Key Centre
Annual Report 2019

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 2019.

The year has been extremely productive with successful ARC and CRC grants together with an increasing number of industry-linked research projects associated with the growing focus on engagement and impact. As an example, the ITLS project with Bridgestone in Japan and a Sydney-based bus operator, resulted in a major development in improving the ways to manage the performance of tyres through enhanced maintenance practice resulting in significant savings in fuel consumption.

Special congratulations are due to Monash ITS who celebrated the 50th Anniversary of their program. I was delighted to be able to attend the Anniversary event held at the Monash Clayton Campus in October and to hear the dinner talk by Dr Evan Gwee from the Land Transport Authority in Singapore. Evan is an alumni of the Monash program and he returned to deliver the Inaugural William Young Alumni Lecture. We are proud of our students and alumni and it is always a pleasure to hear about the development of their careers. As part of the 50th Anniversary celebrations, Monash brought together a special panel of speakers in September for the 20th Ogden Transport Lecture. It was wonderful to see Bill Young and Ken Ogden (staff who were involved when we established the National Key Centre) recognised for their considerable contributions to the Monash program over many years.

ITLS Sydney celebrates 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.

Professor David Hensher

Key Centre Director
Director, Institute of Transport and Logistics Studies
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 2019 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 650 students completed the two core units (CIV2282 Transport and Traffic Engineering and CIV3282 Road Engineering) in 2019 and a further 370 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. Close to 100 students were involved in the Masters degrees offered on the Clayton campus. Monash ITS also offers a Master of Transportation Systems degree in conjunction with South-East University in China. The program had 38 students enrolled in 2019 and is expected to reach its enrolment cap of 50 students in 2020.

In 2019, ITLS-Sydney continued to offer a suite of postgraduate courses in Logistics and Supply Chain Management, Transport and Infrastructure. Students are able to enter directly into the Master of Logistics and Supply Chain Management or articulate through the Graduate Certificate and Graduate Diploma. Alternatively, students can choose the Master of Commerce which includes a specialisation in Logistics and Supply Chain Management and units on Aviation, Maritime Infrastructure and Transport Management. In 2020, the focus of ITLS teaching in Transport Management will move to the new multi-faculty Master of Transport offered in conjunction with the Faculty of Engineering and the Faculty of Architecture, Design and Planning. ITLS academics also teach one 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. Exciting changes to our teaching programs for 2021 will be announced over the course of 2020.

Postgraduate Research

The Key Centre has the largest higher degrees by research program in the transport and/or logistics field in Australia. In 2019, there were two PhD graduations at Monash ITS with 23 continuing student enrolments. At ITLS, there were five PhD graduations with 21 continuing students.
### Enrolments

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<th>Degree</th>
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<td>Master of Advanced Engineering (Transport)</td>
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<td>Master of Transport and Traffic</td>
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### Unit of study

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<td>Transport Planning (CIV4283)</td>
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<td>Quantitative Logistics &amp; Transport (ITLS5200)</td>
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<td>Decision Making on Mega Projects (ITLS6500)</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 program was introduced in 2011, established by Monash ITS in consultation with Transport Safety Victoria (TSV) to provide bus operators with the appropriate skills to offer bus services which meet regulatory and compliance requirements in Victoria. The program comprises two subjects: Introduction to Bus Safety and Safety Risk Management for Bus Operators. To maintain the integrity and the relevance of the program, Monash ITS staff work closely with Transport Safety Victoria and the Bus Association of Victoria (BusVic). Following a review of the program in 2017, in 2018 the program was transformed from a fixed semester, paper-based model to a flexible, online format, with progressive assessment on a staged basis. Developing and maintaining a proactive safety culture is now a key focus.

In 2019 the integrity requirements of the program were 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. In 2019 the course attracted 115 enrolments.

Bus Business Management Program (BBMO) for Bus Operators

The 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 was reviewed in 2019. In 2019 the course attracted 4 enrolments.

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 Online Training Course attracted 157 enrolments in 2019.

