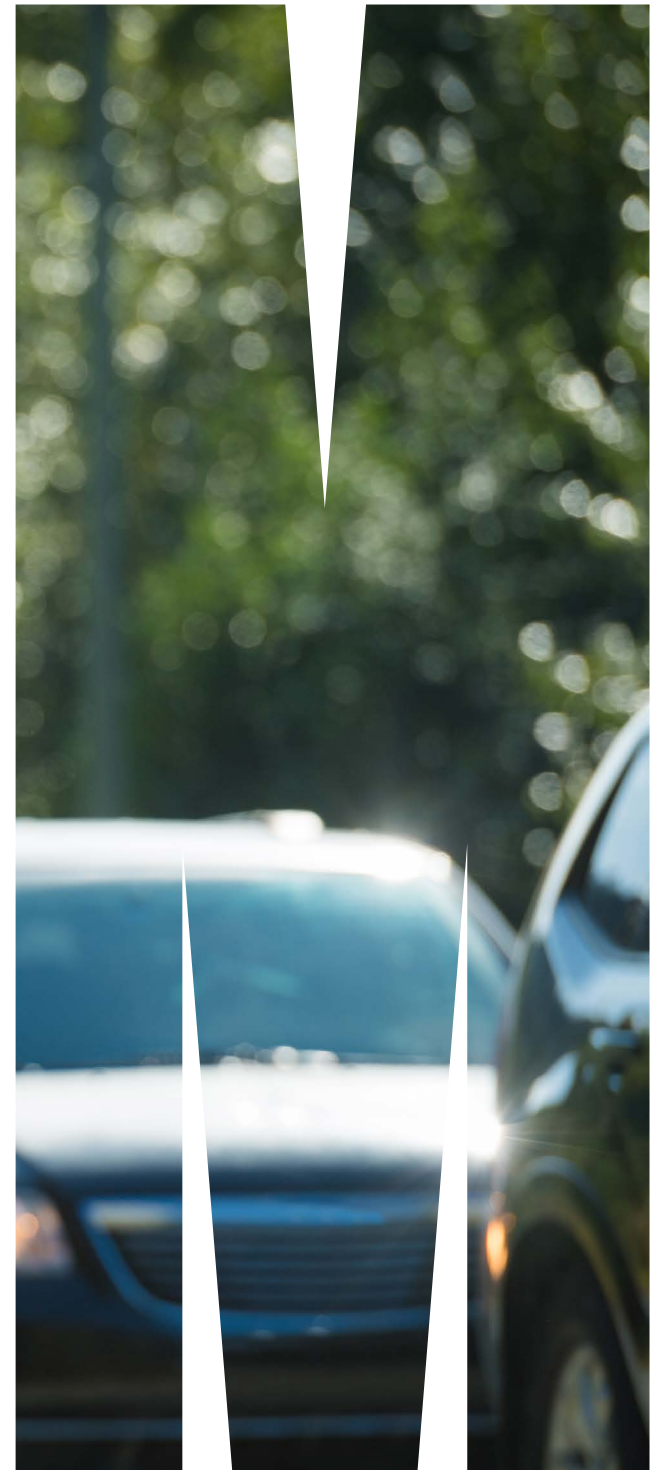




MONASH
University

MUARC

2018 Annual Report





FOREWORD

From Professor Ian Smith -
Interim Senior Vice Provost
and Vice Provost (Research)

In early 2018, I accepted the position of Interim Senior Vice-Provost and Vice-Provost (Research) following the retirement of Professor Pauline Nestor. As well as being responsible for enhancing the research performance of the broader University, the year also brought me closer to the impressive work produced by MUARC.

I saw an important example of this research in August when I had the pleasure of speaking at the Enhanced Crash Investigation Study (ECIS) Symposium at Melbourne Museum.

The project, funded by the Transport Accident Commission, examined 400 serious injury crashes across Victoria to determine their cause and severity.

The magnitude of such a project cannot be overestimated. Essentially, MUARC researchers were tasked with producing evidence and subsequent countermeasures that can save lives on our roads.

The evidence presented was sobering, and I imagine it was challenging for team members to interview hundreds of crash victims throughout the past four years.

What was clear to me, is that these researchers have a genuine desire to make a difference.

As you read the following sections of this 2018 MUARC Annual Report, you will notice a common theme. The research undertaken by the Centre is motivated by the same, worthy goal of preventing serious injury.

The Behavioural Safety Science team, for instance, has completed its role in the 'Safer cycling in the urban road environment' project. The research posits a road environment in which there is a much safer coexistence of motor vehicles and bicycles. Given Monash's commitment to sustainable transport, I commend the team for its pioneering research in this area.

The Advanced Safe Truck Concept project has also made impressive inroads into evaluating new technologies for monitoring heavy vehicle driver behaviour. The Regulation and In-Depth Crash Investigation researchers, and Human Factors team are playing a pivotal role in this \$6.5 million Cooperative Research Centre Project funded by the Australian Government. With collaborative research a central part of our university's mission, it is most pleasing to see MUARC and its technology development partners working alongside the freight industry to make its employees – and all road users – safer.

The importance of partnerships at MUARC is highlighted in the ongoing program of research on Used Car Safety Ratings. Led by the Injury Analysis and Data team and a large consortium of stakeholders across Australia, the research delivers important information to consumers about the crash protection offered by different cars. The Monash University Disaster Resilience Initiative also enjoys a strong relationship with Women's Health Goulburn North East and Women's Health in the North. In 2018, this relationship produced the 'Diversity in Disaster' conference which drew over 340 people to the Melbourne Cricket Ground and has since inspired seminal research papers on the role of gender in emergency management.

Another recurring theme in this report is MUARC's research impact on the pressing public health issues of today as well as those that pose significant challenges for the future.

During a time of national interest in the aged care sector, the Victorian Injury Surveillance Unit published comprehensive statistics on unintentional injury-related hospital admissions among aged care residents in Victoria.

During a time where reduced speed limits have been suggested as a countermeasure to address increased pedestrian fatalities, the Traffic Engineering and Vehicle Safety team is working with the City of Yarra to trial 30km/h speed zones in local streets.

During a time where technology seemingly provides both opportunities and challenges for transport safety, MUARC is collaborating with industry to determine how in-vehicle monitoring technology can save truck drivers' lives, and in partnership with Monash faculties, MUARC is developing a virtual autonomous driving simulator.

It is this consistent production of timely, real-world and impactful research that has made MUARC such a critical asset to policy makers in injury prevention for more than three decades.

Long may that continue.

ABOUT MUARC

The Monash University Accident Research Centre (MUARC) is one of the world’s most comprehensive injury prevention research institutions.

We are grounded in scientific and academic excellence, while producing research with real-life implications that translate readily into policy and practice – whether it is understanding contributing factors to older pedestrian falls, studying community preparedness and recovery in the event of a disaster or comparing year-by-year trends in crashworthiness of the private motor vehicle fleet.

MUARC is the home to many vital Monash researchers and groups. Because of the breadth of our research, we have a strong national profile and an international reputation that is growing in prominence.

The Centre identifies emerging injury problems, monitors progress, determines and evaluates solutions and advises government and industry on safety strategies. We encourage our experts to actively collaborate in solving pressing, practical problems – this allows our external partners access to expertise across their fields of interest. Our research is interdisciplinary and applies a systems framework to address injury prevention needs across three main settings:

- Home and community safety
- Workplace safety
- Transport safety

We have already made Australia – and Australians – safer. Now we are harnessing MUARC’s global perspective and experience to help meet the challenges of public health around the world through international collaborative projects, graduate student mentoring and leadership training across Europe, North America, the Middle East, South Africa and Asia.

We also make significant contributions to capacity building and injury prevention initiatives in the Western Pacific Region through our status as a World Health Organization Collaborating Centre for Violence and Injury Prevention. With our colleagues across Monash, we support and promote the principles of the United Nations’ Sustainable Development Goals and we are proud to contribute to the global network which strives to bring practical solutions for achieving safe, sustainable and resilient communities.





OUR MISSION

Our vision is for an injury-free society

“Through excellence in injury prevention research and translation, we support, challenge and engage citizens, communities, governments and industry to eliminate injury from all causes.”

Our goal is simple but profound: to create safe and resilient solutions to local and global challenges. We do this by:

Striving for excellence in our research and academic programs.

Creating and supporting the next generation of injury prevention leaders and advocates.

Engaging with governments, industry and community so they can make effective and accountable decisions to eliminate injury.

Leading and advocating for robust evidence-based injury prevention policy and interventions that can be adopted across communities.

Demonstrating a safe, supportive and inclusive workplace.

Providing the best possible physical resources to support the MUARC research program.

DIRECTOR'S MESSAGE

It is my pleasure to commend to you this overview of another highly successful year for MUARC. During a time of diminishing funding for University research, the Centre has been able to maintain its international reputation for high impact research. I acknowledge the commitment of all Centre staff in contributing to the significant achievements of 2018.

In addition to the impressive research output that fills this report, 2018 was a significant year for MUARC in respect to the milestones that will shape our future.

With MUARC's new three-year Strategic Plan (2018-2020) formulated, the Centre is motivated by its vision for an injury-free society with the objective of solving the challenges we face on a local and global scale.

A noteworthy achievement was the establishment of the inaugural MUARC Advisory Council. The purpose of the Council is to facilitate new networks to achieve broader reach and larger impact of MUARC's activities. The Council comprises prominent Australians with diverse experience from outside the academy. Chaired by Ms Anna Burke AO (Former Member for Chisolm, 1998-2016, Speaker of the House of Representatives 2012-2013), the Council members include Mr John Merritt (CEO of VicRoads 2014-2017), Ms Jillian Kilby (CEO and Founder of The Infrastructure Collaborative), Judge Frances Millane (County Court of Victoria and Vice President of the Victorian Civil and Administrative Tribunal) and Mr Ken Lay AO, APM (Former Chief Commissioner of Victoria Police, 2011-2015). Membership of the Council is designed to be dynamic and can expand as opportunities arise.

In May, the Centre secured re-designation status as a World Health Organisation (WHO) Collaborating Centre for Injury and Violence Prevention in the Western Pacific Region. The Centre supports the WHO through the continuing MUARC-WHO Internship appointments and a range of initiatives to strengthen capacity in the region on priority issues including road traffic, drowning and child injuries, and trauma care.

The Centre delivered two Road Safety Management Leadership Programs, hosting 50 senior leaders from Australia and around the world. A separate purpose-designed program was delivered for the State Government of Western Australia's Road Safety Commission. This drew 60 executive-level leaders from transport agencies and corporations from across the State and will contribute to preparations for the state's new road safety strategic plan.

MUARC continues to support a vibrant graduate research program with around 40 PhD and MPhil students. Hearty congratulations to the graduates of 2018: Dr Steve O'Hern, Dr Maatje Scheepers, Dr Rison Muhrison and Master of Philosophy graduate, Dudley McArdle. They join a growing cohort of Centre alumni around the globe who are contributing to injury prevention.

