SWOV
INSTITUTE FOR ROAD SAFETY RESEARCH

RESEARCH ACTIVITIES

issue 22 June 2003

Research Activities is published three times a year by SWOV Institute for Road Safety Research in the Netherlands.

Contents:

Editorial

Research Activities has changed its look. A different colour, a different style, but the magazine will continue to cover a wide range of traffic safety issues in the Netherlands.
Not only Research Activities has changed. The English translation of the SWOV-website is nearing completion and will be updated regularly. By providing information, both in Research Activities and on the website, SWOV aims to be a source of information for professionals in the field of road safety.

A Driving License Revolution in the Netherlands?

Novice drivers and young mopedists (16 and 17 years old) have a high accident risk, in the Netherlands but also in other countries. In the Netherlands, the development of specific policy measures has stagnated in comparison with other countries.

Therefore, the Dutch Ministry of Transport has developed a new policy targeted at these high risk groups, and put it down in a memorandum called "The Driving License Revolution". The memorandum is a first step in the discussion about the future of the Dutch driving license policy. The plan is 'revolutionary', because a fundamentally different approach to driver training is proposed.

Novice drivers

The proposals for novice drivers are centred around two basic elements. Firstly, young drivers are encouraged to gain more driving experience during driving lessons, that is, before they acquire the final driving license. Secondly, driving training is expanded by adding second phase training. But what does this mean exactly?

In the current system one can learn to drive from the age of 18, and on average 35 to 40 driving lessons are needed to pass the driving test. Once the driving exam is taken and the test is passed, the driving license is granted. This means that the total amount of driving experience which is gathered during the driving lessons is limited. The new proposal makes it possible to gain experience by allowing accompanied driving without a license from the age of 17. To ensure this being a 'safe' practise condition, a learner driver has to pass a driving test in order to qualify for the 'accompanied driving' module. Another element of the current system is that all driving lessons are taken in one uninterrupted

QUOTE

Social dilemmas occur when individual preferences clash with collective interests

Public acceptance, page 6.

time period. In the new proposal, driver training is spread over a number of years by introducing second phase training. The main focus of this second phase training is on improvement of safety awareness. A third proposal is related to the theory exam. In the current situation, the exam consists of questions on how traffic rules should be applied. For the new system, the introduction of a hazard perception test is proposed. The new system will be tested in an experimental phase.

Young mopedists

In the group of young mopedists, 16 year olds have the highest accident risk. Moreover, accident studies show that -taking exposure into account- moped use is far more dangerous than car use. The new plan aims to reduce the number of casualties by increasing the minimum age for riding a moped to 17 instead of 16. It is expected that this measure, in combination with the introduction of a registration number for mopeds and proper police enforcement, will reduce the number of casualties amongst young and inexperienced mopedists. Moreover, they may give preference to driving a car, since according to the new proposals, accompanied car driving will be allowed from this age onwards. This will increase safety, if unsafe moped trips will be substituted by relatively safe trips.

Missing elements

The new proposals aim to increase the competence level of novice drivers. After completion of driver education they will have more driver experience and a better risk awareness.

However, the plan does not take into account the other threat to safety: the exposure to risky conditions. It does not protect novice drivers from confrontation with dangerous situations they cannot handle yet.

The phased learning process can be even more effective if protective measures are added. Phased learning in combination with protective measures is the essence of the so-called graduated driving license systems. The protective measures aim to prevent situations in which young drivers are known to have a higher risk. When experience increases, the measures are gradually alleviated.

For example, protective measures that have already been applied are:

- night time (weekend) driving curfew;
- no driving with passengers (or limitation of their number);
- no use of alcohol in combination with driving.

Positive results of these measures are reported from Australia, Canada, and the US. Therefore, SWOV suggests including protective measures in the plans of the Ministry of Transport.

17 or 18?

It is expected that the so-called 'Plan 17' will have a positive effect on traffic safety. If the 'missing elements' are added, even larger positive effects can be expected. Moreover, SWOV proposes to compare the safety effects and other implications of 'Plan 17' with those of 'Plan 18'. For both versions of the plan it is important to know the amount of traffic participation that will be affected by the new measures. Also, it is important to know how youths in the Netherlands

view the use of the moped and what they consider the most important (negative) effects of raising the minimum age from 16 to 17 or 18. However, no matter which version (17 or 18) of the plan is chosen, both are revolutionary because they introduce a fundamentally different way of driving training and preparation to the driving licence.

