12 OCTOBER 1999

SWOV
INSTITUTE FOR ROAD SAFETY RESEARCH

RESEARCH ACTIVITIES

CONTENTS

TOWARDS A EUROPEAN

Road Safety Information System

In its European Road Safety Programme 1997 - 2001, the European Commission stresses the importance of the dissemination of data and knowledge. There exists a lot of information which is not optimally used because people involved do not know of its existence, or the information is not easy accessible. This is a situation asking for improvement, because good information supports rational decision taking.

An information system, bringing e.g. tables, graphs and conclusions from research projects to the users' desks, is one of the ways to meet the objective of dissemination. This is why the Commission supported a feasibility study, having the following main question: is it, with reasonable efforts, possible to develop and maintain a European Road Safety Information System with relevant and internationally comparable information? The feasibility study (R-99-22) was carried out by SWOV, supported by experts from other countries. The report was offered to DG VII of the European Commission, who sent it to all member countries. The eventual follow-up will be discussed in the proper circuit.

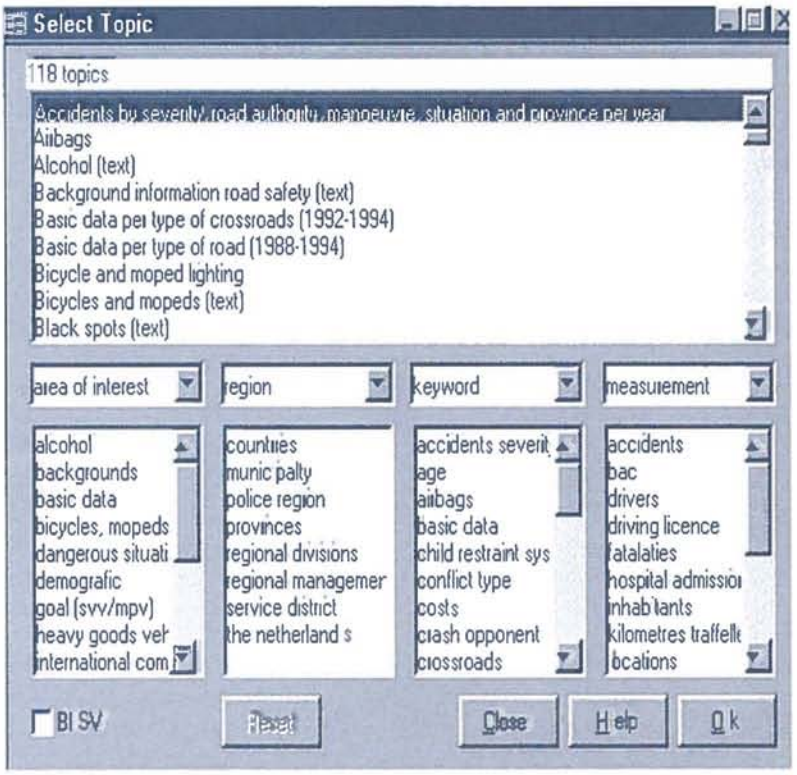
(continues on page 2)

Benefits of CRASH (Community Road Accident System Homepage)

The information system aims at improving traffic safety through supporting decision making based on proper information. It enables quick understanding of key developments and timely adjustment of policy, and gives access to relevant knowledge. CRASH would stimulate the use of qualified information because it would be permanently available at the users' fingertips.

The unique advantages of such a system, if well designed and organised, are:

- *it integrates information from various sources;*
- *it contains recent information that is relevant to policy;*
- *the information in the system is the best there is;*
- *the system can be used without a training course;*
- *the users can request every required combination of data;*
- *all data in the system are accompanied by explanatory text;*
- *the users can learn from traffic safety research throughout the whole of Europe;*
- *it facilitates a common view on traffic safety.*



Feasibility study

In the Netherlands it has shown to be possible to develop and maintain a Road Safety Information System. The system is operational since 1993 and is used by a growing number of enthusiastic road safety professionals. Although the requirement of international comparable information introduces extra complexity, the functioning of the Dutch information system seems to be a useful example.

International experts were involved in the feasibility study, to judge the items raised: are those items indeed the main questions, and is the right balance found between describing concrete solutions and leaving options open for decisions? The experts came from BASt (Bundesanstalt für Strassenwesen; Germany), NTUA (National Technical University of Athens; Greece), TRL (Transport Research Laboratory, United Kingdom) and VTI (Swedish National Road and Transport Research Institute).

