RESEARCH THAT MAKES
A DIFFERENCE...

Centre for Automotive Safety Research

2002-2010

Life Impact | The University of Adelaide
Forewords

Road crashes and the resulting trauma impose a high human and social cost on all South Australians. We have made great gains in the last 40 years but in 2010 there were still 118 people killed and more than 900 people seriously injured on South Australian roads. This level of death and injury is unacceptable and we need to keep working together to further improve road safety in our state.

Successful road safety countermeasures, such as mandatory seat belts, alcohol legislation and speed management, have been based on scientific evidence and rigorous research. The University of Adelaide has been a major contributor to this research and to improving road safety for more than 40 years starting with the first Australian in-depth study of road accidents in the 1960s.

In 2002, the South Australian Government and the University of Adelaide formed a partnership to establish the Centre for Automotive Safety Research (CASR), building on the existing and highly respected road safety research capability at the university. CASR has earned a reputation for high quality and relevant research that has influenced policy in South Australia as well as interstate and overseas. Research from CASR will play a major role in developing the 2011-20 South Australian Road Safety Strategy.

We still have many challenges in understanding why crashes happen, designing programs to prevent them and engaging the community in developing a culture of safe road use. I congratulate CASR on its achievements so far and look forward to working together to meet the challenges of the future.

Hon. Jack Snelling MP
Minister for Road Safety
The University of Adelaide is very proud of the Centre for Automotive Safety Research (CASR) both for its research excellence and its impact in reducing road trauma. CASR has built a reputation for carrying out high quality research and many of the CASR staff members are acknowledged nationally and internationally as research leaders. Also of great importance to the University is the role of CASR in building the road safety researchers of the future through its encouragement of postgraduates and young researchers.

It is important for the university to be in touch with the wider community and CASR has had significant success in this area. CASR staff work closely with decision makers and the community to ensure that their research is used to make a real difference. Their close association with state government agencies continues to produce significant benefits for South Australia, as does their work with many community and industry groups. CASR represents an effective partnership between universities and industry focused on saving lives.

Road trauma remains a major human and social cost in Australia and worldwide. Research at the University of Adelaide has made significant contributions to reducing these costs for nearly 40 years and we look forward to continuing this important work into the future.

Professor James McWha
Vice-Chancellor
The University of Adelaide
At the South Australian Motor Accident Commission, we are dedicated to reducing the injuries sustained on the State’s roads. We regard the Centre for Automotive Safety Research (CASR) as a key partner in helping us to achieve these reductions. CASR is renowned for the quality of its research and the soundness of its policy advice. The expertise of its staff covers the full range of road safety issues, including the design of safer vehicles, the provision of safer road infrastructure, and the development of policies and practices promoting safer road user behaviour.

Having a road safety research centre based in South Australia with the capability of understanding local issues is invaluable. It is also important to us that CASR continues to contribute to the national and international road safety agenda. We look forward to working with CASR and our other partners to reduce the unacceptable burden of road injury in South Australia.

Andrew Daniels
Chief Executive Officer
Motor Accident Commission
We must understand our road crash problem if we hope to ever fix it. CASR has been shedding light on our road safety problems for many years, performing vital and insightful research to support successive waves of safety improvements in South Australia. From pedestrian trauma, to roadside hazards, to speed management, their research is being used here and around the world to initiate changes in policy and investment priorities amongst car manufacturers, road authorities and police agencies alike. Our Department is a proud supporter of the centre, a key partner in our collective drive for a safer South Australia.

Martin Small
Director Road Safety
Department for Transport, Energy and Infrastructure
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Introduction

The Centre for Automotive Safety Research (CASR) plays a pivotal role in reducing the human and economic losses that result from road crashes.

CASR’s research continues to identify the most effective ways to prevent road crashes and the resulting deaths and injuries.

A multi-disciplinary road safety research centre at the University of Adelaide, CASR collaborates closely with government authorities, the automobile industry, non-government organisations, and other research centres, both in Australia and overseas. CASR regularly disseminates its research findings in a variety of ways, with the prime objective of making a difference in the community.

