

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

Contents:

- Dutch Minister of Transport:
"No midlife crisis for 45-year
old SWOV" ①
- Effects of Traffic Education:
structural assessment of
education projects recom-
mended ②
- Decrease in-patients not syn-
chronic with spectacular fall in
road deaths ③
- DRUID measurements well
underway ④
- The summit conquered:
50 years of road safety ④
- SUPREME: Best Practices
in Road Safety ⑤
- SWOV enters into research
exchange agreement with the
University of North Carolina
Highway Safety Research
Center ⑤
- Sharper 2020 road safety
targets for the Netherlands
are feasible ⑥
- Setting the stage for the
European Road Safety
Observatory ⑦
- Publications ⑧

Editorial

In April of this year SWOV organized a symposium in honour of her 45th anniversary. At this occasion the results of the 2003-2006 research period were presented. This issue of Research Activities discusses the outcomes of several of the studies.

This magazine also reports the results of the SUNflower-SafetyNet workshop which SWOV organized in June.



Dutch Minister of Transport: "No midlife crisis for 45-year old SWOV"

SWOV-congress to celebrate 45th anniversary
and closure of the 2003-2006 programme

On April 26, SWOV organized a congress to celebrate her 45th anniversary. At this congress, which was attended by well over 150 guests, SWOV presented the results of the four year research programme 2003-2006.

The theme of the congress, the results of four years of road safety research, ensured a varied programme. As an introduction two special SWOV publications were presented by SWOV's managing director Fred Wegman. The first publication, called *Research results 2003-2006* is a compilation of concise articles about 37 of the studies which were carried out within the programme.

The other publication, *The summit conquered*, analyses the developments in 50 years of road

crashes for all modes of transport and traffic participants. After a peak in the seventies, the number of road deaths has been showing an impressive decrease; see also p. 4.

Interaction research and policy

On behalf of the Dutch Minister of Transport Camiel Eurlings, a representative from the Ministry of

We call upon all youth to serve as role models on the road and to promote road safety among their friends and families – particularly their younger brothers and sisters.

Youth Declaration for Road Safety – WHO/UN

QUOTE

Transport delivered his speech. "Road safety policy in the Netherlands is successful, and SWOV's efforts are partly responsible", said the minister. "The Ministry is continuously searching for solid knowledge. We use SWOV knowledge as building bricks for the interaction between research and policy." According to the minister, SWOV, despite her age, shows no signs of a midlife crisis.

For the future of road safety policy the minister expects more emphasis on policy innovations. Considering the vulnerability of the young in traffic, education will also receive special attention from the Ministry. Minister Eurlings has great expectations of new vehicle technology, another field in which SWOV researchers are active. He stressed the importance of international cooperation and SWOV's good reputation in other European countries.

Network organisation

"SWOV wants to be a network organisation which likes to cooperate with other organisations and parties", said SWOV managing director Wegman. "We enjoy working together with both executive organisations and the field of research". Wegman is therefore proud that already eight PhD students are writing their thesis at his institute, or have already taken their PhD in recent years.

All SWOV research is about finding answers to the question why crashes happen and what can be done about it. In the process SWOV is confronted with new social phenomena, like the combined use of alcohol and drugs. "The difference with earlier days is that then drug users were not traffic participants, and now they are," according to Wegman. He expressed his concern about the group of notorious alcohol consumers. While 'normal' alcohol consumption in traffic is less and less a prob-

Young road traffic casualties

On behalf of the United Nations World Youth Assembly, Floor Lieshout asked for a stronger involvement of youngsters in road safety activities. He thinks 'fresh blood' is necessary to aid the worldwide reduction of young traffic casualties. At present 1049 youngsters die in traffic every day.

More information, including a link to the Youth Declaration for Road Safety, can be found on: www.who.int/mediacentre/news/releases/2007/pr17/en/

lem, this relatively small group remains a danger for themselves and for others. ◆

The results of several of the SWOV studies are discussed in more detail throughout in this issue of Research Activities.

