Preventing injuries, Saving lives, Building futures
THE Monash Injury Research Institute is one of the world’s most comprehensive injury prevention research endeavours.

It is unique in being grounded in scientific and academic excellence, while producing research which has real-life implications that are often translated into policy – whether it's dealing with falls among older people or studying the use of braking systems on motorcycles.

MIRI incorporates the highly respected Monash University Accident Research Centre (MUARC) and other key Monash researchers and groups.

Because of the breadth of our research, MIRI has a strong national profile and an increasingly prominent international one. The institute identifies emerging injury problems, monitors progress, determines and evaluates solutions and advises on safety strategies.

MIRI is designed to encourage our experts to actively collaborate in solving pressing, practical problems – a collaboration that allows our external partners access to expertise across their field of interest.

Our main research focus covers:
- Disaster resilience
- Home, sport and leisure safety
- Injury outcomes
- Patient safety
- Transport safety
- Violence and suicide prevention

These research areas are designed to meet the range of challenges that comprise injury prevention and treatment, targeting the causes of both intentional injury (violence and suicide prevention) and unintentional injury (transport safety, home, sport and leisure safety, workplace safety and transport safety).

At MIRI, we focus on both the prevention of injury as well as the treatment and recovery from injury (injury outcomes).

We have already made Australia and Australians safer. Now, we are harnessing Monash University’s global perspective and presence on four continents to help meet the challenges of public health around the world.

We strive to become an international solution to the problems of health and safety.

This Annual Report shows our achievements in 2014 and hints at greater results to come.

Mission statement

Through high-standard research and independent recommendations, to challenge and support citizens, governments, industries and other organisations to eliminate serious health losses due to injury from all causes.
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MIRI was established in 2011 as a whole-of-university initiative to address injury prevention in all settings. The Institute’s mission is to challenge and support people, government, industries and other organisations to eliminate serious health losses due to injury from all causes. Put simply, MIRI helps to save lives and prevent injury. There are few more important tasks; injury is the leading cause of death among young Australians and the fourth leading cause of death for all groups combined.

In just a few years, MIRI has established a proud record of producing significant benefits in Australia and overseas, both by preventing injuries from happening or reducing their effect when they do occur. The Institute goes from strength to strength in both producing groundbreaking research and in its ability to build strong and collaborative relationships with governments, industry and communities.

The work of MIRI exemplifies one of the University’s principal goals: to achieve impact through excellence. This year has been no exception. The work of the Institute has directly influenced policy and decision making in a wide range of settings – a new UN vehicle design regulation, vehicle standards and training in the taxi industry, the formation of Australia’s first Gender and Disaster Taskforce, used car safety ratings to guide consumer choice, schedules for random breath testing, new designs for railway level crossings, training and education in falls prevention for health and community services, and provision of targeted support for post-injury recovery.

It was with much regret that we said goodbye this year to Professor Rod McClure after seven years as MIRI Director. Rod’s contribution has been enormous – as a distinguished researcher, a creative and generous leader, a wise and engaging colleague, and an outstanding ambassador for the work of MIRI and Monash. Since Rod’s departure to take up a position at the Centers for Disease Control and Prevention in the United States, the Institute has been fortunate to be able to call on the expert leadership of Professor Lesley Day as Acting Director. I would like to congratulate the Institute’s entire academic and professional staff on their achievements and efforts this year and I look forward to what will be an exciting 2015 as MIRI continues to play a crucial role in saving lives around the globe.

Professor Pauline Nestor
Chair, MIRI Board
Senior Vice Provost and Vice Provost (Research)
Monash University
Our Board

The MIRI Board is committed to ensuring the institute stays focused on addressing the prevention of injury in all settings.

Professor Pauline Nestor
Senior Vice Provost and Vice Provost Research, Monash University. Professor Nestor attended Oxford University as a Rhodes Scholar and completed her Masters and Doctorate degrees in nineteenth-century English literature and culture. She was a foundation board member of the Victorian Registration and Qualification Authority and a member of the Victorian Higher Education Accreditation Committee, and has been a member of the ARC College of Experts.

Professor Lesley Day
is Acting Director at the Monash Injury Research Institute (MIRI), Monash University. She is also head of two research units at MIRI: the Falls Prevention Research, and Victorian Injury Surveillance Units, and is supporting the development of occupational injury research at MIRI. As a public health researcher, Lesley has broad expertise in injury epidemiology and the design and evaluation of injury interventions.

Professor Gary Magee
is Professor of Economics and Deputy Dean (Research) in the Faculty of Business and Economics. He is a former Director of the Asian Economics Centre at the University of Melbourne, Head of the School of Economics and Finance at La Trobe University, and Associate Dean (Graduate) in the Faculty of Business and Economics at Monash.

Professor Bryan Horrigan
is Dean of the Faculty of Law at Monash University. He holds a doctorate in law from Oxford University as a Rhodes Scholar and has both academic and professional experience in public and corporate law and governance from Australian, transnational, and cross-disciplinary perspectives.

Professor John Thwaites
is a Monash Professorial Fellow and Chair of both ClimateWorks Australia and the Monash Sustainability Institute. He is a consultant at Maddocks Solicitors and he chairs the Australian Building Codes Board.

Professor Maria Garcia De La Banda
is the Deputy Dean of the Faculty of Information Technology at Monash University. She is internationally recognised for her research in Declarative Programming Analysis & Modelling, has been Chief Investigator in nine national competitive grants, is Area Editor of the Journal of Theory and Practice of Logic Programming, and has many highly cited publications.

Professor Cristina Varsavsky
holds an education focused position and is currently Deputy Dean of the Faculty of Science. Her interests in the scholarship of learning and teaching include broad areas of mathematics and science education, and science and mathematics teacher education.

Professor Ross Coppel
is Deputy Dean and Director of Research of the Faculty of Medicine, Nursing and Health Sciences at Monash University. He is internationally recognised for his work in the fields of malaria and primary biliary cirrhosis. He is a Fellow of the Academy of Health and Medical Sciences and a member of the NHMRC Research Committee.

Professor Kate Smith-Miles
is an ARC Australian Laureate Fellow and Director of MAXIMA at Monash University. She is an applied mathematician, internationally recognised for her work in optimisation, data mining, and applying mathematics to tackle interdisciplinary problems from diverse fields including the biological sciences and engineering and economics applications.

Professor Lesley Day
is a former Director of the Asian Economics Centre at the University of Melbourne, Head of the School of Economics and Finance at La Trobe University, and Associate Dean (Graduate) in the Faculty of Business and Economics at Monash.
This has been a year of change and growth. Early in the year, we farewelled our Director, Professor Rod McClure, after seven years at MIRI. It was under Rod’s guidance and with his vision that MIRI was formed in an effort to establish the environment, capacity and mechanisms for translating injury research into sustained prevention practice. Rod’s commitment to academic rigour and his practice of nurturing, challenging and extending PhD students and early career researchers was highly valued. We wish him the best in his new leadership position at the Centres for Disease Control and Prevention in the United States.

In an exciting development, the Institute’s Monash University Accident Research Centre (MUARC) this year commenced its largest Transport Accident Commission (TAC) funded project to conduct a major study into the causes of serious injury motor vehicle accidents. The launch of the study provided the opportunity to host the first MUARC-TAC Road Safety Symposium.

This year we also formed a collaboration with Victorian Country Fire Authority (CFA). The collaboration seeks to contribute to evidence-based policy and practice in community fire safety. The initial stages of this research focused on CFA’s transition from a response-effectiveness approach to a community outcomes-based approach, which aligns with broader changes in the emergency management sector.

Our higher degree student body this year reached a peak of 44 enrolments. We have three PhD scholarships named in honour of former eminent research leaders – John Lane, Peter Vulcan and Tom Triggs. An event held to present the recipients with their scholarships symbolised the adage that we stand on the shoulders of those who came before us, but also look to our students for the future.

Late in the year, we farewelled Professor Michael Lenne who led our Human Factors team for 11 years. During that time, Mike led a shift to a mixed model of grant and contract research, expanded the team, and significantly increased the team’s academic output. Mike very successfully worked with industry and government clients to deliver academically robust research that is eminently translatable to policy and practice. Mike has taken up a research position in industry and maintains an adjunct appointment with Monash.

We are pleased to announce the appointment of Tim Horberry as Professor (Research – Human Factors), who will join us in March 2015. Tim will head the MUARC human factors team and provide strategic direction for MUARC’s simulation facilities.