CASR was established in 2002 by a deed of agreement between the University of Adelaide, the South Australian Department for Transport, Energy and Infrastructure (DTEI) and the Motor Accident Commission (MAC). It was based on the existing Road Accident Research Unit at the University of Adelaide.
Highlights

CASR is an independent centre of excellence in the field of automotive safety research. Part of the University of Adelaide, CASR is internationally recognised for its world class research and training.

State Government funding has enabled CASR to continue to develop as a world-renowned road safety research centre that delivers significant benefits to the State.

- CASR research into travelling speed and crash risk in urban areas, which is still unique worldwide, was a major influence in the introduction of the default 50km/h speed limit. This has resulted in reductions in urban casualty crash rates in the order of 15%.
- CASR is the only research organisation in Australia undertaking in-depth crash investigations. This work leads to a better understanding of crashes and injury mechanisms.
- CASR research tracking new drivers demonstrated the rapid increase in driver competency in the first year of driving.
- CASR designed, built and operates the only pedestrian impact laboratory in Australia. Research conducted in this laboratory has contributed significantly to the development of a new Global Technical Regulation of vehicle design for pedestrian protection.
- CASR research using information obtained from in-depth crash investigation and data collected through cooperation with the Royal Adelaide Hospital is finding that pre-existing medical conditions play a far more significant role as contributors to crashes than previously thought.
- CASR has a key role in developing new road safety professionals including supporting a number of postgraduate research students.
- CASR is actively involved in providing road safety research training to countries in the region.
- CASR has gained a national and international reputation for high quality road safety research.
- CASR plays a major role in promoting road safety in the South Australian community.
- CASR collaborates with other road safety research organisations around Australia and the world to research topics of common interest.
- CASR staff have received numerous awards recognising their contribution at national and international conferences.
History

There has been a road safety research presence at the University of Adelaide since the early 1960s, initially in the Pathology Department where the first Adelaide In-Depth Accident Study was based, and then from 1973 with the establishment of the Road Accident Research Unit (RARU). From 1981 to 1998 RARU was a research unit of the National Health and Medical Research Council. In 2002 the State Government made a commitment to support and grow the road safety research capability in the State by establishing the Centre for Automotive Safety Research based on the existing expertise at the University of Adelaide.

From its creation to the present CASR has continued to build on the impressive list of achievements of its predecessors.

State Government funding allows the centre to carry out research relevant to the policy needs of South Australia and to develop high-level road safety research expertise. In addition to the important work funded directly by the South Australian Government, CASR is able to use this expertise to undertake work for a variety of national and international clients. CASR is therefore able to continue to provide financial benefits to the State that are many times greater than the funds invested, as well as reducing the physical and psychological trauma resulting from road crashes.
Research achievements

Over the years CASR and its predecessors have been involved in a wide variety of road safety research. It is not possible to cover all of the centre’s achievements but a number of examples are outlined in the following pages.

Travel speed and crash risk

CASR has played a leading role in national and international research on the relationship between travelling speed and crash risk in urban and rural areas.

CASR’s research into travelling speed in a metropolitan area and the risk of involvement in a casualty crash is the only study of its type worldwide. Based on in-depth investigation of actual crashes, it showed that even small reductions in travelling speeds will result in large reductions in casualty crashes. This finding was instrumental in the introduction of the default 50 km/h speed limit in Australia.

An earlier study by RARU, using similar methodology, quantified the relationship between a driver’s blood alcohol level and the risk of crash involvement in Adelaide. By comparing this study with the speed study it was shown that the increase in the risk of casualty crash involvement from travelling at 70 km/h in a 60 km/h zone was similar to that of driving at the speed limit with a 0.10 blood alcohol level.
Young drivers

The high rate of crash involvement of young drivers is a major concern for the community at large and particularly for road safety policy makers.

CASR research tracked the crash and traffic offence experience of 50,000 young South Australian drivers from when they obtained their learner’s permit until five years after they obtained their provisional licence.

