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

Cover photo - Dr. Melanie Franklyn using crash modelling software
Inside cover - Kristie Young and Dr. Michael Regan with the driving simulator
(Cover photos by On Location Photography)
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Chair’s Foreword

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

One of MUARC’s greatest strengths is its ability to engage with policy makers and program administrators, whether in government or industry. This engagement not only ensures ongoing relevance for the research we undertake but also provides an effective path for the results to be implemented through new policies and practice. As reflected in our strategic plan our mission is to “challenge and support citizens, governments and industries to eliminate serious health losses due to injury”. It is a delight to work with a research institute that lives and breathes its mission.

In 2005, we completed the first substantial review of MUARC’s strategic directions since 1997. I thank all our stakeholders, and all our staff, for their constructive input. We now have a very clear sense of where we need to go to ensure we continue to achieve our mission in an increasingly difficult environment for research funding.

As with all new strategic plans, some changes to traditional arrangements are necessary. MUARC’s Board of Management had grown steadily over the years as more Victorian Government agencies became stakeholders. So too the primary role of the Board changed from a mechanism to assist the University with governance matters to an advisory committee representative of (primarily) Victorian Government stakeholders. The strategic plan proposes the separation of these roles. A small management board will be created early in 2006 to focus on governance, strategic direction and long-term financial sustainability. The current 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.

I want to take this opportunity to thank the many senior staff from a wide range of Victorian government agencies – and from the RACV – for their magnificent support over many years on MUARC’s Board of Management and as Trustees of the Accident Research Foundation. Their support has been vital in assisting MUARC to its current position of prominence in the field of injury prevention research and especially in our reputation for social impact. We at Monash all look forward to their continued assistance in building an even stronger MUARC through their focused role of bridging research to policy and practice.

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

Edwina Cornish
Chair

We are grateful for the support of Board members (shown with senior staff)
Board of Management

As at December 2005, the Board comprised the following members:

**Professor Edwina Cornish**  
*Chair*  
Deputy Vice-Chancellor (Research)  
Monash University

**Ms. Penny Armytage**  
Secretary, Department of Justice  
(represented by Mr. William McKendry)

**Dr. Roger Banks**  
VicRoads

**Professor Stephen Cordner**  
*Deputy Chair*  
Director, Victorian Institute of Forensic Medicine,  
Monash University

**Ms. Patricia Faulkner**  
Secretary, Department of Human Services, Victoria  
(represented by Ms. Karen McIntyre)

**Mr. Stephen Grant**  
Managing Director & Chief Executive Officer, Transport Accident Commission

**Mr. Robert Hastings**  
Assistant Commissioner,  
Traffic & Transport Services Department, Victoria Police

**Mr. David Healy**  
General Manager, Road Safety, Transport Accident Commission

**Mr. Eric Howard**  
General Manager, Road Safety, VicRoads

**Professor Ian Johnston**  
Director, MUARC

**Dr. Rob Moodie**  
Chief Executive Officer, VicHealth  
(represented by Dr. Michelle Callander)

**Dr. Ken Ogden**  
General Manager Policy,  
Royal Automobile Club of Victoria Ltd

**Professor John Sheridan**  
Head, Department of Mechanical Engineering,  
Monash University

**Ms. Robin Trotter**  
Executive Officer, WorkSafe Victoria  
Victorian WorkCover Authority

**Ms. Nicole Paramanis**  
Executive Officer to the Board, MUARC
The staff at MUARC continued to perform superbly during 2005.

Several achievements underscore the depth of our national and international reputation. The World Health Organization (WHO) appointed MUARC as a collaborating centre for Violence, Injuries and Disabilities for the western Pacific region. Professor Joan Ozanne-Smith leads the collaborating centre’s activities within MUARC. Professor Brian Fildes was elected a Fellow of the US-based international Association for the Advancement of Automotive Medicine. He is also on the Board of AAAM and has succeeded in attracting the 2007 international conference to Australia for the first time. Several staff received best paper awards at major conferences in the field, including Nimmi Candappa (and her co-authors), Dr. Mike Regan (and his co-authors) and Simon Hosking (and his co-authors). Dr. Max Cameron was invited to spend a month with the French government’s transport research institute to assist them with countermeasure evaluation methods development.

MUARC was also successful in achieving new grants for large research projects. Monash University was a partner in the successful bid for a Co-operative Research Centre (CRC) in automotive technology. One of the five research themes of the CRC is safety and MUARC will undertake the majority of the safety research for the CRC over the next seven years (Brian Fildes, Mike Regan). We also achieved substantial ARC-linkage grants to study the role of visual impairments in driving performance (Dr. Jude Charlton) and (separately) injuries associated with the use of glass in commercial buildings (Joan Ozanne-Smith). We also won a large NHMRC project grant to study the impact of exercise in delaying disability and preventing falls among older people (Lesley Day).

Equally importantly, our emphasis on translating research results into the policy and practice process continued apace. Staff made invited submissions to parliamentary and other public enquiries in areas as diverse as farm injury, driver distraction, product safety and pedestrian safety. Staff also took part in capacity building and knowledge transfer in China, Mongolia, Vietnam and New Zealand.

The year in review marked the completion of one of our longest-running and most substantial projects – the TAC SafeCar project. After almost six years of work we have vital insights into the effects of some safety technologies on driving performance under real-world driving conditions.

It is an honour to lead such a committed group of first-class scientists who are as passionate about ensuring that their research is understood and applied as they are in the quality of the research itself.

Late in the year we farewelled one of our longest-serving scientists. Dr. Narelle Haworth, a founding member of MUARC’s research staff, accepted the Chair in Injury Prevention and Rehabilitation at the Queensland University of Technology. Narelle’s work is a great legacy; fortunately neither she nor it are lost to the field.
Our Staff, Our Experts

Director
Professor Ian Johnston
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 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 30 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 and is also a member of the Departments of Psychology and Civil Engineering at Monash.

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.

Chair of Injury Prevention
Professor Joan Ozanne-Smith
MD, MBBS, MA(prelim), MPH, FAFPHM
Professor Ozanne-Smith holds the foundation Chair of Injury Prevention. She has qualifications in medicine, public health and sociology and her Doctoral thesis evaluated a community based injury prevention program. As well as publishing widely in injury prevention research, she has received many awards and international invitations to teach, write and present on injury prevention issues.

Her main research interests currently relate to safe design, recreational injury prevention and the application of her research knowledge to the developing world. Increasingly, her research focuses on the determinants of transition from high to low injury rates.

Other major interests include injury data system developments and building intellectual capacity in injury prevention. The latter is reflected in her role as principal supervisor for eight PhD students during 2005, and her contributions to global injury prevention capacity building.

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, and 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 Brain Foundation Victoria through which she maintains an active interest in community services for people with acquired brain injury.

Mr. Bruce Corben MEngSc(Trans), BSc

Since 1993 Mr. Corben has been a Senior Research Fellow at MUARC, leading many road safety research projects that have focused primarily on road infrastructure safety. Bruce’s academic background is in Science (Physics) and in Engineering Science (Transport). Key research interests include pedestrians, speed and speeding, roadside safety, motorcyclists, older drivers and the evaluation of road infrastructure safety programs and the development of innovative countermeasures. Bruce’s extensive practical experience in traffic safety engineering and traffic management with Victoria’s state road authority assists in the translation of new research knowledge into practical road safety strategies and countermeasure programs.

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

Dr. Day is a NHMRC Senior Research Fellow and has been at MUARC since 1991. Lesley has qualifications in biological sciences and public health. 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 farm injury and maintains an active interest in falls prevention research. Lesley frequently provides policy advice to state government through a number of advisory committees. She teaches injury epidemiology at Monash and Melbourne universities, and coordinates the MUARC postgraduate program.

Dr. Narelle Haworth PhD, BA(Hons)

Dr. Haworth is a Senior Research Fellow who has managed research projects in almost all areas of road safety since commencing at MUARC in 1987. Narelle has managed surveys of the effects of graduated licensing, pre-driver education, local government road safety activities, motorcycle safety and truck driver behaviour. She has assisted in the development of road safety strategies for several jurisdictions and undertaken research into fleet safety. In recent years, Narelle has applied her knowledge of driver behaviour and human factors to a number of rail safety issues.

Dr. Michael Regan
PhD, BSc(Hons), MESA

Dr. Regan is an applied experimental psychologist with specialist expertise in human factors and ergonomics. He joined the Centre, as a Senior Research Fellow, in 1997 and in 2003 was reappointed to Senior Research Fellow Level D (a level similar to that of Associate Professor). Prior to that he was Manager-Road User Behaviour at VicRoads. Mike’s current research interests are in the areas of road user behaviour, human factors in intelligent transport systems (ITS), human-in-the-loop driving simulation,
novice driver and passenger safety, driver distraction and aviation safety. He is a Member and Past Chairman of the Ergonomics Society of Australia and holds Full Membership of the U.S. Human Factors and Ergonomics Society, ITS Australia, the Australian Aviation Psychology Association and the Australian College of Road Safety. He is the Australian member of International Organisation for Standardization (ISO) Technical Committee 22, Sub-Committee 13, which develops international standards for the ergonomic design of road vehicles.

Ms. Erin Cassell MPH, BA
Ms. 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 and Applied Research unit at MUARC. Her current research interests include injury surveillance, sport, child and home injury prevention research, older persons falls prevention, and the evaluation of injury prevention interventions. She 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 towards the end of 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 local level. Peter also has a strong interest in heavy vehicle, mobile plant, and work vehicle safety, and 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)
Mr. 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. Astrid Linder
PhD, MSc(Engineering Physics)
Dr. Linder, a Holden Post Doctoral Research Fellow, has been at MUARC since August 2003. Astrid has a PhD in Mechanical Engineering in the area of vehicle safety and a M.Sc. in Engineering Physics from Sweden. Her PhD focused on whiplash injuries in rear impacts and dummy development and dynamic seat test related to these injuries. Prior to her position at MUARC she ran a research project in England. Her current research interest is in occupant kinematics, injury prevention in vehicle crashes, mathematical simulations and dynamic testing.

Her research at MUARC included vehicle design for pedestrian protection, seat testing in rear impact with focus on whiplash injuries and occupant dynamics and protection in far-side crashes. Astrid left the Centre in June to return to Sweden.
Dr. David Logan  PhD, BE(Hons)
Dr. Logan is a Senior Research Fellow and Vehicle Safety Manager at MUARC and has completed a Bachelor of Engineering (Hons Class I) and a PhD in Mechanical Engineering, in the field of machine condition monitoring. He has several years’ experience in the consulting engineering industry, working in areas including component testing for the automotive industry, advanced vibration analysis, low volume vehicle compliance, heavy vehicle brake system testing, architectural and building acoustics and noise control.

David manages seven multi-disciplinary researchers in the real-world crash investigation team, collecting data and conducting analyses for several studies. He conducts safety and performance test programs for the Victorian ambulance services and is on the working group for the Farm Injury Risk Among Men (FIRM) study.

Mr. Stuart Newstead  MSc, BSc(Hons)
Mr. 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. Since 1993 he has worked in the road safety field at the Centre. 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 databases. He has particular interest in the development and application of statistical methodology in both road safety and broader public health research. Stuart is currently completing a PhD concerned with the application of statistical analysis techniques to road safety 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.

Melanie Franklyn, Nimmi Candappa, Christine Mulvihill and Bruce Corben were among those who attended the Road Safety Conference in New Zealand
Emeritus Professor Tom Triggs
PhD, MEngSci, BE, BSc

Tom Triggs is Deputy Director and a Professor of Psychology at Monash University. 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.

Professor Triggs 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.

Adjunct Professor Tore Larsson
PhD, MA

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

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

Adjunct 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. Professor Tingvall was Director of MUARC between 1998 and 2000, when he returned to the Swedish National Road Administration.

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

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

Professor Peter Vulcan was the Foundation Director of the Monash University Accident Research Centre 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. Peter 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.

Professor Vulcan’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, Grad Dip Health Sci, BA
Mr. Wayne Baker † MEngSc(Res), BE(Mech)(Hons), BA
Dr. Irene Bobevski  DPsysch(Clin), BAppSc, BA(Hons)
Ms. Nimmi Candappa  BEng(Civil)(Hons), BA(Jap)
Ms. Angela Clapperton  (Counselling), Grad Dip Ed Psych, BSc(Behav)
Ms. Kathy Diamantopoulou  MSc, BSc(Hons)
Mr. Michael Fitzharris † BSc(Hons), BA
Ms. Barbara Fox † MApSocRes, RN, BA
Dr. Melanie Franklyn  PhD, ME (Biomedical Prelim.), BSc
Ms. Effie Hoareau  Grad Dip(Stats & Op Res), BSc
Mr. Simon Hosking  BAppSci(Hons)
Dr. Ajith Gunatilaka  PhD, MS(EE), MSc(Optical Eng), BSc Eng(Hons)
[until Oct.]
Dr. Sjaanie Koppel  PhD, BAppSci(Hons), BA
Ms. Louisa Lam † MPH, Grad Dip(Coronary Care), BHSc, RN
Ms. Eve Mitsopoulos † BA, BSc(Hons)
Ms. Carlyn Muir  MA(SocSci), Psych(Hons)
Ms. Virginia Routley † MPH, Grad Dip(Soc Sci), DipEd, BEd
Mr. Paul Salmon
Ms. Lisa Sharwood † Grad Dip Nurs, Dip AppSc(Nursing), RN
Ms. Carolyn Staines † BSc(Hons)
Ms. Voula Stathakis  MPH, Grad Dip(Epi/Bio Stats), BSc
Ms. Karen Stephan  MPH, BSc(Hons),
Dr. Mark Symmons † PhD, MSc, BSc(Hons), BAppSc
Mr. Nebojsa Tomasevic  MEngSc(Biomed), BEE
Ms. Linda Watson  BSc(Hons)
Ms. Wendy Watson † MA, Dip Ed, BSc(Hons), BA
Ms. Kristie Young  BAppSc(Psych)(Hons)
† Part-time

Karen Ashby
Wayne Baker
Irene Bobevski
Nimmi Candappa
Angela Clapperton
Kathy Diamantopoulou
Michael Fitzharris
Barbara Fox
Melanie Franklyn
Effie Hoareau
Ajith Gunatilaka
Sjaanie Koppel
Louisa Lam
Eve Mitsopoulos
Carlyn Muir
Virginia Routley
Paul Salmon
Lisa Sharwood
Carolyn Staines
Voula Stathakis
Karen Stephan
Mark Symmons
Nebojsa Tomasevic
Linda Watson
Wendy Watson
Kristie Young
Research Assistants