At MIRI, we believe in what we do. Our success is largely attributable to the high calibre and steadfast commitment of all our staff. I congratulate Michael Fitzharis, Eva Alisic and Sharon Newnam on their 25 year Monash University service medals.

I am enormously grateful for the support of all our staff which has enabled MIRI to function efficiently and successfully during a year of change. I’m sure that readers of this report will see why it has been a privilege to lead this organisation, even for a short time.
Year in review

This year has been one of significant achievement for the Monash Injury Research Institute. Under Acting Director Professor Lesley Day, MIRI continued to strengthen its relationship with government and industry across all areas of injury prevention.

A highlight of 2014 was the launch of the Enhanced Crash Investigation Study (ECIS), funded by TAC.

Findings from this unprecedented three-year study will be used to reduce the incidence of serious injury crashes as the Victorian Government aims to reduce road trauma by 30 per cent by 2022. The ECIS will examine more than 400 serious injury crashes in detail to gain an in-depth understanding of what causes such crashes.

More than 5000 pieces of information relating to each crash will be collected and used to determine how and why crashes occur. Associate Professor Michael Fitzharris will lead the study.

Projects began this year in MIRI's collaboration with the Country Fire Authority (CFA). The collaboration aims to contribute to evidence-based policy and practice in community fire safety. Work this year included an assessment of current data quality at CFA, statistical modelling of residential fires in CFA's Fire Incident Reporting System, and evaluation.

Early findings indicated that people living in high-risk areas might be underestimating the risk of bushfire to their homes and property. The concept of preparation for bushfire will be further explored in 2015.

In August, MIRI hosted the World Health Organisation Western Pacific 2014 Road Safety Training Program. Delegates from Cambodia, China, Malaysia, Vietnam, Laos, the Philippines, Mongolia and Samoa attended the event. The delegates, pictured below, heard presentations on issues including speed and alcohol, bicycle helmets, motorcyclists’ protective clothing, and child safety restraints.

MIRI hosted delegates at the World Health Organisation Western Pacific 2014 Road Safety Training Program.
Key projects carried out during the year included:

- A Victorian Injury Surveillance Unit (VISU) study that was the first comprehensive study of Victorian childhood falls since 2000. The study found that falls were one of only two major causes of child injury where hospital admission rates have increased. The study found that falls in the home far outweighed other locations such as schools and at sport.

- A study evaluating the appropriateness of current taxi and hire car age limits in ensuring safety of the Victorian taxi fleet. The project involved consultation with taxi industry stakeholders as well as extensive analysis of the safety performance of the taxi fleet including the risk of crash involvement and injury outcomes related to vehicle choice in the event of a crash. Recommendations for future policy on taxi age limits, vehicle choice and driver focused interventions were made and priorities for further research identified.

- A study found that roadside wire rope barriers result in significant reductions in the risk of both serious injury and death – of up to a staggering 87% reduction.

- An evaluation of alternative operations of mobile speed cameras in Victoria.

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- A study found that roadside wire rope barriers result in significant reductions in the risk of both serious injury and death – of up to a staggering 87% reduction.

- An evaluation of alternative operations of mobile speed cameras in Victoria.

- Professor Max Cameron and Associate Professor Stuart Newstead designed a major trial of alternative operations in three police divisions with the aim of making mobile speed camera locations less predictable. The trial commenced in March and trends in detection rates in trial and control divisions were monitored throughout 2014. A crash analysis will be conducted for Victoria Police after 12 months of the trial.

- An examination of the usability of Google Glass and the potential impact of the device on driver and pedestrian behaviour and safety. A range of activities were undertaken.

In 2014:

- MIRI had one book chapter, 90 journal articles and seven peer reviewed conference papers published, contributing to a further increase in our publication rate.

- Professor Lesley Day was appointed Acting Director of MIRI after former director Professor Rod McClure took a position as the Director of the Division of Analysis, Research and Practice Integration at the National Center for Injury Prevention and Control (Centers for Disease Control and Prevention) in the US.

- Monash University Accident Research Centre (MUARC) Director Professor Mark Stevenson was appointed as an advisor to the Coronal Council of Victoria.

- Professor Brian Fildes received a 25-year service award at a Monash University ceremony in July. Professor Fildes joined MUARC soon after it was established in 1987. He developed and managed a team working on safety research projects. He has been instrumental in helping government agencies implement new injury prevention counter-measures and programs as well as evaluating real world crash performance for the automotive industry. Professor Fildes was based at the Monash University Prato Centre from 2008 to 2012.

- Kathy Diamantopoulou also received the 25-year service award. Ms Diamantopoulou is a research fellow in the road safety field at MUARC and has extensive experience in road safety research.

- MUARC ran its third successive Road Safety Management and Leadership Program, which addressed the issue of a globally rising road toll. The program has become a regular fixture on the international calendar, attracting candidates from a broad spectrum of sectors and organisations responsible for road safety performance.

- Supervised 28 PhD candidates and 16 MPhil students in the MIRI graduate studies program.

- Produced two issues of Hazard, the publication of the Victorian Injury Surveillance Unit, providing data on trends in injuries involving serious falls of children involving furniture, skateboards, scooters and playground equipment.

- MIIR held the MUARC – TAC Road Safety Symposium in March at the RACV Club. Leading international scholars and located experts discussed state-of-the-art innovations in road safety.

- Professor Neville Stanton, the Chair of Human Factors Engineering in the University of Southampton in the UK, spoke at the MUARC Annual Lecture series on the rapid global adoption of autonomous vehicles (vehicles that sense their surroundings and use the information to navigate obstacles and paths).

- The MIRI website had 82,580 visits, of which 59,307 (71.5%) were new visitors to the site. Most were Australian users, and a significant number of visitors were international users including the US (7399) and the UK (3293). Most users found the MIRI website through organic google searches (key word searches).
Key appointment

MUARC Director Professor Mark Stevenson was appointed an advisor to the Coronial Council of Victoria.

The council, established in 2010 and the first of its kind in Australia, provides strategic advice and recommendations to the Attorney-General on the coronial process.

The organisation also analyses how the bereaved, the police, staff and others experience the service, to ensure a responsive and effective coronial system.

Professor Stevenson’s appointment resulted from a major review of the Council, which highlighted the need for a leading expert on road safety with specific skills in research.

Professor Stevenson said he was delighted to be part of a unique organisation.

“I am honoured to accept this position and contribute to such an important institution in the Victorian justice system,” Professor Stevenson said. “It will be a key part of the role to identify emerging trends and patterns in cases, as well as provide advice on legislative issues and proposed law reforms.”

Media coverage

Media outlets regularly call on MIRI researchers to comment on a range of injury prevention issues. MIRI engages a media liaison consultant to ensure timely and accurate coverage.

There were more than 350 mentions of MIRI in the media in 2014, including:

- ABC Catalyst program, featuring MUARC Associate Professor Judith Charlton, who leads the Behavioural Safety Science research team. The program focussed on how child passengers can distract drivers.
- Sydney Morning Herald news report on Victorian Injury Surveillance Unit’s report into children injured in skateboard and scooter incidents.
- An opinion piece by MUARC Director Professor Mark Stevenson in The Age discussing concussion injuries in athletes.

Student education and training programs

MIRI is committed to research training for the development of new leaders in the field of injury prevention. Graduate students at MIRI study in a collaborative environment with a diverse range of highly skilled researchers and injury prevention practitioners.

The program is vibrant and staff and students participate at all levels in mainstream Monash higher degree activities. The academic program reflects the unique multidisciplinary nature of MIRI.

Students pursue topics that reflect the breadth of research themes across MIRI, including road safety, occupational health and safety, injury prevention program evaluation, human factors, sports and recreation injury, injury economics, injury biomechanics, disaster resilience and child injury prevention.

State-of-the-art facilities and expert supervisory capacity in areas such as population injury and crash databases, simulation and instrumented vehicles, and statistical analysis and modelling provide students with wide scope for their research methods and approaches. Many students have had opportunities to engage with the international research community in short courses, data collection, conferences and other exchanges.
MIRI candidates make a significant contribution to the body of scientific evidence on safety issues and injury prevention through scholarly writing.

MIRI hosts several undergraduate students through its supervision of honours and fourth-year engineering projects and the vacation scholarship program. These activities allow undergraduate students to gain experience in research and become familiar with the field of injury prevention.

The Institute also hosted summer students and winter program scholars who worked on a variety of road safety and injury prevention research projects. The program continues to attract high-calibre candidates.