Discrete Choice Analysis: Models, Estimation and Applications

Almost without exception, everything human beings undertake involves a choice. In recent years there has been a growing interest in the development and application of quantitative statistical methods to study choices made by individuals or groups with the purpose of gaining a better understanding both of how choices are made and of forecasting future choice responses. Courses in discrete choice modelling and choice experiment design have been offered by ITLS-Sydney since 2006 and are presented by world experts in the field: Professors David Hensher, Professor William Greene, Professor Michiel Bliemer and Dr Andrew Collins. With participants travelling from as far as South Africa, Hungary, Canberra, Victoria and Queensland, the week-long Discrete Choice Analysis course had 39 attendees in 2019.
Certificate of Railway Planning and Operations

The Certificate of Railway Planning and Operations which introduces students to the key elements of railway planning and operations was launched in 2018. The three-day course is delivered by Dr Nigel Harris, one of Britain’s leading railway planners. Topics covered include management and business planning, understanding the railway market/environment, passenger behaviour, infrastructure design and timetabling. The course was offered over three days in June 2019, attracting 21 enrolments including participants from Transport for NSW.

Certificate of Transport Management

The Certificate of Transport Management program (including the Certificate of Transport Management Refresher) had a total of 49 enrolments in 2019, with participants from the bus industry and their suppliers (from NSW and interstate). 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, the State Transit Authority, BusNSW and private operators.
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 award ceremony was held as part of the 2019 Ogden Transport Lecture; prizes were awarded to:

- Benjamin Green (VicRoads Prize for highest average mark in coursework Masters units)
- Kai Huang (ARRB-Monash Prize for excellence in postgraduate research in transport)
- Steven Stavridis (Transport Safety Victoria Award for the best overall performance in the Bus Safety Management Program for Bus Operators)
- Tracey Tackney (Dyson Group Award for best performance in Bus Safety Management Program, Subject 6101: Introduction to Bus Safety)
- Jay Silver (Crown Coaches Award for the best performance in the Bus Safety Management Program, Subject 6102 Safety Risk Management for Bus Operators)

ITLS-Sydney’s 2019 Awards Presentation Evening was presided over by Dr Alastair Stone, Chair of the Board of Advice. The guest speaker was Professor John Nelson, Chair in Public Transport, ITLS. Prizes were awarded to:

- Andrew James Iemma - Peter Koning Memorial Award for the highest academic achievement in the Master of Transport Management
- Benjamin Julian French - GS1 Australia Prize for the highest academic achievement in the Contemporary Procurement unit of study (ITLS6003)
- Benjamin Julian French and Noel Randolph Pearson - GS1 Australia Prize for the highest academic achievement in the Production and Operations unit of study (ITLS6008)
- Shivangi Mehta - 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
- Benjamin Julian French - Supply Chain & Logistics Association of Australia Award for Excellence for the highest academic achievement in the Master of Logistics and Supply Chain Management
- Yale Wong - Institute of Transport and Logistics Studies Prize for excellence in postgraduate research in transport, logistics or supply chain management
- George Panageotov (Philip Boyle and Associates) – Bus and Coach Association (NSW) Prize
Research and Consultancy

FUNDING AWARDED IN 2019

Australian Research Council Discovery Project Grants

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.

Who Benefits from the Sharing Economy? Disruption in Australian Cities
(2020 -2023, AU$302,343)
Dr Thomas Sigler (UQ), Associate Professor Eric Knight (USyd), Professor Jonathan Corcoran (UQ), Dr Elin Charles-Edwards (UQ), Professor Rico Merkert (USyd), Dr David Wachsmuth (McGill)

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.

Co-operative Research Centre (CRC) Grants

iMOVE Co-operative Research Centre (CRC)
Mobility as a Service (MaaS) Trial: User Behaviour Analytics
(2019-2021, AU$321,000)
Professor David Hensher, Emerita Professor Corinne Mulley, Professor John Nelson, Dr Chinh Ho, Yale Wong, Andre Pinto

Research on identifying preferences for multi-modal mobility services has provided an important reference point for signalling those features of mobility as a service (MaaS) subscription plans that show very positive signs of market appeal. Using the available research evidence on the key drivers of user preferences for MaaS plans for specific socioeconomic segments, this project designs, undertakes and assesses the impact of a real market trial in Sydney over 6 months to identify the extent of real commitment to what otherwise would remain a research-informed MaaS opportunity. Lessons learnt will advise future developments of MaaS offerings.
Other External Research Funding

Worldwide Universities Network, United Kingdom
Low-carbon transport, individual wellbeing and planetary health in the era of smart cities and new mobilities
(2019, AU$19,000)
Dr Chinh Ho