Recently, the Traffic and Transport Consultation Group (OVV) in which the Minister of Transport consults with other government bodies, with the private sector, and with NGO's, has issued an advice about the proposals; SWOV is an advisor in this consultation. The advice was generally positive, although quite a large number of questions and comments were made. Once the Ministry of Transport has formed its opinion, the plans will go to Parliament, where the final decision will be taken.

"Hard Core" adolescent problem groups

Various studies show that, in all highly-motorised Western countries, road accidents are the main cause of death among the 15-24 year olds. Most of the accident studies have been aimed at young motorists and their young passengers.

In the Netherlands, in addition to motorists, the young mopedists and light-mopedists are a specific group with an extremely high risk (per kilometre travelled). What is the reason for this extremely high accident involvement of young road users?

Study

SWOV and Traffic Test, in cooperation with the Transport Research Centre, each carried out a study to gain greater insight in this problem. The study showed that there is a group of so-called 'hard core' problem youths within the group of novice drivers. This group manifests itself in a considerably deviant traffic behaviour and a relatively high accident involvement.

Lifestyle

The first part of the SWOV research consisted of a literature study of the relevant psychological and psychosocial theories and the international research results. Empirical research showed that one of the most important causes of high accident involvement of youngsters is their greater tendency to indulge in 'risky' behaviour. In these studies risky behaviour is described as a feature

of the lifestyle of adolescents which also explains other problem behaviour of youth, such as delinquency and use of alcohol and drugs. The lifestyle is determined by a set of personal, peer group, and behaviour variables; together they represent the youths' position in world. The utility of the concept of lifestyle when describing risky behaviour, lies in the fact that the youth is seen in a wider context, not just that of risky behaviour.

Problem behaviour

The second part of the SWOV study consisted of empirical research among Dutch youths. The data used was from the "Health Behaviour in School-aged Children" (HBSC) study in which, just for once, a number of traffic questions was included. An analysis of the answers showed that there are indeed certain groups of youths who can be identified by their strong tendency to indulge in all kinds of risky behaviour (too much alcohol, smoking, gambling, and bullying), as well as in risky traffic behaviour. This finding is compatible with the existence of a problem, or risky, behaviour syndrome. The study also showed that this tendency for problem behaviour is stronger among men, and increases during adolescense. Moreover, the results also support the importance of the concept of lifestyle: among youths there are certain sub-groups with common lifestyle features. Youths with a tendency for problem behaviour are characterised by, among other things, poor school results and poor health, a less close and freer relationship with their parents, a greater feeling of unhappiness, and the tendency to 'hang around a lot' with their friends.
The family circumstances of the youths appear to have a smaller influence. No influence of the parents' professions was found (Social Economic Status) and the parents' problem behaviour appears to play no, or hardly any, part in the problem behaviour of their children.

Behaviour change

In general, these results support the necessity for more extensive prevention and intervention programmes in which not only the specific traffic related problem behaviour is dealt with (such as drinking and driving, seatbelt use), but also the entire lifestyle of the youth is taken into consideration. However, the character features, values, and norms of the 'hard core' group, make changing their behaviour a difficult task.

The English language SWOV report entitled "Hard Core" Problem Groups among Adolescents, their Magnitude and Nature and the Implications for Road Safety Policies (R-2002-25), can be consulted and downloaded via the SWOV-website http://www.swov.nl.

Escape from submerged vehicles in the Netherlands

Annually, more then 30 car occupants drown in the Netherlands after their car plunges into water. This accident type is far more serious than most other car accidents, in view of its high mortality and serious injury rate.

The Dutch Council for Transport Safety asked SWOV a multiple question: firstly to report the scope of the problem of drowning in cars; secondly, to establish whether (disfunctioning) car properties could actually have prevented escape in these drowning accidents; and finally, to look at this accident type on an international (European) scale.

Results

It was found that annually some 750 of these accidents occur, in which more then 30 occupants were estimated to have drowned. The high percentage of serious outcome, fatalities and serious injuries, shows that accidents were cars end in water, are far more serious than all other types of car accident.
In the second phase of the study, both simple and detailed police reports of the relevant accidents in the year 2000 were examined. Neither source indicated attributing factors concerning prevention of escape due to car properties. This is due to the fact that police reports primarily aim at establishing juridical aspects of accidents (whose fault it was; non use of seat belt; speeding; priority violation; loss of control).
Internationally, it appeared that submerging vehicle accidents are not a safety issue at all.

