



Annual Report 2006



MONASH University
Accident Research Centre



A MEMBER OF
Group of Eight
AUSTRALIA'S LEADING UNIVERSITIES



Vision

A World Leader in the Field of Injury Prevention

Mission

Through high-standard research
and independent recommendations,
to challenge and support citizens,
governments and industries
to eliminate serious health losses due to injury.

Guiding Values

As we pursue our goals and strategies, we will be guided by the following values. These values are central to the MUARC ethos:

Outstanding in research

... we will continue to:

- Advance knowledge in the field of injury prevention
- Generate research of the highest quality and integrity
- Embrace a multi disciplinary approach to complex problems
- Collaborate with colleagues and faculties throughout Monash University and beyond

Developing people ... Developing the field

... we are committed to:

- Offering opportunity for advancement, growth and challenge to all staff
- Nurturing the next generation of Australian researchers and policy makers
- Guiding and supporting the growth of injury prevention capabilities in existing and emerging injury crisis areas of the developing world
- Making leading contributions to national and international research efforts

Preventing injuries ... Saving lives

... these are our defining values and we will:

- Focus on and engage with major injury issues, both current and emerging
- Provide evidence-based advice independent of current orthodoxy and vested interests
- See that research informs policy and translates into safer practice
- Ensure that our collective effort results in fewer fatalities, and a reduction in both the number and the severity of injuries

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Chair's Foreword

**To: Vice-Chancellor and President:
Monash University
Professor Richard Larkins**



The community generally knows about MUARC through its high-profile public presence and road safety voice. However, MUARC's core mission is to prevent injuries and save lives through its high-standard research and independent recommendations that challenge and support citizens, governments and industries to eliminate serious health losses due to injury.

MUARC is Australia's largest multi-disciplinary injury prevention research institute. Our research spans all settings in which injury occurs – transport, the workplace, the home, and throughout sports, recreational and other community locations. Our research relevance and excellence have produced results that have had a significant impact on both government and industry injury prevention efforts.

The World Bank considers injury the fastest growing cause of morbidity and mortality in the world and describes it as "... the (least) researched epidemic of the 20th Century".

In Australia, injuries account for almost 10% of both deaths and hospital admissions and impact disproportionately on the young. In terms of years of potential life lost (up to age 75) injury outweighs cancer and heart disease combined by a factor of more than two.

Over the past year we have focused on working with our partners to implement the Centre's strategic plan and targets, developed in 2005, with particular focus on our research agenda, capacity building, research

collaborations and succession planning, including an executive search for our new Director.

Undoubtedly, our most important partnership has been that between our staff, our clients, and the communities we serve – with all parts of the organisation contributing to our development and strategic focus. Through the initiative and innovation of our staff we have not only improved the ways in which we plan and deliver our research outcomes, but we have done so whilst preserving our academic excellence and independence.

We recognise that our committed staff have been crucial to MUARC's continued improvement and success and we wish to thank and congratulate all for their contribution in achieving such excellent results and progress in the past 12 months.

MUARC also acknowledges its government, industry, business and community partners who have played a critical role in assisting us to continuously improve and achieve strong results this year.

This year Professor Ian Johnston retired as Director of the Centre, after five and a half years in the position. Professor Johnston took up his appointment in 2001, following a 30 year career in the transport safety field. He is a psychologist with a PhD in human factors, having held senior appointments in road safety for both the Victorian and Australian governments, and a wider transport research role with the ARRB Group first as Chief Scientist and then as Managing Director. Professor Johnston is a world-renowned road safety expert and is one of Australia's leading voices on safety and injury prevention issues, accompanied by a well-deserved reputation as a research leader and policy influencer.

The period under Professor Johnston's stewardship was one of rapid growth as the Centre expanded from an annual income of \$5.5 million in 2000 to \$9.7 million in 2006 and from 5 to 20 PhD students. Consequently, when the Centre was reviewed in 2003, some of the recommendations recognised the need for the Centre's administrative, human resources and financial policies and procedures to keep pace with this expansion. Importantly, the review also recognised the need to invest in continued renewal of intellectual capital to maintain the Centre's leading edge in accident and injury prevention research.

Professor Johnston embraced these challenges and engaged the Centre in an extensive process of strategic planning while keeping MUARC at the forefront of the field. The resulting plans, policies and directions will underpin the Centre's operations for many years to come, and enable the Centre to grasp opportunities in new and exciting research directions. Professor Johnston also took pride in developing the next generation of injury researchers through postgraduate student supervision and staff mentoring. The Centre is enormously grateful for his contribution and wishes him well in the next stage of his life.

Professor Johnston maintains a part-time appointment at the Centre where he actively participates in research projects and student supervision.

Finally, I congratulate the staff of MUARC for another productive and successful year.

Edwina Cornish
Chair



Family and staff joined to farewell Ian in his retirement as Director



Board of Management

Following 2005's active year of strategic planning, we began implementing the Centre's Strategic Plan and, as with all new strategic plans, some changes to traditional arrangements were necessary. MUARC's Board of Management had grown steadily over the years, as more Victorian Government agencies became stakeholders. The primary role of the Board also changed, from a mechanism to assist the University with governance matters, to an advisory committee representative of (primarily) Victorian Government stakeholders. The strategic plan proposed a separation of these roles. A small management board was to be created in 2006 and the previous board – augmented as necessary - will be re-structured to form a stakeholder advisory committee to focus on the vital role of facilitating the engagement of MUARC staff with Victorian agencies.

The Centre wishes to thank all past Board Members and Trustee's and to acknowledge the contributions of a large number of individuals and organisations that have been instrumental in assisting MUARC to achieve its current standing. Many of the individuals and organisations will continue their contributions within the new structures.

The new MUARC Board of Management was established towards the end of 2006 and will be fully operational from 2007 with a focus on governance, strategic direction and long-term financial sustainability. During 2006 the interim Board was led by the Chair and Director.

The interim 2006 Board of Management Members are:



Prof Edwina Cornish,
Chair & DVC Research



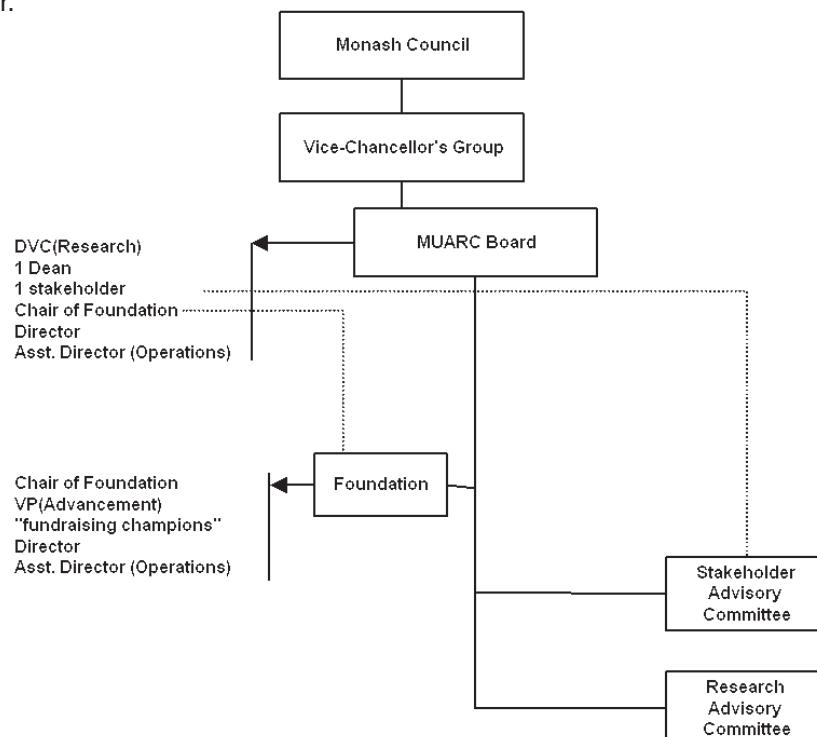
Prof Ian Johnston, Director



Ms Nicole Paramanis, Assistant Director
(Operations) (Exec. Officer)

The 2006 drive aimed to establish and implement a methodical Governance, Advisory and Management Structure that will support the Centre in its mission to eliminate serious health losses due to injury. These efforts focused on the establishment of Research Panels in line with the strategic research directions identified in the Research Directions Plan 2006-2015, convening the new Board of Management, developing an implementation plan to establish a Research Advisory Group, and a review/revision of the Centre's new internal management structure.

The new Governance structure is:



Director's Report

Professor Ian Johnston



It is with a mixture of sadness and eager anticipation that I retire from the full-time workforce. Come the end of 2006 I will have completed 5 and a half years as Director at MUARC and 41 years in the workforce - most of it in transport safety, spanning all modes. It is now time for me to do all those things that have taken something of a back seat in my life until now - grandchildren, hobbies and that book about safety that I have always been going to write! I will, following in the path of my predecessors, retain a part-time position at MUARC through which I can hopefully contribute at a different level.

Each year on this page I have paid tribute to the commitment, enthusiasm and professionalism of all the staff at MUARC. This year is no exception. I never cease to be "blown away" by the quality and timeliness of the contributions made to reducing the burden of injury upon society. This year, though, I wish to pay special tribute to a sub-set of people who helped make MUARC what it is today. Peter Vulcan, the inaugural Director, not only established MUARC but laid the foundations that ensured growth and success. Claes Tingvall, my visionary predecessor, challenged the way the world thought about injury prevention and inspired staff to follow his lead. Tom Triggs, the unparalleled scientist, who served unstintingly as Deputy Director. The senior academic staff who arrived early in MUARC's history, became scientific leaders and forged MUARC's rapid growth in national and international reputation - Brian Fildes, Joan Ozanne-Smith, Narelle Haworth (now at QUT), and Max Cameron. I am delighted that the next generation of scientific leaders already stand out for their own contributions. MUARC is perfectly positioned to cope

with generational change, that inevitable fact of organisational life. Then there are the unsung heroes - the support staff and their leaders. Janette Muddle created systems to span the semi-commercial needs of MUARC with the constraints of conventional university operation and Nicole Paramanis who has built upon this foundation to facilitate further progress. Finally, I pay tribute to the Board Chairs I have served - Peter Darvall, Gary Bouma and Edwina Cornish. Without their support, particularly at the highest university levels, we could not have survived. MUARC - and I - owe all these people a heartfelt thanks.

MUARC is an unusual animal - a whole-of-university research institute with no undergraduate student fee income and a requirement to generate all its revenues from research grants and contracts. It walks the tightrope between commercial necessities and academic excellence. Its unwritten objective is to make significant contributions to knowledge in injury prevention - and through new knowledge to policy and practice - while meeting its costs, including finding the funds needed to invest in its own intellectual development, an essential for any research body. That it succeeds - with some welcome "underwriting" by Monash - is a tribute to the staff. That walking the tightrope creates tensions is beyond dispute. That everyone rises above these tensions underlines their commitment to the goal of saving lives and reducing debilitating injury.

I wish Lesley Day every success as Interim Director until Rod McClure starts in July next year. I am sure Rod will take MUARC to even greater heights.

For my part I have enjoyed the ride. Thanks to all staff, Board and advisory committee members and clients.



Past and present staff, stakeholders and friends joined to thank Ian for his achievements as Director and to the road safety field

Our Staff, Our Experts

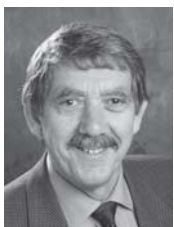


Director
Professor Ian Johnston AM
PhD, BA(Hons), FTSE

Professor Johnston became Director of the Monash University Accident Research Centre in May 2001.

Throughout the 1990s he was Managing Director of ARRB Transport Research. Before that he was Director, Road Safety for the Government of Victoria.

Ian is a psychologist with a PhD in human factors. He is a Fellow of the Australian Academy of Technological Sciences and Engineering, an Associate Editor of the international journal Accident Analysis & Prevention, and Immediate Past-President (and Life Member) of the Road Engineering Association of Asia and Australasia. Ian is committed to seeing research results implemented. His current research interest is how innovation in injury prevention finds its way into practice. Ian has more than 35 years experience in road safety, including as a Trustee of the Global Traffic Safety Trust, a small group of safety professionals who donated their time to furthering safety in developing countries.



Chair of Road Safety
Professor Brian Fildes
PhD, CProdE, BSc(Hons)

Professor Fildes holds an appointment as the Chair of Road Safety at MUARC.

He has a PhD in Psychology and qualifications in Engineering and his speciality is Human Factors research. He has particular interests in occupant protection, driver perception and injuries to older people, both on the road and in the home.

Brian joined the Centre soon after it was established in 1987. He has been instrumental in helping government agencies implement a number of new injury prevention countermeasures and programs as well as evaluating real world crash performance of cars for the automotive industry.



Professor Joan Ozanne-Smith
MD, MBBS, MA(prelim), MPH, FAFPHM

Professor Joan Ozanne-Smith is a Principal Research Fellow at Monash University Accident Research Centre (MUARC) and heads the MUARC World Health Organization

Collaborating Centre for Violence, Injuries and Disabilities. Joan has qualifications in medicine, public health and sociology, a Doctorate in injury epidemiology and a Fellowship of the Australasian Faculty of Public Health Medicine.

Her research is multidisciplinary, interfacing the methods of epidemiology and public health with those of other disciplines such as engineering, biomechanics and health economics. Her current main research interests are safe design, injury prevention in developing countries, and injury data systems.

Other interests include translation of research to prevention and building intellectual capacity in injury prevention, including current supervision of eight PhD students and substantial contributions to global injury prevention capacity building.

Joan's research is published widely and she has received several awards for injury research and prevention.



Dr. Max Cameron PhD, MSc, BSc

Dr. Cameron is a Principal Research Fellow in the Monash University Accident Research Centre. He was formerly an Adjunct Professor within the Centre while on secondment from VicRoads. He holds an M.Sc. in mathematical statistics and is a Fellow of the Royal Statistical Society. During 2000, Max was awarded a PhD for his thesis on statistical evaluation of road trauma countermeasures.

He has worked in the road safety field in Australia since 1965, with extensive experience in road safety research and its management, and in road safety policy formulation and strategic planning. He has special skills in road crash data analysis and countermeasure evaluation in the behavioural, vehicle and road environment safety areas.

His research interests at MUARC have included rating the crashworthiness of cars, evaluations of the Victorian speed camera program, the random breath

test “booze bus” program, the high-profile mass media publicity supporting each of these, and the economic benefits of these road safety measures.

In recent years he has provided consultancy advice to the SWOV Institute for Road Safety Research in the Netherlands, the government of the Republic of Ireland, the KwaZulu-Natal provincial government in South Africa, the Land Transport Safety Authority in New Zealand and road safety agencies throughout Australia. He has also played a key role in the Safety Rating Advisory Committee (SARAC) projects for the European Commission.



Dr. Judith Charlton

PhD, MSc, BEd, MAPS

Dr. Charlton joined the Centre as a Senior Research Fellow in 2000 and was reappointed to Senior Research Fellow Level D in May 2005. Judith is responsible for managing the

behavioural research team, including older road user research within the road safety group. Judith undertook her PhD in Canada at the University of Waterloo where she studied the kinematics of movement problems resulting from brain injury using 3-D motion analysis techniques. She is a registered psychologist and has extensive academic experience in the applied health sciences and research on disability, movement impairment and neuropsychological disorders. The focus of her current research is the safety of vulnerable road users including older drivers, drivers with chronic illness and disability, and child occupants of motor vehicles. A particular interest is in impairments associated with ageing and the role of cognition, vision and attention in driving performance. She supervises several PhD students in psychology and road safety and lectures in postgraduate programs in traffic medicine. Judith is a Director of BrainLink through which she maintains an active interest in community services for people with acquired brain injury.



Mr. Bruce Corben MEngSc(Trans), BSc

Bruce Corben joined the Centre in 1993 following a twenty-year career in the fields of traffic management, and road and traffic engineering safety. The principal focus of Bruce’s research activities lies in developing approaches to road infrastructure

design and system operation that meet the aspirations of Australasia’s Safe System. His main areas of expertise are in the safety of pedestrians, roadsides, intersections and motorcyclists, as well as matching travel speeds to the inherent quality of roads and roadsides. These areas of expertise have been integrated to develop evidence-based road safety strategies for Australian jurisdictions.



Dr. Lesley Day PhD, MPH, BSc(Hons)

Dr. Day, NHMRC Senior Research Fellow, joined the Centre in 1991. Lesley has qualifications in biological sciences from the University of Melbourne, and in public health, from Johns Hopkins University. She has expertise in injury epidemiology,

surveillance, research design, and the design and evaluation of injury interventions. Her particular research interests lie in the application of epidemiological methods to injury prevention research, and development of the interface of epidemiology with other key disciplines. Lesley manages a program of research on injury in two high risk populations – the farm workforce, and older people. She frequently provides policy advice to state government through a number of advisory committees. Lesley also teaches injury epidemiology at Monash and Melbourne universities and supervises a number of PhD students.



Dr. Michael Regan

PhD, BSc(Hons), MESA

Dr. Regan is an applied experimental psychologist with specialist expertise in human factors and ergonomics. He obtained his degrees from the Australian National University in Canberra. Mike joined the Centre in

1997, and was reappointed to Senior Research Fellow Level D (equivalent to Associate Professor) in 2004. He manages the Centre’s Human Factors and Simulation Group. Prior to joining MUARC, Mike was the Manager-Road User Behaviour in the Road Safety Department at VicRoads, in Melbourne. The focus of his current research is on human-machine interaction (HMI), driver distraction, human factors in intelligent transport systems (ITS), driving simulation, novice driver and passenger training, and human error. He is a Member and Past Chairman of the Ergonomics Society of Australia and holds membership of several other professional organisations. Mike sits on the Editorial Boards of the Journal of the Australasian College of Road Safety and IET Intelligent Transport Systems, and supervises several students. He also sits on several Australian and international committees which develop standards for the ergonomic design of road vehicles. On 2 April 2007 Mike will be seconded for 3 years, as a Research Director, to the French National Institute for Transport and Safety Research (INRETS) in Lyon, France.



Ms. Erin Cassell MPH, BA

Erin Cassell is a Senior Research Fellow at the Centre. She has qualifications in sociology and public health. She is the Director of the Victorian Injury Surveillance Unit at MUARC. Her current research

interests include injury surveillance, sport, child and home injury prevention, older persons falls prevention, and the evaluation of injury prevention interventions. Erin is MUARC's designated support person in the area of community injury prevention/safe communities and represents MUARC on WHO Safe Communities committees and other forums. She is a member of the Victorian Safe Communities Network Executive Committee.



Dr. Peter J. Hillard

PhD, BEng(Hons), ARSM

Dr. Hillard joined the Centre as a Senior Research Fellow in 2003 primarily to work on vehicle safety related projects. He has a first degree in engineering from Imperial College and a PhD in injury biomechanics from

the University of Bristol. He had previously held research and lecturing posts at Brunel and Manchester Metropolitan Universities before moving to Australia.

Peter's current responsibilities include supervision of the biomechanical modelling team, management of three AutoCRC projects relating to various aspects of occupant protection and operational management of the Enhanced Crash Investigation (ECI) project. ECI is a real world crash investigation program sponsored by VicRoads which aims to improve understanding of the causes of serious injury crashes and aid development of low cost countermeasures which can be implemented at the local level. Peter also has a strong interest in heavy vehicle, mobile plant and work vehicle safety. His previous research clients in this area have included VicPol, DIER (Tas), BlueScope Steel, Rio Tinto Coal Australia, and the Metropolitan Ambulance Service.



Mr. Jim Langford MEdSt, BA(Hons)

Jim Langford joined the Centre as a Senior Research Fellow in mid-2005, after having spent five years on a part-time secondment from the Tasmanian Department of Infrastructure Energy and Resources. His training is in Psychology and he has had

experience in various research and evaluation contexts, especially in Education and Health.

Jim has been in the road safety area for the past fifteen years and his current interests range from older driver safety to setting safer speed limits. He is also

the editor of and a principal writer for the Austroads Australasian Road Safety Handbook, the most recent volume of which covers research and policy issues associated with the Austroads Safe Systems approach.



Dr. Michael Lenné PhD, BSc(Hons)

Dr. Lenné is a Senior Research Fellow at MUARC, has a PhD in Experimental Psychology, and is a registered Psychologist. He has significant experience conducting research in the road safety and military aviation and maritime environments. His main

research interest is in the field of human factors psychology, and he has been involved in a number of projects in the areas of alcohol, drugs and driving. While continuing work in these areas, Michael is also using his human factors expertise across a number of projects in the areas of road infrastructure and vulnerable road users. He has recently managed projects in rail safety and is also managing a major project that aims to improve data systems in general aviation.



Dr. David Logan PhD, BE(Hons)

Dr. Logan is a Senior Research Fellow and Vehicle Safety Manager at MUARC. After obtaining a PhD in Mechanical Engineering, he spent several years in engineering consulting, working in a variety of

areas including vibration analysis, low volume vehicle compliance, heavy vehicle brake system testing, and acoustics and noise control.

David joined the Centre in 2001 and manages the multidisciplinary real-world crash investigation team, coordinating data collection Australia-wide, as well as presenting invited lectures to both school and professional groups. He is involved in road safety strategy modelling and coordination of the innovative ambulance safety and performance test program. David is also project leader for the AutoCRC ORTeV (On-Road Test Vehicle), working with the School of Biophysical Sciences and Electrical Engineering at Swinburne University to develop a state-of-the-art car carrying out real-time acquisition of physiological, eye tracking, video and vehicle data for use in naturalistic driving, driver distraction and other research relating to the Human-Machine Interface.



Dr. Stuart Newstead

Ph.D., M.Sc., B.Sc.(Hons), A.Stat.

Dr. Newstead is a Senior Research Fellow. He holds a M.Sc.(Research) in the field of mathematical statistics and is accredited by the Australian Statistical Society. In 2006 he was awarded a Ph.D. for an applied

statistics thesis developing statistical methodology for road safety program evaluation and vehicle safety assessment. He has worked at the Centre since 1993 primarily in the road safety field but with statistical advisory roles across the broader injury research domain. He has developed expertise in the areas of road safety program evaluation, vehicle safety research from mass data analysis and management and analysis of road crash and injury databases. He has particular interest in the development and application of statistical methodology in both road safety and broader public health research.



Dr. Jennie Oxley

PhD, BSc(Hons)

Dr. Oxley is a Senior Research Fellow who has been involved in many areas of road safety research since commencing at the Centre in 1990. Jennie has a PhD in Psychology, having examined the effects of age and impairments associated with

ageing on pedestrian performance.

Jennie's main research expertise is in the field of human factors psychology, particularly the role of behavioural and functional factors on crash and injury risk, and the development of innovative measures to improve the safety and mobility of vulnerable road users. Her current research interests focus on pedestrians (older, child and intoxicated), older drivers, the role of functional impairments in driving and walking, road design and infrastructure for older road users, educational and training packages for vulnerable road users, long-term consequences of injury, factors affecting the safety of young novice drivers and speed, and speeding.



Dr. Jenny Sherrard

PhD, MPH, GradDipEval, BSc

Dr. Sherrard is a Senior Research Fellow with a PhD in the field of injury epidemiology. She has formal qualifications in infectious diseases, public health and evaluation. Jenny first joined the Centre in 1993. In 1995,

she was offered a PhD Scholarship with Professor Bruce Tonge in the Department of Psychiatry and, on completion of her doctorate, rejoined the Centre in 1999. Since then, her research has mostly focused on the evaluation of injury countermeasures particularly at the community level with some project work for the Australian Defence Force. During this year Jenny left the Centre as a Senior Research Fellow but retains an honorary role.



Dr. Wendy Watson

PhD, MA, DipEd, BSc(Hons), BA

Dr. Watson is a Senior Research Fellow who has worked in many different areas of injury prevention research over her fourteen years at the Centre. She has formal

qualifications in Psychology, Teaching and Asian Studies and was awarded the 2006 faculty Mollie Holman medal for best doctoral thesis for her research on the validity of population-based measures of the burden of injury.

During her time at the Centre, Wendy has been particularly active in the areas of consumer product safety and in the costing of injury. She has presented her work at national and international conferences and provided advice on the economic costing of injury to various organisations including the World Health Organization. She is currently managing a major NHMRC research project on exercise for delaying the onset of disability and maintaining independence in older persons.

Her main research interests are health outcomes measurement and the determinants of disability following injury.



The launch of the Used Car Safety Ratings creates considerable media interest



Emeritus Professor Tom Triggs

PhD, MEngSci, BE, BSc

Professor Tom Triggs is associated primarily with the human factors and simulation program in road safety at the Centre. Formerly, he was Director of the Battelle Human Factors and Organizational Effectiveness Research

Centre in Seattle and Manager, Experimental Psychology Department at Bolt, Beranek and Newman in Boston.

He is a member of the editorial board of *Safety Science*, and a member of the U.S. Transportation Research Board Sub-committee on driver training. He obtained his PhD in Psychology from the University of Michigan and his Master's degree in Aeronautical Engineering from the University of Sydney.

Tom is a Fellow of the Human Factors and Ergonomics Society and a Fellow of the Ergonomics Society of Australia of which he is a Past President. He was awarded the Cumming Memorial Medal of the Ergonomics Society in 2000, and was co-recipient of the Alan Welford Award of the Society in 2002. He was previously Associate Editor of *Human Factors* for 21 years, and the Australian and New Zealand Associate Editor of *Applied Ergonomics* for 10 years.

His current research interests are in human factors of decision-aiding, human-computer interface issues and driving simulation.

Honorary Appointments

Professor Tore Larsson PhD, MA



Professor Tore Larsson has an extensive background in injury prevention research developed in Sweden. He commenced with the Centre in 1997, his main interest areas being accident and injury analysis, criteria for prevention, occupational risk assessment and the implementation of

work site measures.

Tore returned to Sweden in 2003 to take up an appointment as Professor (Occupational Injury Prevention) with the Royal Institute of Technology, Stockholm, Sweden. He has been appointed as a Professor in the Centre and continues to supervise PhD student, Ben Brooks.



Professor Claes Tingvall

DrMedSci, MSc

Professor Tingvall is a statistician with a PhD in Medical Science and is a Professor in Injury Epidemiology (1991). He was Head of Folksam Insurance Research in Traffic Safety (until 1994) then Director of Traffic Safety at the Swedish National Road Administration 1995-98. Claes was Director of MUARC between 1998 and 2000, when he returned to the Swedish National Road Administration.

Claes maintains his keen interest in the development of the Centre's Visionary Research Model and other projects, and spends several weeks working at the Centre each year.



Professor Peter Vulcan DEng(honoris causa), PhD, MSEM, MechE, BA

Professor Peter Vulcan was the Foundation Director of MUARC until his retirement in August 1998. Previously he was Chairman, Victorian Road Safety and Traffic Authority and prior to that Assistant Secretary Road Safety, Commonwealth Department of Transport. Professor Vulcan has B.Mech.E. and B.A. degrees from Melbourne University, with a PhD in Biomechanics from Wayne State University, USA. He has been involved in road safety for more than 40 years.

Peter's contribution to MUARC and the field of injury prevention were recognised in 2002 with the establishment of the Peter Vulcan Scholarship by the Monash University Accident Research Foundation and the award of Doctor of Engineering *honoris causa* by Monash University.