Effects of Traffic Education: structural assessment of education projects recommended

Given the different effects of traffic education programmes, SWOV recommends assessing the effects as a standard element of an education programme in order to contribute to a further professionalizing of traffic education programmes in the Netherlands.

As we pointed out in Research Activities 34 of March this year, road safety education projects are hardly ever systematically evaluated in terms of safety effectiveness. Therefore, in the recently completed 2003-2006 research programme, SWOV has evaluated eleven education projects. This study, known as the Traffic Education project (EVEO), showed that 50% of the projects resulted in a significant but small improvement in safe behaviour one month after the safety education project was completed. The other half did not show any improvement.

Self-reported behaviour

The study used participants' self-reported traffic behaviour as the measure of effectiveness. The number of crashes as a measure of effectiveness of education programmes, is inadequate, because crashes are rare, and because their causes are partially determined by a sequence of events. Education's role in an individual crash, therefore, is difficult to isolate. That is why it is better to use a measure that is directly related to the behaviour that should be learnt. The research was done in a before-and-after study and corrections were made for external influences



to the programme by measuring self-reported behaviour in a control group that had not followed the programme.

EVEO assessed eleven education programmes. The programmes were mostly aimed at youngsters and children, and were often carried out in cooperation with their schools. A few projects were targeted at specific groups of road users, such as young moped riders. The goal of most of the education projects was to make increase awareness of traffic's dangers and which behaviour is safe or unsafe. The tools used were, among others, classroom discussions, demonstrations, and campaign films.

Modest effect

A month after the programmes had finished, more than half of them resulted in safer traffic behaviour. Effect sizes ranged between 10-41%.

SWOV explains the measured effects as follows:

- The assessed programmes have a brief duration. Studies have shown, however, that repetition of a message improves its effectiveness.
- Traffic behaviour is habitual behaviour and strong motivation and many external stimulants, such as reward and punishment, are necessary to break a habit.
- The EVEO project only looked at isolated education effects and combined effects were ignored. Combinations, however, like for example education combined with police enforcement, can in fact be very effective.

Professionalizing

The EVEO project gave an initial impetus to a systematic and manageable assessment method and can make a contribution to improving assessment projects. We therefore recommend including the EVEO project in the Toolkit, which is a checklist containing features and elements of the most commonly used educational programmes in the Netherlands (www.kpvn.nl). In future, education programmes should be structurally assessed in order to contribute to a further professionalizing of traffic education. ◆

SWOV report R-2006-28, entitled 'When is education effective? Systematic evaluation of education projects', can be consulted and downloaded at www.swov.nl. under Research, Publications. The report is in Dutch, but has an English summary.

Decrease in-patients not synchronic with spectacular fall in road deaths

Over the past decades, the total number of in-patients showed a much slower decrease than the number of road deaths in the Netherlands. Based on an analysis of special in-patient data, SWOV comes to the conclusion that traffic injured who are admitted to hospital often are not as severely injured as one would expect.

In the 1984-2005 period the number of registered road deaths decreased by 54%. In that same period, according to the National Medical Registration (LMR) the number of registered in-patients went down by only 16%, from 20,800 to 17,400, a far smaller decrease, therefore than the decrease in road deaths.

To find an explanation for this difference in development, SWOV analyzed data about injuries and other features of hospital admissions as a result of road crashes. The LMR files from between 1984 and 2005 were used to this end. The LMR's practicability is confirmed by the fact that the number of casualties dying in hospital shows an identical spectacular development to that of all registered road deaths.

Hospital admission not synonymous to severely injured

Analysis of the files results in SWOV's conclusion that part of the Dutch hospital admissions does not meet the requirements for the label 'severely injured', while the terms 'hospital admissions' and 'severely injured' are often used arbitrarily. An increasing proportion of the in-patients, which now amounts to 8%, appears not to have sustained any injuries, but is kept in hospital one night for observation. 'Truly' severely injured are those suffering from injuries like serious fractures, dislocations, sprains, serious concussions and internal injuries. Such injuries generally require a convalescence



period of many weeks, followed by a period of rehabilitation. Severe injury often has lasting effects.

