

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

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Editorial

The opening article in the December issue of Research Activities introduces the updated version of the successful concept Sustainable Safety entitled Advancing Sustainable Safety.

Also in this issue we pay a lot of attention to the SWOV activities in international projects.



Advancing Sustainable Safety: the updated version launched

Sustainable Safety is an impressive concept for considerably safer road traffic in the Netherlands. It provided a scientific basis for the Dutch road safety policy and has earned international recognition. Now, 13 years after the publication of the original vision, the newest insights have been processed and incorporated in the updated vision entitled Advancing Sustainable Safety. On November 2nd, the Dutch Minister of Transport was presented with the first copy of the book of the same name.

The goals of the updated Sustainable Safety concept are unchanged: it aims to prevent (serious) crashes and, where this is not possible, to virtually exclude the chance of severe injury.

Basis

The essence of Sustainable Safety is that human beings are the reference for all safety measures. People's physical vulnerability, but also what they are capable of (it is people who make errors) and what they want (it is people who don't always obey laws) are the starting points

for the view. The fact that people not only make errors, but also disobey rules now and again,

You can analyse the past but you have to design the future.

Edward de Bono
Originator of lateral thinking

QUOTE

is a new points of attention in the vision. Human characteristics get an integral approach from the elements 'human', 'vehicle', and 'road'. In the first place, the environment, such as the road and the vehicle, should conform to what humans are capable of, and provide protection.

Furthermore, humans should be properly instructed to prepare them for safe behaviour in traffic, and eventually be supervised to see whether they are safe road users.

Sustainable Safety aims at road safety measures that have an early as possible position in the chain of system design to final behaviour. After all, it is the flaws in the traffic system that cause unsafe behaviour in the form of mistakes and violations, and can finally lead to crashes.

Five principles

By intervening in the system as early as possible, unsafe actions are made minimally dependent on the choices of individual road users. Five principles are at the core of Sustainable Safety:

- **Functionality** of roads: roads should flow (flow roads) or provide access (access roads) and are connected by distributor roads.
- **Homogeneity** of masses and/or speed and direction: vehicles that differ too much in mass or speed and that use the same space should be physically separated from each other. Where this is not possible, a safe speed should result in safe outcomes if crashes occur on this road. In this case, safe means without severe injury.
- **Forgivingness** of the environment (physical) and between road users (social): this is a new prin-

ciple that, on the one hand, is already used on safe shoulders and, on the other hand, has yet to be further elaborated regarding the social side (road user anticipation of others' behaviour).

- **Recognizability** of the layout of the road and the predictability of the road course and road users' behaviour: uniform surroundings that are well adapted to desired behaviour tell road users what driving behaviour is expected of them and what they can expect of others.
- **Status awareness** by the road user: this is also a new principle that means the capability or the possibility of road users estimating their own task competence correctly. Every road user should know what his skills are and whether they are sufficient to make him a safe road

user. This also means that road users themselves must decide that further traffic participation is irresponsible when they experience a particular (temporary) impairment. Examples are the influence of alcohol, stress, or fatigue.

The five principles are based on scientific theories in traffic engineering, biomechanics, and psychology. Advancing Sustainable Safety further elaborates these principles with respect to measures and specific subjects or target groups. At present the book is only available in Dutch, but the English translation is being made. In the meantime a special edition of Research Activities with a summary of the information in Advancing Sustainable Safety is forthcoming. ◀▶

How do we create a sustainably safe traffic?

The proactive approach of Sustainable Safety is a systems-approach and aims at preventing latent errors in the traffic system before they can lead to dangerous behaviour and ultimately road crashes. A good example is the road user being offered a recognizable and predictable traffic environment. A uniform layout of roads is of great importance to realise this. Harmony between the various parties is necessary to guarantee a sustainably safe quality. A system of quality care is the appropriate way to achieve this. The proposal for such a system of quality care may be new for road traffic, but it is common in other policy sectors, e.g. public health and railway and aviation safety. Such a

system should especially make it clear to those involved what the quality requirements are.

After all, quality is not something free of obligations. Quality care should not only be anchored in one's own organizations, but is better guaranteed collectively. There must also be supervision, e.g. by inspection. However, autonomous competences of government bodies should not be interfered with. In the first instance, such a system could be elaborated for road authorities. This could for example be done by defining expertise requirements for those involved, by better balanced planning preparation (using for example Road Safety Impact Assessments) and transparent implementation procedures, and by setting up assessment procedures of crashes and near misses.