The general outcome of the study is that it is possible to develop a European Road Safety Information System for professionals and citizens. Of course it has to meet certain criteria: the contents must match the subjects that occupy the users and the system must be intuitive in its use.
It was proposed to develop an Internet application to reach potentially every European citizen and to develop a concise paper version for a selected target group not yet having access to Internet.

National correspondents should be involved in the organisation of the system, to make sure that the best use is made of national knowledge. Another recommendation was to develop the system step by step. A first version of the system could be developed within a year, containing enough interesting information to be attractive for the users.

Data to be entered

There is enough information available to distribute. It is advisable to use public information as much as possible, this will prevent complications.
For the first version, easy availability is quite important to make sure that preparations can be finished in a reasonable time. It was advised to start with data on road traffic accidents, exposure, and risk ratio's, i.e. deaths and/or (seriously) injured per distance travelled. The international sources for these data reveal differences. It is important to note that, where possible, the information system will not give access to the sources themselves but to a selection of (aggregated) data originating from the sources. Benefits of the system are the selection and

combination facilities offered to the user, and the comparability of the data and the annotation. In the report of the expert group, it was indicated which items should be included in the annotation to support interpretation of the data. With respect to accident data it was supposed in this study that the results of CARE-plus will be available in due time. CARE consists of all national accident databases, which implies, as can be expected, different definitions and registration practices. The CARE-plus project aims at making the data as comparable as possible. The new Road Safety Information System would be an excellent way of giving access to the results of these efforts, integrated with other important data items and knowledge.

Knowledge to be included

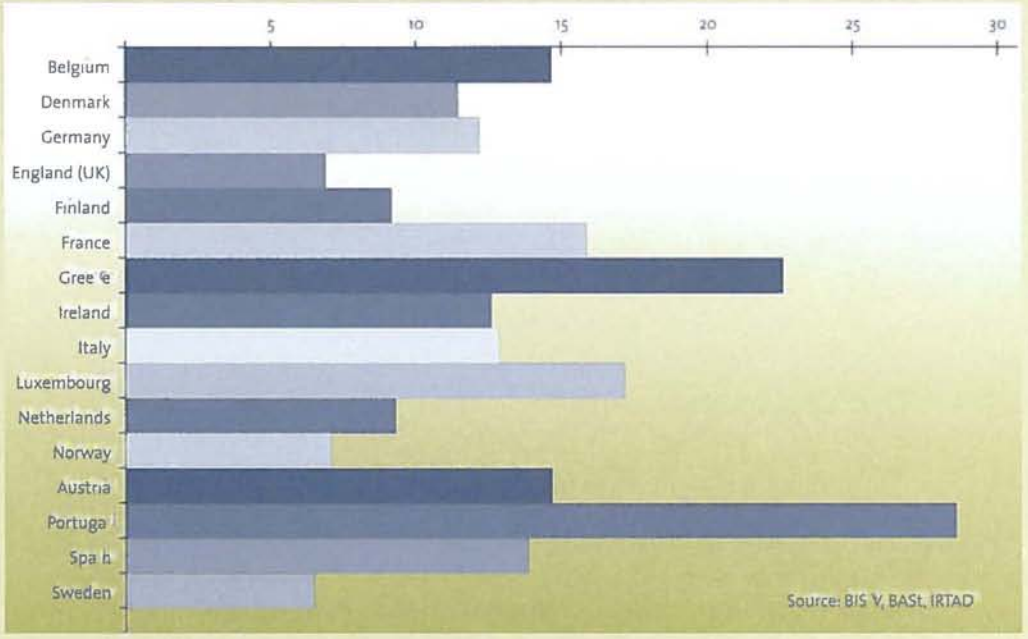
There is a lot of interesting knowledge to consider to be entered into the Information System: research reports, international state of the art reports, official documents (policy plans, legislation), other information systems, and opinions of experts. It was proposed to select the best available for inclusion in the system.

This means, among others, that information is verifiable, qualified, and universally accepted.
The expert group distinguished areas of interest like network planning, road design, speed management, and novice road users, as an aid for the users when looking for interesting information.

Customers and road users

Crash tests, information about differences in rules to obey in different European countries (eventually in the form of knowledge tests), and road safety promotion information explaining why it is important e.g. not to drink-drive, were regarded as being information especially of interest for citizens. For citizens, the language will be a more critical factor than for professionals. Where possible, links to national Websites can be a solution; otherwise information will have to be translated. It is to be expected that the efforts will result in a highly valuable system, bringing relevant information at people's fingertips.