Promotions, comings and goings

Promotions
• Dr Michael Fitzharris, who leads MUARC’s Regulation and In-depth Crash Investigation team, was promoted to Associate Professor.
• Dr Eva Alisic was promoted to Senior Research Fellow.
• Dr Sharon Newman was promoted to Senior Research Fellow.

MIRI welcomed
• Research assistants Hayley Ayton and Prue Dunstan, who are supporting the trauma recovery research team with recruitment and data collection for the Ear for Recovery project.
• Anna Barrett joined as a post-doctoral research fellow and works with Dr Eva Alisic on projects including how families can best support children in injury recovery. Anna has a background in international development and humanitarian coordination.
• Sarah Bullen and Marnie Reilly are research nurses involved in recruiting

Road safety myths

Should society accept road trauma as collateral damage from daily road use?

A new book addressing the issue, ‘Eliminating Serious Injury and Death from Road Transport: A Crisis of Complacency’ by former MUARC Director Professor Ian Johnston, Carlyn Muir and Eric Howard, was launched in April.

The book explores the myths that drive society’s view of road safety and limit progress in reducing death and serious injury. It presents current scientific knowledge in a non-technical way and draws parallels with other areas of public safety and public health.

It also uses examples from the media and public policy debates to paint a clear picture of a flawed public policy approach and offers a range of prevention principles.
injured drivers and collecting medical and crash related data for the ECIS project
• Rai Curry and Allen Guenther are working on crash vehicle inspections and site investigations to reconstruct crashes and identify key contributing factors in the ECIS project
• Tara Fernando joined MIRI as a data analyst. She has a background in statistics and public health.
• Dr Masha Fridman joined MIRI as Senior Research Fellow. She has a background in the application of statistical methods in academic and government research.
• Dr Jane Holden was appointed ECIS project manager. She heads the ECIS data collection team of research nurses, crash investigators and data management.
• Michelle Lai joined as Executive Assistant to Professor Fitzharris and project support to ECIS.
• Natalina Nheu, Research Assistant.
• Rebecca O’Hara joined as a Project Officer on the CFA evaluations examining bushfire planning, community capability and workforce capability
• Steve O’Hern, already a MIRI PhD candidate researching the safety of urban cyclists, joined as a Research Assistant.
• Tandy Pok, a mechanical engineer, joined as a crash investigator to work on the ECIS project.
• Raphaela Schnittker joined as a Research Assistant. She is based at the Centre for Health Innovation at the Alfred Hospital and conducts simulation research focussing on the enhancement of patient safety
• Greg Shotton joined MIRI to maintain and update the website.

MIRI farewelled
• Professor Rod McClure, who accepted a position as the Director of the Division of Analysis, Research and Practice Integration at the National Center for Injury Prevention and Control (Centres for Disease Control and Prevention) in the US.
• Professor Michael Lenné, head of the Human Factors in Transport Systems team, Professor Lenné, who remains at Monash University as an Adjunct Professor (Research) has moved to an industry role.
• Crash investigator Ron Laemmle and Research Nurse Kim Woolley left MIRI to pursue other interests.
• Karen Murdoch, Data Quality Improvement and Consumer Product Safety Manager joined Ambulance Victoria as a research assistant.

Global leader
MIRI researcher Dr Eva Alisic was this year elected to co-chair the Global Young Academy, an organisation that mobilises young scientists from around the world. The GYA enables young scientists, researchers and scholars to join to address issues of global importance.

Dr Alisic said it was an honour to serve the organisation.

“The academy helps to support scientific activity in developing countries in a number of ways including promoting open access of research literature and software and organising games and events that encourage scientific interest in high school students,” she said.

Dr Alisic has studied and worked in The Netherlands, France, Switzerland and the US before moving to Australia in 2011. She is an expert on mental health and has a particular interest in how children and their families cope with traumatic events.

Read more about the academy at www.globalyoungacademy.net
Scholarship recipients
A number of highly prestigious awards are available to graduate students on a competitive basis. Recipients of scholarships during 2014 were:

- Institute for Safety Compensation & Recovery Research (ISCRR): Khic-Hoy Prang; Maatje Scheepers
- NRMA-ACT Road Safety Trust Postgraduate Scholarship: Belinda Clark
- DSTO-MIRI Foundation: Dianne McGregor
- MIRI Scholarship (Child Safety): Suzanne Cross; Jonny Kuo
- John Lane Memorial Scholarship: Shannon Gray (jointly with APA); Kate Bone
- Australian Postgraduate Award: Tim Lathlean, Gemma Read, Maggie Trotter, Sin-Ki Ng and Brendan Lawrence.
- Peter Vulcan Scholarship: Amanda Warmerdam
- The inaugural Tom Triggs Memorial Scholarship: Sarah Louise Donovan.

The Tom Triggs Memorial Scholarship honours the memory of Professor Thomas Triggs, former Deputy Director of MUARC. Professor Triggs was instrumental in establishing MUARC, one of the most successful research centres not only at Monash University, but in Australia.

His development of MUARC’s young driver, driver training and driving simulator research programs have led to the introduction of safety initiatives that have dramatically reduced Australia’s road toll. Professor Triggs died in 2012 and in recognition of his contribution to the field of driver safety, and as a personal tribute, the Trustees of the MUARC Foundation established the Thomas Triggs Memorial Scholarship.

PhD Completions
- Miranda Cornelissen and Roszalina Ramli were awarded their PhDs in 2014.
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<td>Effects of child behaviour on driver distraction and performance</td>
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<td>Tim Lathlean</td>
<td>Training loads, recovery and sleep on injury risk in junior elite Australian Football (AF) players</td>
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<td>Brendan Lawrence</td>
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<td>Dianne McGregor</td>
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<td>Healther Ploeger</td>
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<td>Khic-Houy Prang</td>
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<td>Gemma Read</td>
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<td>Maatje Scheepers</td>
<td>Early identification of mental health conditions, the efficacy of remote health interventions and the resultant health services of TAC clients</td>
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<td>Tiffany Too</td>
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<td>Maggie Trotter</td>
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<td>Saraswathy Venkataaraman</td>
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<td>Amanda Warmerdam</td>
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The Injury Outcomes Research Unit wants to help injured people receive better health care through researching how people react, respond and cope with injury and trauma.

EXPERTISE in this unit includes medicine, epidemiology, statistics, psychology, health promotion and population health. The researchers work closely with the Institute for Safety, Compensation and Recovery Research (ISCRR), WorkSafe Victoria and the Transport Accident Commission (TAC), as well as maintaining collaborative networks with similar groups throughout the world.

This year the IORU team continued its evaluation of the TAC 2015 Strategy in collaboration with ISCRR and the Department of Epidemiology and Preventative Medicine at Monash University.

In 2014, the focus was on examining the scope of remote mental health resources, such as those delivered through the internet, and their potential application within the compensable injury context. The team, led by Associate Professor Michael Fitzharris, also conducted a comprehensive examination of the Independence Plan, which was implemented by the TAC as a means of assisting clients with head injury and spinal injury to achieve their goals. As part of this, Sara Liu conducted detailed interviews with allied health professionals who work with TAC clients. The team also finalised its longitudinal study of the perceptions of TAC staff toward the new claims model.

Dr Janneke Berecki-Gisolf continued to lead the ‘Outcomes of Compensated Injury in Victoria’ study, which is funded by the TAC and the Victorian Workcover Authority through ISCRR. The study is investigating the impact of pre-existing health conditions and pharmaceutical use on recovery of people injured in road crashes and workplace incidents.

The project involves seeking consent from TAC and WorkSafe clients to link their Medicare and the Pharmaceutical Benefits Scheme records to their injury compensation claims records. This project provides key information on how chronic disease impacts injury outcomes, and recommendations on how to help clients with pre-existing health conditions reach an optimal recovery. The project will be completed by July 2015.

Dr Berecki-Gisolf is also working on studies based on the Compensation Research Database at ISCRR. This database of de-identified compensation claims is used to identify determinants of good outcomes, as well as less favourable outcomes. Injury outcomes are return to work, work disability recurrences, health service use and long-term use of opioids. Findings relating to prescription opioid use following workplace injury were published in Pain Medicine.

Dr Sharon Newnam and Dr Dianne Sheppard are working on the NHMRC-funded ‘Work-related Road Traffic Injury: Managing the Risk’, which aims to further identify and define the barriers and facilitators to returning to pre-injury function for those with chronic injuries in the injury compensation setting. The results stand to directly impact most Australian workers who spend time on roads for work reasons.