Young drivers had very high crash rates in the first months of driving on a provisional licence but this was followed by a rapid increase in driving competency. By the end of the first year there were large reductions in crash rates, particularly for crashes involving young drivers leaving the roadway or attempting to make right filter turns across traffic. While the rate of moving violations overall showed a similar reduction to crashes, offences involving speed, alcohol and failure to wear seat belts all showed increasing rates over time from when drivers obtained their provisional licence.

CASR is currently reviewing the results of its in-depth crash investigations to further understand the specific causes and contributing factors that lead to young driver crash involvement, particularly the relative importance of inexperience and risk-taking. The study will specifically consider the interaction between wider systemic failures and errors made by individual drivers.

Based on comprehensive sets of data, these studies suggest new possible countermeasures for reducing young driver crashes and provide direction for future promising areas of young driver research.
Older drivers

Although older drivers are not causing the same level of concern as young drivers there is evidence that they are at increased risk of crashing and have a substantially higher risk of serious injury when involved in a crash.

It is expected that crashes involving older drivers will increase as the population ages and people continue to drive for longer.

CASR has been active in the area of older driver research with a particular focus on the issue of self-regulation of driving behaviour. There is evidence of appropriate self-regulation of driving behaviour by older drivers, such as not driving at night or in adverse weather conditions, but there is still room for improvement, in particular for those drivers with long term declines in vision and visual attention.

CASR has recently undertaken a study for VicRoads to guide policy with regard to drivers with dementia, most of whom are elderly. The study provided advice on the best strategies for identifying drivers with dementia whose fitness to drive should be assessed, for undertaking periodic review of fitness to drive for those with dementia, and for encouraging adherence to decisions by VicRoads to withdraw a driver’s licence from a cognitively impaired individual.
Pedestrian protection

CASR (and previously RARU) has been working at the forefront of research into vehicle design for pedestrian protection for many years.

The first Adelaide in-depth study in 1965 identified for the first time that an adult pedestrian is run under, not run over, by a striking car and that the shape and impact properties of the car strongly influence the resulting injuries.

From the investigation of pedestrian/vehicle collisions at the scene and computer modelling of the motion of the pedestrian on impact, through to reconstructing head and leg impacts with the vehicle in the laboratory, CASR’s research program in this area is unique worldwide in its scope and attention to detail.

For ten years, a CASR staff member was the Australian representative to an International Harmonized Research Activities Pedestrian Safety Expert Group, which was charged with developing internationally acceptable procedures to test the extent to which the design of a car protected a pedestrian in a collision. The other members of the expert group represented governments and the car industry in Europe, the United States and Japan. The chairman of the computer modelling subcommittee of the group was also a CASR staff member. The results of the work of this expert group culminated in a Global Technical Regulation for vehicle design for pedestrian impact protection. This Regulation (GTR9) has now been proposed as the basis of a new Australian Design Rule for pedestrian safety.

CASR research contributes to the level of understanding of human tolerance to impact through the impact testing program. Using in-depth crash investigation cases where a pedestrian has been struck by a vehicle, researchers reconstruct the crash, initially with computer modelling and then in the impact laboratory. The impact test results are compared with the severity of the injury sustained by the pedestrian in the actual collision. Through this research CASR is able to assess the conventional pass/fail criteria used in pedestrian safety tests.

CASR conducts the Australasian New Car Assessment Program (ANCAP) pedestrian safety tests at its impact laboratory. In most cases, overseas car companies send an engineer to the laboratory to observe the tests of their vehicles.
Road and traffic infrastructure

Research at the University of Adelaide has a long history of identifying and promoting safe management practices in relation to road and traffic infrastructure.

The in-depth crash investigation program allows CASR to identify features of the road and traffic infrastructure that have played a role in crash and/or injury causation. The centre holds regular seminars with DTEI to report on these features of the road network. Feedback from crash investigations is also passed on to Local Government Authorities when specific sites require further attention.

CASR also reviews the information contained in Coroners and police reports on road crashes. For example, in the mid-1990s, research for MAC, based on Coroners reports, found that roadside hazards accounted for 40 per cent of the fatalities to car occupants in South Australia over a 12 year period. More recent analysis of police reports has revealed that approximately half of all single vehicle rollovers in rural areas of the state occur on straight roads, emphasising the importance of sealed shoulders on all roads, not only on curves.