Mr. Mats Agby
Mr. Chris Brennan †B.App.Sci(Hons)(Aero) [until Nov.]
Mr. Anthony Clark BEng(Hons)
Ms. Belinda Clark †BA, BBSc(Hons)
Ms. Melinda Congiu B.Bus(Psych), GradDip(Psych)
Mr. Angelo D’Elia BE(Hons), BSc.(Hons)
Ms. Amanda Delaney LLB, BCom(Hons)
Mr. Clay Douglas †BEng(Hons)
Ms. Jessica Edquist †Grad Dip(Psych), BSc.
Mr. David Elsner †BA(Hons), BCommerce, Grad Dip App Finance
Mr. Cosimo Ercole †BA(Hons), DipEd
Ms. Dinalie Fernando †BComp
Ms. Nicola Fotheringham †BA/BSc
Mr. Jonathon Guy BA(Hons)
Ms. Eleri Harris †BA(Hons)
Ms. Narelle Hayes †BA
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. Kelly Marks †BA/BSc
Mr. Ian Morrison †PG Dip Beh.Sci, Grad Dip Psych, BA(Hons)
Ms. Christine Mulvihill BBSc(Hons)
Ms. Mary O’Hare †MA, BA(Hons)
Ms. Sujanie Peiris †BSc(Hons), BE(Hon)
Ms. Zoe Piggott †BA
Mr. James Scully MSc(Maths), BSc(Hons), BA
Ms. Miriam Shrimski †
Mr. Ashley Verdoorn †BSc
Ms. Michelle Whelan †BSc(Hons)
Ms. Vicki Xafis RSA DTEFLA, BA(Languages) [until Sept]
† Part-time
Project and Support Staff

Ms. Sarah Allen †BCom/BEc Administrative Assistant
Ms. Sue Bond †RN (Div 1) B. Health Sci., Grad Dip Rural Nursing, Grad Dip Crit Care
Ms. Jean Box †RN
Mrs. Glenda Cairns † PA to Director, Webmaster, Publications Officer & Postgrad AO
Ms. Christine Chesterman †Dip.Hol.Kin., VISAR Admin. Assistant
Ms. Cathy Daly BMus/BTeach(Hons), †Administrative Officer, Finance
Mrs. Noeline Deveson Senior Project Officer
Ms. Anne Harrison †RN (Div 2)
Mr. Fabian McLindin †RN, Assoc Dip Farm Management
Ms. Matoula Leichman †Administrative Assistant
Ms. Emily Mifsud Office Manager/Administrative Secretary
Ms. Kristen Moore Administrative Assistant
Mr. David Ng †BSc Computer Support
Ms. Debra Neilson †RN, Cert Nursing Admin & Clinical Teaching
Ms. Nicole Paramanis AIMM, BA(Hons), HND Centre Manager
Ms. Vicky Ribas Administrative Officer, Finance
Mr. David Sheppee Co-ordinator, Occupant Protection Project
Mr. David Stroud GradDip Computer Systems Engineering, BEng Computer Systems Officer
Ms. Melanie Thiedeman †GradDip(Asian Studies), BA Personal Assistant to Professor Brian Fildes
Mr. Scott Vost † Driving Simulator Tech. Support
Ms. Rachel Whitworth BEd Project/Administrative Officer

† Part-time

Nurses working on the FIRM project met at the Centre for training. Back (left to right): Anne Harrison, Fabian McLindin, Debra Neilson. Front: Jean Box, Sue Bond, Dianne Hill
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, ‘to challenge and support, citizens, government and industry to eliminate serious health losses due to injury’ gives prominence to, but goes beyond research and training, and embraces 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
• Utilises the most advanced driving simulator in the southern hemisphere
• Manages the injury surveillance database system for Victoria
• Realised external revenue of almost $7 million for 2005.

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, Board of Management has responsibilities in relation to the Centre normally held by the Dean of a Faculty. As the convention has been that 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 advises 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 almost half of the people under 45 years of age, 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, see below.

There are many examples of 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

### Strategic Planning

A major independent, external review was completed in the first half of 2004 by a national and international panel of experts and clients, chaired by Professor Stephen Parker, the Senior Deputy Vice-Chancellor at Monash. The review panel acknowledged the extent of MUARC’s success and applauded its standing in its field but perceived some critical threats to sustainability. The panel recommended that a fundamental strategic planning process be undertaken to provide both MUARC and Monash with a clear sense of the future vision for MUARC and a plan for its realisation.

Monash provided special funding to enable the strategic planning process to commence at the beginning of 2005. MUARC’s Strategic Plan was adopted by the Board of Management in December 2005.

In determining the future directions for MUARC it was important to consider the strategic directions of the university as a whole. Monash University’s future directions were finalised in February 2005 by University Council. Monash Vision for 2025 identified five key areas of ambition:

- a determination to make Monash one of the three leading research universities in Australia
- a vision of continuously increasing internationalism – defined as increasing collaboration in large scale international research projects
- a desire to use existing Monash international campuses and centres (Malaysia, South Africa and Europe) to extend Monash’s research reputation
- continuous improvement in the degree of engagement with government, industry and the community
- a determination to capture the cross-disciplinary synergies through greater inter-faculty collaborations in research

As a Centre with a multi-disciplinary focus, a track record of industry, government and community engagement and an established international reputation, MUARC is well placed to contribute towards the achievement of these ambitions.

MUARC’s plan consists of three parts (see schema below): Part A sets out MUARC’s Vision, Mission and Values for the five-year strategic plan at the macro level; its four aspirational and two enabling goals for the five years 2006-2010 and 36 strategies to achieve these six goals.

### Overview

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<th>Vision</th>
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<td>Mission</td>
<td>Through high-standard research and independent recommendations, to challenge and support citizens, governments and industries to eliminate serious health losses due to injury.</td>
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Part B prioritises the implementation process and sets down the strategies for immediate implementation (in 2006) and the specific targets that will define progress.

Part C contains the details of the implementation plans for 2007 and beyond. These will be updated annually as circumstances change. Towards the end of 2006 a new Part B will be prepared to drive the 2007 implementation effort… And so on.

A significant and fundamental section of the Strategic Plan and planning process this year has been the development of a Research Directions Plan for 2006-2015 under the direction of a subcommittee of senior staff, the Research Needs Analysis Committee. It sought to identify directions and strategies for programmatic research development and priority themes. It is leading towards a Research Strategic Action Plan which will be finalised in the first half of 2006.

The figure below shows the relationships between the Research Directions Plan and the MUARC Strategic Plan. The Research Directions Plan can be characterised as the first phase in the development of key research strategies aimed at achieving leading research, the first goal of the MUARC Strategy.

The Research Directions Plan complements current MUARC leading edge and programmatic research strengths and directions. It is intended to determine future growth directions for MUARC in the major areas of MUARC’s research strengths, transport, community and workplace injury prevention with reference to where the biggest issues lie. It seeks to identify directions and strategies for programmatic research development and to identify priority themes and large projects.

Relationship between the Research Directions Plan and the MUARC Strategic Plan
External Recognition

Honour of Emeritus Professor
In February this year, the recently retired Professor Tom Triggs, MUARC Deputy Director and former Head of the Psychology department received the honour of emeritus professor and has been added to Monash’s prestigious roll.

Tom joined the university in 1973; during his career his research interests have focused on the human factors and driver simulation program in road safety.

He played a key role in establishing MUARC and, after seeing a driving simulator in the US in 1989, introduced the concept into Australia as a safe way of testing driving conditions and others factors in a low-risk context. Professor Triggs has continued supervising research students and maintains a hands-on interest in MUARC projects.

MUARC - WHO Collaborating Centre for Violence, Injuries and Disabilities
In July 2005 MUARC was designated 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 and the Philippines. It is envisaged that the Collaborating Centre will also work closely with the South-East Asia Region and WHO globally.

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; to contribute to solving the major unintentional injury burden in the region (particularly road traffic injury, drowning, falls, poisoning) through research, training, leading-edge workshops and general information exchange; to 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 to assist the WHO regional Office for the Western Pacific to develop, implement and evaluate a regional injury prevention strategy.

Activities during the first six months of operation included capacity building (Australian Youth Ambassadors, ongoing PhD projects focused on regional country needs, mentoring), a major leading-edge workshop in Beijing ("International Workshop on Drowning Prevention in China"), WHO consultancies in Mongolia (Karen Ashby) and Vietnam (Joan Ozanne-Smith) and contributions to strategic planning and developmental work for the WHO/UNICEF World Report on Child and Adolescent Injury.

WHO invited Professor Joan Ozanne-Smith to attend as a speaker and facilitator for a number of sessions at the Strategic Planning and Capacity Building for Injury Prevention and Control Meeting, in 2005 and also the Child Injury Prevention Planning Meeting in Geneva, Switzerland.

Induction of Fellow
Professor Brian Fildes, Chair of Road Safety, received induction as a Fellow of the Association for the Advancement of Automotive Medicine (AAAM). He will Chair the AAAM Scientific Program Committee in 2006.
Nimmi Candappa received the “Practitioner’s Award” at the 2005 Australasian Road Safety Research Policing and Education Conference, for the paper she co-authored, “Evaluation of an Alternative Pedestrian Treatment at a Roundabout” – Candappa, N., Fotheringham, N., Lenné, M., Corben, B., Johansson, C., and Smith, P. The award was for the paper which best reflects a completed road safety program. The evaluation of the modified pedestrian facilities, which showed increased pedestrian safety and convenience, provides to other road safety practitioners a tangible, successful design option for increased pedestrian safety.

Dr. Mike Regan accepted the 2005 Peter Vulcan Award, for the best peer-reviewed research paper presented at the 2005 Australasian Road Safety Research, Policing and Education Conference held in Wellington, New Zealand on 14-15 November 2005. Mike was the senior author of the paper, which reported the final results of the TAC SafeCar project. The MUARC co-authors were Kristie Young, Professor Tom Triggs, Nebojsa Tomasevic, Eve Mitsopoulos, and Adjunct Professor Claes Tingvall.

International Conference on Driver Distraction

A paper by Simon Hosking, Kristie Young and Dr. Mike Regan, titled “The effects of text messaging on young driver performance”, was awarded best paper at the first International Conference on Driver Distraction, Sydney, 2-3 June 2005.

Dr. Mike Regan also gave a Keynote Address titled “Driver distraction: reflections on the past, present and future” at this conference.
Publishing Agreement
Dr. Mike Regan, Kristie Young and Professor John Lee (University of Iowa) signed a publishing agreement with CRC Press to publish the first book on driver distraction (“Driver distraction: theory, effects and mitigation”). The book will be published early in 2007.

Mollie Holman Doctoral Medal Award to Dr. Shauna Sherker
Shauna’s thesis addressed an important and neglected area of public health. In Victoria alone, about 5,000 children present to hospital Emergency Departments (ED) and more than 1,100 are hospitalised annually as the result of a playground fall injury. Upper limb fractures account for 48% of these ED presentations and 75% of these admissions. This thesis conducted in conjunction with an NHMRC project grant (Joan Ozanne-Smith and Lei Li) used a novel interface design between epidemiology, biomechanics and engineering. The research results have strong implications for the re-design of children’s playgrounds and for Australian and International Playground Standards. Several journal articles directly related to the thesis have already been published. Beyond the scientific literature, the research results have been disseminated widely at conferences and community presentations and public debate has been stimulated via the media. Several awards have been made in commendation of the research leading to the thesis. Importantly, Shauna has been appointed and nominated for appointment to Boards, Committees and Standards Australia which have the potential to facilitate the implementation of her research findings. Shauna was supervised by Joan Ozanne-Smith, Dr. Lei Li (until 1999) and Dr. George Rechnitzer (2001-2003).

B-HERT Award
MUARC formed part of the Victorian Public Health Training Scheme consortium that was awarded the B-HERT (Business/Higher Education Round Table) Award in December for Best Education and Training Collaboration. Awarded by the Australian Government Department of Education, Science and Training.

Public Health Association of Australia (PHAA) Annual Conference
Jonathon Ehsani (Victorian Public Health Training Scheme assignment at MUARC) and Professor Joan Ozanne-Smith won best poster award at the Public Health Association of Australia (PHAA) Annual Conference (Perth) “Childhood Injury Mortality in the Western Pacific Region and South East Asia”

International Consultant
The Zhejiang Province (46 million population) Centres for Disease Control (CDC) appointed Professor Joan Ozanne-Smith as an international consultant to their centre. Professor Ozanne-Smith made an invited presentation to CDC in Hangzhou (April) “Injury surveillance and prevention: international experience”.

Scholarship
Ms. Fiona Clay, PhD student, was awarded a place in the summer school on work disability prevention at the University of Sherbrooke in Quebec, Canada. This scholarship is for a three-year program involving yearly periods of study in Canada.
An Independent Voice

Cause of Fatality and Injury on Victorian Farms

The final report of the Parliamentary Inquiry into the Cause of Fatality and Injury on Victorian farms was released in 2005. Dr Lesley Day had made an invited presentation to the Committee in 2003, and her presentation and various publications are heavily quoted in the report. A key requirement of the inquiry was to report on strategies for reducing injury and fatality on Victorian farms, and a considerable number of the 32 recommendations call on government agencies, farmer organisations, and community groups to implement specific strategies. The government's response to the report is due early in 2006.

Pedestrian Intoxication

A Parliamentary Inquiry into the Incidence and Prevention of Pedestrian Accidents was published in 1999. Recommendation 12 from this Inquiry stated “That a legal definition of intoxication be established”. In May 2000 the Government published a response to this Inquiry. The response to Recommendation 12 stated that this recommendation was not supported to the extent that it envisaged a definition based on Blood Alcohol Concentration (BAC). In March 2005, the Victorian Parliamentary Road Safety Committee sought submissions on the recommendations of its 1999 Inquiry. MUARC was contracted by VicRoads to conduct a study to examine the recent literature and practice to determine whether the government response to this recommendation should be amended. This report concluded that many uncertainties remain concerning the definition of intoxication, the BACs at which outward signs of intoxication become evident, and how various individual factors mediate the appearance of signs of intoxication and the resultant BAC. It is concluded that there is currently a lack of conclusive evidence that would support the establishment of a legal definition of intoxication based on BAC. This report formed part of VicRoads response to the Victorian Parliamentary Road Safety Committee.

City of Casey – Review of residential subdivision design with regard to safety performance

Given the rapid growth in subdivisions in the City of Casey, MUARC was commissioned to evaluate current subdivision guidelines of the Council with respect to best practice in residential area design. The intention was to take proactive measures to establish safe designs prior to actual construction, such that, where feasible, only best practice road designs would be used within future subdivisions in Casey, preventing avoidable injuries of road users and costly retrofitting of countermeasures.