The Centre was successful in a bid to develop a new program in injury prevention which will form part of the University's prestigious Graduate Research Industry Partnerships (GRIPs) program. GRIPs are intended to develop interdisciplinary researchers capable of tackling real-world problems in industry. A feature of the program is to connect graduate researchers with academic leaders and industry partners as part of their PhD candidature. The MUARC-led GRIP in Injury Prevention (IP-GRIP) is a joint venture with the Monash Faculties of Arts, Engineering, Medicine, Nursing and Health Services, and Art Design and Architecture. The program will commence in 2019 and will support 17 new PhD scholarships. Partners include the Transport Accident Commission, Amy Gillett Foundation, Safer Care Victoria, Transport Safety Victoria, Bus Association Victoria, WorkSafe Victoria, Department of Justice and Regulation, Department of Health & Human Services and Department of Transport and Main Roads (Queensland).

The year also saw the commencement of the Advanced Safe Truck Concept project in collaboration with Seeing Machines, Ron Finemore Transport and Volvo Trucks. Launched outside Old Parliament House in March, the Australian Government Cooperative Research Centre Project aims to reduce heavy vehicle crashes using innovative technology that alerts drivers to fatigue and distraction. The project launch was well received and industry and government acknowledged this study's capacity to contribute to a much safer trucking industry.

The Centre hosted several international visitors and delegations during the year. These included senior academics from the French Transport Research Institute (IFSTTAR), Technical University Delft, the Indonesian National Traffic Police (Korlantas), and the Government of East Java Province.

MUARC participated in the 2018 Inquiry into the National Road Safety Strategy, hosting a roundtable to collate input from senior researchers on relevant issues and evidence. The report was delivered to the federal government in November, 2018 and can be accessed via <https://roadsafety.gov.au/nrssi/inquiry.aspx>

The University conferred three significant promotions of MUARC staff. Congratulations to Dr Steve O'Hern, promoted to Research Fellow Level B, and Dr Sharon Newnam and Dr Sjaan Koppel, promoted to Associate Professorial positions.

The Centre acknowledges the enthusiastic support of Professor Ian Smith as Interim Senior Vice Provost and Vice Provost (Research) during 2018 and welcomes the appointment of Professor Rebekah Brown as Senior Vice Provost and Vice Provost (Research) commencing in 2019.



Professor Judith Charlton,
Director, Monash University Accident Research Centre

BEHAVIOURAL SAFETY SCIENCE

The Behavioural Safety Science team uses broad multidisciplinary expertise and a 'Safe System' framework to study human behaviour and solutions for safety in all modes of transport, as well as in the workplace, homes and communities. The team is recognised as the leading research group in Australia on the safety of older and impaired drivers, pedestrians, cyclists and child passengers.

We measure the success and impact of our research by its translation into improved policy and practice that make communities safer places to live.

Our research connects with partners in government, industry and universities and research institutes in Australia and around the world.

Oz Candrive III

The Oz Candrive project celebrated its 8th year, marking the milestone with a special event and presentation of research highlights for participants in November 2018. Funded by the TAC with support from Eastern Health, VicRoads, the Victorian Department of Justice and Victoria Police, the project will formally conclude in mid-2019.

The study is making a significant contribution to older driver safety, tracking driving patterns with data-recording devices in drivers' own vehicles, and monitoring their health and functional abilities. Combined with our Canadian partners, the study involves over 1,300 participants.

Project members delivered findings at conferences throughout the year. Professor Judith Charlton and Dr Sjaan Koppel presented at the Gerontological Society of America's Annual Scientific Meeting in Boston, Massachusetts. Dr Daniel Griffiths joined the team in 2018 and presented his first paper from the study at the 7th International Symposium on Naturalistic Driving Research in Blacksburg, Virginia.

PhD student Renée St. Louis spoke at the Australasian Road Safety Conference in Sydney and was awarded Best Paper by a New Researcher. Her study was the first to link the concept of psychological resilience to self-reported measures of driving-related abilities, perceptions and practices in older adults.

A key outcome of the project will be the development of a risk stratification tool that can be used to identify older drivers who may be at risk and who require further assessment to determine fitness to drive. The team has plans to continue this work with its stakeholders and Canadian partners to trial the effectiveness of the tool for clinicians.

With the data collection phase drawing to a close the team said farewell to two long-serving staff members. Louise Beasley and Lorraine Atkinson were pivotal parts of the project and departed at the end of the driver assessment stage. We acknowledge their commitment to the project and their exceptional professionalism and genuine care for participants. We wish them well in the future.

On our bikes with innovative research

The Melbourne-based component of the 'Safer cycling in the urban road environment' study was completed in 2018. Several journal papers on key findings are being prepared. The first-of-its-kind study was funded through the ARC Linkage Grant Scheme and conducted across sites in Melbourne and Perth in partnership with Curtin University, Portland University (USA), the TAC, VicRoads, Main Roads WA, the Amy Gillett Foundation and Cycling Promotion Foundation. The research investigated urban road environment solutions to reduce the risk of injuries to cyclists.

The final stage of the project featured a simulation evaluation using MUARC's BikeSim and driving simulator. The evaluations tested driver and cyclist performance in various intersection environments, with the main objective to identify improved road designs.

The project team also hosted the Monash Cycling Safety Workshop in June. Cycling experts from Australia and abroad gathered in Melbourne with project partners to share findings, and consider recommendations based on outcomes of the extensive program of research.

MUARC's contribution to the project was led by Associate Professor Jennie Oxley, Dr Steve O'Hern and Brendan Lawrence.



PETER LIU – RESEARCH ASSISTANT
ASSOCIATE PROFESSOR JENNIE OXLEY – ASSOCIATE DIRECTOR
PROFESSOR JUDITH CHARLTON – DIRECTOR
MS RACHEL OSBORNE – RESEARCH ASSISTANT
DR SJAAN KOPPEL – SENIOR RESEARCH FELLOW
MS RENÉE ST LOUIS – PHD CANDIDATE
DR DANIEL GRIFFITHS – RESEARCH FELLOW
MS SUJANIE PEIRIS – RESEARCH ASSISTANT



The Child Safety in Cars project

Our work in child passenger safety continued in 2018, with PhD candidate Suzanne Cross nearing completion of her project on 'The role of behaviour in child occupant safety'. Suzanne has been researching the everyday behaviours of child occupants when travelling in their child restraint systems (CRS). Three hundred and eighty parents (of 719 children) completed an online survey related to CRS knowledge and beliefs about factors that may influence their children's safety in a motor vehicle (Cross, Charlton & Koppel, 2017). The survey revealed that the majority of parents correctly understood the recommended transitions from one restraint type to the next, based on age and visual marker guides. Gaps in parents' knowledge included when to transition from a booster seat to an adult seat belt. Parents who were younger (22-39 years), female, and with children under four years of age were significantly more likely to have better knowledge about restraint use than the comparison groups (Cross et. al., 2017).

Another component of the project involved a naturalistic driving study (NDS), collecting vehicle-based data and onboard video/audio data for 42 families. Suzanne's broad aim was to understand how children's behaviour influences their head position and potential vulnerability to injury when seated in a child restraint or booster seat. Suzanne will report findings of this study in a journal paper planned for submission early 2019.

Focusing on distraction

The Behavioural Safety Science and Human Factors teams continued to work together on the Australian Naturalistic Driving Study (ANDS). The project is a national collaboration led by the University of New South Wales and involving Monash University, Queensland University of Technology, the University of Adelaide, Curtin-Monash Accident Research Centre and Virginia Tech Transportation Institute. It uses advanced sensors and data-logging technologies to examine driver behaviour including interactions with road infrastructure and other road users. The study has fitted a data collection system in 346 private vehicles owned by 379 drivers in Victoria and New South Wales.

In October, Dr Kristie Young presented results from the study at the 6th International Conference on Driver Distraction and Inattention in Sweden and also the Australasian Road Safety Conference in Sydney. The study found that drivers were distracted 45 per cent of the time and engaged in a secondary activity every 96 seconds. These results received extensive media coverage around Australia, including the Sydney Morning Herald, Channel 10's The Project, 3AW, ABC Radio, most television news bulletins and a plethora of online news outlets.

The ANDS findings were also considered from the perspective of older drivers in a paper published in the November edition of the Journal of the Australasian College of Road Safety. Dr Young, Professor Charlton and Dr Koppel were authors of the paper. Older drivers spent 37% of their driving time engaged in secondary tasks, but were shown to have the ability to self-regulate the type and timing of these activities.

Future research stemming from ANDS will include Dr Young's collaboration with Professor Andry Rakotonirainy and Dr Mohammed Elhenawy from the Centre for Accident Research & Road Safety – Queensland (CARRS-Q). The team will investigate how machine learning can be used to automate the coding of ANDS video data to detect instances of distracted driving. The project will use state-of-the-art semi-supervised machine learning algorithms to detect driver distraction in off line mode. The outcomes of the project will potentially save many hundreds of hours of manual coding effort.

In a piece of synergy with the team's Ozcandrive project, Dr Griffiths will also be comparing the driver patterns of older drivers with the younger cohort from ANDS.

Identifying the potential benefits of mindfulness

Dr Koppel led an exciting research collaboration between MUARC (including Dr Amanda Stephens and Dr Young) and Monash's mindfulness-based training programs experts Associate Professor Craig Hassed and Dr Richard Chambers. Mindfulness training has been shown to be associated with positive outcomes for psychological functioning and cognitive performance, however the linking of mindfulness training with aberrant/potentially dangerous behaviours such as distraction and aggressive driving is relatively new. This collaboration has already demonstrated that mindfulness is associated with lower rates of self-reported aberrant driving behaviour (Koppel, et al., 2018); increased aggressive driving (Stephens, et al., 2018); frequency of driver engagement in potentially distracting activities (Young, et al., accepted), and self-reported crash involvement (Koppel, et al., 2018). The team has also recently conducted a systematic review which examined the evidence regarding the relationship between mindfulness and road safety, concluding that more research is warranted to specifically investigate the effectiveness of mindfulness as an intervention for reducing road trauma (Koppel et al., 2019). In addition, the team has extended this collaboration with Dr O'Hern to explore similar relationships in the cycling population.

Mandatory medical reporting

The team was recently commissioned by VicRoads to conduct a systematic review of literature on key issues relating to the efficacy of mandatory medical reporting by medical and other health practitioners. Led by Dr Koppel, the review examined the effectiveness of mandatory reporting of drivers with medical and other fitness-to-drive relevant conditions to licensing authorities. The review found evidence to suggest that mandatory medical reporting laws are associated with an improvement in practitioners' knowledge regarding how to report patients to authorities. However, there was inconclusive evidence regarding whether these laws increase the reporting of drivers or reduce their crash risk. The findings of this review have recently been submitted to a peer-reviewed journal.

Older drivers, newer technology

In 2018 the team was commissioned by the Curtin-Monash Accident Research Centre (C-MARC) in Western Australia to review older drivers' uses of and attitudes towards new technologies in vehicles. The study, comprising a desktop review and large-scale survey, is being led by Associate Professor Jennie Oxley, Professor Charlton, Dr David Logan, Dr Koppel and C-MARC's Professor Lynn Meuleners.

