Key Centre
Annual Report 2020

The Commonwealth Key Centre of Teaching and Research in Transport Management

Institute of Transport Studies
Monash University
https://www.monash.edu/engineering/its

Institute of Transport and Logistics Studies
The University of Sydney
http://sydney.edu.au/business/itls
Dear Centres Coordinator,

I hereby present to you, in accordance with the Australian Research Council’s requirements for continued Key Centre status, the report of the proceedings and outputs for the Commonwealth Key Centre of Teaching and Research in Transport Management (established 1995) for the year ended 31 December 2020.

Although the year has been greatly impacted by the COVID-19 pandemic, the Centre has been extremely productive with successful ARC and CRC grants together with an increasing number of industry-linked research projects and consultancies. Our experts have been incredibly industrious in contributing to the current national and international narrative on how COVID-19 is impacting the transport and logistics spaces. This includes researchers providing timely and engaging thought pieces and working papers, our modelling specialists conducting travel surveys, academics contributing to internal and external webinars as well as almost daily media appearances.

ITLS Sydney celebrated its 30th year in 2020, a magnificent milestone for an Institute that continues to deliver high quality teaching and research resulting in increased impact beyond academia. Sadly, the planned celebration with 200 guests had to be postponed due to COVID-19, but we still plan to hold it when we are able to do so.

I commend this Annual Report to all readers who will seek the breadth and depth of our contributions in this most challenging year.

Professor David Hensher
Key Centre Director
Director, Institute of Transport and Logistics Studies
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Constitution

The primary object of the Key Centre is to undertake graduate teaching, executive programs, grant and contract research and development in the fields of transport, logistics and supply chain management studies.

The work of the Key Centre also has the following objectives:

− To provide a focus for University work in areas of transport and logistics management and to establish an ambience attractive to those committed to excellence in graduate transport, logistics and supply chain management programs and research.

− To collaborate, to the fullest extent possible, with other parties having an interest in transport, logistics and supply chain management studies and its applications.

− To offer specialised training courses, workshops, short courses and seminars on topics of interest in the area of transport, logistics and supply chain management.

− To seed the development, in Australia, of innovative ideas in transport, logistics and supply chain policy and professional practice in which the Key Centre plays a role.

These objectives are achieved by the Key Centre through:

− developing and offering graduate transport and logistics management programs, industry programs, certificates, executive programs and short courses;

− bringing high quality transport, logistics and supply chain management programs to people outside Sydney and Melbourne (both nationally and globally), as well as widening the offerings of courses within Melbourne and Sydney, through access to courses provided by both ITLS-Sydney and Monash ITS;

− contributing to Australia’s growing participation in the Asia Pacific region in a leadership role in transport, logistics and supply chain management;

− widening the range of courses available for middle level professional managers in critical areas of transport, logistics and supply chain management not currently served;

− equipping managers in all disciplines (i.e., engineering, economics, planning), the small business sector and local government to succeed in the face of technological, economic and institutional change;

− building on the recognised need for stronger links between education of engineers, planners, policy analysts and managers in transport, logistics and supply chain management;

− undertaking research to develop state-of-the-art management practices and technical methods; and

− transferring the knowledge developed through research to client groups through the Key Centre’s publications, workshops, conferences, seminars, and by participation in networks of transport, logistics and supply chain stakeholders.
Teaching and Learning

Award Programs

Undergraduate
In 2020 the Monash Institute of Transport Studies continued to deliver transport units in the Bachelor of Engineering program on both the Australian (Clayton) and Malaysian (Kuala Lumpur) campuses. Over 400 students completed the two core units (CIV2282 Transport and Traffic Engineering and CIV3282 Road Engineering) in 2020 and a further 260 completed the two final year electives (CIV4283 Transport Planning and CIV4284 Traffic Systems). Those units are part of undergraduate civil engineering degrees co-accredited under both the Australian and Malaysian Engineering Education Accreditation Systems.

Postgraduate Coursework
The Master of Transport and Traffic degree, offered on-line, is structured around five core units and electives. A number of those units are also offered as part of a transport specialisation in the Master of Advanced Engineering, a rapidly growing on-campus program, taught on the Clayton campus. Over 100 students were involved in the masters degrees offered on the Clayton campus. As part of an adjustment in the postgraduate programs offered by the Faculty, the Master of Transport and Traffic was closed to further enrolments with the immediate priority to be the campus based masters degrees. As part of that change a new postgraduate unit was offered for the first time in Road Engineering. Monash ITS also offers a Master of Transportation Systems degree in conjunction with South-East University in China. The program reached its enrolment cap of 80 students in 2020.

In 2020, ITLS-Sydney continued to offer a suite of postgraduate courses in Logistics and Supply Chain Management, Transport and Infrastructure. Our new Master of Logistics and Supply Chain Management launches in 2021 with a suite of new units including more emphasis on resilient and sustainable supply chains. We are also launching a new Global Logistics specialisation in the Master of Commerce which provides an international and trade perspective on logistics. ITLS also offers the Master of Transport in conjunction with the Faculty of Engineering and the Faculty of Architecture, Design and Planning. Our programs are designed to allow students to tailor their learning experience, with the ability to enter at Graduate Certificate, Graduate Diploma or Masters level. Students can also choose from a range of online and part time friendly units. ITLS academics also teach an undergraduate unit on Managing Food and Beverage Supply Chains and also teach into the highly ranked Master of Management and Master of Business Administration (MBA) programs.

