹⁴. Finally, important efforts concerned also the comparison of road accident data collection forms executed by NTUA¹⁷ and by SOBEMAP¹⁶.

In the framework of the above described current situation, this work explored a new area related to the pan-European comparison of road accident data as none has compared up to date the end product of national road accident data analysis: the accident statistics reports. This research collected and compared the relevant work actually carried out and presented by the national administrations. Official analysis of road accident data carried out by the statistical service (or other specialised organisation) in each EU State reflects not only the requirements so far defined in the State but also the limits of data availability and reliability. Considerations of the reports of international organisations have been added to this analysis.

The objectives of this work included among others the presentation of the official use of accident data and the possibilities for pan-European comparison as well as the opening of the discussion for a future European approach on road accident analysis. A number of difficulties had to be overcome such as the translation to a common language (English) of all road safety terms and concepts used in the various general reports as well as the lack of related bibliography for such an international level comparison of road accident analysis approaches.

1.2 The official publications considered

The general publications (General Reports) for road accident statistics analysed and compared in the framework of this research are those officially published every year by the national administrations of twelve EU states (the three new member states were not considered as the research was carried out before their accession). It is noted that the United Kingdom issues two separate general reports, one for Great Britain (GB) and one for Northern Ireland (NI), and therefore the total number of general reports included in the following comparison is 13. It has to be mentioned that in most of the states additional road accidents statistics general reports are published by various organisations (public and private) like the reports issued by regional administrations (e.g. Länders of Germany, etc.), by research institutes, by insurance companies, etc. The official reports vary from country to country for their contents, level of detail, etc. but they all provide at least a first analysis of the road accidents in the national road network.

Information contained in these road accidents general reports is the result of processing the data collected (most often by the Police) with specially designed national forms and stored in national data bases. The information contained in these general reports provides a first idea on which data are a) available via the road accidents data collection - elaboration process, b) reliable after the errors elimination during the data elaboration and c) considered to be interesting by the issuing authority.

In parallel with the comparison of the national general reports, the general reports on road accident statistics issued by international organisations have been examined. More precisely, the reports examined are those published by Eurostat (the Statistical Office of the European Commission), by the European Conference of Ministers of Transport (ECMT), by the Organisation for Economic Co-operation and Development (OECD) and by the United Nations (UN). The general reports of the international organisations are the main existing source of international road accidents data comparison. They show on one hand what is available and on the other hand what is possible to compare at European level.

1.3. The comparison parameters

The contents, the structure and the format of the statistics Tables included in each national general report followed different rules in each report. The comparison of these Tables would have been impossible without the selection of two comparison parameters for each country's general report classifying the information in two distinct levels¹⁸: a) Safety measurement units (absolute numbers, indices, percentages), b) Accident data categories (general information, road user, road environment, vehicle, accident, cross-combinations).

Safety Measurement Units: Road safety data contained in the Tables can be given in several measurement units such as absolute numbers, indices, percentages, etc. All safety measurement units used in the seventeen general reports have been recorded and are presented in an exhaustive list in Table 2. This research identified 58 different measurement units which are used in the general reports. The safety and other related measurement units have been divided into seven groups:

- accident absolute numbers (no of fatal, serious/slight injury accidents, etc.),
- casualties absolute numbers (no of killed, seriously/slightly injured, etc.),
- other absolute numbers (no of drivers, vehicles, infringements, etc.),

- data from other data bases (population, vehicles, vehicle-kilometres, etc.),
- risk exposure indices (accidents/killed/injured per population/vehicles, etc.),
- severity indices (killed per accident/casualties, etc.),
- percentages - ratios (accident category percentages, growth, average, etc.).