A helping hand for the footwear sector in Cambodia

A high number of fatalities on Cambodia's roads involve people commuting to and from work. The garment and footwear sector contributes a high number of these fatalities (NSSF, 2016), which is why the Asia Injury Prevention (AIP) Foundation is delivering a road safety pilot program to more than 8,000 workers, drivers and factory management in the industry. MUARC is participating in this project through training consultancy. Associate Professor Jennie Oxley, along with Dr Sharon Newnam and PhD candidate Mohammed Aburumman, are equipping government officials with the tools necessary for the implementation of an effective, user-friendly program.

Staff recognition

During the year, we were delighted to congratulate two team members on their promotions. Dr Koppel was promoted to Associate Professor (Level D). Sjaan's promotion was awarded through the Faculty of Medicine Nursing and Health Sciences Promotions Committee and judged by the same rigorous criteria for excellence and impact for research grants, publications and service as her peers across that Faculty. Her Associate Professorship is effective from 1 January 2019.

Dr Steve O'Hern was promoted to Research Fellow Level B. Steve's application was viewed positively by PVC Research who noted his excellence in research, education and engagement.

HUMAN FACTORS IN TRANSPORT AND WORKPLACE SAFETY

The Human Factors team is made up of members with a diverse array of knowledge and from various disciplines, among them psychology, design, computer science and engineering.

As a unit, we are interested in how people interact with complex work systems; our overarching aim is to prevent accidents, mainly through the use of human-centred methods. We focus on safe design and user-centred evaluation of systems, equipment, tasks and environments.

In 2018, the team continued to concentrate on areas such as road transport, mining, medical and the workplace.

Mining book hits the shelf

Professor Tim Horberry published a new book on mining that he wrote alongside colleagues from the University of Queensland and the National Institute for Occupational Safety and Health in the United States. *Human-centred design for mining equipment and new technology* features extensive case studies and an educational guide to assist the mineral industry and anyone learning about the field. The book was published by CRC Press USA/Taylor and Francis UK and is widely available.

As part of the team's interest in the minerals industry, Dr David Logan also undertook consultancy work for a major mining house about self-driving trains.

Raising safety standards for emergency workers

Emergency workers such as police officers, firefighters and ambulance paramedics put themselves at risk to save the lives of others. It is crucial, therefore, that sufficient training programs are provided for incident and emergency responders who work in high-speed road environments. Seed funding was granted in 2018 for a research paper that will support the development of a program for these responders. The project, led by Dr Sharon Newnam, entails the development a non-accredited training pilot for emergency service workers in high-speed road environments and the submission of a proposal for an accredited training program. As part of the broader project, MUARC intends to collaborate with Eastlink, Holmesglen TAFE and the emergency service sector in Victoria.

Dr Newnam also continued to lead the delivery of workplace road safety programs throughout the year. The team has created a workplace road safety development package that aims to create a culture where road safety is integrated within existing safety practices and embedded within the safety values of workers at all levels of the organisation.

Planning towards zero

Dr David Logan led the important task of modelling how to achieve the target of zero fatalities and serious injuries caused by road trauma. This work occurred through the *Modelling of Towards Zero Action Plan 2018-2020* and *Modelling of NSW Road Safety Action Plan 2018-2021* projects.



DR DAVID LOGAN – SENIOR RESEARCH FELLOW
PROFESSOR TIM HORBERRY – ASSOCIATE DIRECTOR
DR KRISTIE YOUNG – SENIOR RESEARCH FELLOW
MR NEBOJSA TOMASEVIC – SIMULATOR TECHNICIAN
MS RAPHAELA SCHNITTKER – RESEARCH ASSISTANT
MS CHRISTINE MULVIHILL – RESEARCH FELLOW
MS RACHEL OSBORNE – RESEARCH ASSISTANT
DR SHARON NEWNAM – SENIOR RESEARCH FELLOW



Simulators stimulating interest

The Human Factors team is responsible for MUARC's driving simulators, and they once again took a leading role in the work of the unit during the year. The car, portable car, cycle, and automation simulators were used steadily throughout 2018. They attracted interest from the many local and international visitors who toured Monash facilities, and the portable simulator was a popular attraction at the Agfest festival in Tasmania.

In close collaboration with Associate Professor Michael Fitzharris, the team began in earnest a major project looking at developing the next generation of fatigue and distraction technology. The Advanced Safe Truck Concept is being conducted using Cooperative Research Centre Projects funding and is bringing together MUARC, Seeing Machines and Ron Finemore Transport.

Throughout 2018, the major activity undertaken as part of this project was testing alert and sleep-deprived drivers in our car simulator. Nearly 80 drivers were tested during the year. The lead researcher is Christine Mulvihill, directed by Professor Horberry and Associate Professor Fitzharris.

The newest addition to our suite is the truck simulator. We successfully built the simulator and soon started testing 20 truck drivers for the Advanced Safe Truck Concept.

Keeping our eyes on distraction

Dr Kristie Young continued her Australian Research Council Discovery Early Career Researcher Award fellowship on driver distraction and self-regulation of attention. In the same broad field, Dr Young, Christine Mulvihill and Professor Horberry also undertook projects with both Metro Trains and VicRoads looking at driver/operator distraction issues and how they can be managed.

Professor Horberry, Dr Young and Rachel Osborne continued a MUARC Baseline project looking at pedestrian distraction caused by smartphone use, with a particular focus on risky behaviours from using smartphones while crossing roads. This work will be completed shortly.

Global network

The Human Factors team continued to enjoy many national and international collaborative relationships and opportunities in 2018. These include:

- Joint projects with colleagues in Europe and North America (such as Dr Newnam's heavy vehicles work with University of Michigan Transportation Research Institute in the USA).
- Many international conferences, including Professor Tim Horberry at the ITS World Congress in Copenhagen.
- Leading National conferences such as Dr David Logan attending the Australian Driverless Vehicles Initiative (ADVI) annual meeting in Adelaide.
- Several team members presented at the Australasian Road Safety Conference in Sydney.

We were also active with other colleagues across Monash University. For example, we received a Monash Infrastructure grant with colleagues from Civil Engineering, IT and MADA at Monash, and Coventry University in England.

Staff recognition

Dr Sharon Newnam was promoted to Associate Professor (Level D). Sharon was assessed through the Faculty of Business and Economics for her strong research record and high quality outputs. Her Associate Professorship will be effective from 1st January 2019.

Dr Newnam also received the accolade of a Research Field Leader in a September 2018 edition of The Australian's Research acknowledgements. Sharon was recognised as an expert in the area of 'Quality and Reliability'.

Congratulations to our PhD students

Our PhD students once again produced some excellent research and are regularly publishing their work in critical areas such as:

- Medical safety (Raphaella Schnittker)
- Mining industry leadership (Sarah-Louise Donovan)
- Workplace risk/OHS (Mohammed Aburumman)
- Work Design (Sara Pazell, at the University of Queensland, co-supervised by Professor Horberry)
- Vehicle automation (Nebojsa Tomasevic)

A safer approach to patient handling

Dr Sharon Newnam is working with WorkSafe Victoria to develop, pilot and implement a systems-based approach to identify the factors influencing the success of risk control measures for tasks involving transferring patients in hospital settings. This project, the Patient Handling Injuries Review of Systems (PHIRES) project, is in response to demand from the sector for assistance with reviewing risk controls following a report of a worker injury in order to design revisions at appropriate levels in the system to create more effective interventions. The objectives of this project are to develop: 1) a practical tool that OHS practitioners can use to investigate the risk controls and the factors that affect their success, 2) a model of the factors influencing the success of risk controls during patient handling tasks and 3) a framework to assist in designing more effective risk control interventions.

ADVANCED SAFE TRUCK CONCEPT

Funded under the Cooperative Research Centre Projects (CRC-P) funding scheme, the Advanced Safe Truck Concept (ASTC) project brings together technology, research and operational expertise to develop an innovative driver state sensing concept for use in commercial vehicles.

Our project team is led by Associate Professor Michael Fitzharris and Professor Tim Horberry, who are working alongside key partners Professor Mike Lenné (Seeing Machines), Dr Jonny Kuo (Seeing Machines), Mr Darren Wood (Ron Finemore Transport), Mr Mark Parry (Ron Finemore Transport), and Mr Mitch Peden (Volvo Trucks Australia).

Christine Mulvihill, Brendan Lawrence, Raphaela Schnittker and Nebojsa Tomasevic are also valued contributors of the MUARC team.

Along with Seeing Machines and Ron Finemore Transport, we are working towards further developing and refining the intelligence that keeps truck drivers and road users safe through future driver monitoring technology.

The heavy vehicle industry is a crucial component of transport systems and economies across the world. We recognise the need to keep the industry moving safely.

Project launch

Professor Judith Charlton, Associate Professor Michael Fitzharris, Professor Tim Horberry and Ms Christine Mulvihill were in Canberra on Tuesday, 27 March 2018 for the launch of the ASTC.

The Hon Paul Fletcher MP, Minister for Urban Infrastructure and Cities, delivered the keynote address outside Old Parliament House. The Minister was shown inside a Volvo Truck fitted with the latest Seeing Machines driver monitoring technology by Mr Ron Finemore AO.

Mr Finemore, Executive Chairman of Ron Finemore Transport, delivered a passionate speech about the need to use data effectively to keep truck drivers and the broader community safe.

Prof Charlton spoke on behalf of MUARC, stating that the project was set to make a profound impact on saving lives in the freight industry.

Why is ASTC needed?

According to the Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2462 Australians died as a result of involvement in heavy vehicle crashes between 2005 and 2014. These fatalities represented 17.5% of deaths on Australian roads.

Driver drowsiness remains a significant contributing factor to road crashes, accounting for 20-30% of all fatal crashes. Fatigue has also been shown to be a significant factor to crashes worldwide. For instance, the United States' National Highway Traffic Safety Administration (NHTSA) estimates that there were an average of 83,000 crashes each year between 2005 and 2009 related to drowsy driving, with 37,000 injury crashes and 886 fatal crashes per year.

First phase

Extensive data are being collected using car and truck driving simulators. Combined, these will represent one of the largest and in-depth drowsiness datasets available. A MUARC truck simulator was built. This employs a full-size Volvo truck cab supplied by Ron Finemore Transport. It uses the same projection screens as our car simulator and the scenarios tested are comparable.

Throughout 2018, MUARC recruited over 80 car drivers who underwent three sessions in the car simulator. The first session was a briefing, the second session tested the drivers when rested, and the third session tested them when drowsy. We also began recruiting truck drivers, who went through the same three-stage process in the truck simulator. This latter component continues into 2019 with the aim of testing 20 truck drivers.

Second phase

The second phase is Australia's first naturalistic truck study, and the first worldwide to our knowledge to use driver monitoring technology. This component of the project builds on Seeing Machines' Guardian technology platform that actively monitors for and alerts drivers to fatigue and distraction. Ten trucks have been instrumented with the Seeing Machines sensing platform for up to 6 months, generating over 10,000 hours of real-world data that is critical for technology development.