The most recent work completed by CASR based on in-depth crash reconstructions has challenged traditional rural road design approaches by suggesting that even if the sides of roads could be cleared to current design standards, this should not be relied upon in isolation to reduce injuries from run-off-road crashes. Instead, barrier protection as close as practicable to the edge of the road offers a better opportunity for crash mitigation. A paper on this topic was awarded the Peter Vulcan Award for Best Paper at the 2010 Australasian Road Safety Research, Policing and Education Conference.

CASR research has been used by road authorities to support the adoption of various engineering countermeasures on the road network. CASR is also frequently called upon to offer advice on the anticipated effectiveness of countermeasures and assist with crash reduction modelling and site selection and prioritisation. The centre works closely with DTEI in conducting trials and evaluations leading to the introduction of cost effective road crash countermeasures.
In-depth crash investigation

CASR is the only research organisation in Australia, and one of very few internationally, that has a program of attending the scenes of road crashes as soon as they occur, thereby enabling the independent collection of relevant and detailed crash information.

This information is combined with interviews with crash participants and witnesses, medical information and crash reconstruction to work towards a more complete understanding of why a crash happened and why the participants were injured.

CASR investigates about 70 road crashes at the scene each year. Information collected on these crashes forms the basis for a wide range of other studies. A recent example was investigating the potential relevance of electronic stability control to the prevention of single vehicle loss of control crashes. CASR staff reconstructed the motion of the car as the driver lost control in the actual crash and then, using a vehicle dynamics computer package provided by Bosch Australia, predicted what would have happened had the car been equipped with the electronic stability program developed by Bosch.

CASR is currently using in-depth crash investigation data and Coroners data to examine driver behaviour in fatal crashes. It is often thought that most crashes, particularly fatal crashes, are due to extreme behaviour by drivers. Crashes involving compliant road users can be thought of as due to failures of the road system (‘system failures’). To examine the relative contribution of system failures and extreme behaviour in South Australian crashes, two datasets were reviewed: Coroner’s files and the CASR in depth crash investigations. The study found that around 40% of fatal crashes and approximately 10% of non fatal crashes were due to extreme behaviour. These findings indicate that the majority of crashes do not involve extreme behaviour but involve people making normal road user errors.

Other areas of investigation have included pedestrian safety and medical fitness to drive. Studies of pedestrian accidents were used in the validation of proposed international standards for assessing the level of pedestrian protection provided by vehicle design. The study was based on data collected from real crashes, computer simulations, and laboratory reconstruction.

The research work on medical fitness to drive examined in-depth data from 300 metropolitan area crashes. It found that in 13 per cent of cases there was medically documented evidence that a pre-existing medical condition or an acute medical event was a direct causal factor in the crash. These findings have attracted considerable local and international interest. A follow-up study co-sponsored by Austroads, MAC and DTEI is currently underway.

In 2009 CASR organised the inaugural CASR Case Study Workshop, using the Swedish OLA principle (Objective facts, Solutions and Intentions) to bring together a group of road safety stakeholders. The group discussed crashes at length to identify contributing factors, suggest and debate potential solutions, and develop plans for implementing solutions. The workshop used information collected by CASR through in-depth crash investigation to identify common crash types at particular intersections. The workshop was attended by representatives of DTEI, SA Police Major Crash Investigation, Barossa Council and the Country Fire Service.
Impact laboratory

CASR operates the only pedestrian impact test laboratory in Australia.

Developed initially for the study of brain injury mechanisms in road crashes, the laboratory is now primarily used for research on the relationship between vehicle design and pedestrian impact protection. CASR is commissioned by the Australasian New Car Assessment Program (ANCAP) to conduct pedestrian impact testing to ascertain the level of pedestrian protection afforded by new vehicles. Other research projects have included a detailed assessment of how bull bars affect the risk of pedestrian injury when compared to the same vehicle without a bull bar.