Accident data categories: Road accidents data are included in various categories such as those concerning the road user type, the vehicle type, the age, the sex, the road class, etc. At the end of the general reports comparison, 305 different accident data categories have been identified as used in the general reports. Accident data are combined between them to produce the various categories shown in multi-dimension Tables. For example the Table titled "*Accidents per road user type*" is totally different from the Table titled "*accidents per road user type by age groups and by road class*" even though they both include information for road user type. The accident data categories have been divided into six groups concerning:

- general information (hour, day, month, etc.)
- road user (road user type, age, sex, seat belt use, alcohol influence, etc.)
- road environment (road type/class/surface/condition, intersection, etc.)
- vehicle (vehicle type/use/nationality, etc.)
- accident (accident type, collision type, etc.)
- cross-combinations of the above groups (road user type by road class, etc.)

THE NATIONAL OFFICIAL STATISTICS PUBLICATIONS

2.1. General overview

Table 1 presents an overview of all available general reports. Apart of the general information concerning each general report, quantitative information as well as contents information is provided. This first step of the comparison reveals already the profile of each general report. The number of Tables contained in the road accident statistics general report varies from 15 Tables (L) to 150 (D) with an average number of 53 Tables. This number of Tables included in each general report is in most of the cases, a quantitative criterion revealing the degree of detail covered by each report. Some remarks derived from the general information given in Table 1 on the thirteen road accident statistics general reports, are following.

The general report for road accidents statistics is issued in each country by a different administrative service. In seven countries (D, I, NL, B, GB, DK, GR) this report is published by the statistical office, in four countries (L, IRL, E, P) it is issued by a transport related service (Ministry, Directorate General or Section), in one case (NI) it is issued by the police and in one country (F) it is issued by an inter-ministry road safety authority. In each Member-State the responsibility of information flow from data collection to data storage, elaboration and publication, is distributed amongst competent services in a different way. As a consequence the way the road accidents data are collected, elaborated and published reflects the approach of the administrative services involved. Therefore, the official road accidents statistics publication reflects also the way road safety is treated in each Member-State.

Table 1. Comparison of General Reports - General Information

						Quantitative Information							Contents Information			
	Title	Issued by	Issued on	Year of ref.	Price (Ecu)	Total pages	Table and chart pages	No of chapters	No of table groups	No of tables	No of charts	No of figures (maps-photos)	Notes on Road Safety	Definitions	Notes on tables	Road Accident report form
GERMANY (D)	Verkehrsunfälle - 1991	Federal Statistical Office	Apr-93	1991	14,70	380	339	5	12	150	35	3	YES	YES	YES	YES
FRANCE (F)	Sécurité Routière - Bilan Annuel - Statistiques et Commentaires - Année 1991	National Interministry Observatory for Road Safety	1992	1991	10,47	115	101	7	6	80	71	5	YES	YES	YES	NO
ITALY (I)	Statistica degli incidenti stradali - anno 1991	National Statistical Institut	Sep-93	1991	Free	200	184	8	6	91	15	5	YES	YES	NO	YES
NETHERLANDS (NL)	Statistiek Van De Verkeers ongevallen op de openbare weg 1991	Central Statistical Office	1992	1991	13,00	69	56	7	8	32	0	0	YES	YES	NO	YES
BELGIUM (B)	Accidents de la Circulation sur la voie publique avec tués ou blessés - Année 1991	National Statistical Institute (Ministry of Economic Affairs)	1992	1991	6,72	68	61	4	3	27	9	0	NO	YES	NO	NO
LUXEMBOURG (L)	Le bilan des accidents de la route en 1991	Ministry of Transport	Jan-92	1991		7	3	1	1	15	0	0	YES	NO	NO	NO
GR.BRITAIN (GB)	Road Accidents Great Britain 1991 - The casualty report	Government Statistical Service (The Department of Transport)	Nov-92	1991	14,34	143	56	3	10	48	12	2	YES	YES	YES	YES
NOR.IRELAND (NI)	Road Traffic Accident Statistics - Annual Report 1991	Police	Jul-92	1991		37	32	3	1	25	8	2	YES	YES	YES	NO
IRELAND (IRL)	Road Accident Facts - Ireland 1991	Transportation Section of the Environmental Research Unit	Oct-92	1991	6,19	58	50	6	5	70	8	3	YES	YES	NO	NO
DENMARK (DK)	Faerdssesuheld 1991	Statistical Office	Nov-92	1991	17,35	133	103	6	3	56	7	1	YES	YES	YES	YES
GREECE (GR)	Στατιστική Μεταφορών και Επικοινωνιών	National Statistical Service	1990	1984	1,49	50	44	1	1	16	0	0	NO	YES	NO	NO
SPAIN (E)	Boletín Informativo - Accidentes 1991	Directorate General for Transport (Ministry of the Interior)	1992	1991		136	128	3	8	39	2	1	NO	YES	NO	NO
PORTUGAL (P)	Accidentes de Viação 1991	Directorate General for Traffic (Ministry of Internal Admnistr.)	1992	1991		177	170	3	4	43	11	1	YES	NO	NO	NO
TOTAL 13						1573	1327	67	68	692	178	23	Y10 - N3	Y11 - N2	Y5 - N8	Y5 - N8
AVERAGE 13					10,63	121	102	4	5	53	14	2				