On 2nd November 2005 Fred Wegman proposed choosing Advancing Sustainable Safety as starting point for future policy and to collectively implement the proposals, concentrating on policy innovation, high quality implementation, and broadening the policy. "Road safety is served if we continue with making the infra-

structure sustainably safe, but we must also pay attention to education, enforcement, and technology". Wegman reminded the public that all those present are unanimous in their striving for safer road traffic, but that we have to create possibilities. "Advancing Sustainable Safety sets the basis for further road safety improve-

ments, and it proposes various possibilities to achieve them. Implementation requires commitment, initiative, and cooperation. In other words: with this book, SWOV has made the first move.

The ball is now in the court of the other actors in the field of implementing road safety policies". He then officially presented the first copies of Advancing Sustainable Safety to Ms Karla Peijs, the Minister of Transport, and representatives of the police, provinces, municipalities, and NGOs.

In her reaction, the Minister said she was pleased with Advancing Sustainable Safety. Improving road safety is one of her top-priorities. Although in 2004 the number of casualties had already reached its target for 2010, new measures and initiatives are still necessary. As the Minister said: "We must not forget that the 881 fatalities last year are the equivalent of 18 busses full of children, fathers, mothers, and acquaintances.

Every effort and creativity is welcome: road safety measures will be well received because they have a high social yield".



From left to right: Wegman (SWOV), Van Woerkom (ANWB), minister Peijs, Mik Bruins (Municipalities), Spee (Public Prosecution Service), Kapel (Police), Gosselaar (Association of Water Boards) and Goos (Dutch Traffic Safety Association 3VO).

First FERSI Scientific Road Safety Research Conference: successful exchange of information

Some 200 researchers presented their latest findings and discussed ways to interpret, improve and apply them at the first FERSI Scientific Road Safety Research Conference.

FERSI, the Forum of European Road Safety Research Institutes, was created to bring together the national road safety research organisations to provide a common focus for research at the European level. On September 7 and 8, 2005, FERSI brought this into practice by organizing the first FERSI Scientific Road Safety Research Conference which was hosted by BAST in Bergisch Gladbach, Germany.

Conference

The conference started with four scientific presen-

tations outlining the main challenges to road safety research. The rest of the meeting was filled with 12 workshops covering topics in three areas: Data, strategies and communication, Behaviour and education, and Technical applications. A truly wide range of topics was discussed, from basic time-series modelling to driver training, and from methods to formulate casualty reduction targets to speed limits consistent with road quality. The wide variety of subjects offered a wonderful survey of the current activities on road safety research. Beside these presentations on research, the set-up and results of various EU projects were presented. Amongst these were projects and networks like SafetyNet, SARTRE III, SUNflower+6, AWAKE, ROSE 25, IMMORTAL, DRUID, IN-SAFETY, RIPCoRD-ISERSEST, and HUMANIST.

Projects

In accordance with the objectives set out by FERSI, many projects used the conference as an opportunity to meet at BAST. European projects met just before the conference, in the evenings or just after the conference. This made the first week of September 2005 a true explosion of high-level information exchange on road safety.

The FERSI Board has decided to continue organizing the FERSI Scientific Road Safety Research Conferences. Based on the experiences with this first conference, the Board has decided to pay more attention to the coherence of the presentations over the meeting, and to stimulate discussion. The first FERSI Scientific Road Safety Research Conference has proven to offer a good platform to fulfil FERSI's mission to encourage the exchange of good practice and research knowledge between countries, to stimulate closer co-operation and, where appropriate, encourage the exchange of researchers between countries. ◀▶

For more information, including the presentations held at the conference, please refer to the FERSI website www.fersi.net

OECD-ECMT Programme of Work: SWOV participation

In the framework of the first OECD-ECMT Programme of Work for the period 2004-2006 SWOV chairs the working group on 'Young driver risks and effective countermeasures' and participates in two other working groups: 'Achieving ambitious road safety targets', and 'Speed Management'. The final reports are expected in 2006.