The testing process involves firing instrumented dummy headforms and legforms at the front of a stationary vehicle to measure the risk of injury to the head and legs of a pedestrian in the event of a collision. The launchers that project the impactors were designed by CASR engineers and built in Adelaide for a very modest cost. The senior engineer in charge of pedestrian protection for Subaru in Japan commented, ‘Your launcher may not have cost very much, but it gives the right answer’. Autoliv Research purchased a licence from CASR to build a copy of the headform launcher, which they operate in their test laboratory in Sweden.

A procedurally important aspect of impact testing is the measurement of the speed of the impactor. CASR has developed a laser-based velocity measurement system to do this task with a degree of accuracy that is about ten times greater than similar equipment on the market. The device has been licensed to Cellibond, a UK company which sells equipment to most of the crash test laboratories around the world.

CASR is proud to announce the relocation of the pedestrian impact testing to the new vehicle testing laboratory. Prominently located close to the University of Adelaide in Kent Town, the new laboratory provides further efficiencies and facilitates the continued expansion of services. CASR gratefully acknowledges the ongoing support of ANCAP Australasia Pty Ltd.

New areas of interest for research at the laboratory include roof strength measurements (important in rollover safety), and testing seat backs for whiplash injury prevention.
‘Outstanding work of the utmost importance’ was how Leonard Evans, ex General Motors Research Labs and author of ‘Traffic Safety and the Driver’, described the CASR study of travelling speed and the risk of crash involvement in Adelaide.

The results of this study point the way to achieving major reductions in deaths and injuries on the roads.

For 18 years from 1981 CASR was a Research Unit of the National Health and Medical Research Council. During that time the centre’s research program consisted mainly of investigations of brain injury mechanisms in road crashes and epidemiological studies of drink driving and crash risk. This work attracted considerable attention overseas.

In the mid 1990s the Japan Automobile Research Institute (JARI) approached CASR with a request to collaborate on brain injury research. This was the first time that JARI had entered into a formal research agreement with any research organisation outside Japan. Honda R&D Company later requested the centre to assist in an attempt to assess the injury predictive value of a mathematical model of the human skull and brain and then, at their expense, to join them in an attempt to validate the kinematics of a full scale pedestrian crash test dummy.

CASR is collaborating with Associate Professor Tetsuya Nishimoto of Nihon University in Japan in a project to understand the tolerance of the brain to impact forces. Associate Professor Nishimoto’s experience in computer simulation is being combined with CASR’s experience in conducting biomechanical experiments to determine the tolerance of brain tissue to the stresses generated during a collision. The results of this research will improve the ability to assess the extent to which head protecting technologies will actually reduce the risk of brain injury.

CASR’s research work on pedestrian safety and vehicle design has also achieved wide recognition. It led to participation in the ten-year program, from 1997, to develop internationally acceptable test procedures. The centre’s expertise was utilised by representatives of government and the car industry from Europe, Japan and the United States. In Australia, CASR conducts the pedestrian safety impact tests for the Australasian New Car Assessment Program (ANCAP).

A senior researcher from the French National Institute for Transport and Safety Research (INRETS) joined CASR in Adelaide for three months in 2008 to initiate an ongoing collaborative study of the validity of computer models of the pedestrian/car collision. A research engineer from INRETS is working at CASR on brain injury research for 12 months in 2010/2011.

CASR has, for many years, had an outstanding reputation world-wide for the relevance and quality of its research. CASR’s expertise in in-depth crash investigation, which is unique in Australia, is also widely recognised in other countries; Thailand and Malaysia have both sent engineers to Adelaide for training by CASR in this research area.
CASR researchers have been acknowledged by their peers at the annual Australasian Road Safety Research, Policing and Education Conference, being awarded the Peter Vulcan Award for Best Paper in 2008-2010 and the John Kirby Memorial Award for Best Paper by a New Researcher in 2009 and 2010.

CASR’s research program is aided greatly by support from the South Australian Government. Exemplified by studies of travelling speed and crash risk, crash data analysis, and countermeasure effectiveness evaluations, CASR’s research program has become increasingly aligned with the immediate concerns of the Australian State and Federal Government authorities in a wide range of traffic safety projects. The effectiveness of CASR’s research work has been recognised in assessments such as the following, in 2008, by Chris Brooks, then Senior Advisor, Road Safety, in the Australian Transport Safety Bureau:

‘My view is that the CASR team has made (and continues to make) an outstanding contribution to road safety and the quality of their work is second to none’.
Getting the message out

We recognise that our responsibilities to the wider community do not end with the publication of a report. CASR actively promotes the results of its research using a variety of methods.