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EUROSTAT	Transport Annual Statistics 1970 - 1989	Statistical Office of the Commission of the E.C.	Aug-91	1989		35	35	1	1	6	0	0	NO	NO	NO	-
ECMT	Statistical Report on Road Accidents 1991	European Conference of Ministers of Transport	1993	1991		83	56	3	1	17	25	0	YES	YES	YES	-
OECD	International Road Traffic and Accident Data - Brief Overview	BAST	Feb-93	1991		2	2	1	1	3	0	0	NO	NO	NO	-
UN	Statistics of Road Traffic Accidents In Europe - 1991	Economic Commission for Europe	1992	1989		90	73	10	2	8	0	0	NO	YES	NO	-
TOTAL 4						210	166	15	5	34	25	0	Y1 - N3	Y2 - N2	Y1 - N3	
AVERAGE 4						53	42	4	1	9	6	0				

The year of reference for twelve out of thirteen general reports is 1991; Greece's most recent publication refers to 1984. The issuing date varies from January 1992 (L) to September 1993 (I). Ten national general reports are issued during the year following the reference year (1992) (F, NL, B, L, GB, NI, IRL, DK, E, P), two reports are issued during the second year following the reference year (1993) (D, I), and one report is issued during the sixth year after the reference year (GR). Consequently, in most of the states the yearly results of the road accidents statistics are ready a few months after the expiration of the reference year.

The volume of road accidents statistics general report varies from 7 pages (L) to 380 pages (D) with an average volume amongst the thirteen reports of 121 pages. Seven reports have more than 100 pages (D, I, P, GB, E, DK, F). The report volume reflects also the report profile: between the Luxembourgese press note of seven pages and the 380 pages exhaustive statistic Tables list of Germany there exist several heavier or lighter publications.

2.2. Safety measurement units comparison

A number of 58 different road safety and other related measurement units have been recorded (Table 2) to be used in the thirteen national general reports for road accident statistics and the four reports issued by the international organisations. Only a few of these measurement units are used in most of the Tables of the national reports (number of accidents, killed, injured and casualties). Most of the measurement units are used in only a few Tables.

The only three safety measurement units used in all thirteen national reports are the number of accidents (with casualties), the number of killed and the number of casualties. Almost half of the 58 safety measurement units (27), are used in only one or two general reports. Furthermore, it is noted that a safety measurement unit recorded to be used in several national reports, does not necessarily mean that is the same in all reports. The definition of many absolute numbers differs from country to country even for the basic concepts such as the number of killed, slightly or seriously injured, etc.