Third phase

The third phase involves a mixed-method approach to develop new Human-Machine-Interface concepts for driver distraction, drowsiness and workload. In practice, this relates to how drivers ought to receive information on their level of drowsiness and when they are distracted. Based on these findings of the HMI development work, feedback from car and truck drivers will be sought, with this work continuing into 2019.

The full project is expected to be completed in 2019.

Presentations

Several ASTC team members presented on the project during 2018:

- At the 25th ITS World Congress in Copenhagen, Seeing Machines Chief Scientific Officer and MUARC Adjunct Professor, Mike Lenné, presented 'The Advanced Safe Truck Concept Project: A partnership program developing future integrated driver monitoring technology'.
- At the Australasian Road Safety Conference in Sydney, Christine Mulvihill presented 'The efficacy of measures for investigating driver fatigue and distraction: A simulator study'.



PROFESSOR TIM HORBERRY – ASSOCIATE DIRECTOR
PROFESSOR JUDITH CHARLTON - DIRECTOR
MS CHRISTINE MULVIHILL – RESEARCH FELLOW
ASSOCIATE PROFESSOR MICHAEL FITZHARRIS
– ASSOCIATE DIRECTOR



MS TANDY POK ARUNDELL – PROJECT COORDINATOR
ASSOCIATE PROFESSOR MICHAEL FITZHARRIS
– ASSOCIATE DIRECTOR
DR SARA LIU – RESEARCH FELLOW
MS SUJANIE PEIRIS – RESEARCH ASSISTANT

REGULATION AND IN-DEPTH CRASH INVESTIGATION

The Regulation and In-Depth Crash Investigation (RICI) team is interested in matters relating to road and vehicle safety regulations; we consider how decisions are made, formulated and supported through evidence-based science. Our unit, led by Associate Professor Michael Fitzharris, creates comprehensive in-depth crash data, in addition to utilising data from hospitals, police and compensation systems to identify safety concerns.

Envisaging a safer future for blind and low-vision pedestrians

Electric vehicles will bring significant environmental benefits, including reduced emissions and exhaust particulates as well as less vehicle noise. This very quietness poses a significant risk to pedestrians who are blind or have low-vision.

In 2018, we began and delivered a report in conjunction with Vision Australia about the dangers posed by electric vehicles to these pedestrians. The study engaged with the blind and low-vision community through focus group discussions and an online survey of nearly 250 participants.

Led by Dr Sara Liu and Associate Professors Michael Fitzharris and Jennie Oxley, the research found that 35% of those surveyed had experienced either a collision or near-collision with an electric or hybrid vehicle.

The Report made a series of recommendations that, if implemented, would see Australia follow other countries in mandating the fitment and activation of an Acoustic Vehicle Alerting System (AVAS) in all electric and hybrid vehicles. The technology produces a sound that alerts pedestrians and cyclists to the otherwise near-silent vehicles. The Report also made a number of other recommendations, covering vehicle technology, road infrastructure design and driver education. It is anticipated that further development of this work and the uptake of recommendations will commence in 2019.

Analysis of crashes on Transurban Roads

In 2018, we delivered to Transurban the results of our evaluation of the road safety performance of Transurban-owned and operated roads in NSW, Victoria and Queensland. The research found that, adjusting for traffic volume, there were significantly fewer injury crashes on Transurban assets than 'like', or comparable roads.

At the same time, the research highlighted a number of opportunities for Transurban's consideration to improve performance. The analysis builds on previous work and is designed to assist Transurban in meeting its stated objective of eliminating fatality and serious injury crashes from its network.

Drug-driving

The team continued its work on impaired driving, with a major program of research examining drug-driving.

The program, titled, 'Drug-driving: improving our understanding of risk and motivation for driving after use of illicit substances', is a multi-year program that aims to identify countermeasures that, when implemented, would reduce drug-driving on Victorian roads. The project is funded under the MUARC Baseline program and involves the collaboration of the Burnet Institute through Professor Paul Dietze.

Our work in this area took a major step in 2018 with an online survey on drug-driving attitudes attracting 1850 respondents. The survey provides road safety agencies and policy-makers with critical insights to the motivations for driving after consuming drugs and alcohol and the types of drugs and prescription medications they use. A key part is documenting what the Victorian community believes to be the most effective ways to influence driver behaviours and to reduce drug-and alcohol-related driving.

The findings will be finalised for Baseline partners in 2019, across a series of Reports.

Our work on this topic also saw Associate Professor Michael Fitzharris present to the Australasian College of Road Safety Symposium on Impaired Driving in August.

Motorcycle research

We continued our long-standing and successful collaboration with Dr Julie Brown at Neuroscience Research Australia (NeuRA) on the effectiveness of protective motorcycle clothing.

This work focused on assessment protocols for motorcycle clothing standards, and following our earlier work, saw the publishing of a paper in Traffic Injury Prevention titled, 'Near-miss crashes and other predictors of motorcycle crashes: Findings from a population-based survey'.

MUARC also continues to participate in the multi-year EU COST Action, known as SafeTwoWheelers. The COST Action seeks to realise the benefits of increased motorcycle usage – such as energy savings and less traffic congestion – by prioritising motorcycle safety. In doing so, the initiative draws upon safety experts to develop and coordinate a research approach that can inform motorcycle users, industry and authorities.

We worked closely with the University of Florence and Dr Giovanni Savino, who presented at the 12th International Motorcycle Conference in Cologne, Germany. The paper, co-authored by Associate Professor Fitzharris, produced a priority list for motorcycle safety measures and a framework that can underpin further research in the field.

Associate Professor Fitzharris also presented at the University of Southampton (England) on the number and types of motorcycle crashes and the role of technologies such as Anti-Lock Braking Systems (ABS) and Autonomous Emergency Braking (AEB). An Australian perspective was provided, showing the economic cost of motorcycle crashes in Victoria from 2000-2011 was \$11 billion. It was demonstrated that technology could play a role in reducing 57% of crashes. While this reduction is significant, Associate Professor Fitzharris noted the figure also shows there are 43% of crashes where solutions are still required. This work will be published in Traffic Injury Prevention in 2019.

Enhanced Crash Investigation Study

The \$8m TAC-MUARC Enhanced Crash Investigation Study (ECIS) seeks to provide the Transport Accident Commission (TAC) with new insights on how serious injury crashes occur, as well as the factors that influence the severity of injuries sustained.

A goal of ECIS is to identify evidence-based road safety countermeasures that would achieve the TAC's long-term objective of eliminating serious injury crashes in Victoria.

On Wednesday 29 August, the TAC hosted a symposium at the Melbourne Museum Theatre where over 150 invited guests heard the first findings of the study.

Hosted by ABC Presenter Virginia Trioli, the event began with an introduction from TAC CEO Mr Joe Calafiore and a presentation on the impact of serious injuries on Victorians by TAC Lead Director Road Safety, Ms Samantha Cockfield.

At the event, TAC International was launched by Victorian Minister for Finance, Mr Robin Scott, who described the venture by stating it will initially focus on providing low or no cost advice to lower-middle income countries in the Asia Pacific region.

The World Bank's global lead and Head of the Global Road Safety, Dr Soames Job, then demonstrated the need to address serious injuries on a global scale, highlighting the safety and economic imperatives of government investment. Other presentations were given by Ms Jessica Truong (Global NCAP) and Mr Rob McInernay (IRAP).

Invited guests were also introduced to the museum's new 'Road to Zero' experience by TAC Project and Content Manager, Ms Anne Harris, and had the opportunity to tour the exhibition.

Vice Provost, Professor Ian Smith, introduced ECIS before Associate Professor Michael Fitzharris and Sujanie Peiris revealed the key findings on behalf of their investigators and team. The project examined 400 serious injury crashes that occurred across Victoria. The goal was to determine the factors associated with their occurrence, injury severity and to identify opportunities to prevent these crashes and injuries in the future.

The findings showed the enormous economic cost of crashes to the TAC and the Community. The study clearly demonstrates strong relationships and interactions between pre-crash travel speed, impact speed, vehicle safety, road infrastructure and injury severity outcomes.

The project's ongoing work will provide guidance on how Victoria can achieve its Towards Zero ambition.

ECIS has many partners including The Alfred Hospital and the Royal Melbourne Hospital, and many staff who have worked with us on the project. We acknowledge their contribution.

We are indebted to those individuals and their families that participated in the study in the hope that what we learn makes the roads safer for all. The value of their individual contributions can never be understated, nor forgotten.

External engagement

Our team was engaged in a number of other activities throughout 2018:

- Associate Professor Fitzharris presented at the Victoria Police Professional Development Workshop and also the Road Safety Management Leadership Program, both hosted by MUARC. He also presented a paper on ECIS at the Association for the Advancement of Automotive Medicine's 62nd annual conference in Nashville, Tennessee. The paper, led by Sujanie Peiris and published in Traffic Injury Prevention, used ECIS data to evaluate alternative intersection treatment in rural crossroads. Associate Professor Fitzharris also attended the 25th ITS World Congress in Copenhagen where a paper on the Advanced Safe Truck Concept was presented with project partner Seeing Machines.
- We hosted Bosch, the Australian Transport Safety Bureau and Fédération Internationale de Motocyclisme.
- We visited the Major Collision Investigation Unit at Victoria Police's road policing facility.



ASSOCIATE PROFESSOR STUART NEWSTEAD - DEPUTY DIRECTOR
DR TREVOR ALLEN – RESEARCH FELLOW
MS LAURIE BUDD – RESEARCH ASSISTANT
DR CARLYN MUIR – SENIOR RESEARCH FELLOW
MR ANGELO D'ELIA – RESEARCH FELLOW
MR LUKE THOMPSON – RESEARCH ASSISTANT
MS ANNA MAGENNIS – RESEARCH ASSISTANT
DR KAREN STEPHAN – SENIOR RESEARCH FELLOW

INJURY ANALYSIS AND DATA

Led by Associate Professor Stuart Newstead, the Injury Analysis and Data (IAD) team's expertise lies in highly analytical data-driven safety research. The unit's researchers are specialists in numerical and behavioural sciences, and public health, possessing the ability to manage, analyse and present accident and injury data to produce real-world benefits.

Collecting, analysing and interpreting data with accuracy, rigour and insight is essential to the safety sciences, and this expertise brings about collaborations with leading public and private organisations across Australia and the world.

Quantifying and improving the safety of vehicles

Impact from the IAD team's program of research delivered for the Vehicle Safety Research Group, a consortium of motoring clubs, road authorities and insurers across Australia and New Zealand, was again highlighted by the annual publication of the Used Car Safety Ratings (UCSRs) produced by the team. This comprehensive guide gives consumers information on the safety of their current vehicle and any used vehicles they are considering buying based on real-world crash outcomes. This year, the ratings were able to cover more vehicle makes and models than ever before due to enhancements to the data system underpinning the ratings. They were also enhanced to include assessment of reversing camera fitment to identify 'safer picks' based on recent IAD research quantifying the road safety benefits of this technology in reducing reversing crashes.