Dr. Eric Wigglesworth

AM, Hon MD, DAppSc, MSc, DipEd, BSc

Dr. Eric Wigglesworth accepted an invitation to join the Centre as an Honorary Senior Research Fellow in September 1998. This followed his retirement after serving for almost 20 years as the founding Executive Director of the Sir Robert Menzies Memorial Foundation. During this period he also completed a series of investigations into road-rail fatalities at level crossings and has published 12 reports on this theme. He also has a strong interest in the pattern of occupational injuries, and has published widely on the advocacy of occupational health and safety and trauma reduction.

Research Fellows

Ms. Karen Ashby MPH, GradDipHealthScienc, BA
 Dr. Jeffery Archer PhD(Traffic Engineering), BSc(Hons)
 Mr. Wayne Baker MEngSc(Res), BE(Mech)(Hons), BA, GCertOHM
 Dr. Irene Bobevski DPsych(Clin), BAppSci, BA(Hons)
 Ms. Megan Bohensky MPH, BA
 Dr. Charlotte Brace PhD, BSc(Hons), DPS
 Ms. Nimmi Candappa BEng(Civil)(Hons), BA(Jap)
 Ms. Angela Clapperton M(Counselling), GradDipEdPsych., BSc(Behav)
 Ms. Belinda Clark †BA, BBS(Hons)
 Ms. Amanda Delaney LLB, BCom(Hons)
 Ms. Kathy Diamantopoulou MSc, BSc(Hons)
 Dr. Michael Fitzharris †BA, BSc(Hons), PhD
 Ms. Barbara Fox †MApSocRes, RN, BA
 Dr. Melanie Franklyn PhD, ME (Biomedical Prelim.), BSc
 Dr. Phillip Gould Ph.D., B.Comm.(Hons), B.E.(Hons)
 Ms. Effie Hoareau GradDip(Stats&OpRes), BSc
 Mr. Simon Hosking B.App.Sci(Hons)
 Dr. Sjaanie Koppel PhD, BAppSc(Hons), BA
 Dr. Julie Lahausse DPsych(Org/Ind), Psych(Hons), BA
 Ms. Carlyn Muir MA(SocSci), Psych(Hons)
 Ms. Christine Mulvihill BBS(Hons)
 Ms. Virginia Routley †MPH, GradDip(SocStats), DipEd, BEc
 Ms. Lisa Sharwood †Grad Dip Nurs, DipAppSc(Nursing), RN
 Ms. Carolyn Staines †BSc(Hons)
 Ms. Voula Stathakis MPH, GradDip(Epi/BioStats), BSc
 Ms. Karen Stephan GradCertBiostats, MPH, BSc(Hons)
 Mr. Nebojsa Tomasevic MEngSc(Biomed), BEE
 Ms. Linda Watson BSc(Hons)
 Ms. Kristie Young BAppSc(Psych)(Hons)
 † Part-time



Karen Ashby



Jeffery Archer



Wayne Baker



Irene Bobevski



Megan Bohensky



Charlotte Brace



Nimmi Candappa



Angela Clapperton



Belinda Clark



Amanda Delaney



Kathy
Diamantopoulou



Michael Fitzharris



Barbara Fox



Melanie Franklyn



Phillip Gould



Effie Hoareau



Simon Hosking



Sjaanie Koppel



Julie Lahausse



Carlyn Muir



Christine Mulvihill



Virginia Routley



Lisa Sharwood



Carolyn Staines



Voula Stathakis



Karen Stephan



Nebojsa Tomasevic



Linda Watson



Kristie Young

Research Assistants & Project Staff

Ms. Sarah Barlow †RN, BSc(Hons)
 Ms. Megan Bayly BA(Psych)(Hons)
 Ms. Lorraine Becker
 Ms. Sue Bond †RN (Div 1) B. Health Sci., Grad Dip Rural Nursing,
 Grad Dip Crit Care [until June]
 Ms. Jean Box †RN [until June]
 Mr. Anthony Clark BEng(Hons)
 Ms. Melinda Congiu B.Bus(Psych), GradDip(Psych)
 Mr. Angelo D'Elia BE(Hons), BSc.(Hons)
 Mr. Clay Douglas †BEng(Hons)
 Ms. Jessica Edquist †Grad Dip(Psych), BSc.
 Mr. David Elsner †BA(Hons), BCommerce, Grad Dip App Finance
 Ms. Nicola Fotheringham †BA/BSc
 Mr. Jonathon Guy BA(Hons)
 Ms. Eleri Harris †BA(Hons)
 Ms. Anne Harrison †RN (Div 2) [until June]
 Ms. Narelle Hayes †BA
 Ms. Dianne Hill †Grad.Cert. Clin. Trials [until June]
 Mr. Robin Hutchinson BSc(Behav.), BSc(Hons)
 Mr. David Kenny †Crash Investigation Engineer
 Ms. Jessica Killian †MSc(Repro), GradDip (ReproSci), BSc
 Mr. Ron Laemmle Crash Investigation Engineer
 Ms. Louisa Lam †MPH, GradDip(Coronary Care), BHSc, RN
 Mr. Fabian McLindin †RN, Assoc Dip Farm Management [until June]
 Ms. Debra Neilson †RN, Cert Nursing Admin & Clinical Teaching
 [until June]
 Mr. Bryan Nitz, †Exercise for Independent Living Exercise Class Leader
 Ms. Mary O'Hare †MA, BA(Hons)
 Ms. Dinalie Peiris †BComp
 Ms. Sujanie Peiris BSc(Hon), BE(Hon)
 Mr. James Scully MSc(Maths), BSc(Hons), BA
 Mr. David Sheppee Co-ordinator, Occupant Protection Project
 Ms. Miriam Shrimski †
 Dr. Mark Symmons †PhD, MSc, BSc(Hons), BAppSc
 Mr. David Taranto BE(Elec)(Hons), BSc
 Ms. Joanne Tziotis
 Mr. Ashley Verdoorn †BSc
 Ms. Michelle Whelan †BBS(Hons)
 Ms. Lyn Willmott †Cert III VicFit Instructor, Exercise for Independent
 Living Exercise Class Leader
 † Part-time



Sarah Barlow



Megan Bayly



Anthony Clark



Melinda Congiu



Angelo D'Elia



Clay Douglas



Jessica Edquist



David Elsner



Nicola
Fotheringham



Narelle Hayes



Robin Hutchinson



David Kenny



Jessica Killian



Ron Laemmle



Louisa Lam



Sujanie Peiris



James Scully



David Sheppee



Miriam Shrimski



Mark Symmons



David Taranto



Ashley Verdoorn



Michelle Whelan

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Mr. Simon Alexander Computer Support
 Mrs. Glenda Cairns † PA to Director,
 Webmaster, Publications Officer & Postgrad AO
 Ms. Christine Chesterman †Dip.Hol.Kin.,
 Administrative Officer, Finance
 Ms. Cathy Daly BMus/BTeach(Hons), † Finance & Systems Officer
 Mrs. Noelene Deveson Senior Project Officer
 Ms. Brenda Gibson †BA, DipEd, PGradDipHistory
 Senior HR Advisor & Policy Officer
 Ms. Allison Harding †Media & Communications Co-ordinator
 Ms. Matoula Leichman †Group Administration Officer
 Ms. Vicki McAuliffe Senior Administration Co-ordinator
 Ms. Emily Mifsud Administrative Secretary [until June]
 Ms. Kristen Moore Administrative Assistant
 Ms. Nicole Paramanis AIMM, BA(Hons), HND
 Assistant Director (Operations)
 Ms. Vicky Ribas Administrative Officer
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 Ms. Melanie Thiedeman †GradDip(Asian Studies), BA Group
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 Ms. Elizabeth Varvaris Administrative Assistant
 Ms Georgina Wells BBus, Personal Assistant to Chair of Road Safety
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Glenda Cairns



Christine
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Cathy Daly



Noelene Deveson



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Allison Harding



Matoula Leichman



Vicki McAuliffe



Emily Mifsud



Kristen Moore



Nicole Paramanis



Vicky Ribas



David Stroud



Melanie Thiedeman



Elizabeth Varvaris



Georgina Wells



Rachel Whitworth



2005 and 2006 were baby boom years for staff at MUARC with 7 new Mums and 2 new Dads. [shown here Vicky, Irene and Sujanie]

The Centre in Profile

The Monash University Accident Research Centre (MUARC) is Australia's largest research institute specialising in the study of injury prevention and safety science.

Its work and mission gives prominence to, but goes beyond, research and training to embrace advocacy, engagement and application.

MUARC:

- Conducts research in the community setting, and in rural, transport and workplace safety
- Comprises almost 90 staff members, with skills and experience in a wide range of disciplines
- Provides a stimulating program for postgraduate researchers
- Uses the most advanced driving simulator in the southern hemisphere
- Manages the injury surveillance datasets for Victoria and provides data to underpin research and prevention
- Is a World Health Organization Collaborating Centre
- Realised external revenue of almost \$9 million for 2006.

Established in 1987, MUARC is a centre of Monash University. It has close links with, but is not attached to any of Monash University's teaching faculties.

The Director of the Centre is responsible to the Chair, Board of Management, for the operation of the Centre. The Chair's responsibilities are similar to those held by the Dean of a faculty. As the chairperson is also the University's Vice-Chancellor (Research), the role includes that of academic mentor to the Centre's director.

As the Centre is not incorporated, Board members are not directors for the purposes of the Corporations Law. Comprising highly respected and experienced representatives of the public sector, RACV and Monash University, the Board's role is to monitor the

general performance and direction of the Centre's research program, and to consider any matters referred to it by the Vice-Chancellor.

What does MUARC do?

In *Overview of Injury in Australia* (www.health.gov.au), the Australian Government Department of Health and Ageing reports that: "injuries result in an estimated 8,000, or 6%, of deaths each year in Australia and are responsible for an estimated 400,000 hospital admissions annually. Injuries are the principal cause of death in people under 45 years of age (almost 50% of deaths), and account for a range of physical, cognitive and psychological disabilities that seriously affect the quality of life of injured people and their families".

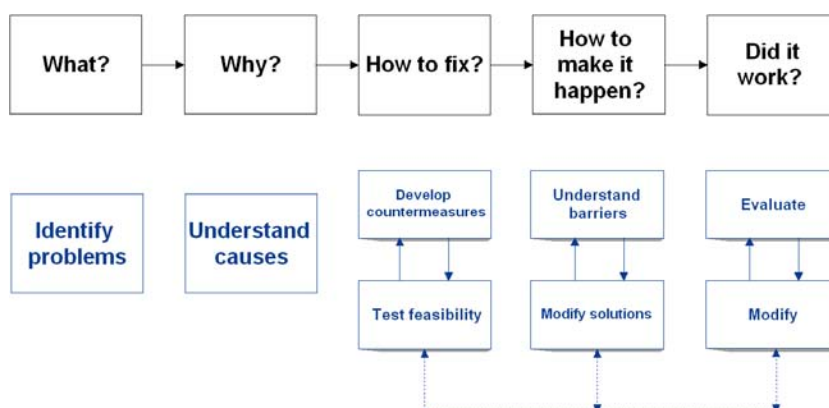
Although a substantive proportion of MUARC's work is conducted within the Australian setting, there is abundant appreciation that the 'burden of injury' is global. As reported in the *World report on road traffic injury prevention*, the increasing motorisation in the world's most heavily populated areas has led to estimates that road trauma may double by 2020. Drowning, falls, intentional injury, injuries to older people and people in remote communities represent other major priorities and challenges to be overcome to reduce suffering for victims and their families throughout the world.

MUARC was established in the belief that injury is preventable, that solutions are achievable by the application of scientific methods, and that the required commitment to implement and sustain change is attainable.

MUARC has been a key player in the gains in injury reduction in Australia in the past two decades. The adoption of a simple but effective model for the injury reduction research process has been key to our success. Victoria's per capita death rate from motor vehicle crashes is now among the lowest in the world.

The Victorian Government's transport injury compensation insurer has established that its investment in evidence-based injury prevention efforts has provided excellent economic returns.

Significant gains have also been made in reducing injury from the use of tractors on farms, from requirements for the fencing of pools in residences, and from the re-design of workplaces to control the interaction between pedestrian workers and forklift operators.



Highlights of an Active Year

The external review of MUARC in 2005 highlighted two principal priorities:

- the need to overcome MUARC's financial fragility; and
- the need for succession arrangements to ensure that MUARC flourishes over the next period as key senior staff reach retirement age.

The review also strongly recommended that MUARC engage more actively with the wider Monash University community and a case was successfully made for the University to invest in securing MUARC's future.

In 2006 the Centre concentrated its efforts on implementing the five immediate priorities were identified in the resultant MUARC Strategic Plan (2005-2008):

1. Secure the human and financial resources needed to underpin implementation of the strategic plan.
2. Secure a viable funding base, independent of project contracts.
3. Establish systematic links with Monash faculties, centres and campuses.
4. Overcome the key staffing problems.
5. Reform the governance, advisory and management structures.

MUARC developed a Human Relations Strategy to underpin the Strategic Plan with a focus on succession planning. Recommended actions included:

- moving the majority of staff to longer term contracts;
- developing a rewards scheme based on performance; and
- staff recruitment to meet key skill shortages identified in the research plan and implementation of a program to develop the future leaders.

Achievements

1. *Secure the human and financial base to underpin the implementation of the strategic plan*
 - Monash provided a special strategic grant of \$250,000 in 2006 to fund the strategic implementation process.
 - Monash identified MUARC as a research institute well placed to contribute towards achieving the larger University objective to be one of the world's great international, research-intensive universities.

2. *Secure a viable funding base, independent of project contracts*

- MUARC developed a fund raising plan and prepared cases for externally funded Chairs and Post-Doctoral Fellowships. The search for external funding for each of these will be the primary focus of our initial fund raising efforts in 2007.

3. *Establish systematic links with Monash faculties, centres and campuses*

- MUARC's Research Directions Plan (2006-2010) identified eight promising directions for preventive research: ageing and injury, injury in developing countries, injury data systems, product safety and technology impact, implementation and evaluation research method development, rail, air and sea transport injury, road transport injury and work-related injury. Nine Monash faculties were identified as potential collaborative partners for projects that straddle common areas of interest.
- Discussions on closer collaboration were undertaken with Law (especially the Centre for Regulatory Studies), Arts (especially School of Political and Social Inquiry), Business and Economics (especially the Centre for Health Economics), Art and Design, Engineering (especially TR@M) and Medicine (especially MONRAS and the Departments of Epidemiology and Preventive Medicine and Forensic Medicine). Research funding bids were made/won with respect to ageing and injury (MonRAS) and collaborations have begun on projects related to policing (with the School of Social and Political Inquiry), developing children's perception of safety and risk (with the Faculty of Education) and safe intersections (Faculty of Engineering (Civil)).

4. *Overcome key staffing problems (and implement succession planning)*

- Undertake an executive search for our new Director.
- Pro-actively recruit expert staff to meet the growing needs of the Centre.
- Active promotion and support of a varied staff development training program which included learning and development programs and services addressing the organisational and individual needs of both our academic and general staff.
- Review all MUARC staff contractual appointments to identify any incorrect classifications. A number of 'casual' staff were

offered and subsequently transferred onto fixed term agreements. Around 26% of our EFT staff are now on contracts of greater than one year (up from 5%).

- Develop an overall framework for performance management, part of the contract review and renewal process, involving an active partnership between supervisors and staff and providing ongoing communication and feedback.

5. *Reform MUARC's governance, advisory and management structures.*

- Implementation of the new governance and internal organisational structures began during 2006 and will continue into 2007.
- Development of an Operational Management Plan to ensure MUARC's financial accounting infrastructure, related policies and procedures to provide capability for processing and reporting of finances in an efficient manner. Several of the targets from the Management Plan were successfully implemented, most notably: financial operating systems reform, development of an accurate competitive project costing and pricing system; development of financial risk management strategies; implementation of a quarterly financial review process with all staff group heads; implementation of a progressive up-skilling and multi-skilling of administrative staff; review of policies and procedures in consultation with staff.

Other achievements

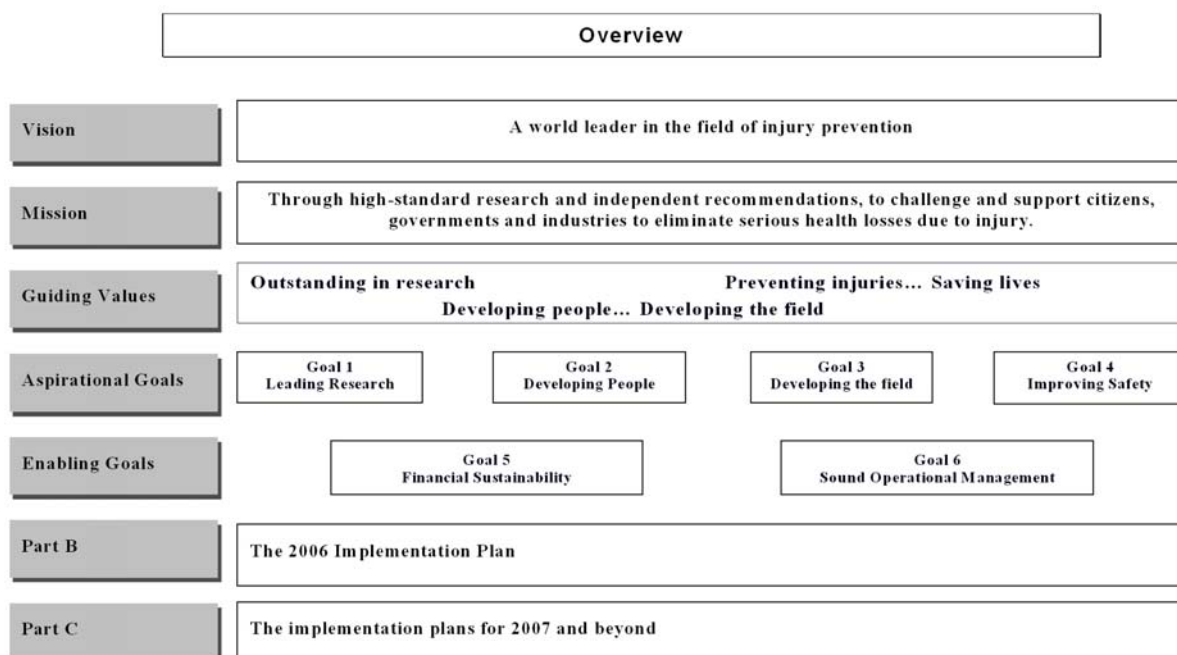
An aspirational goal in the MUARC Strategic Plan is *Improving Safety by: Advocating for Injury Prevention; Informing Policy and Influencing Practice*. The media is a valuable tool for influencing government and the community. MUARC seconded Allison Harding from

the University's central Media Communications office in January 2006 to develop a Communications Plan to support this goal and assist the achievement of MUARC's strategic plan. As a result:

- In 2006, there were over 800 mentions of MUARC and our work in the media compared with 460 in 2005.
- MUARC 'sold' story ideas to various media outlets utilising media releases to create a pro-active media agenda.
- Tools and systems were established to record and monitor MUARC's media presence. Collection of photographs and DVDs of television reports for an archive and, ultimately, for website downloads has commenced and visuals are now available to the media on request.
- The Simulator, a crash inspection vehicle and other areas within the MUARC building were 'branded' for use as media interview/events areas.
- The website was reviewed in preparation for a major upgrade in 2007.
- Media training was initiated for selected staff and students.

These achievements reflect the commitment and expertise of our staff and students and the support and dedication demonstrated by our partners and the University. The Centre thanks all for their efforts in delivering the excellent outcomes.

Next year will bring many new opportunities and challenges including the final stages of our strategic implementation targets, the continued growth and development of our current academic research areas, international positioning and preparations for the Research Quality Framework. The progress made to date indicates that the Centre is well positioned to tackle the challenges ahead.



MUARC Strategic Plan Schematic

External Recognition

Although “Preventing injuries. Saving lives.” is a reward in itself, it is greatly appreciated that many staff receive external acknowledgement for their contribution in this field.

Professor Claes Tingvall (a past Director of MUARC) was awarded the inaugural Nordic Road Safety Prize in September at a ceremony in Copenhagen. The press release read “Professor Claes Tingvall, architect behind “Vision Zero”, was presented with the Nordic Road Safety Council’s highest award, for his pioneering efforts in the field of road safety. Claes Tingvall has contributed immensely to moving positions forward. ‘Vision Zero’ has become an export commodity, and the concept of shared responsibility is also generally established as the basis for the EU Commission’s plan of action for road safety.”

Two staff members were honoured by the Australian Injury Prevention Network. Professor Joan Ozanne-Smith was presented with the Special Award for Sustained Achievement. This award is made to researchers, practitioners or policy makers who have made an outstanding contribution to their field over a sustained period. The closing paragraph of the citation for the award is as follows: “Few people would have had the tenacity to maintain, develop and promote their vision for injury prevention in the way Joan has been able to do. Through her persistence and determination, Joan has made a sustained contribution to the Australian, and now the international community, saving many lives and reducing the injury burden.” Congratulations Joan on this recognition by your Australian peers.

Erin Cassell was presented with the 2006 Award for Meritorious Achievement in Research. Both awards were presented at the 8th Australian Conference on Injury Prevention in Sydney.

Charlotte Brace was the recipient of the Ken Provins Award for the best paper presented during the Human

Factors and Ergonomics Society of Australia Annual Conference, for her paper entitled ‘Identifying and Designing for the Needs of Older Road Users’.

Two senior Centre staff, Nicole Paramanis and Lesley Day, participated in the university’s inaugural Senior Women’s Shadowing Program along with 8 other senior women from across Monash. The objectives of the program were to enable women at Monash University to enhance their leadership capabilities; and to provide Monash University with a larger cohort of women with leadership skills and abilities. Program participants undertook the equivalent of a minimum 3 full days shadowing their appointed leader in action, and 6 Praxis meetings during which the group reflected on various issues related to leadership.

Angelo D’Elia received the Statistics Prize for the best statistics honours student in 2005 for his project “The comparison of logistic regression models in the estimation of vehicle crashworthiness”. Angelo undertook his honours year at the Centre while enrolled in the School of Mathematical Sciences. Angelo then joined the staff of the Centre upon completion of his degree.

Professor Brian Fildes, along with external associates Clay Gabler, Ken Digges and Laurie Sparke won the 2005 Isbrandt Award of the Society of Automotive Engineers (SAE) for their work on Harm analysis associated with far side injuries. This is a prestigious award among the automotive industry in the USA.

Professor Joan Ozanne-Smith’s has long been a mentor to Dr Zhang Peibin in China, who was awarded the Song Qingling Paediatric Medicine Prize, the one national paediatric medicine prize, for his child injury research project. The award took place in the Beijing Great Hall of the People. In his acceptance speech he thanked Joan for her help and support with the research. Subsequently, Dr Zhang has been asked by the China Preventative Medicine Association to write China’s first textbook on child injury prevention, to which Joan will contribute a chapter.



Professor Claes Tingvall (centre) is shown here at the prize giving ceremony with Mr Matti Järvinen (left) from Finland, the president of the Nordic Road Safety Council and to the right Mr Rene la Cour Sell, host of the prize giving dinner and managing director of the Danish Road Safety Council

An Independent Voice

MUARC is one of the world's leading injury prevention research centres. Through high quality research and independent recommendations, MUARC aims to challenge and support citizens, governments and industries to eliminate serious health losses due to injury.

One of its greatest strengths is the ability to engage with policy makers and program administrators to ensure the relevance of its research and the translation of results into policy and practice.

A sample of MUARC's projects are described here.



Four Wheel Drive Crash Risks

The 4 Wheel Drive (4WD) vehicle segment has been one of the fastest growing segments in new vehicle sales in Australia over the last decade. However, recent analyses have indicated that 4WD vehicles are aggressive in crashes, causing comparatively more harm than other passenger vehicles when in collision with other road users and are relatively unstable vehicles, with a high risk of rollover. To assess the safety of these vehicles more completely, this study produced two analyses of 4WD risk in comparison to other passenger vehicles: estimates of primary safety for 4WDs and other passenger vehicle market groups using NZ data; and, secondly, induced exposure estimates of rollover risk using Australian and NZ crash data.

Results of the study confirmed the higher rollover risk associated with 4WDs, identifying vehicles driven by young drivers, male drivers and older 4WDs as being particularly susceptible. However, in terms of crash risk overall, estimates from the study showed that 4WD vehicles are generally safe vehicles overall, despite the identified higher rollover risk. The one situation identified with unusually high risk for 4WDs compared to other passenger vehicle types was that of teenage ownership. The results overall warn that parents who are 4WD owners need to be wary of allowing their novice family members to use such vehicles keeping in mind that regular cars present significantly less risk than 4WDs for novice drivers. Results also reinforce the importance of electronic

stability technology as a highly desirable risk-reducing feature for these relatively unstable vehicles. Results are being used by government agencies and auto clubs to offer objective consumer information on the relative dangers of 4WD vehicles.



Evaluation of the \$240M Victorian Accident Blackspot Program

In 2000, the State Government of Victoria commenced a \$240 million Statewide Blackspot program. The program treated 841 identified blackspot sites across Victoria over a four year period. During 2006, MUARC completed a

comprehensive scientific evaluation of the program for VicRoads estimating its crash effects and economic benefits. The evaluation focused not only on the program overall but also the effectiveness of broad and specific treatment types as well as effectiveness by road type and urban and rural location. Treatment types examined included intersection treatments such as new traffic installations and roundabouts, treatments targeting off path crashes such as shoulder sealing and barrier installations and treatments targeting unprotected road users such as pedestrian signals and refuges. The evaluation was able to identify those treatment types most effective in reducing crashes and those providing the greatest economic benefits. Results have been used to justify further investment in blackspot treatment programs with the detailed results being used to tailor future blackspot program treatments to achieve maximum crash reduction and economic benefits for the community. Sponsor: VicRoads.

Bicycle and motor vehicle crash characteristics

This study, funded by the Amy Gillett Foundation, aimed to describe the characteristics of crashes involving bicycles and motor vehicles and was based on data on police reported crashes in Victoria, Queensland, Western Australia and South Australia during 2000-2004.

Crashes involving bicycle riders were identified and 13,901 bicycle riders matched to colliding motor vehicles and their drivers. These collisions were used to describe characteristics of bicycle crash circumstances, demographics and serious injury outcomes of both bicycle riders and motorists involved.



Crashes of vehicles from adjacent directions at intersections predominate along with events involving manoeuvres of either vehicle such as u-turns and entering or leaving parking. Ninety-two percent of crashes occurred on the straight and 99% occurred on sealed roads.

Crashes peaked from 2pm to 6pm. Crashes were less common on Saturdays and Sundays compared with weekdays. Crashes were more common in February and March and frequency declined over the winter months.

Overall 80% of crashes involved male bicycle riders. Bicycle riders aged 6 to 19 years were involved in crashes the most (29%), followed by bicyclists aged 20 to 29 years (20%). Overall 54% of crashes involved male motorists and 37% of crashes involved female motorists. Motorists aged 30 to 39 years were involved in crashes the most followed by motorists aged 40 to 49 years and 20 to 25 years. Crash involvement for these age groups was 18%, 15% and 14% respectively.