The German reports uses the higher number of safety measurement units (36) followed by the French and the British reports (25) the Spanish (21), the Irish (20) and the Belgian (19). The Greek report uses 17 safety measurement units followed by the Italian the N.Irish and the Danish reports using 16 units, the Portuguese (14), the Dutch (12) and the Luxembourgese (9). The 58 road safety and other related measurement units have been distributed into seven basic groups:

Accident absolute numbers: The measurement units of this group are used not only in most of the general reports but also in most of the Tables of each general report. All thirteen national reports use the number of accidents with casualties as safety measurement unit. Eleven countries (except F and DK) use the number of fatal accidents and ten countries (except F, I, and DK) use the number of accidents with injured (without those killed) persons. Belgium is the only country which uses the unit number of fatal injury accidents. Germany, Belgium and Portugal use the number of serious/slight injury accidents. Five countries present in their accident statistics report the number of accidents with only material damages (D, F, IRL, DK, P). It is noted that the definition of accident with only material damages used in these five countries is not the same.

Casualties absolute numbers: The measurement units of this group are also used not only in most of the general reports but also in most of the Tables of each general report. All thirteen national reports use the numbers of killed, injured and casualties (killed + injured) as safety measurement unit. In the Belgian report the addition of numbers of slightly and seriously injured

Table 2. Safety and other related measurement units used in each general report

	D	F	I	NL	B	L	GB	NI	IRL	DK	GR	E	P	TOTAL 13	EUROSTAT	ECMT	OECD	UN	TOTAL 4
ACCIDENT ABSOLUTE NUMBERS																			
No of accidents*	13	.	.	.	.	4
No of fatal accidents	11	.	.	.	.	0
No of injury accidents	10	.	.	.	.	0
No of fatal injury accidents	1	.	.	.	.	0
No of serious injury accidents	3	.	.	.	.	0
No of slight injury accidents	3	.	.	.	.	0
No of accidents with only material damages	5	.	.	.	.	0
No of accidents with only serious material damages	1	.	.	.	.	0
No of accidents with only slight material damages	1	.	.	.	.	0
CASUALTIES ABSOLUTE NUMBERS																			
No of killed	13	.	.	.	.	4
No of injured	12	.	.	.	.	3
No of fatally injured	1	.	.	.	.	0
No of seriously injured	10	.	.	.	.	0
No of slightly injured	10	.	.	.	.	0
No of casualties	13	.	.	.	.	3
OTHER ABSOLUTE NUMBERS																			
No of vehicles involved	6	.	.	.	.	0
No of drivers involved	8	.	.	.	.	0
No of road users involved	4	.	.	.	.	0
No of alcoltests	3	.	.	.	.	0
No of infringements	3	.	.	.	.	0
DATA FROM OTHER DATA BASES																			
Population	7	.	.	.	.	3
All deaths	1	.	.	.	.	0
Vehicles	9	.	.	.	.	3
Vehicle-kilometers	5	.	.	.	.	1
Area	0	.	.	.	.	2
Road network length	6	.	.	.	.	2
Driving licences (drivers)	3	.	.	.	.	0
Fuel use	1	.	.	.	.	0
Passenger-kms	1	.	.	.	.	0
RISK EXPOSURE INDICES																			
Accidents per vehicle-kilometers	3	.	.	.	.	1
Fatal accidents per vehicle-kilometers	1	.	.	.	.	0
Killed per vehicle-kilometers	4	.	.	.	.	1
Injured per vehicle-kilometers	1	.	.	.	.	0
Accidents per population	1	.	.	.	.	1
Killed per population	7	.	.	.	.	3
Injured per population	0	.	.	.	.	1
Injured per population	2	.	.	.	.	0
Casualties (killed + injured) per population	7	.	.	.	.	0
Accidents per vehicle	6	.	.	.	.	0
Fatal accidents per vehicle	1	.	.	.	.	0
Non-fatal accidents per vehicle	1	.	.	.	.	0
Killed per vehicle	5	.	.	.	.	1
Injured per vehicle	2	.	.	.	.	0
Casualties (killed + injured) per vehicles	2	.	.	.	.	0
Accidents per km of road network	1	.	.	.	.	0
Accidents per day	1	.	.	.	.	0
Killed per deaths	4	.	.	.	.	0
Killed per passenger kilometers	1	.	.	.	.	0
1980 = 100	2	.	.	.	.	1
SEVERITY INDICES																			
Killed per accidents	5	.	.	.	.	0
Injured per accidents	3	.	.	.	.	0
Casualties per accidents	2	.	.	.	.	1
Killed per casualties	0	.	.	.	.	1
PERCENTAGES - RATIOS																			
growth percentages	6	.	.	.	.	0
accident categories percentages	8	.	.	.	.	0
average (year series)	3	.	.	.	.	0
difference (year series)	3	.	.	.	.	0
deviation from standard value (year series)	1	.	.	.	.	0
Total number of safety measurement units used	36	25	16	12	19	9	25	17	20	16	17	21	14	58	6	12	10	8	4