Fewer injuries after road crashes

In the period studied, the average number of different injuries for hospital admissions as a result of a road crash decreased by 17%. This decrease is especially the case for victims who have sustained more than three injuries.

The average length of stay also shows a large decrease, even as large as 60%, but this decrease also shows for other groups of patients and cannot therefore be associated with improved road safety.

Not only the number of injuries per person decreased, but this was also the case for the injury severity. After correction of the number of hospital admissions by deletion of the 8% without injury, the remaining number of hospital admissions appears to have decreased with one fifth. This development indicates that the road safety improvement has also affected the number of hospital admis-

sions. It must be said, however, that this decrease remains smaller than that of the road deaths, even after correction.

The fact that the number of road deaths went down faster than the number of 'truly severely injured' in combination with the fact that there is a diminished injury severity, led to the conclusion that crashes have a less serious outcome than in the past.

Increasing numbers of injured cyclists

The decrease of the number of hospital admissions after correction, is mainly the case for car occupants. This group also has a clearly diminished injury severity. In contrast, there is hardly a reduction of injury severity among cyclists. On top of that, cyclists are by far the single largest group of traffic injured admitted to hospital, and this group continues to grow in size, in an absolute as well as in a relative sense. SWOV therefore recommends further investigation of the group of injured cyclists.

Severe injury better indicator road safety

For future target setting in road safety policy and monitoring of road safety developments, SWOV proposes to use only cases of at least moderate or severe injury instead of *all* hospitalized. This data seems to give a more accurate picture of road safety. Such a change requires consultation between different parties, because it will affect the established Dutch road safety targets. ◆◆

SWOV-report R-2007-2 entitled 'Traffic injuries admitted to hospital; Developments in numbers, injury severity and admission duration since 1984' can be consulted and downloaded on www.swov.nl. The report is in Dutch, but has an English summary.



How dangerous are alcohol, drugs, and medicines in traffic?

DRUID measurements well underway

Last December, SWOV started her participation in the DRUID project, a large-scale EU study of the traffic risks of alcohol, drugs, and medicines. In the meantime the project is well underway and the Dutch project team is travelling through the country to carry out testings.

For the testings the project team uses regular police alcohol controls in the six police regions of Amsterdam, Enschede, Groningen, Leiden, Nijmegen, and Tilburg. Motorists who are breathalyzed are asked to voluntarily participate in the study. They are then completely anonymously tested on their use of drugs and medicines.

Cooperation

SWOV project coordinator Sjoerd Houwing is enthusiastic about the cooperation by the police regions: "It is of course impossible for us to halt cars in traffic on our own to ask the drivers to take part in the study. Only the police may do this. The policemen we go along with do everything they



can to ensure we can do our work as well as possible. They are also very aware of the importance of the project. The IMMORTAL project which preceded DRUID showed that alcohol and drugs, especially when used in combination, can result in extremely high risks. But where our conclusions are based on data, the police see the problem in daily practice".

Until now SWOV has carried out twelve testings, two in each of the participating police regions. An average of 60 motorists per testing cooperated;

the refusal rate fortunately is very low. Houwing: "If we explain to the motorists why we are carrying out this study, practically every driver supports this approach. They frequently tell us that alcohol and drugs, and to a lesser extent medicines, just do not belong in traffic".

Comparison with hospital patients

In order to determine the safety effects when driving under the influence of alcohol, drugs, and medicines, the drug and medicine use of the interviewed motorists is compared with that of injured drivers who have ended up in hospital. The availability of these anonymous data is presently being discussed with the hospitals within the six police regions.

DRUID

The EU project DRUID, which stands for DRiving Under the Influence of Drugs, alcohol and medicines, is a cooperation of 36 partners from 18 European countries. Testing in the DRUID project will continue until July 2009. ◀▶

The summit conquered: 50 years of road safety

In the publication entitled 'The summit conquered; Assessment of road safety in the Netherlands in the period 1950-2005', SWOV has looked back on a half century of road safety developments in the Netherlands.