A quick scan of traffic safety authorities in 8 European countries revealed that no specific accident data were gathered, since the problem was too small to deserve registration, or the data gathered pointed indeed to a very small safety problem.

Recommendations

SWOV advises road authorities to take measures to prevent these accidents, because of their proven seriousness. A proper measures would be the mounting of roadside safety fences, especially around bends. Improving the surface of road shoulders seems benificial, both for this type of accidents, as well as for numerous other car accidents.
Car manufacturers should test their devices also in conditions as experienced under water. Even more important is the testing of escape routes like doors and windows. Drivers and occupants should wear seat belts in order to ensure a better chance of escape, because cars ending in water often sustain substantial damage in the earlier phases of the accident.

The Council for Transport Safety advises all parties concerned to better prepare car drivers and the general public for the eventuality that a car ends in water. In view of expected rescue problems, both occupants and public should know how to act. The presence of a life hammer (to destroy hard glazed windows) is advised. Considering the increasing use in new cars of electronic devices which could hinder escaping from a submerged vehicle, it is vital to keep on monitoring the scope of accidents with submerged vehicles.

PENDANT

On 1st January 2003, the international project PENDANT, started officially. The name PENDANT is almost an acronym for Pan-European Coordinated Accident and Injury Database. The project aims to create a European database of in-depth accident data. Furthermore, European hospital databases will be reviewed and analysed.

This EU project is a logical continuation of an earlier European study called STAIRS and will continue until december 2005. It is coordinated by Loughborough University in England. In this project, 11 contracted organisations and several sub-contractors work together. The participating countries are expected to have their in-depth accident team study, register, and analyse a substantial number of car accidents.
In the Netherlands, this is being done by the Dutch Accident Research Team (DART) of TNO.

In-depth data

In-depth data provides much more detailed information from separate accidents than police data. This includes the severity of the collision, the damage to the car, the make and type of the car, the type and severity of injuries sustained by occupants. By pooling the data of all cases of the different in-depth teams, the total number is cases to be analysed is expected to be about 1000 at the end of the second year of the project. This number, and the detail of the data, provides the possibility to focus analysing on relevant safety issues, such as the effectiveness of modern safety devices dependant on collision speed. TNO Automotive and SWOV work together on the Netherlands contribution about in-depth accident investigation.

Hospital data

In addition, SWOV, together with representatives from France and Spain, will produce a contribution to the part of the project concerned with hospital data on road accidents. SWOV is taskleader of 2 different tasks: the systematic description of the three different hospital data registrations, and the design of a protocol for collective analysis of the data.
The idea is to describe the characteristics of existing registrations in each of the participating countries, and to tune them in such a way that collective analysis is possible.
In the Netherlands, this involves the National Medical Registration (NMR) of Prismant, an organisation involved in the Health sector.

Information about PENDANT can be found on the website:
http://www.mechanik.tu-graz.ac.at/pendant/

Use of bicycle helmets in the Netherlands

In the Netherlands cycling is an everyday means of transport that is used by many of the Dutch. For reasons of space, accessibility, health, and the environment, the promotion of cycling is a part of Dutch transport policy.

Cycling is, in general, a safe activity, but also one with risks. The cyclist who is involved in an accident, or who falls off his bike, runs the risk of head and brain injury. Especially young children sometimes fall off their bike without being involved in an accident involving another road user.
SWOV, together with the Consumer Safety Institute, the Traffic Safety Organisation 3VO and Maastricht University, studied the use of bicycle helmets in order to explore possibilities to increase the voluntary use of helmets by young children. Wearing a helmet offers considerable protection against head and brain injury.

Accidents

Each year, about 22,000 children are treated in the Accident & Emergency departments of hospitals as a result of a cycling accidents.
In addition, about another 1,300 children are admitted as in-patients. More than a third of all casualties are aged between 4 and 8. Head injury is especially prominent in this age group according to the National Medical Register.
A joint research programme explored the possibilities of promoting voluntarybicycle helmet use by young children.