Speed Limit Setting

In 2005, the Victorian Minister for Transport requested the Victorian Speed Limits Advisory Group to review and make recommendations on speed zoning practices in Victoria. As part of this review, MUARC was commissioned by VicRoads to examine the appropriateness, implementation practices and overall impact of the current VicRoads speed limit guidelines as they apply specifically to school zones, shopping strips, and rural town centres. The resulting report examined speed limits in school zones, shopping strips and rural town centres around Australasia and internationally, and identified the leading speed philosophies, policies and practices in both Australian and overseas jurisdictions. It concluded that excessive or inappropriate speed has a twofold effect on safety: each increases both the risk of involvement in an injury crash and the severity of injury when a crash occurs. Important issues of speed limit setting practices that were identified include: consideration of the speed/road infrastructure; development of a more protective road infrastructure; desirability of obtaining public acceptance for reduced speed limits; vigorous promotion of compliance with posted limits; consistency in setting speed limits across the whole network; and creation of readily apparent speed limits through the use of signage and other road environment cues.
City of Port Phillip - Roundabout Evaluation

Roundabouts are known to be one of the safest treatments at intersections. However, a popular criticism of roundabouts is that they do not cater well for pedestrians. The City of Port Phillip in Melbourne, Victoria, reconstructed an existing roundabout at a busy suburban intersection to provide greater safety and convenience for pedestrians. The innovative design provides right-of-way for pedestrians directly at the intersection, in contrast with standard roundabout designs. A before-and-after study was undertaken to evaluate the success of this design in terms of pedestrian safety and convenience. The results indicated a general decrease in mean vehicle speed, greater pedestrian compliance with the crossings, and reduced waiting time for pedestrians, suggesting greater convenience and safety with the new treatment. The surveys of pedestrians reflected these findings through generally positive responses towards the treatment.

Older driver research for VicRoads

As a follow-on from the recent Victorian Parliamentary Inquiry into Road Safety for Older Road Users, VicRoads commissioned a survey of 2,000 older drivers to assess various aspects of their driving and safety performance. Two reports have been prepared – one dealing with the extent of driving amongst older licence-holders, the other with aspects of crash risk. The former report has been published and the other is still in press.

Driver Distraction

MUARC wrote a major submission to the Victorian Parliamentary Road Safety Committee's Inquiry into Driver Distraction. On 6 December, Dr Mike Regan, Professor Ian Johnston and Kristie Young appeared before the Committee and spoke to the Submission. MUARC also prepared for VicRoads a report on driver distraction that was used to develop their own submission to the Inquiry.

Law Reform

Dr Eric Wigglesworth offered a written submission to the Victorian Parliament Law Reform Committee "Inquiry into Coroners Act 1985" and supported this with a witness appearance on 28 November 2005.


Queensland Transport commissioned MUARC to develop an evaluation framework that would accurately monitor and report on the outcomes of the Queensland Road Safety Strategy for 2004-2011 and associated action plans. The evaluation framework for the Queensland Road Safety Strategy is being structured according to the GOSPA model, that is, an overall goal, objectives, strategies, programs/plans, actions and targets.
To the extent possible, the evaluation framework developed for the 2004-2011 Strategy will be trialed on the previous Queensland Road Safety strategy that covered the period 1993-2003. It is expected that both the framework development and the trial run on the earlier strategy will be completed during 2006. The project also included two other components: a review of Australian and international literature on best-practice approaches for evaluating road safety strategies and action plans; and a review of the current methods of providing evaluations and analyses within Government. Both these reviews were completed during 2005.

**Victorian Injury Prevention Strategy (VIPS) 2005-2010**

The Department of Human Services (DHS) commissioned MUARC to prepare a draft Victorian Injury Prevention Strategy (VIPS) and discussion paper. The draft was completed in May 2005 and a revised version was finalised in August following feedback from DHS. The main recommendations for the strategy focus on priorities based on the size of the problem, and preventability.

MUARC also provided the DHS with a series of injury indicators as part of this project, as well as a Victorian injury profile for 2002 and comprehensive background documents for each of the priority areas.

**Productivity Commission, Canberra**

Following the release of its Discussion Draft on the Australian Consumer Product Safety System in August 2005, the Productivity Commission held a series of roundtable discussions to consult with interested parties on a number of key issues. Professor Joan Ozanne-Smith was invited to meet with the Productivity Commission in April to discuss a comprehensive submission made to the review on behalf of MUARC. Professor Ozanne-Smith and Wendy Watson were invited to the further roundtable dealing with data issues in Canberra in October 2005.

Topics of discussion and focus included:

- additional data sources and methodologies that would assist the Commission in establishing the likely level of death and serious and non-serious injury caused by consumer products;
- data and views on the magnitude of losses, in the aggregate, caused by consumer products and on the relative roles played by product fault, product design, product servicing and maintenance, and consumer behaviour in Australia; and
- information and views on cost issues, including: the likely level of direct and indirect costs from injuries associated with consumer products in Australia; the appropriate methodology for calculating such costs; and relevant cost or injury data that may be used as an input to further evaluation of costs in this area.

**Child-Resistant Packaging**

Professor Joan Ozanne-Smith made an invited submission to the Therapeutic Goods Administration (TGA) on issues of concern regarding Child-Resistant Packaging of Medicines and Other Therapeutic Products. The Centre has undertaken a program of childhood poisoning prevention research since the early 1990s. Our previous studies have identified the involvement of a number of agents that are required to be packaged in child resistant packaging among common childhood poisoning agents. Consequently, the Victorian Department of Human Services (DHS) funded a collaborative study between MUARC and the Royal Children’s Hospital, Melbourne, in 2004, to investigate “Barriers to child poisoning prevention: Why does child resistant packaging fail?”

Child poisoning remains the second most common cause of injury related hospital admissions in Victoria for ages 0-4 years (345 admissions in the year 2002/03). The rate of these hospital admissions, for this peak age group was 113/100,000 excluding 340 same day admissions, and the rate of hospitalised cases has risen over the past nine years in Victoria. Medications were the most commonly involved agents.

Given that evidence in the scientific literature indicates protective effects associated with child resistant packaging (CRP), recommendations have been made repeatedly for more agents associated with medically treated poisoning to be scheduled to require CRP. This has been taken-up to some extent in the August 2004 Therapeutic Goods Order No. 65.

The MUARC study “Barriers to child poisoning prevention: Why does child resistant packaging fail?” focuses on reclosable child resistant containers (CRCs). It includes a comprehensive literature review relating to CRP, an in-depth case series study of child poisoning cases where agents required CRCs, and an examination of a sample of containers where the child resistant closure was reported to have failed. Preliminary results and recommendations were provided to the TGA to inform the review. Final results will be published in 2006.
Government and Industry Engagement

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 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.

Used Car Safety Ratings

As part of an ongoing MUARC research program focusing on vehicle safety, updated crashworthiness ratings and aggressivity ratings for 1982-2003 model vehicles were estimated based on data on crashes in Victoria, New South Wales, Queensland, Western Australia and New Zealand. Crashworthiness estimates and their associated confidence limits were obtained for 288 vehicle models classified into 12 market groups.

This year a new aggressivity rating was successfully developed by MUARC which extended the previous rating to consider injury outcomes of not only drivers of other vehicles but also of unprotected road users such as pedestrians, cyclists and motorcyclists. The new aggressivity rating measured the risk of death or serious injury to other drivers or unprotected road users impacted by the focus vehicle. Based on the crash data available, new aggressivity rating estimates and their associated confidence limits were obtained for 261 vehicle models. As in previous years, both the crashworthiness and aggressivity ratings were presented in a booklet and made freely available to Australian consumers.

The Used Car Safety Ratings Committee funded this research; project partners are Qld. Transport, RACV, TAC, VicRoads, NRMA, RTA(NSW), ATSB, RACWA, WA Office of Road Safety, AAA, RACQ, AA NZ and Land Transport New Zealand (MUARC Report No. 241)

TAC SafeCar

The TAC SafeCar project, a joint research initiative between the Transport Accident Commission (TAC), the Ford Motor Company of Australia and MUARC, was completed during the year. This followed nearly six years of research and development activity. During the final phase of the project, 15 Ford passenger cars were deployed, each equipped with the following Intelligent Transport System (ITS) technologies: intelligent speed adaptation, following distance warning and seat belt reminder. MUARC assessed the effects of the technologies on the driving performance and safety of 23 corporate car fleet drivers in Victoria. The study was the first of its kind in the world, and the final report on its findings was presented to the TAC in August 2005. The report will be released to the public early in 2006.

The systems tested were effective in making drivers reduce speed, adopt longer following distances to...
vehicles ahead and buckle their seatbelts earlier and more often. Wide scale deployment of these systems is expected to greatly reduce road trauma in Australia.

**Advanced Driving Simulator**

MUARC’s advanced driving simulator is the most advanced in the southern hemisphere. It was originally purchased by the Transport Accident Commission to support MUARC research in 1998. Upgrading of the simulator’s capability has commenced and includes new projectors, a new total visual field projection screen, and a new Holden Calais sedan. Holden are generously funding a large part of the upgrade.

A team of MUARC researchers has spent the year developing technical specifications to underpin the upgrade of the simulator’s computers and software. These documents will form an ARC Linkage application in the first half of 2006, which if successful, will increase the power of scenario simulation to maximise research utility. The rapid development of intelligent transport systems technology makes completion of a facility capable of assessing new technologies vital if Victoria is to maintain its current leading edge position.

The new facility is expected to become a world-class research laboratory and will further raise the profile of MUARC, the university and Australia in advanced driving simulation research.

**ARC Linkage: Occupant Protection In Far Side Crashes**

The research commenced in January 2004 and a number of key research components are well underway. Preliminary findings in the area of priority crash configurations, injuries and injury mechanisms have already been identified.

It is expected that through a comprehensive test schedule, this research will lead to a better understanding of occupant biomechanics and injury mechanisms during far-side collisions. Current dummy bio-fidelity can then be assessed and improved, appropriate far-side test measures developed, and recommendations for regulations made. It is anticipated that application of these test procedures will allow the development of innovative and world-leading far-side countermeasures that will ultimately improve vehicle occupant safety.

Project partners are: Monash University Accident Research Centre, George Washington University (NCAC), Virginia Medical College of Wisconsin, Virginia Polytechnic Institute and State University, Autoliv AB, Sweden, Holden Innovation, Melbourne, and Dept. Transport and Regional Services, Canberra.

**NHMRC Exercise for Independent Living Project**

In 2005, a team of investigators led by Dr. Lesley Day were awarded a three-year NHMRC project grant of $869,450 to investigate the impact of exercise in delaying disability and preventing falls 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;
2. investigate the mechanisms by which exercise intervenes in the disability pathway; and
3. determine the cost-benefits of exercise for older people. The study will recruit 500 people over 70 and randomly assign 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 48 weeks.

The groups will then be compared to see 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 is the first study worldwide to test the impact of any exercise program on delaying the manifestation of disability among older people. 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 has the support of Australian Retirement Communities and Arthritis Victoria. MUARC will collaborate with the National Ageing Research Institute, University of Western Australia, Monash Institute for Health Services Research and Monash University Centre for Health Economics.

Auto CRC

In 2005, a consortium of university, industry and CSIRO partners was awarded a seven year grant for the establishment of the Cooperative Research Centre for Advanced Automotive Technology to provide a national strategic research capacity for the Australian automotive industry. Professor Brian Fildes was instrumental in securing a substantial role for MUARC.

The inaugural program of research projects is Human Machine Interface (HMI) and Driver Distraction and Occupant Protection.

HMI and Driver Distraction

As vehicles become more complex and with greater use of in-vehicle information systems, the ability for drivers to interact with these systems and safely carry out the primary tasks of driving will be highly dependent on the system's ergonomics.

Older and younger drivers have different needs and ways of interacting with the in-vehicle systems and external environment.

There are no industry guidelines or agreed standards in Australia in this area.

Understanding the nature and issues involved in useability and driver distraction is essential for minimising complexity and driver distraction from these systems.

This project encompasses theoretical and experimental studies of cognitive workload and driver distractions for a range of driver ages and driving conditions (real and simulated), and the development of reports, guidelines and standards in this area.

Project partners are Cooperative Research Centre for Advanced Automotive Technology Ltd, Monash University, GM Holden Ltd and GM Global Technology Operations Inc and Swinburne University of Technology.

Occupant Protection

Investigate and report the current state of the safety research communities' understanding of the opportunities for improved safety in the following areas:

Child Safety – opportunities for rigid lower anchor systems to improve frontal and side impact performance. Pursue advances in Booster design. Investigate issues relating to scaling of Human Body Models to make them suitable for Child Safety Research.

Brain Injury modelling – validation of existing state of the art brain models against available crash reconstruction case data. Investigation of opportunities for reduced Brain Injuries in Rollover Collisions.

Pedestrian Harm Reduction – influence of vehicle shape parameters in attenuating head impact energies in pedestrian collisions with vehicles and assessment of pedestrian models.
Harm Analysis – opportunities for reduced harm from side impacts. Investigate mild brain injuries resulting from vehicle collisions.

Recommend direction for future project development in the areas of advanced occupant restraints. Identify priorities, and conduct research in those areas to build knowledge and improve and develop countermeasures that increase occupant protection.

Project partners are Cooperative Research Centre for Advanced Automotive Technology Ltd, Monash University and GM Holden Ltd and GM Global Technology Operations.

**ARC Vision Impairment and Fitness to Drive**

A three-year collaborative research program (2005-2007), funded through the Australian Research Council Linkage Grants Scheme, seeks to identify the way in which specific vision conditions affect driving performance. The study will examine the effects of visual field loss on drivers’ ability to monitor information, allocate attention and minimise the effect of distractions. Outcomes of the study will enable the development of evidence-based guidelines for assessing vision for driving and effective countermeasures to enhance mobility and crash risk.

The project will bring together researchers from MUARC and other universities and industry partners including the University of Iowa Division of Neuroergonomics, Victorian Institute of Forensic Medicine (VIFM), Centre for Eye Research Australia, (CERA), GM Holden Limited, VicRoads, Road Safety Trust, New Zealand, Queensland University of Technology (QUT), the Swedish Road Administration (SRA) and Carl Zeiss Pty Ltd.