‘At the Scene’ is a quarterly newsletter produced by the centre to convey information on current and recently completed research projects and topics of general interest. The newsletter is distributed both locally and internationally.

‘Road Safety In the News’ is a fortnightly email distribution generated by the centre’s library personnel which provides subscribers with a selection of road safety news items from around the world. This free service is distributed to a number of affiliated organisations and consultants and has received particularly favourable feedback.

In 2009 and 2010 the centre ran a seminar series: a regular program of public lectures used to present a selection of the centre’s work and research outcomes. The series attracted significant media attention and copies of presentations have been widely circulated.

As opportunities arise, CASR personnel contribute to television news and current affairs programs, as well as the print and radio media both nationally and internationally to convey key messages and address or respond to current issues.

CASR works closely with DTEI in the selection of cost effective road crash countermeasures and in the conduct of trials and evaluations. The centre also holds regular seminars with DTEI engineers to highlight opportunities for improvement in the safety of the road network based on our in-depth crash investigation program.

As a leading research centre, CASR publishes widely in the academic literature and presents at major conferences, both in Australia and overseas. The centre also publishes a report series based on research projects and these are available on the website.

The CASR website has a user-friendly interface to encourage its use by both the community and other road safety organisations. The site provides online access to CASR publications as well as the online catalogue maintained by the CASR library, which has one of the world’s largest collections of road safety material. The CASR website also features a virtual tour of the impact laboratory and information on current courses and events.
Supporting South Australia

The Centre for Automotive Safety Research works closely with State Government Departments in the development and assessment of road crash prevention and injury control measures.

CASR has provided input and had representation on the State’s peak road safety advisory groups for nearly 30 years. The Director of CASR is currently a member of the Road Safety Advisory Council (RSAC) and many CASR staff members contribute to the work of the committees and task forces supporting the Council.

CASR also plays a major role in promoting road safety in the South Australian community. Staff are involved in road safety activities for young people, including talks at schools, involvement with the Safe Routes to Schools Program and the Driver Intervention Program. More recently CASR has participated in the RAA Street Smart event, which brought together school students from all over South Australia. Staff also participate in community road safety activities, including speaking to drug and alcohol groups, the Psychology and Aging Interest Group, various Rotary Clubs, and joining with Community Road Safety Councils in programs such as a Dukes Highway Summit.
Building the next generation of researchers

Road safety is a multi-disciplinary issue and requires researchers and practitioners to be able to look at problems from different points of view.

At the same time, it is important to encourage new researchers to apply their discipline to understanding the problem as a whole rather than to concentrate only on those aspects of the problem that suit their discipline. The program of in-depth crash investigation plays a particularly valuable role in training new researchers to appreciate the complex interaction of factors that can contribute to both crash and injury causation. In this way, and by working alongside experienced researchers, the next generation of road safety professionals is developed.

Three of the current senior staff were awarded their PhDs based on research work conducted at CASR and postgraduate studies are becoming a major activity. This has been made possible in large part by the longer term support provided to CASR by DTEI and MAC. Currently there are six PhD students studying at CASR. Two of these students have received scholarships, one from the Royal Automobile Association of South Australia and the other from Motorcycling Australia.

The centre transfers its knowledge of infrastructure to up and coming professionals through delivery of a final year course in Traffic Engineering and Design as part of the Civil, Environmental and Mining Engineering degree program at the University of Adelaide. CASR staff also present a final year subject in Automotive Safety for the Mechanical Engineering degree program and participate in Road Safety Audit training at the University of South Australia. Training seminars are conducted for new traffic engineers at DTEI and will be extended to local government.

CASR has been host to international postgraduate students including a French Masters student who spent several months at the centre as part of an ongoing collaboration between CASR and INRETS (French National Institute for Transport and Safety Research).