Postgraduate Research
The Key Centre has the largest higher degrees by research program in the transport and/or logistics field in Australia. In 2020, a number of students at Monash ITS Monash chose to delay their graduations, despite completing the requirements for the degree, until there is a return to on-campus graduation ceremonies. Monash ITS had 29 continuing student enrolments. At ITLS, there were five PhD graduations with 19 continuing students.
## Enrolments

<table>
<thead>
<tr>
<th>Institute of Transport Studies, Monash University</th>
<th>Enrolments</th>
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<tbody>
<tr>
<td><strong>Doctor/Master of Philosophy</strong></td>
<td>29</td>
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<tr>
<td>Master of Advanced Engineering (Transport)</td>
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<tr>
<td>Master of Transport and Traffic</td>
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<tr>
<td>Master of Transport</td>
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<tr>
<td>Master of Transport Systems</td>
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<th>Institute of Transport and Logistics Studies, University of Sydney</th>
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<td><strong>Doctor/Master of Philosophy</strong></td>
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<td>Master of Commerce</td>
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<td>- Aviation and Maritime Management and Logistics</td>
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<tr>
<td>- Infrastructure and Transport Management</td>
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<td>- Logistics and Supply Chain Management</td>
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<td>Graduate Certificate in Transport Management (no longer offered after 2019)</td>
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<td><strong>Undergraduate:</strong></td>
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<td>Traffic and Transport Engineering (CIV2282) (Clayton and Malaysia Campuses)</td>
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<td>Road Engineering (CIV4287) (Clayton and Malaysia Campuses)</td>
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<td>Transport Planning (CIV4283)</td>
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<td>Traffic Systems (CIV4284) (Clayton and Malaysia Campuses)</td>
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<td>Advanced Traffic Engineering (CIV5301)</td>
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<td>Traffic Engineering and Management (CIV5302)</td>
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<td>Quantitative Methods (CIV5303)</td>
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<td>Intelligent Transport Systems (CIV5304)</td>
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<td>Travel Demand Modelling (CIV5305)</td>
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<td>Transport and Traffic Data (CIV5309)</td>
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<td>Road Engineering (CIV5177)</td>
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<td>Intelligent Tsp Systems: Eng. and Management (CIV5318)</td>
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<td>Quantitative Methods (CIV5319)</td>
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<td>Case Studies in Transportation Systems (CIV5320)</td>
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<td>Modelling Transportation Systems (CIV5406)</td>
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<td>Sustainable Tsp Systems Planning (CIV5321)</td>
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<tr>
<td>Urban Public Transportation Systems (CIV5322)</td>
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<td>Managing Food &amp; Beverage Supply Chains (ITLS2000)</td>
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<td>Foundations of Supply Chain Management (ITLS5000)</td>
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<td>Infrastructure Financing (ITLS6501)</td>
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Professional Development

Bus Safety Management Program (BSMP) for Bus Operators

The BSMP provides bus operators with the appropriate skills to offer public bus services which meet regulatory and compliance requirements in Victoria. The program was introduced in 2011, established by Monash ITS in consultation with Transport Safety Victoria (TSV). The program comprises two subjects: Introduction to Bus Safety and Safety Risk Management for Bus Operators.

To maintain the integrity and relevance of the program, Monash ITS staff work closely with Transport Safety Victoria and the Bus Association of Victoria (BusVic). Developing and maintaining a proactive safety culture is now a key focus. The integrity requirements of the program have been strengthened, to ensure that it is the enrolled program participant who is completing assessment tasks, without undue influence or assistance. The flexible, online format has been well received by TSV, the bus industry and course participants. Commencing in late 2020 new software was introduced for program content, to simplify access for program participants.

Enrolments reduced by 25% in 2020, attracting about 100 participants, as a result of the COVID-19 pandemic, as small inbound tourism operators make up a significant part of the market. Existing bus businesses continued to enrol staff in the program, as part of the professional development programs. Numbers will increase immediately border are opened and inbound tourism recommences.

Bus Business Management Program (BBMO) for Bus Operators

This program was launched by Monash ITS in 2012, providing potential bus service contractors with business management skills appropriate to the industry. It is an essential requirement for all service bids by Victorian bus companies. The course incorporates the two subjects from the Bus Safety Management Program for Bus Operators (mentioned above), along with two additional subjects: Financial Management for Bus Operators and Business Development for Bus Operators. The format of the two additional subjects is undergoing a review while 2 students were enrolled in 2020.

Bus and Coach Accreditation Scheme Online Training Course

Transport for NSW is responsible for the regulation of public passenger bus services in NSW (including long distance, tourist and charter services). Under the Passenger Transport Act 2014, all operators of public passenger bus services must be accredited to be able to provide services legally in NSW. This online course is approved by Transport for NSW as meeting the accreditation requirement of competency to operate bus and coach services; applicants must pass the course examination. The course includes four modules: i) Accreditation; ii) Management Information System; iii) Vehicle Maintenance Management System; and iv) Safety Management Systems. The training is delivered through online learning materials including notes, case studies, online quizzes and a discussion board. The Bus and Coach Operator Accreditation Scheme (BOAS) Online Training Course attracted 135 completed enrolments in 2020 despite COVID with 292 enrolled students in the process of completing their training. At the moment we can only run computer-based exams on our campus. However, under these current circumstances (COVID-19), we are able to allow students to sit a paper-based version of the final examination without travelling to Sydney under the supervision of a suitable person who must have a connection to Australia (i.e. is registered to practise). This has allowed 47 students in regional NSW to successfully complete this course and will ensure that they have accomplished a level of understanding of the obligations of an accredited operator with privileges to provide bus and coach services in NSW.

Discrete Choice Analysis: Models, Estimation and Applications

This course was not held in 2020 due to COVID-19 restrictions.

Certificate of Railway Planning and Operations

This course was not held in 2020 due to COVID-19 restrictions.
Certificate of Transport Management

ITLS were able to successfully deliver a COVID safe face to face Certificate of Transport Management (CTM) program with 30 enrolments in November 2020, with participants from the bus industry and their suppliers. The program at ITLS-Sydney is recognised as an important industry qualification for middle and senior management, and an excellent opportunity for career development. Participants are introduced to the latest developments in the industry and provided with knowledge and skills in management, planning and policy areas central to the success of the bus and coach industry, to operators, suppliers and consultants. The four-day program includes presentations by industry representatives, specialist consultants and academic experts, designed to develop practical skills for the industry, as well as interactive exercises. The networking benefits are an important aspect of the program. The course content is reinforced by four assignments completed after the course. The Certificate of Transport Management is supported by Transport for NSW (TfNSW), the State Transit Authority, BusNSW and private operators.