The project has three parts: Phase 1 will address current practices regarding assessment of vision conditions in Australian licensing jurisdictions. Phase 2 will comprise a series of driving simulator experiments to identify and describe the characteristics of driving performance and visual scanning patterns in people with visual field loss (from glaucoma, macular degeneration and other eye conditions). These experiments will use advanced driving simulators and state-of-the-art eye and head tracking technology. Phase 3 will identify selected interventions and evaluate their feasibility and efficacy to enhance safety of drivers with visual field loss. Potential countermeasures may include: driver training; in-vehicle technologies such as early hazard warning systems; and solutions that focus on the road infrastructure.

**Austroads Road Safety Handbook**

During 2005 the fourth volume of the Handbook was drafted, consisting of a series of papers covering policy and research issues associated with the new Austroads Safe System approach to road safety. In addition, work continued on updating a selection of papers previously published in Volumes 1 to 3.

**Austroads Project: Assessing Responsibility for Older Drivers’ Crashes**

This project, which investigated the extent to which older drivers were responsible for their involvement in fatal and other crashes, was concluded and a report published.

**Austroads Project: Balance Between Harm Reduction and Mobility in Setting Speed Limits**

The first stage of this project reported on the various approaches to setting speed limits in use around the world and proposed an alternative model based on harm reduction principles. A report was subsequently published. Work is proceeding on Stage 2 of the project, which entails both refinement of the speed setting model and speed trials in at least one jurisdiction.

**ARC Linkage Grant: Architectural Glass Related Injury**

An ARC linkage grant was awarded to Professor Ozanne-Smith and Dr. Sherrard to study ”Architectural glass related injury: implications for improving public safety”. The grant is for two years with Pilkington Glass and the Victorian Building Commission as industry partners. The immediate benefit of the project is information for government, the building and furniture industries, regulators, and the community to underpin interventions to prevent architectural and furniture glass injury. Project partners are Pilkington Glass and the Victorian Building Commission.
and passengers. Phase 3, which commenced during the year, will culminate in the development and evaluation of a CRM training module to be trialed in the ACT. Research also commenced into optimal ways to train hazard perception skills among motorcycle riders.

**ANCIS (the Australian National Crash In-Depth Study)**

ANCIS is a collaborative research project comprising Monash University, the Australian automobile manufacturers, Federal and State Government Transport and insurance agencies, a vehicle parts supplier and motoring clubs in Victoria and NSW. Its objective is to provide an in-depth analysis of a sample of vehicle crashes for use in improving vehicle crashworthiness and better understanding the contributing factors to crash involvement.

ANCIS is unique in that it has achieved two crucially important changes in the manner with which road safety is dealt with in Australia. It has brought together leading Australian road safety researchers and road safety related Government and industry bodies. Further, the in-depth data collected, based on a multi-causal approach to crashes, has broadened the scope and understanding of crash-related areas, enabling ANCIS partners to work together to achieve the goals set out in the National Road Safety Strategy. This research and the collaboration between partners is evidence of the leading role that Australia plays internationally in innovative approaches and solutions to road safety issues. Also of great importance, and only now emerging, is the role that ANCIS is playing in paving the way for new collaborative research, a change that is instrumental in the adoption of novel and effective road safety initiatives.

The ANCIS study is a valuable adjunct to mass databases in that it provides much more detail on the cause and severity of the crash, 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 are provided to throw new light on the crashworthiness of the vehicles and aspects of their crash involvement. Innovative countermeasures to reduce crashes and injuries are suggested from these findings.

Project partners: Australian Transport Safety Bureau, Dept. of Transport and Regional Services, Royal Automobile Club of Victoria Ltd, Autoliv Australia, Roads & Traffic Authority (NSW), Ford Motor Company Australia Ltd, Transport Accident Commission (TAC) (Vic.), Holden Ltd, Toyota Motor Corporation, Department of Infrastructure, Energy & Resources (Tasmania), VicRoads, Motor Accidents Authority of NSW, National Roads and Motorists’ Association Ltd (trading as NRMA Motoring & Services), Insurance Australia Group (IAG), Mitsubishi Motors Australia Ltd, Australian Automobile Association (AAA) and Federal Chamber of Automotive Industries.

**VicRoads Project: Speed**

As part of its review of speed zoning practices, VicRoads’ Speed Limits Advisory Group contracted MUARC to review speed setting practices around the world, with a specific focus on school zones, shopping strips and country town centres. A report was subsequently prepared and is currently before the Group.

**ASFA Project: Aviation Safety**

The Aviation Safety Foundation of Australia (ASFA) has engaged MUARC to conduct a project that will improve data systems for general aviation, and thus improve safety. This is being achieved through the development of a new standardised insurance claim form, and the development of new investigative techniques for insurer-appointed assessors. These new investigative techniques are focused on the identification of systemic errors and are founded in the aviation safety domain. The final product will be an aviation safety database, and the data it provides will inform later stages of the injury prevention process via the development, implementation and evaluation of countermeasures aimed at improving general aviation safety.

**Driver Distraction**

There is converging evidence that driver distraction is a significant contributing factor in road crashes. During the year MUARC consolidated its position as Australia’s leading research organisation in this area. It undertook fundamental research to investigate the effects on driving performance and safety of driver interactions with new technologies, undertook risk audits for the government and private sector to establish the potential for distraction to compromise driver safety in vehicle fleets, prepared and spoke to a submission prepared for the Victorian Road Safety Parliamentary Committee Inquiry on Driver Distraction and contributed to the develop of international standards to limit distraction in car cockpits.

**Joint Project, NRMA-ACT Road Safety Trust, VicRoads and VMAC: Driver Training**

Traditional approaches to driver training focus on the young novice driver. Young passengers, however, are known to have a profound influence on driver safety and, through the driver, on their own safety. There is potential to change the current perception of the young passenger as a “back seat driver” into that of a “co-pilot” - and to train young drivers and passengers to operate as a team to enhance their safety. This project is the first in the world to explore Crew Resource Management (CRM) Training, used to train aviation aircrew, as a form of training for young drivers and passengers. Phases 1 and 2 have explored the applicability of this form of training to young drivers and passengers. Phase 3, which commenced during the year, will culminate in the development and evaluation of a CRM training module to be trialed in the ACT. Research also commenced into optimal ways to train hazard perception skills among motorcycle riders.
Industry & Government: Rural Safety

In 2005, efforts continued to focus on increasing the recruitment rates of participants into two large studies; the Farm Injury Risk among Men study, and the associated in-depth investigations of factors associated with farm machinery injury. Recruitment for both these studies is anticipated to continue until mid 2006, with final results available at the end of 2006. An investigation of the potential for technology to assist with managing child safety on farms was completed in 2005. The technical and practical feasibility of alarm systems to alert parents when young children wander away from the farmhouse was established. It appears that there are a number of products already on the market, which could be adapted for this purpose. The next stage would be testing these products in the agricultural environment to determine if the established specifications would be met.

Project collaborators/partners: NHMRC, University of Alberta Canada, Monash University Department of Epidemiology & Preventive Medicine, Rural Industries Research and Development Corporation, Institute of Agricultural Rural and Environmental Health, University of Saskatchewan, Canada (funded by the Health Research Council of Canada) and MUARC’s strategic development program.

NRMA-ACT Road Safety Trust: Experience and Confidence Vital for Older Women Drivers

“Three times more crashes on our roads because of an increase in older women drivers” said the Herald Sun headline in January 2005.

“This is not so,” says Dr. Jennifer Oxley, the manager of a study that lead to the story behind the headlines. “But some older women have specific problems that affect their driving.”

This project was funded by the NRMA-ACT Road Safety Trust and supported by COTA (ACT). Driving is a fundamentally important part of today’s society. While it is important for people to maintain their mobility and keep driving for as long as possible, it is also important to ensure that older drivers remain safe drivers by understanding the factors that may contribute to crash risk.

MUARC researchers investigated the issues surrounding the safety and mobility of older female drivers and identified the impacts of driving experience, driving practices, driving confidence, functional performance and health-related factors on crash risk.

The study reported that drivers with reduced functional skills 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.

The research also identified a number of measures aimed at maintaining the safe mobility of older female drivers including education materials for older drivers on ways to reduce crash risk and maintain mobility (e.g., adoption of safe driving behaviours), improvements to licensing procedures by appropriate identification of ‘at-risk’ drivers by licensing authorities, and improvements to the road environment to provide a safer transport system. For further information, the full report can be found at http://www.monash.edu.au/muarc.

VicRoads: The Enhanced Crash Information (ECI) Project

In 2001 the Victorian government released its “arrive-alive!” road safety strategy that targets a 20% reduction in deaths and serious injuries by 2007. One of the key initiatives outlined in the strategy document is the collection of more detailed crash data and the dissemination of these data to key road safety practitioners to arrive at a range of innovative and novel road safety solutions for Victoria.

The Enhanced Crash Investigation (ECI) project involves the in-depth investigation of 81 serious injury crashes and presentation of the findings in a de-identified format to multi-disciplinary Regional Case Review Panels.

The project was devised to serve as both a means of collecting more detailed information on critical crash types as well as an educational tool. It is hoped that from their participation panel members will gain a more holistic view of road safety, and road trauma and its consequences. A subsidiary objective is that through an enhanced understanding of all facets of crash occurrence, issues affecting road safety regionally can be dealt with more effectively and novel solutions to local crash problems can be found.

It is still early days to assess what the outcomes of the project. By its completion, however, these should
include: infrastructural improvements at a number of crash locations to help prevent future crashes, a deeper understanding of the key factors leading to vehicle crashes in Victoria and the issues which need to be tackled in order to reduce the incidence of serious injury crashes, a more holistic understanding of road trauma and its consequences amongst panellists, which in time seems likely to trickle down through their organisations and development of many new collaborations between stakeholder organisations.

**VicHealth/DHS: Victorian Injury Surveillance and Applied Research (VISAR)**

In 2005, responsibility for funding VISAR shifted from VicHealth to the Department of Human Services (DHS). VISAR collects and 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 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**

The three core data and information dissemination functions undertaken by VISAR are the production of the VISAR publication *Hazard* (three editions per year), the information request service and the VISAR website.

The three issues of Hazard in 2005 were: Preventing home fall injuries: Structural and design issues and solutions (Summer 2005 edition); Unintentional asphyxia (choking, suffocation and strangling) in children aged 0-14 years (Winter 2005 edition); and Consumer product-related injury (1): Playground equipment and trampolines (Spring 2005 edition).

The hard copy of *Hazard* was distributed to more than 1,300 Victorian (69%), interstate (19%) and overseas (12%) subscribers. Accessing *Hazard* through the VISAR website is increasingly popular; more than 160,600 hits were made to the pdf files of *Hazard* in 2005. The most popular editions covered sports injury, intentional injury, consumer product related injury, poisoning, burns and scalds, swimming pool safety and home falls injury prevention.

In 2005, the most frequently requested topics were: elderly falls, playground and play equipment injury, DIY home maintenance injury, home injury, dog bite, sports injury, poisoning, nursery furniture and equipment injury, off road vehicle injury and local community injury profiles.

**VicHealth/MUARC: VISAR’s Applied Research Program**

Although funding was not continued for this project in 2005, the VISAR staff committed to complete work on two studies (both part funded by Sport and Recreation Victoria): Call back study of serious injury in non-elite Australian Rules football in seasons 2004 and 2005 and A web-published database of sports countermeasure reviews.

VISAR staff also took prime responsibility for several recreational boating safety projects, part of a program of work funded by Marine Safety Victoria and for completing two studies investigating barriers to the wearing of personal protective equipment by skateboarders and in-line skaters funded by the Department of Human Services Public Health Grants Scheme and the City of Melbourne.
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. It is also 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.

**International Workshop on Drowning Prevention in China**

MUARC joined with the Chinese Centres for Disease Control and United Nations agencies, WHO and UNICEF, to conduct an International Workshop on Drowning Prevention in China on Nov 24—25 in Beijing. The workshop was the first formal function of MUARC’s WHO Collaborating Centre for Violence, Injuries and Disabilities. The highly successful workshop was attended by 55 international and Chinese participants, and provided a world first opportunity for a meeting of major players to discuss the prevention of drowning in a developing country.
The Monash University North Asia Group was the principal funder. A high profile opening including speeches by the WHO Country Representative, Dr Henk Bekedam, the UNICEF Country Representative, Dr Christian Voumard, the Deputy Director China Centres for Disease Control, Dr Hou Peisen, Minister Graham Fletcher, Deputy Australian Ambassador and Professor Joan OZanne-Smith. Joan and Carolyn Staines also presented papers, together with Chinese and other international researchers.

The workshop provided an opportunity for invited key people and agencies to explore the nature and magnitude of the drowning problem, review global drowning prevention successes and discuss a strategic approach to drowning prevention in China. The China Swimming Association and Olympic gold medallist Ms Qian Hong, contributed a swimming teaching and elite sports perspective, while the International Life Saving Federation, the Alliance for Safe Children and others presented a water safety perspective.

Speed Camera Use Internationally

Speeding is estimated to be a factor in about one-third of all fatal crashes occurring in the United States and is a significant contributor to road trauma in other jurisdictions. Research has shown that the use of speed cameras reduces motor vehicle speeds and the incidence of crashes, however speed cameras have been controversial wherever used. In collaboration with researchers from the US and UK, the Centre has examined the development of camera programs in Victoria and Britain and detailed the types of controversies that have arisen, the techniques used to address them, and what North America can learn from this experience.

This research was funded by the Insurance Institute for Highway Safety.

Trends in the crashworthiness of the NZ vehicle fleet

A principal focus of previous MUARC vehicle safety research has been to track historical improvements in the average crashworthiness of the Australian vehicle fleet by year of manufacture since 1964. New MUARC research has been able to quantify trends in the crashworthiness of the New Zealand vehicle fleet using a similar methodology. The New Zealand and Australian vehicle fleets differ significantly in their mix of vehicle makes and models as well as the standards they were manufactured to meet. In particular, New Zealand has a strong program of importing used vehicles into New Zealand (mainly from Japan) with these vehicles currently representing approximately two-thirds of newly registered light vehicles. The results of the research show that the level of absolute crashworthiness and trends on a year of manufacture basis were similar for used imports and for vehicles sold new in New Zealand. However, the absolute levels of crashworthiness and improvements by year of first registration for the imported used vehicles occurred some six years after those for new vehicles, a lag equivalent to the average age of the used imported vehicles over the study period. Overall during the study period (1964-2002), there was a statistically significant 50% improvement in the average crashworthiness of New Zealand light passenger vehicles with the majority of this improvement occurring between 1983 and 2002.

This research was funded by the Used Car Safety Ratings Committee.