In general, crashes involving bicycle riders are seldom reported to the police unless someone is killed or injured (usually the bicyclist) hence only injury crashes are considered in this report. Serious injury is defined as an injury requiring admission to hospital or death. The rate of bicycle riders killed or seriously injured was relatively constant over the period 2000 to 2004 and the average risk of death or serious injury for bicycle riders involved in the reportable crashes included in this study was around 27%. Over the study period injury severity was relatively unchanged for 20 to 49 year old bicycle riders. The risk of serious injury increased with age for bicyclists aged 50 years and older. By contrast, the risk of serious injury for those aged under 20 increased inversely with age.

The study provides valuable insights into bicycle and motor vehicle collisions that result in injury to the bicycle rider and directions for further research.

Driver Distraction Book

Dr. Mike Regan is the senior editor and co-author of Regan, Lee and Young "Driver Distraction: Theory, Effects and Mitigation", the first book on driver distraction, to be published in late 2007. This work involves over 30 authors from around 15 countries and will be printed by CRC Press.

The Enhanced Crash Information (ECI) Program

Since 2004 MUARC has been conducting an in-depth crash investigation program for VicRoads designed to improve understanding of the factors that contribute to the occurrence and severity of serious injury crashes in Victoria. The overall objective of the program was to inform regional stakeholders of the causes of crashes in their regions to foster collaborations between stakeholder organisations at a local level and lead to the development and implementation of local innovative action plans to prevent similar crashes happening again.

In-depth data was collected on crashes that occurred in each VicRoads region with an emphasis on contributory factors. These data were then presented on a 'no-blame' basis to review panels in the locality where the crash occurred. Panels comprised local stakeholders including VicRoads and council traffic engineers, representatives from the Police, emergency services, receiving hospital, and local community organisations.

The initial stage of the program ran from November 2004 to June 2006, and involved the evaluation of 13 motorcycle and 66 car crashes at 27 review panels across Victoria. The process of crash investigation and review was considered to be highly worthwhile by all of the 435 stakeholders involved in the review panels. As a consequence, the Victorian Motorcycle Advisory Council subsequently funded an extension of the program focusing exclusively on motorcycle crashes. A new 5-year ECIS program looking at all types of passenger vehicles is due to commence in the second half of 2007.

Government and Industry Engagement

MUARC has been a key player in the gains in injury reduction in Australia and the world over the past two decades. A key reason for this success is our high level of engagement with government agencies and with a range of industries, which ensures the most important issues are the subjects of the research thrust and that the results are quickly transferred into practice.

A sample of MUARC's projects with government and industry partners is presented below.

The relationship between slips, trips and falls and the design and construction of buildings

The objectives of this study are:

- (1) to determine the frequency and risk contribution of 'slips, trips and falls' in buildings, which are a direct result of building design construction and other extrinsic hazards and the potential contribution of intrinsic factors; and
- (2) to identify the number of persons exposed to each hazard and the age group most at risk.

The three primary components of this study are a literature review, data acquisition and analysis, and consensus weighting of hazards by an expert panel, based on the available evidence.

The literature review will focus on the most prevalent hazards and harms as identified through a preliminary analysis of state, national and international data relating to the topic, and as identified in similar studies conducted internationally, as well as on methods for weighting the harm from hazards in buildings.

Victorian hospital treated fall injury in buildings data will be extracted and analysed. An iterative process will be employed, with the Australian Building Codes Board, to determine the final set of inclusion criteria for the dataset, to reflect classes of buildings addressed by the Building Code of Australia. National hospital data, based on the final Victorian dataset, will then be extracted by the National Injury Surveillance Unit. Data relating to relevant deaths will be sought from the National Coroners Information System. Cost estimates for medical treatment will be applied to hospital data.

The specific role of the expert panel will be to attribute the contribution of building design and construction to categories of slips, trips and falls based on available evidence. The panel will be similar to those convened for the BRE studies, "A risk assessment procedure for

health and safety in buildings," (Raw GJ, et al 2000 and "Building regulation, health and safety," Raw GJ, et al 2001) and the United Kingdom's "Housing Health and Safety Rating System: Operating Guidance" (The Office of the Deputy Prime Minister, 2006). Sponsor: Australian Building Codes Board. Chief Investigator: J. Ozanne-Smith

Factors that influence child booster seat position



The study aimed to gain a more detailed understanding of the child restraint usage rates, 'appropriateness' of restraint use, and the factors that influence appropriate restraint use for children in the booster seat age group.

Six hundred and ninety nine parents from New South Wales and Victoria completed a questionnaire regarding restraint use by their children aged 4 to 11 years. The findings revealed that only 24 percent of children in that age group were travelling in a booster seat, while the remaining 76 percent were travelling in a seat belt. Children travelling in booster seats were significantly younger (5.8 years vs. 8.2 years), lighter in weight (21.9 kg vs. 30.3 kg) and shorter in height (115 cm vs. 131 cm) compared with children travelling in a seat belt. Children travelling in a booster seat were also significantly more likely to be sitting in the front passenger position (for all vehicle types) (38%) compared to children travelling in a seat belt (28%).

Appropriateness of restraint use was computed using height criteria of 100-140 cm for booster seats and greater than 140 cm for seat belts. Based on the height measurements provided by parents, children travelling in booster seats were found to be significantly more likely to be appropriately restrained (93%) compared to children travelling in a seat belt (25%). The likelihood of being appropriately restrained in a booster seat was greater for female children compared with males and greater amongst those who had a sibling in a seat belt compared with those who did not. Appropriate booster use was also influenced by parents' knowledge about size thresholds for transition to seat belts and there was a greater likelihood of appropriate use of boosters with increasing age and weight of the child.

Amongst those children using a seat belt, the mean age for their transition into a seat belt was 5.6 years. The most important reason cited by parents for

moving a child into a seat belt was that the child was too big for their forward facing child restraint/booster seat (69%). Children who were appropriately restrained in a seat belt were more likely to be in a smaller vehicle than a larger vehicle and not have another sibling in a booster seat compared to those who did have a sibling in a booster seat. Additionally, the likelihood of appropriate seat belt use increased with greater weekly distance travelled and increased age and weight of the child.

The findings highlighted the need to improve legislation on child restraint usage and to promote awareness amongst both parents and children of safety benefits associated with appropriate restraint use and seating position. Sponsor: Motor Accidents Authority

Crash risk of older female drivers

The majority of the older population are women and future predictions indicate an increase in this proportion, an increase in the proportion of licensed older women, increased driving by older women drivers, and a subsequent estimated three-fold increase in crash rates in the coming decades without active intervention. It is therefore essential to understand the contributory factors to crash and injury risk in order to develop appropriate and effective countermeasures to reduce this risk.

Two studies were undertaken to investigate the crash risk of older female drivers and to determine contributory factors. The first study used existing data from a recent survey of 673 current older female drivers in the ACT. Logistic regression analysis was used to model the 'at-risk' older female driver using crash involvement in the last five years as the dependent variable and taking correlations between other variables into account. The survey data analyses revealed that the most 'at-risk' older female drivers were those who: (i) were the principal driver; (ii) were moderately or not at all confident that they were a safe driver; (iii) shared driving on long-distance trips; (iv) had problems with the driving style of older drivers; and (v) experienced problems driving on unfamiliar roads.

The second study was a case-control study of 48 crash-involved and 44 non crash-involved older female current drivers in the ACT which examined in detail the effect of functional performance, health factors and driving factors on crash risk. Functional performance was examined using four validated tests of skills that are likely to be important in driving such as visual processing, memory and search, scanning strategies, attention span, divided and selective attention, problem-solving and motor performance.

The case-control study confirmed the findings of the survey data analyses and identified a number of additional predictors of crash involvement. Poor

attentional, cognitive, executive and motor skills as well as the presence of multiple medical conditions were associated with crash involvement. In particular, the results suggested that those with more pronounced functional changes and multiple medical conditions were most at risk of crashing possibly due to the effect of functional limitations on the skills necessary for driving performance but also due to the effects on adoption of compensatory strategies. Low confidence, difficulty in some driving situations and principal driver status were also related to increased risk of crash involvement.

These findings suggest that older female drivers who become principal drivers, perhaps due to illness or death of a partner, may lack the up-to-date driving experience and associated confidence to drive safely. Further, this group may be at risk of crash involvement as a result of 'low mileage' and a higher propensity to drive on the urban network. The finding that the majority of crash-involved participants were involved in crashes at intersections supports this view.

Recommendations included behaviour and educational resources, improvements to licensing procedures, improvements to road design and system operation and further research to gain a better understanding of the issue and potential preventive measures. Sponsor: NRMA-ACT Road Safety Trust

Strategic principles of drink-driving enforcement

This study aimed to review the existing drink-driving enforcement research conducted by MUARC to develop operational principles of drink-driving enforcement and emphasise where the best results are to be achieved. In addition, drink-driving enforcement studies undertaken in other Australian jurisdictions and internationally were reviewed.

Both the Australian and international research indicated that existing drink-driving enforcement efforts have successfully contributed to reductions in casualty crashes at all severity levels. There has been little research on the costs and benefits associated with the Random Breath Testing (RBT) program as it operates in Victoria, however, international evidence suggests that RBT programs operated in a similar manner to the Victorian program are cost beneficial. The research also highlighted a remaining group of drivers — persistent offenders and rural drivers — who have not been influenced by current enforcement methods.

Recommendations include a complete cost benefit analysis of the Victorian RBT program to underpin future drink driving enforcement and the development of alternative strategies for influencing groups with low compliance with drink-driving laws. Sponsors: Department of Justice, Transport Accident Commission, VicRoads, Victoria Police and RACV.

Self-regulatory practices adopted by older drivers in the ACT and NSW

This study involved a survey of a random sample of 6,000 people (3,000 residents of the ACT and 3,000 residents of NSW) aged 60 years and older. Survey responses from 1,697 current drivers (ACT: 1,015 NSW: 682) and 108 former drivers were available for analysis.

Approximately two thirds of all current drivers reported that they drove daily or almost daily (ACT: 72%; NSW: 63%) and more than one third drove at least 100 kilometres per week (ACT: 36%; NSW 44%). Males were more likely than females to drive daily and travel greater distances and younger participants (<75 years) were more likely to drive more frequently and further than older participants (75 years and older). One-third of drivers reported that they drove less now than five years ago. Changes in driving distance as well as driving quality and speed were related to overall health status. The majority of drivers reported they were satisfied with their current amount of driving (ACT: 83%; NSW: 81%).

Most of the drivers reported being very confident and had no difficulty in driving situations including intersections, busy traffic and other higher risk conditions. Overall, less than one quarter of participants reported that they routinely avoided these situations. The most commonly avoided driving situations were driving at night particularly when wet (15-25%) and driving in busy traffic (approximately 15%). Regression modelling was used to identify key characteristics of self-regulators amongst older drivers. Data for Victorian drivers from an earlier study as well as ACT and NSW drivers were included in these analyses. Those who self-regulated by avoiding any of the selected driving situations were more likely to be Victorian drivers (rather than ACT or NSW drivers), aged 75 years and older, female, have lower ratings of overall health and driving confidence, and live in rural areas.

More than half of the drivers (ACT: 64%; NSW: 57%) said that they had thought about giving up driving one day while only 17% said that they had actually made plans for this. The majority of former drivers who participated in the study were 75 years and older (64%), female (61%), and lived in urban areas (75%). One third indicated that they went out daily or almost daily, while 28% went out only once or twice a week. Two-thirds of all former drivers were satisfied with their ability to go places and most said they stopped driving at about the right time, however, about one-quarter said they were not satisfied with their current ability to get places. Almost all of the participants (99%) indicated that they frequently used a private car as a passenger and just under half indicated that they regularly walked or used public transport to get to places.

The three most important reasons for stopping driving were having someone available to drive them, availability of other forms of transportation and concern that their driving responses would not be fast enough in an emergency. A number of recommendations arising from this research are made for strategies to enhance the awareness of self-regulatory practices and to encourage older people to drive for as long as it is safe for them to do so. Sponsor: NRMA-ACT Road Safety Trust

Crash-based evaluation of Australian Design Rule 69 (Full Frontal Impact Occupant Protection)



In-depth data at MUARC were used to evaluate Australian Design Rule 69 (ADR 69), Full Frontal Impact Occupant Protection, with respect to both injury risk and cost of injury for drivers of passenger cars. The effectiveness of frontal airbag deployment was also examined. ADR 69 was introduced in Australia in mid-1995 and was

based largely on the US occupant protection standard, FMVSS 208. The results of this evaluation indicate reductions of 80% and higher in the likelihood of sustaining AIS 2+ head and face injuries, with even greater gains associated with frontal driver airbag deployment. The frontal driver airbag was particularly important in reducing the probability of chest injuries. The average injury cost savings for drivers of post-ADR 69 manufactured passenger cars was found to be as high as AUD\$19,000 depending on the body region, while the combined injury cost saving associated with head, face, neck and chest injuries combined was AUD\$27,000 on average per driver. The findings do, however, point the way forward for improvements in vehicle safety design for the further protection of the spine and the lower extremity in particular, where the regulation has had little impact among this sample of belted drivers. Limitations of this research and implications of these findings are discussed. Recommendations to build on the success of ADR 69 are made. Authors: Michael Fitzharris, Brian Fildes, Stuart Newstead and David Logan.

Investment in feasibility study brings dividends

Fall injury is a key health issue for Australia, posing a major threat to the safety, health and independence of older people. Population ageing necessitates urgent action to maintain the health and independence of our growing older population and falls prevention is an important part of this requirement.



Reliable evidence shows that interventions can reduce falls among community dwelling older people. Commitment to falls prevention is shown by recent investment in policy development, practice networks and infrastructure. However, the potential for the evidence base to translate into falls reductions has not yet been fully realised in Australia. The challenge now is to deliver the most effective interventions efficiently at a population level. Proven falls interventions differ in their type (or mix of types), level of effectiveness, specific sub-groups targeted, and in the level of resources required. The relative benefit of delivering various interventions will differ according to the demographic structure of population, and other factors. Epidemiological modelling of the impact of proven falls interventions on future fall rates, together with cost-effectiveness analyses, has the potential to provide a powerful policy-setting tool.

A study to explore the feasibility of the modelling approach applied to falls interventions was supported by the Centre's Strategic Research Program during 2004-05, with presentations being given at two national and one international conference. As a result funding to pursue this research in 2007/08 was obtained from the Falls Prevention Community Grants Program within the Australian Department of Health and Ageing.

Exercise for Independent Living: the impact of exercise in maintaining independence among older people

This study addresses the issue of disability among our ageing population. Preservation of function among our older citizens, and their capacity to live independently, is of significant social, public health and economic benefit. The aims of this study are to: (1) test the efficacy of exercise in delaying disability among older people, prior to its onset; and (2) investigate the mechanisms by which exercise intervenes in the disability pathway, (3) determine the cost-benefits of exercise for older people. The study is currently recruiting 500 people over 70 years of age and randomly assigning them to receive one of two exercise programs: "Flex and Move" (a flexibility and relaxation program), or "Focus and Flow" (consisting primarily of Tai Chi moves) for a period of 48 weeks. The groups will then be compared to determine if there is any difference in the development of disability as well as a range of functional outcomes such as strength, balance, depression, arthritic symptoms, life satisfaction, and falls.

This will be the first study world-wide to test the impact of any exercise program on delaying the manifestation of disability among older people. Robust evidence that exercise can in fact delay disability will have immediate and significant implications for the maintenance of independence among older people at a critical time for our ageing population. Translation of



these research results to practice will decrease demand for support services for community dwelling older people, and for places in supported accommodation facilities. Older people will have improved quality of life, and government and non-government agencies will experience reduced demand for limited resources. This internationally significant study will also contribute to understanding the mechanisms by which disability develops, and create the valuable opportunity for continuing research on attrition of effect and long term adherence to exercise programs.

The project is funded by the National Health and Medical Research Council and the Wicking Trust, and has the support of Australian Retirement Communities and Arthritis Victoria. It is expected to be completed by December 2008.

Chief Investigators: Dr Lesley Day, Monash University Accident Research Centre; A/Prof Keith Hill, National Ageing Research Institute; Prof Leon Flicker, University of Western Australia; A/Prof Damien Jolley, Monash Institute for Health Services Research; A/Prof Leonie Segal, Monash University Centre for Health Economics

The influence of heavy vehicle travel growth on light vehicle road trauma



Increased travel by heavy vehicles (rigid trucks, articulated trucks and buses) has been identified as one of the key components of total growth in vehicle travel to 2010. This study examines the effect of anticipated growth in heavy vehicle travel on road trauma in the light passenger vehicle fleet. Road trauma levels are measured by the

number of light vehicle driver fatalities and serious injuries resulting from light passenger vehicle collisions with heavy vehicles.

Using exposure data sourced primarily from the Bureau of Transport and Regional Economics and the

Australian Bureau of Statistics in conjunction with NSW Police reported crash database, a model to project relevant future trends in road trauma has been developed to reflect three key elements of the road trauma chain: exposure; crash risk; and injury outcome given crash involvement. In addition to the specific results presented in this study, the model developed may be used to assess the likely impact of proposed policy changes on heavy vehicle related road trauma. Future heavy vehicle related road trauma trends are projected based on two scenarios of future crash risk. The results demonstrate the sensitivity of heavy vehicle related road trauma to crash risk and highlight the importance of continuing to reduce heavy vehicle crash rates to offset projected growth in heavy vehicle travel and deliver reductions in heavy vehicle related road trauma. A potential remedy to predicted increases in heavy vehicle related trauma is explored and demonstrates the application of the model as a policy evaluation tool. The tool has already proved valuable to federal transport agencies in setting policy.

Intelligent transport systems and motorcycle safety

This study aimed to identify existing and emerging Intelligent Transport Systems (ITS) that have the potential to enhance motorcycle rider safety.

A review of the literature revealed that very few commercially available ITS currently exist specifically for motorcycles, although several emerging technologies were identified. Consultations with international experts in ITS, motorcycle safety, motorcycle manufacturers and various road safety research organisations confirmed this. However, there are emerging and existing technologies for other vehicles that have the potential to address key motorcycle safety issues.

Each of these technologies is described in the report, and those deemed most directly relevant to these key safety issues were ranked in a prioritised list. Systems that addressed the stability and braking properties of the motorcycle were given the highest priority on the list, as these systems have potential to enhance motorcycle safety in almost all crash situations. However, the list was based on safety relevance only. In the absence of more definite data regarding the causal factors of motorcycle crashes and the actual effectiveness of each of these systems, the list should be regarded as tentative.

Recommendations are made for further research and for stimulating the early development of ITS that enhance safety and are acceptable to riders. Sponsor: Roads Corporation (VicRoads)

The effects of text messaging on young novice driver performance



This project aimed to evaluate the effects of text (SMS) messaging on the driving performance of young novice drivers using the advanced driving simulator located at MUARC.

Twenty participants drove on a simulated roadway which contained a number of events, including a pedestrian emerging from behind parked cars, traffic lights, cars turning right in front of the driver, a car following episode and a lane change task.

The results revealed that retrieving and, in particular, sending text messages had a detrimental effect on a number of safety critical driving measures.

The ability of drivers to maintain their lateral position on the road and to detect and respond appropriately to traffic signs was significantly reduced when text messaging.

In addition, drivers spent up to 400 percent more time with their eyes off the road when text messaging. While there was some evidence that drivers attempted to compensate for being distracted by increasing their following distance when following a lead vehicle, drivers did not reduce their speed while distracted.

Sponsor: NRMA

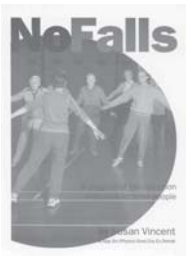
Safer fleet vehicle purchases

Vehicle purchases by fleet owners make up a high proportion of total new vehicle sales in Australia. Consequently, vehicle safety initiatives targeting fleet purchasers have the potential to offer significant road safety gains. The aim of this project is to provide economic evidence of the benefit likely to be accrued by fleet managers if they adopt safe vehicle purchasing policies. The justification for safe vehicle purchasing policies is currently based on assumptions about the economic savings from reduced injury levels in work related accidents. These assumptions need to be validated in order to provide sound business justification for safe purchasing policies. Fleet managers may be currently deterred from purchasing the most crashworthy available vehicles because of their additional cost. Outcomes of this project aim to counter this reluctance by providing hard economic evidence that attests to the immediate benefits of a more crashworthy vehicle fleet (to influence fleet managers and their financial managers) and to the longer-term benefits of safer vehicles spreading through the total vehicle fleet (especially to influence government policy makers).

A comprehensive model of the road trauma chain involving fleet vehicles is being constructed that will be

able to assess the road safety and economic benefits of a range of fleet purchasing options. This will enable those purchasing options that offer the greatest potential road trauma savings and economic benefits to be identified. Sponsor: Austroads. Chief Investigators: M. Cameron, S. Newstead, J. Scully

NoFalls Train the Trainer and Exercise Program Manual



The NoFalls exercise program was developed as part of a major study by the Centre into the prevention of falls in people aged over 70. The findings published in the *British Medical Journal* in 2002, revealed exercise focusing on balance improvement could significantly reduce the number of falls in people aged over 70. In a partnership with

Active Ageing SA, we developed a Train the Trainer workshop to provide health and fitness professionals with the skills to train others in how to conduct the NoFalls Exercise Program for community dwelling older people. Workshops were held in all capital cities, except Darwin, in early 2004, resulting in 100 NoFalls Exercise Program Trainers located around Australia. These Trainers have trained at least 200 NoFalls Exercise Class Leaders. In addition, we produced a NoFalls Exercise Program Manual, which outlines the exercises themselves and the format for the 15 week program. At least 500 copies of the manual have been distributed, with feedback indicating that most people rated the manual as a good or excellent resource. Copies of the manual may be obtained via the MUARC website. This activity was funded by the Commonwealth Department of Health and Ageing and included a follow-up evaluation of those who undertake the training course as well as those who obtain the manual.

Two major farm injury projects complete data collection

The Farm Injury Risk among Men (FIRM) and Agricultural Machinery Design and Operational Safety Study (AMDOSS) both completed data collection in 2006, after a four year period of recruiting injured farmers through hospital emergency departments, and uninjured control farmers using the electronic white pages. The aim of these two projects is to identify risk factors for serious farm injury, and to examine in particular detail the role that machinery design plays in farm injury. A total of 258 injured farmers and 703 control farmers were recruited and interviewed about their working patterns, the farm on which they work, and individual characteristics such as experience and training. On-site inspections of 100 pieces of agricultural machinery with a focus on operations and design were conducted. This major effort involved co-



operation from 21 hospitals around Victoria and the Centre gratefully acknowledges the assistance of hospital staff for this project. Data analysis is underway and results will be published in 2007.

Industry engagement with MUARC's rural injury prevention research program

The Agricultural Machinery Design and Operational Safety Study (AMDOSS) is a 3 year research project funded by the Rural Industries Research and Development Corporation (RIRDC), and will conclude during 2007. Key deliverables are to provide expert and evidence based commentary about agricultural machinery injury causation and prevention. Discussion will include observations of human factors, machinery design, and the regulatory environment, including the role of Australian Standards.

In order to both inform the research, and to develop networks to efficiently disseminate the findings to the groups most affected, various stakeholders within the agricultural machinery industry have been engaged throughout the project. Various tiers of supply within the industry have been consulted, including dialogue with senior representatives from the Tractor and Machinery Association (TMA), the Farm and Industrial Machinery Dealer's Association, the Victorian Farmers Federation and others. Presentations have been made to, and feedback received from industry at key meetings of each of these groups, the most significant of these being the Annual General Meeting of the TMA. The project's progress has been regularly reported to Farmsafe Victoria, Farmsafe Australia, and the National Farm Machinery Safety Reference Group, of which project staff are active members.

In July 2006, Wayne Baker and Lesley Day both attended the Annual International Meeting of the American Society for Agricultural and Biological Engineers (ASABE). Wayne's presentation of preliminary results and methodology of the AMDOSS study was very well received by an audience of safety professionals and engineers. Those present were

predominantly from companies who are the largest manufacturers of agricultural machinery worldwide, as well as a number from similar research institutions throughout North America. At the same event, Wayne and Lesley gave an invited presentation to the ASABE Ergonomics Safety and Health committee, and fielded questions about what is a unique research program.

Development of a speed enforcement strategy for Western Australia

The objective of this research was to enhance speed enforcement strategies in Western Australia, by assisting WA Police decisions regarding the deployment of enforcement technology (what, where and how) and the purchasing of enforcement technology (number, mix and type).

Speed enforcement operations were defined for the WA road environment which recognises its relatively unique characteristics of vast size and light traffic density, except in Perth. Evidence of the effects on speeds and road trauma in other jurisdictions due to speed camera systems and manual speed enforcement was reviewed and synthesised to provide strategic understanding of their mechanisms. For some key speed enforcement operations, it was possible to calibrate the road trauma reductions against the operational levels.

From this research base, a suitable speed enforcement method for each part of the WA road system was defined. The road trauma reductions and economic benefits if the enforcement was operated at each level were also calculated. The recommended speed enforcement package was estimated to produce 26% reduction in fatal crashes, 12% reduction in crashes resulting in hospital admission, and 9% reduction in medically-treated injury crashes. The package was estimated to provide a saving of at least \$186 million in social costs per annum, with an estimated cost of \$18.6 million per annum. Thus the benefit-cost ratio of the package was estimated to be at least 10 to 1. Sponsor: WA Office of Road Safety. Chief Investigator: M. Cameron

Linking Victorian injury data sources: A feasibility study

The broad aim of this project is to assess the feasibility of linking a number of Victorian data sets that underpin much of the injury prevention research carried out by MUARC. These data sets include: police reported road crashes; Transport Accident Commission claims data; in-depth crash inspection data collected at MUARC and hospital admissions data. To date, use of information in all the datasets together has been limited, as the data sources have never been fully linked. This project is attempting to link all four datasets.

Benefits from the project will include assessment of data quality issues through cross comparison and assessment of the sampling frames and coverage within each data set. Effective linking of the data sets will potentially lead to more robust and better qualified results from research that would previously have only analysed the data sets individually. The full potential for use of the linked records in a wide variety of research settings will be examined as part of the project. Results from the research will be available during 2007. Sponsor: MUARC Baseline funding. Chief Investigator: S. Newstead

Impacts of the Victorian speed-related initiatives during 2001-2002

This project aimed to evaluate the crash effects of the 50 km/h default urban speed limit introduced in Victoria on 22 January 2001. Furthermore, it aimed to relate these effects to intermediate measures indicating mechanisms of program effectiveness, such as speed monitoring data and speed enforcement data, where possible. Limitations in the available data resulted in the study only examining the effects of 50km/h limits in metropolitan Melbourne and limited regional areas. Results of the evaluation demonstrate that implementation of the Victorian default 50km/h urban speed limit was associated with a 12% reduction in casualty crashes. Assessment of program crash reduction effects for particular road user sub-groups showed the default limit change was also associated with a reduction in fatal and serious injury crashes involving pedestrians of between 25% and 40%. A final report on the evaluation will be published in early 2007.

Another project which continued during 2006 aimed to examine the overall impact on road crashes and their injury outcomes due to a package of speed-related initiatives introduced during 2001-2002, including the following changes to speed enforcement:

- More covert operations of mobile speed cameras, including flashless operations;
- 50% increase in speed camera operating hours; and
- Lowering of cameras' speed detection threshold.

The 50 km/h General Urban Speed Limit introduced in January 2001 was also part of the package, as well as an increase in speed-related advertising (the "Wipe Off 5" campaign), media announcements about the above enforcement initiatives, and a restructure of the speeding penalty regime.