Capitalising on the power of the database assembled to produce the UCSRs, the team completed a number of additional research projects. The first of these assessed the contribution vehicle safety improvements have made to reaching strategic road safety goals in Australia over the past 15 years. It also forecast expected future gains through improvements in injury mitigation from improved crashworthiness and crash risk reduction through increased uptake in new crash avoidance technologies such as Autonomous Emergency Braking (AEB). A second project capitalised on a newly established motorcycle Vehicle Identification Number decoding system established by MUARC to identify the contribution of motorcycle design and specification to both crash risk and injury outcomes in crashes. From this analysis it was then possible to assess the relevance of the Learner Approved Motorcycle Scheme to improving road safety outcomes for novice motorcyclists and where this scheme could be potentially enhanced.

A research project providing statistics on the potential benefits of AEB for both light and heavy vehicles, including evaluation of the crash reduction effects of AEB for light vehicles in Australia, was commissioned by the Australian Commonwealth Department of Infrastructure, Regional Development and Cities. Outcomes from the research will inform the development of a Regulatory

Impact Statement to support the development of a mandate to fit this technology to vehicles in Australia.

As part of the MUARC Baseline Research Program, the team also commenced a program of research to establish and document the available data sources in Victoria and Australia more broadly to underpin comprehensive safety analysis for heavy vehicles. Analysis of the available data will also be conducted with the program outcomes to inform both the development of heavy vehicle regulations as well as priorities for new and enhanced data collection to enable research to inform heavy vehicle safety policy. A further project conducted in this area was an analysis of contributing factors to heavy vehicle fatal crashes in Victoria through the analysis of coronial inquest records. This project was carried out in collaboration with staff from the Monash University Department of Forensic Medicine.

Data systems and metrics

The monitoring of road safety trauma outcomes is of significant interest to the Victorian community. The 'road toll' or counts of fatalities are usually reported in the media and are generally available soon after they occur. Although serious injuries often represent a larger overall burden to the community, the ability to report them is delayed due to the time taken to finalise crash-related data. In an effort to significantly reduce this lag, the Transport Accident Commission (TAC) approached MUARC to assist with developing a 'leading indicator series' of Police-reported serious injury. The project explored the accuracy of reporting serious injury at different lag points post-crash date to establish how accurately serious injury can be reported using a prediction model that utilises various information available from key data sources. The project found that it was feasible to produce an accurate leading indicator series of serious injury with a three-week time lag. This would reduce the current four-month wait to finalise crash-related data.

Improving the safety of high-risk and vulnerable road users

If we consider the road trauma problem in statistical terms, vulnerable and high-risk road users are disproportionately represented. With this in mind, a number of research projects undertaken by the IAD team in 2018 focused on key, high-risk road user groups.

Evaluation of the P Drivers Project, one of the largest trials of a behaviour change-based program for new probationary drivers ever undertaken, was completed in 2018. Evaluation of the New South Wales Safe Driver Course, a similar program aimed at learner drivers, was also completed. Both projects provide significant evidence on the benefits of behaviour change programs to improving novice driver safety.

Work also commenced on a MUARC Baseline Research Program project examining the role of prescription medicines in contributing to road crash risk. It is undertaking a comprehensive literature review to establish current knowledge regarding prescription medicines and road safety as well as investigating the feasibility of establishing a suitable linked data system to further measure risk in the Victorian context.

A further project was also completed for the Safe System Road Infrastructure Program office of VicRoads examining the road safety benefits of 40km/h speed zones on strip shopping centre precincts in Melbourne. Analysis outcomes provide evidence on site characteristics where future expansion of this program will have the greatest road safety benefits.

Assisting in setting strategic directions

Both Victoria and NSW have road safety strategies that set targets for the reduction of deaths and serious injuries from road crashes through the coordinated delivery of a range of programs and countermeasures. Work was undertaken by the IAD team for both the Victorian and NSW Governments to produce baseline models of road trauma trends in each state, and in particular predict likely road trauma trends to the end of each strategy. Statistical evaluation models were developed that examined historical trends in both fatalities and serious injuries and, based on research evidence, quantified the impact that implemented road safety programs have had on observed trauma. The model also considered the impacts on trauma levels of travel exposure growth, as represented by population growth, and changes in economic circumstances. The model produced forecasts of expected future road trauma accounting for planned ongoing initiatives and investment in road safety programs under each road safety strategy. This assists with the development of the road safety plan of each jurisdiction which sets out priorities for achieving long-term strategic goals.

A key enabler of the IAD team strategy research was the Traffic Enforcement Resource Allocation Model (TERAM) previously developed under the Baseline Research Program. For the first time, TERAM allowed estimation of the potential road trauma impacts of additional investment in enforcement programs by Victoria Police and the Department of Justice and Community Safety to be integrated into the broader strategic road safety modelling exercise along with more traditional investments in infrastructure and vehicle safety improvements. Further use of TERAM was made during 2018 to inform planned expansion of drug, alcohol and speed enforcement in Victoria.



Improving the effectiveness and efficiency of road traffic policing

The team further demonstrated its expertise in the area of police traffic enforcement through a wide range of projects undertaken in 2018. The IAD team continued projects for the ACT Government including further work on evaluation of the Alcohol Interlock Program for convicted drink-drivers and completion of an evaluation of the fixed and mobile speed camera program.

A project developing strategic advice on expansion of the Western Australian Automated Traffic Enforcement Program was completed and presented to the WA Road Safety Forum meeting. The team completed further evaluation of the Queensland Camera Detected Offence Program identifying the need for a new evaluation framework for assessment of the Queensland mobile speed camera program.

Drug driving is becoming an increasing problem on Victorian roads with the presence of drugs in fatal road crashes now equal to that of alcohol. In response, Victoria Police with funding from the TAC has increased the level of roadside drug enforcement on Victorian roads. The IAD team has been commissioned by the TAC to undertake an evaluation of the effectiveness of the expanded drug testing program as well as further evaluation on the effectiveness of roadside alcohol testing. Results feed directly into a new strategic plan for road policing being developed by Victoria Police.

Vehicle identity theft was identified as a problem on our roads by the Victorian Government in the Community Safety Statement 2017. As part of the response, VicRoads in collaboration with the Department of Justice and Community Safety and Victoria Police engaged researchers from the IAD team to investigate vehicle number plate fraud and its association with crime and safety outcomes. As part of the first stage of the project, a literature review of the topic has been completed identifying the level of knowledge on the degree and types of vehicle identity theft and its impact on crime. It also considered the range of technologies available to potentially address this problem. The next stage is well underway and involves sourcing relevant data from partner organisations to quantify the level of vehicle identity fraud and crimes associated with the activity, identifying gaps in our understanding of the issue, and recommending strategies to reduce the impact of number plate fraud on public safety.

As part of the MUARC Baseline Research Program, IAD team researchers undertook a project to ascertain the potential road safety benefits of camera-based enforcement of hand held mobile phone use in vehicles. The study has drawn on a number of information sources including the most recent naturalistic driving studies to ascertain the prevalence and risks of hand held mobile phone use as well as data on prevalence from recent trials of camera-based mobile phone use enforcement.

Guiding emergency services

Strong collaboration between MUARC (led by the IAD team) and emergency services including the Victorian Country Fire Authority (CFA), Metropolitan Fire Brigade (MFB) and Victoria Police continued in 2018.

Collaborative projects with the CFA continued including a study to link the CFA Fire Incident Reporting System with various other administrative data sources. This study aims to improve the identification and severity classification of people injured in CFA-attended events. A project also commenced to understand factors contributing to the risks and severity of non-residential fires in CFA service areas in order to better target prevention programs in these structures. Acknowledging the value of previous work conducted by the IAD team for the CFA in establishing factors contributing to the risk and outcomes of residential building fires, the MFB has commissioned a similar project to understand the risk factors of residential building fires in their service areas in Melbourne.

In collaboration with colleagues from the Monash University Faculty of Medicine, in 2018 the IAD team completed two projects aiming to better understand both physical and psychological injury amongst Victoria Police members. The police injury study involved analysis of injury claims over time, and the mental health prevalence study involved an organisation-wide survey of both operational police and public service employees.

INJURY OUTCOMES RESEARCH

With an overarching aim of helping injured people receive better healthcare, the Injury Outcomes Research Group conducts research into how they react to, respond to and cope with injury and trauma. The group comprises researchers who possess expertise in medicine, epidemiology, statistics, psychology, health promotion and population health.

Researchers from across MUARC work in close collaboration with the Institute for Safety, Compensation and Recovery Research (ISCRR), WorkSafe Victoria, the Transport Accident Commission (TAC), as well as injury-focused stakeholders across the world.

Identifying the effect of pre-accident medical conditions on rehabilitation

A project completed in 2018 showed the impact of pre-existing health conditions on how people recover from a transport accident.

The project linked TAC claims data with Victorian Hospital Admitted Episodes Data (VAED), Mental health services data (CMI/ODS), and Alcohol and Drug Information System (ADIS) data.

Associate Professor Janneke Berecki-Gisolf and Dr Trevor Allen presented the results at the TAC in November, with the study providing a knowledge base that can be used to improve the support provided to TAC clients. Dr Sara Liu was also part of the investigation team.

TAC clients with pre-existing pain were found to suffer a range of adverse post-accident outcomes. The subsequent delay in rehabilitation for these clients prompted further chronic conditions such as hypertension and depression.

Clients who had previously used mental health services and experienced drug and alcohol-related issues also took longer to return to work after transport accidents.

The study was funded by the TAC through ISCRR. Data linkage is carried out by the Victorian Data Linkage Unit at the Department of Health and Human Services.

Crash and injury outcomes for older road users

An ageing population means the proportion of Australian adults aged 65 years and over is expected to reach 22% by 2061. To address the concern of growing road trauma among older people (defined as 65 years and over), MUARC completed an analysis of the occurrence, severity and risk factors of older road user crashes. Funded under the Baseline Research Program, the project identified priorities for policies and programs relating to this demographic of drivers.

From an Injury Outcomes perspective, an analysis of TAC Claimants showed a strong association between injury and age, as well as speed. The number of road users that died or were hospitalised for more than one day increased with age. For example, while 22.1% of drivers aged between 41-55 years were hospitalised for at least one day, this figure increased to 26.8% for 65-74-year-old claimants, 32.2% for 75-84 year old claimants, and 38.1% for 85 years and older claimants. There is a 1 in 10 chance of an older driver/passenger being killed if involved in a crash in a 110 km/h zone, with this likelihood increasing for those aged 85 years and older.

The total direct cost to the TAC for older driver crashes is \$361,167 million (\$26 million per annum). With an increased financial burden identified as a future risk, the project highlighted the need to focus on injury mitigation and crash reduction strategies specific to older road users.

The project was headed by Dr Sjaan Koppel, Associate Professor Michael Fitzharris, Associate Professor Stuart Newstead, Mr Angelo D'Elia, Ms Laurie Budd and Professor Judith Charlton.

Bouncing back from disease and injury

In July, Dr Dianne Sheppard started her work on the National Breast Cancer Foundation-funded project: "Testing the feasibility of a support intervention for transitioning back to 'good' work following breast cancer". The pre-recruitment stage is progressing well with learnings from the pilot study feeding into the refinement of consultant training and the program's implementation.