Four-wheel drive vehicle crash involvement patterns - Australia and New Zealand

This project, funded by the RACV, aimed to assess the nature and impact of four-wheel drive (4WD) vehicle crash patterns on Australian and New Zealand roads. Previous MUARC analysis of crashworthiness has shown that 4WD drivers have a relatively low risk of serious injury when involved in crash types such as head-on collisions. However, 4WD vehicles are considerably overrepresented in rollover crashes and are relatively aggressive vehicles, which are more likely to kill or injure car drivers when in a head-on collision. This study found that, despite these shortcomings, there were a number of mitigating criteria in favour of 4WDs as a passenger vehicle, Firstly, despite the increasing size of the 4WD fleet, there did not appear to be a concomitant growing threat to car drivers. The reasons for this may be related to changes in the way that 4WDs are being used, and possibly to the growing number of smaller 4WDs in the fleet, gradually replacing the more aggressive large 4WDs. Analysis of trends in 4WD crash patterns showed that crash-involved drivers were tending to be less young and more female and that the crashes were becoming more urban: driver groups and locations that tend to have lower and less serious crash involvements.

Projecting passive safety effects of the New Zealand light vehicle fleet

The passive safety features of a motor vehicle consist of built-in safety features that protect the vehicle occupants from harm in the event that the vehicle crashes. As part of a road safety target-setting process in 2000, NZ road safety targets were set for a reduction in social cost of 15.5% associated with passive safety features of the light vehicle fleet by 2010. Since that target was set, MUARC produced new estimates of crashworthiness, allowing a more accurate projection of social cost reductions. This study developed a methodology for projecting changes in casualty rates associated with passive safety features, including the effects of two potential interventions: restrictions on cars allowed to be
imported into New Zealand and restriction of government fleet vehicles to those with superior crashworthiness.

**The EU - Safety Rating Advisory Committee (SARAC)**

A European Union project investigating criteria for the safety assessment of cars based on real world crashes. Professor Brian Fildes, Dr. Max Cameron and several Centre staff are involved in a suite of projects, which have been ongoing since the mid 1990s and which are due for completion in March 2006.

**Intelligent Transport Systems - International**

The Centre has established itself as the leading Australian organisation in this area, and has continued to forge collaborative links with ITS-related working groups for international agencies such as INRETS, the European Commission, the International Working group on Speed Control and the Japanese Worldwide Platform for Safe Speed Initiatives.

Dr Mike Regan and his research group have affiliations with the several European Committees - European Commission eSafety Working Group on Human Machine Interface (HMI), European Commission eSafety Working group on International Cooperation and the International Working Group on Speed Control (Europe).

In addition, Dr Regan and his group has networks with more than 30 human factors researchers in the European automotive industry (eg BMW, Volvo) and in academia (eg BAST Germany, TRL, UK).

**The French National Institute of Transport and Safety Research (INRETS)**

Dr. Cameron was invited to INRETS to compare and document the diverse modes of speed camera use in Australia, France, Britain and New Zealand, with the aim to evaluate the most effective in terms of reducing crashes and changing driver behaviour. He spent a month in Paris in October 2005. A delegation from INRETS visited the Centre in late 2005 to explore possible collaborative efforts in the 7th European Framework Program.

**Traffic Accident Causation in Europe (TRACE)**

MUARC’s Chair of Road Safety, Professor Brian Fildes, is an adviser and participates in working groups for the European Union project, run by the Laboratory of Accidentology and Biomechanics in Paris, as a sub-contractor to LAB.

**MUARC and the United States**

The Centre has two large ARC Linkage programs in far side protection and driver vision with project partners from the USA, Australia and New Zealand.

Professor Brian Fildes is also working on pedestrian collaborative research with Medical University of Hannover, Chalmers University in Sweden, Wayne State University in Detroit, Holden and Toyota and a head injury research program with Wayne State University, Detroit and Holden Innovation.

**International Forum of International Traffic Safety (INFATS)**

Professor Brian Fildes was a member of the Scientific Program Committee and delivered a keynote address to the International Forum of International Traffic Safety (INFATS) conference in China. This also established links in vehicle safety research with Hunan University in Changsha, province.

**WHO Consultancy in Vietnam - Da Nang and Hanoi**


**WHO/UNICEF World Report on Child and Adolescent Injuries**

Child injuries are a global public health problem. According to WHO Global Burden of Disease data, in 2002, more than 700,000 children under 15 were killed by an injury. Injuries are the leading cause of death for children after their first birthday. There is also high morbidity associated with childhood injuries: for every injured child who dies, there are several thousand children who live with varying degrees of disability.

In March 2005 WHO held a consultation meeting to which Professor Joan Ozanne-Smith was invited to discuss the development of a WHO strategy for child and adolescent injury prevention (a global call to action was launched in November 2005). At this meeting, participants unanimously agreed that a World Report, similar to those developed for road traffic injury prevention and violence and health, would be an important catalyst to raise awareness about this public health issue. Like the world reports before, this document could lead to the passing of a World Health Assembly resolution on child injury prevention and thereby encourage Member States to implement a strategy and national plans of action to address this growing problem.
Professor Ozanne-Smith was subsequently appointed to the Editorial Committee for the World Report on Child and Adolescent Injury Prevention which met for the first formal meeting in Geneva in November. The editors will oversee the production of the report from conceptualisation and development to launch.

Consultancy for World Health Organisation in Mongolia

Karen Ashby undertook a second short-term consultancy in Ulaan Baatar, Mongolia, from September 26 to October 9 2005, funded by the Western Pacific Regional Office of the World Health Organisation. Her consultancy involved reviewing progress made towards the implementation of a 12-month trial of an injury surveillance collection at the National Traumatological and Orthopaedic Teaching Hospital (NTOTH) in Ulaan Baatar, supervision of an intersectoral workshop designed to strengthen implementation of National Injury Program in rural Mongolia, and provision of training sessions on injury surveillance, violence and measuring disease and health.

Swedish National Road Administration

MUARC has been involved in several road safety projects with the SNRA, including one that led to the introduction into law of compulsory helmet wearing for bicyclists in Sweden.

MUARC has completed (under contract) several literature reviews for the SNRA and has placed staff there on short term assignments to assist with the knowledge transfer. MUARC regularly has SNRA staff “out posted” to Melbourne for collaborative efforts.

Beyond NCAP (New Car Assessment Program)

Euro NCAP assesses new vehicles for crashworthiness. Professor Fildes has been consulted on the new project - Beyond NCAP – which is investigating ways to further improve the rating system. As yet we have no formal contractual role.

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.

Organisation for Economic Co-operation and Development (OECD)

Professor Ian Johnston is working with the OECD group on “Achieving Ambitious Road Safety Targets” in Paris; at present they are examining models of how to get safety policy/practice more effective.

The United States

Professor Johnston was commissioned by the US Government to describe how Victoria has succeeded in reducing death and serious injury on the roads and to prepare a set of guidelines for US States to consider adopting. The report was circulated widely throughout the US in late 2005.
Every year the Centre welcomes academic and industry guests from around the world. These visits provide valuable collaboration opportunities. Some of those who visited in 2005 are detailed below.

In February, Jiangsu Provincial Center for Disease Control and Prevention, China (Director, Professor Hu Xiaoshu and Deputy Directors, Dr. Wu Ming and Dr. Wang Peihua) met with Professor Joan Ozanne-Smith and Virginia Routley in Melbourne to discuss collaborative programmes between MUARC and the National Centre for Non Communicable Disease (NCNCD). Nanjing, the capital of Jiangsu is one of two sites for Virginia’s PhD project on seat belt wearing rates in China. Jiangsu is the sister province of Victoria, with a population of 73 million. Professor Hu has since been promoted to the equivalent role of Vice Minister for Health in Jiangsu Province.

The Centre hosted a group of visitors from Japan for two days in April. Dr. Yamanaka is an emergency medicine paediatrician looking to establish a Japanese child injury surveillance system. Drs Nishida and Motomura from the National Institute of Advanced Industrial Science and Technology (AIST) discussed the prospect of a joint project, marrying VISAR data with software they have developed to model child injury scenarios.

A delegation from Zhejiang province, China, had a very successful visit to the Centre in July and was exposed to a cross section of injury prevention initiatives, with a focus on seat belts. In addition the delegation visited the TAC, the simulator, Victoria Police, Child Safety Centre and Poisons Information Centre.
The visitors were: Dr. Liqun Liu, Zheijian Provincial Centre for Disease Control & Prevention
Dr. Jiangyue Wang, Zhoushan Centre for Disease Control & Prevention
Dr. Min Yu, Division of Noncommunicable Disease Control & Prevention
Dr. Heping Zhang, Transport Police Division, Bureau of Public Security of Putou District
Dr. La Chen, Health Bureau of Putuo District

Collaboration on the Holden Research Program
Associate Professor Jikuang Yang, Chalmers University of Technology

Participation in the ARC Occupant Protection in Far Side Crashes Collaborative Partners project meeting
Dr. Joel Stitzel, Wake Forest Center for Injury Biomechanics, Virginia Tech
Dr. Brian Stemper, Medical College of Wisconsin
Professor Frank Pintar, Medical College of Wisconsin
Dr. Stephen Rouhana, Ford Research & Advanced Engineering
Professor Ken Digges, George Washington University
Dr. Ola Bostrom, Autoliv Development
Associate Professor Clay Gabler, Department of Mechanical Engineering, Virginia Tech.
Dr. Richard Morgan, National Crash Analysis Center, George Washington University
Dr. Jeffrey Augenstein, William Lehman Injury Research Center
Mr. Craig Newland, Commonwealth Department of Transport & Regional Services
Dr. Tom Gibson, Human Impact Engineering
Dr. Laurie Spark, Holden Innovation
Mr. Stu Smith, Holden Innovation
Professor King Yang, Bioengineering Center, Wayne State University

Participated in the ARC Vision & Driving Collaborative Partners Project Meeting
Dr. Matthew Rizzo, University of Iowa
Professor Joanne Wood, Queensland University of Technology

Attended discussions on the prevention of traumatic brain injury and MUARC seminar on current research activities of CDC
Mr. Wes Rutland-Brown, Centre for Disease Control & Prevention (CDC)

Attended MUARC to contribute to the in-depth machinery investigation project associated with the FIRM study
Mr. Eric Hallam, Director, Agricultural Health & Safety Program, Cornell University, Wisconsin
Dr. Mark Purschwitz, Research Engineer, National Farm Medicine Center, Wisconsin

Attended training for ANCIS recruitment
Ms Tanya Critchlow, Westmead Hospital, Sydney

From left: Prof. Brian Fildes, UAEU Vice-Chancellor
Dr Hadeef Bin Jouan Al-Dhahiri and Deputy Vice-Chancellor Dr Maitha Al-Shamsi
Prof. Stephen Parker and Prof. Ian Johnston

Visitors from the UAE met with MUARC staff

From left: Dr Chen La, Prof. Joan Ozanne-Smith, Dr. Wang Jianyu, Dr. Liu Liqun, Ms Virginia Routley (front), Dr. Yu Min and Mr. Zhang Heping
The media constantly calls on MUARC researchers for their expertise, seeking comment on issues from driver distraction and aviation safety to childhood poisonings and the prevention of falls in the elderly. Centre experts answered hundreds of requests from media organisations around the world in 2005 and more than 200 items and articles quoting centre researchers were published or broadcast in newspapers, magazines, and on radio and television news and current affairs programs throughout Australia and internationally.

The centre’s director, Professor Ian Johnston, was most in demand from the media, and commented frequently on issues including young drivers, speed cameras, and drink driving. Professor Johnston again featured in the speed campaign television commercials originally made in 2002 by the Transport Accident Commission. In 2005, the commercial continued to air and is now broadcast throughout Australia (except the Northern Territory) and in New Zealand.

In the commercial, Professor Johnston compared two cars travelling at 60 km/h and 65 km/h and the driver’s reaction time and stopping distances. The tagline was different in each jurisdiction — for example, ‘Speeding. What’s Your Excuse?’ in South Australia.

Professor Johnston also wrote an opinion piece for Monash University’s flagship publication, Monash Magazine, explaining why speed management is so controversial — yet so vital.

Much of the centre’s research is reported through the mass media, often in partnership. Such publicity means that the research can and does influence practice directly. A sample of our activity in 2005 is detailed below.

Professor Brian Fildes was quoted regularly on various matters, such as speeding, older drivers, vehicle safety, and driveway safety, while Dr. Mike Regan was in demand in the areas of driver distraction, road rage, intelligent vehicle safety technologies, and training for young drivers. Dr. Max Cameron was also quoted on the issue of young drivers.

Bruce Corben spoke on speed, pedestrian safety and roadside barriers, while Stuart Newstead discussed vehicle safety - often responding to questions about 4WDs.

The media interviewed Dr. Jude Charlton on child restraints and older drivers, while Dr. Narelle Haworth was a regular contributor on motorcycle issues in the news.

Among other media work, Professor Joan Ozanne-Smith Joan was interviewed by United Nations Radio (New York) regarding the Drowning Prevention Workshop in Beijing. Her group, including Karen Ashby, Lesley Day, and Erin Cassell regularly commented on injury prevention issues including playground safety, choking and suffocation, do-it-yourself home maintenance injuries, drowning, and farm safety.
Journalists came to MUARC in June to attend a WorkSafe Victoria launch of a campaign highlighting the dangers of forklifts in workplaces. The WorkCover Minister, Mr John Lenders, launched a manual called *Reducing the Risk - Forklift Safety*, based on MUARC research showing revealed forklifts had killed 54 Victorians since 1985 and injured many more.

Mr Lenders’ visit coincided with the launch of a new Occupational Health and Safety Act, which came into effect on July 1. He said the new OHS Act aimed to reduced workplace deaths and injuries and ensure a strong economy for Victorian businesses.

A Japanese NHK documentary team visited MUARC in April to discuss injury prevention and the role of injury surveillance. The documentary was triggered by the death of a child in a revolving door in Japan. It was shown on Japanese national TV.

MUARC media releases distributed during 2005 through Monash University’s Media Communications office were:

**February 2005 - Home is where the injuries are, says research**
Improved home design and construction and tighter building controls could lead to a significant drop in home fall injuries, according to a new Monash University Accident Research Centre report.

**May 2005 - Survey seeks to shed light on older motorcyclists**
The Monash University Accident Research Centre (MUARC) is seeking motorcyclists aged over 25 to participate in a study on riding patterns, attitudes to riding and accident involvement patterns.

**June 2005 - Collaboration raises bar on forklift safety**
The dangers of forklifts in Victorian workplaces are being highlighted in new industry guidance material launched at Monash University today by WorkSafe Victoria.