This project will be completed in early 2007. Linked to this project was an attempt to develop statistical models of monthly variations in crashes and injury outcomes as functions of each of the components of the above package and relevant socio-economic factors. It has been generally concluded that such models need realistic assumptions to be made about viable functional

forms connecting each factor and the road trauma outcomes. Sponsor: MUARC Baseline funding. Chief Investigators: M. Cameron, S. Newstead

Review of behavioural, travel and exposure surveys for Victoria



For over five years MUARC has been conducting a series of studies that have focused on the behaviour, travel and exposure data needs of the Victorian stakeholders. This fundamental methodological research, was a three stage project that commenced in mid-2002:

- Stage 1 - Review current collection of behaviour, travel and exposure data in Victoria and relevant literature and experiences from other regions.
- Stage 2 - Prepare a survey design and implementation plan for collection of behaviour, travel and exposure data in Victoria.
- Stage 3 - Facilitate a Behaviour, Travel and Exposure Forum with key stakeholders regarding a collaborative approach to data collection and to establish MUARC's future role in this area.

Stage 1 outlined the importance of regular measurements of on-road behaviours and exposure to risk for the advancement of road safety. A review of existing travel surveys and other relevant data was provided with the conclusion that Victoria was lacking in an integrated and representative program that can provide accurate behavioural and exposure measurements. A future survey program was recommended to collect behavioural, travel, and exposure data across a number of road safety priority areas.

Stage 2 focused on the development of a design for both household interview surveys and observational surveys and derived recommendations for the implementation of the surveys. In addition to presenting the templates for the various data collection forms, this report presented considerable detail about how the household and observational surveys should be structured and conducted and included discussion under the following headings: What data should be collected; The target population; Sampling units, frame and methodology; Data collection procedures; Sample size estimates; Frequency of data collection; The benefits of having these data; and An implementation plan. In addition to presenting the surveys and methodology, the stage 2 report presented a number of recommendations, the most critical being the proposed collaboration with other parties active in this area of research, particularly the Department of Infrastructure (DOI) and VicRoads. The feasibility of a collaborative approach, and a mechanism for achieving it, became the focus of the third stage of this research program.

Stage 3 conducted during the second half of 2006, began from the agreed platform that it was desirable for MUARC to collaborate with DOI, VicRoads and other bodies who were planning travel/exposure surveys of various types. The first task undertaken was to define the umbrella concept of total land transport travel/exposure in Victoria per annum, under which each of the planned travel/exposure surveys could be considered to lie. The second task, and the key process in Stage 3, was the convening by MUARC of a forum to outline this umbrella concept and to persuade the travel/exposure survey organisers to position their planned surveys as sub-sets of the conceptual population. Some of the key outcomes from the forum include the attainment of the following: roundtable support for a collaborative approach whereby VicRoads and DOI would use a similar data collection tool; roundtable agreement that household surveying, across 365 days of the year, was the optimal method for collection of high quality travel/exposure data (with the exception of behavioural data); and agreement about MUARC's future role through both involvement in the DOI project steering group and through the direction and collection of the observational data. The MUARC project team subsequently developed a number of proposals to conduct observational surveys in line with the recommendations arising from the forum.

The final draft report documenting the 3 stages of the Behaviour, Travel and Exposure Surveys Project was submitted to the Baseline Research Committee in early December. This MUARC report draws together the work undertaken for this project over the previous 18-24 months, with recommendations for future activities. The design of two behavioural surveys recommended under this project: an On-Road Driver Alcohol and Drug Survey Program in Melbourne, and a Road-Side Observation Survey Program, will commence in early 2007. Sponsor: MUARC Baseline funding. Chief Investigators: M. Cameron, I. Bobevski, K. Diamantopoulou, B. Clark

Study of disqualified drivers in Victoria

The objective of this study was to identify the extent and profile of disqualified drivers in Victoria, including demographic characteristics, the circumstances under which people become disqualified, the driving patterns of those disqualified, whether heterogeneous groups of disqualified drivers exist with different risk profiles and for whom the sanction of disqualification has different effectiveness. Due to data availability and access challenges surrounding disqualified drivers in Victoria, the scale of the investigation was modified to conduct an in-depth smaller scale study with disqualified drivers, rather than the originally planned large survey.

A total of 53 participants (40 disqualified drivers, 13 partners/parents) were recruited for the study via newspaper advertising, mail outs (Victorian Association of Drink Driver Services) and flyers distributed through VicRoads Customer Support Centres. Ten Focus groups were conducted by Quantum Market Research, 6 comprising disqualified drivers and 4 with partners/parents of disqualified drivers.

The following themes identified from past research as being pertinent to this target population were discussed within the focus groups: the impact of disqualification, attitudes toward disqualification, experiences of driving under disqualification, knowledge of penalties for driving under disqualification, attitudes towards penalties for driving under disqualification, perceived risk of apprehension for driving under disqualification, perceptions of police detection methods, punishment avoidance, exposure to role models, and social and personal rewards. Data analysis commenced in December and a final report, including future recommendation, is due in early 2007. Sponsor: MUARC Baseline funding. Chief Investigators: B. Clark, I. Bobevski

Sports Injury Research

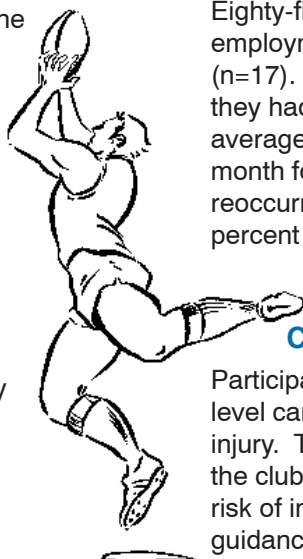
Investigation of serious injury among adult non-elite Australian rules football players

This study aimed to describe in more detail the nature, mechanisms and circumstances of serious, hospital-treated Australian football injury; to identify and describe potential risk factors to injury; to document injury outcomes; and to make recommendations on prevention and future research.

Any male patient aged 18 years or older who presented to one of 7 participating Victorian hospital emergency departments with a serious injury that occurred when playing an organised match of Australian football at the community (non-elite) level were eligible for inclusion in the study. Of 219 eligible players who gave consent to the hospital to be contacted by the research team, 172 agreed to participate in the study (79% participation rate).

Injury details

The 172 players reported 206 injuries. Fractures accounted for more than half of all injuries (61%), followed by dislocations (16%) and intracranial injury (7%). The most common body sites injured were hand including fingers (19%), shoulder (17%) and face (15%).



Common activities being engaged in at the time of injury were: tackling or being tackled, contesting the ball on the ground or in the air, bumping/shepherding or being hit/punched. Nearly three-quarters of injuries were caused by being stuck by or colliding with other players (72%), and a further 12% (n=20) were the result of collisions with objects (mainly the ball).

First aid at the ground

Five percent of players reported that the first aid they received was inadequate or inappropriate and 22% either continued to play on when injured or were sent/went back into play after coming off the ground for first aid. The mode of removal of players from the ground appeared to be generally satisfactory with most players receiving the appropriate level of assistance.

Potential risk factors for injury

Our study identified several putative risk factors: older age, not playing football in the previous season and lack of general and match fitness at the start of the playing season, having a back problem, carrying a sports injury from the previous season, player distraction, playing in a mid-field position or playing out of position and foul play by opposition players.

Injury outcomes

On average, players missed six games due to their injury. Sixty percent of players injured in the 2004 season that were followed up 12 months later (n=89) reported they had not returned to play in 2004, 34% reported they had not resumed playing in the 2005 season (one-third because of their 2004 injury or concern about the likelihood of re-injury) and 13% had retired permanently from the game (mostly as a direct result of their injury). This represents a considerable temporary and permanent loss of participants to the sport, especially when many community level clubs, particularly in rural areas, are struggling to field open age teams.

Eighty-five percent of all study participants were in employment (n=145) and around 10% were students (n=17). Of the players in employment, 83% reported they had taken time off work due to their injury, an average of 12.2 days. Six respondents to the 12-month follow-up survey (7%) reported their injury had reoccurred, five when playing football. Forty-six percent of follow-up respondents indicated their injury still caused them some pain.

Conclusion

Participating in Australian football at the community level can result in serious or potentially catastrophic injury. There is considerably more work to be done at the club, league and peak body level to minimise the risk of injury and this research provides some guidance on the way forward for prevention and research. Sponsor: Sport and Recreation Victoria

Sports countermeasure reviews

Each year in Victoria there are at least 7,500 hospital admissions and 15,500 Emergency Department presentations for sports injuries. This project aimed to review the research literature to describe and assess the quality of evidence on the effectiveness of strategies and measures used to prevent injury in five major community sports: Australian football, cricket, soccer, basketball and netball. A further review covering the effectiveness of mouthguards was also undertaken.

Sports injury prevention Fact Sheets were developed for each of these sports plus 6 additional sports/recreation activities (recreational running, in-line skating, skateboarding, snowboarding, cross country skiing, downhill skiing). Fact Sheets were disseminated to players, coaches and parents through the *Smartplay* (Victoria) website (www.smartplay.com.au/vic). Sponsor: Sport and Recreation Victoria

Motorcycle simulator

Honda Australia generously provided a Honda NSR150 motorcycle on permanent loan to MUARC. The motorcycle has been integrated with the MUARC Advanced Driving Simulator for studying the factors involved in safe motorcycle riding performance. The motorcycle simulator has been used to investigate the hazard perception skills of motorcycle riders, including reaction times to hazards, risk perception, and how riders visually search the road environment for hazards. Furthermore, the riding performance of experienced motorcycle riders has been compared with that of novice riders with varying levels of car driving experience. The results of these studies will be used to inform motorcycle safety stakeholders, including VicRoads and the Victorian Motorcycle Advisory Committee, about strategies for improving motorcycle safety and designing hazard perception training tools for novice riders.



Used car safety ratings research program

For over 15 years MUARC has been involved in a program of research examining issues relating to vehicle safety in both Australia and New Zealand through the analysis of large databases on real crash outcomes. Data on which the research to date is based has come from reports on crashes compiled by police in various States across Australia and in New Zealand. A primary focus of work in the area has been on developing ratings of vehicle secondary safety performance in terms of the vehicle's ability to protect its own occupants in a crash (crashworthiness) and the injury risk the vehicle poses to other road users with which it impacts (aggressivity). Ratings have been estimated by make and model of vehicle as well as by year of vehicle manufacture.

The purpose of the ratings system is two-fold. First, it serves to provide relevant consumer information on relative vehicle safety to assist in safer vehicle purchasing as well as to promote a general culture of vehicle safety awareness when considering vehicle purchase priorities. To achieve this, the ratings are published in the form of a brochure for public distribution and on public access web sites of Australia's peak motoring bodies and road authorities. The ratings are updated annually to provide coverage of new vehicles as well as to improve the accuracy of the ratings for vehicles previously rated through analysis of additional crash experience. The Australian national road safety strategy nominates the ratings as a key element in vehicle safety activity.

Second, although the focus of the research program started off on the ratings systems, more recently the value of the data system assembled for estimation of the vehicle safety ratings has been recognised for facilitating a much broader range of research on vehicle safety issues. Research projects beyond the ratings for which the data has been used include:

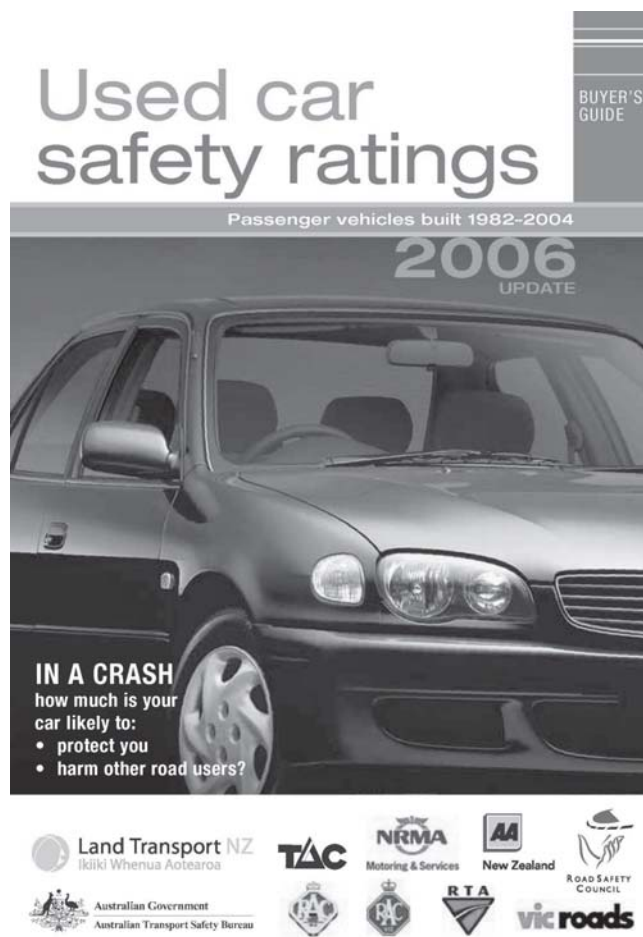
- Investigation of the relationship between real crash outcomes and results of consumer crash barrier test programs such as ANCAP and EuroNCAP.
- Estimation of the relative safety of various vehicle classes in specific crash types including single vehicle crashes and crashes with heavy vehicles.
- Investigation of safety outcomes related to specific vehicle classes such as 4WDs and small cars.
- Examination of the effects of cross sectional composition of the vehicle fleet on overall safety outcomes allowing optimum vehicle classes and fleet mix to be identified with respect to overall secondary safety performance.
- Investigation of the effectiveness of vehicle safety systems
- Investigation of vehicle primary safety performance and development of vehicle primary safety ratings.
- Forecasting of future trends in vehicle safety.

The research program is supported by a consortium of 13 stakeholders comprising government road safety agencies and automobile clubs across Australia and New Zealand. Representative members from each agency sit on a steering committee which oversees progress of the research program and determines focus and content of future research.

Recently completed and current projects being undertaken as part of the research program are as follows:

Updated used car safety ratings

During 2006, updated crashworthiness and aggressivity ratings based on Australian and New Zealand crash data from 1987 to 2004 were estimated by make and model and broad market grouping of vehicle. Ratings by year of vehicle manufacture for both the Australian and New Zealand vehicle fleets were also estimated covering years of manufacture from 1964 to 2004. The database from which the ratings were estimated covered over 2.5 million crashed vehicles allowing accurate ratings to be estimated for over 300 makes and models of vehicle in 12 market groups. Results of the ratings update were published by the project stakeholders in mid 2006 supported by a major press launch that received extensive print, radio and television coverage. Over 125,000 copies of the printed ratings brochure have



been distributed whilst the technical report available on the MUARC web site detailing the ratings was accessed around 100,000 times during the year. The ratings are also available on stakeholder web sites including providing cornerstone consumer information on the TAC's widely promoted "howsafeisyourcar.com.au" website.

Vehicle crash risk ratings estimated using New Zealand vehicle inspection data

Vehicle safety ratings have traditionally focused on the measurement of vehicle secondary safety performance through the estimation of crashworthiness and aggressivity ratings. One of the obvious aspects of vehicle safety performance that has not been addressed in the ratings to date is crash risk, primarily due to the unavailability of suitable vehicle exposure data on which to base the crash risk estimates. A recent study completed for Land Transport New Zealand has established the suitability of New Zealand Warrant of Fitness (WoF) test data for use in the estimation of vehicle crash risk ratings. This study is piloting the use of the NZ WoF data to estimate vehicle crash risk ratings including development and application of the methodology to estimate crash risk ratings by vehicle make and market group adjusted for differences in travel distance and environment and driver demographic factors. Success of this process on NZ data will prove the ability to estimate crash adjusted crash risk ratings, something that has not yet been achieved

anywhere in the world. It will also provide impetus to find or establish similar data sources to the NZ WoF data in other jurisdictions including Australia to expand the ratings. The project will be completed mid 2007. Sponsors: VicRoads, RACV, TAC, NRMA, RTA NSW, ATSB, WA Office of Road Safety, RACWA, RACT, Queensland Transport.

Vehicle stability program effectiveness in Australia

Electronic Stability Control (ESC) is a vehicle technology aimed at crash avoidance through preventing loss of control crashes. Studies in Europe and the USA have estimated significant reductions in crash risk associated with the technology. Although available in Europe for over 10 years, the feature is only just becoming common on vehicles in Australia. This study aims to research the current and potential future benefits of ESC in the Australian vehicle fleet. The first stage of the project is examining current and future ESC fitment rates in the Australian vehicle fleet. The second stage is evaluating the effectiveness of ESC in reducing crash risk in the Australian environment using induced exposure methods applied to the Used Car Safety Ratings crash database. The final stage of the project will examine the potential future crash savings and economic benefits of increasing the rate of ESC fitment to Australian vehicles above that expected through either regulation or consumer information and advocacy programs. Results of the project will be available mid 2007.



Information from the used car safety ratings is made widely available on the web via sites such as howsafeisyourcar, RACV, NRMA, ATSB, VicRoads and, of course, the MUARC site.

Australian National Crash In-depth Study (ANCIS)

ANCIS has been running continuously since April 2000, entering its third triennial funding round in mid-2006. By the end of the year there were 430 cases available for analysis. A total of 14 publications have been prepared directly using study data, while many more have included ANCIS data in larger data sets. Data collection has been ongoing in Victoria, while recruitment at Westmead Hospital in NSW commenced in October 2005.

These papers, published at both national and international level, have shown the ongoing value of ANCIS data. For example, multiple impact crashes were shown to have higher injury severity levels to vehicle occupants than collisions involving a single collision, with the trend being more pronounced when the most severe impact occurred later in the crash sequence. Multiple impacts also result in a significantly greater incidence of severe head and spinal injuries. Another paper compared real-world crash outcomes in ANCIS with its early predecessor, the Crashed Vehicle File. It showed that newer vehicles (post-1995) were sustaining more severe damage than older vehicles, but with a lower incidence of the most severe injury levels, thus demonstrating the significantly improved protection afforded by newer vehicles. This same study also found a greater than expected incidence of rollover in the newer vehicles, but a lower incidence of serious head and abdominal injury. Finally, a paper presented in New Zealand showed a number of interesting characteristics relating to the important area of AIS3+ brain injury sustained by the occupants of vehicles in ANCIS. Brain injury was more likely to occur in rollover, as well as three times more likely when the collision partner was a narrow, rigid object such as a tree, pole or post. A higher than expected incidence of brain injury occurred in mid-block crashes compared with intersections. Logistic regression analysis found AIS3+ brain injury was three times more likely in 70-90 km/h zones compared with 40-60 km/h speed zones and nearly twice as likely again in 90-110 km/h zones – highlighting the enormous importance of speed in determining crash injury outcomes.

The ANCIS study is a valuable adjunct to mass databases in that it provides much more detail on the cause and severity of individual crashes, as well as the injuries sustained by the vehicle occupants. These data are rich in terms of the amount of detail contained in each case and throw new light on the crashworthiness of the vehicles and aspects of crash involvement. Preliminary analyses have revealed interesting trends that will be able to be strengthened as the database continues to grow.

A number of papers presented at national and international conferences have also demonstrated the value of ANCIS data. Research has been conducted

by MUARC into issues relating to injury severity in multiple impact crashes, the performance of newer compared with older vehicles and an important paper addressing a number of detailed characteristics relating to more severe brain injuries in the vehicle occupants recruited into ANCIS.

Many analyses using these data, particularly those examining specific subsets, will demonstrate trends rather than statistically significant findings; nevertheless they are extremely important if we are to gain a greater understanding of the causal factors behind crashes in this country and new and innovative solutions to address the burdening road toll problem. More importantly, there is an ongoing commitment to continue to collect these data to highlight emerging crash trends and new ways to address injury prevention on the road.

Thanks to the Victorian data collection team during 2006, including Sarah Barlow, Anthony Clark, David Kenny, Ron Laemmle, Louisa Lam, Kristen Moore, Lisa Sharwood and David Sheppee. In NSW, the assistance of Valerie Malka (Trauma Director, Westmead), Tanya Critchlow and Libby Braybrooks was also very much appreciated.

The contribution of the ANCIS sponsors is gratefully acknowledged, with funding currently provided by Autoliv, the Commonwealth Department of Transport and Regional Services, Ford Australia, General Motors Holden, Toyota Australia, the Roads & Traffic Authority (NSW), the Motor Accidents Authority (NSW), Insurance Australia Group, RACV, NRMA, TAC and VicRoads. Observers to the study included the Australian Automobile Association, the Tasmanian Department of Infrastructure, Energy and Resources, the Federal Chamber of Automotive Industries, Mitsubishi Australia.

Standardised Approach for Emergency Vehicles (SAFE)

Emergency vehicles such as Police, Fire and Ambulance are increasingly using sophisticated technologies and equipment to improve their operational effectiveness. This equipment, however, is typically bolted-on to existing vehicles without considering the safety, power and device integration implications. The purpose of this project is to gain an understanding of the emergency driver user-interface and Information and Communication Technology (ICT) requirement issues, and to develop a standard interface platform for addressing ergonomic design, ICT power requirements and safety.

Victorian Injury Surveillance Unit (VISU)

VISU holds Victorian injury surveillance data on three datasets (ABS Death Unit Record File, Victorian Admitted Episodes Dataset and the Victorian Emergency Minimum Dataset). Data are analysed and disseminated to a wide range of clients in order to: identify and describe injury issues and problems; monitor trends and outcomes; identify intervention points and potential countermeasures to injury; support planning and evaluation of preventive strategies and interventions; and generate research hypotheses.

Data and information dissemination

Publication of Hazard

The three issues of *Hazard* in 2006 were: *Consumer product-related injury (2): Injury related to the use of motorised mobility scooters*; *Consumer product-related injury (3): Injury related to the use of ladders and On- and off- road motorcycling injury in Victoria*.

Hard copies of *Hazards* were distributed to more than 1,250 Victorian (69%), interstate (19%) and overseas (12%) subscribers. In 2006, approximately 116,000 *Hazard* issues were downloaded from the VISU website. The most popular back editions covered sports injury, intentional injury, poisoning, burns and scalds, swimming pool safety and home falls injury prevention.

VISU data and information request service

In 2006, VISU serviced 248 data and information requests via our phone and e-mail request service from a range of sectors including government, media, research/education, industry, medical/health organizations, injury prevention and other non-government organisations and the general public.

VISU web-page

The VISU webpage continues to be a well-utilised resource (www.monash.edu.au/muarc/visu). During 2006, the VISU webpage received an average of 31 hits each day.

Special projects

VISU provided very detailed reports to the Cities of Dandenong and Greater Geelong on injuries among children aged 0-8 years in their municipalities to assist these councils to plan and develop their government-funded *SafeStart* Child Injury Prevention projects.

VISU completed a major report on child injury for the Department of Human Services (DHS), Office for Children, which was used to develop outcomes for child safety. One of the 35 key aspects of children's development included in the Outcomes Framework published in the DHS Report: *The State of Victoria's Children Report* (published in October 2006). The contents of the report will be used to develop policies and programs to address the child health inequalities highlighted in the report.

Sponsor: Department of Human Services (DHS).



Karen Ashby is a member of the VISU team

Australian Research Council (ARC) Linkage Projects

Vision research

Vision is fundamental to driving, providing 90 to 95 percent of all sensory input in the driving environment. Many individuals have visual conditions that may compromise driving performance, yet the basis of driving errors in many vision conditions, particularly those associated with visual field loss, remains poorly understood.

The project on Vision Impairment and Fitness to Drive aims to examine the role of vision as a risk factor to people with specific visual conditions (Glaucoma, Macular Degeneration, Hemianopic or quadrantanopic visual field loss and Retinitis Pigmentosa). Research tasks include an analysis of current practice and extent of problem (Task 1); driving simulator experiments to identify and describe their driving performance (Task 2); and looking at suitable countermeasures to address their needs to continue driving (Task 3).

During 2006, the work focused mainly on Tasks 1 and 2. An analysis was undertaken of people with a known visual deficit to try and estimate their relative risk and a report is being prepared on these findings. In preparation for the main simulator experimental study, a pilot validation study commenced involving comparative driving performance of a sample of people with relevant visual impairment on a test track and in the driving simulator to demonstrate the validity of the simulator at MUARC to test these conditions. The study is due to be completed during 2008.

Far side research

Regulations and interventions aim to protect occupants when they are involved in crashes. Australian Design Rule ADR 72 specifies a level of performance that auto manufacturers have to meet to protect occupants in a side impact collision. This regulation focuses on the struck or near side occupant, the one immediately adjacent to the impacting vehicle or object. Yet, a considerable amount of Harm in side impacts occurs to those on the far side (non-struck side) for which there are no regulations or suitable countermeasures available. This project set out to identify the extent of the problem and what can be done to minimise this Harm.

The project is an international collaboration involving many of the world's leading experts in the area of research, regulation and the auto industry. A series of tasks were identified, from analysis and fundamental biomechanics, to testing and identifying potential far side solutions. Many of the findings from the research to date have been presented at international conferences and published in scientific journals. Some of the relevant findings have been presented to

government bodies involved in vehicle safety. The research program is due to be completed midway through 2008.

Architectural glass related injury: implications for improving public safety

The project forms part of a research program with the goal of reducing injury associated with architectural glass and with glass in furniture. It investigates for the first time the risk of injury associated with glass in these settings. Information from in-depth studies of the incidence, pattern and circumstances of injury associated with glass together with information on the distribution and type of glass currently in use, including types used for replacement in the event of breakage, will provide the data necessary to conduct subsequent studies of glass impact performance and human-glass impact simulation for application to the building design and construction industry.



The project aims to:

- Describe the epidemiology of injury caused by architectural glass and glass in furniture.
- Determine the types and distribution of architectural and furniture glass causing injuries in domestic settings.
- Contribute to international enhancements to injury coding and surveillance by developing recommendations for specific coding changes to the ICD-10 AM coding system for classification of diseases.

All establishment processes, including contracts and ethics approvals for hospital recruitment of injury cases at 5 public hospitals have been completed and honorary staff appointed to all hospitals for the purpose of obtaining consent to contact for case recruitment to the call back and site inspection studies. The literature review has commenced and is ongoing. The data collection form has been completed and reviewed, the study database established and patient interviews have commenced. Architectural and furniture glass related injury data have been extracted from the Victorian and Queensland emergency department datasets and the National Coroners Information System, and analysed. The report on secondary data analyses is in preparation. *Homesafe* has agreed to undertake a component of the exposure study through its home inspection service (both architectural and furniture glass). The first Project Advisory Committee meeting was held in December 2006, where preliminary results were presented and discussed. ARC Linkage Grant, Chief Investigator: J. Ozanne-Smith. Partner Organisations: Pilkington (Australia) Limited; Victorian Building Commission; Australian Building Codes Board

The Cooperative Research Centre for Advanced Automotive Technology (AutoCRC) was created in December 2005, as part of a national strategy to secure Australia's position in the global automotive industry. Its participants are eight leading vehicle and component manufacturers, two state governments and ten research institutions with a total research investment in research and training of \$100m over seven years.

Monash University is one of the ten research institutions, and MUARC plays an active role in the research and educational programs in the AutoCRC.



Mission

Through strategic industry-led research collaborations AutoCRC will deliver smarter, safer, cleaner manufacturing and vehicle technology for Australia's benefit.