Dr Eva Alisic leads the Trauma Recovery Lab, which aims to find out how children and families recover from traumatic events such as car crashes, the sudden loss of a loved one, disaster and violence. The researchers use a mix of research methods with an emphasis on quantitative, observational approaches combined with qualitative, interview research.

This year, Dr Alisic has been looking at how emergency professionals provide ‘psychological first aid’ to children, based on interviews with staff of Melbourne’s Royal Children’s Hospital. She is conducting a global study of professionals’ knowledge and use of psychological first aid principles. In 2014, Dr Alisic obtained an NHMRC Early Career Fellowship to examine the role of caregivers and professionals in helping children recover from traumatic stress.

Dr Sjaan Koppel led a team which began an evaluation of the WorkSafe streamlined treatment request policy changes. This pre vs post comparison seeks to evaluate the impact of this policy initiative. The team also conducted a review of the injured workers survey run by the WorkSafe.

The IORU also has a number of PhD students, including Khic-Houy Prang who published a systematic review on the role of perceived social support in recovery from musculoskeletal injury in the Journal of Occupational Rehabilitation.
Careful up there

PEOPLE use ladders at home all the time – to clean the gutters, to change light bulbs and for various DIY projects.

However, in the home environment the use of ladders represents one of the highest risks for fall-related injuries and deaths. In Victoria, the frequency of ladder falls resulting in serious injury doubled between 2002 and 2013. More than 5000 people were admitted to hospital due to ladder falls between 2010 and 2013, with a similar number of patients receiving emergency department treatment.

Despite the leap in injuries, there had been no injury prevention initiative (although workplace ladder safety initiatives had been successful).

In 2014, the Department of Health Victoria commissioned MIRI and the Monash University Department of Forensic Medicine to undertake a review of the issues surrounding ladder falls in the home environment, with the purpose of identifying effective interventions and practical actions.

MIRI researchers Professor Jennie Oxley, Steve O’Hern and Joan Ozanne-Smith and Fiona Kitching from the Department of Forensic Medicine analysed injury data at all levels of severity from emergency presentations, hospital admissions,

The use of ladders represents one of the highest risks for fall-related injuries and deaths.

major trauma and death.

Older men accounted for most cases (especially deaths) and most cases were from the metropolitan area. Factors associated with high level injury severity included older age, activity type (outdoor activities including pruning, trimming, fruit picking), and body region injured (head).

The findings from injury data analysis, a review of national and international literature, and consultation with consumers and key stakeholder groups, have now provided a set of evidence-based initiatives to reduce the incidence and severity of ladder fall injuries.

These opportunities also look at reducing the overall costs to the community. They centre around eight themes and include enhancements to design, manufacture and the environments in which ladders are used, education and promotional activities, enhanced data systems, and areas warranting further research.

Falls are a significant threat to the safety, health and independence of seniors.

The Falls Prevention Research Unit, led by Professor Lesley Day, has for more than 20 years studied the effectiveness of falls interventions.

2014 was the fifth and final year in the project Reducing falls among older people in Victoria: better evidence, better targeting, better outcomes. The project, funded by the NHMRC and the Victorian Department of Health and Human Services, aims to improve falls prevention strategies in Victoria.

The main findings and recommendations were the subject of an invited keynote presentation at the 6th Biennial Australia and New Zealand Falls Prevention Conference.

During 2014, the evaluation of the three different falls prevention interventions was completed. Key findings included that group-based exercise, home exercise, and home safety assessments and modifications, seem to be as effective when delivered in community settings as when tested in randomised controlled trials.

There is now additional funding to follow up research participants to help understand the extent to which the interventions were having an ongoing effect on falls and other health outcomes.

The Department of Health and Human Services has been working to incorporate the project recommendations into policy and programs. A presentation on this aspect of the work won the Best Policy Paper prize at the 6th Biennial Australia and New Zealand Falls Prevention Conference.
Quality injury surveillance data is crucial to the development of effective injury prevention and safety promotion. The Victorian Injury Surveillance Unit (VISU) analyses, interprets and disseminates Victorian data on injury deaths, hospital admissions and emergency department presentations.

The unit provides quarterly reports to the Victorian Department of Health, and VISU data and reports are published for professional and community audiences. Critical information is also provided to organisations including Commonwealth, state and local government departments and agencies, health and injury prevention organisations, media, business and industry, education institutes, research groups and the community.

In July, VISU published the tenth of a series of e-bulletins that provide an overview of the injury profile for Victoria. The ‘Unintentional (accidental) hospital-treated injury in Victoria 2012/13’ edition utilised two injury surveillance datasets that separately record hospital admissions and Emergency Department presentations.

Overall there were 397,014 hospital-treated injury cases in Victoria in 2012/13 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 83.9% of which were unintentional. Key findings included that
- males were overrepresented accounting for 58% of all hospital-treated injury cases.
- falls were the leading cause of injury for admissions and ED presentations accounting for more 37% of all hospital-treated injury cases, followed by hit/struck/crush (17%), cutting and piercing (8%) and transport (7%), and
- the home was the most common setting for injury (24% of hospital admissions and 39% of ED presentations).

In 2014, VISU published two editions of Hazard, an in-depth analysis of a major or emerging injury issue. This publication is used to raise awareness of the identified injury issues across community and government and stimulate preventative action.

The first issue (Hazard 77) focused on child falls. These are the leading cause of child injury admissions and Emergency Department presentations (non-admissions) in Victoria and Australia, yet this health issue is neglected in Australia and in other developed countries such as the US, Canada and European Union countries where the problem is also prominent. The study recommended
- increased funding for research to better understand serious fall injuries and its consequences in children
- conduct more high-quality population-based case control studies on the risk and protective factors for child fall injury.
- development of a stand-alone or integrated child fall injury prevention plan to stimulate the design and evaluation of interventions to reduce fall injuries in children.

Hazard 77 also provided an overview of falls from playground equipment.

The second issue (Hazard 78) continued the child falls theme and focused on falls from furniture and falls involving skateboards and scooters. Key recommendations included that
- children should always be placed in a five-point harness in a high chair
- children under nine should not sleep in an upper bunk
- children aged under eight should not ride scooters unsupervised
- children aged under five should not use skateboards, and
- children should only ride good quality scooters.

More information on the studies and the recommendations is available at www.monash.edu/miri

An online survey of VISU data request clients was completed in 2014. There were high levels of satisfaction with the adequacy of the data, timeliness and format of the report and the helpfulness of VISU staff.

The feedback provided will help guide improvements as to how Hazard and other information generated by VISU is disseminated.
Few areas of injury prevention research are as sensitive and difficult to address as those that involve ‘intent to harm’. MIRI researchers have both the experience and the diverse qualifications to make a valued contribution to the field. Our experts provide independent, evidence-based advice to government and non-government organisations to support the development of improved policy and practice.

CHILD Abuse Prevention Research Australia (CAPRA), led by Director Professor Chris Goddard, (pictured left), investigates the causes and devastating effects of child abuse on the community. CAPRA is a unique collaboration between a world-class university and a national child welfare organisation.

CAPRA has been playing an important role this year in assisting victims at the Royal Commission into Institutional Responses to Child Sexual Abuse. The terms of reference for the Royal Commission were established in 2013. The commission is investigating how institutions such as schools, churches, sports clubs and government organisations have responded to allegations and instances of child sexual abuse.

It is the job of the Royal Commission to uncover where systems have failed to protect children so it can make recommendations on how to improve laws, policies and practices.

Also this year, CAPRA released ‘They count for nothing’, a report that offered a critique of the public health model as it is currently applied to child protection in Australia. Professor Chris Goddard, CAPRA researcher Karen Broadley, and Dr Joe Tucci, the CEO of the Australian Childhood Foundation, wrote the report. The report argued that without a strong system for collecting and analysing population-based data associated with child abuse and neglect, the public health approach is doomed to failure.

The report explained and considered the role of a high-quality data surveillance system as an essential component of a public health model of child protection, applied the discussion to Australian context, and made recommendations including:

- the creation of a unified child protection system across Australia
- the expansion of the type of information collected about children at risk of abuse and neglect
- the extension of sources of information
- that the Commonwealth Government establish and resource an independent National Child Protection Inspectorate.

The year saw the submission of many papers for publication, including book chapters, while CAPRA PhD candidate Rison Muhrisun had his academic work published in Indonesian.