* The term "accident" means accident with casualties unless stated otherwise

provides the number of injured which is not used as such. Ten countries (all except I, NL, IRL) make the distinction between numbers of slightly and seriously injured. Belgium is the only country that also uses the number of fatally injured persons.

Other absolute numbers: In few Tables of some national general reports the measurement unit is not the number of accidents or casualties but concepts such as the number of drivers involved in the accident -injured or not- (used in 8 national reports), the number of road users involved in the accident -drivers, passengers and pedestrians injured or not-(used in 3 national reports), the number of vehicles involved in the accident (used in 6 national reports) the number of alcoltests carried out and the number of infringements related to the accident recorded (used in 3 national reports).

Data from other data bases: The use of risk exposure indices implies the need of some basic data from other data bases which are not related to the road accidents data base. These data concern mainly the vehicles fleet (used in 9 reports), the population (used in 7 reports), the road network length (used in 6 reports), the vehicle-kilometres (used in 5 reports) and some other data used in only one report (no of all deaths, area, no of driving licences, fuel use, no passenger kms). These data from other data bases are often presented in Tables distributed by age groups, sex, geographic region or vehicle type (according to the case) in order to allow the formation of risk exposure indices in multiple dimension Tables. For example, the risk exposure index "*killed per population*" can be distributed by age groups and sex if there is corresponding information for the number of killed by age group and sex, and the number of inhabitants by age group and sex.

Risk exposure indices: The risk exposure indices combine data from the accident / casualties absolute numbers and data from other data bases in order to form indices expressing better the level of road safety. The most commonly used risk exposure indices are the number of accidents/killed/injured/casualties combined with the population, the vehicles fleet and the vehicle-kilometres run. More precisely, the indices "*killed per population and casualties per population*" are used in 7 reports, the index "*accidents per vehicle*" is used in six reports, the index "*killed per vehicle*" is used in 5 reports and the index "*killed per vehicle-kilometre*" is used in 4 reports. It is noted that the different methodologies used for the estimation of vehicle-kilometres in each Member State make the comparison of indices containing veh-km very difficult. The Belgian, the Luxembourgese and the Portuguese reports do not contain any risk exposure indices.

It is noted that the units used in the risk exposure indices vary from one country to another. For example the index "*killed per population*" is expressed in number of killed per 1.000 inhabitants (DK), per 10.000 inhabitants (IRL, E), per 100.000 inhabitants (D, GB, GR) and per 1.000.000 inhabitants (D, F). The transformation of these indices to a common unit is obviously a simple mathematical operation.

Severity indices: In some general reports for road accident statistics, indices for the expression of the accident severity are used. Only six countries use these indices (D, F, I, DK, E, P). Five countries use the index "*killed per accidents*" and three countries use the index "*injured per accidents*". It is obvious that these severity indices can easily be produced by simple mathematical operations among the number of killed, injured and casualties, and the number of accidents.