Age group	All injuries		Head injuries	
	Number	%	Number	%
0-3 years old	2.900	13	660	14
4-8 years old	8.600	39	2.300	49
9-14 years old	10.000	47	1.700	37
Total	22.000	100	4.700	100

Accident & Emergency treatments after bicycle accidents by age and injury in absolute numbers. Source: Injury Surveillance System 1998-2000, Consumer Safety Institute

Market exploration

A market exploration among parents of young children was part of the study. The results showed that the demand for childrens' bicycle helmets had increased in the last 10 years. The supply of bicycle helmets also increased considerably during this period, as far as choice, appearance, fitting shapes, and wearing comfort are concerned.

In 2002, nearly a quarter of Dutch parents of young children had bought a helmet for a child in the family during the past 5 years, and nearly two-thirds of the children with a helmet had actually used it during the past few months. Older children, however, wore a bicycle helmet less often. Round about 6 and 8 years old, relatively large groups of young helmet users lessen their helmet use, or they completely stop using them. These are the ages when children become more sensitive to their social surroundings and to what their image is.

The results of the study will be used to define effective communication programmes to improve awareness of the benefits of helmet use.

ROSEBUD

To support their decisions, decision-makers can use tools to assess the benefits and costs of different measures. These efficiency assessment tools (CBA, cost-benefit analysis and CEA, cost-effectiveness analysis) are used by a variety of politicians, civil servants and experts in the area of road safety.

ROSEBUD (Road Safety and Environment Benefit-Cost and Cost-Effectiveness Analysis for Use in Decision-Making) is a thematic network, which aims to support users of efficiency assessment tools at all levels of government. ROSEBUD has been awarded a grant by the European Commission, has a duration of three years, and is coordinated by BASt in Germany. Key issues of ROSEBUD are transfer and integration of knowledge.
An important part of the transfer of knowledge and experience in ROSEBUD is covered by a "User Reference Group" which consists of 50-80 persons. The User Reference Group should bring together users of efficiency assessment tools from all levels of government and scientific experts in the field of road safety. Continuous interaction with members of the User Reference Group will be carried out by means of interviews/ questionnaires and workshops and conferences.
The project is divided in five workpackages.
In the first workpackage, an overview of current practice of the use of efficiency assessment tools will be presented. In the second workpackage, barriers for the use of efficiency assessment tools in road safety policy are identified.
In workpackage three, improvements in efficiency assessment tools are developed, which are tested in workpackage four.
The demands of various users are summarised in workpackage five, in which the findings of the previous workpackages will also be integrated.
SWOV is a member of the Steering Committee, participates in workpackage two, and is leader of workpackage three.

More information about ROSEBUD can be found on the ROSEBUD -website:
http://partnet.vtt.fi/rosebud/

Navigation systems can have a positive road safety effect

An enormous increase in the number of navigation systems in cars is expected. Reason enough for SWOV to carry out a literature study and brief survey to try and quantify their road safety implications.

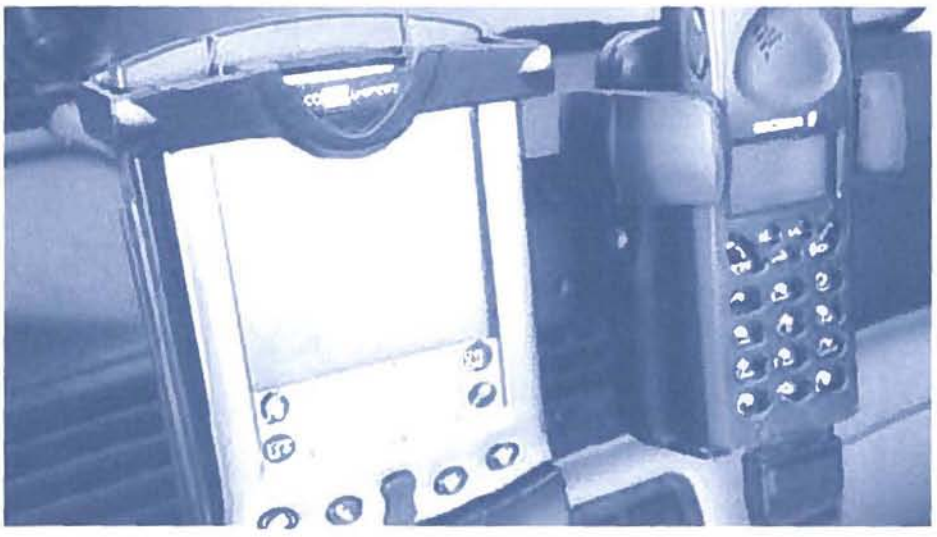
The result of this study can be briefly summarized as follows: navigation systems have a positive road safety effect because they assist finding a destination and help avoiding detours.
However, they do have a possible negative effect if operating and monitoring the system interferes with the driving task. This is also the case if the information given is not up-to-date or does not fit the driver's need. The literature indicates that a total of 5 to 7% of the kilometres driven can be saved by reducing detours.
A special target group of navigation systems are older drivers. They benefit a lot from the support of the driving task by providing the correct route information. A precondition of the system is, however, that it must be extremely simple to operate and will not interfere with the driving task.