There is a peak in the number of road deaths for most of the modes of transport around 1970. From the 1960s onwards most road deaths have been among car occupants, whereas before then the victims were mainly pedestrians and cyclists. In the fifties, no passenger cars were involved in the majority of fatal crashes. Since the 1980s, the number of fatal crashes between cars and these two groups of vulnerable road users has decreased considerably.



These and other interesting trends in Dutch road safety are based on a SWOV analysis of the developments in the numbers of road deaths and in-patients since 1950. The crash data have been subdivided by mode of transport, road type, age, and other characteristics.

The report doesn't only look at the developments in the numbers of road crash casualties, the report also discusses how crashes are registered and their registration rates, the road safety definitions and road safety measures, and the social factors that are or have had an influence on road safety.

Males more often casualty

The analysis investigated trends in the numbers of road deaths in detail. Since 1976 much more data has been available than in the period before. This later data shows that pedestrian and cyclist deaths are mainly found among the elderly (>70) and the young (<25), and that car occupant fatalities and especially moped rider deaths are mainly young, whereas the age for motorcycle fatalities has strongly varied over the years. Another noticeable fact is that men are over-represented.

In the regions with a low population density, the number of deaths per inhabitant is larger than in regions with a high population density. Despite the

fact that the crash rate on 50 km/hour and 80 km/hour roads has decreased during the past decades, these roads still account for the majority of road deaths. This decrease is mainly due to improvement of the traffic distribution as a result of the many infrastructural measures during the past five decades. The total number of fatal crashes on motorways has also decreased, whereas there have been more fatal crashes on the 30 km/hour roads because the total length of this road type has increased.

Road safety trends

Below is a selection of trends which occurred in the past 50 years:

The risk of a fatal crash appears to be connected with the point in time of the traffic participation. The hour of the day as well as the day of the week is of importance. There are many casualties in the morning rush hour on weekdays, as is also the case as early as 16 hrs in the evening rush hour. There is no similar peak in the number of road deaths in the weekend. Another major difference between weekdays and the weekend is that the number of road deaths is considerably higher on weekend nights, between 0 and 6 hrs.

- Since the mid-eighties, the number of fatal crashes per kilometre travelled has decreased by 4-5% a year for pedestrians, cyclists, and car occupants.
- Especially for the elderly the crash rate has decreased over the past decades.
- The number of road deaths among drivers has come to dominate road safety.
- The number of pedestrian deaths, especially among children, has decreased considerably.
- The number of single car crashes, crashes not involving any other road users, has hardly decreased for years, whereas the number of car crashes involving other road users types did decrease.
- The introduction and lowering of speed limits made an important positive contribution to road safety, as did the construction of cycle paths and road crossing facilities.
- The many advanced technical vehicle developments of the past decades also have positive effects. ◀▶

The publication entitled 'The summit conquered; Assessment of road safety in the Netherlands in the period 1950-2005' is available at www.swov.nl under Research, Publications. The report is in Dutch, but has an English summary.

SUPREME: Best Practices in Road Safety

With the launch of the project results on the EU website, the SUPREME project has officially come to an end. The goal of SUPREME was to collect, analyze, summarize and publish best practices in road safety in the Member States of the European Union as well as in Switzerland and Norway.

SUPREME was aimed at providing user specific information on outstanding safety measures with a view to implementation in other countries or at the European level. The target audiences of the project are decision and policy makers at all levels, from European to local, as well as the scientific community and practitioners in the field. Data has been collected on current policy measures in all countries, covering the whole field of road safety policy divided in nine themes. The measures were looked at from different perspectives: classes of road

users concerned, scope of implementation and type of organization implementing the measure. On each theme a separate (interim) report has been published as well.