The Joint OECD-ECMT Transport Research Centre was established to 'promote economic development and contribute to structural improvements of OECD and ECMT economies, through co-operative transport research programmes addressing all modes of inland transport and their intermodal linkages in a wider economic, social, environmental and institutional context'. SWOV, together with the Transport Research Centre, represents the Netherlands in the Joint OECD-ECMT Transport Research Centre.

Achieving ambitious road safety targets

The working group, in which 20 countries participate, is preparing a report to indicate what can (or must) be done to achieve ambitious road safety targets. As a basis for the advice the current traffic safety situation is analysed. The results of the analyses of road safety targets, policies, possible strategies, new measures, and finance, will be published. SWOV, represented by Henk Stipdonk, contributes to this working group with an analysis of the decrease of the number of fatalities in the past.

Young driver risks and effective countermeasures

Young drivers face higher risks than more experienced drivers and are a significant cause of higher risks for other road users. A working group chaired by Divera Twisk (SWOV) is working

on a comprehensive assessment of the factors that contribute to the high levels of crash involvement of young drivers. The working group explores best current practices and identifies policy options for achieving further improvements for young drivers and other road users. It also explores the extent to which current policies in OECD countries reflect the knowledge of the best available practices, and what obstacles there are in implementing these measures. The working group conducted analyses to forecast the magnitude of the young driver accidents in the coming 20 years world wide. SWOV also estimated the associated economic

costs of current accidents with young drivers, and drafted the chapters of the review on effective countermeasures.

Speed Management

The working group on Speed Management reviews good practice of individual speed management measures as well as their inter-dependency. Measures reviewed include assessment of appropriate speeds, speed limits, signs, signing and marking, infrastructure, enforcement, education and new technologies such as Intelligent Speed Adaptation (ISA). The working group also considers speed-related

policy options available to improve road safety and sustainability. In April 2004 the first meeting of the working group on Speed Management took place. It consists of around 15 national experts from different parts of the world. Currently, the editorial committee in which SWOV is represented by Ingrid van Schagen, is putting the final touches to the review. ◀▶

More information about the OECD-ECMT Transport Research Centre and its Programme of Work 2004-2006 can be found on their website www.cemt.org/JTRC.

SWOV in new European Union RIPCoRD-ISEREST project



The aim of the RIPCoRD-ISEREST project is to develop best practice tools and offer scientifically well-founded guidelines for support of infrastructural road safety measures to achieve a road safety goal.

RIPCoRD-ISEREST is the acronym for Road Infrastructure Safety Protection Core Research and Development for Road Safety in Europe; Increasing Safety and Reliability of Secondary Roads for a Sustainable Surface Transport. In this project SWOV is the coordinator of the Road Safety Impact Assessment (RIA) and Accident Prediction Models (APMs) workpackage. This part of RIPCoRD involves comparing the different methods member states use to estimate effects and design their crash models. This makes it possible to determine the road safety effects of changes in the infrastructural networks and, within these networks, the changes in road segments and junctions. The first result is a state-of-the-art report on RIA and APMs that was published in June 2005.

Accident Prediction Models

APMs describe how various explanatory variables contribute to the number of crashes on a particular road type. They are variables that previous research has shown to be of influence, to be valid, to be reliably measurable, and are not closely related to other explanatory variables. The state-of-the-art report describes which methods should be used to create an APM. Many studies on APMs have been published, and in the report we have made subdivisions of urban versus rural, and road segments versus junctions. For each of the resulting four possibilities we indicate how frequently particular explanatory variables have been used in these studies. It is surprising how many different explanatory variables are sometimes used without a specific preference being mentioned. This is especially the case with the junction models; there are many other variables besides lane width, road category, design speed, and street lighting. On rural roads, the variables most frequently used are shoulder width,

junction density (access and side roads), speed limit, and road width.

Road Safety Impact Assessment

The purpose of a RIA is to determine the safety effects of major investments or changes in a road network. Preferably a cost-benefit analysis is applied. An interesting new development is a RIA for the network or area level by combining simple APMs to the required level. This makes the RIA a very interesting policy instrument, but it takes quite a lot of effort to make such a complicated instrument. Until recently, road authorities used other methods for decision-making such as a combination of crash statistics and analysis, black spot analysis, audits, or inspection. With support from the Ministry of Transport's Traffic Research Centre, SWOV created the Regional Road Safety Explorer for the Netherlands in 2002. This instrument has found its way to various traffic consultancies. They use it, often in an adapted form, for road authorities. Comparable instruments are also being developed abroad. The instrument most similar to the Road Safety Explorer is the Safety Analyst of the Federal Highway Administration in America.