Researcher Karen Broadley won a full scholarship in 2014 for her study into female sex offenders, which she will conduct with Queensland Police.

Dr Neerosh Mudaly received further funding for her work on the Animals as Therapists program for children who have been abused.

Dr John Frederick completed his work on child abuse deaths. He examined Victoria Police child homicide records over the past 20 years. The study reviewed the practices of the child protection system with an emphasis on health, welfare and police procedures.

In an exciting development, CAPRA has received funding to develop a dramatised version of Professor Goddard’s and Dr Mudaly’s book, ‘The truth is longer than a lie’. 
Disaster Resilience Initiative

Disaster resilience is an evolving field of study and research around the globe. MIRI is a key player in this field following the addition of the Monash University Disaster Resilience Initiative in 2012.

The Initiative began in 2005 in the university’s Department of Community Emergency Health and Paramedic Practice in the Faculty of Medicine, Nursing and Health Sciences.

As part of MIRI, the Initiative aims to strengthen community-based disaster resilience through Masters and PhD studies, quarterly, research-driven, professional development forums, providing evidence to shape new approaches to disaster preparedness and management, and helping translate research into practical use.

In 2014, the Initiative, led by Emeritus Professor Frank Archer, Dr Caroline Spencer and Mr Dudley McArdle, consolidated its strong networks with Emergency Management Victoria and both the emergency management and general communities.

MUDRI held three forums and a research symposium, attended by 284 participants. The forums, already an established part of the Victorian emergency management landscape, focus on research driven, knowledge transfer and professional development.

Researchers presented one keynote paper, and gave an invited presentation and free paper at the 12th Asia Pacific Conference on Disaster Medicine, in Tokyo. International research consultancies on measuring the impact of disasters were undertaken with EcoMed, Belgium, and in a consortium with Evidence Aid (UK) and 3ie. MUDRI members continue to make significant leadership contributions to the World Association for Disaster and Emergency Medicine.

The higher degree by research training program continued to grow. There are now four PhD candidates and 14 Masters of Philosophy candidates. A unique feature of these candidates is that most are successful, mid-career, emergency management leaders.

A highlight of the year was the 3rd Annual Monash Disaster Research Symposium, which this year included MPhil candidates presenting their confirmation seminars and one PhD mid-candidature seminar, all successfully completed. Mr Michael Bourne, Research and Evaluation Manager for the Country Fire Authority, presented the 7th Annual Professor Frederick ‘Skip’ Burkle Keynote Lecture.

PhD candidate Claire Zara, with Ms Debra Parkinson from the School of Social Sciences, Faculty of Arts, received a Resilient Australia Award for their groundbreaking work with communities affected by the Black Saturday bushfires in 2009. The award, in the category “National Significance”, was a joint project with Women’s Health Goulburn North East and Women’s Health in the North.

Their research examined and revealed what happens to women, men, and their relationships during and after a catastrophic disaster. It resulted in two reports: The Way He Tells It: Relationships after Black Saturday and Men on Black Saturday: Risks and opportunities for change. The reports led to the creation of Australia’s first Gender and Disaster Taskforce, sponsored by Victoria’s Emergency Management Commissioner.

In 2015, the Initiative aims to establish further cross-university linkages, maintain financially sustainability and increase supervision capacity to grow research candidate numbers.

What is a disaster?

Disasters are “serious disruptions of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.” (UNISDR, 2009)
MONASH University
Accident Research Centre
A centre within the Monash University Injury Research Institute

Deb Judd, Geoff Rayner, Dr. Jane Holden, Robin Jackel, Tandy Pok.
The Monash University Accident Research Centre (MUARC) is Australia’s largest and most respected transport safety research centre. Our research, consultancy and training include safety across all modes of transport. Now the transport arm of the Monash Injury Research Institute, since our founding in 1987, MUARC has developed research-based solutions that have made Australians safer – and have made us an acknowledged leader in the field. We are committed to the excellence of our research, the independence of our recommendations and the engagement we have with the communities we serve. We have many Australian and international clients, and have forged long-term relationships with key stakeholders including VicRoads, the Transport Accident Commission, the Department of Justice, and Victoria Police.

Our work is conducted across six priority areas:

- Behavioural science for transport safety
- Global engagement
- Human factors in transport systems
- In-depth crash investigations and transport regulation
- Statistical analysis and transport data systems
- Traffic engineering and vehicle safety.

We have also established an ongoing research partnership with Western Australia’s Curtin University. The Curtin-Monash Accident Research Centre (C-MARC) is supported by the government of Western Australia. Our partnership ensures we provide research expertise specific to the states’ needs.

About MUARC
At MUARC we believe that we need to stop thinking about ‘lowering the road toll’ and instead focus on ‘eradicating deaths and serious injuries across our road transport system’.

We want to shift the emphasis away from encouraging drivers to take responsibility for the death and injury on our roads towards ensuring that governments make roads and vehicles safer.

Governments, after all, implement the planning, design, operation and use of the road network; the entry and exit of vehicles, drivers and operators to and from the network; and the recovery of crash victims from the network and their emergency care and longer-term rehabilitation. Governments are also responsible for making sure that drivers and policy makers have the information they need to make driving safer.

This will require significant investment in technology, infrastructure and importantly, extending our current understanding of road safety by challenging the status quo and embracing the complexity of our transport system.

One of MUARC’s continuing successes is our ability to translate our world-leading research into policy and practice – and to have political and community leaders who are prepared to embrace the evidence and lead the change.

This has been a successful year in funding, research and collaborations. Key highlights of 2014 include:

- Commencing the largest TAC funding to conduct a world-first $8 million study into the causes of serious injury accidents. The unprecedented three-year study will be used to reduce the incidences of serious injury crashes as the State Government aims to reduce road trauma by 30 per cent by 2022. The Enhanced Crash Investigation Study (ECIS) will examine more than 400 serious injury crashes in microscopic detail to gain an in-depth understanding of what causes such crashes. “This is the first time we have had the opportunity to take such an holistic approach to why and how serious injury accidents occur so that we can determine how it can be prevented in the future,” Associate Professor Fitzharris said.

- The release of the 2014 update of the Used Car Safety Ratings. MUARC analysed records from more than 7 million vehicles in police-reported road crashes in Australia and New Zealand between 1987 and 2012. The ratings were calculated using an internationally reviewed method and were influenced by the vehicle’s mass, the structural design of the body, and the safety features, such as airbags and types of seat belts, in the vehicle. This is a unique tool - its strength in many ways is not so much the research that underlies the ratings but the fact that every major road authority and motoring club in Australia and New Zealand is a stakeholder.

- Holding the third Road Safety Management and Leadership Program, involving 23 senior Australian and international executives. The program is now a regular fixture on the international calendar and attracts candidates from a broad spectrum of sectors and organisations. The candidates are responsible for road safety performance and the related disciplines and practices that support the delivery of these sectors and organisations’ safety mission and goals.

- Publication of a study led by Professor Mark Stevenson which shone a spotlight onto the trucking industry and how and why its accident rate is so high. The study – published in the American Journal of Epidemiology – looked at 530 heavy vehicle drivers
who had recently crashed and 517 heavy vehicle drivers who had not. The study found that long-distance truckers are almost three times more likely to crash when they drive during midnight-to-dawn hours with few breaks. The truckers were recruited at rest stops along heavily travelled truck routes in New South Wales and Western Australia. The study was collaboration between The George Institute (Sydney), Curtin University (CMARC) (WA), The University of NSW, Queensland University of Technology (CarrsQ) and the Woolcock Medical Research Institute (Sydney).

- The expansion of the human factors and simulation laboratory, thanks to our ongoing partnership with the Defence Science and Technology Organisation (DSTO). The laboratory simulates a class of defence land vehicle that is being provided through Project LAND 121, which will deliver a networked and integrated capability and will see the delivery of vehicles with a generational advancement on current fleet technology.

- Research published in Traffic Injury Prevention suggesting that simply increasing the number of cyclists on the roads might not improve safety if riders are dispersed widely across the road network. Conversely, stable or even decreasing numbers of cyclists concentrated on high-density routes may make riding safer.

- The publication in Attention, Perception and Psychophysics of a study finding that the more motorcycles on the roads the safer for all drivers. Forty drivers were involved in the study, with each participant completing two drives in the MUARC simulator. This was the first time that a study has used a simulator to test the safety in numbers effect.