Percentages - Ratios: Finally, in several reports the absolute numbers were followed by percentages and ratios for the better comprehension of the situation described by the absolute numbers. In eight general reports (D, F, I, NL, B, GB, IRL, DK) percentages of accident categories are used (e.g. in 1991, in France 65,7% of the accidents happened during the day and 34,3% happened during the night). In six general reports (D, F, I, B, L, E) annual growth percentages are

used (e.g. in France the annual growth percentage for the number of killed was -6,5% in 1991). Three general reports (F, NL, GB) use average numbers (e.g. in 1991, in France the average number of killed per day was 26). Three general reports (F, B, E) use differences from previous year (e.g. in 1991, in France 672 less people were killed in road accidents than those of 1990). The French report uses also the deviation from the mean annual value during a number of years in order to better express the evolution of road accidents.

2.3. Accident data categories comparison

In total 305 different Tables were identified in all general reports, divided in 67 one-dimension Tables (only one accident data category) and 238 multi-dimension Tables (cross combinations of accident data categories). The following Table 3 is an extract of the Table containing time series of accident data categories included in each general report sorted by frequency of appearance in the general reports.

It is noted that 168 of the total number of Tables are used in only one national general report and 55 more Tables are used in only two national general reports. The number of Tables with the same type which are used in many national reports is very limited (38 Tables are used in at least 5 national general reports and only 14 Tables are used in at least 10 reports).

The comparison of the accident data categories makes obvious that a number of valid comparisons of some basic common elements in EU-level is possible. On the basis of the results of the above Table, a number of one-dimension Tables of the same type which could be the first step of possible EU-level common comparison was selected and presented in the following list: Hour (12), Day of the week (13), Month (12), Region (10), Cities (8), Road user type (13), Age group (13), Sex (11), Inside - outside built-up areas (12), Road class (9), Road surface conditions (10), Lighting (9), Weather conditions (10), Vehicle type (11). In brackets is the number of general reports using this accident data category.