Road safety research training for countries in the region has been an important role for CASR. Activities have included an international seminar on road safety and a number of invited lectures in Thailand, a training course on crash investigation for 18 Thai engineers supported by the Thai Government and a two-month course for two Malaysian road safety engineers from the Malaysian Institute for Road Safety Research. Two CASR staff members have been included on an international expert panel which provided research training in traffic safety and crash injury prevention as part of a five year program at Hunan University with funding provided by the Chinese Ministry of Education.
The future

CASR remains committed to reducing the enormous human and financial costs of road crashes in South Australia, Australia and around the world.

It is an ongoing challenge to find ways to change how the community views road trauma by presenting evidence that road crashes are not an inevitable part of the road transport system and are not just the responsibility of those involved in crashes. Research is needed to demonstrate the benefits of different countermeasures and the necessity for continued investment.

Although much is known about road crash countermeasures there are still many unanswered questions to investigate. Over the next decade vehicle technology will increase in importance and achieving the maximum safety benefits will rely on understanding the interactions between human, vehicle and the road. Also in this timeframe the relationships between safety and sustainability, safety and environment, and safety and liveability will gain greater prominence and will require careful research to understand how to build a transport system that meets all these different objectives. The relative priorities of safety and mobility may also need to be re-examined as will the priority placed on safety in road investment decisions.

CASR will continue to concentrate its research efforts on understanding road crashes and identifying measures for mitigating their consequences. We will continue our in-depth crash investigation and reconstruction programs and use the information to better address future issues such as the mix of vehicle types and weight, and the increasing importance of non-motorised modes of travel. We will also maintain our close relationship with health and medical professionals to ensure a better understanding of the factors leading to crashes, injuries and death.

CASR has a national and international reputation as a centre of research excellence and we will continue to build on this reputation in the future. We believe our role of developing new road safety professionals will become even more important as generational change occurs and our postgraduates and young researchers of today will be leaders in the future.

Collaboration with others is a vital part of developing and implementing road safety countermeasures. In the future we intend to continue working closely with all tiers of government, private industry and other researchers. Initiatives such as our research in progress forum in 2011 will build better linkages within the research community and our partnership with ANCAP to upgrade our laboratory will improve our capacity to work with the vehicle industry. Our relationships with State and Federal governments have always been central to our work and we will ensure they are strengthened in the coming years.

Although CASR will change and develop to meet the challenges of the future our central aim will always be to carry out research that makes a real difference in the world and helps in reducing the unacceptable consequences of road crashes.
CASR Report series

2010

2009
Hutchinson TP, Kloeden CN, Lindsay VL (2009) Accidents to intoxicated pedestrians in South Australia (CASR061).
Hutchinson TP, Lindsay VL (2009) Pedestrian and cyclist crashes in the Adelaide Metropolitan Area (CASR055).
Long AD, Hutchinson TP (2009) Evaluation of the Adelaide Hills speed limit change from 100 km/h to 80 km/h (CASR056).

2008
Anderson RWG, Baldock MRJ (2008) Vehicle improvements to reduce the number and severity of rear end crashes (CASR052).
Hutchinson TP (2008) Road courtesy and road safety (CASR044).


Long AD, Kloeden CN, Hutchinson TP, McLean AJ (2006) Reduction of speed limit from 110km/h to 100km/h on certain roads in South Australia: A preliminary evaluation (CASR024).
Wundersitz LN, Hutchinson TP (2006) South Australia’s Driver Intervention Program: Participant characteristics, best practice discussion and literature review (CASR021).
2005

2004

For a complete list of reports by CASR staff please see the website: www.casr.adelaide.edu.au/publications
CASR Reference Board

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University of Adelaide

Martin Small
Director Road Safety
Department for Transport, Energy and Infrastructure

Professor Michael Taylor
Director
Transport Systems Centre
University of South Australia
For further information please contact:
Centre for Automotive Safety Research
The University of Adelaide
South Australia 5005

Telephone:  +61 8 8303 5997
Facsimile:  +61 8 8232 4995
Email: casr@adelaide.edu.au

www.casr.adelaide.edu.au

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