**June 2005 - Larger, heavier cars safer for drivers**
Drivers of larger or heavier cars are less likely to be injured or killed in a crash than the drivers of smaller vehicles, a study by researchers at Monash University has found.

**July 2005 - Overhaul motorcycle training and licensing – report**
Aspiring motorcyclists should have to hold a full car licence before obtaining a motorbike licence, a report from the Monash University Accident Research Centre has recommended.

**September 2005 - US farm machinery safety experts touring country Victoria**
Two US experts in farm machinery safety will tour regional Victoria next week to investigate the state’s world-leading model for tractor safety.

**October 2005 - Can exercise delay disability in the over 70s?**
A world-first study by Monash University is investigating whether exercise can delay the onset, or slow the decline, of disability in older people.

**December, 2005 - Keep on walking – but watch the road, say researchers**
Some older pedestrians are at increased risk of death or injury and need to adopt strategies to avoid dangerous situations, a new report by Monash University researchers shows.

The media’s increasing demand for MUARC experts has led to the centre seconding a media officer in 2006 to take a pro-active role in ensuring a consistent, positive message is sent about the centre and its important, expanding work.

**MUARC’S web site**
The Centre’s web site remains a major means of communicating its research. The site received more than 2.7 million hits during the year. Reports are now published directly to the site in pdf format and freely available - these pdf files received more than 240,000 hits. Information is sorted by broad topic as well as chronologically. Information about our staff, our annual report and generic information about the Centre are all of interest to our visitors. One of the subjects which attracts the highest rate of interest is the used car safety rating material. The Centre also welcomes feedback from visitors to the site and constantly updates the available material.
Research Training and Academic Program

Research training is a vital link in the injury prevention chain – and a valuable component of the advancement of knowledge and the development of the new leaders in the field of injury prevention.

The PhD program enriches the centre’s work and contributes to the knowledge pool in Australia and throughout the world. MUARC continues to provide graduate placements for high calibre students.

The PhD program continues to be a vibrant component of the centre’s research portfolio. The doctoral program enriches the work of the centre and importantly is building capacity in the injury research field for Australia and beyond.

The aim of the PhD program is to provide advanced multi-disciplinary training in the research and prevention of accidents and injuries. Candidates are pursuing their studies through the centre, or through relevant Monash University departments with MUARC co-supervision. The study program is designed to expand candidates’ expertise and paradigms beyond that of their undergraduate discipline, in recognition of the multidisciplinary nature of injury prevention research.

In 2005, Dr. Mike Keall was awarded his PhD for his thesis ‘Estimation and analysis of driver crash risk’. It described a method for driver risk estimation which was applied to New Zealand data to produce estimates of driver risk under different conditions. The results are providing essential direction for the development of road safety initiatives and policy in New Zealand.

We have continued to develop our supervision capacity in 2005, with five staff members completing the Monash University Supervision Training Program. In 2005 the student body established a student committee headed by their representative Jessica Killian and have established a system of regular student meetings where they give a short presentation on their PhD progress every two months.

Full-time PhD Candidates

Ben Brooks
Supervisors: Professor Tom Triggs, Professor Ian Johnston and Professor Tore Larsson
Title: ‘Culture and claims data: Building blocks for an OHS decision support group’

Small businesses typically have limited workplace injury experience, resources and time to conduct health and safety risk assessments or act on the results of these assessments.

This project aims to develop an on-line tool to assist businesses in their risk decisions. Information to support the tool has been gathered from workers’ compensation claims and ethnographic studies in commercial fishing and furniture manufacturing. If small businesses can use information in the database appropriately, this may reduce the frequency and severity of work related injury. Ben is due to submit in 2006. (Monash University Accident Research Foundation Peter Vulcan Scholarship)
Lyndal Bugeja
Supervisors: Professor Joan Ozanne-Smith and Mr. Graeme Johnstone (State Coroner of Victoria)
Title: ‘The role of coroners’ recommendations in injury prevention policy and practice in Victoria’

Australian deaths from external causes are legally required to be reported to the coroner for investigation. Since 1985, the Victorian Coroner’s Act has allowed coroners to formulate recommendations in relation to “matters of public health and safety”.

Without the term “prevention” in the Act, the coroner’s role in injury prevention is embryonic, driven mostly by individual coroners. There are examples where the coronial process has detected injury death trends, with effective countermeasures subsequently recommended and implemented. However, this process is ad hoc and its effectiveness is unquantified. This study aims to identify factors that influence the implementation of coroners’ recommendations in Victoria. Improvements in developing and implementing coroners’ recommendations have the potential to contribute significantly to injury prevention efforts.

Fiona Clay
Supervisors: Professor Joan Ozanne-Smith and Ms. 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” has been accepted to the Australian Health review. (NHMRC scholarship, VIC Health scholarship)

Clay Douglas
Supervisors: Professor Brian Fildes, Mr. Tom Gibson and Dr. Astrid Linder
Title: ‘Modelling far-side occupants in lateral and oblique impacts’

The cost and burden of injury from side impact crashes is a growing concern. And while research has focused on protecting occupants on the struck or near-side of the vehicle, less attention has been paid to protecting occupants on the non-struck or far-side.

Despite injuries to far-side occupants accounting for up to 40% of harm in real-world side impact crashes, countermeasures aimed at protecting far-side occupants do not currently exist internationally.

Generally, far-side occupants are left poorly restrained by traditional three-point seatbelts equipped to modern vehicles. As a result, injuries to the head, thorax and upper and lower extremities are commonly sustained as the occupant is thrown towards the point of impact.

An international research program was assembled involving many of the world’s experts in side impact protection and biomechanics. Under the umbrella of this program exists a sub-task to better understand far-side occupant biomechanics in lateral and oblique configurations.

This thesis aims to complement this effort to understand the injury biomechanics through the use of a human mathematical model. This human model will later be used to evaluate levels of occupant protection, optimise potential countermeasure designs, and investigate the interaction between adjacently seated occupants in side impact. (Australian Postgraduate Award (Industry))

Jessica Edquist
Supervisors: Professor Ian Johnston, Dr. Mike Regan and Dr. Tim Horberry
Title: ‘Driver distraction: The effects of visual clutter in the highway environment’

‘Visual clutter’ is often used as a potential problem in roadside environments, yet seldom defined. There are three suggested ways that visual clutter impacts on driving performance - by impairing visual search (e.g. for a particular street sign), by increasing driver workload, and by distracting drivers (e.g. billboards).

This project is investigating 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 and elderly drivers.

The project first explored drivers’ definitions of visual clutter through focus groups and ratings of clutter in various road scene photographs. At the end of 2005,
preparation was under way for a follow-up video experiment to check whether the results of the photo study hold true in a moving environment. This second study will also test whether there are differences of visual clutter noticed by novice, experienced and older drivers.

The results from the photograph and video studies will inform the design of an experiment using the driving simulator, to determine the effects of visual clutter on driving performance.

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, and the industry partner is the Department of Main Roads, Queensland. (Australian Postgraduate Award (Industry))

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 hip fracture: Feasibility of a novel fracture-preventing device’

Hip fractures of the proximal femur are one of the most serious health problems facing the aged population, so the development of the external hip protector has potential for hip fracture-prevention. But its effectiveness is limited by non-compliance.

This project is investigating the feasibility of an implanted hip fracture-preventing device to address limitations of the external hip protector. Such a device would function similarly to the external hip protector by combining shunting fall energy to muscle and passive attenuation.

A feasible site has been selected, and the rest of the study will focus on developing specifications of such a device by investigating the anatomical variation of muscle and using dynamic impact loading to quantify the energy attenuation properties of the relevant muscles. Surgical considerations of such an implant are also under investigation.

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’

The World Health Organisation currently ranks traffic crashes as the ninth leading cause of disability globally, and this is expected to increase to the third leading cause of disability by 2020. In Australia alone, approximately 22,000 people are admitted to hospital annually, and for every fatality, another 15 are seriously injured and another 70 sustain minor injuries in traffic crashes. This project seeks to examine how people admitted to hospital after being injured in a traffic crash recover over the first six-months post-accident, examining factors such as pain, depression, anxiety, daily living, return-to-work / study, and use of health services. The major theoretical orientation will be models of coping, such as Lazarus and Folkman’s transactional model of stress, the role of personality and biopsychosocial models of health.

By the end of 2005, 68 patients admitted to The Alfred, Dandenong Hospital and Monash Medical Centre (Clayton) were recruited to the study, with 64 completing the two-month post-discharge interview and 62 completing the six-month interview. The patient sample consists of drivers, passengers, motorcyclists, pedestrians and cyclists. The project is expected to be completed in mid-2006. (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’

The thesis combines research from a range of sources, including Victorian, Japanese and Dutch accident statistics. The project discusses a range of suitable time series methods to aid policy makers and other accident researchers to examine the effectiveness of past actions and forecasts future accident rates.

The “Latent Risk Model” (LRM), developed by Phillip and researchers from Holland, has also been further examined for the dissertation. Application of the model to a range of road crash and social sciences variables suggest that the LRM will have a range of epidemiological and general risk applications.

Phillip has built a model to forecast hourly vehicle counts on the Monash Freeway in Melbourne, which
provides for relatively accurate forecasting up to a few weeks ahead. It is hoped this model can be combined with accident counts to develop a time series relationship between traffic volume and accident frequency.

Phillip has had a productive year continuing his research in France and Australia, and is expected to submit in early 2006. (Baseline program scholarship)

Jessica Killian

Supervisor: Professor Joan Ozanne-Smith

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 per cent of the world’s deaths and 12 per cent of the world’s burden of disease in 2000.

It is known that drug and/or alcohol interactions cause an increased risk of mortality, but the full extent of the involvement of drugs across the whole range of injury deaths is mostly unknown.

The contribution of drugs and alcohol to unnatural deaths can now be described at a population level through the Australian National Coroners Information System (NCIS).

This study examines the presence and contribution of alcohol and drugs in external cause deaths from 2000 to 2004 in Victoria. So far, 5925 external cause deaths have been recorded, with more than 85% having toxicology documents attached. Preliminary results show that alcohol was found in the highest proportion of cases (68.9%) followed by morphine (29.9%), codeine (28.9%), diazepam (28.7%), paracetamol (21.3%) and heroin (8.9%). The most frequent external causes were road traffic, suicide, drowning, and falls.

This study provides, for the first time in Australia, a systematic examination of the epidemiology of licit and illicit drugs in injury deaths by external cause. The results of this research could assist with a coding system of drugs and/or alcohol in external cause deaths, improving the NCIS as a tool for alcohol and drug injury surveillance. (Australian Postgraduate Award)

Adam McKinnon

Supervisors: Professor Joan Ozanne-Smith, Dr. Jenny Sherrard 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 national 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.

Civilian and military injury surveillance systems inform injury prevention priorities and interventions but research is required to maximise their performance and utility. Previous research examining injury surveillance systems has focused on the technical design from an information collection viewpoint.

The current research aims to explore the potential gains in system utility by designing injury surveillance systems according to the needs of system users. Surveillance will be examined in three phases 1) systematic, ongoing collection 2) analysis and interpretation and 3) information dissemination. Through determining user needs the research will also be able to determine the extent to which current systems meet user requirements, assess system utility and reliability and develop recommendations for future systems development and improved user application. (Australian Postgraduate Award (Industry))

Eve Mitsopoulos

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 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.
Through continued research and development, intelligent transport systems (ITS) have gained support as a way of realising significant road safety benefits. Further, particular groups of high risk road users, such as young novice drivers, may benefit from specific ITS applications. The focus of the current research is on the potential use of ITS to aid calibration skill in young novice drivers.

To design appropriate ITS applications to aid the calibration of young novice drivers it is important to first ascertain the types, degree and source of miscalibration in such drivers.

An experiment was carried out in 2005 using the MUARC advanced driving simulator comparing the calibration skill of young novice drivers with that of experienced drivers, in two driving situations: car following and gap acceptance during right hand turns. Further experimental work will be carried out in 2006 and early 2007. The outcomes of the experimental series will be used to inform the design of ITS applications to aid calibration in young novice drivers. (Australian Postgraduate Award; Victorian Government Information and Communication Technologies Scholarship)

Sujanie Peiris
Supervisors: Professor Brian Fildes and Dr. Melanie Franklyn
Title: ‘Modelling the kinematics of children and child restraint systems during side and frontal vehicle impacts’

Biological data for children is very limited as it is difficult to perform experiments on child cadavers. Consequently, child dummies have predominately been developed using either animal studies or scaling techniques based on adult humans – meaning child crash test dummies may not necessarily accurately replicate the behaviour of a child during a crash. However, since these physical dummies are being used to develop vehicle safety countermeasures, it is important their biofidelity be investigated.

This study does this by using corresponding mathematical dummy models. Furthermore, depending on availability, a three-year-old child mathematical model may also be evaluated. All child/dummy mathematical models will be placed in a mathematical model of a forward facing child restraint that is currently being used in Australia. Real-world impacts will be modelled using the mathematical dummies/child and the ability of the dummies to predict the injuries sustained by children involved in the real-world impacts will be investigated.

Depending on the performance of the three-year old dummy/child models, it is anticipated that a more biofidelic model of a child will be developed as part of this investigation. This will involve obtaining more realistic tissue, bone and joint properties and incorporating this information into the model.

So far, sled tests and material tests have been performed, and a validated mathematical model of a child restraint has almost been completed. Furthermore, a number of child computer models have been accessed and are currently being evaluated. A number of real-world crash investigations databases have also been searched for real-world impacts that can be modelled. (John Lane Memorial Scholarship funded by the Monash University Accident Research Foundation)

Virginia Routley
Supervisors: Professor Joan Ozanne-Smith and Dr. 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 Chinese economy in the past 20 years, motor vehicles, road traffic accidents, deaths and injuries have increased considerably. It is now law to wear seatbelts where fitted, but estimates of seat belt wearing rates in China, particularly those undertaken by observational studies, are scarce. This study,
undertaken with the China Center for Disease Control collaboration, will measure the progress of seat belt wearing and changes in attitudes in Nanjing, Jiangsu Province and Zhoushan, Zhejiang Province. Occurring later in technological development than Victoria, the first state worldwide to mandate seat belt wearing, a comparison with the development of seat belt wearing in Victoria should give an indication of temporal and social differences in road safety development. It will inform wider seat belt uptake interventions in China.