- Research revealing a reduction of Western Australian drivers with both legal and illegal levels of alcohol in their systems. The research, conducted with the Curtin Monash Accident Research Centre (CMARC) compared with two similar studies conducted in 1999. The authors recommend that in order to maximize both general and specific deterrence, regular breath testing enforcement schedules should be extended into the early hours of the morning to reflect the evolving changes in socialisation and alcohol consumption patterns.

- Studies showing that taking responsibility for a crash is a strong indicator for how well a person will recover. The research showed that people who blame others for an accident have worse physical and mental health outcomes than those who take responsibility for the incident – even though the injuries may be the same. The research has already assisted the TAC to understand and identify those at greater risk of experiencing poor post-accident recoveries, enabling them to be managed by the most appropriate rehabilitation teams earlier on in the claims process.

- A lecture by Dr Nicole van Nes, senior researcher with the Dutch National Road Safety Research Institute in the Netherlands, gave a lecture in July. Dr van Nes, a former Research Fellow at MUARC, discussed the interplay between technology and behaviour – and importantly, how to achieve desired behaviour through design. Dr van Nes is currently the coordinator of the 10 million euro EU-funded large scale European Naturalistic Driving Study, UDRIVE.

- Publication of four issues of The Big Impact newsletter, enabling stakeholders to stay up-to-date with the centre’s activities and research.

- MUARC researchers regularly provided comment for news and opinion articles and items in Australian and international media.

- MUARC entered into a Memorandum of Understanding with the South African Road Traffic Infringement Agency with the goal of fostering greater research and capacity building initiatives.
INTERSECTION safety continued to be investigated in the major multi-year study involving Dr Bruce Corben, Ms Candappa and Dr Logan. Safety at intersection is still a major concern in Victoria and Australia. As a result of the current study, a trial of an innovative European design is expected to commence mid-2015. On a smaller scale, mountable mini-roundabouts were evaluated on local streets, results suggesting there are safety benefits to be generated through these measures.

Not only is safety at intersections a concern but also crashes involving run-off-road crashes. A current study looks at any improvement to safety as a result of reduced speed limits along high speed rural roads.

A study involving the TEVS team Dr Corben, Dr Logan, Dr Oxley among others, examined pedestrian safety improvements. Walking is a sustainable mode of transportation of benefit to both individuals and to the broader community. Significant personal health, economic and social benefits can be derived from safe walking. The study showed that there was a significant reduction in pedestrian deaths in Victoria between the late 1980s and 2013.

2013. The team also undertook a number of smaller scale projects addressing road safety at local level, including pedestrian safety around schools as well as the formulation of a Safe System Road Safety Action Plan for the City of Casey.

The team headed by Professor Mark Stevenson and Dr Oxley is also involved in the ARC Linkage project on “Safe Cycling in the Urban Environment”. In addition to analyzing cycling crashes in and around major cities, the study involves Field Operational Tests (FOTS) that collects new and important data on cycling and infrastructure, and focuses on the development of urban prototypes with the potential to reduce the number of cyclist collisions. Mr Lawrence and Mr O’Hern are undertaking their graduate studies as an important part of this research.

Dr David Logan led another key area of research facilitating ongoing attempts to reduce serious road trauma, focusing on developing a better model for the prediction of the benefits of road safety strategies. The eMETS model, based on the pioneering METS model, aims to bring new levels of sophistication to the modelling of the potential serious casualty savings able to be achieved from combinations of countermeasures implemented as part of government road safety strategies. eMETS draws upon the most robust evidence from the research literature in each of the Safe System cornerstones to assist road safety stakeholders to most effectively direct major investment programs targeting key crash areas.

Finally, the consortium is also involved in international research, evaluating the safety benefits of new vehicle technologies in passenger cars such as City Safe and Lane Departure Warnings, in preventing reversing collisions, as well as the safety of Minibus occupants.
2014 represented the fifth year of data collection for the team’s Candrive/Ozcandrive study. The Candrive/Ozcandrive study is a longitudinal, multi-centre international research program which involves 928 drivers aged 70 years and over in Canada and 302 drivers aged 75 years and older in Australia and New Zealand.

Using a longitudinal study design, the project is tracking this cohort for up to six years, assessing changes in their functional abilities, driving practices (e.g., exposure and patterns), as well as crashes and citations. Participants’ usual (or naturalistic) driving practices (e.g., trip distance, duration, type of road, speed) are recorded through an in-car recording device installed in the participant’s own vehicle and measures of their functional ability, medical conditions and self-reported driving-related abilities and practices are documented annually. In addition, participants’ driving performance is evaluated annually through an on-road driving task.

The broad aims of the project are to reduce vehicle-related injuries and death and improve the quality of life of older drivers by extending their safe mobility. The study is generating a rich volume of data which is contributing new insights about older drivers and informing policy on safe mobility for older people. Importantly, the study will answer questions about: how older drivers’ driving changes over time; how patterns of self-regulation change; and how declining health and functional ability can impact on driving.

Ozcandrive is funded through a five-year Australian Research Council Linkage grant (LP 100100078), awarded to Monash University, and is a partnership with La Trobe University, VicRoads, Victorian Government Department of Justice and Victoria Police, the Transport Accident Commission, New Zealand Transport Agency Community Road Safety Fund, The Ottawa Hospital Research Institute and Eastern Health. In 2015, the study will commence its sixth year and a new phase, funded by the Transport Accident Commission.

As part of the Ozcandrive study, the team developed a novel on-road driving task, the Driver Observation Schedule (eDOS), to evaluate older drivers’ driving behaviour (baseline) as well as to monitor changes in individual driving behaviours over time (follow-up). In April, the team conducted the 200th follow-up eDOS driving task, bringing to completion eDOS driving task data collection. In addition, the team’s findings related to older drivers’ performance on the baseline eDOS driving task were recently accepted for publication in the Canadian Journal of Aging. Analyses of the follow-up eDOS are now underway with a view to publishing the results in 2015.

In 2014, the team also conducted a world-first study in which older drivers’ cognitive workload was measured using a physiological response (e.g., heart rate) during an on-road driving task. This exciting pilot research has recently been published in Traffic Injury Prevention and has the potential to change the way in which older driver researchers measure cognitive workload during on-road driving tasks in the future.

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Another research focus within the team is child vehicle occupant protection. In a world-first study, the Naturalistic Observation of Children in Cars project uses innovative naturalistic driving methods to observe children as rear seat occupants during real world car trips. Child restraint systems for vehicles are designed to provide specialised protection for child occupants in the event of a crash. However, children do not sit perfectly still and upright while travelling in vehicles, potentially leading to inappropriate seating postures throughout their journey. The research will quantify the positions of child occupants in cars and identify the injury effects of out-of-position status and its impact on driver distraction.

The project involves a large scale international collaboration through the Australian Research Council Linkage Scheme, with VicRoads, TAC, RACV, Britax and ProQuip, and brings together researchers from Monash University, the Children’s Hospital of Philadelphia Research Institute, University of Michigan Transportation Research Institute and Chalmers University of Technology. Outcomes will be used to optimise vehicle and child restraint system design and develop targeted safety education strategies to mitigate injury to children in the event of a car crash.

In 2014, PhD candidates Jonny Kuo and Suzanne Cross completed the data collection for more than 40 families and recorded the behaviour of nearly 100 children in vehicles. The behaviour captured during participants’ every day driving trips has resulted in hundreds of hours of video footage to be analysed. The team has made significant advances towards automating the data analysis through computer vision solutions to capture driver head position and potential distraction. This work will be complemented by in-depth analysis of the video footage to describe children’s behaviours which might influence their seating position within their child restraint system, as well as children-driver interactions which may be a source of potential driver distraction.

Another important component of the children in cars project involves a national survey of parents’ knowledge and attitude of child restraint systems. In 2014, the survey responses were analysed and the findings revealed that parents had misconceptions about harness use and seat belt suitability, and put a low safety priority on the effects of children’s movement in child restraint systems and their out-of-position status.

The team has commenced writing scientific papers, with several conference and journal papers published describing the study methodology and solutions for more automated analysis of the driver distraction. Sled tests planned for late 2015 will be conducted at Britax, Melbourne and Autoliv, Sweden and will examine injury consequences of the out-of-position status of children, as determined from the naturalistic observation study.

Cycling safety has assumed an increasingly important attention within MUARC’s research portfolio, in response to the growth of commuter and recreational cycling activities on Australia’s road system. Dr Jennie Oxley leads a four-year study funded through an ARC Linkage Grant in partnership with Main Roads Western Australia, VicRoads, Transport Accident Research Centre, Amy Gillett Foundation, Cycling Promotion Fund, Monash’s Institute of Transport Studies (Civil Engineering), and Emergency and Trauma Research Unit, and the Curtin-Monash Accident Research Centre.