Deaths per 100.000 inhabitants (1995)



Safety Standards for

SAFESTAR WAS A RESEARCH STUDY FOCUSING ON TRAFFIC SAFETY FOR WHAT IS KNOWN AS THE 'TRANS EUROPEAN ROADWAY NETWORK' THAT LINKS THE MAJOR EUROPEAN CENTRES. THE PROJECT WAS PART OF THE 1994-1998 EUROPEAN RESEARCH PROGRAMME TRANSPORT WITHIN THE FOURTH FRAMEWORK PROGRAMME, SUB-PROGRAMME OF ROAD TRAFFIC AND TRANSPORT.

SAFESTAR is an acronym for Safety Standards for Road design and redesign. Nine European research institutes collaborated in the SAFESTAR project. SWOV coordinated the activities. SAFESTAR resulted in 20 'deliverables' (technical reports published by the responsible institutes, and in a final report (published by the EC).

The level of road safety is, to a large extent, determined by the features and layout of the road transport system infrastructure. If human errors which result in accidents are to be held in check then proper road design is crucial. It was estimated that improvements in the engineering of roads was one of the main factors behind the reduction in casualties on the roads of EU countries in recent years.

To achieve their full effect, safety principles in road design have to be applied in a systematic and consistent manner. Progress towards the optimal adaption of road design to these principles is expected to produce a considerable reduction in the number of accidents and accident rates compared to the existing situation in Europe.

Design standards

Standards play a vital role in road design. Not all countries have a full range of design standards applied to their road networks and this situation contributes to the size of the road safety problem on the continent as a whole.

Continued improvement of road design standards on the Trans European Road Network (TERN) is required and this will help to install good practise on all types of road throughout Europe. Urban road sections will virtually not be part of this network in the long term. However, urban sections will occur on TERN links at least for a considerable time, presumably as main thoroughfares. Therefore, a limited amount of attention was paid to urban conditions.

Proposals and agreed technical standards, however, cannot be expected to flow simply from a safety perspective. The overall objective of the SAFESTAR programme was the formulation of safety arguments for selecting particular design elements or dimensions for inclusion in the improvement and augmentation of design standards.

Safety arguments

The safety arguments produced in the course of this study do not lend themselves to summary and simplification. They are laid out in the main body of the final report. This final report also contains lists of design standards for different road types. These lists cannot be considered to be complete because the research reviewed and carried out, could not fill all gaps in our present knowledge. Therefore a second list indicating where more data and research are required was added.

Topics which were treated in SAFESTAR

The knowledge needed for being able to carry out an effective safety policy at the European level is insufficient with regard to various safety aspects of road infrastructure.

Design and Redesign SAFESTAR

SAFESTAR was established to fill in some of these gaps of knowledge, with special notice being given to the following six topics, related to TERN road types:

1. *Hard shoulders (Emergency lanes) and safety devices on motorways and express roads*
   Currently, there is a safety problem because of the design of hard shoulders and the presence of obstructions on or adjacent to them. SAFESTAR provided an overview of the nature and degree of danger on hard shoulders. Current measures taken to combat the problem were reviewed and analysed. Criteria were generated for the application of safety barriers and other measures (SWOV reports D-99-2 and D-99-1).

2. *Tunnels on motorways*
   Frequently the dimensions and design standards of tunnels do not match those of the adjacent stretches of motorway and this results in safety problems. SAFESTAR selected a number of tunnel designs intended to reduce problems, and tested these designs by means of two driving simulators (reported by TNO Human Factors, Soesterberg, the Netherlands).

3. *Express Roads*
   The current infrequent application of this type of road on TERN is expected to increase significantly in the near future. Because it caters for long distance and local traffic it is known to be relatively unsafe. SAFESTAR catalogued the dangers and analysed the reasons for the choice of this type of road, forecasting developments and recommending standards of design, and a basis for the choice (SWOV reports D-99-3 and D-99-4).