Continuation

The RIPCoRD-ISEREST project started in January 2005 and will continue for three years. At this moment Norway, Portugal, Austria, and the Netherlands are carrying out four pilot projects with RIAs or APMs. These are partly based on a literature study and are being carried out as part of the Road Safety Impact Assessment (RIA) and Accident Prediction Models (APMs) workpackage. For the Netherlands, SWOV is working on APMs for distributor roads in which we concentrate on the influence of traffic volume and driving direction separation. In another workpackage, Diepens & Okkema Traffic Consultants is studying if their Road Safety Made Visible instrument (partly based on the Road Safety Explorer) may be applicable abroad. ▶◀

You can find more information about the RIPCoRD project on the project's website: www.ripcord-iserest.com

Transition to a sustainable mobility: Transumo

Mobility is one of the cornerstones of our modern economy. However, the Dutch traffic and transport system which is among the best worldwide, is currently experiencing considerable problems with accessibility, the environment and safety.

If nothing is done to remedy the problems, the consequences may be the potential weakening of the Netherlands' strong international position, a decrease in the competitive strength of the Dutch economy. In turn this can lead to an increase in proposals to invest in measures that in fact are not sustainable for mankind and nature. To develop solutions for the problems, the Transumo (Transition to sustainable mobility) consortium was founded with participants from private companies, government, research institutes, consultancy firms, and the academic world.

Sustainable mobility

Adhering to the present system of traffic and transport is an important cause of the current

situation. In fact, the existing practice in the field of traffic and transport is no longer suitable nowadays.

There are three causes behind the existing lack of innovation:

- Insufficient generation of new, innovative ideas for sustainable mobility
- The complexity of the implementation of innovative approaches. Innovations that are technically and economically feasible are not always practicable, acceptable or manageable, as a result of which the implementation fails and the innovation does not get past the conceptual development stage.
- The multi-actor (and multi-objective) context in which the innovations are developed, on which no single actor seems to have sufficient decisive power.

Transumo wants to encourage a transition to a sustainable mobility: a transition to a traffic and transport system which meets the criteria of sustainability, safety, accessibility, comfort, affordability, and environmental demands.

Projects

The projects in Transumo are divided over clusters and test sites. The five clusters are: Transition Management, Mobility of Persons, Freight Transport & Logistics, Traffic Management, and Infrastructure.

As part of the SWOV 2003 – 2006 programme SWOV does research on the following Transumo projects:

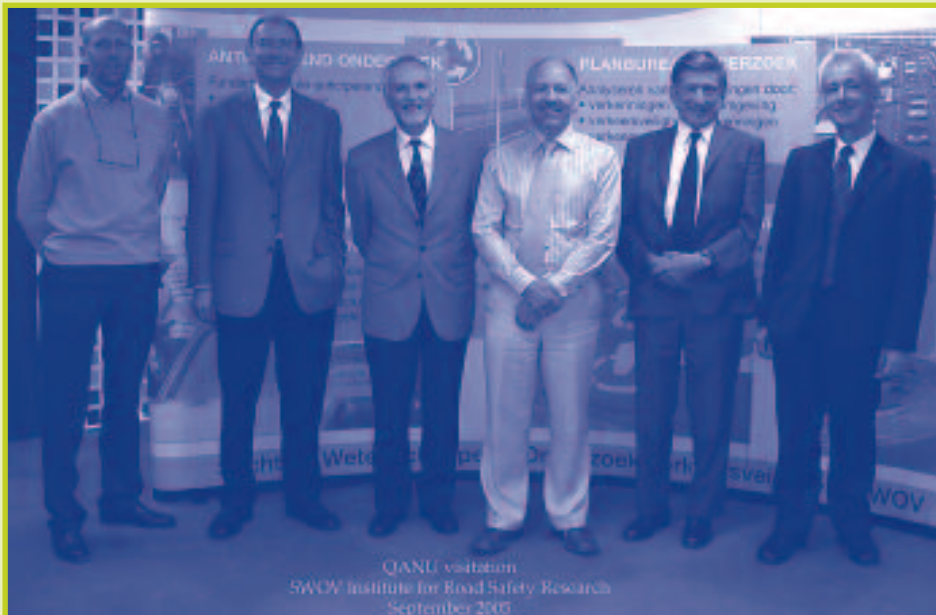
- The development of a GIS-based computer programme into a tool for the districts as a follow-up to the Road Safety Explorer.
- Policy studies into cooperation and decision-making.
- Literature study of the possibilities of Advanced Traffic Management.
- Intelligent vehicles.
- Credible speed limits.
- The effect of road design on behavior (anticipatory behavior, speed choice).
- European networks.