As much of the syllabus for the CTM has direct relevance to the current challenges of the Community Transport industry, ITLS and TfNSW offered eight fee-free scholarships for individuals working in TfNSW contracted Community Transport Service Providers (CTSPs) to attend the four-day course (a fee scholarship is worth $2,950).
Student Awards

The Key Centre recognises the achievements of its students and alumni through industry and government sponsored prizes that are presented at annual award ceremonies where our students and alumni joined our Board members, industry partners, and the sponsors of prizes to celebrate the success of our students.

ITS-Monash’s awards were presented as part of a virtual Department of Civil Engineering Awards Ceremony with prizes were awarded to the following students:

- Aaron Fernando (Traffix Group Prize at Level 4 for Best overall performance in all Transport units CIV2282, CIV3283, CIV4283 & CIV4284)
- Hyun Jun Jang, Daniel Richards, Vuvavi Muruga (CIV4284 Prize for Transport Engineering awarded by Movement & Place Consultin
- Andrew O’Brien (The Veitch Lister Consulting Prize is awarded annually to a graduating student in the Master of Transport or Master of Traffic with the highest average mark in coursework units)

Due to COVID, ITLS-Sydney’s 2020 Awards Presentation Evening did not proceed but the following prizes were awarded to:

- Noel Randolph Pearson and Arun Mandaparka - GS1 Australia Prize for the highest academic achievement in the Contemporary Procurement unit of study (ITLS6003)
- Zargham Javed and Marjorie Docor - GS1 Australia Prize for the highest academic achievement in the Production and Operations unit of study (ITLS6008)
- A H M Tahmid Yusuf - Mrs Ma Ching Prize to an international student for the highest academic achievement in a transport, infrastructure and/or logistics and supply chain management specialisation in the Master of Commerce
- James Gray - Supply Chain & Logistics Association of Australia Award for Excellence for the highest academic achievement in the Master of Logistics and Supply Chain Management
Research and Consultancy

Funding awarded in 2020

Australian Research Council Discovery Project Grants

Who Benefits from the Sharing Economy? Disruption in Australian Cities
(2020-2024, AU$115,000)
Professor Rico Merkert (with University of Queensland)
Technological disruption has created new possibilities for employment and social interaction in cities yet comes with many associated challenges for policymakers. This project aims to formulate a critical understanding of the sharing economy as a disruptive social, economic, and political process in Australian cities. The project team will apply advanced spatial analytics and theoretical approaches to three distinct facets of the sharing economy, providing new empirical evidence to explain transformative change in cities. It applies a geographical lens to create to new knowledge regarding who benefits from the sharing economy, and how progressive regulation can enhance the outcomes of disruptive technologies.

The long-term effects of autonomous cars on land use, access and travel
(2020-23, AU$199,962)
Professor Graham Currie and Dr Md. Kamruzzaman
Autonomous vehicles are a major world trend which will significantly impact Australian communities. Current research is focused on autonomous vehicle technology and short-term benefits (reduced crashes, congestion relief). This project explores long-term disruptive effects with a focus on land use and travel impacts to ensure wider social, economic and environmental impacts are better managed. Findings from this project will help Australian cities prepare for the long-term disruptions of autonomous vehicles.

Context-aware verification and validation framework for autonomous driving
(2021-23, AU$448,958)
Professor Tsong Chen; Professor Hai Vu; Dr Huai Liu; Dr Xi Zheng; Associate Professor Zhiquan Zhou
This project aims to enhance the reliability and safety of emerging self-driving vehicles, through a framework that supports the validation and verification of autonomous driving systems. This project expects to generate new knowledge in areas of software engineering, intelligent transport, and machine learning, using a multi-disciplinary research combining expertise from various fields. Expected outcomes of this project are a family of new context-aware techniques to verify and validate complex behaviours in autonomous driving. This should provide significant benefits, such as safe autonomous driving systems and the improved journey experience and security for road users.

Australian Research Council Discovery Early Career Researcher Award (DECRA)

A Novel Approach in Crowd Evacuation Planning: Behavioural Intervention
(2021-23, AU$419,693)
Dr Milad Haghani
The ability to rapidly and safely evacuate crowds can mean the difference between death and survival in mass emergencies. While the immediate reaction of the public to an emergency is paramount for their survival, their role in crisis management is often not fully harnessed. This project establishes an innovative and pragmatic approach in urban emergency planning: optimising evacuations through behavioural training. Pioneering empirical steps will be taken to discover optimum strategies that individual crowd members should adopt, and to establish the extent to which modifying crowd response can be effective. The outcomes will result in educational guides that will increase public awareness and community preparedness for public emergencies.

Market Design and Next Generation of Shared and Automated Transport Services
(2021-2023, AU$424,000)
Dr Mohsen Ramezani, Honorary Associate
This project aims to develop novel quantitative models and market design methods to fundamentally transform the analysis, control and regulation of shared and automated point-to-point transport services in multimodal networks. The project offers an innovative non-equilibrium approach that models multiple
competitive transport platforms, travellers, freelancer drivers and transport legislator entity to ensure achieving social welfare. The project outcomes address the eventual transition towards automation where platforms own and utilise different proportions of AVs in their fleet. The project expects to generate new knowledge of transport science that can be used to lessen social, economic and environmental impacts of private car ownership.