Another of Dr Sheppard's projects is the fast-track recovery app, funded by the New South Wales State Insurance Regulatory Authority. The app has been designed to facilitate recovery from non-catastrophic motor vehicle accident injury. With the project entering its final six months, top-up funds are being sought to allow the team to add an additional recruitment strategy before finalising the evaluation.

Monash Alfred Injury Network collaboration

Our partnership with the Monash Alfred Injury Network (MAIN) continued as we work towards improving post-crash survival outcomes by optimising acute emergency care systems.

As part of our objective to identify the benefits of crash notification technology in boosting people's chances of survival and recovery, we reviewed emergency call system eCall.

Funded by the Monash University Interdisciplinary Research grant scheme, the ongoing project involves partners from the School of Public Health and Preventive Medicine (Professor Peter Cameron), Department of Surgery, Central Clinical School, The Alfred (Professor Mark Fitzgerald), Department of Community Emergency Health and Paramedic Practice (Associate Professor Brett Williams), and MUARC (Professor Jude Charlton and Associate Professor Michael Fitzharris).

MONASH UNIVERSITY DISASTER RESILIENCE INITIATIVE

The impact of climate change demands all communities become more resilient to its outcomes. The Monash University Disaster Resilience Initiative (MUDRI) team responds to this challenge and supports communities in strengthening their resilience. MUDRI’s multidisciplinary expertise combines academic and industry experience, public health, anthropology, emergency management, social science and disaster risk reduction to work collaboratively across the community sector. The team comprises Emeritus Professor Frank Archer, Dr Caroline Spencer, Dudley McArdle, Dr Saadia Majeed, Dr Debra Parkinson, Dr Deanne Bird, Dr Ben Beccari, Suzanne Cross and Samantha Bailey. Launched in 2012, MUDRI dates back to 2005 where it had its origins in the Faculty of Medicine, Nursing and Health Sciences.

Building our flagship Compendium

Launched in 2015, the online *MUDRI Victorian Compendium of Community-Based Resilience Building Case Studies*, a first in Australia, continued to grow strongly in 2018 with a 50 per cent increase in new case studies accepted for inclusion, bringing the total to 30. The case studies provide exemplars of resilience building activities and are free for anyone wanting to help community members build expertise, reduce program duplication and save valuable resources, particularly in the setting of disasters and emergencies. With sufficient case studies to analyse, the Compendium provides data to identify critical success factors to help others support their communities in strengthening their resilience in case of disasters, sudden events or unexpected emergencies.

Conference leaves legacy

The team’s year was highlighted by its relationship with the Gender and Disaster Pod. The partnership proudly delivered the Diversity in Disaster conference, held at the Melbourne Cricket Ground in April. Over 340 participants heard from researchers, policymakers, community representatives and people with lived experience from across Australia and New Zealand. The conference focused on a range of diversity topics including LGBTI-inclusive emergency management, and gendered expectations and consequences in disaster. MUDRI was represented on the steering committee and a number of the MUDRI team and associates presented papers at the Conference.

The event will have a lasting impact through its Conference Monograph. These legacy documents encompass the works of key researchers and community representatives who presented at the conference, book-ended by the Issues Paper and the Outcomes Statement. The documents, funded by the National Disaster Resilience Grant Scheme, are expected to prompt further research and provide a valuable resource to community members, students and state government agencies.

Understanding the big picture: Women’s Health Goulburn North East and Women’s Health in the North

Disaster resilience is about more than the disaster. When unexpected weather events ravage communities, it can take months, years and decades for residents to find their feet. For this reason, MUDRI engaged in a novel project that sought to understand disaster resilience beyond the first three years of a disaster. Dr Debra Parkinson led the research component, while Dr Caroline Spencer led the literature review team. The project, funded by National Disaster Resilience Grant Scheme, will be launched in early 2019.

Community evaluations

- An evaluation of workshops based on responsible burning-off practices for EMTRAIN.
- A Capacity Statement evaluating the Centre of Resilience for the Emerald Community House

Research publications

- 12 publications
- Two reports to funders.
- Our contributions to a second Australian Institute of Disaster Resilience’s Monograph called Diversity in Disaster Monograph, a project led by Dr Deb Parkinson.

Graduate education

In 2018, the MUDRI higher degree by research program comprised eleven students in the Masters by Research and seven in the PhD program. All MUDRI students remain on track with candidature milestone achievements. Students from both cohorts attended the annual MUDRI one-day Colloquium and engaged with national leaders in the field. MUDRI celebrated its first Masters success and graduation: Dudley McArdle’s thesis on professionalism in emergency management titled ‘Australia’s Emergency Managers – Towards Professionalisation’.

MUDRI welcomed 27 coursework students from the Master of International Development Practice and Master of Nursing during the year. We particularly appreciated the continued academic and professional support from the Faculty of Arts. Faculty staff provided unrelenting valuable professional assistance to the MUDRI team with the commencement of the revitalised and restructured MUDRI unit ‘Guiding principles for professionals engaged in disasters and humanitarian crises’, which ran in 1st and 2nd semesters.

Welcome new adjuncts

In 2018, MUDRI welcomed Dr Ben Beccari and Dr Deanne Bird who joined the team as Adjunct Research Fellows. Dr Becarri is a senior advisor in monitoring and evaluation at the State Emergency Service (SES), while Dr Bird is a human geographer from the University of Iceland. Both adjuncts bring an appreciated set of real-world expertise to our team.



EMERITUS PROFESSOR FRANK ARCHER – ASSOCIATE DIRECTOR
DR CAROLINE SPENCER – RESEARCH FELLOW
MR DUDLEY MCARDLE – CONSULTANT



Major lectures

Mr Joe Cuthbertson, Chair of the WADEM Oceania Chapter, delivered the 13th Annual Professor Frederick ‘Skip’ Burkle Keynote Lecture. Titled ‘A WADEM Oceania Chapter: Celebrating 10 years’, the keynote lecture was a particular highlight of MUDRI’s year as it celebrated the 10th anniversary of the Chapter, which began its life at Monash in 2008. Of significance, the Chapter is the first of WADEM’S Chapters to reach this milestone.

Jerril Rechter, CEO of VicHealth presented the keynote Oration at the 2018 Emergency Services Foundation National Conference in Melbourne. This was The Fourth Annual Claire Zara Memorial Oration.

Back by popular demand

The popular MUDRI Annual Community Forum returned for its 6th showcasing event to address community needs and help drive resilience strengthening activities. The theme for this year’s one-day Forum *Community-based Resilience: the community speaks* attracted 85 participants representing: community members; community leaders; community-based organisations; community development practitioners; emergency, health and social services; state and local government; business and private agencies, and university academics and students. This community-based resilience network enables participants to benefit from connecting with like-minded people.

Global reach

The international exposure of MUDRI continued to grow. MUDRI staff made four presentations at the Asian Pacific Conference for Disaster and Emergency Medicine in Kobe, Japan, one of which was a well-received special lecture.

Emeritus Professor Frank Archer continued as a member of the World Association for Disaster and Emergency Management’s (WADEM) Prehospital and Disaster Medicine Editorial Board and as a Board Member of the Asian Pacific Conference for Disaster and Emergency Medicine. Dr Caroline Spencer continued her roles on the WADEM Regional Oceania Chapter Council and the WADEM Editorial Board. Joe Cuthbertson continued to co-chair the WADEM EMS Section and maintained his position as Chair of the Oceania Chapter Council, and on the WADEM Board.

MUDRI continued its collaboration with the University of Greenwich, London. The team commenced research to explore the different ways that the community understands emergency warnings during emergency events.

Professional outreach

The professional outreach of MUDRI included:

- Completion of its Review of the National Community Recovery Manual managed by the Australian Institute of Disaster Resilience.
- Membership of the Gender and Disaster Pod, in partnership with Women’s Health Goulburn North East and Women’s Health in the North.
- Collaboration with Evidence Aid to champion further the evidence-based approach in humanitarian action and increase awareness in Oceania.
- Membership of the National Emergency Management Education Alliance, hosted by the Australian Government Attorney General’s Department.

MUDRI @ MUARC

MUDRI again contributed to MUARC in 2018 and we would like to thank the staff who championed the group’s successes. MUDRI’s strength lies in its people and network; it is stronger for having their support as it continues its mission to build the resilience of many communities in the face of unexpected emergency events.

PHD AND MPhil CANDIDATES

The Graduate Research Program continued to provide a growing and vibrant research environment for MUARC's PhD, Masters, Honours and Vacation students. Our graduate research students undertake transformative and interdisciplinary research that is at the forefront of finding sustainable, social, economic, environmental and technical solutions to eliminating injury.

Their research topics align with MUARC's priority to provide the scientific evidence that underpins the prevention and management of injury across the full range of injury types and mechanisms within transport, workplace, home and community settings.

Our graduate student cohort remained strong throughout 2018. At the commencement of 2018 we had a total of 40 students (27 PhD and 13 MPhil). Our supervisors co-supervised an additional 13 non-MUARC students (enrolled in various faculties and institutions). The year finished with 33 students (24 PhD and 9 MPhil).

Student highlights:

- We welcomed one new student in 2018: Phuong Hua was awarded a RTP scholarship, along with a Monash Graduate Excellence Scholarship.
- Four students completed and graduated in 2018: Steve O'Hern, Maatje Scheepers, Rison Muhrison and Dudley McArdle.
- One student submitted their thesis in 2018: Diana Wong.
- Successful milestones completed in 2018: Confirmation of Candidature (1), Mid Candidature Review (9), Pre Submission Seminar (2).
- Our PhD and MPhil students contributed to 14 published journal articles during 2018.
- The MUARC Vacation student program was also successful in 2018 attracting 11 students: Summer 2017/18 – 7; Winter 2018 – 2 and Summer 2018/19 – 3.
- During 2018 a number of our alumni started successful careers in government, industry and academic positions, and are making significant and distinctive contributions to injury prevention.

A significant achievement for the Graduate Research team in 2018 was a successful application to establish a Graduate Research Industry Program (GRIP). GRIPs are designed to bring together graduate researchers and academic leaders from various fields with external partners to explore an issue of global significance. MUARC, in collaboration with various Monash Faculties (MADA, Medicine, Engineering and Arts) established the Injury Prevention GRIP (IP-GRIP). The goal of the IP-GRIP is simple but profound: **to provide excellent research that will underpin an injury-free transport system, workplace and community.** There is no similar Injury Prevention GRIP initiative in any other university in Australia, so **this is a first.**

Ten industry partners, including TAC, VicRoads, Department of Justice and Regulation, Department of Health and Human Services, Transport Safety Victoria, WorkSafe, Bus Association Victoria, Amy Gillet Foundation, Queensland Transport & Main Roads, and Safer Care Victoria are co-funding scholarships (with co-funding from the University) to support a cohort of 17 students addressing 17 topics within the broad theme of injury prevention. This program will provide our students great opportunities to become thought leaders for industry through a unique industry-driven interdisciplinary training program, internship opportunities, mentoring and scholarships.