The final results of the data collection and analysis are presented in two publications: a handbook for measures at the country level, gathering best practice measures in road safety from the 27 participating countries, and a handbook for measures at European level. This last publication aims at completing the information provided in the handbook at the country level by presenting Europe-wide best practices and best measures at the national level that could have an added value if implemented at the European level. ◀▶

All results from the SUPREME project can be found on the EU website: http://ec.europa.eu/transport/roadsafety/publications/projectfiles/supreme_en.htm

SWOV enters into research exchange agreement with the University of North Carolina Highway Safety Research Center

Countries throughout the world are recognizing the need to reduce severe injury and fatalities on their roads, and improve highway safety. There are a number of factors that contribute to a severe or fatal injury in a crash – anywhere from seat-belt use to excessive speed.

In their continued efforts to find the most effective methods in reducing the number of crash-related fatalities and injuries, SWOV and the University of North Carolina Highway Safety Research Center (HSRC) entered an agreement to collaborate on highway safety research, as well as participate in an employee exchange programme between the two institutions.

"We are very excited to work in conjunction with SWOV and learn more about the type of research they conduct. Through the employee exchange programme, we'll be able to have more of a first-hand account of their research methods, as well as the knowledge and insights of one of their researchers." said David Harkey, director of HSRC, in their newsletter.

In the exchange programme, SWOV's Martine Reurings, spent six-week with HSRC in April and May as a visiting researcher from SWOV.



SWOV and HSRC officially signed the agreement on March 7, 2007. Attendees of the University of North Carolina community signing the agreement included Tony Waldrop, vice chancellor for research and economic development, UNC-Chapel Hill; Peter Coclanis, associate provost for international affairs, UNC-Chapel Hill; David Harkey, HSRC's director, UNC Highway Safety Research Center; and Fred Wegman, SWOV's managing director.

Within the next few months, HSRC will begin making preparations to send a researcher to the Netherlands.

In addition to general research and the employee exchange, the two Centers will explore opportuni-

ties for collaborative projects to improve road safety throughout the world. ◀▶

The University of North Carolina Highway Safety Research Center makes its research available on its website <http://www.hsrc.unc.edu/>

Sharper 2020 road safety targets for the Netherlands are feasible

SWOV has made a long term outlook on the numbers of road deaths and in-patients in the Netherlands. The central issue was the feasibility of the 2010 and 2020 targets set by the government. The outlook included an estimate of the effect of several intended road safety measures. Based on present and intended policy, SWOV found that without additional measures, it is far from certain that the targets will be achieved. With additional measures, it may be possible to sharpen the present target for 2020.

Targets

It is essential to have insight in the long term road safety developments to be able to see if new measures need to be taken to adjust the course of road safety policy in time. The long term road safety targets in the Netherlands can be found in the Ministry of Transport's *Mobility Policy Document*. Currently, the ministry considers adjusting the 2020 target. In the *Mobility Policy Document* the maximum number of road deaths in 2020 has been set at 580; the number of injured at 12,250. The intermediate target for 2010, which had earlier been set at 900, is now 750 deaths and 17,000 injured.

Feasibility

In their study entitled *Road Safety in 2020; Mobility, crashes, and policy outlooks*, SWOV has estimated the expected number of casualties for 2010 and 2020. The study took the four prognoses about mobility and distances travelled that the ministry's Transport Research Centre (AVV) had made together with several planning offices as a basis. The projected mobility is an important factor for future casualty numbers.

For the prognosis of the number of road crash casualties in 2020, SWOV first examined what would happen if the current policy were to continue unchanged, i.e. without any new measures. This is called the *baseline prognosis*. We calculated prognoses for various mobility scenarios of AVV, allowing for the introduction of road pricing. We then used this baseline prognosis to quan-



tify the expected extra contribution of a number of intended new measures.

Achievement uncertain with current policy

The baseline prognosis showed that continuation of the current policy, and without extra new measures, makes achieving the targets in the *Mobility Policy Document* extremely unlikely. This, in any case, applies to the scenario for the largest mobility growth.