Road safety effect

The positive effects of adequate navigation systems in cars are linked to fewer (detour) kilometres, resulting in less stress, lower costs, and less pollution. Road safety may count on a reduction of accidents and causalities of about 5-7%, being the same as the car kilometres saved.
If this reduction were also to apply to the Netherlands, a complete introduction of navigation systems would result in 40-50 less road deaths and a decrease of 400-600 seriously injured annually.
The brief survey of Dutch users showed that a majority of drivers can and do programme while driving. The satisfaction with the system seemed great, and the majority used it to assist them finding a new destination.

Major positive effects:
- Less detour kilometres,
- Less driver stress,
- Less doubt at critical decision moments (intersections, roundabouts, turning-off).

Points of concern:
- Use of less-safe, lower-order roads,
- Manual (adjustments to) programming while driving,
- Reading screen information while driving,
- Not up-to-date or incomplete route information.



Recommendations

To make navigation systems as safe as possible, the following is recommended:
- programming while driving should be made impossible,
- the display must be simple and quickly legible
- the information must also be audible
- it must also be possible to give spoken orders to the system.

We recommend a greater uniformity of the systems offered, and we recommend a design in which future systems, such as ISA can be integrated.

Accident patterns and accident risks

The Transport Research Centre of the Ministry of Transport commissioned SWOV to carry out an extensive study of 'Accident patterns and accident risks per road category'.

Central in this study is the relation between the various road categories in the Netherlands and certain accident patterns and risks. With accident patterns we mean the distribution of the various accident types. The project covers such a wide area, that it has been divided into three parts. The results have been published in three Dutch language SWOV reports: 'Accident patterns on existing urban and rural roads' (R-2002-21), 'Explanation of safety differences between road types with a traffic engineering and traffic psychology approach' (R-2002-22), and 'Calculation method of sustainably-safe basic data based on changes in accident patterns' (R-2002-23).

Existing roads

The part called 'Accident patterns on existing urban and rural roads' was carried out as a result of the expectation that certain accident types (practically) will no longer occur on sustainably-safe designed roads. That is why shifts in the accident pattern per road category were expected. Part of this study was concerned with the types of accident patterns on the various 'old' road categories. Which accident patterns occur on the various road categories and what is the distribution by collision opponents, manoeuvre type, and accident severity?

The result of the accident analysis is a series of accident patterns. The absolute and relative frequency of many relevant accident types on all distinguished sub-road categories are presented, as well as an indication of the accident severity. Two types of rural roads seem to have similarities in their accident pattern when a number of important road features are also similar: number of carriageways, lanes, and parallel provisions. This also applies to the urban road types.

As far as the accident severity is concerned, for the rural roads and the urban through-roads it was determined that the accident severity for a road user increases as his vehicle mass decreases (from lorry to pedestrian). In general the accident severity is slightly greater on the rural roads than on urban through-roads. Also the accident severity of various urban accident types is lower than on rural roads, especially the bicycle accidents on road sections.