Outcomes

AutoCRC aims to deliver outcomes that will directly enhance the viability and sustainability of the Australian automotive industry, its capability to export and its productivity through:

- Reduced concept-to-product cycle times
- Improved manufacturing flexibility and efficiency
- New material systems to meet the challenges of weight reduction, increased safety and enhanced functionality
- Improved air quality and reduced consumption of fossil fuels
- Safer, crashworthy vehicles and intelligent products and systems for increased comfort and performance with minimum driver distraction.

Research themes

AutoCRC has four broad research themes and a program dedicated to training and education, with up to 25 projects commencing in the first year of operation. Each research theme has its own distinct goals and technology milestones, and these will constitute technology building blocks designed to enable substantial change within the Australian automotive sector. MUARC is primarily engaged in the Safety and Intelligent Vehicle Systems theme.

This theme will focus its efforts on improving vehicle safety and injury prevention through pedestrian impact protection, far-side impact protection, human machine interface optimisation and child safety. In addition AutoCRC will investigate vehicle systems for improved performance and safety.

Outcomes

- Improved designs based on an improved understanding of biomechanics
- New improved prototype seat
- In-vehicle systems to minimise driver distraction and maximise usability
- New crash avoidance technology

MUARC leads two work programs under the Safety and Intelligent Vehicle Systems theme, namely:

1. Occupant protection

Improvements to occupant protection are outcomes sought from this project:

- Improved tools for testing child safety systems and improved anchorages to increase child protection in front and side impacts
- Validation of brain models using real life data to improve occupant safety and new virtual engineering tools for vehicle design to reduce pedestrian impact injuries.

2. Human machine interface and driver distraction

Encompasses theoretical and experimental studies of cognitive workload and driver distractions (real and simulated) and the development of guidelines and standards. A conjoint study will determine the relative benefits of crash avoidance technologies ranked against their roll in reducing harm.

Brian Fildes accepted membership of the research advisory committee of the AutoCRC research program.

An International Research Centre



International projects, collaborations and networks

MUARC is a key player in the gains in injury reduction in Australia and the world over the past two decades. A key reason for this success is our presence overseas and the number of significant projects, networks and collaborations the Centre has in Europe, North America, Asia and New Zealand. The Centre is a WHO Collaborating Centre with influence in the south east Asian and western Pacific areas. Importantly, Monash University also has existing infrastructure in Malaysia, South Africa, Italy and England, which allows the Centre to further extend its research on the international arena. The Centre will continue to engage and develop its counterparts in these countries and initiate the development of injury prevention initiatives.

The Centre's aim is to maintain and increase its influence on the international stage.

A sample of MUARC's international projects, networks and collaborations are detailed below.

Use of mobile phones while driving



An independent analysis of the literature was conducted by MUARC for the Swedish Road Administration, to examine the effects of hands-free and hand-held mobile phone use on driving performance and to examine the relative effects of hands-free

versus hand-held mobile phones on driving. Sponsor: Swedish Road Administration.

Safety Rating Advisory Committee (SARAC)

The SARAC project is a long-standing European research project dating back to 1995. Its aim is to evaluate high quality rating systems from around the world, to compare retrospective accident ratings with crash test ratings, and examine various other aspects of driver behaviour and vehicle safety. MUARC researchers have played a major role throughout the duration of the SARAC project in the conduct of the research and advice to government and the auto industry. Many reports on the findings of SARAC are available to the public. The SARAC project was completed in 2006 after 12 years of successful activity. As a result, a number of improvements and additional knowledge in vehicle rating and consumer advice have come to notice from the output of this work.

French National Institute of Transport and Safety Research (INRETS)

During October, Amanda Delaney was invited to the Group for the Analysis of Road Risk and its Governance at INRETS to continue a collaboration established by Max Cameron with the same group in 2005. As part of collaborative efforts aimed at seeking funding in the 7th European Framework Program, MUARC and INRETS have been developing an international comparison and economic analysis of automated speed enforcement. INRETS are also interested in MUARC's broader research on the effectiveness of traffic enforcement practices of all types in Australia. During her month at INRETS, Amanda gave presentations on MUARC's drink-driving enforcement research and MUARC's development of a speed enforcement strategy for Western Australia.

Ergonomics applicable to road vehicles

Mike Regan was the Australian representative on the Sub-Committee 13 (Ergonomics Applicable to Road Vehicles), a sub committee of the International Organization for Standardisation (ISO) Committee TC22, which develops human factors standards for the design of the HMI for car and truck cockpits, including in-vehicle ITS technologies.

Israel

One might be forgiven for thinking that Israel had bigger things to worry about than its road safety record. However, more people have died on the roads in Israel since its creation in 1948 than in its involvement in all the wars, border conflicts and terrorism events in the same period. The Ran Naor Foundation and the Yad Hanadiv (Rothschild Foundation) invited an international panel to examine the state of road safety research and professional training in Israel and to recommend a way forward that would enable Israel to adopt a more scientific approach to solving its problems.

Professor Ian Johnston was one of four experts comprising the panel - the other three were from The Netherlands (Fred Wegman), Germany (Gunther Kroj) and the United States (Rick Pain). The panel visited Israel twice during 2006, visiting all seven of Israel's universities to talk with academics, visiting the key government departments to assess their roles and holding discussions with several other business and citizen groups. Their report "*Road Traffic Safety Research and Education in Israel*" has been published. The two Foundations are now planning to implement the recommendations.

Ian was also the international keynote speaker at the 5th annual Or Yarok (Green Light) national road safety conference held in Tel Aviv in November. Or Yarok is the "implementation arm" of the Ran Naor Foundation. The Prime Minister addressed the conference dinner and announced the first (public) Israeli road toll reduction target heralding a new level of government commitment to reducing road trauma.

Farm cohort study

Lesley Day is an investigator on a large cohort study of farm families funded by the Canadian Institutes of Health Research, along with collaborators from Queens University, and University of Saskatchewan in Canada, and the Marshfield Medical Research Foundation in Wisconsin, USA. The study, which commenced in 2006, will recruit 13,000 farmers and, after collecting a comprehensive set of baseline data, will follow their injury experience over a two year period. The study will have a particular emphasis on identifying the interactions between individual and

environmental factors that increase the risk for farm injury. The study will be large enough to examine these interactions for specific high risk sub-populations – farm children, and older people engaged in farming.

Lesley was one of two invited international guest presenters at the Canadian Consensus Meeting on Injury and Death in Agriculture in Saskatoon, Canada. She gave an overview of the history and development of agricultural safety strategies in Australia as an example of an approach that Canada may consider adopting.

Sabbaticals

Professor John Lee, from the University of Iowa, took a 2-month sabbatical at the Centre during November/December 2006. He is one of the world's leading figures in human factors and transportation research, and collaborated with Dr Mike Regan and his research team on a range of research topics in the broad areas of driver distraction, driving simulation, intelligent transport systems and human-machine interaction.

Dr Gavan Lintern, from General Dynamics in the US, spent 2 months at the Centre during December 2006/January 2007. He is a leading aviation human factors researcher, and worked with Dr Mike Regan and his research team on a range of human-machine interaction and driver distraction projects in support of the AutoCRC research program.



Prof. John Lee presented a seminar at MUARC

Secondment

Matts-Åke Belin spent 2006 with MUARC on secondment from the Swedish Road Authority. Matts-Åke is a political scientist who was involved in the development and implementation of policies to give effect to 'Vision Zero' in Sweden. He is undertaking a PhD, part-time at the Karolinska Institutet in Stockholm. The secondment to MUARC provided both a chance for a concentrated period of thinking and writing and also an opportunity to compare Swedish and Australian approaches to the development and



Matts-Åke Belin

implementation of policy around road safety. His major comparative case study revolved around speed management policy and practice with a focus on speed enforcement. He worked closely with Bruce Corben, Max Cameron and Ian Johnston and received wonderful assistance from VicRoads, Victoria Police, Department of Justice and the TAC.

International links

Joan Ozanne-Smith is an invited member of the Monash China Task Force, to assist the university in setting its strategic directions for developments in China.

MUARC's Chair of Road Safety, Brian Fildes, was an invited keynote speaker at the General Motor's International Science Laboratories 3rd Research Conference in Bangalore, India. His presentation on "Human Factors in Safety: The Role of the Driver, the Vehicle and the Environment" was well received by the 100 or so international participants who attended the meeting.

General Motors North America

Professor Brian Fildes was the guest of General Motors North America and attended a series of meetings to provide an overview of the research undertaken by MUARC for GM_Holden in Australia and to help clarify future research needs of relevance to GM and MUARC.

Head injury research

Brian Fildes and Melanie Franklyn are presently engaged in an on-going collaborative head injury research program with Wayne State University, Detroit, the National Highway Traffic Safety Administration in the USA and GM_Holden Innovation in Australia. The initial study commenced initially for GM_Holden in 2002 and has since been extended through the Safety Research theme of the AutoCRC. Professor King Yang from Wayne State University has spent several weeks at MUARC during this time assisting with crash reconstructions for this project and MUARC staff have spent additional time at WSU as well.

Monash University, UAEU and GM-Holden

Monash University signed a Memorandum of Understanding with the United Arab Emirates University (UAEU) on 15 March 2004 for an initial life of five years. While the MoU is general in its expression of interest for co-operation, Monash also has a specific "Data Collection Services Agreement" with the UAEU. This Agreement is a fixed price, three-year contract for the UAEU to collect data from a sample of road crashes involving GM-Holden vehicle models in the Al Ain region of the UAE.

MUARC has trained the UAEU staff in the appropriate crash investigation methods and provides on-going training, data quality control and data interpretation. In order to discharge the contract, the UAEU created the Research Centre for Transportation and Traffic Safety.

This Centre is loosely modelled on MUARC and reports directly to the Deputy Vice-Chancellor (Research Affairs). It is clearly the intent of the UAEU to develop the Centre beyond this initial research contract.

Traffic Accident Causation in Europe (TRACE)

MUARC officers were asked to participate in a European project aimed at identifying patterns of crashes that occur throughout Europe and major causes of these crashes. This European Commission project provides data to governments and vehicle manufacturers that can be used to enhance road and vehicle safety generally throughout the region. MUARC's role as a sub-contractor is to provide information on crash types and crash trends in Australia for comparison with Europe, as well as participation in identifying behavioural and technology solutions to priority crashes. The TRACE project commenced in January 2006 and will report on its findings during June 2008.



MUARC & GM staff relaxing after a HARM meeting in Germany



MUARC - WHO Collaborating Centre for Violence, Injuries and Disabilities

In July 2005 MUARC was designated for an initial four-year term as a WHO Collaborating Centre for Violence, Injuries and Disabilities. The designation is for the Western Pacific Region encompassing 27 countries, including China, Vietnam, Japan, Cambodia, Lao, Philippines, Pacific island nations, New Zealand and Australia. The Collaborating Centre also works closely with the South-East Asia Region of WHO and WHO globally.

This Collaborating Centre functions in an environment where injury has come to the fore as the leading health problem in children and young people in many of the countries within the Western Pacific Region, including China.

MUARC's role as a WHO Collaborating Centre is to assist with the development and monitoring of regional capacity in injury prevention including data systems, research, and injury prevention policy and planning developments. MUARC will contribute to solving the major unintentional injury burden in the region (particularly road traffic injury, drowning, falls and poisoning) through research, training, leading-edge workshops and general information exchange. MUARC will also contribute to suicide prevention in the region by conducting research on access to the means of suicide and assisting countries to develop and implement policies aimed at reducing access to methods such as poisoning and falls from heights and assist the WHO Regional Office for the Western

Pacific to develop, implement and evaluate a regional injury prevention strategy.

Activities grew substantially during 2006 and included capacity building, research and other international scientific developments, strategic planning and business planning for the Collaborating Centre's operations.

1. Capacity building

WHO appointed Joan Ozanne-Smith is one of eight editors worldwide for the joint WHO/UNICEF World Report on Child and Adolescent Injury to be published in 2008. In addition, Joan is an invited chapter contributor for the first Chinese text on child injury prevention, edited by Dr Zhang Peibin, to be published in early 2008.

Angela Clapperton was awarded an AusAID funded Australian Youth Ambassador for Development award to undertake a four month placement in Vietnam in 2006; MUARC also supported this placement with an additional top-up grant. WHO was the in country partner and MUARC the Australian partner organization. Angela spent much of the assignment located within the Vietnam Ministry of Health working on capacity building in injury surveillance and injury prevention planning.

In March 2006, Monash University signed a Memorandum of Understanding with the Alliance for Safe Children (TASC) to undertake collaborative child injury prevention projects in the region. A proposal for a collaborative intervention trial is under development for drowning prevention in China and a TASC Fellowship was advertised through MUARC in 2006. Together with TASC, MUARC supported Jonathon Ehsani's successful application for a Dunlop AsiaLink Fellowship. Jonathon was awarded a Monash Graduate Scholarship in December to undertake his PhD at MUARC on completion of the Dunlop Fellowship.



(From back left) Vi Peterson, Co-Director of TASC, Prof Tom Triggs, Prof Joan Ozanne-Smith, Prof Edwina Cornish and Ambassador Pete Peterson at the signing of the MOU with the Alliance for Safe Children



MUARC participated with WHO headquarters in the development of a global mentoring scheme (MENTOR-VIP), as well as providing individual mentoring to in-country and trainee injury prevention professionals. In addition, MUARC was represented at the first global Ministries of Health injury prevention focal points forum in Durban, South Africa in April. MUARC was also invited to participate in the development of guidelines on the role of injury prevention focal points. Such activities provide opportunities to be at the forefront of international developments and to identify partners for future collaborations.

2. Research

Developing country related PhDs focused on regional country needs are continuing at MUARC with Virginia Routley's study of seat belt wearing in China, Carolyn Staines' study of drowning in developing communities and from March 2006 Matthew Ericson's study of road safety public policy in South-East Asia.

MUARC was invited, as a WHO Collaborating Centre, to be represented on the Scientific Committee for the 9th World Conference on Injury Prevention and Safety Promotion, to be held in Mexico in 2008. The first meeting was held in Geneva in September.

Joan Ozanne-Smith was an invited plenary speaker at an international Research Methods Conference on the topic of "Translating injury prevention measures from high to low and middle income countries", in Capetown, South Africa in April.

3. Strategic Planning

Importantly MUARC through its Collaborating Centre was commissioned by the Western Pacific Regional Office to prepare a Regional Framework for Action for Injury and Violence Prevention. The first consultative workshop on the Framework was conducted in Manila in May 2006 and a second consultation is planned for 2007. In addition, MUARC is compiling regional country profiles to provide information and baseline data for regional developments.

A WHO consultancy was undertaken in Fiji by Joan Ozanne-Smith in November to develop a draft national strategic plan in consultation with relevant government and non-government agencies.

As a Collaborating Centre, MUARC is represented at the annual WHO Heads of Collaborating Centres meeting in Geneva where international strategic directions are planned with the WHO Department of Violence and Injury Prevention (represented by Joan Ozanne-Smith).

Franco-Australian seminar on research collaboration on ITS and E-Safety

Mike Regan was Australian delegation leader and co-organiser of the Franco- Australian seminar on research collaboration on Intelligent Transport Systems and e-Safety, held in Lyon/Paris, France, on 2-4 October 2006. Mike was funded by the French Embassy in Canberra to attend the seminar, which was co-convened by MUARC and the French National Institute for Transport and Safety Research (INRETS). During the 3-day seminar, delegates from Australia and France identified projects for mutual research collaboration. The Director general of INRETS strongly supports ongoing research cooperation between MUARC and INRETS, which will be facilitated by Mike during his 3-year secondment to INRETS, commencing in April 2007.

Seniors network meeting

During the conference, Jim Langford hosted a 1½hour Network session on the topic of Technology and Design Features to Enhance Older Driver Safe Mobility. These sessions are intended to meet-and-greet potential partners who might be interested in joining a partnership towards a funding proposal on the topic.

The Network meeting went extremely well. There were over 25 participants who attended. There were a number of people with keen interest and involvement in suitable areas who made a strong contribution to what was widely supported as an important topic to pursue.

Irmgard Heiber, Scientific Administrator, ICT for Transport at EU INFSO also attended the session and was also very impressed and made a number of excellent suggestions about possible project funding in this area. Given suitable budget approval, we will press ahead with the proposed meeting in Prato for next January.

MUARC leadership of such a proposal is not possible without legal entity status, so we approached INRETS prior to the meeting seeking their agreement to joint manage the initiative under the proposed MoU between MUARC and INRETS. Jim is working on developing an outline for a joint project (involving MUARC staff B. Fildes, J. Charlton, J. Langford and M. Regan) and intends holding further discussions in Paris next January, prior to the Prato meeting to finalise this proposal.

The elderly and mobility: A review of the literature

The ability to travel is associated with freedom, activity and choice and driving offers an important mobility option for most elderly. Driving cessation is linked to an increase in depressive symptoms and a decline in out-of-home activity levels and community mobility. Further, for at least some people, the same health conditions and functional impairments that cause a change in driving patterns will also limit access to other transport options (walking, cycling, public transport), thereby further contributing to restricted community mobility and its consequences. Driving status thus plays a critical role in the complex interactions between ageing, physical and psychological health, community mobility and use of health services. A good understanding of these relationships is required in order to enable older people to maintain economic and social participation and quality of life.

This report provides a comprehensive review of international literature to assess the current state of knowledge with regard to the complex relationships between changing driving and travel patterns, ageing, health status, reduced mobility and the impact of poor mobility on quality of life. The findings from the literature review were used to compile a set of 'best-practice' recommendations to effectively manage the safe mobility of elderly road users.

It is recommended that a co-ordinated approach that encompasses innovative strategies and initiatives to manage the mobility of older road users be adopted. Such an approach should include measures that focus on safer road users (appropriate management of 'at-risk' older drivers through appropriate licensing procedures and development of targeted educational and training programs), safer vehicles (improved crashworthiness of vehicles, raising of awareness amongst older drivers of the benefits of occupant protection, and development of ITS technologies), safer roads (creating a safer and more forgiving road environment to match the characteristics and needs of older road users), and improvements to alternative transport options (provision of accessible, affordable, safe and co-ordinated transport options that are tailored to the needs of older adults and promotion and awareness of alternative transport options amongst older drivers and their families/caregivers). Options for further research are also highlighted.

Poor mobility places a substantial burden on the individual, families, community and society and there is a real need for policy makers, local governments and communities to consider the transportation needs of the elderly to support ongoing mobility. Sponsor: Swedish Road Administration (SRA)

Older drivers and vehicle technology

There is a plethora of new safety features under development or being installed in new motor vehicles aimed at enhancing safety and comfort for vehicle occupants. Many of these crash avoidance and crashworthiness technologies provide some form of feedback to the driver, calling for action through various feedback systems. The degree to which drivers are able to respond to multiple sources of information feedback while being able to continue to drive safely is relatively unknown, especially those who have limited cognitive capabilities.

At the EU Information Society's IST 2006 Conference in Helsinki, Finland in November 2006, MUARC conducted a network session at the invitation of the European Commission to identify the range of interest in this area. Guests from a range of different backgrounds attended the meeting and expressed strong support for more research to be carried out in this area. It is expected that a proposal for funding under the European Framework 7 program will follow as a result of this interest.



Bangalore, India, where Professor Brian Fildes was an invited keynote speaker at the General Motor's International Science Laboratories 3rd Research Conference

Visitors

The Centre hosts many visitors throughout each year. The collaboration provided is greatly valued and we thank all our visitors for their input.

MUARC hosted the 7th Farside Review meeting in Melbourne from 21-26 January. Attendees included Professor Ken Digges, Dr Jeffrey Augenstein (University of Miami), Mr Craig Newland (Department of Transport and Regional Services), Dr Stephen Rouhana (Ford Research & Advanced Engineering, Michigan), Professor Frank Pintar (Medical College of Wisconsin), Dr Ola Bostrom (Autoliv Development, Sweden) and Professor King Yang (Wayne State University).

Professor Yang also worked with Peter Hillard and Melanie Franklyn on the crash reconstruction brain injury project for the CRC during his visits.

Professor Klaus Langwieder, the former Director of the Institute for Vehicle Safety of the GDV, Munich, joined us for an extended visit during February and March.

Ms. Lisa Molnar of the University of Michigan Transport Research Institute attended the Centre from 12-16 March via a Centre scholarship, to present a series of seminars in the older driver area and to discuss possible collaborative projects with the Centre.

Dr. Gavan Lintern came as a visiting academic. He used the opportunity to mentor young researchers at MUARC in the use of Cognitive Work Analysis and Functional (Ecological) Interface Design for addressing issues in automobile design and road safety.



Mike Regan and his research team hosted a visit from three European colleagues, who came to discuss MUARC research activities in vehicle intelligent transport systems and driver distraction. (L to R: Mike Regan, MUARC; Dr Jean-Luc Ygnace, INRETS, France; Dr Stephan Pascale, European Commission, Belgium; A/Professor Geoff Rose, ITS Monash University; Dr Jean-Pierre Medevielle, INRETS).

A number of colleagues visited MUARC to discuss current research and collaborative possibilities. These included:

- Neil O'Keefe (Chair, Victorian Motorcycle Advisory Council), Jill Earnshaw (Executive Officer for VMAC) and Ray Newland (motorcycle division of the VACC) to discuss current MUARC research in motorcycle safety and future research possibilities
- The Vice-Chancellor and the Deputy Vice-Chancellor Research from the United Arab Emirates University (UAEU). Monash and the UAEU have a Memorandum of Understanding under which MUARC and the UAEU's Roadway Transportation and Traffic Safety Research Centre are collaborating on an in-depth crash study under Brian Fildes leadership with funding from Holden Australia



The Minister for Foreign Affairs, The Hon. Alexander Downer, enjoyed driving the Albert Park Grand Prix track in the driving simulator.

- The Tasmanian Road Safety Task Force visited MUARC for discussions on current MUARC research. Brian Fildes hosted their visit and presentations were given by David Logan, Mike Regan, Peter Hillard, Stuart Newstead, Ian Johnston, Mike Lenné and Jennie Oxley
- Dr Christina Brudvik, Associate Professor, Institute for Surgical Sciences, Bergen Accident & Emergency Department, Norway. Dr. Brudvik was working on the last year of her PhD on child injuries in Bergen, Norway. She was interested in finding out more about our child injury surveillance systems and had a special interest in forearm fractures in children and how to prevent them
- Professor Joanne Wood, School of Optometry, Queensland University of Technology, Queensland. Professor Wood is a collaborative partner in the ARC Vision and Fitness to Drive project and attended the Centre to participate in the project progress meeting
- Professor David Shinar, Department of Industrial Engineering & Management, Ben Gurion University of the Negev, Israel visited MUARC to attend a Project Advisory Committee meeting for the ARC Linkage Project: Vision Impairment and Fitness to Drive. Professor Shinar also gave a seminar on crash avoidance
- Dr. Robert Anderson, Deputy Director, Centre for Automotive Research, University of Adelaide, South Australia participated as an external panel member for Clay Douglas's PhD confirmation of candidature
- Sally Greenberg, Senior Product Safety Counsel, Consumers Union, Washington DC, presented a seminar entitled 'Kids and cars and pertinent safety technology'
- Mr. David Cousins, Director Consumer Affairs Victoria and three of his senior colleagues visited MUARC to explore the potential for an ongoing research partnership
- Dr. Delia Hendrie, School of Population Health, University of Western Australia joined us to work on the Cost of Injury Study report
- Rajiv Gupta, Detroit, Michigan, visited to work on CRC Harm projects and to discuss the Holden research program activities with the Occupant Protection team
- Professor Kee Ying Fung, Department of Mechanical Engineering, Hong Kong Polytechnic University was here to observe crash inspection techniques with a view to initiating a pilot project in Hong Kong
- Matt Tsien, Executive Director, Global Central Engineering, GM visited the Centre to see the simulator and discuss future HMI projects
- Professor Peter Shelluch, Deputy to the Pro Vice-Chancellor, South African campus, visited to discuss injury prevention research in South Africa
- Deanna Burger, the new Director Research for Monash South Africa discussed the potential for injury prevention research in South Africa via collaboration with MUARC
- Nigel Ridgway, General Manager Compliance Strategies Branch, and Gail O'Bryen, Manager Product Safety Compliance from the Australian Competition and Consumer Commission visited Joan Ozanne-Smith to discuss future directions in product safety research
- Bing Deng, GM North America, and Professor Jikuang Yang, Chalmers University, visited MUARC to hold discussions with Brian Fildes and the team concerning crash investigation techniques for a potential project in China
- Debra Stearns from Workplace Safety Injury Prevention, part of New Zealand's ACC, came to discuss fleet safety initiatives
- Susana Itty from Monash University Malaysia came to discuss the possibilities of injury prevention seminars and short courses at the Malaysian campus



Monash University's Chancellor, Jerry Ellis, caught up with staff in April





The Queensland Minister for Transport, The Hon. Paul Lucas, along with Terry Sullivan the Government Whip and Mr. Dan Hunt, Deputy Director General of Queensland Transport visited the simulator while it was set up with the motorcycle.

- Drs. Jean-Pierre Medevielle and Jean-Luc Ygnace, French National Institute for Transport and Safety Research (INRETS), Lyon, were here for the annual FEAST conference
- Dr. Stephan Pascall, European Commission, Directorate for Information Society. A delegation of the European Commission had a special interest in ICT in transport and ICT in the environment

The Centre also received visits from a number of political leaders:

- Senator Kerry O'Brien, Federal Shadow Minister for Transport
- The Irish Parliamentary Transport Committee were interested in traffic enforcement research results. Geoff Rose and Graham Currie from Civil Engineering also discussed transport planning and management
- The Hon. Alexander Downer, the Minister for Foreign Affairs, led a group of about 50 ambassadors/envoys to Monash. A visit was made to the driving simulator
- The Hon. Jim Cox, Minister for Infrastructure in Tasmania came to discuss older driver issues
- The Queensland Minister for Transport, The Hon. Paul Lucas, along with Terry Sullivan the Government Whip and Mr. Dan Hunt, Deputy Director General of Queensland Transport
- The Hon. Tim Holding, Victorian Minister for Police and Emergency Services, had discussions around our enforcement research program and what it might mean for government policy
- The Hon. Jim Cox, Tasmanian Minister for Infrastructure and two parliamentary colleagues, accompanied by three senior staff from the DIER

- The Hon. Clare Martin, Minister for Transport in the Northern Territory came to discuss possible directions for road safety in the Territory

Other visitors included:

- Mr. Francis Gayzik, Virginia Tech, Wake Forest Center for Injury Biomechanics, USA
- Pete and Vi Peterson from the Bangkok based TASC (The Alliance for Safe Children). TASC is a not-for-profit Foundation dedicated to reducing injury among children in developing countries. The visit was to discuss MUARC research in this area.
- Mr Ashraf Shad, UAE University
- Associate Professor Yaser Hawas, Director, Roadway, Transportation & Traffic Safety Research Centre, United Arab Emirates
- A visit by the Chancellor of Monash, Mr. Jerry Ellis, presented the opportunity to showcase MUARC's research activities and infrastructure
- Dr Yeong-Han Cheong and Melissa Kay, Product Management Unit, Land Transport & Safety, Queensland
- Mr. Gurion Melzer, Chairman of the Israel-Australia, NZ and Oceania Chamber of Commerce, visited as part of a tour of Monash and MUARC
- A delegation from the Consulate General of the People's Republic of China visited Monash
- The President of Sichuan University, Professor Xie Hepeng and his delegation



Members of the Tasmanian Road Safety Council visited the Centre in February

MUARC in the news

MUARC was in the news more than ever in 2006 as the media reported on a range of the Centre's research findings as well as seeking the expertise of researchers on a whole range of accident and injury prevention issues.