New intended policy

Guided by policy documents and interviews with policy makers, five possible new policies for the coming period were selected of which we calculated the safety effects:

- introduction of accompanied driving from 17 years old;
- stimulating the use of the informative kind of Intelligent Speed Assistance (ISA) for cars and delivery vans;
- increased stimulation of a safety culture in haulage companies by using ITS and behaviour feedback to lorry drivers;
- incidental extra investment of 300 million in dangerous trunk roads (national as well as provincial);
- an annual € 100 million extra during a 14-year

period to increase safety of the secondary road network.

If these measures are taken between now and 2020, the targets are expected to come within reach. They will save 80 road deaths and 2,600 in-patients extra per year.

Lower targets feasible, but extra measures needed

To make achieving the Ministry's targets in 2020 sufficiently certain, additional measures remain necessary. SWOV recommends developing an additional package of measures which must have the Sustainable Safety principles as a basis. Further elaboration of these measures is required to calculate their quantitative effects, but previous effect calculations have shown that substantial savings in casualties are to be expected. SWOV expects that further sharpening of the current government targets for 2020 then may also become feasible. ◀▶

SWOV report R-2006-27, entitled 'Road Safety in 2020; Mobility, crashes, and policy outlooks', can be found at www.swov.nl under Research, Publications. The report is in Dutch, but has an English summary.

Year	Road deaths			In-patients		
	Mobility Policy Document target	Baseline prognosis based on largest exposure growth	Extra effect intended measures	Mobility Policy Document target	Baseline prognosis based on largest exposure growth	Extra effect intended measures
2010	750*	800 ± 120		17,000	17,600 ± 400	
2020	580	570 ± 130	-80	12,250	15,600 ± 1,000	-2,600

* set in 2006, after lowering the original target of 900.

Table. Numbers of road deaths and in-patients with unchanged policy and the scenario with largest exposure growth, including road pricing. Implementation of already intended measures results in number, or extra numbers, of fatalities and injured saved.

Setting the stage for the European Road Safety Observatory

SUNflower – SafetyNet workshop in Amsterdam

How can countries better understand their current road safety status, and be assisted with data- and knowledge-driven policymaking to further improve road safety in the future? These questions were the main topics in the SafetyNet-SUNflower workshop which was held in Amsterdam on June 1, 2007.

The main goal of the international workshop which was organized by SWOV was to see how the SUNflower methodology can be used in the SafetyNet project, and which obstacles need to be overcome. The workshop addressed the connection between policy questions, knowledge and data. The starting point was the combination of SafetyNet and the Sunflower approach, thereby using the main outcomes of the SUNflower projects to strengthen the structure of SafetyNet's European Road Safety Observatory (ERSO). ERSO will contain data from all EU countries and is intended to be a complete source of information for all those who are professionally occupied with road safety.

SUNflower

The SUNflower project, which was completed in 2006, made a comparative study of the development of road safety in European countries. This also included identifying which underlying policy concepts can be determined and which measures, interventions and developments are beneficial. The findings have been visualized in a pyramid structure (Figure 1). SUNflower's pyramid structure is considered to be of great added value to the SafetyNet project. The pyramid structure has been translated into a road safety footprint methodology that can be used for benchmarking. But more than that it

improves our understanding of road safety developments and consequently contributes to better policymaking.

The SUNflower pyramid represents the target hierarchy of road safety and is used as a framework for the information system in SUNflower as well as in SafetyNet. The pyramid has a country's structure and culture as its basis and through different layers reflects the different aspects of road safety for the system components (infrastructure, road user, transport mode) under the influence of external factors. The top of the pyramid is formed by the social costs: the road safety problem translated into socio-economic costs to society. The causal relationships between the layers of the pyramid are important links for knowledge based benchmarking.

Workshop

One important issue that was brought forward was that concentration of evidence-based/science-based information is essential for effective policymaking, for cooperation and for action to be taken to contribute to reaching the EU target of fewer than 25,000 fatalities in 2010. Data is important in this process because it shows if measures work. SafetyNet collects data for policymaking so that the demand for tailor-made information can be satisfied. Different parts of the ERSO website, therefore, contain different kinds of information, for example fact sheets, data and links to organizations and information worldwide.