The provision of services to design and conduct a freight survey of the Melbourne-Brisbane inland rail corridor
(2019, AU$110,795)
Professor Rico Merkert, Professor David Hensher and James Bushell
BIS Oxford Economics Pty Ltd, Australia

Peer review of Future Transport Modelling Report
(2019, AU$2,640)
Professor Michiel Bliemer
Infrastructure Australia

University College London Mobility Scheme
(2019, AU$5,000)
Professor John Nelson and Miguel Loyola Borja

Best Practice Public Transport Regulatory, Procurement/Contracting Model Research – Comparing Transport for London and Melbourne - International Transport Forum (2019, AU$100,000)
Prof Graham Currie
Review of procurement models for public transport in London UK and Melbourne, Australia

Independent Audit of the Demand Forecasting for the NSW Fast Rail Strategy - NSW Dept Premier and Cabinet (2019-20, AU$50,000)
Prof Graham Currie and Prof Hai Vu
Review of demand forecast modelling for the NSW Fast Rail Strategy.

Vissim and Unity Integration Modelling Study
(2019, AU$24,000)
Dr Inhi Kim
Mainroads, WA

Passenger Flow Evaluation Study
(2019, AU$36,000)
S. Ravitharan, Dr. Inhi Kim, S. Coxon, Y. Nam and J. Haasz
Bombardier Australia

Smart Mobility by CCDI, China
(2019, AU$73,000)
Dr. Inhi Kim
**Significant Continued Research Funding**

**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 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 Khao 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 Linkage Project Grant**  
*Funding on the line:*  
**(2016-20, AU$217,964)**  
A/Prof Matthew Burke, Prof Corinne Mulley, Dr Barbara Yen, Prof Neil Sipe, Dr Guilherme Lohmann, Prof Y-C Chiou, Mr Tim Raimond (TfNSW)

This research develops property value capture schemes to provide alternative funding for public transport investment. Hedonic modelling using longitudinal geographic-weighted regression provides visual detail on the timing and spatial patterns of property value uplift from recent investments in rail, busways and ferries in Queensland and NSW. The first international survey of benefit-area schemes for value capture is conducted along with surveys of Australian stakeholders and discrete choice modelling to determine willingness-to-pay. This data is then used to develop an institutionally, legally and politically feasible scheme for implementation in Australia, focused on cases including extension to the Gold Coast light rail network.

Industry partners: Qld Department of Transport and Main Roads, Transport for NSW, Gold Coast City Council, Queensland Airports Limited

**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.
Understanding the automobility decisions of Australian millennials (2015-2019, 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.

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 2019, ITLS was involved in the aforementioned Mobility as a Service (MaaS) trial as well as the Facility and Network Optimisation for Australia Post project valued at $525,000; both continue into 2020.

Innovative Manufacturing Co-operative Research Centre (CRC)
(2018-2020 $1,434,033)

Cristyn Davies, Professor Rachel Skinner, Professor Behnam Fahimnia and Professor Robert Booy

Manufacturing and multi-setting usability study, supply chain impact/disruption assessment and Phase 1 clinical study of an innovative vaccine delivery technology

Rail Manufacturing Co-operative Research Centre (CRC)
(2017-2020, AU$41,029)

W.Jiang and Dr. Inhi Kim

Short-term rail passenger flow forecasting application

Centre of Excellence in Bus Rapid Transit development (BRT+)
(2017-2022, AU$457,164)

Professor David A Hensher, Professor Emerita Corinne Mulley, Professor Rico Merkert, Dr. Chinh Quoc Ho, Wen Liu http://www.brt.cl/

Volvo Research and Education Foundations, Sweden

Bus Rapid Transit is a Centre of Excellence (CoE) for Bus Rapid Transit (BRT) studies implemented in Santiago, Chile, and financed by the Volvo Research and Educational Foundations. This CoE was established in May of 2010 and is working as a consortium of five institutions: Pontificia Universidad Católica de Chile, Massachusetts Institute of Technology, University of Pretoria, The University of Sydney, and World Resources Institute Ross Center for Sustainable Cities. The main goal of the CoE is to develop a new framework for planning, design, financing, implementation and operation of BRT in different urban areas, giving clear guidelines to decision makers on when and how BRT projects can effectively enhance mobility and meet accessibility needs. These guidelines will be a major milestone to change the way decision makers address investment and design plans for configuring urban mobility systems. An essential goal of the CoE is to identify elements which are transferable between existing and prospective BRT systems and elements that are project site specific.