Safety differences

In the part called 'Explanation of safety differences between road types with a traffic engineering and traffic psychology approach', a study was made of whether safety differences of road categories could be explained by differences in the combination(s) of road features. A distinction was continually made between a traffic engineering and traffic psychology approach. Hypotheses from both approaches were made about the relations between road features, road behaviour, and accidents. Using these supposed relations, various road sections were judged for their safety. These hypotheses were then tested by comparing the road judgements with an objective safety measure, viz. the number of accidents. Based on these road assessments, twenty studied road stretches were ranked by safety, and then subdivided into 'safety classes'. These results were then linked to the corresponding accident data. From this, it appears that there is some relation between the ranking by the appraisal methods and the objective safety measurements 'accident density' and 'number of accidents per motor vehicle kilometre travelled'. However, based on these methods, it is not yet possible to explain the total variance in the number of accidents. For a better explanation of the variance in the accident data, the appraisal methods need to be altered. Preferably they be integrated into one method in which both lines of approach are used and complement each other. Such an alteration and integration can take place by carrying out an inventory of the task burden that a road stretch requires. There are, in fact, traffic engineering as well as traffic psychological aspects underlying this.

Apart from this, a further extension and refining of the appraisement method is possible by also involving the point of view of the road user; on the basis of which aspects does a road user judge the safety of the road on which he/she is travelling. A positive result is that both methods/approaches, the traffic psychological better than the traffic engineering, produced leads for road categorising. Further study of the application of both methods for road categorising is desirable. This especially because road categorising is regarded as being so important in a sustainably-safe road traffic system.

Calculation

The part called 'Calculation method of sustainably-safe basic data based on changes in accident patterns' describes a method to calculate the new accident risks (basic data) of the road categories after the sustainably-safe measures had been implemented. The calculation method uses changes in accident patterns and the basic data that quantify the safety of the existing road categories.

The report emphatically presents only a calculation method, and not the sustainably-safe basic data itself. The choice of the sustainably-safe measures to be implemented, and the ways to estimate their effects, is still a matter of discussion. This report hopes to stimulate and contribute to this discussion.

Public acceptance

In order to obtain greater insight in the problem of public acceptance for new traffic safety measures, a study was made of different situations in which a lack of public support can play a role. The study was carried out using a literature study and a workshop among experts.

Using the information gathered, four potential dilemmas were distinguished:

- social dilemma,
- legitimacy or fairness dilemma,
- credibility dilemma,
- implementation dilemma.

Social dilemmas

Social dilemmas occur when individual preferences (directly perceptible) clash with collective interests (noticeable in due course). In road safety, the speeding problem can be considered partly as a social dilemma. The preference of the individual motorist for an adequate speed is often contrary to the collective road safety.

Legitimacy dilemmas

The essence of legitimacy dilemmas lies in questions of fairness: are the advantages and disadvantages of a measure defensibly and fairly distributed among the various groups that are effected by the measure and its implementation? For example, older mopedists consider not being allowed to use the bicycle path any longer a problem.

Credibility dilemmas

Credibility dilemmas are mostly about the public's perception of the purposes and interests that play a role in certain social questions. The media are often seriously involved in such dilemmas. A measure that, in principle, is effective and safety improving, can be doubted because of (perceived) negative side effects or ulterior motives, or because there appear to be better alternatives. A well-known example is the criticism of the alleged financial ulterior motives of automated speed controls.

Implementation dilemmas

The essence of implementation dilemmas is that acceptance of a measure is hampered because the disadvantages are compensated by additional advantages of other measures insufficiently or too late. An example is the development of a project in which speed-reducing measures (disadvantages) were taken earlier than flow-promoting measures (advantage).

Research instruments

From a theoretical point of view these dilemma's can be considered separate areas. In practise however, a pile-up of dilemma's can often be observed. Mistakes made in the opening phase of introducing a measure may give rise to questions about the credibility and legitimacy of the measure. This in turn leads to a larger emphasis on the social dilemma of the measure. Each of the four dilemmas can lead to the situation in which public support for a measure is already low when introduced, or becomes negative in time. The correct type of research can reveal possible dilemmas, so that recommendations for communication can be made. It may be expected that sound communication will lead to a higher level of public support. If, for example, the public's knowledge or experience of a measure is very slight, pilot studies or focus groups are better research instruments than a written questionnaire for making an inventory of opinions and feelings about the relatively unknown measure.

The Dutch report D-2002-2 contains a checklist for the correct choice of research instrument.

ASTERYX

Commissioned by the EU (DG-TREN), a consortium of 4 institutes (from England, France, project manager Austria, and the Netherlands) is carrying out a project in which the so-called CAREplus database is critically examined.

This European database contains accident data from 1991 onwards, and is the sum of the detailed (police) data of nearly all EU countries. The database has its own (European) website on which users can consult accident data, for as far as they are available.