This study is the first comprehensive study in Australia that combines academic, government and community efforts to enhance cycling activity while addressing safety concerns. The study takes an innovative, multi-disciplinary approach to understanding the issues contributing to cyclist injury with a particular focus on the urban road environment. The study will develop new road designs which will improve the urban cycling experience. Australia’s first cycling simulator (BikeSim) will be built as part of this study and will be used to safely evaluate the new road prototypes which will be designed to improve cyclist safety and maintain the efficiency and mobility of vehicles.

It is a four-staged project run in Melbourne and Perth; the first two stages (in-depth study of crash-involved cyclists and naturalistic cycling study of non-crash involved cyclists) are being undertaken to describe the contributing factors to cyclist crashes and identify features of the urban road environment that increase risk of collision. The second two stages (prototype development and bicycle simulator studies) will be undertaken to develop and evaluate effective urban prototypes that have the potential to achieve large reductions in numbers of cyclist collisions.

Dr Oxley and her colleagues are now fitting the bikes of regular commuter cyclists with cameras.

Three PhD candidates have been selected for this project, two Melbourne-based and one Perth-based. One Melbourne-based candidate, Brendan Lawrence and the Perth-based candidate, Michelle Fraser, are using the case and control group data for their research, and the second Melbourne-based student, Steve O’Hern is building the BikeSim, and an Australian-first technology, with validation studies planned to take the study to the next phase.

In collaboration with government and academic partners from Malaysia, the Social Security Organisation (SOCSO, Ministry of Human Resources) and Monash University Malaysia researchers, Dr Oxley continues the work on the ‘Safer Motorcycling to and from Work’ training program. The program has been developed in consultation with key stakeholders and is designed to address all components of a system-based approach that takes into account not only the role of the individual rider but also the roles of the various workplace levels, including managers and supervisors and the overall organisation. This year the emphasis was on organisations to incorporate motorcycle commuting as an occupational health and safety issue.

SOCSO has developed a plan for widespread dissemination of the program throughout Malaysia and funded a ‘Train-the-Trainer’ course to upskill trainers to deliver the program, ensure the integrity and quality assurance of the program, and enhance the impact of the program. The Train-the-Trainer courses were delivered to 120 SOCSO trainers throughout Malaysia. Following the training sessions, each newly trained program facilitator is tasked with delivering the program to 100 selected organisations and companies within their region over the next twelve months. An evaluation of the program is planned for 2015.
PROJECTS this year highlighted the importance of conducting research that applies human factors principles to system design, particularly in the road safety setting. Major achievements were underpinned through expertise in the measurement of behaviour using on-road testing, driving simulation, surveys and focus groups, and human factors methods such as task and cognitive task analysis.

A key project that started this year was doctoral student Gemma Read’s ‘Evaluating Design Hypotheses for Rail Level Crossings: An Observational Study of Pedestrian and Cyclist Behaviour’. In July, Ms Read presented her study – which looked at people’s behaviour at level crossings in Melbourne – at the Fifth International Conference on Applied Human Factors and ergonomics in Poland, where team leader Professor Michael Lenné presented the keynote speech.

Continuing the research, done with Professor Lenné, stakeholders met for a two-day workshop in Melbourne. Authorities including VicRoads, Public Transport Victoria, V/Line and Metro listened to the results presented in Poland and, in a groundbreaking move, discussed innovative ways of dealing with the issue of why people behave in dangerous ways at railway crossings. The ideas generated by this workshop were then analysed and prioritised into three main design concepts that were presented at another workshop, with the same stakeholders, in December. These projects will continue to be developed and tested during 2015. The study, funded by the Commonwealth, is being done in partnership with the University of the Sunshine Coast and the University of Southampton.

Driver distraction was a focus for the group in 2014. A project funded by Toll Transport looked at whether in-cab technologies can negatively and positively impact on driving heavy vehicles. In another project, funded by Transport for NSW, the team provided human factors input into the design of a Cooperative Intelligent Transport System which would share information among vehicles and roadside infrastructure such as traffic signals. CITS increase the quality and reliability of information available to the drivers about their immediate environment, other vehicles and road users. The system will be trialled along a stretch of NSW highway and the Human Factors team has been involved in designing the way the systems within the vehicle operate.

Another study of interest completed in 2014 was an investigation into the effects of roadside advertising on driver behaviour and situation awareness. This project, part-funded by an Australian Government Researchers in Business grant, aims to use cutting-edge methods to establish the level of distraction constituted by billboards in typical urban environments. The results of this study are likely to be of interest to the advertising industry, VicRoads and planning authorities, contributing to the formulation of guidelines for the future placement and
content of roadside billboards.

In 2013 the Human Factors group started work on a purpose-built laboratory that simulates a class of defence land vehicle. The simulated vehicle features two motion-based chairs that move in sync and that can simulate a range of motion provided by military vehicles in sealed and unsealed roads. In 2014 we started to see results from research using this world-class facility. Done in collaboration with the Defence Science and Technology Organisation, a study was presented at the 2014 Australasian Road Safety Research conference in Melbourne in November, looking at the impact of secondary distractions on the primary tasks of people driving vehicles in military situations.

Another milestone was the Keynote speech given by Professor Lenné at the SimTecT conference in Adelaide in August. Aimed at users of simulation, Professor Lenné invited the Director of MUARC, Professor Mark Stevenson, to conduct a plenary session on modeling and simulation in road transport, to great success.

Research Fellow Dr Kristie Young (pictured right) led a project aimed at examining the usability of Google Glass and the potential impact of the device on driver and pedestrian behaviour and safety.

Google Glass is a wearable technology with an optical head-mounted display. It was developed by Google and displays information in a smart phone-like hands-free format. In the project, a range of activities was undertaken, including an expert assessment by three human factors specialists, usability testing, a pedestrian walking study and a driving simulation study. The Google Glass was compared to a smartphone to examine if there are any differences in the impact of the two devices on performance and safety. The results will be published in 2015.
Led by Associate Professor Michael Fitzharris, the team is interested in matters relating to road and vehicle safety regulations including how decisions are made, formulated and supported through evidence-based science. The team creates and uses comprehensive in-depth crash data, as well as data from hospitals, police and compensation systems to identify safety concerns.

The team is especially focussed on identifying seemingly intractable and often persistent problems in road safety and developing new ways of overcoming them. In line with this vision, Associate Professor Fitzharris began leading the TAC-funded world-first study into the causes of serious injury accidents (see opposite).

The year was a productive one for the team, with research and publications in many areas including side impact crashes, motorcycle safety and alcohol interlock devices, as well as successful international collaborations.

Research from Associate Professor Fitzharris last year informed the development of a new regulation (GTR 14) from the United Nations World Forum on the Harmonization of Vehicle Regulations. GTR 14 was approved as a United Nations Regulation in 2014. Led by the Australian Government, the new rule will change the way vehicles are manufactured by ensuring that side curtain airbags and side impact protection is dramatically enhanced for passenger cars and light commercial vehicles. The regulation will require new vehicles to pass a new side impact pole test. It is anticipated that the Australian Government will introduce the legislation in 2015. This research was commissioned by the Commonwealth Department of Infrastructure and Regional Development, with Mr Robert Hogan and Mr Thomas Belcher being key collaborators.

In a significant achievement for MUARC, the final report of the collaborative Australian National Crash in-depth Study (ANCIS) was published in April. The study collected data from more than 1000 injured vehicle occupants between 2000 and 2013. The project addressed key challenges in vehicle safety and road user behaviour. Further use of the data will continue to contribute to understand how road crashes and injuries occur.

Associate Professor Fitzharris was also invited to speak at the Serious Injury – The Hidden Trauma Workshop in the lead up to the Australasian Road Safety Research, Policing & Education Conference.

The team worked on a number of motorcycle safety projects in 2014. With Dr Julie Brown (NeuRA) and Professor Nigel Taylor (University of Wollongong), the team commenced a project funded by the Australian Research Council (DP140102866) that seeks to examine the thermal effects on riders of protective motorcycle gear and how that impacts on rider performance. The team is taking the study into a motorcycle simulator in 2015, ultimately to see how thermal quality can be made more comfortable so that riders can wear protective gear but achieve optimal safety.