Co-operative Research Centre (CRC) Grants

iMOVE Co-operative Research Centre (CRC)
Working from Home (WFH) and Implications for Revision of Metropolitan Strategic Transport Models (2020, AU$540,000)
Professor David Hensher, Professor John Nelson, Associate Professor Matthew Beck, Dr Camila Balbontin, Andre Pinto
This project tracks the travel activity and positions in relation to WFH of the Australian population through a longitudinal data plan (commencing in March 2020) and what this might mean as we get to understand responses from employers and employees to WFH until we reach some equilibrium, possibly when vaccination is widespread. This raises important questions as to what revisions will be required to strategic models used by State governments in respect of modal choice and frequency of weekly travel under various WFH futures. The research program develops revised post-Covid-19 travel choice models conditioned on WFH preferences.

iMOVE Co-operative Research Centre (CRC)
Investigating the Feasibility of Adopting Co-Modality in Sydney (2020, AU$175,000)
Professor Michael Bell
City planners are increasingly investigating how to leverage integrated transport opportunities to maximise transport network efficiency, improve the environment and best utilise available resources. This can be achieved by diverting some freight tasks from the road network to utilising spare capacity on public transport to reduce the number of trucks and vans on city roads, cutting both congestion and emissions.
Within the context of Sydney’s CBD, the proposed project aims to investigate:
1. The potential for moving freight within urban areas utilising latent capacity on public transport without disrupting passenger service levels.
2. The role of public transport station services, with a particular focus on how to move goods through stations.

iMOVE Co-operative Research Centre (CRC)
Autonomous Mobile Lockers for City Logistics (2020-2021, AU$20,000)
Jun (Elsa) Lee
In this study, Autonomous Mobile Lockers (AMLs) are introduced into the current city logistics network. The proposed system consists of couriers working with AMLs that visit the couriers in the field and transfer parcels to and from the depot.

Other External Research Funding

TRACSLAB Driving Simulator Experiment (2020, AU$20,586)
Professor Michiel Bliemer, Dr Yasir Ali
International research project with University of Massachusetts at Lowell, United States
The project studies the merging behaviour of drivers in a simulated environment using four connected driving simulators. The aim is to look into the safety and efficiency benefits in a connected environment when information is presented to drivers and cooperation requests for merging are made.

Australian Transport Research Cloud (ATRC), Australian Research Data Commons (ARDC) (2020-2022, AU$297,000)
Professor Michiel Bliemer
Funding to create the Australian Transport Research Cloud platform. The platform enables researchers to analyse and model the impact of potential policy changes and planning decisions on transport and travel behaviour, allowing more informed decision making. It provides integrated access to a range of high quality datasets (ABS Census and Journey to Work datasets, State Household Travel Surveys, National Road network
datasets, real time traffic and public transport data, people flow data, public transport timetable data, and de-identified smart travel card datasets) and transport network analysis and simulation tools.

**Freight estimation and forecasting on the Melbourne-Brisbane Inland Rail Corridor**
*(2020-2021, AU$146,200)*

Prof Rico Merkert, Prof David Hensher and James Bushell  
Client Commissioned Research, BIS Oxford Economics, Department of Infrastructure, Transport, Cities and Regional Development

**BRT Centre of Excellence, Pontificia Universidad Catolica de Chile, Chile**
*(2020, AU$109,154)*

Professor David Hensher, Dr Chinh Ho, Wen Liu, Professor Corinne Mulley, Professor Rico Merkert, Professor John Nelson

**Food Cold Chain Project**
*(2020, AU$21,000)*

Professor Michael Bell and Du Supun Perera  
Client Commissioned Research, Allianz Marine & Transit Underwriting Agency Pty Ltd, Australia

**Evaluation of level of satisfaction of customers for On-demand Demand Transport (ODT) in NSW supported by evidence from operational data**
*(2020)*

Professor John Nelson and Muhammad Fayyaz  
Client Commissioned Research, Transport for NSW, Australia

**Car Trip Timing Module – Parameter Estimation**
*(2020, AU$1,500)*

Dr Chinh Ho  
Consultancy, Transport for NSW, Australia

**Significant Continued Research Funding**

**Australian Research Council Discovery Project Grant**  
**Efficient and fair context-aware resource allocation in networks**  
*(2019–21, AU$440,000)*

**Professor Hai Vu**, Dr Lachlan Andrew and Dr Tran Khoa Phan  
This project aims to develop a flexible mathematical framework for internet resource allocation among competing demands by exploiting application context to allocate resources more efficiently. The project will extend an existing framework which allocates resources independently at each time period, by considering benefits over periods of time relevant to users. The expected outcome of this project is a systematic method for designing next-generation congestion-avoidance protocols that anticipate and accommodate different types of demand. This project will provide significant benefits including better provision of internet services and new ways to help combat traffic congestion, bringing benefits to both the environment and society.

**Australian Research Council Discovery Project Grant**  
**Scalable urban traffic control framework driven by distributed information**  
*(2018-20, AU$294,139)*

Professor Hai Vu and Dr Kun An  
This project aims to develop a mathematical framework for an in-depth investigation of the role of information in a fundamental interaction between the traffic signal setting and self-interest route/departure time choice of road users. Traffic control is one of the oldest and most cost-effective solutions for the worsening congestion problem in many metropolitan areas. With the modern technological advancement, however, there remain fundamental mathematical challenges in taking that advantage to improve traffic control and combat congestion. The outcome will be insights into the use of information and algorithms that can provide efficient, robust and behaviour consistent (i.e. safe) traffic network management.
Australian Research Council Linkage Project Grants
Cycle Aware: Driving with bikes
(2016-2020, AU$180,000)
Dr Jennifer Bonham (University of Adelaide), Dr Marilyn Johnson, Prof Narelle Haworth (Queensland University of Technology, CARRS-Q)
This innovative approach to cyclist safety focuses on the education and training required by drivers to interact safely with cyclists. In a world-first it uses two ontologically diverse methodologies to examine how Australian drivers become cyclist aware and the education and training necessary to foster safe driver-cyclist interactions. It directly addresses the issues of cyclist road trauma and the growing on-road tensions between cyclists and drivers. This national approach to cycle aware driver education enhances opportunities for active travel and addresses the growing issue of inactivity. It provides a critical knowledge base for State and Territory driver education policies and a Cycle Aware module which will target learner drivers.