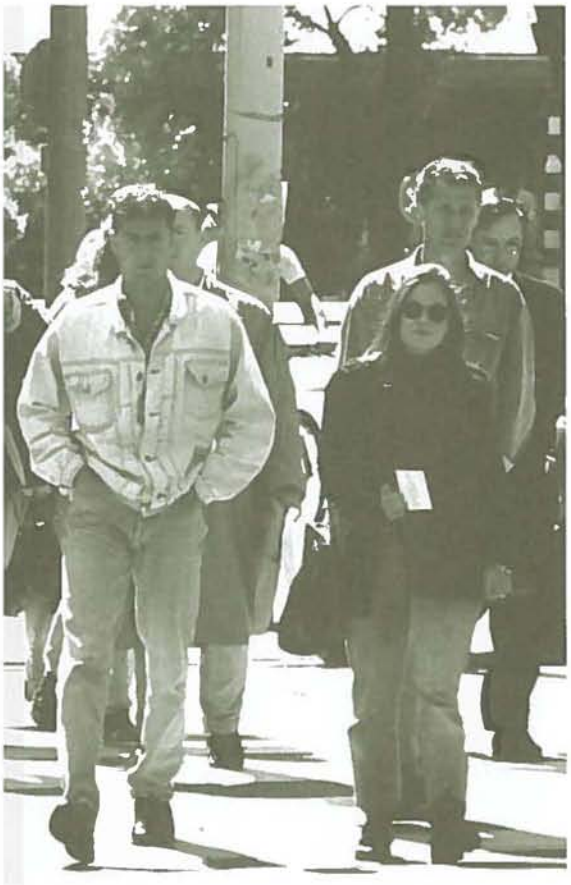
4. *Rural Roads*
   Currently about one third of the length of TERN is comprised of this type of road which is known to generate the vast majority of injury accidents outside built-up areas. SAFESTAR carried out evaluations and looked at research on the different effects of corrective measures and a variety of marking and signing with reference to cross sections (reported by VTT Technical Research Centre of Finland), and to the design of curves (reported by Danish Road Directorate). SAFESTAR developed improved calculation models which make it possible to assess curve designs for safety aspects before the roads are constructed (reported by LNEC Laboratório Nacional de Engenharia Civil, Lisbon, Portugal).

5. *Major Urban Junctions*
   A large number of designs and design methods for dealing with these type of junctions is already available. There is a need for improvements to the process of choice of design with reference to the safety of all road users including cyclists and pedestrians. SAFESTAR focused on obtaining improved calculation models (reported by VTI Swedish Road and Transport Research Institute).

6. *Road Safety Audit*
   The principles and practise of Road Safety Audits (RSA) are seen as an excellent tool for improving safety through the careful monitoring of design by independent experts. Some European countries already have procedures for carrying out RSA. As part of SAFESTAR, these procedures have been described and compared. RSA also appears to offer an opportunity to promote consistency in design standards (SWOV report D-99-5).

SWOV's Mission Statement

SWOV's mission and task have changed for the coming years. SWOV focuses, more so than in the past, on fundamental research issues. Moreover, we will pay more attention to distributing road safety knowledge and information.



Our most important target group consists of professionals (abroad as well as in the Netherlands) in the field of traffic and road safety. One of the first new information distribution activities we carried out was making information available via Internet. From April this year, SWOV has its Website at www.swov.nl.

Working Programme

SWOV's working programme was established after consultation with the Programme Board which has been installed recently. The board consists of representatives from all parties who may have an interest in the results of SWOV's work. These are: the National Ministry of Transport, Ministry of Justice, the provincial and municipal governments, and road safety organisations. Working parties of experts with practical experience will also be appointed. They will be consulted about the research and knowledge distribution programmes. Except for the activities that will take place in the field of knowledge dissemination, for the next 3-5 years SWOV's Working Programme offers eight research themes. In the frame, a list is given of the task and themes. Between brackets the names of the managers responsible for the themes and tasks are mentioned. In the next issues of this magazine we will inform you about the contents of our Working Programme.

SWOV's Working Programme

Information and communication (Martha Brouwer)

Road users; the relationship between behaviour, environment, and accidents (Dr. Marjan Hagenzieker)

Preconditions for safe behaviour (Divera Twisk)

Strategies for a safe road infrastructure (Theo Janssen)

Road design and road safety (Atze Dijkstra)

Vehicle safety (Boudewijn van Kampen)

Telematics and road safety (Dr. Marion Wiethoff)

Road safety analysis (Bob Roszbach)

Decision making and its administration (Paul Wesemann)

Cooperation

In the past SWOV has always sought international cooperation in the field of road safety research. SWOV has been carrying out several projects for the European Commission. In some projects we were a partner in the project team, in other projects we had a leading role.