After refining a survey design, establishing contractual and other project arrangements, and becoming familiar with the cities’ traffic, Virginia identified potential observation sites and methods. The results informed the baseline study and resulted in seat belt observations of more than 30,000 vehicles in the two cities. Seat belt wearing and attitude surveys are planned for April 2006. The final surveys are planned for April 2007. (Australian Postgraduate Award)

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. But drowning continues to be a major cause of unintentional injury deaths in developing countries.

This study ultimately aims to help prevent drownings in developing countries by looking at the experience of Victoria from early European settlement to the present. It seeks to identify both causal and preventive factors, and patterns of change, operating during this period. This study has drawn on historical information available from the records of inquests into drownings in the 19th and 20th centuries. Preliminary findings are showing marked patterns of change over time, with exposure to water hazards, supervision of children, infrastructure development, lifestyle changes and swimming ability appearing to be prominent factors.

The development of the community’s response to the drowning problem is also being investigated, using archival material and discussions with agencies associated with water safety and drowning prevention in Victoria. Preliminary findings of the study were presented at the 1st International Workshop on Drowning Prevention in China, held in Beijing in November 2005. (Monash Graduate Scholarship)

Wendy Watson
Supervisors: Professor Joan Ozanne-Smith and Professor Jeff Richardson (Centre for Health Economics, Faculty of Business and Economics)

Title: ‘Of life and limb: Measuring the burden of non-fatal injury’

Wendy, the first recipient of the John Lane Memorial Scholarship (2000) submitted her thesis this year. The study’s aim was to learn if current methods of estimating the burden of non-fatal injury at the population level were valid.

The investigation was prompted by concerns that governments were underestimating the burden of injury – and possibly prioritising incorrectly as a result.

Obviously, given the burden of non-fatal injury is increasingly the focus of clinical, preventive and health services research, it is important the correct measures are being used.

And indeed, the findings, to be published in 2006, suggest current methods do not provide valid estimates of the burden of injury and should not be used for public health priority setting in injury prevention until further research is done, and methods refined.

Part-time PhD Candidates

Mike Keall
Supervisors: Professor Brian Fildes, Professor Max Cameron and Mr. Bill Frith (Land Transport Safety Authority, NZ)

Title: ‘Estimation and analysis of driver crash risk’

Risk of traffic crash can be evaluated in various ways according to the purpose of the analysis. This project consists of a number of sub-projects that quantify risk in different ways. These include: the analysis of changes in risk associated with a particular road safety intervention (hidden speed cameras in NZ); estimation of changes in risk associated with driver blood alcohol concentration; an examination of older drivers’ risk associated with their performance in on-road driving tests; and an evaluation of risk of different driving groups in different driving environments.
**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 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 examines and assesses opportunities for using combinations of road infrastructure and speed moderation to create safe traffic environments for pedestrians. It is expected the thesis will be submitted in early 2006.

**Stuart Newstead**

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

In the battery of available statistical analysis methods, Generalised Linear Modelling (GLM) techniques have been well established for many years. GLM techniques offer the most appropriate analysis methods in a variety of settings that are not well catered for by older classical statistical methods. Many areas of applied statistical research have made powerful use of GLM analysis techniques. Notable areas include medical research, economic research and biological, and in particular genetic, research.

Examination of statistical analysis techniques commonly used in the road safety research field over the past few decades has revealed that this area of research has been relatively remiss in recognising the potential power of GLM analysis methods. Instead, much of road safety research has utilised inappropriate or outmoded statistical analysis techniques with little power and sophistication.

Consequently, an opportunity was identified to broaden the field of application of modern and powerful GLM statistical analysis techniques in road safety research through use in a number of studies carried out at the centre.

The thesis draws together papers demonstrating the development and application of some statistical GLMs in two key areas of road safety research. The first is the analysis of quasi-experimental evaluation designs for road safety program evaluation and the second assessment of vehicle secondary safety through the analysis of mass crash data sources. The thesis was completed and submitted for examination in November.

**Karen Scally**  
*Doctor of Psychology*

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

Title: ‘Parkinson’s disease and driving behaviour’
Students from other institutions co-supervised by MUARC staff

Simone Lewis  
*Co-supervisor: Professor Brian Fildes*  
Title: ‘Low severity neck injuries from side impacts’

This postgraduate project investigates low severity neck injuries from side impacts. It is a collaborative project between MUARC, Victoria University and Holden. The project uses real world crash data and human modelling to establish potential mechanism of injury.

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).

Graduate Seminar Series

Graduate students present seminars at key points throughout their candidature.

- January - Fiona Clay - “Predictors of return to work and work disability following injury”
- March - Sujannie Peiris - “Modelling the kinematics of children during side impacts”
- March - Jessica Killian - “Unintentional death and poisoning”
- April - Jessica Edquist - “Driver distraction: the effects of visual clutter in the highway environment”
- May - Damian Morgan - “Modelling risk factors for unintentional drownings of beach swimmers”
- June - Virginia Routley - “China Belting Up: An evaluation of the changes in seat belt wearing patterns in the Chinese cities of Nanjing and Zhoushan over three years in an environment of rapid motorisation”
- June - Carolyn Staines - “Drowning and its prevention in low and middle income countries”
- October - Mike Keall - “Estimation and analysis of driver crash risk”
- November - Wendy Watson - “Of life and limb: Measuring the burden of non-fatal injury”

Placements

Victorian Public Health Training Scheme (VPHTS)

Dianne Beck’s main focus during her placement at the Centre was on the epidemiology of injury from glass in furniture. As well as Victorian data, she obtained injury data from Queensland, the United
Dr. Rachel Tham, a dentist, undertook a five-month placement at the Centre working with Erin Cassell on traumatic dental injury surveillance at the Royal Dental Hospital of Melbourne and a literature review of mouthguards in sport.

Jonathon Ehsani completed a highly productive Victorian Public Health Trainee Scheme fellowship in December 2004. In November 2004, Jonathon went to Nanjing, China, where he undertook with Virginia Routley, a validation study of the methods for the PhD study on seat belt wearing and the results of this study have been prepared for publication.

He also conducted a study of despecification of motor vehicle safety features in China and India. His final study was a comparison of injury mortality rates by cause in the South-East Asian and Western Pacific regions and their sub-regions, resulting in findings of importance in planning child injury interventions in the regions, particularly with regard to drowning, road traffic injury and fires.

Michelle Sweidan joined MUARC in November 2004 for a four month fellowship, also under the Victorian Public Health Trainee Scheme. A pharmacist by initial training, Michelle will work on projects relating to child poisoning, and other relevant topics.

Sarah-Jane Blunt, a Health Promotion student from Deakin University, undertook an 80-hour practical placement from July to October, working with research staff engaged in the Victorian Injury Surveillance and Research program.

Undergraduate Research Programs

The MUARC Honours and Vacation Research Scholarship 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 foster links with other university faculties with students enrolling through their home disciplinary units while undertaking supervised research projects within the centre.

The 2004-2005 Vacation Research Scholars were Liam Fechner (a third year engineering student at Monash) who worked on vehicle safety issues with Professor Fildes and others in his research group, and Kristen Moore, a student in the Monash Sciences Scholar program, whose interest area is statistical analysis (supervisors Mr. Stuart Newstead and Dr. Judith Charlton).

The centre also hosted an Honours student from Monash Department of Mathematics, Angelo D’Elia, and a student from the University of Melbourne’s Advanced Medical Science program, Hui Chen Han.

Angelo undertook his thesis on the comparison of theoretical logistic regression models in the calculation of vehicle crashworthiness with Stuart Newstead and on completion of his degree; he has accepted a position as a research assistant at MUARC with Max Cameron’s group.

Hui Chen is working with Peter Hillard and David Logan investigating the potential for improving injury coding methods.

Peter Hillard and David Logan were joint "industry supervisors" for the following Mechanical Engineering student final year projects: Peter Parkes: "Rollover prevention and protection in Unimogs"; Rodney Huxtable and James Morgan: "Minimising occupant injury in a side impact crash"

Journal Club

The Journal Club, convened by Barbara Fox, met on the first Friday in the month eight times during 2005, reviewing articles on the following topics and presented by the following speakers:
• **February 2005:** Carolyn Staines: ‘Mothers’ home safety practices for preventing six types of childhood injury: What do they do and why?’
• **March 2005:** Jude Charlton: ‘The effect of visual field defects on driving performance.’
• **April 2005:** Eve Mitsopoulos ‘Do expert drivers have a reduced illusion of superiority?’
• **May 2005:** Damian Morgan ‘Pete’s story: interpreting the consequences of risk taking.’
• **June 2005:** Jessica Killian ‘Alcohol and drowning in Australia.’
• **August 2005:** Melanie Franklyn ‘Analysis of finite element models for head injury investigation: reconstruction of four real-world impacts.’
• **September 2005:** Jessica Edquist ‘Age differences in visual search for traffic signs during a simulated conversation.’
• **October 2005:** Jim Scully ‘Willingness to pay for reducing fatal accident risk in urban areas: an internet-based web page stated preference survey.’

The Journal Club meetings were well attended especially by PhD students, with an average of 12 persons per meeting.

**Lunchtime Seminar Series**

The following seminars were presented during 2005. 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.

**Thursday 20 January**
**Assoc. Professor Jikuang Yang**
Chalmers University of Technology, Sweden "From Accident to Safer Vehicle for Vulnerable Road Users"

**Wednesday 30 March** **Paul Salmon**
MUARC “From the Battlefield to Monash Freeway: Investigating the application of military-based Human Factors theory and methods in the road transport domain”

**Wednesday 20 April** **Ken Winkel**
Australian Venom Research Unit, University of Melbourne “Lessons for Global Snakebite Control from Studies in the Asia-Pacific”

**Wednesday 4 May** **Dr. Wes Rutland-Brown**
Centers for Disease Control and Prevention, National Center for Injury Prevention and Control Division of Injury and Disability Outcomes and Programs “CDC’s Traumatic Brain Injury Research”

**Wednesday 18 May** **Dr. Michel Bédard**
Canada Research Chair in Aging and Health, Department of Psychology, Lakehead University Canada “Driving and ageing”

**Monday 30 May** **Dr. Peter Burns**
Chief of the Ergonomics and Crash Avoidance Division at Transport Canada “Driver distraction”

**Wednesday 14 September** **Dr. Eric Hallman**
Director, Agricultural Health and Safety Program, Cornell University and **Dr. Mark Purschwitz**
Research Engineer, National Farm Medicine Center, Wisconsin. “Agricultural equipment safety in the United States - investigations, initiatives, and insights”

**Friday 14 October** **Jeff Augenstein**
Director Surgical ICU, Ryder Trauma Centre, Miami “Vehicle Safety Innovations as a Result of Road Trauma Research”

**Thursday 20 October** **Prof. Claes Tingvall**
Swedish National Road Authority (SNRA) “Traffic Safety in Sweden - new initiatives”

**Short Courses and Workshops**

MUARC conducted a short course on Injury Epidemiology and Prevention in April convened by Dr. Jenny Sherrard. Fourteen participants, including MUARC PhD students, attended the course.

The Adding Value to Injury Data Workshop in May, convened by Professor Joan Ozanne-Smith and funded by the MUARC Strategic Development Program, was attended by about 20 people from Victoria, NSW, WA and NSW as part of an initiative to stimulate new advances in this area.

**AusAID**

Two new Australian Youth Ambassador (AYA) assignments were taken up in 2005. These assignments were won by MUARC in partnership with WHO and UNICEF in China. The assignments were each for 12 months. Adam Craig followed in Jonathon Passmore’s footsteps in this role at WHO. Jonathon was a Victorian Public Health Training Scheme Fellow at MUARC before taking up his WHO, China AYA assignment in 2004. Alanna Chan was appointed to the UNICEF, China assignment commencing in October 2005.

Professor Joan Ozanne-Smith and senior WHO Geneva and UNICEF staff provide mentoring for the AYAs. Joan invited both Adam and Alanna in Beijing to discuss their assignments and progress.

*Postgrad students Eve Mitsopoulos, Clay Douglas, Jessica Killian and Jessica Edquist*
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

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Director, MUARC
Professor Ian Johnston

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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.

Postgraduate Research

**Current Scholarship Holders**

Peter Vulcan Scholarship: Ben Brooks - ‘Culture and claims data: building blocks for an OHS decision support group’

John Lane Memorial Scholarship - second recipient: Sujanie Peiris - ‘Modelling the kinematics of children and child restraint systems during side and frontal vehicle impacts’
**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.

Ms. Wendy Watson, the first recipient of the John Lane Memorial Scholarship (2000), funded by the Monash University Accident Research Foundation, submitted her thesis this year.

The aim of her project, *Of Life & Limb: Measuring the Non-Fatal Burden of Injury*, was to learn if current methods of estimating the burden of non-fatal injury at the population level were valid.

The study was prompted by concerns that governments were underestimating the burden of injury – and possibly prioritising incorrectly as a result.

“Given the burden of non-fatal injury is increasingly the focus of clinical, preventive and health services research, it’s important the correct measures are being used,” she said.

Ms. Watson’s findings, to be published next year, suggest current methods do not provide valid estimates of the burden of injury and should not be used for public health priority setting in injury prevention until further research is done, and methods refined.

**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.

**Donations**

The Foundation received a $10,000 donation from Bosch at the Active & Passive Forum in November, MUARC Director, Professor Ian Johnston attended the forum and was delighted to accept the cheque on the Trustee’s behalf. The donation funds will be used for road safety research.

**Travel Scholarship**

Dr. Eric Hallam, Director of the Agricultural Health and Safety Program at Cornell university, New York, and Dr. Mark Purschwitz from the National Farm Medicine Centre, Wisconsin USA, visited MUARC as part of a trip to Australia to investigate the relatively successful approach being taken to reducing tractor related roll over deaths on farms. Dr. Purschwitz’s visit was partly sponsored by the Foundation. While at the Centre, they gave a joint seminar on US agricultural equipment safety, and joined meetings and on-site inspections for the farm machinery in-depth investigation study. As both Dr. Hallam and Dr. Purschwitz are agricultural engineers and have worked for tractor manufacturers, their input and advice was very helpful. They also provided some useful contacts in the agricultural manufacturing industry in the United States. After leaving the Centre, they toured regional Victoria to explore organisation and technical issues associated with modifications to tractors, as well as meeting farmers, machinery dealers and WorkCover officers.