Experiences

During the workshop representatives from the participating countries discussed their experiences with using the pyramid structure for the road safety

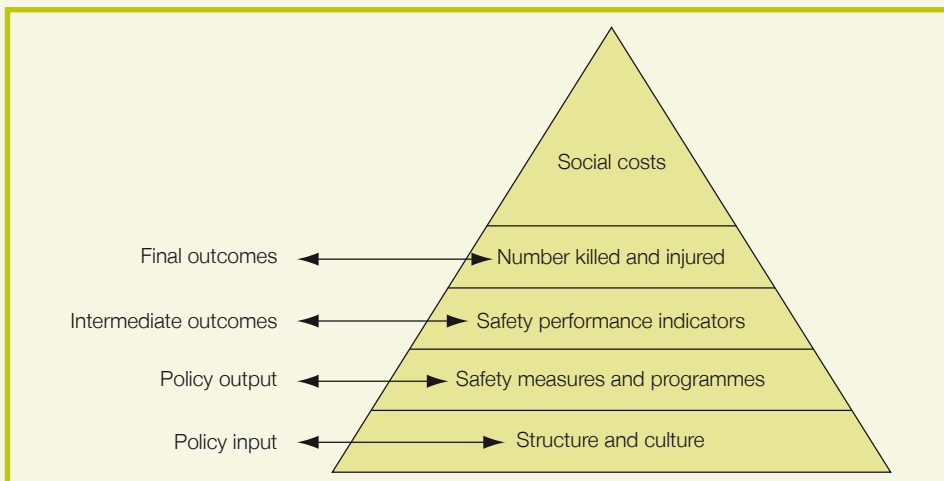


Figure 1 SUNflower pyramid

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 articles on scientific projects carried out by SWOV and by others.

Editorial committee: Marjan Hagenzieker, Jolanda Maas, Ingrid van Schagen, Martijn Vis, Hansje Weijer

Editor: Hansje Weijer
Photographs: Paul Voorham, Voorburg

Realisation: SLEE Communicatie, www.slee.nl

Publisher:

SWOV Institute for Road Safety Research, PO Box 1090, 2260 BB Leidschendam, The Netherlands

T + 31-703173333
F + 31-703201261
E info@swov.nl
I www.swov.nl

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

Copyright: No part of this publication may be reproduced in any form, by print, photoprint, microfilm or any other means without the prior written permission from SWOV Institute for Road Safety Research.

The articles in this magazine can (for private use only) be found on our website: www.swov.nl

ISSN: 1380-703X

SWOV Institute for Road Safety Research

PO Box 1090
2260 BB Leidschendam
Duindoorn 32
2262 AR Leidschendam

The Netherlands

T +31 - 703173333
F +31 - 703201261
E info@swov.nl
I www.swov.nl

topics seat belts, motorized two wheelers, and young drivers. They were asked about their experiences on four specific points:

- Their experiences with organizing information in the pyramid structure;
- The problems they encountered;
- Recommendations for improvements;
- Recommendations for steps to be taken.

This yielded some interesting and important results. The pyramid structure, for example, is judged interactive and accurate, but the bottom layer of the pyramid, *Structure and Culture*, still needs defining the best indices. Therefore the need and the best indices for the bottom level must be considered. Also it was pointed out that the links between the

layers (causal relationships) are as important as the layers themselves.

The footprint representations from SUNflower+6 were considered to be a good starting point. Communication was seen as an important necessity. Countries can learn from each other. But where can policymakers find the information they need? They must be informed of ERSO's existence. Also the implementation of the 'questions-and-answers' process was seen as an essential step.

Conclusion

Although the focus during the workshop was on the pyramid structure, the SUNflower methodology entails a lot more than just the pyramid. It is more than a benchmarking instrument; it improves our

understanding of developments of road safety, the relations between indicating at the different layers, and consequently contributes to better policymaking.