In this EU project, all participating institutes have access to the source itself, so that more detailed analyses can be conducted in order to to deal with the following task aspects of the Asteryx project.

- The CARE research aspect: Analysis of possibilities and limitations of CARE and the added value for the road safety community;
- The CARE user aspect. Evaluation of the user instruction and data-handling, giving practical advice and examples for the use of CARE; explanation of possible pitfalls as a result of incorrect interpretation or incorrect use of the data, especially when comparing data from different member countries;
- The CARE aspect of the European added value: Determination of specific accident patterns in individual member countries or combinations of them; determination of subjects that require extra activity at the EU level, national level, regional level, or local level; if possible, evaluation of the Commission policy which is already implemented or of decisions taken; recommendations to the Commission for future use of CARE.

Each institute studies the added value by means of a case study. While using the database for this purpose, specific attention will be paid to the first two goals.
SWOV is conducting analyses of two road safety items: the increase in the number of rear-end collisions with cars on motorways and the possible relation between traffic regulations and accidents. This last is being studied for two facets, viz. the influence of speed limits on motorways and the minimum age for riding a moped. SWOV's contribution will be ready mid 2003, and the final report is expected late 2003.

The address of the Asteryx website is ***http://europa.eu.int/comm/transport/home/care/index_en.htm***

Colophon

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

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Editor: Hansje Weijer
Photographs: Paul Voorham, Voorburg
Realisation: SLEE Communicatie, www.slee.nl

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

ISSN: 1380-703X

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SARTRE-3

In 2002 another large-scale public survey about the perception of road safety risks and the opinions on road safety measures was carried out. This is the third time that this survey has been conducted throughout Europe.

SARTRE stands for Social Attitudes to Road Risk in Europe. In it, about 1000 driving licence holders per country are questioned about their opinions on road safety measures, danger perception in traffic, about road accident causes, their own behaviour and that of other road users, and about their expeniences with police surveillance.

The first study took place in 1991 and the second in 1996. During this period, the number of participating countries has increased considerably. In 1991 there were 15 countries (of which 10 EU member states), in 1996 there were 18 (of which 14 EU member states), and in 2002 there were 23 (of which 14 EU member states).
At the European level, these survey results present a picture of how support for road safety and road safety measures has developed among European motorists. At a national level for example, the results provide insight into how parts of the Netherlands system of traffic enforcement compare with those abroad, and whether the experiences with traffic enforcement have changed during the period 1996-2002.

Unique material for comparison

The SARTRE database contains, per country, a unique source of information about reported traffic behaviour and opinions. Comparisons with previous studies provide insight in how the support for road safety policies and road safety measures has developed in the various European countries. Such an insight is of great importance for the European road safety policy. For the Netherlands, this study is especially useful because information is obtained about how the Dutch road users think about road safety measures and how they behave in traffic in comparison with other (foreign) road users.

In the summer of 2003, SWOV will produce a report about the SARTRE-3 results, with particular attention for the Netherlands. SWOV published the results of SARTRE -1 in report R-94-9: 'Differences and similarities between European drivers in opinions about traffic measures'. The results of SARTRE 2 are published in report R-97-26: 'Nederlandse rapportage SARTRE 2'.

New in SARTRE

In SARTRE-3, questions were asked for the first time about:

- acceptance of safety cameras,
- experiences with aggressive traffic behaviour,
- acceptance of obligatory speed limiters in cars,
- obligatory car driver tests every 10 years,
- acceptance of obligatory car driver tests for the 60+,
- acceptance of fines on licence number of car owner,
- acceptance of the use of a black box for accident analysis and speed control,
- acceptance of electronic identification of vehicle for speed control and recovery of parking/toll money,
- the use of mobile phones (whether or not to permit hands free phoning),
- knowledge of safety regulations in tunnels,
- public wishes for a European road safety policy.

Publications

Most SWOV reports are written in Dutch but they all include an English summary. Below is a selection of reports that have recently been published by SWOV. Records of all SWOV reports that were published from 1980 onward can be found on our website (www.swov.nl). Reports that were published in or after the year 2000 can be downloaded free of charge.

Accident patterns on existing urban and rural roads
Ing. C.C. Schoon & J.M.J. Bos. R-2002-21. 40 + 48 pp. € 15,- (In Dutch).
This report is part of the project 'Accident patterns and accident rates per road type'. This study focusses on the relation between the various road types in the Netherlands and certain accident and rate patterns: the distribution of accidents among various accident types (crash opponents, manoeuvres) and various classes of accident severity.