Dr Giovanni Savino (U. Florence), a recipient of a prestigious EU Marie Curie Fellowship, presented at the Association for the Advancement for Automotive Medicine conference in Munich in October. His study reconstructed motorcycle crashes using data from 80 hospitalised motorcyclists in NSW, 40 from serious crashes in Florence and 92 fatality crashes that occurred in Sweden. The study found that had autonomous emergency braking (AEB) been fitted to the motorcycles the average speed at impact would have been reduced by close to 5%. Importantly, AEB would have addressed a third of the crashes. In addition to lower impact speeds, AEB would also have a significant reduction effect on the number of fall events prior to impact.

The team was also part of a successful EU COST Action on the Scientific and Technical Innovations for safer Powered Two Wheelers. The proposal, led by Professor Marco Pierini (U. Florence) involves 62 participants from 13 European Nations. MUARC is the only non-European partner in the project.

And in further projects, the team also examined current Australasian and International drink driving legislation and alcohol interlock programs. The aim of this project, conducted for Austroads, was to identify opportunities for the expansion of alcohol interlock devices as a way of reducing alcohol-related crashes and drink-driving.
MUARC researchers this year took the first steps in a world-leading project that will examine in microscopic detail 5000 pieces of information from hundreds of car crashes.

The Victorian Government’s Transport Accident Commission has commissioned MUARC to conduct the $8 million project, which was launched at a major event in Melbourne in March. Associate Professor Michael Fitzharris is leading the study.

The process begins in hospitals when MUARC nurses approach patients and invite them to participate in the study. The nurses interview the injured driver, collecting information such as their memory of the crash, the purposes of their trip, their driving history and their health. Detailed information is collected on injuries suffered with the medical record and the ambulance documentation being pivotal.

ECIS vehicle inspectors then inspect the car for damage and as well as the the scene of the crash.

“By doing such holistic analyses of each individual crash, we are then able to recreate and reconstruct the crash using sophisticated computer technology,” Dr Fitzharris said. “By combining all of this information, we have an opportunity to prevent future crashes and make vehicles safer”.

MUARC has employed about a dozen new staff members to work on the ECIS study including project manager Dr Jane Holden.

During the project, ECIS will hold regular seminars seminars that involve key road safety stakeholders. These will be undertaken across Victoria and it is expected local knowledge will be capitalised on in generating new road safety solutions.

The study also involves international road safety experts as part of an International Scientific Panel, including:

- Professor Ray Bingham from the University of Michigan: Transportation Research Institute
- Associate Professor Diana Bowman from University of Michigan: Risk Science Center and the Department of Health Management and Policy, School of Public Health, and
- Professor Clay Gabler from Virginia Tech: Virginia Tech-Wake Forest School of Biomedical Engineering and Sciences & Department of Mechanical Engineering.
- Professor Andrew Morris, from Loughborough University: Professor of Human Factors in Transport Safety and Director of Internationalisation (Design School)

Australian experts involved are:
- Dr Bruce Corben, Corben Consulting
- Professor Russ Gruen, Director, National Trauma Research Institute, The Alfred
- Adjunct Professor Mike Lenne, (formerly) MUARC
- Professor Mark Stevenson, Director, MUARC
THE accurate collection, detailed analysis and insightful interpretation of data are critical to the safety sciences. The team’s injury analysis and data researchers are expert in the fields of numerical and behavioural sciences, and are skilled in the management, analysis and presentation of accident and injury data to produce real-world benefits.

The Victorian Parliamentary Road Safety Committee’s Inquiry into Serious Injury Research was tabled in May. The report referenced Associate Professor Newstead and the team’s evidence more than 130 times, including agreeing that Victoria had a ‘mono-focus’ on road fatalities to the detriment of serious injuries.

This was the 22nd year of publication of the Used Car Safety Ratings (UCSR). The ratings have been successful for more than two decades because they provide a comprehensive guide giving consumers real-world information on the safety of their current vehicle and any used vehicles they are considering buying. The unique feature of this ratings system is that the information has been collected from real incidents, using police reports and injury compensation claims data.

The team carried out a study of the age of the Victorian taxi fleet for the Taxi Services Commission. Most taxis have an age limit of between two and six years. The study looked at the safety implications of imposing taxi and hire car age limits as well as the potential benefits of other policy options such as specifying minimum vehicle safety standard and driver-focused measures to reduce taxi crash risk. The recommendations in the final report on the study are being considered by the Taxi Services Commission in the formulation of future safety focused policy for taxis and hire cars.

Associate Professor Newstead, Professor Max Cameron and Ms Laurie Budd conducted a comprehensive evaluation of the annual crash effects from 1997 to 2012 of each element of the Queensland program (mobile speed cameras, fixed speed cameras, red-light/speed cameras, and point-to-point cameras).

Professor Cameron also conducted a review of the randomised scheduling of mobile speed cameras in Queensland and extended the crash evaluation to estimate the effect of increased covert operation of mobile cameras since 2010. Recommendations for increased...
unpredictability of mobile speed cameras to increase their general deterrence across the road system were made. Two reports were submitted to Queensland’s Department of Transport and Main Roads but have not yet been released.

Professor Max Cameron also led a literature review of blood alcohol content limits in Australia and New Zealand. Dr Jennie Oxley and Ms Belinda Clark provided the review and Professor Cameron carried out the analysis of the effects on driver fatalities and serious injuries for all drivers, young drivers, motorcyclists, professional drivers, and drivers with previous drink-driving convictions. The final report was provided to Austroads and the results being considered in the context of setting future blood alcohol limits for Australian drivers.

Associate Professor Newstead and Professor Cameron designed a major trial of alternative mobile speed camera scheduling operations in three Victoria Police divisions with the aim of increasing the crash savings achieved. The trial commenced in March in conjunction with three ‘control’ divisions to provide a scientific comparison. Trends in scheduling patterns and speeding driver detection rates in both trial and control divisions were monitored throughout the year, and a crash analysis will be conducted for Victoria Police after two months of the trial.

The team continued its work in novice driver program evaluation, including the NSW Safe Driver Course, and the P Drivers Project in Victoria and NSW. The team undertook a rigorous and independent evaluation of a Transport Accident Commission 2013 trial of reduced travel speeds for trucks using the freeway section between Melbourne and Geelong. The trial generated largely positive findings, with crash risk reduction, reduced over speed limit transgressions, fuel saving benefit and generally positive attitudes towards the lower travel speeds. More specifically, the trucks were found to be highly compliant with the voluntarily reduced maximum travel speed. Based on the observed reductions in travel speed during the reduced speed stages of the trial, the reduced maximum travel speed on the freeway was estimated to reduce crash risk by around 60%. While the study provided some promising results, it was a small-scale pilot and further research using a larger sample of drivers and a wider selection of travel routes was recommended to confirm and extend the findings and provide an evidence base to inform future policy decisions.

In a C-MARC project (conducted in conjunction with Curtin University’s School of Public Health), Associate Professor Newstead and Mr Angelo D’Elia worked to identify key measures of economic activity and establish the relationship between these factors and road trauma in Western Australia using advanced statistical time series techniques. The project found that changes in economic activity in Western Australia between 2000-2009 were associated with higher levels of road trauma than would have been observed had economic conditions remained constant at year 2000 levels. Analysis results have identified the need to consider future possible economic circumstances in setting road safety targets and to consider past changes in economic circumstances in assessing progress towards meeting targets set.

MIRI completed a study evaluating the appropriateness of the Victorian taxi fleet.
Statement of Income and Expenditure

From 1 January 2014 to 31 December 2014

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Notes:
1. Accommodation and other services which were previously supplied as in-kind support have been replaced as Central Support Services Overhead Costs. The University has provided a transfer of funds to part offset these charges.
2. Includes payments to consultants.

The Institute’s Statement of Income and Expenditure has been certified to be in accordance with the University’s Accounting and Financial Reporting System by the Office of the Senior Vice-President and CFO. Where required as a condition of funding grants, accounts will be audited by independent external auditors. The Institute’s accounts have been subjected to Government audit as part of the University’s annual accounts for the calendar year 2014.

Footnote: It should be noted that the Institute operates on a calendar year and its revenue and expenditure are, for the most part, project related and several projects span multiple reporting periods and calendar years. The apparent ‘surplus’ mostly reflects grant and contract income received in 2014 for expenditure that will be incurred in 2015.

JOEL CHIBERT
Director, Research and Revenue Accounting Services
Office of the Senior Vice-President and CFO