The present Transumo programme runs from 2004-2009. ◀▶

The Transumo consortium has its own website: www.transumo.nl.

International scientific review: good marks for SWOV

In SWOV's subsidy scheme 2003 it is stated that its research programme 2002-2005 must be evaluated according to a method that is usual in the academic world. In 2005 the Ministry of Transport commissioned QANU to make a scientific review using the 'Standard evaluation protocol for public research organisations 2003-2009'.



The Qanu visitation committee, from left to right: Bennink (secretary), Van der Heijden, Huguenin, Petersen (chairman), Allsop, Van Zuijlen.

The final results of the scientific review were made known to SWOV and sent to the Ministry of Transport in December. And although there is still room for improvement, we were pleased to hear that the international committee finds the quality of SWOV's work in general good to very good, sometimes even outstanding.

The committee consisted of five university professors in the field of traffic and road safety research: Kurt Petersen, chairman (DTF, Denmark), Richard Allsop (University College London, UK), Denis Huguenin (Swiss Council for Accident Prevention), Rob van der Heijden (Radboud University Nijmegen) en Henk van Zuijlen (Delft University of Technology).

Strengths

On several specific points the committee made encouraging statements. They judged the work on the concept of Sustainable Safety to be particularly strong. The Anticipatory Research department also is found to do very good work on behavioural and training aspects. They were of the opinion that although the research of the newly created Planning Office department is not yet in a stage that would allow full assessment, the efforts were found interesting and challenging, and the expectations are high. SWOV has a good policy regarding competence management and improvement of qualifications of its staff. The PhD-programme is also regarded

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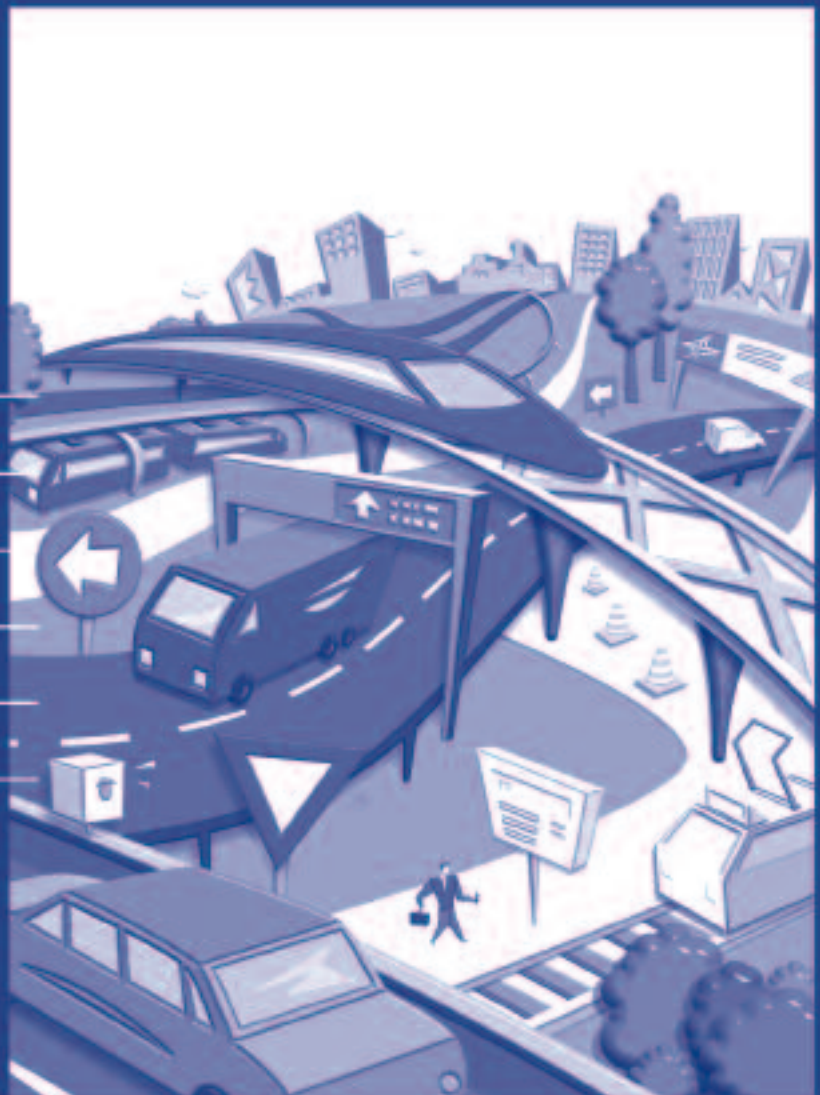
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AMSTERDAM RAI