Australian Research Council Discovery Early Career Award
Understanding the preventing road deaths using coronial recommendations
(2017-2022, AU$327,900)
Dr Marilyn Johnson
Fatal road crashes are sudden, unexpected and violent. Each fatality has a lasting impact resulting in immeasurable emotional costs and a financial burden in excess of $3.8 billion per year. This study is a systematic analysis of coronial death investigations of fatal road crashes in Australia using public health and road safety theoretical frameworks. Intended outcomes will contribute to our understanding of fatal road crashes including new insights into pre-crash social factors (e.g. alcohol/drug use and dependence, unemployment, age), the utility and impact of coronial recommendations on road safety policy and practice and preventing deaths on Australian roads.

Australian Research Council Discovery Early Career Award
Understanding the automobility decisions of Australian millennials
(2015-2020, AU$373,500)
Dr Alexa Delbosc
The aim of this project is to understand the complexity of decision-making around driver licensing and car travel of Australian millennials. The historical growth in car use is coming to an end as young adults are becoming less likely to get a licence and drive cars. The millennial generation is poised between two key life stages - the first opportunity to get a driving licence and the transition into adulthood. Understanding how millennials navigate these key mobility transitions could significantly reduce road deaths and injuries, road congestion and greenhouse gas emissions.

Multi-source Data Driven Service Platform and Key Technologies of Semi-closed Park Autopilot Systems, under the Jiangsu Industrial Technology Research Institute - Monash University Strategic Collaboration Scheme (2018-2021, $307,000AUD (of a total $921K))
Dr. Nan Zheng, and Dr. Yang Lv from Suzhou Automobile Research Institute
The R&D project develops a service platform and the key vehicle and information technologies for implementing semi-closed automated systems.

Putting a human face on cyclists in the ACT - ACT Road Safety Fund Grant (2020-2021, $40,000)
Prof Narelle Haworth, Dr Alexa Delbosc, Prof Nick Haslam & Dr Farhana Naznin
This project tests whether the images used to portray cyclists influences how 'human' or 'non-human' people perceive cyclists to be. The aim is to design guidance for portraying cyclists in an effort to reduce the dehumanization of cyclists.

iMOVE Co-operative Research Centre (CRC)
(2017-2026)
The Federal Government has granted a group of nearly fifty leading industry and research organisations known as the iMOVE Co-operative Research Centre (CRC), a total of $55 million over ten years to explore intelligent transport systems including self-drive vehicles. Key members of the iMOVE CRC include Institute of Transport and Logistics Studies (ITLS) and the University of Sydney’s Faculty of Engineering and IT.
In 2020, ITLS was involved in the Mobility as a Service (MaaS) trial ($530,000), the Facility and Network Optimisation for Australia Post project ($525,000) in addition to the two projects mentioned above.
University Research Grants

Looking for Positives: Health, Wellbeing and Active Transport Following a Pandemic
(2020, AU$15,500)
Business School Pilot Research Scheme
Professor Stephen Greaves, Associate Professor Matthew Beck
The COVID-19 pandemic witnessed an increase in local walking and cycling as safe and bio-secure modes of transport. As we emerge from the lock-down and the desire for mobility returns, indicators suggest that people could return en masse to the car to maintain social distancing. This project investigates the sustained impact of travel behaviour at the start of the pandemic and its effect on health/environmental outcomes by following-up with 1,500 Sydney-siders who were surveyed in late 2019 about their travel, health and well-being. This could generate what will be Australia’s first rigorous natural experiments on travel/health behaviour pre-post the pandemic.

Australian Rest Break Regulations for Truck Drivers: A New Methodology and Assessment of Implications
(2020, AU$5,990)
Business School Early Career Researcher Grant Scheme
Dr. Saman Eskandarzadeh
Rest Break regulations have a significant impact on the productivity and service level of carriers and logistics providers. The regulations impose convoluted restrictions on the schedules of duties of heavy vehicle drivers. Rest break regulations are easy to read, but difficult to efficiently apply. There is little known about how these regulations can be efficiently applied in practice. This project aims to develop a methodology to help carriers minimise the negative impact of these regulations by improving their scheduling practices. Using the developed methodology, we will investigate the cost of existing scheduling practices in the logistics industry.

Sea-Port-City network design of two port cities - lessons experiences and future perspectives for Singapore and Sydney
(2020, AU$10,000)
University of Sydney Office of Global Engagement - Partnership Collaboration Awards
Professor Michael Bell

Mobility and Logistics in the Era of the Coronavirus Pandemic
(2020, AU$10,000)
University of Sydney Office of Global Engagement - Partnership Collaboration Awards
Professor Michael Bell
The project investigates the resilience of existing mobility and logistics systems, exploring the potential for innovative technologies such as autonomous vehicles (AVs) to relieve the urban mobility and logistic problem under this pandemic situation.

Preparing Society for 21st Century Mobility: Achieving Equity and Prosperity in an Era of Emerging Mobility Technologies
(2020, AU$10,000)
University of Sydney Office of Global Engagement - Partnership Collaboration Awards
Professor Stephen Greaves, D. Geoffrey Clifton
By focusing on opportunities offered by emerging technologies, this project advances methods for comparative research in transport poverty.
Engagement

Public Lectures and Seminars

Leadership and Policy Seminar Series and Research Seminar Series

Established in 2003, the ITLS-Sydney Leadership and Policy Seminar Series benefits from leading national and international experts (CEOs, Visiting Professors etc.) speaking on topical transport and logistics issues relevant to business and academia. The seminar series attracts a broad audience from industry, government and academia as well as our own faculty and research students. The seminar conveners are Professors Rico Merkert and John Nelson.

Established in 2018, the ITLS-Sydney Research Seminar Series brings leading national and international research experts to share their current and most exciting research projects. The seminar series attracts a broad audience from industry, government and academia as well as faculty and research students. The seminar convener is Professor Michael Bell.