We will be welcoming our new group of PhD students to MUARC and Faculties early 2019.



(L-R, PHD CANDIDATES)
 MR NEBOJSA TOMASEVIC
 MS RAPHAELA SCHNITTKER
 MS RENÉE ST LOUIS
 MS THARANGA (TARA) FERNANDO
 MS HAYLEY McDONALD
 MS ANGELA CLAPPERTON
 (FAR RIGHT)
 ASSOCIATE PROFESSOR JENNIE OXLEY –
 ASSOCIATE DIRECTOR, GRADUATE RESEARCH

PhD and MPhil Candidates

Transport

Name	Project Title	Supervisors
Inam Ahmad	Criteria for child safety features in vehicle	Sjaan Koppel, Brian Fildes, David Logan
Samantha Buckis	Young drivers and crash risk factors – event data recorders shedding new light on speeding behaviour	Michael Fitzharris, Mike Lenné, Amanda Stephens
Nimmi Candappa	Understanding the crash dynamics of wire rope barrier in the context of Safe System ideals	Brian Fildes, David Logan
Suzanne Cross	Children in Cars: the role of in-vehicle behaviour in child occupant protection	Jude Charlton, Sjaan Koppel
Angelo D’Elia	A data system framework for road safety research with applications	Stuart Newstead, Carlyn Muir
Phuong Hua	The impact of childhood exposure to suicide on suicidal behaviour in later life	Sjaan Koppel, Lyndal Bugeja, Myfanwy Maple
Mohammad Ibrahim	Scientific approach for road safety strategy framework	Brian Fildes, David Logan, Sjaan Koppel
Brendan Lawrence	Understanding the nature of unreported bicycle incidents	Jennie Oxley, David Logan, Mark Stevenson
Hayley McDonald	The contribution of drugs and alcohol in serious injury crashes	Janneke Berecki-Gisolf, Stuart Newstead, Karen Stephan
Steve O’Hern	Evaluation of evidence-based infrastructure for safer cycling	Jennie Oxley, Mark Stevenson
Jianrong Qiu	Exploring the road safety impacts of bus safety inspections	David Logan, Jennie Oxley, Christopher Lowe
Renée St.Louis	Impact of changes in health and functional impairments on driving patterns of older adults	Jude Charlton, Sjaan Koppel
Nebojsa Tomasevic	Investigation of transfer control from automated vehicles to the driver	Tim Horberry, Brian Fildes, Kristie Young
Jessica Truong	Safe systems and safety culture – How to move Towards Zero	Ian Johnston, Stuart Newstead
Luke Valenza	Older Passengers and Falls in Trams	Jude Charlton, Selby Coxon, Jennie Oxley

Workplace

Name	Project Title	Supervisors
Mohammed Aburumman	A safety culture translation toolkit: Guiding industry in creating a safer working environment	Sharon Newnam, Brian Fildes
Ivan Cikara	Has the ‘Chain of Responsibility’ legislation improved Road Transport Safety?	Sharon Newnam, Sjaan Koppel
Sarah-Louise Donovan	Safety Culture and leadership: Examining the influences for improved safety outcomes in high risk organisations	Tim Horberry, Mike Lenné, Paul Salmon
Maatje Scheepers	Evaluation of a psychosocial screen in a large injury compensation organisation	Di Sheppard, Sharon Newnam, Meaghan O’Donnell
Raphaela Schnittker	Application of Cognitive Systems Engineering in Anaesthesia: Developing and evaluating a decision-making support tool for airway management	Stuart Marshall, Tim Horberry, Kristie Young

Home and Community

Name	Project Title	Supervisors
Janne Bowen	Building and strengthening resilience in communities prior to emergencies	Frank Archer, Caroline Spencer
Joanne Briggs	Quality project evaluation of the Army Aboriginal Community Assistance Program from a military participant perspective	Frank Archer, Leanne Boyd
Angela Clapperton	Victorian suicides: Investigating the presence and nature of mental illness and exploring pathways to suicide	Stuart Newstead, Jane Pirkis, Lyndal Bugeja
John Coleman	Does collaborative planning for general practices contribute to a more resilient emergency response?	Frank Archer, Caroline Spencer
Joseph Cuthbertson	Disaster risk and the social determinants of health	Frank Archer, Jose Rodriguez , Andrew Robertson
Susan Davie	How prepared is Australia to protect children in emergencies?	Frank Archer, Eva Alisic, Deanne Bird
Craig Ferguson	Recent major national natural disasters have identified inadequacies in crisis leadership at the incident control level	Frank Archer, Tony Pearce
Tharanga Fernando	The injury comorbidity index study	Janneke Berecki-Gisolf, Stuart Newstead, Mohammad Ansari
Frances Haire	Analysing perceptions of floods in Australia to inform behaviour change	Frank Archer, Doug Paton, Deanne Bird
Roger Jones	Developing a practical tool to help individuals and communities in assessing and managing emergency risk	Frank Archer, Caroline Spencer
Ravathi Krishna	A cross cultural comparison of Child Centred Disaster Risk Reduction (CC-DRR) strategies in India and Australia	Eva Alisic, Kevin Ronan
Dudley McArdle	Australia’s emergency managers - towards professionalisation	Frank Archer, Caroline Spencer, F(Skip) Burkle
Bianca Olstein	A comparative study of the emergency response to mass casualty incidents and disasters between Israel and Australia	Frank Archer, George Braitberg
Matthew Pepper	Disaster resilience and emergency response	Frank Archer, F(Skip) Burkle
Suresh Pokharel	Multiple stresses and urban vulnerability: Why and how building resiliency should be a focus	Frank Archer, F(Skip) Burkle
Mark Potter	Examining the response and recovery interface with the aim of improving community resilience	Frank Archer, Greg Leach
Adam Poulter	Professionalisation of the international humanitarian workforce – what are the barriers and opportunities	Frank Archer, F (Skip) Burkle
Fiona Roberts	Investigation into measuring Disaster Resilience and Recovery	Frank Archer, Caroline Spencer
Kate White	An investigation of the changing nature of “community resilience” as a contemporary issue in the Victorian emergency management sector for shared understanding and shared responsibility	Frank Archer, Caroline Spencer
Diana Wong	Disaster Health Evaluation	Caroline Spencer, Frank Archer, Leanne Boyd



ROAD SAFETY MANAGEMENT LEADERSHIP PROGRAM

MUARC hosted road safety professionals from across the world in May and November as part of its acclaimed Road Safety Management Leadership Program.

Facilitated by MUARC’s Global Road Safety Advisor, Eric Howard, and ably joined by on site experts Ian Johnston and Rob Klein, the Programs guided participants through an extensive five-day agenda filled with formal presentations, interactive case studies, group work and panel discussions.

Senior faculty members of MUARC along with their internationally experienced road safety partners delivered road safety management, science and leadership topics.

The Programs were attended by 50 senior managers from Victoria Police, Transport Accident Commission, VicRoads, NSW Roads and Maritime Services, National Transport Commission, Transport for NSW, Department of Transport and Main Roads QLD, SA Safer Australian Roads and Highways and the NSW, QLD and WA police forces.

The Program also benefited from strong international participation from the Department of Transport in Abu Dhabi, the Government of New Caledonia, Road Traffic Infringement Agency in South Africa, New Zealand Transport Agency, the Government of Tamil Nadu in India and the National Transportation Safety Committee in Indonesia.

Testament to its growing reputation as an invaluable professional development course for the next generation of road safety leaders, November’s event marked the tenth instalment of the Program. Participants also enjoyed their first field trip to the TAC’s ‘Road to Zero: Road Safety Experience Space’ at the Melbourne Museum.

There are a number of moving parts to the Program and its success is dependent on a large team of contributors and high level coordination. We thank the facilitation team, our senior researchers and industry partners for their important contributions to the Program, which grows in strength year after year.

“I think it’s just an exceptional program. Not only is the expert content invaluable, but the opportunity to mix with our peers who are all facing similar challenges and objectives has added even more value.

This is possibly the best way you could ever spend your time if you’re interested in road safety. You’ll get the best outcomes and you get to share your time with other really passionate people.”

KERRIE TREGENZA: SENIOR MANAGER - COMMUNITY ROAD SAFETY DEPARTMENT OF TRANSPORT AND MAIN ROADS, QUEENSLAND

“I’ve found it really, really helpful. It’s diverse, interactive and covers so many different road safety and leadership topics. I think from a leadership perspective, the Program has been so valuable and helped me plan how I’m going to tackle some of my challenges when I get back.”

NOELANI REARDON, ROADS AND MARITIME SERVICES, NSW

“It is amazing and informative. A very comprehensive programme. It covers the entire road safety management system value chain from end to end. What intrigued me is the safe systems approach as supported by the vision zero with an intention of achieving a target of zero on traffic-related deaths. The success though lies on ensuring that all elements of the systems approach are implemented in a synchronised manner by different implementing entities in our jurisdiction.”

HELEN KGAMANYANE, ROAD TRAFFIC INFRINGEMENT AGENCY, SOUTH AFRICA

TRAFFIC ENGINEERING AND VEHICLE SAFETY

Traffic Engineering and Vehicle Safety (TEVS) Consortium is made up primarily of research engineers with industry and academic experience in civil and mechanical engineering, as well as safe behaviour. The team comprises Professor Brian Fildes, Dr David Logan, and a number of PhD engineers, namely Nimmi Candappa, Brendan Lawrence, Mohammad Nabil Ibrahim, Inam Ahmad, Nebojsa Tomasevic, Mohammed Aburumman and Jianrong (Jocelyn) Qiu.

Supervisors are also key observers within the group, and include Professor Tim Horberry, Associate Professor Jennie Oxley, Dr Sharon Newnam and Dr Sjaan Koppel.

The group's work focuses on the development and evaluation of safe road infrastructure, vehicle design and maintenance, transport modal choice, workplace safety, autonomous vehicles and child restraint.

Trialling reduced speeds

Our team is working with the City of Yarra to trial 30km/h speed limits in parts of Fitzroy and Collingwood. The council became the first in Australia to enforce the reduced speed after a 2017 MUARC report cited evidence that the chances of pedestrians being killed when hit by a motor vehicle were halved when the speed limit was reduced from 40km/h to 30km/h.

MUARC was awarded the project in August 2018 and the trial will last 12 months. The team is in the implementation stage for collecting data, which is being led by Brendan Lawrence with support from Professor Brian Fildes and Associate Professor Jennie Oxley.

Reducing risk on our roads

The Safe System Road Infrastructure Program (SSRIP) is a TAC and VicRoads initiative that delivers safety upgrades to the state's high-risk roads. Our team continues to help inform the program, with Associate Professor Oxley and the Australian Road Research Board (ARRB) working on the Pedestrian Infrastructure Program. This involvement sees the evaluation of pedestrian safety in 12 separate locations, with Geelong, Shepparton and Flemington featuring in 2018. Countermeasures include pedestrian crossing facilities, road narrowing, pavement alignment, speed limit changes with a general area treatment.

A new SSRIP project was also awarded for the design of Raised Safety Platform treatments. ARRB is facilitating this work with MUARC completing the evaluation.