(Continued from page 5)

as a good development.

About SWOV's knowledge dissemination the committee noted that SWOV has a good communication strategy for projects and very good communication with the professional field. There is good timing, good volume and the channels towards the end-users are well developed and utilised.

Recommendations

Although the committee was very positive about SWOV, they also made a number of recommendations, mostly with an eye on the future.

Among others they recommended that SWOV strengthen the networking opportunities because SWOV might be too small to cover all areas with the same intensity.

The issue of data collection requires careful

consideration. For their research SWOV often depends on data collected by others. It is important that the availability and accessibility of data be 'secured'. Gathering supplemental data is crucial for the quality of the research. Another important recommendation was that the development of the European research area requires SWOV to think about ways to fulfil a leading role in road safety research.

Conclusion

"The committee has seen indications that SWOV is the institute on road safety research in the Netherlands and, given its high profile in many, if not all EU research in the field of road safety, it belongs to the top European institutes on road safety in general. The challenge for the future is the networking and interplay that is needed to strengthen and maintain this position." ◀▶

1st SafetyNet Conference: Prague 10 –11 May 2006

SafetyNet is an ambitious and exciting EU project aimed at setting up a framework to assemble a co-ordinated set of data resources that will meet the EC needs for policy support: the 'Road Safety Observatory'.

Institutes and organisations from 17 European countries cooperate in the project which will reach its half way stage in May 2006.

Conference

Halfway through the SafetyNet project the 1st SafetyNet Conference offers the opportunity to examine the ways in which data driven road and vehicle safety policies are formed. It also sets out to identify the new challenges that will come with new technologies and post-2010 casualty reduction targets. The main topics of the conference will be:

- Political decision making for road and vehicle safety,
- EU approaches to accident data and safety information,
- US experiences in accident data collection, knowledge transfer from accident data to policy,
- Accident data requirements for improved vehicle safety,
- The car industry's need for accident data,
- Accident data to improve road design and infrastructure safety,
- Institutional arrangements for independent accident investigation,
- Scientific accident investigation,
- Trauma registers, public health dimension, ethical issues,

- Non Governmental Organisation (NGO) use of accident data.

The conference is particularly of interest for those who work in a field where road safety plays a part, like for instance policy makers or politicians.

More information about SafetyNet and the 1st SafetyNet Conference can be found at the SafetyNet website <http://safetynet.swov.nl>. If you are interested in attending the conference and would like to receive further information as it becomes available you can mail to safetynet@lboro.ac.uk

SafetyNet

Building a European Road Safety Observatory

In its 2001 White Paper and other public documents the EC expressed the demand for a 'Road Safety Observatory'. On May 1st 2004, as part of the 6th Framework Programme, the European project SafetyNet was started in answer to the request. SafetyNet is an ambitious project that will bring together all the most experienced organisations within the EU to assemble a co-ordinated set of data resources that together will meet the EC needs for policy support. The Road Safety Observatory will enable the Commission to monitor progress towards targets, identify best practises, and monitor new regulatory and other safety actions. All data assembled or gathered within the project will be made available over the web to the entire road safety community.

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.

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Driver Behaviour & Training Conference, November 15-17

November 15 - 17 Cranfield University organized the 2nd Driver Behaviour en Training conference in Edinburgh (UK). The conference was a platform for describing and discussing recent advances in the field of driving behaviour and driving training with a view to road safety. Speakers and participants from all over the world attended the conference.