Table 3. Tables for accident data categories - frequency and period covered

Frequent tables for accident data categories	D	F	I	NL	B	L	GB	NI	IRL	DK	GR	E	P	TOTAL 13	EUSTAT	ECMT	OECD	UN	TOTAL 4
1 Day of the week	*	*	*	*	*	*	*	*	*	*	*	*	*	13					
2 Road user type	*	*	*	*	*	*	*	*	*	*	*	*	*	13	*	*	*	*	4
3 Age group	*	*	*	*	*	*	*	*	*	*	*	*	*	13	*	*	*	*	3
4 Accident type	*	*	*	*	*	*	*	*	*	*	*	*	*	13					1
5 Hour	*	*	*	*	*	*	*	*	*	*	*	*	*	12					
6 Month	*	*	*	*	*	*	*	*	*	*	*	*	*	12					
7 Road user type - Age group	*	*	*	*	*	*	*	*	*	*	*	*	*	12	*	*	*	*	2
8 I/O built-up areas	*	*	*	*	*	*	*	*	*	*	*	*	*	12	*	*	*	*	3
9 Sex	*	*	*	*	*	*	*	*	*	*	*	*	*	11	*	*	*	*	1
10 Vehicle type	*	*	*	*	*	*	*	*	*	*	*	*	*	11	*	*	*	*	1
11 Region	*	*	*	*	*	*	*	*	*	*	*	*	*	10					
12 Age group - Sex	*	*	*	*	*	*	*	*	*	*	*	*	*	10	*	*	*	*	1
13 Road surface conditions	*	*	*	*	*	*	*	*	*	*	*	*	*	10					
14 Weather conditions	*	*	*	*	*	*	*	*	*	*	*	*	*	10					
15 Hour - Day of the week	*	*	*	*	*	*	*	*	*	*	*	*	*	9					
16 Road user type - Age group - Sex	*	*	*	*	*	*	*	*	*	*	*	*	*	9					
17 Road class	*	*	*	*	*	*	*	*	*	*	*	*	*	9	*	*	*	*	2
18 Road layout	*	*	*	*	*	*	*	*	*	*	*	*	*	9					
19 Lighting	*	*	*	*	*	*	*	*	*	*	*	*	*	9					
20 Vehicle type - Accident type	*	*	*	*	*	*	*	*	*	*	*	*	*	9					
21 Cities	*	*	*	*	*	*	*	*	*	*	*	*	*	8					
22 Road user type - I/O built-up areas	*	*	*	*	*	*	*	*	*	*	*	*	*	8					
23 I/O built-up areas - Vehicle type	*	*	*	*	*	*	*	*	*	*	*	*	*	8					
24 Alcohol influence	*	*	*	*	*	*	*	*	*	*	*	*	*	7					1
25 Seat belt	*	*	*	*	*	*	*	*	*	*	*	*	*	7					
26 Road user type - Sex	*	*	*	*	*	*	*	*	*	*	*	*	*	7					
27 Road user type - Accident type	*	*	*	*	*	*	*	*	*	*	*	*	*	7					
28 Age group - I/O built-up areas	*	*	*	*	*	*	*	*	*	*	*	*	*	7					
29 Sex - Vehicle type	*	*	*	*	*	*	*	*	*	*	*	*	*	7					
30 I/O built-up areas - Accident type	*	*	*	*	*	*	*	*	*	*	*	*	*	7					1
31 International comparisons	*	*	*	*	*	*	*	*	*	*	*	*	*	6					
32 Road user type - Vehicle type	*	*	*	*	*	*	*	*	*	*	*	*	*	6					
33 Road user type - Cities	*	*	*	*	*	*	*	*	*	*	*	*	*	6					
34 Age group - Vehicle type	*	*	*	*	*	*	*	*	*	*	*	*	*	6					
35 Road user type - Month	*	*	*	*	*	*	*	*	*	*	*	*	*	5					
36 I/O built-up areas - Day of the week	*	*	*	*	*	*	*	*	*	*	*	*	*	5					
37 I/O built-up areas - Region	*	*	*	*	*	*	*	*	*	*	*	*	*	5					
38 Road class - Accident type	*	*	*	*	*	*	*	*	*	*	*	*	*	5					

Blank cell: this table does not exist in the national general report

Even though these accident data categories do not cover all the accident analysis needs, they represent a solid and valid basis for the future definition of an advanced EU-level road accident analysis. This list of accident data categories can be further elaborated with the addition or deduction of accident data categories as the EU-level accidents analysis needs will be further defined. The data combination of these categories can produce several Tables with one, two or more dimensions. These basic common Tables could be the basis for the road accidents statistics reports and publications of the European Union.

It is noted that there is need for an appropriate selection and definition of the values to be contained in each one of these accident data categories.

3. THE INTERNATIONAL STATISTICS PUBLICATIONS

The road accident statistics reports of the four international organisations (Eurostat, ECMT, OECD, UN) are issued during the second year after the reference year (during the third year for the UN publication). The ECMT and UN reports are independent publications (83, 90 pages respectively), the Eurostat report contains road accident statistics as part of the transport statistics publication (35 pages) and the OECD publication is an output of the IRTAD data base (2 pages). The ECMT publication contains 17 Tables and 25 charts referring to the 30 ECMT Member-States, the UN publication contains 8 Tables referring to 33 European countries, Eurostat contains 6 Tables referring to the 12 European Union states and OECD contains 3 Tables referring to the 24 OECD countries.

The ECMT publication contains also some notes on road safety in European countries and comments on the Tables. The ECMT and UN reports contain also definitions of basic road safety terms. The OECD report is in English, the ECMT report in English and French, the UN report in English, French and Russian and the Eurostat report in the nine EU languages.