Supporting the TAC

Our close association with the TAC was evident in Dr David Logan's involvement in multiple ventures with the organisation. David produced technical advice for the TAC's new 'Road to Zero: Road Safety Experience' space at the Melbourne Museum. The \$55m education complex was opened in August 2018 and aims to build road safety knowledge and awareness among younger road users.

David was also a key player in the TAC's television advertising campaign on wire rope barriers, serving as a technical advisor to the project. TAC ran the campaign to convey the safety benefits of the barriers to the public and released a behind-the-scenes video where David explained the technical operations of the road treatment and how its outcomes relate to the real world. PhD candidate Nimmi Candappa also assisted in this campaign.

Tracking future development for AARC

In 2018, we were approached to evaluate the future development of the Australian Automotive Research Centre's (AARC) test facilities in Anglesea. The 1000-hectare site is currently used for military training and testing trucks owned by Bosch and Linfox. With an eye to developing the track and becoming a research provider, AARC has enlisted the counsel of General Motors, Car Advice, Bosch, and MUARC. Funding has been provided by the Victorian government to commence the project, with Professor Fildes set to conduct a research presentation to the group.

Students sharing their work

As well as all of our PhD candidates progressing their projects, two of our students presented their research during 2018. Jocelyn Qiu attended the Australasian Road Safety Conference in Sydney and discussed her research into the roadworthiness of Victorian buses, while Nebojsa Tomasevic presented his work on the validation of a driving simulator for research in human factors of vehicle automation.

MS SUJANIE PEIRIS – RESEARCH ASSISTANT
DR DAVID LOGAN – SENIOR RESEARCH FELLOW
ASSOCIATE PROFESSOR JENNIE OXLEY
– SENIOR RESEARCH FELLOW
MR BRENDAN LAWRENCE – RESEARCH ASSISTANT



MR ANGELO D'ELIA – RESEARCH FELLOW
MS THARANGA (TARA) FERNANDO – DATA ANALYST
MR ADRIAN LAUGHLIN – RESEARCH ASSISTANT
DR JANE HAYMAN – DATA ANALYST
ASSOCIATE PROFESSOR JANNEKE BERECKI-GISOLF
– DIRECTOR, VISU
MS VOULA STATHAKIS – RESEARCH FELLOW
DR DIANNE SHEPPARD – SENIOR RESEARCH OFFICER
MS ANGELA CLAPPERTON – RESEARCH FELLOW

VICTORIAN INJURY SURVEILLANCE UNIT

High-quality injury surveillance data is crucial to preventing injuries and promoting safety. The Victorian Injury Surveillance Unit (VISU) analyses, interprets and disseminates data on injury deaths, hospital admissions and emergency department presentations in the state of Victoria.

Established in 1988, VISU's initial focus was confined to child injury prevention. The service expanded from 1990 to address injury issues across all age groups and utilised surveillance data at three levels of injury severity (deaths, hospital admissions and ED presentations). VISU has earned the reputation of providing an efficient and highly regarded injury surveillance service that stimulates research and underpins injury prevention policies and programs.

Injury Atlas nears completion

PhD student Himalaya Singh made strong progress on his Victorian Injury Atlas in 2018, with the online tool set for a 2019 launch. The Atlas uses VISU's datasets to create an interactive map of Victoria showing injury-related statistics across the state. Users will be able to refine their search results to focus on chosen regions. The tool is years in the making and will complement VISU's popular data request service. Congratulations to Dr Singh for also successfully completing his PhD, graduating in December 2018.

17th VISU e-bulletin – Unintentional hospital-treated injury in Victoria 2016/17

In June, the team published its 17th e-bulletin. The issue provided an overview of unintentional hospital-treated injury in 2016/17 utilising two injury surveillance datasets that separately record hospital admissions and ED presentations for injury. The results showed there were 122,742 injury cases admitted to Victorian hospitals in 2016/17 of which 90% were unintentional. Of the 405,854 injury cases to Victorian EDs, 80% were unintentional.

The findings also revealed:

- The annual rate of injury admissions increased significantly by 4.4% per year over the 10-year period 2007/08 to 2016/17.
- The annual rate of injury ED presentations increased significantly by 1.0% per year during the same period.
- Falls were the leading cause of injury, accounting for 47% of admissions and 37% of ED presentations, while the home was the most common setting for injury among hospital admissions (26%) and ED presentations (42%).

18th VISU e-bulletin – Injury deaths in Victoria 2014-2016

VISU's second e-bulletin for the year looked at Victorian injury deaths from 2014-2016. Data were extracted from the VISU-held Cause of Death (COD) dataset supplied by the Australian Coordinating Registry (ACR). There were 7814 injury deaths recorded for Victoria over the three-year period 2014-2016, an average annual rate of 43.8 deaths per 100,000 Victorians.

The findings also showed:

- The all-ages unintentional annual injury death rate was 31.1 per 100,000 Victorians; rates were highest in older adults (132.6 per 100,000 older adults) and lowest in children (2.0 per 100,000 children).
- The all-ages intentional annual injury death rate was 11.9 per 100,000 Victorians (comprising a 10.9/100,000 suicide rate and a 1.0/100,000 homicide rate). Intentional death rates were highest in adults (15.9 per 100,000 adults aged 25-64 years) and lowest in children (0.7 per 100,000 children). Both suicide and homicide rates followed this age pattern.

Issues in injury and injury prevention

Hazard has been VISU's flagship publication for 30 years. The bi-annual publication highlights emerging injury issues and raises awareness of identified injury-types to stimulate preventative action.

Issue 84 – Unintentional Injury among older residents of Aged Care facilities in Victoria

Hazard 84, published in October, focused on the extent of unintentional injury-related hospital admissions among Aged Care residents in Victoria. The team worked closely with Professor Joseph Ibrahim from Monash University's Department of Forensic Medicine as a key collaborator. The publication reported that:

- There was a total of 14,896 unintentional injury-related hospital admissions among Aged Care residents over the ten-year period 2007/8 to 2016/17 in Victoria.
- During the most recent 3-year period from 2014/15 to 2016/17, fractures accounted for 40.6% of the 4,961 injury admissions among residents of Aged Care facilities.
- The majority of injuries among residents of Aged Care facilities from 2014/15 to 2017/17 were the result of falls (87.9%).
- An estimated total of \$23.4 million AUD in hospital costs was spent on Residential Aged Care injury related admissions over the period 2014/15-2015/16 (two years).

Injury-prone sports revealed

In April 2018, PhD candidate Tara Fernando led a Medical Journal of Australia paper that shed light on which sports were sending Victorians to hospital. The study analysed 171,541 presentations to EDs in Victoria for sports and active recreation injuries from 2012/13 to 2014/15.

The paper reported that the sports most commonly associated with ED presentations among Victorians aged five years or older were Australian football, motor sports, and cycling/BMX. However, the highest injury rates per participant (among people aged 15 years or more) were for motor sports, rugby, and skateboarding/inline hockey/roller sports.

Self-harm research projects

Throughout 2018, VISU was involved in two ongoing projects related to suicide and non-fatal intentional self-harm:

Victorian Stakeholder Group on Suicide Information and Data

The team continued its role as a member of the DHHS Victorian Stakeholder Group on Suicide Information and Data. This stakeholder group was born from the 2016 Victorian Suicide Prevention Framework and the need to support the framework with data.

The framework includes two flagship initiatives. The Victorian government is partnering with Primary Health Networks (PHNs) to support local communities to develop and implement coordinated place-based approaches to suicide prevention. These trials are being implemented across 12 Victorian locations. The second initiative is the Assertive Outreach trials, also called the 'HOPE' initiative. Twelve health services have been funded to design and implement flexible and person-centred care for people that present to the ED for intentional self-harm.

VISU's role has been to provide a series of reports to support these initiatives. Each report includes an overview of intentional self-harm hospital ED presentations and admissions among residents of the Local Government Areas in the catchment areas of the PHNs or health services.

Victorian Suicide Register Data Linkage Study

This project is a collaboration between VISU, the Coroners Court of Victoria (CCOV) and DHHS. The purpose of this research is to obtain a better understanding of the health, health service use and specifically the mental health service use by people who subsequently suicide. These services are captured by linking the Victorian Suicide Register to the Victorian Admitted Episodes Dataset (VAED), Victorian Emergency Minimum Dataset (VEMD), Clinical Mental Health dataset (CMI/ODS), Alcohol and Drugs Information System (ADIS) and Mental Health Community Support Services dataset (MHCSS). This information will be used to identify (1) risk factors for suicide, as evidenced from health service use patterns; and (2) potential gaps in service provision, such as under-utilisation of mental health services by those who need it, and lack of follow-up for those who have been identified as having suicide risk.

Journal articles with VISU data and conference presentations

Siesmaa EJ, Clapperton AJ, Twomey D. Hospital-Treated Snow Sport Injury in Victoria, Australia: A Summary of 2003-2012. Wilderness Environ Med. 2018 Jun;29(2):194-202.

Fernando DT, Berecki-Gisolf J, Finch CF. Sports injuries in Victoria, 2012-13 to 2014-15: evidence from emergency department records. Med J Aust. 2018 Apr 2;208(6):255-260.

O'Hern S, Oxley J. Pedestrian injuries due to collisions with cyclists Melbourne, Australia. Accid Anal Prev. 2019 Jan;122:295-300.

Finch CF, Gray SE, Akram M, Donaldson A, Lloyd DG, Cook JL. Controlled ecological evaluation of an implemented exercise-training programme to prevent lower limb injuries in sport: population-level trends in hospital-treated injuries. Br J Sports Med. 2018 Sep 14. pii: bjsports-2018-099488.

Himalaya Singh presented a poster titled "Victorian injury atlas: A web-based tool for exploratory analysis of injury data to support evidence-based decision making in Victoria, Australia" at the World Conference on Safety in November 2018, Bangkok.

STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED 31 DECEMBER 2018

	Notes	\$000's	\$000's
OPENING BALANCE AT 1 JANUARY 2018			4,861
INCOME			
Research			
Australian Research Council		228	
National Health and Medical Research Council		9	
Commonwealth Government - Others		71	
State and Local Government		3,985	
Co-operative Research Centres		360	
Industry Australia		263	
Industry International		254	
Total Research			5,170
Commonwealth Government Research Support Program			1,720
Commercial			663
Other income			454
Monash contribution	1		2,729
Total Income			10,736
EXPENDITURE			
Salaries and Related Expenditure		5,803	
Financial and Administration	2	70	
Student Related		110	
Infrastructure Related		180	
Central Support Services – Overhead Costs	1	2,642	
Other Operating Expenditure		1,401	
Total Expenditure			10,206
NET BALANCE FOR THE YEAR			530
CLOSING BALANCE AT 31 DECEMBER 2018			5,391

Notes:

1. The University has provided a transfer of funds to cover the Central Support Services – Overhead Costs
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 Chief Financial Officer and Senior Vice-President. 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 2018.



Connie Mogg
Acting Director, Research and Revenue Accounting Services
Office of the Chief Financial Officer and Senior Vice-President