Jiangsu Industrial Technology Research Institute
(2016-2019, 4Million RMB (AU$760,000))

Dr Inhi Kim, Professor Terry Liu (SEU), Professor Yifan Dai (THU)

Collaborative Model of Green Travel in Intelligent City Integration platform

National Natural Science Foundation of China (2016-2020, 620,000 RMB (AU$117,000))

Dr. Yadan Yan (Zhengzhou University), Dr. Inhi Kim

The traffic operational reliability analysis and optimization design of connection lines between motorways and urban roads.
i-Sense Oakleigh: The Smart Connected Precinct (2018-2019, Australian Government, Dept of Infrastructure, Regional Development and Cities, AU$700,000)
Prof. Hai Vu and Prof. John Grundy (Led and submitted by City of Monash)
Developing a digital infrastructure for Smart Precinct.

**University Research Grants**

**Evaluating and Framing Sustainability Priorities of Supply Chain Managers**
(2019, AU$10,000)
Professor Behnam Fahimnia
University of Sydney/University of Geneva Partnership Collaboration Awards

**The CT mobility manager: Exploring new roles for community transport in a MaaS-enabled environment (Business School Industry Partnership Grant)**
(2019, AU$26,971)
Professor John Nelson, Professor Emerita Corinne Mulley and Dr Geoffrey Clifton
Industry partner: Randwick Waverley Community Transport, Australia

**Investigating the external validity of virtual-reality experiments of decision-making in studies of human evacuation behaviour (Business School Early Career Researcher Grant)**
(2019, AU$12,000)
Dr Milad Haghani

**Identifying variable speed limit information impact on driver behaviour: A driving simulator approach (Business School Early Career Researcher Grant)**
(2019, AU$12,000)
Dr Mark Raadsen

**Linkage Seed Funding Scheme (2019, AU$27,500)**
Dr Kun An
Impacts of transport conditions on the stability of blood samples
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 2019:

**AV revolution? Limits and chances**
6 February 2019  
Professor Kay Axhausen, IVT ETH Zurich

**Preparing logistics for a low carbon world**
6 March 2019  
Professor Alan McKinnon, Kuhne Logistics University, Germany

**Human-machine interaction in order/procurement decisions**
14 March 2019  
Kai Hoberg, Kuhne Logistics University, Germany

**Using AI to analyse travel demand with mobile phone sensor technology and enhanced multimodal navigation using augmented reality**
22 March 2019  
Sonal Ahuja, Executive Director, Sunovatech DMCC

**ISO20400 Sustainable Procurement – An overview of what this is, the development process and Australia’s contribution and how to build a business case for Sustainable Procurement**
10 April 2019  
Sarah Collins, Head of Procurement, Australian Broadcasting Corporation

**Industry/Logistics 4.0 in Australia**
8 May 2019  
Dr Jens Goennemann, Managing Director, Advanced Manufacturing Growth Centre

**Car sharing Australia – the art of the impossible**
5 June 2019  
Malcolm Noyle, Pan Tasman Business Development Manager, Share Now

**Recent developments in Demand Responsive Transport: the view from Europe**
7 August 2019  
Professor John Nelson, Chair in public Transport, Institute of Transport and Logistics Studies
Adopting Mobility-as-a-Service: An empirical analysis of end-users’ experiences
5 September 2019
Goran Smith, Chalmers University of Technology, Sweden

21 months after launch – Customer Obsession at Amazon.com.au
11 September 2019
Rocco Braeuniger, VP, Country Manager, Amazon Australia

Creating a blueprint for connected and automated vehicles in NSW
17 October 2019
Evan Walker, Director, TfNSW Smart Innovation Centre

Making the connections, but under pressure: the third party logistics industry in the Asia-Pacific
4 November 2019
Professor Neil M Coe, National University of Singapore

Model averaging in choice modelling: applications to model structure and identifying sources of heterogeneity
13 November 2019
Professor Stephane Hess, University of Leeds

Data driven estimation of origin-destination flows
20 November 2019
Professor Hans van Lint, Delft University of Technology

On-demand and shared mobility from a city perspective: how to reap the benefits and mitigate the risks?
27 November 2019
Daniel Reck, ETH, Zurich

Transit vehicle assist and automation: An enabler for innovating public transportation
11 December 2019
Professor Wei Bin Zhang, University of California at Berkeley

Transit vehicle assist and automation: An enabler for innovating public transportation
11 December 2019
Professor Wei Bin Zhang, University of California at Berkeley

Ogden Transport Lecture
Monash ITS’ Ogden Transport Lecture is a free public lecture that was initiated in 2001 to recognise the key role which Ken Ogden played in the formation and development of the transport program at Monash University.