Centre experts responded to hundreds of media requests. More than 800 articles and other media mentions quoting Centre researchers were published or broadcast in newspapers, magazines, and on radio and television news and current affairs programs throughout Australia and internationally.

Just as importantly, MUARC's website has become a leading research tool for both the media and members of the public.

MUARC made a splash at the beginning of the year with Jennie Oxley's research report *Crash Risk of Older Female Drivers*. Radio talkback lines in Sydney (2UE), Melbourne (3AW) and Adelaide (5AA) ran hot as Jennie discussed her findings that elderly women drivers are more likely to be involved in crashes in the future. The report also received major coverage in newspapers including the Herald Sun.

Early in the year MUARC's Erin Cassell and Karen Ashby received widespread media coverage of their findings that waterskiers and wakeboarders featured strongly in a study of injuries involving boats.

In February, after a spate of one-car road accidents including the tragic deaths of six Mildura teenagers, MUARC director Ian Johnston featured on the ABC's 7.30 Report with his views on electronic stability control devices. Joan Ozanne-Smith's work on injury prevention in China received international coverage.

MUARC made news again in March with trial results, supervised by Michael Lenné, persuading the Victorian government that saliva tests could be used to check whether drivers were under the influence of ecstasy. MUARC also led the media debate on lowering residential speed limits to 30km/h to protect children and pedestrians.



Brian Fildes, MUARC's Chair of Road Safety, spoke to media ranging from Seven's Today Tonight to ABC Online, WIN TV Mildura and The Shepparton News, on topics including side impact collisions and speed reduction strategies.

Driver distraction, including mobile phones and text messaging, was a topic of increasing importance and MUARC's Mike Regan was at the forefront of media articles on the subject.

Max Cameron contributed to a major Australian Financial Review article on drink driving, and weighed into the debate on speed camera tolerances in The Australian in April.

In May MUARC statistics were featured in The Age to highlight the number of children killed in driveway accidents. Research fellow Carolyn Staines also received media attention for her work on drowning in developing countries.

Senior Research Fellow Judith Charlton grabbed headlines in June with her research showing that mandatory testing of older motorists does not effectively identify dangerous drivers. The elderly were also spotlighted by Joan Ozanne-Smith's predictions of a big rise in mobility scooter injuries and deaths in coming years.

MUARC's 2006 Used Car Safety Ratings received national attention in July. Stuart Newstead's findings leading The Herald Sun and The Australian to report that rising fuel costs were steering people to unsafe smaller cars while rural media, such as the Border Mail, and international media, including New Zealand's Herald On Sunday, spotlighted the impact of four-wheel-drives on injuries to other road users.

Four-wheel-drives were the focus in August with newspapers including the Daily Telegraph reporting on a MUARC study showing that 4WD motorists were more likely to be involved in rollover crashes and 3.4 more times likely to die.

In August, everyone from the Border Mail to the Launceston Examiner and the Adelaide Advertiser were keen to cover Dr Judith Charlton's research showing that parents were putting children at risk by allowing them to use adult seat belts in cars.

In September, MUARC's Joan Ozanne-Smith raised the alarm on flaws in child resistant packaging on medicine, leading to widespread media coverage.

The launch of the Used Car Safety Ratings received wide spread coverage



Dr Eric Wigglesworth contributed to the media debate on train crossing fatalities, Dr Wendy Watson was interviewed on the alarming statistics for child injuries from falling out of shopping trolleys.

Bruce Corben was in demand throughout the year on a range of speed-reduction

issues with his work in Western Australia gaining particular attention on Seven's Today Tonight and The West Australian newspaper.

MUARC ended the year with a special call to parents with Carolyn Staines' research raising fears that the drought could lead to more toddler drownings around the home. This received extensive media coverage, particularly across rural areas.

MUARC media releases distributed during 2006 through Monash University's Media Communications office were:

February 2006 – Play time is risky business – research Parents should be aware of new playground safety standards when choosing and installing equipment in their backyards, a new report from the Monash University Accident Research Centre says.

February 2006 – Tasmanian road safety in the spotlight Tasmania's Road Safety Task Force is visiting the internationally renowned Monash University Accident Research Centre in Melbourne to discuss future road safety strategies.

March 2006 – Wanted: disqualified drivers The Monash University Accident Research Centre is calling on disqualified drivers – and their partners – to attend confidential focus groups so they can learn more about the impact of licence suspension.

April 2006 – Children at risk inside cars – US expert Children are regularly strangled by automatic windows and backed into by drivers who have restricted rear vision, US consumer advocate Ms Sally Greenberg tells a Monash University Accident Research Centre seminar.

May 2006 – Age-based testing on older drivers doesn't work – researchers Testing drivers once they reach a certain age will not prevent deaths and injuries on Australian roads, say researchers from the Monash University Accident Research Centre.

May 2006 – Mobility scooter death and injury "epidemic" ahead – study A national approach is needed urgently to deal with an impending epidemic of mobility scooter deaths and injuries, researchers from the Monash University Accident Research Centre say.

July 2006 – Deviant minority still on our roads – researchers

Although most motorists now recognise that driving over the limit is wrong, there remains a deviant group of drivers who continue to flout the law, says a MUARC report.

August 2006 – Children graduate to seatbelts too early – research

Laws are needed to prevent children graduating to seatbelts too early to reduce the risk of injury in a car crash, say Monash University safety experts.

August 2006 – Falling to their deaths

At least 12 men died and more than 5000 people were injured in ladder accidents in Victoria in just two years, says a report from the Victorian Injury Surveillance Unit, part of the Monash University Accident Research Centre.

October 2006 – Amy Gillett Foundation to fund cyclist research

The Amy Gillett Foundation announced a postgraduate research scholarship, based at the Monash University Accident Research Centre, to help fill the void of information about the circumstances of bicycle crashes and interaction with other road users.

October 2006 - Older drivers keep themselves safe – research

MUARC studies found that many older drivers are keeping themselves safe on the roads by regulating when, where and how they drive.

October 2006 - Child pedestrians 'cross at the wrong time' – study

Nearly 60 percent of children involved in a simulated pedestrian study "crossed the road" at the wrong moment, a Monash University Accident Research Centre study has found.

October 2006 – Intersection crashes the focus of MUARC funding

A state government road safety package includes \$3.25 million for further research into serious injury and intersection crashes, including a major project for MUARC to improve understanding about intersection crashes.

November 2006 – Be both waterwise and safe

Toddlers and infants are at risk of drowning in some waterwise households, warns the Monash University Accident Research Centre.

December 2006 – MUARC Director Professor Ian Johnston to retire

The Director of the Monash University Accident Research Centre, Professor Ian Johnston, will retire at the end of the year.

MUARC'S web site

The Centre's web site continued to be a major source of information for both the media and members of the general public. The site received more than 2.7 million hits during 2006, an average of over 7,500 hits per day.

Research Training and Academic Program

The Centre's PhD program continues to be a vibrant hub of research activity, meeting the Centre's objective of the advancement of knowledge and contributing to the training of the injury prevention leaders of the future.

The aim of the PhD program is to provide advanced multi-disciplinary research training. The research program is designed to expand candidates' expertise and paradigms beyond that of their undergraduate discipline, in recognition of the broad nature of injury prevention research. The program has two components: a major research work or thesis; and a minor study program, designed to provide a broad understanding of accident and injury prevention and exposure to issues beyond the thesis topic, to foster an environment of inquiry, and support the development of critical analysis skills.

PhD research topics are developed in consultation with the supervisor. Topics cover a range of areas in line with the Centre's key research themes including ageing, developing countries, injury data systems, product safety and technology impact, implementation and evaluation methods, road user safety, and work related injury.

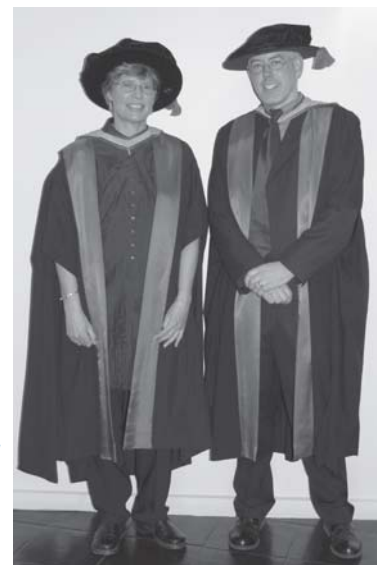
In 2006, the postgraduate student numbers grew to 20 including two staff candidates and the addition of four new full time PhD students. Carlyn Muir commenced her studies under an Australian Research Council Industry award, examining fitness-to-drive in people with visual field loss. Carlyn's research exemplifies many of the postgraduate research endeavours that have direct relevance to industry, government and the community. Karen Stephan became the first recipient of the NRMA-ACT Road Safety Trust Scholarship. Karen's topic is "The effect of drugs on crash risk and driving behaviour". Matthew Ericson is the recipient of the Peter Vulcan Scholarship sponsored by the Monash University Accident Research Foundation. Matthew's topic is "Road safety policy in the Lao PDR, Cambodia and Vietnam: How successful are road safety interventions and can policy outcomes be improved?" Abdulla Al Ali is our first international student. Abdulla is from the United Arab Emirates and his topic is "Data-based methodological and analytical methods for evaluation and improvement of traffic safety measures in the United Arab Emirates".

Throughout the year, a number of students had the opportunity to travel to China and South East Asia for data collection, to Canada and North America for study programs and to Europe, South Africa and the US for conference presentations. Students presented

their research at national and international conferences, giving papers on driving and visual clutter; visual search patterns of older drivers; the burden of injury; and long-term psychosocial consequences of road traffic injuries. Four students presented at the "8th Australian Injury Prevention Conference": Jessica Killian - Understanding the prevalence of drugs and alcohol in unnatural death; Lyndal Bugeja - The role of coroners' recommendations in injury prevention policy and practice in Victoria; Carolyn Staines - Researching Australian history to prevent drowning deaths in developing countries; and Wendy Watson - The validity of burden of injury measures for priority setting & cost-effectiveness analyses. Eve Mitsopoulos presented data from a simulator experiment which sought to explore differences in calibration ability between young novice and experienced drivers at SimTect 2006.

2006 was an outstanding year for PhD completions. The Centre is extremely proud of the achievements of the four students who graduated during the previous 12 month period - Wendy Watson (John Lane Scholar), Stuart Newstead (staff candidate), Phillip Gould (Baseline scholarship), Michael Fitzharris (MUARC Foundation Scholar) and also Bruce Corben (staff candidate) who submitted his thesis for examination. The Centre is fortunate to have graduates of this calibre on staff.

The growing high quality postgraduate student community contributes a fresh and vital edge to the Centre's research environment as can be seen from their research interests described in the following pages.



Wendy Watson and Stuart Newstead were among this year's graduates

Full-time PhD Candidates



Ben Brooks

Supervisors: Professor Tom Triggs, Professor Ian Johnston and Professor Tore Larsson

Title: "Know-risk' Design of an architecture for an acute occupational injury risk decision support system'

This research project examined how people make decisions about acute occupational injury risks. Of particular interest was how these decisions can be supported, and therefore improved, through the design of a Decision Support System (DSS). A DSS is an interactive, computer-based system that aids the user in judgement and choice alternatives. The project applied a text-mining software to free-text descriptions of workers compensation claims as a key method of underpinning decision support.

A descriptive decision-making model called the Pulley Model has been developed. A pulley is a simple machine used to create a mechanical advantage for the user to shift a load. By analogy, the range of factors affecting risky decisions has the potential to create an advantageous environment for people making decisions about risks, or de-rail those decisions completely.

The architecture of the proposed 'Know-risk' system uses Fuzzy Set Theory to make more sophisticated risk assessments and to resolve the inherent uncertainty in these decisions. The translation into a useable tool has the potential to improve risk assessment and record keeping and, through the inclusion of contextual variables, support more effective action planning.



Lyndal Bugeja

Supervisors: Professor Joan Ozanne-Smith and Mr. Graeme Johnstone (State Coroner of Victoria)

Title: 'The role of coroners' recommendations in injury prevention and control in Victoria'

In Australia, deaths resulting from injury are required to be reported to the coroner for investigation. In addition to their investigatory role to establish identity, cause of death and circumstances surrounding injury deaths, coroners are empowered to make recommendations or comments on issues of public health and safety in order to minimise the potential for future deaths in similar circumstances. The coroner is therefore ideally placed to contribute significantly to the development and implementation of injury countermeasures.

Evidence suggests that while coroners have contributed to the identification of injury trends and

development of countermeasures in a number of areas of injury, the role of coroners' recommendations in injury prevention and control has not been examined. This research developed from an observation that many recommendations generated by coroners following a death investigation are rarely considered or implemented, despite the sense that similar types of deaths occur over time and location.

The purpose of this study is to examine the role of coroners' recommendations in injury prevention and control. In particular the study aims to identify the factors that assist or impede the formulation and implementation of public health and safety interventions formulated in coroners' recommendations in Victoria.



Fiona Clay

Supervisors: Professor Joan Ozanne-Smith and Dr. Wendy Watson

Title: 'Predictors of return to work and ongoing work disability following injury: 12-month follow-up study'

Managing and treating injured people impacts economically through direct treatment costs and lost work productivity. Despite resources for rehabilitation, long term injury work disability is increasing, and there is little Australian research in the field.

This study looks at a cohort of injured patients aged 18 to 64 and examines the influence of work status, patient beliefs, demographic and clinical factors on work outcome. So far, 170 patients have been recruited. A predictive model of return to work and ongoing work disability will be developed and validated internally by assessing whether early time-points can predict work status at later time-points and externally by looking at whether it can discriminate between different health transitions and between people who do and do not return to work. This study will potentially identify people at risk of continuing work disability and may lead to new treatment interventions.

A journal article "Private health insurance in a state-wide injured population" was published in the Australian Health Review. (NHMRC scholarship, VIC Health scholarship)



Clay Douglas

Supervisors: Professor Brian Fildes, Dr. Tom Gibson and Dr. Peter Hillard

Title: 'Modelling far-side occupants in side impact crashes'

Regulations and interventions to protect far-side occupants in crashes do not currently exist, despite these occupants accounting for over 40% of the seriously injured persons and 30% of the overall Harm in US side impact crashes. Furthermore, no suitable crash dummies or mathematical models have been developed to investigate far-side occupant dynamics.

This study aims to develop and validate a computer model capable of mimicking human dynamics in far-side impacts. The model will then be used to investigate the influence of certain impact and vehicle factors on occupant kinematics. Further to that, the model will be used to understand the interaction of adjacently seated occupants who collide during side impacts.

This thesis falls under the umbrella of a larger study aimed at improving protection to far-side vehicle occupants. It is an ARC Linkage study involving a collaboration of universities and private companies in Australia, USA and Sweden. (Australian Postgraduate Award (Industry))



Jessica Edquist

Supervisors: Professor Ian Johnston, Dr. Simon Hosking and Dr. Tim Horberry (external)

Title: 'The effects of visual clutter in driving performance'

This project examines the issues of perception and information processing surrounding visual clutter in the driving environment. Although 'visual clutter' is often invoked as a potential problem in roadside environments, it is seldom defined. The literature suggests that visual clutter might be expected to impair visual search (e.g. for a particular street sign), increase driver workload, and distract drivers; however, there is little empirical work in the area.

The aims of the project are to investigate what items can act as visual clutter, what effect this clutter has on driving, and whether these effects are particularly severe for vulnerable groups (such as novice drivers and elderly drivers).

The first phase of the research explored what objects and environments contribute to visual clutter, by conducting focus groups with drivers and gathering ratings of visual clutter in photographs and videos of road scenes. The second phase (currently underway) looks at the effects of visual clutter on hazard

perception and responses to traffic control devices for novice drivers, experienced drivers, and elderly drivers.

The project is part of an ARC Linkage Grant study entitled 'A Human Factors Approach to the Design of Visual Information in the Highway Environment'. The grant also covers two students at the University of Queensland. The industry partner is the Department of Main Roads, Queensland.' (Australian Postgraduate Award (Industry))



Matthew Ericson

Supervisors: Professor Ian Johnston and Professor David Chandler (Monash Asia Institute)

Title: 'Better road safety outcomes: Improving the effectiveness of technology transfer in the Lao PDR and Cambodia'

The objective of this project is to identify and analyse policy limitations which hamper the effective implementation of road safety interventions in low-income countries with fast-growing motor-vehicle fleets. Road safety interventions are often less effective when applied in such countries, although such interventions have been proven effective in the most developed countries. The process of technology transfer is somehow inhibited by environmental and institutional differences. Consequently, this project investigates the policy factors affecting outcome of road safety interventions following transfer, and how the main barriers can be overcome.

The project explores a number of case studies from Cambodia and the Lao People's Democratic Republic including programs to increase helmet wearing, regulating the safety standards of locally-made vehicles, and improving the safety of unrestrained open load space passengers. The project is being undertaken in partnership with participating organisations, including the Red Cross, Handicap International and the Coalition for Road Safety. (Accident Research Foundation Peter Vulcan Scholarship)





Michael Fitzharris

Supervisors: Professor Brian Fildes, Dr. Judith Charlton and Professor Claes Tingvall

Title: 'The road to recovery: Coping with the impact of traffic crashes on health'

This thesis examined the nature of physical and psychological disability associated with injury sustained in traffic crashes. Of particular interest were changes in general health status, the ability to perform activities of daily living, pain outcomes, and acute and post-traumatic stress disorder. The major theoretical orientation of this research project was the influence of appraisals, personality and coping on psychological health outcomes. A key question was the role that these factors played in post-crash adaptation, and the validity of a model of personality and coping that integrates the strengths of Lazarus and Folkman's (1984) contextual perspective and that of trait-based theorists.

Participants were 62 injured persons aged 18-59 years involved in traffic crashes who were interviewed on three occasions: prior to discharge; 2-months post-discharge, and 6-8 months post-discharge. Despite on-going impairment in health and functional disability as well as on-going pain, by 8-months most had resumed employment duties. Some gender differences in these outcomes were evident, and potential explanations for these differences were explored. Initial levels of post-crash anxiety were common and severe, however, these difficulties resolved relatively quickly. Perceived responsibility for the crash, length of stay and persistent pain were found to be associated with later depression severity. The subjective appraisals of threat-to-life and perceived control were associated with acute and post-traumatic stress disorder. Overall, the results of this research project demonstrate the significant on-going physical and psychological disability associated with traffic crashes. It is imperative therefore that governments and society cease thinking of the road toll as simply the number of people being killed on our roads, and consider the total burden of injury when planning a safe road transport system. Michael completed in October. (Monash Graduate Scholarship; Monash University Accident Research Foundation Scholarship)



Phillip Gould

Supervisors: Professor Tom Triggs, Dr. Max Cameron and Dr. Farshid Vahid (Department of Business and Economics)

Title: 'Time series models of crashes and casualties'

During 2006, Phillip Gould was awarded his PhD for his thesis on 'Econometric modelling of road crashes'. Although his research had been completed during 2005, Phillip's thesis benefited from his interactions with statisticians and econometricians at the Free University Amsterdam and the Dutch Institute for Road Safety Research SWOV during 2005/06. On his return to Australia, Phillip was appointed to the staff of MUARC and continued his methodological developments in a project funded by the Baseline Research Program. He also made substantial contributions through the application of the new time series application methods to existing contract research projects described elsewhere in this Annual Report. Phillip completed in August.



Jessica Killian

Supervisor: Professor Joan Ozanne-Smith and Adjunct Professor Olaf Drummer

Title: 'The correlation between forensic toxicology and unnatural death'

Injuries are not only recognised as an important public health problem, but are also one of the major causes of death. Injuries accounted for 9% of the world's deaths in 2000 and 12% of the world's burden of disease. It is known that drug-drug and / or drug-alcohol interactions cause an increased risk of mortality. The use of such mind-altering drugs in places of employment or by drivers of motor vehicles, for example, places the individual and other members of the community at risk. However, the full extent of the involvement of drugs across the whole range of injury deaths is mostly unknown. Illegal drugs are more likely to be the cause of unintentional death than intentional. In contrast, in Australia, pharmaceuticals are more likely in self-harm, where analgesics and psychoactive drugs appear to be most commonly responsible for poisoning and / or suicide.

The study aimed to examine the presence and contribution of alcohol and drugs in all external cause deaths for the period 2000 to 2005 in Victoria, Australia (population 20.7 million). A secondary aim was to use the research results to assist with improving the National Coroners Information System (NCIS) as a tool for alcohol and drug injury surveillance.

The extent to which drugs and alcohol contribute to unnatural deaths can now be described at a population level for the first time in Australia using the

NCIS (a national database of coronial information). Associated toxicology reports were examined to determine the proportion of cases that contained alcohol and drugs and the type and range (therapeutic, supra-therapeutic and toxic) of drugs.

There were 7673 external cause deaths in Victoria between July 2000 and June 2005. Of these, 2086 (27%) external cause deaths contained a toxicology report where alcohol was identified as positive (greater than 0). A toxicology report was not attached in 1420 (18.5%) cases and the remaining 4152 external cause cases contained a negative result for alcohol. Of cases with a toxicology report, 455 (5.4%) had a blood alcohol concentration (BAC) of less than 0.06 g/100mL. There were 564 (7.4%) detected with alcohol (0.06 g/100mL to <0.16 g/100mL) and 659 (8.6%) had a toxic level of alcohol (>0.16 g/100mL). Of all causes with alcohol detected, 2726 (37%) were due to intentional self-harm, followed by 2005 (27%) being transport related, 932 (12%) due to poisoning and 553 (7%) being fall related. The trends and themes of other drugs will also be reported especially in relation to traffic injuries

The study results provide, for the first time in Australia, a systematic examination of the epidemiology of licit and illicit drugs in injury deaths due to all mechanisms.



Adam McKinnon

Supervisors: Professor Joan Ozanne-Smith and Dr. Rodney Pope (Industry partner)

Title: 'Optimising the utility of injury surveillance systems for injury control in active populations'

Promotion of physical activity is a key Australian health priority and a major focus for the Australian Defence Force to achieve and maintain operational fitness. Unfortunately, these goals are associated with the negative effects of increased injury occurrence and substantial related costs.

In recognition of the growing importance of injury and the subsequent burden injury places on society, numerous nations and organisations have, or are establishing, injury surveillance systems to monitor injury, identify injury trends and utilise data to work toward the reduction of injury within their populations. The majority of research on these systems to date has focused on the technical understanding of injury surveillance systems. However, many operational systems continue to operate at sub-optimal levels due to a variety of issues, many of which relate to the human interaction with such systems.

As injury surveillance systems are dependent on human input and operation, it is essential that research examine the human factors of injury surveillance systems and their outputs from a user perspective. Only after a thorough understanding of

the issues limiting the efficiency of injury surveillance systems is established can methods be developed to increase the utility of such systems for injury control. The aim of this thesis is to identify methods to optimise the utility of injury surveillance systems for injury control in active populations. In late 2006 Adam received the Secretary of Defence Scholarship for 2007. (Australian Postgraduate Award (Industry), 2007 Secretary of Defence Scholarship).



Eve Mitsopoulos-Rubens

Supervisors: Professor Tom Triggs and Dr. Mike Regan

Title: 'Investigating the calibration skill of young novice drivers relative to experienced drivers: Implications and recommendations for the design of

intelligent transport systems to aid calibration in young novice drivers'

It has been proposed that deficiencies in calibration ability contribute to young novice drivers' high crash involvement. Calibration in driving can be defined as the ability to match task demands to one's own capabilities as a driver. Calibration requires accurate knowledge of the demands imposed by the traffic system, *and* of one's own capabilities to meet those demands. Moreover, calibration requires comparison between capabilities and demands, to determine whether there is an undesirable mismatch which necessitates appropriate modification to one's driving behaviour. The goal in this process is to minimise the opportunity for error.

The primary aim of this PhD research program is to explore, using the MUARC advanced driving simulator, the fundamental differences between young novice and experienced drivers' calibration ability. To date two simulator experiments have been undertaken with an additional experiment planned for 2007.

Through continued research and development, intelligent transport systems (ITS) have gained support as a means through which significant road safety benefits can be realised. Further, particular groups of high risk road users, such as young novice drivers, may serve to benefit from specific ITS applications. Accordingly, a supplementary aim of the current research is to examine the implications of the findings from the aforementioned experimental series for the design of ITS technologies to aid any deficiencies in calibration skill in young novice drivers. (Australian Postgraduate Award; Victorian Government Information and Communication Technologies Scholarship)



Virginia Routley

Supervisors: Professor Joan Ozanne-Smith and Assoc. Professor Li Dan (Centers for Disease Control, PR China)

Title: 'Development of seat belt wearing in two cities in China'

With the rapid development of the economy in China in the past 20 years the number of motor vehicles, road traffic accidents, deaths and injuries have increased considerably. The road traffic safety law, requiring seat belts to be worn where fitted came into effect in May 2004 and has considerable potential to reduce fatalities and injuries.

Estimates of seat belt wearing rates in China, particularly those undertaken by observational studies, are scarce. This PhD study, undertaken at MUARC with both Monash University and China Center for Disease Control supervision, is measuring the progress of seat belt wearing and changes in attitudes in Nanjing, Jiangsu Province and Zhoushan, Zhejiang Province.

In 2004 contractual arrangements, traffic familiarisation, pilot testing and meeting with Center for Disease Control and Prevention personnel, city and provincial officials were undertaken. The results informed a baseline study in these cities in April 2005 and resulted in seat belt roadside observations of over 30,000 vehicles. The following year over 1,100 seat belt attitude and fitment interview surveys were completed plus observational roadside wearing updates of another 20,000 vehicles. The final observational and interview surveys, supplemented by focus groups, are planned for April 2007.

Victoria, Australia was the first state worldwide to mandate seat belt wearing and a comparison with the development of seat belt wearing between Victoria and these Chinese cities should give an indication of temporal and social differences in road safety development. More significantly the study will inform wider seat belt uptake interventions in China.



Carolyn Staines

Supervisors: Professor Joan Ozanne-Smith and Professor Graeme Davison (School of Historical Studies, Faculty of Arts)

Title: 'The Victorian experience of drowning and its prevention: historical eco-epidemiological study of drowning prevention in an economically developing community'

Victoria, along with other economically developed communities, has had considerable success in reducing drowning death rates. However, drowning continues to be a major cause of unintentional injury deaths in developing countries. This study aims to inform drowning prevention in developing countries by determining how Victoria reduced drownings. The study investigates the causes of drowning deaths and their prevention, in Victoria, from mid 19th century through to the year 2000.

Coronial Investigations into drowning deaths have been conducted in Victoria since 1840, and written records of these investigations have been preserved. Carolyn has used the records of almost 1500 drowning cases to determine what caused drowning deaths, whether and how the causes changed over time, and what factors resulted in the reduction of deaths. This research, supplemented by additional information from other historical sources and newspaper archives, is producing a rich picture of the drowning risk profile of Victoria's early settlers and the evolution of this over the period of the state's economic and social development. Results of this study have been presented at international and national conferences.