After the Scottish Minister of Transport, Tavish Scott, opened the conference, he was followed by five interesting 'key-note speakers'. Professor Nils Petter Gregersen from VTI, Sweden, impressed the audience with the Swedish view on road safety with his presentation 'Driver Education – A difficult but possible safety measure'. Next professor Ian Glendon from Griffith University, Australia, spoke on the differences between training and culture in 'Hands on the wheel: Driving culture vs driver training'. Professor Gerry Matthews from Cincinnati University, USA, spoke about 'A transactional model of driver stress and fatigue: Implications for driver training', followed by Trevor Wedge from the Driving Standards Agency, UK, with a speech entitled 'What if? Hazard perception and training and testing'.

Finally, professor Steve Stradling from Napier University, Scotland, spoke about 'Attitudes to car use and speeding in Scotland'.

Presentations

The main part of the conference was filled by more than 40 individual presentations with a wide variety of topics. For SWOV Saskia de Craen presented the assessment of a diary to study the development of higher order skills in the course of gathering driving experience. The diary is part of a PhD-study. One of the results indicates that certain problems, like handling situations in which no formal traffic rules apply, occur more often than others in inexperienced drivers as compared to experienced ones. The study also indicated relevant differences between male and female drivers, in the situations they encounter in traffic. A two-year longitudinal study, which the SWOV is currently conducting, will have to indicate if this changes over time. ◀▶

More information about the conference can be found on the Cranfield University website www.cranfield.ac.uk/soe/drive. The proceedings of the conference are published in 'Dorn (ed.), L., Driver behaviour and training, Volume II'.

Fact Sheets

Road Safety Explorer

The Road Safety Explorer has been developed to assist Dutch regional authorities in drawing up their traffic and transport plans. It makes an estimate of the effects of both national and regional road safety measures in a particular region. This estimate can then be compared with the road safety targets of the region concerned, while taking the region's expected population developments into account. The region can then use the results to determine whether the road safety plan can be achieved and meets the regional target, and if the measures are cost-effective.

Infrastructure and the elderly

In traffic the elderly, those who are 75 years or older, have an increased fatality rate. The most important cause of this high fatality rate is their greater physical vulnerability. Besides this, functional limitations can lead to the elderly being relatively more often involved in certain crash types. By designing measures that are specifically aimed at these crash types, the number of crashes involving the elderly can be reduced. An inventory was made of infrastructural measures that had been taken abroad to increase the safety of the elderly. In addition, an assessment was made of if and how to apply certain measures under Dutch road and traffic conditions.

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.

Detailed cost-benefit analysis of potential impairment countermeasures;

Research in the framework of the European research programme IMMORTAL
Willem Vlakveld, Paul Wesemann, Eline Devillers, Rune Elvik (TØI), Knut Veisten (TØI). R-2005-10. 128 pp. € 11.25
The cost-benefit analysis provides objective information for policy makers by presenting an overview of all relevant socio-economic effects in a structured manner.

This report gives a description and the results of cost-benefit analyses for a selection of road safety measures: mandatory eyesight testing, increasing random road side breath tests, and installation of alcohol lock for drivers with an alcohol problem. Some policy recommendations are made.

How safe was 2004?;

Analysis of the decrease in number of road deaths in 2004. Henk Stipdonk.
R-2005-11. 43 + 14 pp. € 11.25
In 2004 there was a sharp decrease in the number of road deaths compared with 2003. The reduction of 19% is spectacular: the number fell from 1088 in 2003 to 881 in 2004, the largest reduction ever in the Netherlands. This report tries to find the explanation by answering three questions: Is the data correct? What was the role of coincidence? What really happened? No unambiguous explanation has been found, but it will remain a subject of future research.

Advancing Sustainable Safety;

National Road Safety Exploration for the years 2005 - 2020. Fred Wegman & Letty Aarts (ed.) 254 pp. € 30.- (In Dutch; is presently being translated) Advancing Sustainable Safety is an update of the original Sustainable Safety vision that has been the basis of road safety policy in the Netherlands since 1992. Sustainable Safety aims at preventing crashes, and if that is not possible, virtually excluding serious injuries when a crash occurs.

Fact sheets:

- Road Safety Explorer
- Infrastructure and the elderly

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