50 years on: Transport challenges and opportunities, looking back and looking forward
24 September 2019
Panel members: Sir Rod Eddington, AO FTSE, JP Morgan, Jim Betts, Secretary, Department of Planning and Industry, NSW and Romilly Madew AO, CEO, Infrastructure Australia

Transport Research Association of NSW (TRANSW) Annual Symposium
3 December 2019
Keynote Speaker: Athanasios Ziliaskopoulos, University of Thessaly
Panel Discussion - Advanced transport modelling methods for NSW: Edmund Cheung, Principal Transport Modeller, Asan Group, Timothy Clark, Transport Planner, Transurban and Blake Xu, Manager of Transport Model Development, Transport for NSW
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

- **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**  

- **Dr Geoffrey Clifton**  
  Australian Timetable Association (Convenor, Sydney Branch)

- **Professor Graham Currie**  
  United States Transportation Research Board Committee: Light Rail Transit Systems (Chair); Land Transport Authority of Singapore, Research Advisory Board Member; Conference Organising Committee - National Streetcar and Light Rail Conference, New Jersey USA; Track Chair - Public Transport - Australasian Transport Research Forum

- **Dr Alexa Delbosc**  
  Transportation Reviews (editorial panel member), Journal of transport and Land Use (editorial panel member); United States Transportation Research Board Committees: Social and Economic Factors of Transportation (Paper Review Coordinator), Traveller Behaviour and Values (Friend); Australasian Transport Research Forum Scientific Committee Member.

- **Professor Stephen Greaves**  
  Travel Survey Conference International Steering Committee; Australasian Transport Research Forum Conference Organising Committee; United States Transportation Research Board Committees: Air Quality, New Technologies in Travel Surveys

- **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 (Vice-President, National Executive Committee, Victorian Chapter Chair), Australasian Road Safety Conference (Organising Committee, Scientific Committee), Melbourne Metro Rail Authority Public Engagement and Influence 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),

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

- **Associate Professor Rico Merkert**  
  United States Transportation Research Board Committees: Air Cargo, Aviation Economics, Light Commercial and General Aviation

- **Professor Corinne Mulley**  
  United States Transportation Research Board Committee: Public Transport Committee; Transportation Reviews (editorial panel member); Partner, Volvo, Educational and Research Foundation Centre of Excellence in Bus Rapid Transit, Chile; Executive Board, Executive Board, World Symposium of Transport and Land Use Research (former Chair)

- **John Nelson**  
  ITS Australia, MaaS National Reference Committee

- **Professor Geoff Rose**  
  Australasian Transport Research Forum: National Executive Committee and Chair Scientific Committee for the 2019 ATRF Conference; World Conference on Transport Research (Local Area Representative); United States Transportation Research Board Joint Sub-committee Co-Chair: 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**  
  IET Intelligent Transport Systems, Associate Editor; United States Transportation Research Board Committees: Artificial Intelligence and Advanced Computing Applications: A870 (Friend)
Awards

- **Dr. Camila Balbontin**
  Dean’s Citation for Teaching S1 2019, University of Sydney Business School, Australia, 2019.
  For ITLS5200 Quantitative Logistics and Transport

- **Professor Michiel Bliemer**
  Dean’s Citation for Teaching S1 2019, University of Sydney Business School, Australia, 2019.
  For ITLS5100 Transport and Infrastructure Foundation

- **Dr. Andrew T Collins**
  Dean’s Citation for Teaching S1 2019, University of Sydney Business School, Australia, 2019.
  For ITLS6002 Supply Chain Planning and Design

- **Professor Graham Currie**
  Vice Chancellors Award for Postgraduate Supervision - Monash University

- **Dr Alexa Delbosc**
  Identified as the national Field Leader in transport research by *The Australian*

- **Professor David Hensher**
  John Shaw Medal
  Director Professor Hensher became the first academic to receive the John Shaw Medal; an award that honours an industry champion who has made a lasting contribution to Australia’s roads. Professor Hensher was recognised for his extensive work in the development and application of quantitative methods for studying individual choice has significantly assisted state and national government departments with planning for future transport services and infrastructure.