SWOV was involved in the following studies:

- *Safety Standards for Road Design and Redesign* (SAFESTAR)
- *Managing Speeds of Traffic on European Roads* (MASTER)
- *Analysis and Development of New Insight into Substitution of Short Car Trips by Cycling and Walking* (ADONIS)
- *Developing Urban Management and Safety* (DUMAS)
- *Advanced Research on Road Workzone Safety Standards in Europe* (ARROWS)
- *Guarding Automobile Drivers through Guidance, Education and Technology* (GADGET)
- *Road Safety Impact Assessment* (RIA)
- *Social Attitudes to Road Traffic Risk in Europe* (SARTRE survey)
- *The Safety Effects of Daytime Running Lights* (DRL)
- *Conception and Evaluation of Roadside Testing Instruments to Formalise Impairment Evidence in Drivers* (CERTIFIED)
- *The Promotion of Measures for Vulnerable Road Users* (PROMISING)
- *Feasibility study on a European Road Safety Information System* (CRASH)

In this issue you will find more information about the projects SAFESTAR and CRASH (see pages 4 and 1). On other projects, SWOV has already reported in previous issues of this magazine.
In case you want to know more about our involvement in the projects mentioned please contact us.

SWOV's aim is to continue the co-operation with other research institutes in the European Union and therefore we made various proposals for the 5th R&D Framework Programme of the European Commission. But SWOV is also interested in other ways of co-operation, for instance with institutes outside the European Union.
As from 1992 SWOV has been building up relationships in particularly Russia, Hungary, the Czech Republic, Slovakia, Poland and Romania. The organisations involved are sister institutes, technical universities, or ministries of transport. With some of the institutes or universities SWOV has signed Memoranda of Understanding in which the interest for mutual cooperation is expressed.

International experiences

In the past SWOV has carried out a lot of research and has given advice in an international context. For the World Bank SWOV gave contributions on: improving road safety for vulnerable road users and legislation and regulation and enforcement to improve road safety in developing countries. In the future, this kind of research and advice this will stay as one of SWOV's tasks. SWOV is also one of the partners in a consortium dealing with road safety in PHARE-countries. This project will be finalised in 1999.
Furthermore, terms of reference were described in order to draft detailed action plans for improving road safety in Kazakhstan. Kazakhstan is faced with the enormous task of implementing political, economic, and social changes in converting their centrally controlled planned economy to a market economy. Already years ago SWOV made a review of the road safety situation in Kazakhstan. Recommendations of what could be done to improve the road safety situation in Kazakhstan were drawn up.

In 1999 SWOV is involved in safety projects in Lahore, Pakistan and in Peru.

Training programmes and courses

The organisation of courses, training programmes, and workshops is now and in the future an important task of SWOV. The road safety part of the TREND course for traffic and road engineers from developing countries of the International Institute for Infrastructural, Hydraulics and Environmental Engineering (IHE) at the University of Delft is taken care of by SWOV. In the past, training programmes were organised for Russian and Polish managers and specialists in the field of road safety. The goal was to disseminate knowledge and experiences to the participants about the Dutch road safety system. Technical visits formed part of the programme.

More information

SWOV staff is frequently visiting and giving presentations on high level scientific congresses, seminars, workshops, etc. Our expertise and experience is recognised throughout the world, which makes SWOV one of the leading road safety research institutes in the world. Apart from giving lectures, we also write articles in international scientific journals and many people from abroad come to visit our institute and even stay for a few days or weeks. SWOV will keep other professionals up-to-date on its activities, and on new developments in road safety research and its results, by means of this magazine: Research Activities and by the dissemination of information on the SWOV website. If your are interested in receiving information from us, or if you are interested in any form of co-operation with our institute, please don't hesitate to contact us. Our Information and Communication Department is most willing to help you.

Programme for intensified enforcement in the Netherlands

Recently, a special programme for intensified enforcement started in 8 of the 25 Dutch police regions. The programme is an initiative of the Bureau of Enforcement (bureau Verkeershandhaving), which is part of the Public Prosecutor's Office (Openbaar Ministerie). The intensified enforcement programme focuses on speeding, drink-driving, seat belt usage, and helmet usage of moped riders.