The following presentations were given in 2020 both in person (pre-COVID) and virtually:

**Future Transport 2056**
20 February 2020
Rodd Staples, Secretary, Transport for NSW

**The Immediate and Long-Term Implications of COVID-19 on Transport, Logistics and Lifestyle Webinar**
11 May 2020
Prof David Hensher (Host and Facilitator), Adrian Dwyer (IPA), Cecilia Warren (IGA), Michelle Batsis (UITP), Tony Arnold (ITLS), Prof John Nelson (ITLS)

**The Future of Global Logistics Webinar**
17 June 2020
Prof Rico Merkert (Host and Facilitator), Greg Johnson (Australia Emirates), Anisa Makalic (Commercial Coles Express), Ron Koehler (Trackster Global)

**The ‘New Normal’ For Post-pandemic Supply Chains Webinar**
20 July 2020
Prof Michael Bell (Host and Facilitator), Prof Benham Fahimnia (ITLS), Katie Walacavage (ANZ), Hemandra Maharaj (Metcash)

**Co-modality in Logistics Webinar**
4 September 2020
Prof Michael Bell (Host and Facilitator), Prof Johan Woxenius (University of Gothenburg), Prof Ron van Duin (Rotterdam University of Applied Sciences), Michael Stokoe (Transport for New South Wales)

**Reframing Supply Chain Management for the Post-COVID World Webinar**
16 November 2020
Prof Ben Fahimnia (Host and Facilitator), Henry Brunekreef (KPMG), Marcus Carmont (TM Insight), Simon Rowe (Kimberly-Clark), Liam French (Roland Corporation), Gareth Jude (ITLS)

**Monash ITS Staff Seminars**

Future of Transport: Development, Trends and Impacts
September 2020, MCAV Webinar
Professor Hai Vu
Transport Research Association of NSW (TRANSW) Annual Symposium

November 2020

On 17, 18, and 19 November, the third TRANSW Symposium was held with 38 presentations by research students and post-docs at the University of Sydney, UNSW and UTS. This year, the Symposium was held fully online with 12 short pitch presentations discussing a research idea and 26 demonstration presentations discussing research results.

ITLS HDR Supply Chain Symposium

December 2020

This year’s event took place on 7th December and was held online. There were five presentations, enjoyed by 25 participants, covering a range of topics including company purchasing decisions, resilient digital logistics networks, last mile delivery issues, and big data analytics to support supply chain research.
Committees

- Dr Kun An
  United States Transportation Research Board Committees: Transportation Network Modelling TRB - ADB30 (Friend)

- Dr Matthew Beck
  United States Transportation Research Board Committees: Stated Response (Chair)

- Prof Behnam Fahimnia
  IEEE Technology & Engineering Management Society, Board Member; Supply Chain Association of Australia, Director and Board Member

- Professor Michael Bell
  International Symposium on Transport Network Reliability Scientific Committee (Chair, International Advisory Committee); United States Transportation Research Board Committee: Intermodal Freight; Member of International Advisory Committee, Hong Kong Society for Transport Studies (HKSTS)

- Professor Michiel Bliemer
  International Scientific Committee of the Dynamic Traffic Assignment Conference, Chair of the Transport Research Association for NSW, Member of the organising committee of the TRANSW Symposium 2020, Director Future Transport Research Group, Director Travel Choice Simulation Laboratory

- Professor Graham Currie
  United States Transportation Research Board Committee: Light Rail Transit Systems (Chair); Land Transport Authority of Singapore, Research Advisory Board Member; K2 Swedish National Centre for Research and Education on Public Transport - International Advisory Board Member, Conference Organising Committee - National Streetcar and Light Rail Conference, New Jersey USA; Track Chair - Public Transport - Australasian Transport Research Forum, Committee for Melbourne - Transport Task Force, Associate Editor - Transportation

- Dr Alexa Delbosc
  Transportation Reviews (editorial panel member)

- Prof Behnam Fahimnia
  IEEE Technology & Engineering Management Society, Board Member

  Professor Stephen Greaves
  Travel Survey Conference International Steering Committee; Australasian Transport Research Forum Executive Committee

- Professor David Hensher
  Advisory Board, Institute of Transport and Logistics Studies (Africa), South Africa; International Conference Series on Competition and Ownership in Land Passenger Transport, International Steering Committee (Chair), Partner, Volvo, Educational and Research Foundation Centre of Excellence in Bus Rapid Transit, Chile

- Dr Chinh Ho
  Permanent Scientific and Technical Committee, Cooperation for Urban Mobility in the Developing World

- Dr Marilyn Johnson
  Amy Gillett Foundation Research and Policy Committee, Australasian College of Road Safety (Victorian Chapter), Australasian Road Safety Conference (Organising Committee, Scientific Committee (Chair)), CLOCS-A National Working Group, Road Safety Education Scientific Advisory Committee

Dr Inhi Kim
United States Transportation Research Board Committees: Highway/Rail Grade Crossings TRB - AHB60 (Standing); International Conference on Ambient Systems, Networks and Technologies (Program
committee), ITS Asia Pacific Forum 2020 (Program Committee), Korean Journal of Intelligent Transportation Systems (Editorial member), International Journal of Computer and Software Engineering (Editorial member)

- **Martin Locke**
  Board member, Infrastructure Partnerships Australia, Australia

- **Professor Rico Merkert**
  United States Transportation Research Board Committees: Air Cargo, Aviation Economics

- **Professor Corinne Mulley**
  Partner, Volvo, Educational and Research Foundation Centre of Excellence in Bus Rapid Transit, Chile; Executive Board, World Symposium of Transport and Land Use Research (former Chair); Transportation Reviews (editorial panel member); Research in Transportation Business and Management (editorial panel member); Emerald Transport and Sustainability Series (editorial advisory board)

- **John Nelson**
  ITS Australia, MaaS National Reference Committee, Chair, Mobility Working Group, Business Council for Sustainable Development Australia, Member, American Society of Civil Engineers (ASCE) Mobility Innovation Committee (USA), Member and sub-group leader, International Transport Forum (ITF) Working Group on Innovative Mobility for the Periphery (OECD, Paris).