The pyramid shape gives the model a stable basis. The societal costs are at the top: after all, we want to reduce the costs of crashes to society. However, there are some important issues concerning the pyramid structure that need our attention on the short term. What disaggregation levels for the third dimension of the pyramid are most appropriate? Also, there is more work to be done in describing or developing clear indicators for the different levels of the pyramid or for the links between them. And finally, while ERSO is growing in importance, we need to establish its position in the world. ◀▶

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.

Towards a checklist for credible speed limits; Development of an assessment method based on road and road environment characteristics

C.N. van Nes, S. Houwing, R.F.T. Brouwer & I.N.L.G. van Schagen. R-2006-12. 26 + 13 pp. € 10.-

Credible speed limits can reduce the number of speed violations. To be able to determine the credibility of speed limits, a checklist was developed for urban and rural roads. This checklist contains road and road environment characteristics which can easily and quickly tell the road authority if the limit on a particular road is or isn't credible. This study describes how this checklist was made and reports on a practical test in cooperation with a number of road authorities.

Speed and speed management; Summary of the most important findings from the speeding projects in SWOV's 2003-2006 research programme

I.N.L.G. van Schagen (ed.). R-2006-13. 68 pp. € 12.50

Two projects in the SWOV four-year programme 2003-2006 made study of different aspects of speed. This final report of all activities within these projects briefly discusses the most important ideas concerning speed and speed management and presents the results of literature studies, analyses and a number of empirical studies.

Long-term forecasts of road traffic fatalities in the European Union; General methods and results

H. Stipdonk & P. Wesemann. R-2006-15. 20 pp. € 7.50 (in English)

In 2005, SWOV carried out two road safety outlooks for the European Union: Impact Assessment and ASSESS. These outlooks have calculated the expected numbers of road deaths in 2010 and 2020 for 25 EU countries. The two studies, however, used a different context and approach, and used different data. This report describes and compares the two methods, presents the most important results and gives recommendations for future outlooks.

Recognizable layout of roads; Final report of the predictability projects in SWOV's 2003-2006 research programme

L.T. Aarts & R.J. Davidse. R-2006-18. 36 pp. € 10.-

This final report recapitulates what is known about the recognizability of roads and the results of research on this issue in the SWOV four-year programme 2003-2006. First the underlying ideas about the recognizability principle in the Sustainable Safety vision are discussed. It then continues to look at the present situation.

Powered two-wheelers and road safety; Inventory and positioning in Sustainable Safety

P.L.J. Morsink. R-2006-24. 107 pp. € 17.50

This literature study gives an overview of the use and road safety problems of powered two-wheelers (PTWs) in the Netherlands. The study contains conclusions and recommendations for likely possibilities to ride safer on a PTW.

Road safety in 2020; Mobility, crashes, and policy outlooks

P. Wesemann (ed.). R-2006-27. 84 + 32 pp.

€ 17.50

The Dutch long term road safety targets, e.g. the maximum number of road deaths and in-patients, are regularly set or sharpened. This requires insight in the long term road safety development. This insight is also essential for seeing the necessity for timely policy adjustment. SWOV's long term outlook assesses if the present targets for 2010 and 2020 can be achieved, both for unchanged policy and for the introduction of a number of new measures.

When is education effective? Systematic evaluation of education projects

D.A.M. Twisk, W.P. Vlakveld & J.J.F. Commandeur. R-2006-28. 96 + 36 blz. € 20.-

Relatively little is known about the road safety effects of traffic education. SWOV studied the effectiveness of 11 education projects. Using a pre-test, followed by an intervention in the form of an education programme and a post-test, the effects were measured in terms of changes in self-reported behaviour. The study and its results are described in this report.

Fact sheets:

- Measuring Safety
- International comparability of data
- Influence of weather
- Post-licensing training for novice drivers
- Vulnerable road users
- Alcohol
- Periodic Vehicle Inspection of cars (MOT)
- Recognizable road design
- Fear-based information campaigns