The methodology of this study has also attracted attention as it employs an unusual combination of the disciplines of epidemiology and history to provide an output that is rich in both quantitative and qualitative information.

In 2006, Carolyn was invited to contribute to the development of the WHO Report on Child and Adolescent Injury, and is a member of the working group addressing the issue of drowning prevention in the report. (Monash Graduate Scholarship)



Karen Stephan

Supervisors: Dr Michael Lenné and Professor Ian Johnston

Title: 'The association between drivers' use of prescription medications and risk of injurious traffic crash'

While the relationship between alcohol use and crash risk is well recognised, the impact of other drugs on road safety is less clear. This is especially so for prescription medications. Some medications have the potential to impair a driver's ability to perform the complex tasks required for

driving, and may therefore lead to an increased risk of being involved in a collision. Epidemiological studies of the relationship between medication use and crash risk are relatively rare, probably due to the difficulties associated with obtaining a large enough sample size to detect the relationship between rare outcomes (traffic crashes) and rare exposures (prescription medication use).

This PhD research is designed to determine the association between prescription medication use and risk of traffic crash. Data will be obtained from linked health databases, which bring together information on encounters with the health care system for individuals within a population, including information on dispensed prescription medications and involvement in injurious traffic crashes. The results of this research will ultimately provide patients and practitioners with information about medications that are linked to increased crash risk, and will contribute to informed prescribing decisions for drivers. Scholarship: NRMA-ACT Road Safety Trust Postgraduate Research Scholarship

Part-time PhD Candidates



Richard Fernandez

Supervisors: Professor Joan Ozanne-Smith, Associate Professor Raphael Grzebieta (Department of Civil Engineering), Associate Professor Nigel Wreford (Department of Anatomy and Cell Biology) and Dr. Lesley Day

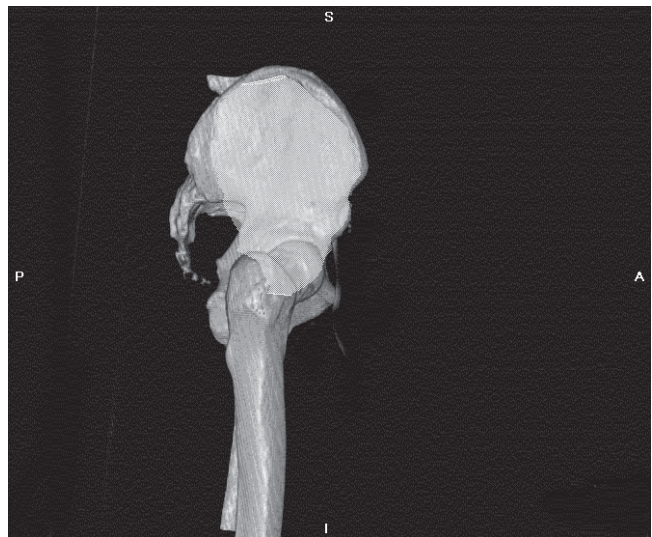
Title: 'A novel approach to the prevention of fall induced hip fracture: the anatomical and functional basis to improve hip-fracture preventing devices'

Hip fracture is a global epidemic increasing in significance as the world population ages. In particular fractures of the femoral neck and trochanters are one of the most common and most debilitating types of fracture resulting from falls.

Forces generated in simple falls directly on the greater trochanter have the potential to cause hip fracture. Shunting of the impact energy to surrounding adipose and muscle tissue by a hip protector is effective in reducing hip fracture. However, the user compliance of this device is low.

The purpose of this research is to evaluate the feasibility of an implanted hip protecting device and to quantify the force attenuating capacity of the muscles surrounding the hip based on the muscle volume, thickness and mechanical properties.

Results from anatomical dissection, literature reviews and key informant interviews with surgeons indicate that an implanted protector may not be feasible with current methods and technology. Data on variations in gluteal and quadriceps muscle thickness and volume has been gathered from a computed tomography scan



Lateral view of pelvis indicating rendered image of gluteus medius and minimus muscles computed from CT scans

database and evaluated using a three dimensional software programme. Experiments to determine the mechanical properties of ovine skeletal muscle are in their final stages.

Inputting such data into a computed model will allow optimisation of existing external hip protecting shunting devices and development of protectors based on a range of individual size.

Damian Morgan

Supervisors: Professor Joan Ozanne-Smith and Professor Tom Triggs



Title: 'Risk factors for unintentional drowning at surf beaches'

The PhD study identifies and assesses factors that contribute to the risk of drowning at surf beaches as well as providing estimates of exposure to that risk. Methods used include analysis of coronial data, observation of beach

users, self report, and expert risk assessment. Data gathered in this study is used firstly to develop a predictive model of exposure to drowning risk, and secondly, to quantify the risk posed to beach users according to swimming ability, surf beach experience, and beach conditions.

Staff candidates



Bruce Corben

Title: 'Achieving safe traffic environments for pedestrians'

This thesis is founded on the belief that traffic environments should and can be made safe for pedestrians, using current knowledge and

approaches. The significance of walking to individuals and the broader society is considered, including the many health, social, environmental and economic benefits derived from safe walking.

Pedestrians are highly vulnerable in traffic and frequently experience difficulty in selecting safe gaps in daily urban traffic situations. Commonly encountered vehicle travel speeds pose a high level of crash and injury risk to pedestrians, and can be managed more successfully to create low-risk settings for pedestrians. The thesis, which examines and assesses opportunities for using combinations of road infrastructure and speed moderation to create safe traffic environments for pedestrians, was submitted for examination in July 2006, with completion expected early in 2007.



Stuart Newstead

Title: 'Some applications of generalised linear modelling techniques in a road safety research context'

In 2006, Stuart Newstead was awarded his PhD for his thesis 'Some applications of statistical generalised linear modelling techniques in a road safety research context'. It describes the original application of a family of statistical regression models to two important areas of road safety research. The first is the evaluation of road safety program effectiveness and the second the assessment of relative vehicle safety performance. The methodology developed has been widely applied to a range of MUARC research projects.



Student enrolled through Monash department and supervised jointly



Karen Scally

D Psych (Clinical Neuropsychology)

Supervisors: Dr. N. Georgiou-Karistianis, Professor Tom Triggs & Dr. Judith Charlton

Title: 'Factors influencing driving performance in Parkinson's Disease'

The overall aim of this thesis is to examine factors influencing driving performance in Parkinson's disease (PD). PD is a movement disorder that causes physical symptoms such as resting tremor, difficulty initiating movement, difficulty executing movement and rigidity. Research has shown that driving ability is compromised by PD and in particular, cognitive changes in PD are linked to poor driving performance. No effective screening methods currently exist to assess and predict driving ability in PD. Research has shown that patient self-report of driving ability, neurological examination and PD severity rating scales all fail to identify those with impaired driving skills. One promising new area of research on driving performance in PD is the impact of an impaired capacity for internally generating (self-initiating) movement. Previous research has investigated the effect of internal cueing deficits in PD. PD drivers were found to have significantly poorer driving performance than healthy age-matched controls, relying heavily on external cues (static warning signs prior to traffic lights) to regulate driving performance even when internal cueing (advance information/memorised familiar route) was available and more efficient. The present study aims to further investigate PD drivers' responses to selected 'ecologically valid' external cueing conditions during simulated driving performance. The driving scenario for this study will include a flashing "prepare to stop" signal used at potentially hazardous intersections where there is a high speed zone or low visibility on approach to the traffic lights.

Students from other institutions co-supervised by MUARC staff

Daryl Pedlar

Doctor of Health Science (Deakin University)
Associate supervisor: Dr. Lesley Day

The aim of this project is to develop a framework for a preventive strategy for dairy farm injury in south-west Victoria, based on a profile of injury in this region and input from a regional consultative forum. The dairy farm injury profile will be developed from specialised emergency department and general practice injury data collections, in addition to an exposure survey of dairy farmers.

Michael Lucas

PhD (University of Western Australia)

Associate supervisor: Dr. Lesley Day

Title: 'Injury among Australian veterinarians'

This project is a component of the Health Risk of Australian Veterinarians (HRAV) study of a cohort of veterinarians who graduated from Australian universities between 1960-2000. The aim of the HRAV study is to determine whether this group are at increased risk of cancer, injury, zoonoses or adverse reproductive outcomes and to determine the risk factors for these conditions in veterinary practice. The aim of this PhD study is to identify the prevalence of, and risk factors for, injuries among Australian veterinarians, and to develop a prevention model for occupational settings.

Melissa Russell

PhD (University of Melbourne)

Associate supervisor: Dr. Lesley Day

Title: 'Falls risk, assessment and interventions for older fallers presenting to the emergency department and being discharged home'

The aim of this PhD study is to investigate the factors causing older people to fall and to test a strategy for prevention (including a randomised controlled trial).

There are three main components: (1) examination of the characteristics and future falls risk of older fallers presenting to emergency departments and discharged home (2) the evaluation of the Falls Risk for Older People in the Community assessment tool (3) a randomised controlled trial to reduce further falls and injuries for older fallers presenting to an emergency department.

Peta Hitchens

PhD (University of Tasmania)

Associate supervisor:

Dr Lesley Day

Title: Epidemiology of falls to professional thoroughbred racing jockeys in Australia



The aims of this study are to investigate the epidemiology of jockey falls in Australia, and to identify modifiable risk factors associated with jockey falls. It is estimated that between 25-40% of all jockeys in Australia suffer a significant injury each year and that

an average of two jockeys are killed annually, yet the evidence base from which to develop preventive strategies is minimal. There are three main components to this PhD project: (1) establishment of a national jockey falls data base using fall incident information from Stewards Reports and race field information from Racing Information Services Australia (2) analysis of the data base to describe the epidemiology of jockey falls, and potential risk factors (3) investigation of the role of jockey physiological and performance characteristics in falls aetiology.

Graduate seminar series

Graduate students present seminars at key points throughout their candidature.

- March - Lyndal Bugeja "The role of coroners' recommendations in injury prevention and control in Victoria"
- March - Adam McKinnon "Optimising the utility of injury surveillance systems for injury control in active populations"
- April - Clay Douglas "Development of an occupant computer model for a far-side vehicle crash"
- May - Hui-Chen Han (Advanced Medical Science student from Melbourne Uni,) "A better prediction of mortality: Improvements on current trauma scoring methods".

Placements

Dr Zhong Jie Ming (Michael) and Dr Zhao Ming (Barry) had the benefit of a five week traineeship at MUARC in August and September. Both public health doctors are employed in the Non-communicable Disease section of the Zhejiang Provincial Center for Disease Control and Prevention (NCCDC), in Hangzhou, China. Zhejiang NCCDC staff have responsibility for injury prevention for the province population of 46 million.

While at MUARC the trainees were exposed to the injury prevention activities of both the Centre and external organizations with a particular focus on injury surveillance, elderly falls, road safety and drowning



Barry and Michael participated in an exercise class designed to reduce falls in the elderly

prevention. Additionally they attended the Saferoads Conference in Melbourne and the National Injury Prevention conference in Sydney. Between visits and conferences they compared Victorian and Zhejiang province fatality and emergency department injury data. The Monash University Accident Research Foundation generously funded the MUARC staff time involved in the visit.

Undergraduate Research Programs

The MUARC Honours program encourages and attracts high quality undergraduate students with the aim of developing research skills in an area of accident and injury analysis and prevention through supervised research projects. The Honours program also fosters links with other university faculties with students enrolling through their home disciplinary units while undertaking supervised research projects within the centre.

Hui Chen Han

AMS student

Supervisors: Peter Hillard and David Logan

Title: Better prediction of mortality: Potential improvements to current trauma scoring systems.

The Injury Severity Score (ISS) was introduced in the early 1970s to provide a relatively simple method of scoring the severity of polytrauma. Over the years there has been much criticism of the ISS and its ability to predict mortality risk. Numerous alternative systems have been proposed, however, the ISS is still widely used. The reason for this is that while some of the newer systems are more accurate, they lack the simplicity of the ISS and tend to be time-consuming to calculate.

This study reviewed the literature on current and proposed trauma scoring systems in order to identify the factors that had the most significant effect on mortality risk. Two key factors were identified: age, and the existence of pre-existing conditions. It was proposed that the incorporation of these two factors could lead to significant improvements in current trauma scoring systems without significantly increasing their complexity. Hui Chen completed in June.

Journal club

The Journal Club was convened by David Logan. Its purpose is to allow staff and students the opportunity to discuss relevant papers with a view to increasing capability in writing for journals and to encourage this activity.

Sessions were held as follows:

7/04/06 **Clay Douglas**, "Efficacy of Side Air Bags in Reducing Driver Deaths in Driver-Side Collisions"

5/05/06 **Hui-Chen Han**, "The Effect of Preexisting Conditions on Mortality in Trauma Patients"

16/06/06 **David Logan**, Elvik "Laws of Accident Causation"

7/07/06 **Michael Lenné**, Gander et al "Investigating driver fatigue in truck crashes: trial of a systematic methodology"

8/09/06 **Melinda Congiu**, Thomson et al "Influence of Virtual Reality Training on the Roadside Crossing Judgements of Child Pedestrians"

20/10/06 **Carlyn Muir**, Lambie et al "Driving performance of drivers with impaired central visual field acuity"

10/11/06 **Jess Edquist**, Fidler et al, "Editors can lead researchers to confidence intervals, but can't make them think"

Lunchtime seminar series

Lunchtime seminars covering a range of injury prevention topics were held monthly with both local and international speakers from Germany, Israel, Sweden and the US. Efforts were made to recruit speakers on topics in addition to road safety and related to MUARC's strategic directions, e.g. product safety, ageing, developing countries. Seminars overall were well attended and the MUARC audience supplemented by colleagues from outside organisations. The seminar series was convened by Virginia Routley with the assistance of Glenda Cairns.



Staff value the opportunity to share ideas via the lunch time seminars



Professor John Lee presented a lunchtime seminar in December

The following seminars were presented during 2006. These presentations are open to anyone to attend and an email advisory is sent to those who request to be on the list regarding the upcoming seminars.

2 March **Professor Klaus Langwieder**
Universities of Dresden and Munich; Former Director of the Institute for Vehicle Safety, Munich
“Improvement of car seats and head restraints to reduce whiplash injuries”

24 March **Professor David Shinar**
George Shrut Professor of Human Performance Management, Dept. Industrial Engineering and Management, Ben Gurion University of the Negev, Israel “Accident causation and accident causation research methodology”

27 April **Sally Greenberg**
Senior Product Safety Counsel, Consumers Union, Washington D.C. “Kids and Cars and pertinent safety technology”

25 May **Mats-Åke Belin**
Swedish Road Administration “Theories about causation of the road traffic safety problem in Sweden - a historical case study”

6 July **Associate Professor David Legge**
Director Latrobe Univ. China Health Program “Policy issues with respect to health care in China”

27 July **Professor Collette Browning**
Monash University, National convenor in Healthy Ageing Theme, ARC/NHMRC Research Network in Ageing Well “Overview of ARC/NHMRC Research Network in Ageing Well”

17 August **Professor Narelle Haworth**
Professor in Injury Prevention and Rehabilitation, Centre for Accident Research and Road Safety, Queensland University of Technology
“Integrating safety policies for vulnerable users”

12 October **Professor Matthew Rizzo**
Department of Neurology, University of Iowa Carver College of Medicine “Developing in-vehicle countermeasures (collision alerting and warning devices) for patients with attentional impairments”

2 November **Professor Claes Tingvall**
Swedish Road Administration “Future mega-trends in traffic safety”

30 November **Dr. Jeffrey Archer**
MUARC “Simulation, Traffic Conflict Studies and Studies with Hi-Tech Instrumented Vehicles”

14 December **Professor John D. Lee**
Department of Mechanical and Industrial Engineering, University of Iowa “Driver distraction: its causes, consequences and mitigation”

Foundation

Our Role

To support, encourage and promote the work of the Accident Research Centre

Foundation Regulations made by Monash University Council, December 1996

Our Vision

Research achieving results

Foundation Trustees:

External Trustees appointed by the Vice-Chancellor



Chairman
Mr. E.C.J. (Ted) Johnson



Mr. Philip G. Molyneux

Ex-Officio Members



Chair of the Board of Management, MUARC
Professor Edwina Cornish
Deputy Vice-Chancellor (Research)



Director, MUARC
Professor Ian Johnston



Executive Officer
Nicole Paramanis

The Accident Research Centre sets aside funds in the Foundation. The interest earned on the investment of these funds, together with donations to the Foundation, is used to support postgraduate research and training, and other worthwhile activities.

Among the donations, \$1000 was received from the Dame Elizabeth Murdoch Trust as a contribution to the China seat belt study undertaken in association with China Center for Disease Control.

Postgraduate research

John Lane Memorial Scholarship

Dr. John Lane, recognised as the father of aviation safety in Australia and a leader in road safety, died on January 21, 1999. In recognition of Dr. Lane's contribution in the field of injury prevention, and as a personal tribute, the Trustees of the Foundation established the John Lane Memorial Scholarship.

The John Lane Scholarship will be offered again for 2007.

Peter Vulcan Scholarship

Professor Peter Vulcan was the inaugural Director of MUARC, leading the organisation from its inception in 1987 until his retirement in 1998. Peter remains an Adjunct Professor and is still active in several MUARC projects.

Matthew Ericson became the recipient of the Peter Vulcan Scholarship early in 2006. His research topic is 'Road safety policy in the Lao PDR, Cambodia and Vietnam: How successful are road safety interventions and can policy outcomes be improved?'

Travel scholarships

Dr Zhong Jie Ming (Michael) and Dr Zhou Ming (Barry) benefited from a 5 week placement at MUARC in August and September supported by the Foundation. Both public health doctors are employed in the Non-communicable Disease Section of the Zhejiang Provincial Center for Disease Control and Prevention (NCCDC), in Hangzhou, China. Zhejiang NCCDC has

responsibility for injury prevention for the province of 46 million. The traineeship builds on involvement in a MUARC seat belt PhD project in Zhoushan and a Zhejiang province delegation to MUARC in 2005.

The purpose of their traineeship was to be exposed to Victorian, and specifically MUARC, injury prevention activities with a particular focus on injury surveillance, elderly falls, road safety and drowning prevention. The Foundation funded staff time to organise their accommodation, program and conference attendances, accompany the trainees to organisations relevant to injury prevention, supervise their injury surveillance project and to inform them of MUARC projects. Additionally their registration fee at the Saferoads Conference in Melbourne was part funded by the Foundation. They concluded their visit with attendance at the National Injury Prevention Conference in Sydney.



As a focus for injury surveillance the trainees compared Victorian and Zhejiang province fatality and emergency department injury data. On returning to China they gave a presentation to CDC on what they had learned from their MUARC placement. Relations between MUARC and Zhejiang CDC are further enhanced as a result of the traineeship.

In March of this year, the Foundation supported a visit by Lisa Molnar, Lead Research Associate with the Social and Behavioral Analysis Division of the University of Michigan Transportation Research Institute (UMTRI). Lisa has conducted research in a variety of areas including: older driver safety and mobility; adolescent driving behavior; development and evaluation of traffic safety laws, policies, and programs; use and misuse of safety belts and child safety seats; and prevention of underage drinking and alcohol-impaired driving. She has an extensive background in health-related planning and considerable experience in survey research, including the development, implementation, and analysis of direct observation surveys, written questionnaires, telephone interviews, and face-to-face, individual and group interviews. Lisa is a member of the American Society on Aging and the Gerontological Society of America (GSA), and is the primary convener of the Transportation and Aging Formal Interest Group of GSA.

During her visit, Lisa made presentations and held discussions highlighting research at UMTRI in several areas:

- Older driver safety and mobility;
- Novice driver safety and graduated licensing systems;
- Occupant protection technologies, especially seat belt reminder systems;
- Development and evaluation of community safety programs.

She also met with MUARC staff to discuss current UMTRI and MUARC research areas and to identify areas where the two institutions might collaborate in the future. Discussions in this area are on-going.

Both UMTRI and MUARC are internationally recognised transportation research institutions. Given their common research goals and interests, this visit has represented an opportunity not only to facilitate the transfer of knowledge between the two institutions, but also to explore prospects for future collaboration, especially in the area of older driver safety and mobility.

John D. Lee

John D. Lee is a Professor at the Centre for Computer Aided Design and the Department of Mechanical and Industrial Engineering at the University of Iowa, Iowa City, Iowa. During his visit he provided collaboration on intelligent transport system (ITS) and driver distraction research. Professor Lee was also involved in editing and writing chapters of a driver distraction book and gave a public seminar at MUARC during his sabbatical.

Safe Family Research Scholarship

MUARC and the Foundation are committed to reducing death and serious injury from unintended events in all aspects of daily living through high quality research and independent recommendations. MUARC ensures its research findings are conveyed to governments, industry and the community in ways that facilitate maximum impact in policy and practice. A key feature of the way MUARC and the Foundation works is to build partnerships with groups that can make a difference – in 2006 MUARC and the Foundation joined a partnership with the Amy Gillett Foundation and a positive outcome of this partnership has been the establishment of The Safe Family Research scholarship which will be commenced in 2007.



More information on the Foundation can be found at the Centre's website at www.monash.edu.au/muarc including the latest financial statement.

Statement of Income and Expenditure

Balance as at 1 January, 2006		\$ 2,239,801
Income		9,782,915
Department of Education, Science & Training	1,180,801	
Research	6,525,041	
Australian Research Council	348,006	
Nat Health & Medical Res Council	398,251	
Commercial Research	2,435,425	
Commonwealth Research Grants	91,000	
Victorian Government Grants	1,629,453	
Other Research Grants	45,125	
Co-operative Research Centres	1,541,781	
Commercial	575,507	
Internal Grants (Monash Research Support)	224,455	
Other (inc. Sale of Assets, student fees, transfers)	127,111	
Monash University internal transfer ¹	1,150,000	
Expenditure		-8,601,618
Salaries and related	-5,352,960	
Financial and administration ²	-486,104	
Student related	-29,323	
Infrastructure related	-305,926	
Central Support Services - Overhead Cost ¹	-1,350,973	
Capital Expenditure	-200,667	
Other operating	-875,665	
Balance at 31 December, 2006		3,421,098

¹Accommodation and other services which were previously supplied as in-kind university support have been replaced as overhead costs. The university has also provided a transfer of funds to substantially offset these charges. \$900,000 for subsidy, \$250,000 Strategic Implementation funding.

² includes payments to consultants

The Centre's accounts have been certified correct by the University's Corporate Finance Division. Where required as a condition of funding grants, accounts will be audited by the University's Internal Auditor. They will be subject to Government audit as part of the University's annual accounts for the calendar year 2006.

Footnote: It should be noted that the Centre operates on a calendar financial year and its revenue and expenditure are, for the most part, project related and several projects cross-fixed reporting periods and financial years. The apparent 'surplus' mostly reflects grant and contract income received in 2006 for expenditure that will be incurred in 2007.

A few more snapshots



Angela Clapperton in Hanoi, walking through rice fields and 'party congress' celebrations. Angela undertook a 6 month placement in Vietnam.



Dr Dina Burger, Director of Research at Monash South Africa, met with Ian Johnston and (back) Jude Charlton, David Logan, Nicole Paramanis and Max Cameron



While attending an aviation psychology conference, Mike Lenné was lucky enough to have a go landing a jet aircraft at the Lufthansa training centre just outside Berlin.



Allison Harding was seconded to the Centre to proactively develop our presence with the media



While in New Zealand, Ian Johnston met with (from left) Kate McMahon, formerly Head of Road Safety Strategy for the UK Dept. of Transport, John Gottler, Deputy President of TRAFINZ and Anders Lie, Swedish Road Administration



Professor Joan Ozanne-Smith received a Special Award for Sustained Achievement



Erin Cassell received the 2006 Award for Meritorious Achievement in Research



Prof Joan Ozanne-Smith and Dr Zhang Peibin in Nanjing, China. Dr Peibin was awarded the Song Qingling Paediatric Medicine Prize for his child injury research project.



Some of our more energetic staff participated in the BRW Triathlon. Shown here Ashley Verdoorn celebrating and Nicola Fotheringham - almost there.



Matthew Ericson was awarded the Foundation Peter Vulcan Scholarship to undertake his PhD. Shown here (from left) Ian Johnston, Ted Johnson, Matthew Ericson, Edwina Cornish, Peter Vulcan.



Angelo D'Elia receives the Statistics Prize from Dr. Malcolm Clark

Appendix A

Project Steering, Project Advisory and Working Group External Committee Members

The following people served as external members on Project Advisory Committees, Steering Committees and Working Groups. Their valuable contribution is gratefully acknowledged.