- **A/Professor Dong Ngoduy**
  Transportmetrica A, Associate Editor; Transportmetrica B, Associate Editor; ARC detailed assessor; Member of the UK Research Council (EPSRC) Peer Review College

- **Professor Geoff Rose**
  Australasian Transport Research Forum: National Executive Committee; United States Transportation Research Board Joint Sub-committee: Emerging Vehicles and Low Speed Transportation

- **Professor John Kenneth Stanley**
  Member, Advisory Committee, Institute of Transport Studies, Monash University, Australia, 1995 - present.

- **Dr Susi Susilawati**
  United States Transportation Research Board Committees: Geographic Information Science and Applications (Friend); United States Transportation Research Board Committees: Urban Transportation Data and Information Systems (Friend); Indonesia: International Symposium on Transportation Studies for Developing Countries

- **Professor Hai L. Vu**
  IEEE Transactions on Intelligent Transport Systems, Associate Editor; United States Transportation Research Board Committees: Artificial Intelligence and Advanced Computing Applications: ABJ70 (Member)

- **Dr Nan Zheng**
  Editorial board member: Transportmetrica B: Transport Dynamics, PLOS One
Awards

- **Professor Michael Bell**
  - Dean’s Citation for Teaching COVID, S1 2020, University of Sydney Business School
  - Second most highly cited academic by subject areas 1996 – 2018: Economics and Business, PLOS Biology, 2020

- **Dr Jyoti Bhattacharjya**
  - Dean’s Citation for Teaching Merit, S1 2020, University of Sydney Business School
  - Dean's Citation for Teaching COVID, S1 2020, University of Sydney Business School
  - Dean's Citation for Teaching, S2 2020, University of Sydney Business School

- **Professor Michiel Bliemer**
  Dean’s Citation for Teaching COVID, S1 2020, University of Sydney Business School

- **Professor Behnam Fahimnia**
  - Dean’s Citation for Teaching, S2 2020, University of Sydney Business School
  - Dean’s Citation for Tutoring, S2 2020, University of Sydney Business School
  - Excellence in Research Award, 2020, University of Sydney Business School

- **Professor Stephen Greaves**
  Dean’s Citation for Teaching COVID, S1 2020, University of Sydney Business School

- **Dr Ali Hajiaghbozorgi**
  Dean's Citation for Tutoring, S2 2020, University of Sydney Business School

- **Professor David Hensher**
  - Ranked in the Top 10 most highly cited academics 1996-2018 by PLOS Biology
  - Most highly cited academic by subject areas 1996 – 2018: Economics and Business, PLOS Biology, 2020

- **Martin Locke**
  Dean’s Citation for Teaching COVID, S1 2020, University of Sydney Business School

- **Professor Rico Merkert**
  - Dean’s Citation for Teaching COVID, S1 2020, University of Sydney Business School
  - Professor of the Year Award, Beta Gamma Sigma Honour Society, University of Sydney Chapter

- **Dr Christopher Standen**
  Dean's Citation for Teaching, S2 2020, University of Sydney Business School

- **Nina Verzosa**
  Dean's Citation for Tutoring, S2 2020, University of Sydney Business School

Industry Sponsored PhD Scholarships – Monash

**Victoria Department of Transport**
Laura Aston
Exploring the Transit Orientation of Urban Development and its Impact on Public Transport in Melbourne

**BusVic**
Prudence Blake
Understanding Bus Markets Using the Concept of ‘Customer Fluctuation’
Yarra Trams
Matthew Diemer
Placemaking & Streetscape Design: Measuring Perceived Place Quality and Understanding its Implications for Tram Modernisation

**Transdev Melbourne**
Nora Estgfäller
Exploring Route Density/Frequency and First/Last Mile Solution Trade Offs in Transit Network Design

**Metro Trains Melbourne**
Lisa Fu
Future Train: Design investigation into passenger rail carriage interiors for Melbourne

**Victoria Department of Transport**
Taru Jain
Impact of Shared Modes on Travel Behaviour in Melbourne

**Metro Trains Melbourne**
Amy Killen
Designing Urban Rail to Reduce Vandalism

**Public Transport Victoria**
Laura McCarthy
Understanding declining public transport use during the transition to parenthood

**Victoria Department of Transport**
Rachel Mence
Understanding and Improving Gender Diversity in the Public Transport Workforce

**Victoria Department of Transport**
Rejitha Nath
Improving Network Synchronisation in Melbourne

**Victoria Department of Transport**
Maryam Nawaz
Exploring Reliability Engineering Approaches between Melbourne and Best Practice Railways

**BusVic**
Ha Anh Nguyen
Exploring the Safety Impacts of Bus Asset Ownership Models

**BusVic**
Jianrong Qiu
Exploring the Road Safety Impacts of Bus Safety Inspections

**Victoria Department of Transport**
Homayoun Rafati
Mining Big Data and Visualisation in Public Transport

**Industrial Sponsored PhD Scholarships – University of Sydney**

**Metro Trains**
James Bushell
How to better coordinate operators in the passenger transport industry to provide better mobility as a service

**Qantas**
Alicja Gajewska
Determinants of successful performance measurement and management with the use of strategic management approaches: Visualized performance benchmarking in the airline context
Forest Coach Lines
Thiranjaya Kandanarachchi
Improving Trust and Collaboration among stakeholders in the Mobility as a Service Eco-system

Lion
Maryam Teymoury
Behavioural decision-making and contractual structures

Ipsos Australia
Nina Versoza
Improving travel survey methods

Busways
Yale Wong
Integrated mobility services and contractual structures
Media

The following word cloud represents the main themes and topics from media coverage featuring ITLS and Monash researchers in 2020. Fifteen ITLS and one Monash researcher featured in 203 separate media appearances including national and international newspapers, television, radio and websites. It should be noted that four ITLS researchers, Professors David Hensher and Rico Merkert, Associate Professor Matt Beck and Dr Geoffrey Clifton were listed in the Top 10 spokespeople from the Business School by audience across 2020. This is an important achievement as increasing our media presence and in turn, our research impact, is a key component of the ITLS five-year strategic plan.
Centre Outputs