The enforcement activities will be supported by publicity campaigns. According to the current planning, the programme will continue for four years. In addition to direct safety objectives by reducing the number of violations, the programme also aims to determine the optimal level of police enforcement and the optimal organisational conditions to realise durable (sustainable) behaviour changes.

Quantitative targets

For each of the four enforcement spearheads, quantitative targets have been set. On the one hand, the targets refer to the number of fines that have to be given in a particular period: an effort target. On the other hand they refer to a reduction in the number of offences: an effect target. For example, in one of the participating regions the effect target for speeding is a 10 per cent reduction in the number of speed offences; for drink-driving the target is a maximum of 2 per cent violations; and with respect to seat belt and helmet usage the target is 90 per cent (correct) use in the target group.

Monitoring and evaluation

To assess the safety benefits of the enforcement programme, SWOV, in consultation with the Enforcement Bureau, has developed an evaluation and monitoring plan. In all eight participating regions, detection equipment has been installed to allow for continuous speed monitoring on 240 selected road stretches and to monitor changes in speed and speeding. First of all, the direct feedback is used by the police itself to make short term tactical decisions concerning the day, time, and location of the mobile radar control: as soon as, at a particular location, the effect target has been achieved, the enforcement effort is reduced to a maintenance level in order to realise more enforcement at another location. In this way, optimal use is made of a fixed amount of manpower and hours available for speed enforcement. Secondly, the data will be used by SWOV to assess the longer term effects of police enforcement on the different traffic violations. The effect of the programme on drink-driving, seat belt use, and the use of helmets will be assessed by SWOV on the basis of annual behavioural observations and a bi annual national survey. All the different types of data (speed data, behavioural data, accident data, the exact location of the enforcement activities and man hours) that come available will be combined into one database. This database will allow for in-depth statistical analyses to assess the relationship between police effort, behavioural change of road users, and traffic safety.

SWOV against a future lowering of the minimum age for driving a light-motorcycle

A EUROPEAN GUIDELINE FROM 1991 (91/439/EEG) HAS MADE IT POSSIBLE TO INTRODUCE AN EXTRA CATEGORY OF DRIVING LICENCE; CATEGORY A1 FOR LIGHT MOTORCYCLES WITH A CYLINDER CAPACITY OF UP TO 125CC AND A MAXIMUM POWER OUTPUT OF 11 KW.

At the moment, every member country is free to establish its own preconditions as to qualifying for this new driving licence category. The exception is that the minimum age may not be below 16 years. Most member countries have added the category A1 to their national traffic laws, using the minimum age of 16 years. The Netherlands is one of the few exceptions; it recognises just one driving licence category for motorcyclists (category A) and for this there is a minimum age of 18 years. As most of the member countries have the A1 category, the European Commission is planning to harmonise this, meaning that every member country is obliged to have this category in their traffic laws. At his moment there is also the matter of also harmonising the driving preconditions; among other things the minimum age of 16 years.

Road safety consequences

SWOV is extremely concerned about the road safety consequences of the possible lowering of the minimum age, because of the very high accident risk (deaths per billion occupant kilometres) for motorcyclists (in the Netherlands).

The most important argument for maintaining the present minimum age of 18 years is the following: postpone the moment of entry into (the dangerous world of) fast, motorised traffic until one can choose for the much safer car. Buying a motorcycle at 16 or 17 means, moreover, that the chance is great that, having once become 18, one will continue to drive a motorcycle, and only in later life, or maybe never at all, change over to the relatively safe car.

Very high accident risk for motorcyclists

The large difference in the accident risk of cars, the motorcycles, and a number of other means of transport, are shown clearly by the data in the table below. Also made clear are the differences between the various age-groups.

There is an especially high motorcyclist accident risk among the 18-24 year olds. Above 25 years old, the risk is approximately the same as that for mopedists and light-mopedists. Compared with these, the risks for cyclists and car drivers are considerably lower. Analysis of the data by cylinder capacity is not possible.

The literature does not show (clearly) that driving a light motorcycle is safer than a heavy motorcycle. It may be assumed that the accident risk for 16 and 17 year olds is even higher than for the age-group 18-24 years old.

This, because among other things, the situations and circumstances in which 16 and 17 year old drive a motorcycle are different, and probably unsafer than those experienced by older motorcyclists.