The 2005 Foundation Annual Report will be available from the Centre’s website at [www.monash.edu.au/muarc](http://www.monash.edu.au/muarc)
# Statement of Income and Expenditure

## Balance as at 1 January, 2005

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<tbody>
<tr>
<td>Department of Education, Science &amp; Training</td>
<td>1,124,247</td>
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<td>Australian Research Council</td>
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<td>Monash University internal transfer$^1$</td>
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## Income

### $8,466,821

## Expenditure

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<td>Salary and related</td>
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<td>Capital Expenditure</td>
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<td>Other operating</td>
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## Balance at 31 December, 2005

$-7,866,768$  

$2,239,801$

$^1$Accommodation and other services which were previously supplied as in-kind university support have been replaced by overhead costs. The university has also provided a transfer of funds to substantially offset these charges.

$^2$ 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 2005.

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 2005 for expenditure that will be incurred in 2006.
Appendix A
Project Steering and Project Advisory
External Committee Members

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

<table>
<thead>
<tr>
<th>Project Representative</th>
<th>Project Representative Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Gibbons</td>
<td>Department of Justice</td>
</tr>
<tr>
<td>Peter Keogh</td>
<td>Victoria Police</td>
</tr>
<tr>
<td>Philip Swann</td>
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<tr>
<td>Dimitra Tapsas</td>
<td>Royal Automobile Club of Victoria (RACV) Ltd</td>
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<tr>
<td>Richard Thiele</td>
<td>Transport Accident Commission</td>
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Analysis of fatal drug crashes

Behaviour, Travel and Exposure

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<tr>
<th>Analysis of fatal drug crashes</th>
<th>Behaviour, Travel and Exposure</th>
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</thead>
<tbody>
<tr>
<td>William Gibbons</td>
<td>Peter Keogh Victoria Police</td>
</tr>
<tr>
<td>Peter Keogh</td>
<td>Pat Rogerson VicRoads</td>
</tr>
<tr>
<td>Philip Swann</td>
<td>Robyn Seymour Royal Automobile Club of Victoria (RACV) Ltd</td>
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<tr>
<td>Dimitra Tapsas</td>
<td>Richard Thiele Transport Accident Commission</td>
</tr>
<tr>
<td>Richard Thiele</td>
<td>Tricia Williams VicRoads</td>
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</table>

Baseline Program Committee

Cerebro-Spinal Injury During Competitive Dive-in

<table>
<thead>
<tr>
<th>Cerebro-Spinal Injury During Competitive Dive-in</th>
<th>Cerebro-Spinal Injury During Competitive Dive-in Organisation</th>
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<tr>
<td>Ron Bongetti</td>
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</tr>
<tr>
<td>John Kilpatrick</td>
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<td>Brendan Lynch</td>
<td>Swimming Australia</td>
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Crashworthiness Ratings

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<tr>
<td>Barbara Bibby</td>
<td>Land Transport New Zealand</td>
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<td>Iain Cameron</td>
<td>Office of Road Safety Western</td>
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<tr>
<td>Michael Case</td>
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<tr>
<td>Samantha Cockfield</td>
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<td>Julian del Beato</td>
<td>Royal Automobile Club of Victoria (RACV) Ltd</td>
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<td>Angus Draheim</td>
<td>Queensland Transport</td>
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<td>Roger Farley</td>
<td>Office of Road Safety Western</td>
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<td>Christopher Jones</td>
<td>Association Limited</td>
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<td>the late Andrew Justice</td>
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Baseline Program Committee

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<tr>
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<td>La Trobe University</td>
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<td>Carol Armitage</td>
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<td>Claire Austin</td>
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<tr>
<td>Raye Boyle</td>
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<tr>
<td>Louise Dooley</td>
<td>Office for Senior Citizens</td>
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<td>Daniel Du Plessis</td>
<td>Office for Senior Citizens</td>
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<tr>
<td>David Evans</td>
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<td>George Fairbairn</td>
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<tr>
<td>Lesley Frederikson</td>
<td>NZ Association of Gerontology</td>
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<td>John Gibson</td>
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<td>Scott Thomson</td>
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<tr>
<td>Graham Woods</td>
<td>Khandalla Medical Centre</td>
</tr>
</tbody>
</table>
Staff members Melanie Franklyn and Anthony Clark
Appendix B
Publications and Presentations

MUARC Report Series
Senserrick, T. & Haworth, N. (2005) Review of literature regarding national and international young driver training, licensing and regulatory systems, Monash University Accident Research Centre, Report No. 239

Books and Book Chapters


Peer Review Journal Articles


Cassell, E., Ashby, K., Gunatilaka, A. & Clapperton, A. (2005) ‘Do wrist guards have the potential to protect against wrist injuries in bicycling, micro scooter riding and monkey bar play?’ Injury Prevention (11), pp200-203


Keall, M., Frith, W. J. & Patterson, T. L. (2005) ‘The contribution of alcohol to night-time crash risk and other risks of night driving’, Accident Analysis & Prevention, 37, pp816-824


**Other Journal Articles**


Peer Review Conference Papers


Other Conference Publications


Other Published Reports


Day, L. & Rechnitzer, G. (2005) Safe access platforms for tractors, Rural Industries Research and Development Corporation (RIRDC), No 04/180


Sponsor/Consultant Reports (restricted access)


Fotheringham, N., Lenné, M., Logan, D. & Haworth, N. (2005), A targeted review of the use and perceived safety benefits associated with fitting seat belts on trains, Monash University Accident Research Centre, Report prepared for the Department of Infrastructure

Haworth, N., Lenné, M. & Mulvihill, C. (2005), Interim evaluation of drug driving testing program, Monash University Accident Research Centre, Report to Victorian Department of Justice

Haworth, N., Newstead, S. & Brennan, C. (2005), Benefit to cost estimates for increasing the safety specifications of VicFleet vehicles, Monash University Accident Research Centre, Report prepared for Transport Accident Commission


Hosking, S., Regan, M., Triggs, T., Horberry, T. & Young, K. (2005), The effects of flashing amber arrow turn control traffic signals on pedestrian safety, Monash University Accident Research Centre, Report to RTA NSW


Langford, J., Fotheringham, N. & Corben, B. (2005), Speed limits in school zones, shopping strips and rural towns - a desktop review, Monash University Accident Research Centre, Contract report to VicRoads

Langford, J., Koppel, S., Charlton, J., Fildes, B. & Oxley, J. (2005), Explaining the association between mileage driven and crash risk for older drivers, Monash University Accident Research Centre, Contract report for VicRoads


Lenné, M., Fotheringham, N. & Corben, B. (2005), Exploring a legal definition of intoxication based on BAC, Monash University Accident Research Centre, Contract report for VicRoads

Lenné, M., Salmon, P., Regan, M., Haworth, N. & Fotheringham, N. (2005), The AVSAFE Research project: Stage 1-Review of General Aviation accident and incident reporting to inform database development, Monash University Accident Research Centre, Report to Aviation Safety Foundation of Australia, ATSB, BHP Billiton and Civil Aviation safety Authority

Oxley, J. & Corben, B. (2005), Pedestrian safety and vehicle speeds - Clayton Campus, Contract report prepared for Monash University Facilities and Services


Regan, M., Mitsopoulos, E., Triggs, T., Young, K., Duncan, C. & Godley, S. T. (2005), Provus’ discrepancy evaluation of the DriveSmart novice driver CD-ROM training product, Monash University Accident Research Centre, Report to TAC


Regan, M., Young, K. & Johnston, I. (2005), Review of knowledge relevant to the terms of reference of the Parliamentary Road safety Committee Inquiry into driver distraction, Monash University Accident Research Centre, Report to VicRoads
Regan, M., Young, K., Jontof-Hutter, Triggs, T., Tomasevic, N. & Hosking, S. (2005), *Effect of Intelligent Speed Adaptation on experienced and inexperienced drivers: A simulator study*, Monash University Accident Research Centre, Report to TAC


Stephan, K., Lenné, M. & Corben, B. (2005), *The effectiveness of repeater speed signs in the Melbourne CBD: literature review to inform study design*, Monash University Accident Research Centre, Contract report for Transport Accident Commission


Young, K., Regan, M. & Salmon, P. (2005), *Mobile phone use while driving: Options paper to inform Orica policy*, Monash University Accident Research Centre, Report to Orica Consumer Products

Presentations


Charlton, J. & Koppel, S. (2005) ‘Visual Search patterns in Younger and Older Drivers’, RMIT School of Health Sciences (Division of Psychology and Disability Studies) Research Colloquia, 11 August


Clay, F. (2005), Vocational Strategies Group, Transport Accident Commission, 10 February

Corben, B. & Oxley, J. (2005) ‘Road safety for the local community: Mobility, safety and independence’, Strength training group [Invited presentation], Caulfield Hospital, 1 July

Day, L. (2005), Monash University Advancing Women in Research Seminar Series, 1 June

Day, L. (2005) ‘Challenges in recruiting study participants through hospital emergency departments: the Farm Injury Risk among Men study’, Seminar for the Institute of Agricultural Rural and Environmental Health, University of Saskatchewan, Saskatoon, Canada., 9 December

Day, L. (2005) ‘MUARC’s farm injury prevention research program’, Farm500 workshop hosted by the National Trauma Research Institute, Alfred Hospital, 21 July


Fitzharris, M. (2005) ‘Consequences of traffic crash injuries - a role for perceived responsibility, pain & coping strategies on depression severity’, Alfred Psychiatry Research Centre, 21 October
Fitzharris, M. (2005) ‘Helping to design safer vehicles: Trauma research at MUARC’, LaTrobe University Graduate Nursing School, National Trauma Research Institute, The Alfred, 19 October


Haworth, N. (2005) ‘Barriers to improved light and heavy vehicle fleet safety and how to overcome them’, Australasian Road Safety Research Policing Education Conference Workshop on Heavy and light vehicle safety, Wellington, 16 November


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Brian Fildes presenting at the Fourth International Forum of Automotive Traffic Safety in China
Logan, D. (2005) 'Real World Crash Investigations', Mechanical Engineering final year students, Monash University, 7 March
Logan, D. (2005) 'Real World Crash Investigations', Year 10 Science students, Rowville Secondary College, 5 October
Logan, D. (2005) 'Real World Crash Investigations and 4WDs', Rotary Club, Croydon, 6 December
Oxley, J. (2005) 'Assessing older drivers' fitness to drive', VFPM meeting [Invited presentation], Colac, 19 October
Oxley, J. (2005) 'Older road user research at MUARC', Lunch-time seminar series [Invited presentation], Department of Psychology, Swinburne University, 18 May
Ozanne-Smith, J. (2005) 'Injury surveillance and prevention: international experience', Centre for Disease Control, Zhejiang Province, PR China, 12 April
Regan, M. (2005) 'Driver distraction', Seminar, Western Australian Chapter of the Australasian College of Road Safety [Keynote presentation], Perth, 12 December
Regan, M. (2005) 'Driver distraction, road user behaviour and human factors', Institute of Transportation Engineers 2005 Annual Meeting and Exhibit [Invited presentation], Melbourne, 7-10 August
Regan, M. (2005) 'Intelligent technologies in vehicles - human factors and safety issues', LaTrobe University. Ergonomics and Systems Safety Unit, [Invited presentation], 1 September
Regan, M. (2005) 'In-vehicle driver distractions', Driver Fatigue and Distraction Workshop, Australasian Road safety Research, Policing and Education conference [Invited presentation], Wellington, New Zealand, 16 November
Regan, M. (2005) 'Removing obstacles to the deployment of vehicle e-safety technologies', Smart Demo 2005 Exhibition and Conference [Invited presentation], Adelaide, 29-30 September
Regan, M. (2005) 'TAC SafeCar project: Aims, methods and findings', Professional Development Seminar, Transport Accident Commission Resolution Division, [Invited presentation], 8 June
Regan, M. (2005) 'Technology, distraction and the future of driver training and education.' Professional Driver Training Association of Victoria Annual Conference [Invited presentation], Melbourne, 9 October
Regan, M. (2005) 'Vehicle Intelligent Transport Systems: The Human Factor', Engineers Australia (Education Week), Melbourne, 19 August
Sharwood, L. (2005) 'Roadside to resuscitation to roadside', The Alfred Hospital Research Week, [poster], November
Sharwood, L. (2005) 'Roadside to resuscitation to roadside', NTRI Trauma Research Symposium, [poster], November
Appendix C
Staff Membership of Boards and Committees

• Association for the Advancement of Automotive Medicine, Chicago, Illinois, Scientific Program Committee, Member (B. Fildes, J. Charlton)
• Association of Tertiary Education Management (N. Paramanis)
• Australian Institute of Management (N. Paramanis)
• 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)
• Australian Research Management Society (N. Paramanis)
• Brain Foundation Victoria, Board of Directors (J. Charlton)
• CEA/EC International Safety Rating Advisory Committee (SARAC), Munich, Germany, Members (M. Cameron, B. Fildes)
• Child and Youth Injury Prevention Alliance, Member (E. Cassell)
• 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)
• Fleet Safety Forum, Member (N. Haworth)
• Human Factors and Ergonomics Society of Australia, National Awards Committee (T. Triggs)
• International Journal of Injury Control and Safety Promotion, Editorial Board (J. Ozanne-Smith, V. Routley)
• Injury Prevention, Editorial Board (P. Vulcan, L. Day)
• Injury Prevention Research Institutes of Australasia (I. Johnston (Member), J. Ozanne-Smith (Chair))
• 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 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 University’s Roads and Traffic Sub-committee (B. Corben)
• Monash University’s Roads and Traffic Sub-committee (B. Corben)
• 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)
• Older People Injury Prevention Reference Group convened by the Victorian Department of Human Services (L. Day)
• Road Engineering Association of Asia and Australasia, International Governing Council (I. Johnston)
• Road Safety Reference Group, Victoria, Member (I. Johnston)
• Road Safety Research Steering Group, Transit New Zealand, Corresponding Member (M. Cameron)
• Scientific Committee 8th World Conference on Injury Prevention and Safety Promotion, Durban South Africa 2006, Member (J. Ozanne-Smith)
• Standards Australia Committee CS-072 Safety in House Design (J. Ozanne-Smith)
• Standards Australia Committee SF 21*: Human Factors and Control Systems (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)
• 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 Farmers Federation, Member (W. Baker)
• Victorian Motorcycle Advisory Council, Minister for Transport, Member (N. Haworth)
• Victorian Public Health Research and Education Council, Member (J. Ozanne-Smith)
• Victorian Public Health Training Scheme, Member (J. Ozanne-Smith)
• Victorian Safe Communities Network, Member Executive (E. Cassell)
• WHO international expert consultation on estimating the economic burden of interpersonal violence, Geneva, Switzerland, April 4-5, 2005 (W. Watson)
• WHO World Report on Child and Adolescent Injury Prevention, J. Ozanne-Smith (Co-editor)

Opposite: Linda Watson and Stuart Newstead discuss the car safety rating data