### ARC Centres of Excellence

Centre Outputs and Detailed Income and Expenditure Report

(CODIE)

<table>
<thead>
<tr>
<th>Centre Name:</th>
<th>ARC Centre of Excellence of Teaching and Research in Transport Management</th>
</tr>
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<tbody>
<tr>
<td>Centre ID: (eg CE1100006)</td>
<td>NO95/08214</td>
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<tr>
<td>Calendar Year Reported:</td>
<td>2020</td>
</tr>
<tr>
<td>Centre Admin. Organisation:</td>
<td>The University of Sydney</td>
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CENTRE OUTPUTS AND DETAILED INCOME AND EXPENDITURE REPORT (CODIE) GUIDE

CODIE data from individual Centres is for use within the ARC and will not be published. Consolidated figures may be published, used for evaluation purposes or to promote the overall achievements and/or outcomes of the ARC Centres.

The ARC is interested in tracking the development of the Centre as a focal point for research and as an attractive destination for high-quality researchers. The Outputs categories align Centre outputs with the outputs of other ARC schemes.

Reporting requirements

- Centres receiving ARC centre funding must submit a completed CODIE (Certification, Outputs, Income, Expenditure, In kind, Personnel and Other ARC grants worksheets) along with five (5) copies of the Annual Report
- Centres no longer receiving ARC centre funding, but retaining their title, must submit a completed Outputs worksheet only from this CODIE along with one (1) copy of the Annual Report.

To be noted when completing the CODIE:

- The CODIE is NOT a balance sheet. The total income does not necessarily have to balance the total expenditure.
- Headings should not be modified. New headings must only be entered under the “Other” category.
- Leave blank any rows that are not applicable to your Centre.
- New rows may be added to tables if more entries are required.
- All data must be for the 2020 calendar year ONLY.
- Insert Centre Details on sheet 1 (Title Page) before completing the remainder of the CODIE. These details will auto-fill across the worksheet.
- Example worksheets are provided. Please note the data in these examples are illustrative only and do not represent indicative amounts.

Submitting your CODIE (due by 31 March each year)

To submit your CODIE please:
1. Check the Centre name below is correct.
2. Print this page and sign the Certification below.
3. Print one (1) copy of each worksheet.
4. Post this with the signed Certification page and five (5) paper copies (one for Centres no longer receiving ARC Centre funding) of the Centre’s Annual Report to:

   Centres Coordinator  
   Australian Research Council  
   GPO Box 2702  
   Canberra ACT 2601

5. Email an electronic copy of this file to centres@arc.gov.au

Certification

To be signed by an authorised officer of the Centre.

I hereby certify that the following sheets are an accurate representation of the outputs, income and expenditure of the:

ARC Centre of Excellence of Teaching and Research in Transport Management

covering the calendar year 2020 and that I am authorised to approve their submission.

Certified by:
Signature

Print Name

Professor David Hensher
15 March 2021
ARC Centre of Excellence of Teaching and Research in Transport Management

Instructions
- Include outputs for ALL Centre activities (including those arising from Centre staff not named as Cis or PIs).
- Do not include any outputs from other ARC-funded projects or from work predominately completed before commencement of the Centre.
- If you are unable to differentiate between Centre outputs from other ARC-funded projects, these may be included in Column A. In these cases, the (double counted) outputs should also be acknowledged in Column D.
- Include outputs for ALL Centre activities (including those arising from Centre staff not named as Cis or PIs).
- Do not include any outputs from other ARC-funded projects or from work predominately completed before commencement of the Centre.
- If you are unable to differentiate between Centre outputs from other ARC-funded projects, these may be included in Column A. In these cases, the (double counted) outputs should also be acknowledged in Column D.
- Include only 2020 accepted and in-print books/articles. Do not include outputs that were listed in the 2020 CODIE.

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<thead>
<tr>
<th>Code</th>
<th>Type of Output</th>
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<th>B</th>
<th>C</th>
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<td>Number of outputs in Column A that included overseas involvement (i)</td>
<td>Number of outputs in Column A that involved personnel external to the Centre (ii)</td>
<td>Number of outputs in Column A also attributed as outputs of other ARC Projects (iii)</td>
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<td>Number of countries from which international visitors originated</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>O</td>
<td>Number of international visitors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>Number of overseas visits by Centre personnel</td>
<td>4</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Q</td>
<td>Number of countries visited by Centre personnel</td>
<td>3</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>R1i</td>
<td>Training programs/teaching packages conducted</td>
<td>10</td>
<td>0</td>
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</tr>
<tr>
<td>R1</td>
<td>Number of PhD students graduated</td>
<td>7</td>
<td>0</td>
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</tr>
<tr>
<td>R2</td>
<td>Number of Masters students graduated</td>
<td>28</td>
<td>100</td>
<td>0</td>
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</tr>
<tr>
<td>R3</td>
<td>Number of Honours students graduated</td>
<td>0</td>
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<td>0</td>
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</tr>
<tr>
<td>S1</td>
<td>Number of PhD students enrolled</td>
<td>53</td>
<td>14</td>
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<tr>
<td>S2</td>
<td>Number of Master students enrolled</td>
<td>467</td>
<td>47</td>
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<tr>
<td>S3</td>
<td>Number of Honours students enrolled</td>
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</tr>
<tr>
<td>T</td>
<td>Number of early career researchers (within 5 years of PhD completion)</td>
<td>5</td>
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</tr>
</tbody>
</table>

(i) Outputs with overseas involvement – e.g., #journal articles with international co-authors, # international students enrolled/graduated
(ii) Outputs with involvement from outside the Centre – e.g. # journal articles with co-authors not affiliated with the Centre
(iii) Outputs which have been attributed elsewhere in ARC reporting. - e.g. Linkage Project final reports
(iv) Codes K-Q = Sydney/Monash