The Death Rate (deaths per billion occupant kilometres) of various road users (1995 1997)
Sources: Statistics Netherlands (CBS) and Ministry of Transport, Research Centre, Basic Data department. (NB the risk data for motorcyclists also includes scooters)

Mode of Transport	Age-group			
	15-17	18-24	25-29	30-39
Cyclist	13,4	7,3	5,9	5,1
Mopedist & light-mopedist	87,8	60,8	46,4	69,5
Motorcyclist (incl. scooters)	-	**131,9**	**56,2**	**69,2**
Car driver	-	16,0	6,1	3,6

SWOV Publications

SWOV carries out research concerning road safety. Most SWOV reports are written in Dutch. In these reports, normally an English summary is incorporated, which can be found on our website. Sometimes however when research is carried out for the EU or other international bodies reports are written in English. SWOV researchers also participate in international conferences, workshops and seminars and contribute to international journals. These contributions are normally written in English, sometimes in German or French. Some of those are published by SWOV. Reports can be obtained by asking for a SWOV order form, completing it and sending it to Sandra Rietveld, Information and Communication Department of SWOV. The price of each report (in Dutch guilders) is mentioned in the following list, as well as the language in which the report is written. Reports can be paid by credit card. For bank transfers we will charge an extra Dfl. 15,- per transfer. After SWOV has received your payment, the reports will be sent to you by mail.

CRASH - Community Road Accident System Homepage
Feasibility study on a European Road Safety Information System, financially supported by the European Commission.
Martha Brouwer, Frank Poppe, Ton Blokpoel & Vincent Kars.
R-99-22. 108 pp. Dfl 35,- (in English).

Estimating the confidence margins of the National Travel Survey
Application of the CBS approximation method.
F.D. Bijleveld. R-99-21. 23 pp. Dfl 17,50 (in Dutch).

Monitoring road safety
Description of a calculation instrument for following road safety developments.
F.D. Bijleveld. R-99-22. 93 pp. Dfl 30,- (in Dutch).

The effect of outside edge strips on traffic behaviour
An exploratory study of traffic behaviour on roads with and without edge strips.
R.M. van der Kooi & J. Heidstra. R-99-19. 80 pp. Dfl 25,- (in Dutch).

Road safety of mopeds and light mopeds
Comparison of various models of mopeds and light mopeds.
J.M.J. Bos. R-99-18. 52 pp. Dfl 22,50 (in Dutch).

The safety of a roundabout in the town of Venray
Comparative study of the safety aspects of a specific design of the cycle path.
J. van Minnen. R-99-17. 84 pp. Dfl 39,- (in Dutch).

Evaluation of the campaign 'Be seen, light your bike'
Study of the effectiveness of a bicycle lights information campaign in 5 Netherlands police regions.
Dr. Ch. Goldenbeld & J. Schaap. R-99-16. 104 pp. Dfl 35,- (in Dutch).

Design of a road safety measure catalogue
R.J. Davidse. R-99-15. 40 pp. Dfl 20,- (in Dutch).

The accident proneness of motorised two-wheelers in comparison with the car
Dr. P.H. Polak. R-99-14. 19 pp. Dfl 15,- (in Dutch).

Support for measures concerning driving licences for novice drivers
Opinions of the young and their parents.
J. Heidstra. R-99-12. 25 pp. Dfl 25,- (in Dutch).

Estimation of the effects of lowering the legal alcohol limit for driving
Advice to the Ministry of Transport.
M.P.M. Mathijssen. R-99-11. 20 pp. Dfl 15,- (in Dutch).

The effectiveness of Gelderland's Second Long term Road Safety Plan
Will the road safety target for reducing the number of seriously injured in 2010 be achieved?
R.D. Wittink & C.C. Schoon. R-99-10. 26 pp. Dfl 17,50 (in Dutch).

Practical experiences with the safety of a number of road types
Study of the road safety effects of a number of infrastructural measures, together with the principles of 'sustainably safe'.
J. van Minnen. R-99-9. 116 pp. Dfl 35,- (in Dutch).

Road safety in the Province of Nord-Brabant
Back in the main group.
M. Brouwer & F.C.M. Wegman. R-99-8. 34 pp. Dfl 17,50 (in Dutch).

Design of a Traffic Count Network in Valkenburg, the Netherlands
Oei Hway-liem. R-99-7. 30 pp. Dfl 19,50 (in Dutch)

Drug and alcohol use by motorists in the Netherlands, 1997/1998
Report of a field-study, carried out during autumn weekend nights.
M.P.M. Mathijssen. R-99-5. 51 pp. Dfl 22,50 (in Dutch).