As far as the safety measurement units used in the reports issued by the international organisations are concerned, the ECMT report uses 14 units, the OECD report uses 10 units, the UN report uses 8 units and the Eurostat report uses only 6 units. All four road accident statistics reports use the number of accidents and the number of killed. The OECD report does not use the number of injured and number of casualties which are used in the other three reports. Data from other data bases are used in all reports except the Eurostat report. All reports except that issued by the UN include the risk exposure index "*killed per population*". Severity indices are used only by the ECMT report. Percentages and ratios are used in any of these international organisation reports.

The total number of accident data categories used in the road accident statistics general reports issued by the international organisations is eight. The accident data category concerning the "*Road user type*" is used by all four reports. The categories concerning the "*Age groups*" and the "*Inside / outside built-up areas*" are used by three international reports (not the one of ECMT). The remaining five accident data categories are used either by two (Road class) or one international reports (Accident type, Sex, Vehicle type, Alcohol influence).

As far as trends of data used in the international organisation general reports are concerned, the OECD and the UN reports use year series of up to ten years, the ECMT report uses year series of sixteen years and the Eurostat report uses year series of nineteen years. The UN

report contains also year series for 34 years (numbers only, I/O built-up areas). The Eurostat report does not contain one year Tables as most of its Tables refer to the 1988-89 period.

4. CONCLUSION

EU-level road accident analysis is limited by the data collected and the restrictions of the collection system used in each EU state. The detailed comparison of national general reports of road accident statistics as well as the comparison of general reports issued by the international organisations revealed the restrictions imposed by the national data collection - elaboration systems. A basic conclusion from the comparison of national road accident analyses is that road accidents data collection - elaboration process is a national matter (or regional in some cases) reflecting sometimes the way road safety is treated in each member state. The new EU-level road safety culture has not yet any impact to national road accident analysis systems.

The twelve national road accidents data collection - elaboration processes present significant differences among them and therefore convergence perspectives face important difficulties. Basic problem is the lack of uniformity of the data used in each EU Member-State. The differences between the contents and the form of the road accidents data collected and elaborated in each Member-State are numerous and consequently the data which is currently common in all twelve states is limited. Important differences exist between the definition of terms, the accident data categories, the contents and their classification of the accident data categories and the road safety measurement units. Furthermore, important differences exist between the underreporting degree and the accuracy of the data collected.

In the context of the above conclusions, and in relation to the current situation presented in the beginning of this paper, a number of actions are considered useful for the appropriate exploitation and EU-level comparison of the national road accident statistics.

There is need for a common definition at European Union level for a number of the above mentioned road safety concepts (accident data categories, contents of accident data categories, safety measurement units). In the short term, correction coefficients could be used while in the long term, an harmonisation at European Union level would be helpful. In both cases (short and long term) comparative in-depth studies are necessary.

The collection of a minimum of common basic information in all member states of the European Union is also a necessary action. Member states should progressively collect this information using common definitions and a common data collection process. The need for collection of some common basic information in all member states does not limit in any way the information that every administration wishes to collect. Furthermore, there is need for a common basic process for the collection of road accidents information in all member states of the European Union ensuring equivalent level of data accuracy. In parallel to this common basic road accidents data collection process, each country can use any other data collection technique it considers appropriate for analyses at national level.

There is also need for the realisation of pan-european analysis reports and publications with information on road accidents in all member states, comparable at European Union level. These pan-european analyses will further show the incompatibilities between the national systems and

make more urgent the need for a basic standardisation of collection systems. The final objective should be the adoption of a common basic road accidents data collection - elaboration process.

In parallel to the above mentioned necessary actions, it is essential to establish links with other additional data in order to allow the use of a number of risk exposure factors. More precisely, links with the following additional data are considered as very useful: population, drivers population, vehicle fleet, road network, vehicle mileage, infringements, alcotest results, basic economy indices, etc. Existing problems of availability and incompatibility of the above additional data should also be faced and solved progressively.

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