Explanation of safety differences between road types with a traffic engineering and a traffic psychological approach
R.J. Davidse, R.M. van der Kooi, A. Dijkstra, & J.G. Arnoldus. R-2002-22. 52 + 100 pp. € 23,85 (In Dutch).
This report is part of the project 'Accident patterns and accident rates per road type'. Study of whether differences in the safety of road types can be explained by differences in combinations of road features. A distinction was continually made between a traffic engineering approach and a traffic psychological approach.

A method for calculating changes in accident rates on roads made sustainably-safe
S.T.M.C. Janssen. R-2002-23. 23 + 12 pp. € 10,- (In Dutch).
This report is part of the project 'Accident patterns and accident rates per road type'. This part of the project describes the method of calculating the new accident rates (key data) of the sustainably safe road categories after sustainably safe measures have been implemented. The data used are those used to quantify the safety of present existing types.

About the covariance between the number of accidents and the number of victims
F.D. Bijleveld. R-2002-24. 26 + 13 pp. € 10,- (In English).
Traffic safety is not only indicated by the number of accidents, but also by numerous accident related outcomes like the number of people killed, the number of people seriously injured, the amount of material damage, etc. In this study some statistical issues involved in the simultaneous analysis of accident-related outcomes (the number of victims, fatalities and accidents) of the traffic process were studied. The main focus of this study was the covariation of the outcomes.

"Hardcore" problem groups among adolescents Their magnitude and nature, and the implications for road safety policies
T. Wurst. R-2002-25. 38 pp. € 10,- (In English).
Contemporary data show that traffic death continues to be the leading cause of death for people aged 15-24 in all western motorised countries. The first part of this paper consists of a literature review, summarising relevant psychological and psycho-social theories and international research findings. The second part of the paper consists of an empirical study among Dutch adolescents.

Mobile computers in cars and possible road safety effects
an inventory. Dr. L.G. Braimaister. R-2002-26. 78 + 30 pp. € 25,- (In Dutch).
This literature study makes an inventory of the developments in the field of mobile computers, mobile multimedia information and communication systems.
The report also contains an exploration of possible road safety effects of such systems.

Review of Ireland's Road Safety Strategy
F. Wegman. R-2002-27. 58 + 4 pp. € 12,50 (In English).
Evaluation of road safety policies in Ireland and recommendations for further improvement.

Size, nature, and severity of accidents with cars submerged in water
An analysis of data up to 2000. L.T.B. van Kampen. R-2002-28. I. 34+13 pp. € 11,70.
This report presents the first phase of the project which studies the outcome of road accidents in which a car end up in the water.

Problems with escape and rescue from cars after immersion
L.T.B. van Kampen. R-2002-28. II. 38 + 1 pp. € 10,- (In Dutch).
Second phase of the project which studies the outcome of road accidents in which a car end up in the water. Study of causes and consequences of motor vehicle immersions, on the basis of police files and literature.

Possible road safety consequences of e-commerce in the Netherlands
An exploratory study. Dr. L.G. Braimaister. R-2002-29. 40 + 4 pp. € 11,25. (In Dutch).
Initial investigation of the possible influence of e-commerce on road traffic in the Netherlands and of the possible road safety consequences.

Possible safety effects of navigation systems in cars
Literature study, some simple calculations of effects, and survey results. H.L. Oei. R-2002-30. 38 + 4 pp. € 11,25. (In Dutch).
First estimate of the possible positive and negative safety effects of navigation systems and also the safety demands that can be made for these systems. The study consists of a brief review of literature, among which a recent test of several navigation systems. Furthermore, a number of simple calculations of the (safety) effects were performed and a small scale survey was held among car drivers with navigation systems.

Literature study of emotions in traffic
Use and possibilities of an affective approach to traffic behaviour. Dr. P.B.M. Levelt. R-2002-31. 122 pp. € 20,- (In Dutch).
Irritation, anger, and aggression are the emotions mainly associated with traffic. However, emotions in traffic can also be positive. This report, mainly based on the work of Nico Frijda, presents a framework within which the emotional aspects of traffic behaviour can be studied. Also an overview of traffic psychological literature about these phenomena is given.

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