Safety standards for express roads
Research in the framework of the European research project SAFESTAR, Workpackage 3.4.
Ton Hummel. D-99-4. 38 pp. Dfl 20,- (in English).

Express roads in Europe
Research in the framework of the European research project SAFESTAR, Workpackages 3.2 & 3.3.
Ingrid van Schagen. D-99-3. 29 pp. Dfl 17,50 (in English).

Criteria for roadside safety of motorways and express roads
A proposal for road authorities in the framework of the European research project SAFESTAR, Workpackage 1.2.
Chris Schoon. D-99-2. 62 pp. Dfl 25,- (in English).

Specific safety measures for emergency lanes and shoulders of motorways
A proposal for motorways' authorities in the framework of the European research project SAFESTAR, Work package 1.1.
Leon d Braimaister. D-99-1. (in English).

Safety in the sectors and social activities: domestic, traffic, industry and sport
A comparative study, carried out by SWOV and the Consumer Safety Institute.
P. Wesemann & J.M.J. Bos (SWOV) & P.C. den Hertog, M.C. Adriaanse & A.C.M. Blankendaal (Consumer Safety Institute). R-98-70. 63 pp. Dfl 25,- (in Dutch).

Estimation of expected applications for moped and light-moped registration numbers
Data based on a survey among mopedists and light-mopedists; a study carried out, commissioned by RDW Vehicle Technology and Information Centre.
J.M.J. Bos & C.C. Schoon. R-98-69. 44 pp. Dfl 22,50 (in Dutch)

Driving licence B: too many powers?
Road safety consequences of the discrepancy between the driving licence B prerequisites and the skills needed for driving those vehicle types for which driving licence B is issued.
J.M.J. Bos & D.A.M. Twisk. R-98-67. 76 pp. Dfl 25,- (in Dutch).

The working elements of accompanied driving
Results of a workshop on accompanied driving.
D.A.M. Twisk (ed.). R-98-66. 60 pp. Dfl 22,50 (in Dutch).

Likely measures for novice drivers. Appendix II
Feasibility analysis: report on the process, results and products.
D.A.M. Twisk. R-98-63b. 50 pp. Dfl 22,50 (in Dutch)

Likely measures for novice drivers. Appendix I
Inventory, based on expert meetings.
D.A.M. Twisk. R-98-63a. 45 pp. Dfl 22,50 (in Dutch).

Likely measures for novice drivers
Final report, starting points, effectiveness and practicality.
D.A.M. Twisk. R-98-63. 42 pp. Dfl 22,50 (in Dutch).

'Sustainable safety' and road user behaviour
Inventory and selection of methods and variables.
Dr. J.A. Rothengatter (RUG). R-98-59. 32 pp. Dfl 20,- (in Dutch).

Sustainably safe road traffic and the new standard road user
Contribution to the conference 'The New Road User', 7th November 1996, Gouda, the Netherlands.
M.J. Koornstra. D-98-13. 22 pp. Dfl 17,50 (in Dutch).

Road safety in the Netherlands up to 1997
An analysis of the nature and general developments in the period 1985-1997. R.J. Davidse (ed.). D-98-12. 87 pp. Dfl 30,- (in Dutch).

Colophon

RESEARCH ACTIVITIES is a magazine on road safety research, published three times a year by the SWOV Institute for Road Safety Research in the Netherlands. Research Activities contains summaries of research projects carried out by SWOV and by others.

Editorial committee Martha Brouwer, Atze Dijkstra, Ingrid van Schagen, Anita van der Vorst
Editor Anita van der Vorst
Photographs Paul Voorham, Voorburg; Theo Janssen, Zoetermeer
Realisation SleeCommunicatie, Zoetermeer

Publisher
SWOV Institute for Road Safety Research
PO Box 1090, 2260 BB Leidschendam, The Netherlands
T + 31 - 703209323
F + 31 - 703201261
E vorst@swov.nl
I www.swov.nl

Free copies are available from the publisher. Please send subscription requests and address changes to SWOV.

ISSN 1380-703X

SWOV

INSTITUTE FOR
ROAD SAFETY RESEARCH

SWOV Institute for Road Safety Research

PO Box 1090

2260 BB Leidschendam

Duindoorn 32

2262 AR Leidschendam

The Netherlands

T + 31 - 703209323

F + 31 - 703201261

E swov@swov.nl

I www.swov.nl