Project Representative	Organisation	Austroroads Older Driver Model Assessment Program, Stage 3	
Analysis of fatal drug crashes		Robin Anderson	Department of Urban Services (ACT)
William Gibbons	Department of Justice	Trevor Bailey	Department of Transport (South Australia)
Peter Keogh	Victoria Police	John Brown	National Roads and Motorists' Association Limited
Philip Swann	VicRoads	Kim Butfield	Great Southern Population Health, WA
Dimitra Tapsas	Royal Automobile Club of Victoria (RACV) Ltd	Barry Cole	University of Melbourne
Richard Thiele	Transport Accident Commission	Chris Costa	Injury Control Council Western Australia
Architectural glass related injury: implications for improving public safety		Peteris Darzins	National Ageing Research Institute
Brian Ashe	Australian Building Codes Board	Marylin Di Stefano	La Trobe University
Chris Barker	Pilkington Australia	Geoff Findlay	DPI, WA
Noel Caulfield	Homesafekids	Bill Frith	AustRoads / Ministry of Transport, NZ
Dennis Hogan	Victorian Building Commission	John Goldsworthy	Australian Transport Safety Bureau
Noel Stokes	Pilkington Australia	Charles Gorman	Metropolitan Traffic Education Centre
Australian National Crash In-Depth Study (ANCIS)		Jenny Gowan	Pharmaceutical Society of Australia (Victorian Branch)
Bill Bridgens	Ford Motor Company of Australia	Anne Harris	Royal Automobile Club of Victoria (RACV) Ltd
Michael Case	Royal Automobile Club of Victoria (RACV) Ltd	John Hebron	Transport Industries Skills Centre
Angela Conway	Department of Infrastructure, Energy & Resources (Tasmania)	Mark King	Queensland Transport
Julie Edwards	Motor Accidents Authority (NSW)	Corinne Leadbeater	VicRoads
Paul Fay	Ford Europe	Robin Lovell	Occupational Therapy Australia – Victoria
David Healy	Transport Accident Commission	Terry Martin	Australian Driver Trainers Association
/ Richard Thiele	Transport Accident Commission	Neil Morfitt	Insurance Commission, WA
Jack Haley	National Roads and Motorists' Association Limited	Morris Odell	Victorian Institute of Forensic Medicine, Monash University
James Hurnall	Australian Automobile Association	Rosemary Rouse	Roads and Traffic Authority, New South Wales
Robert Judd	Autoliv Australia	Michael Scavone	Pharmaceutical Society of Victoria
Pamela Leicester	Insurance Australia Group	Margaret Spurr	Disabled Motorists (Victoria)
Nimmi Magedara	Roads & Traffic Authority (NSW)	Jim Stiles	DPI, WA
Ross McArthur	VicRoads	Jill Thompson	Council on the Ageing (Victoria)
Mark Morarty	Toyota Motor Corporation of Australia	Nick Tolhurst	Department of Human Services
Craig Newland	Department of Transport and Regional Services	Gordon Trinca	Royal Australasian College of Surgeons
Ashley Sanders	Mitsubishi Motors Australia Ltd	John White	Disabled Motorists (Victoria)
Keith Seyer	Federal Chamber of Automotive Industries	Patricia Williams	VicRoads
Stu Smith	Holden Ltd	Baseline Program Committee	
Laurie Sparke	Holden Ltd	Antonietta Cavallo	VicRoads
		William Gibbons	(proxy for Bill McKendry)
			Department of Justice
		David Healy	Transport Accident Commission
		Michael Case	Royal Automobile Club of Victoria (RACV) Ltd.
		Peter Keogh	Victoria Police

Behaviour, Travel and Exposure

Kelly Bryden	Royal Automobile Club of Victoria (RACV) Ltd.
William Gibbons	Department of Justice
Peter Keogh	Victoria Police
Pat Rogerson	VicRoads
Robyn Seymour	Royal Automobile Club of Victoria (RACV) Ltd.
Richard Thiele	Transport Accident Commission

Cerebro-Spinal Injury During Competitive Dive-in

Ron Bongetti	Swimming Victoria
John Kilpatrick	Swimming Victoria
Brendan Lynch	Swimming Australia

Disqualified Drivers Advisory Committee

Antonietta Cavallo	VicRoads
Samantha Cockfield	Transport Accident Commission
William Gibbons	Department of Justice
Peter Keogh	Victoria Police
Pat Rogerson	VicRoads
Robyn Seymour	Royal Automobile Club of Victoria (RACV) Ltd

Exercise for Independent Living

Flavia Cicuttini	Department of Epidemiology and Preventive Medicine, Monash
Leon Flicker	University of Western Australia
Keith Hill	National Ageing Research Institute
Damien Jolley	Institute for Health Services Research, Monash
Leonie Segal	University of South Australia

Farm injury risk among men (FIRM)

Jim Dosman	University of Saskatchewan, Canada
Louise Hagel	University of Saskatchewan, Canada
John Langley	Injury Prevention Research Unit, University of Otago, New Zealand
Malcolm Sim	Department of Epidemiology and Preventive Medicine, Monash
Don Voaklander	University of Alberta, Canada
Rory Wolfe	Department of Epidemiology and Preventive Medicine, Monash

Flexible barrier system

William Gibbons	Department of Justice
Ken Hall	VicRoads
David Healy	Transport Accident Commission
Peter Keogh	Victoria Police
Daniel Przychodzki	Royal Automobile Club of Victoria (RACV) Ltd

Highway Design for Older Drivers

Robin Anderson	Department of Urban Services (ACT)
Trevor Bailey	Department of Transport (South Australia)
Antonietta Cavallo /Tricia Williams	VicRoads
Jack Cook	Council on the Ageing (Victoria)
Bill Frith	Land Transport Safety Authority, New Zealand
Anne Harris	Royal Automobile Club of Victoria (RACV) Ltd
Mike King	Queensland Transport
Jim Langford	Department of Infrastructure, Energy & Resources (Tasmania)
Richard Lathlean	Austrroads
Rosemary Rouse	Roads & Traffic Authority (NSW)

In-depth Investigations of Farm Machinery Injury Working Group

Trevar Crowe	Department of Agricultural and Bioresource Engineering, University of Saskatchewan, Canada
John Curtis	Victorian Farmsafe Alliance project officer, Victorian Farmers Federation
James Houlahan	formerly Australian Centre for Agricultural Health and Safety
Graeme Prince	Chair, Farmsafe Victoria, Victorian Farmers Federation
Eric Sharkey	Grains Commodity Group, Victorian Farmers Federation

Linking Victorian Injury Data Systems Advisory Committee

William Gibbons	Department of Justice
Vaughn Moore	Department of Human Services
Pat Rogerson	VicRoads
Richard Thiele	Transport Accident Commission

Maximising the Effectiveness of Chain of Responsibility Provisions

Michael Case	Royal Automobile Club of Victoria (RACV) Ltd
Peter Frauenfelder	VicRoads
William Gibbons	Department of Justice
David Healy	Transport Accident Commission
Peter Keogh	Victoria Police
Ross McArthur	VicRoads
Dimitra Tapsas	Royal Automobile Club of Victoria (RACV) Ltd

Perceptual Countermeasures

John Goldsworthy	Australian Transport Safety Bureau
Mike Tziotis	ARRB Transport Research Ltd

Safety Attitudes and Behaviours in Work-related Driving

William Gibbons	Department of Justice
John Ingham	Victoria Police
Russell Scott	VicRoads
Ruth Stuckey	Transport Accident Commission
Dimitra Tapsas	Royal Automobile Club of Victoria (RACV) Ltd

Speed Theme Advisory Committee

Antonietta Cavallo	VicRoads
Sarah Coleman	Department of Justice
William Gibbons	Department of Justice
David Healy	Transport Accident Commission
John Ingham	Victoria Police
Peter Keogh	Victoria Police
Pat Rogerson	VicRoads
Richard Watkins	Victoria Police

Transport Accident Commission SafeCar Project

Kevin Connelly	Transport Accident Commission
David Healy	Transport Accident Commission
Bruce Hearn	VicRoads
Ross McCarthur	VicRoads
Ken Ogden	
/Michael Case	Royal Automobile Club of Victoria (RACV) Ltd

Used Car Safety Ratings*Members*

Michael Case	Royal Automobile Club of Victoria (RACV) Ltd (Chair)
Samantha Cockfield	Transport Accident Commission
Ross McArthur	VicRoads
Henry Schleimer	Queensland Transport
Steve Spalding	Royal Automobile Club of Queensland (RACQ) Ltd
Jon Gibson	Office of Road Safety Western Australia
Michael Upton	Royal Auto Club of Western Australia Ltd
John Goldsworthy	Australian Transport Safety Bureau
Jack Haley	NRMA Motoring and Services
Nimmi Magedara	Roads and Traffic Authority, New South Wales
Rosemary Rouse	Roads and Traffic Authority, New South Wales
Mark Borlace	Automobile Association South Australia
Stella Stocks	AA New Zealand
Anne Logan	Land Transport New Zealand
John White	Land Transport New Zealand
<i>Observers</i>	
Barbara Bibby	Land Transport New Zealand
Iain Cameron	Office of Road Safety Western Australia
Roger Farley	Office of Road Safety Western Australia
Julian del Beato	Royal Automobile Club of Victoria (RACV) Ltd
Diana Paez Ortiz	Royal Automobile Club of Victoria (RACV) Ltd
James Hurnall	Australian Automobile Association
Doug Ling	Royal Automobile Club of Tasmania (RACT) Ltd

Visionary Research Model Study

Antonietta Cavallo	
/Tricia Williams	VicRoads
William Gibbons	Department of Justice
David Healy	Transport Accident Commission
Ken Ogden	
/Michael Case	Royal Automobile Club of Victoria (RACV) Ltd.
Peter Keogh	Victoria Police

Young Driver Program – Learner Driver Experience

Antonietta Cavallo	VicRoads
Anne Harris	Royal Automobile Club of Victoria (RACV) Ltd
William Gibbons	Department of Justice
Peter Keogh	Victoria Police
Paul Tierney	Transport Accident Commission

Appendix B

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Cameron, M. & Delaney, A. (2006), *Development of strategies for best practice in speed enforcement in Western Australia: Final Report*, Monash University Accident Research Centre, Report to Department of Premier and Cabinet, Office of Road Safety, Western Australia, September

Cassell, E., Congiu, M. & Guy, J. (2006), *Evaluation of the effectiveness of the 2005 Victorian personal flotation device (PFD) wear regulations: a pre- and post-observational study*, Report to Marine Safety Victoria, August

Cassell, E., Watson, W. & Tham, R. (2006), *Systematic review of the effectiveness of strategies and measures to prevent community level Australian football injury*, Report to Sport & Recreation Victoria, June

Delaney, A. & Cameron, M. (2006), *Review of existing safety camera enforcement operations in relevant jurisdictions*, Monash University Accident Research Centre, Report to Baseline Research Program Committee, May

Johnston, I. & Haworth, N. (2006), *Mid-term review of arrive alive! Victoria's Road Safety Strategy 2002-2007 Part 3: Conclusions and discussion to assist the next strategic planning process*, Contract report to VicRoads

Lenné, M., Redman, J., Dietze, P., Triggs, T., Regan, M., Walmsley, S. & Murphy, B. (2006), *The effects of cannabis and alcohol on driving performance in novice and experienced drivers*, Client report for MUARC Baseline Research Program Committee, February

O'Hare, M. & Johnston, I. (2006), *Heavy vehicle safety in Australia - an overview with a focus on the role of braking performance*, Contract report to the National Transport Commission

Sherrard, J. & Cassell, E. (2006), *Systematic review of the effectiveness of strategies and measures to prevent community level netball injury*, Report to Sport & Recreation Victoria, June

Sherrard, J. & Cassell, E. (2006), *Systematic review of the effectiveness of strategies and measures to prevent community level soccer injury*, Report to Sport & Recreation Victoria, June

Sherrard, J., Stretch, R. A. & Cassell, E. (2006), *Systematic review of the effectiveness of strategies and measures to prevent community level cricket injury*, Report to Sport & Recreation Victoria, June

Stephan, K., Lenné, M. & Corben, B. (2006), *Reduction of travel speeds in the Melbourne CBD after installation of repeater speed signs: Results of a controlled before-after study*, Monash University Accident Research Centre, Contract report for Transport Accident Commission

Stephan, K. & Regan, M. (2006), *Variable message signs: A review of the evidence and current practice regarding the effect of filler messages on the effectiveness of traffic-related messages*, Monash University Accident Research Centre, Contract report for Citylink

Tham, R., Cassell, E. & Laslett, A.-M. (2006), *Systematic review of the effectiveness of mouthguards to prevent orofacial injury in sport*, Report to Sport & Recreation Victoria, June

Watson, W., Regan, M. & Haworth, N. (2006), *Driver-specific monitoring devices - survey of current status*, Monash University Accident Research Centre, Report prepared for National Transport Commission

Presentations

Ashby, K. (2006) 'Local injury profile', Me, you and us - a Safer Community Forum, City of Greater Shepparton [keynote speaker], 27 October

Ashby, K. (2006) 'Youth injury: City of Greater Bendigo 2003/04', Victorian Safe Communities Workshop, City of Greater Bendigo [invited speaker], 22 August

Ashby, K., Cassell, E., Pepperdine, S., Pacquola, M., Singer, Y. & Cleland, H. (2006) 'In-depth study of the personal, social and environmental factors contributing to serious fire burn injury with apparent alcohol involvement', 8th Australian Injury Prevention Conference, Sydney, 27-29 September

Ashby, K., Lenné, M. & Regan, M. (2006) 'Improving incident reporting for general aviation', 8th Australian Injury Prevention Conference, Sydney, 27-29 September

Ashby, K., Ozanne-Smith, J. & Fox, B. (2006) 'Investigating the over-representation of older persons in Do-It-Yourself home maintenance injury', 8th Australian Injury Prevention Conference, Sydney, 27-29 September

Ashby, K., Ozanne-Smith, J. & Fox, B. (2006) 'Investigating the over-representation of older persons in do-it-yourself home maintenance injury and barriers to prevention', 8th World Conference in Injury Prevention & Safety Promotion, Durban, 2-5 April

Baker, W. (2006) 'In depth investigation of agricultural machinery injuries: an extensive study of machine design and human factors', Annual International Meeting of the American Society of Agricultural and Biological Engineers, Portland, Oregon, USA

Baker, W. (2006) 'In depth investigation of agricultural machinery injuries: an extensive study of machine design and human factors', Ergonomics Safety and Health-03 committee at the ASABE annual meeting, Portland, Oregon, USA [invited presentation]

Cameron, M. (2006) 'General principles of road safety, the role of speed, and benefits and costs of rural speed limits', WA Road Safety Council Forum/Workshop, Kalgoorlie [invited presentation], 1 September

Cameron, M. (2006) 'General principles of road safety, the role of speed, and benefits and costs of rural speed limits.' RSC forum/workshop, 1 September

Cameron, M. (2006) 'Speed cameras - the full story', Melbourne High School Old Boys Association, [Invited presentation], Melbourne, 14 June

Cameron, M. (2006) 'Speed enforcement strategies for Western Australia', WA Road Safety Council regional meeting, Kalgoorlie, 31 August

Cameron, M. (2006) 'Speed enforcement strategies for Western Australia', WA Road Safety Council regional meeting, Kalgoorlie [invited presentation], 31 August

Cassell, E. (2006) 'The effectiveness of assaultive injury prevention programs', 15th International Safe Communities Conference, Cape Town, South Africa, 9-11 April

Cassell, E. (2006) 'Motivations and barriers to the wearing of personal protective equipment by youth skaters in Victoria, Australia', 8th World Conference on Injury Prevention and Safety Promotion, South Africa, 2-5 April

Charlton, J. (2006) 'Older driver licensing issues', National Road Safety Strategy panel meeting, Brisbane, 25 August

Charlton, J. (2006) 'On the road in later years - recent research on older drivers', Seminar hosted by the Australian Association of Gerontology in association with the Research Network in Ageing Well, the Council on the Ageing and the NSW Ministerial Advisory Committee on Ageing, Sydney, 30 August [invited address]

Clapperton, A. (2006) 'Call back study of hospital treated community level Australian football players injured in 2004 season', 8th Australian Injury Prevention Conference, Sydney, 27-29 September

Day, L. (2006) 'Beyond the Randomised Controlled Trial: Modelling the population level impact of proven falls prevention initiatives for older people', Eighth World Conference on Injury Prevention and Safety Promotion, Durban, South Africa

Day, L. (2006) 'Cluster versus individual randomization in an exercise, disability and falls trial in a retirement village setting', Second International Seminar of Injury Research Methods, Cape Town, South Africa

Day, L. (2006) 'Exercise for Independent Living', 'Break a record, not your bones' Tai Chi event, Great Hall of the National Gallery of Victoria, 12 March

Day, L. (2006) 'Farm Injury Risk among Men (FIRM): identifying risk factors for serious farm work-related injury among men', 8th Australian Injury Prevention Conference, Sydney, 26-29 September

Day, L. (2006) 'Farm injury risk among men: Methodological challenges and preliminary results from a case-control study of farm injury', Seminar: Alberta Centre for Injury Control and Research at the School of Public Health, University of Alberta, Canada

Day, L. (2006) 'History and development of agricultural safety strategies in Australia', Canadian Consensus Conference on Injury and Death in Agriculture, Saskatoon, Canada

Fitzharris, M. (2006) 'Helping to design safer vehicles: trauma research at MUARC', Monash University Paramedic Students Research Seminar Series, National Trauma Research Institute, The Alfred, 18 July

- Franklyn, M. (2006) 'Analysis of computer models for head injury investigation', National Trauma Research Institute, Alfred Hospital, March
- Johnston, I. (2006) 'E = ½ m v/2', Saferoads 2006 - Moving towards a Safe System, Melbourne, 7 September
- Johnston, I. (2006) 'Future directions for road safety', Royal Automobile Association of South Australia Annual Strategic Planning Retreat, Adelaide [invited address], 5 April
- Johnston, I. (2006) 'Key directions for the future', Saferoads 2006 - Moving towards a Safe System, Melbourne, 7 September
- Johnston, I. (2006) 'Key directions for the future of road safety', Invited paper to the 2006 Queensland Road Safety Summit, convened by the Queensland Premier and held in the Queensland Parliament, Brisbane, 21-22 February
- Johnston, I. (2006) 'Research into Policy into Practice - the secret of Australia's road safety success', 22nd ARRB Conference - Research into Practice, Canberra, 29 October-2 November [keynote address]
- Johnston, I. (2006) 'Road Safety in Australia - can we do better?' Invited paper to a joint meeting of the parliamentary road safety committees of the Australian and New Zealand governments and those of Victoria, NSW and Queensland, Sydney, 4 April
- Johnston, I. (2006) 'A seachange in mindset? (or can pigs really fly?)', TRAFINZ conference "Sustainability - Our choice. Our future", Queenstown, New Zealand, 6-9 August [keynote address]
- Johnston, I. (2006) 'State of play with road safety in Australia and possible future directions', Parliamentary Road Safety Committees of Victoria, NSW and Queensland, NSW Parliament [keynote address], 3 April
- Lenné, M., Salmon, P., Regan, M., Haworth, N. & Fotheringham, N. (2006) 'Using aviation insurance data to enhance general aviation safety: phase 1 feasibility study', Swinburne University Multi-modal Symposium on Safety Management and Human Factors, Melbourne, 8-9 February
- Logan, D. (2006) 'Real World Crash Investigations', Invited lecture to Year 8 "Maths & Crime" students, Geelong College, 5 April
- Logan, D. (2006) 'Vehicle safety - the present and the future', 27th Annual Combined ASA/ANZCA Continuing Medical Education Meeting: "Engineering for Safety in Anaesthesia - Removing the Pump Handle", Melbourne, 29 July
- Mulvihill, C. (2006) 'A comparison of hazard perception and responding in car drivers and motorcyclists', Fourth US Meeting of the International Motorcycle Safety Conference, Long Beach, California, 28-30 March
- Mulvihill, C. (2006) 'Review of 'best practice' road safety strategies', Safe Roads 2006 - Moving towards a Safe System, Melbourne, 7 September
- Mulvihill, C. (2006) 'Teaching old dogs new tricks? Training and older riders', Australasian Road Safety, Research Policing and Education Conference, Gold Coast, 25-27 October
- Newstead, S. (2006) 'Compatibility of Australian vehicles', Victorian and NSW Chapters of the Society of Automotive Engineers, SAE Theatre, North Melbourne [invited presentation], 15 February
- Newstead, S. (2006) 'Compatibility of Australian vehicles', Victorian and NSW Chapters of the Society of Automotive Engineers, SAE Theatre, Sydney [invited presentation], 22 February
- Newstead, S. (2006) 'Road safety public education: getting the message across', 2006 Queensland Road Safety Summit, Parliament House, Queensland [invited presentation], 21-22 February
- Newstead, S. & Cameron, M. (2006) 'Vehicle crashworthiness and aggressivity research in Australia', Queensland Chapter of the Society of Automotive Engineers, Mt Gravatt TAFE [invited presentation], 6 July
- Ozanne-Smith, J. (2006) 'Child poisoning: why do child resistant containers fail?' 8th Australian Injury Prevention Conference, Sydney, 27 September
- Ozanne-Smith, J. (2006) 'International injury prevention strategies: relevance for Australia', Infant and Nursery Products Industry Association of Australia's national conference, Melbourne [keynote speaker], 3 August
- Ozanne-Smith, J. (2006) 'International successes in road safety', Ministry of Health, Fiji, November
- Ozanne-Smith, J. (2006) 'The need for a paradigm shift in product safety in Australia', Third National Consumer Congress, 15-17 March
- Ozanne-Smith, J. (2006) 'Regional framework for action on injury and violence prevention', WHO regional workshop, Manila, Philippines, May
- Ozanne-Smith, J. (2006) 'Strategic directions in death and injury information', National Marine Safety Conference, Queensland, 12 September [invited presentation]
- Regan, M. (2006) 'Distraction and fleet vehicles', Human factors in transport seminar, Melbourne [invited speaker], 9 August
- Regan, M. (2006) 'Driver distraction', Resource Industry Road Safety Forum (RIRSF), Melbourne [invited speaker], 20 November
- Regan, M. (2006) 'Driver distraction: theory, effects and mitigation', ExxonMobil Safety Meeting, Melbourne [invited speaker], 16 November
- Regan, M. (2006) 'Intelligent Transport Systems and road safety: the human factor', Swinburne University Multi-modal Symposium on Safety Management and Human Factors, Melbourne, 8-9 February

Regan, M. (2006) 'ITS safety technology', Society of Automotive Engineers - Australasia Seminar, Melbourne [invited speaker], 27 September

Regan, M. (2006) 'Technology, distraction and the future of driver training', Professional Driver Training Association of Victoria, Melbourne [invited speaker], 14 March

Routley, V. (2006) 'Road safety in Australia', Zhejiang Provincial Center for Disease Control, Hangzhou, China, 10 April

Routley, V. (2006) 'Road Safety in Australia', Zhoushan Centers for Disease Control, Zhejiang Province, China, 13 April

Staines, C. & Ozanne-Smith, J. (2006) 'Drowning deaths in the colony of Victoria', 2006 Water Safety Conference, Surfers Paradise

Staines, C. & Ozanne-Smith, J. (2006) 'Her hat was floating in the creek: Researching Australian history to prevent drowning deaths in developing countries', 4th Annual Scientific Conference Australasian Society for Behavioural Health and Medicine, Auckland, New Zealand, 9-11 February [poster]

Staines, C. & Ozanne-Smith, J. (2006) 'Prevention of drowning deaths: lessons from history', 8th World Conference on Injury Prevention and Safety Promotion, Durban, South Africa

Staines, C. & Ozanne-Smith, J. (2006) 'Researching Australian history to prevent drowning deaths in developing countries', 8th Australian Injury Prevention Conference, Sydney

Watson, W. (2006) 'Are burden of injury measures valid for priority setting?' 8th World Conference on Injury Prevention and Control (Safety 2006), Durban South Africa, 3 April

Watson, W. (2006) 'Of life & limb: Measuring the burden of non-fatal injury', Monash University Centre for Health Economics Seminar Series, [invited presentation], 7 June

Watson, W. (2006) 'The validity of burden of injury measures for priority setting and cost-effectiveness analyses', 8th Australian Injury Prevention Conference, Sydney, NSW, 27-29 September



Staff at the Gold Coast Road Safety Conference dinner

Appendix C

Staff Membership of Boards and Committees

- Accident Analysis & Prevention, Associate Editor (I. Johnston)
- Association for the Advancement of Automotive Medicine, Chicago, Illinois, Scientific Program Committee, Member (B. Fildes, J. Charlton)
- Association for the Advancement of Automotive Medicine, Membership and Credentials Committee (M. Fitzharris, J. Charlton)
- Australasian College of Road Safety (Victorian Chapter) Committee, (J. Charlton, M. Regan)
- Australian e-Safety Working Group, Chair/Member (I. Johnston, M. Regan)
- Australian Government Department of Health and Ageing, Clinical Classification and Coding Groups (CCCG), Member (J. Ozanne-Smith)
- Australian Injury Prevention Network, Member Executive Committee (L. Day)
- Brain Foundation Victoria, Board of Directors (J. Charlton)
- CEA/EC International Safety Rating Advisory Committee (SARAC), Munich, Germany, Members (M. Cameron, B. Fildes, S. Newstead)
- Centre of Research Excellence in Patient Safety Reference Group, Member (J. Ozanne-Smith, K. Stephan)
- City of Melbourne Injury Prevention Advisory Committee, Member (E. Cassell)
- Department of Infrastructure, Energy and Resources, Tasmanian Road Safety Council, Hobart, Tasmania, Member (B. Fildes)
- Farmsafe Australia National Reference Group for the Safety of Older Farmers Program (L. Day)
- Farmsafe Victoria, Victorian Farmers Federation, Member (L. Day, W. Baker)
- Human Factors and Ergonomics Society of Australia, National Awards Committee (T. Triggs)
- IET Intelligent Transport Systems journal, Editorial Board (M. Regan)
- Injury Prevention, Editorial Board (P. Vulcan, L. Day)
- Injury Prevention Research Institutes of Australasia (I. Johnston (Member), J. Ozanne-Smith (Chair))
- International Journal of Injury Control and Safety Promotion, Editorial Board (J. Ozanne-Smith, V. Routley)
- International Organising Committee: 8th International Level Crossing Symposium and Managing Trespass Seminar. Sheffield England. Member (E. C. Wigglesworth)
- International Organisation for Standardization (ISO) Technical Committee 22, Sub-Committee 13 - Ergonomics Applicable to Road Vehicles (M. Regan)
- International Scientific Committee: 9th World Conference on Injury Prevention, Mexico, 2008 (meetings Geneva October 2006, Mexico 2007), Member (J. Ozanne-Smith)
- International Task Force on Vehicle Highway Automation, Member (M. Regan)
- International Working Group on Speed Control, Member (M. Regan)
- Journal of the Australasian College of Road Safety, Editorial Board, Member (M. Regan)
- Kidsafe Victoria Council, Member (E. Cassell)
- Monash Ageing Research Advisory Committee (J. Charlton, L. Day)
- Monash China Task Force, Member (J. Ozanne-Smith)
- Monash University medical students selection panel, Member (B. Fox)
- Monash University's Roads and Traffic Sub-committee (B. Corben)
- National Farm Machinery Safety Reference Group (NFMSRG) convened by Farmsafe Australia, Member (L. Day, W. Baker)
- National Health and Medical Research Council Health Partnerships Committee (L. Day)
- National Panel on the Biomechanics of Impact Injury (NPBII), Institution of Engineers Australia (A. Linder)
- Nursery Product Safety Reference Group, convened by Standards Australia and the Australian Competition and Consumer Commission, Member (J. Ozanne-Smith)
- Older People Injury Prevention Reference Group convened by the Victorian Department of Human Services (L. Day)
- Road Engineering Association of Asia and Australasia, Past President (and Life Member) (I. Johnston)
- Road Safety Reference Group, Victoria, Member (I. Johnston)
- Road Safety Research Steering Group, Transit New Zealand, Corresponding Member (M. Cameron)
- Safestart Child Injury Prevention Project Steering Committee, Victorian Department of Human Services (E. Cassell)
- Scientific Committee 8th World Conference on Injury Prevention and Safety Promotion, Durban South Africa 2006, Member (J. Ozanne-Smith)
- Scientific Committee, DSC-Asia/Pacific Driving Simulation Conference, Tsukuba, Japan, Member (M. Regan)
- Smart Demo 2005 Intelligent Vehicle Trial and Symposium, Chair of Technical Program (M. Regan)
- Standards Australia Committee CS-072 Safety in House Design (J. Ozanne-Smith)
- Standards Australia Committee SF 21*: Human Factors (M. Regan).
- Standards Australia Committee IT23*: Traffic Information and Control Systems (M. Regan)
- Transport Accident Commission Ride Smart Reference Group (M. Regan)
- Transport Industry Safety Group, Member (I. Johnston)
- Transportation Research Board of the U.S. National Academies. Committee AHB60 on Highway-Rail Grade Crossings. Washington D.C. Member (E. C. Wigglesworth)
- UK Ergonomic Society's Council, Chair of the Membership Committee and a member of the Editorial Board (C. Brace).
- Victoria's Speed Limits Advisory Group, convened by VicRoads (B. Corben)
- Victorian Civil and Administrative Tribunal, Business Licensing, Tribunal Member (J. Ozanne-Smith)
- Victorian Department of Human Services Emergency Department Information Systems Committee, Member (E. Cassell, K. Ashby)
- Victorian Motorcycle Advisory Council, Minister for Transport, Member (B. Corben)
- Victorian Public Health Research and Education Council, Member (J. Ozanne-Smith)
- Victorian Public Health Training Scheme, Member (J. Ozanne-Smith)
- Victorian Road Trauma Committee of the Royal Australasian College of Surgeons, Member (I. Johnston)
- Victorian Safe Communities Network, Member Executive (E. Cassell)
- WHO World Report on Child and Adolescent Injury Prevention: Drowning Work Group, Member (C. Staines)

Opposite: Prof Ian Johnston with the driving simulator



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