![Professor Hensher being awarded the John Shaw Medal by Roads Australia President, David Stuart-Watt](image)

- **Martin Locke**
  Dean’s Citation for Teaching S1 2019, University of Sydney Business School, Australia, 2019.
  For ITLS6500 Decision Making on Mega Projects

- **Professor Rico Merkert**
  Research Engagement Award 2019, University of Sydney Business School, Australia

- **Professor John Nelson**
  University of Sydney Office of Global Engagement – University College London Mobility Scheme
  To support PhD candidate Miguel Loyola’s data collection
- **Dr Mark Raadsen**  
  Dean’s Citation for Teaching S1 2019, University of Sydney Business School, Australia, 2019.  
  For ITLS5200 Quantitative Logistics and Transport

- **Dr Mark Raadsen**  
  Early Career Research Award for Talented Scholars 2019, University of Sydney Business School, Australia

- **Yale Wong**  
  Intelligent Transport Systems (ITS) Australia Young Professional Award 2019

- **University of Sydney**  
  The Shanghai Ranking Consultancy ranked the University at number one in Australia and sixth internationally for transportation science and technology in the annual Academic Ranking of World Universities (ARWU).

**Outstanding rankings result for ITLS**  
ITLS has been included in the top 10% of institutions in the field of Discrete Choice Models as of July 2019, ranking fifth amongst a cohort of 1,866 global institutions.

**Industry Sponsored PhD Scholarships – Monash**

**Public Transport Victoria**  
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

**Public Transport Victoria**  
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

**Public Transport Victoria**  
Rachel Mence  
Understanding and Improving Gender Diversity in the Public Transport Workforce
Public Transport Victoria
Rejitha Nath
Improving Network Synchronisation in Melbourne

Public Transport Victoria
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

Public Transport Victoria
Homayoun Rafati
Mining Big Data and Visualisation in Public Transport

VicRoads
Samithree Rajapaksha
Simulating Bus and Tram Priority in Traffic Flows

VicRoads
James Reynolds
Exploring public policy analysis, implementation theory and decision-making frameworks in public transport priority

Transdev Melbourne
Sarah Roberts
Future Bus – a Multi-Purpose Bus for Changing Needs and Roles

Yarra Trams
Luke Valenza
Passenger Falls in Trams

Industry 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

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 clouds represent the main themes and topics from media coverage featuring ITLS and Monash researchers in 2019. Eleven ITLS researchers featured in 114 separate media appearances while two Monash researchers featured in 17 separate appearances including national and international newspapers, television, radio and websites.
## 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>
</thead>
<tbody>
<tr>
<td>Centre ID: (eg CE1100006)</td>
<td>NO95/08214</td>
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<tr>
<td>Calendar Year Reported:</td>
<td>2019</td>
</tr>
<tr>
<td>Centre Admin. Organisation:</td>
<td>The University of Sydney</td>
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</table>
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 2018 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 2018 and that I am authorised to approve their submission.

Certified by:

Signature

Print Name

Professor David Hensher
16 March 2020
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 only 2019 accepted and in-print books/articles. Do not include outputs that were listed in the 2019 CODIE.

<table>
<thead>
<tr>
<th>Code</th>
<th>Type of Output</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<tbody>
<tr>
<td></td>
<td>Number of Centre outputs</td>
<td></td>
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<tr>
<td>A1</td>
<td>Book – authored research</td>
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<td>A2</td>
<td>Book – authored other</td>
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<td>Book - translation</td>
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<td>B</td>
<td>Book chapter</td>
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<td>C1</td>
<td>Journal article – articles in scholarly refereed journal</td>
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<td>C2</td>
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<td>C3</td>
<td>Journal article – non-refereed article</td>
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<td>C5</td>
<td>Unpublished reports (including commercial consultancies)</td>
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<td>E1</td>
<td>Conference – full written paper-refereed proceedings</td>
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<td>17</td>
<td>16</td>
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<td>E2</td>
<td>Conference – full written paper-non-refereed proceedings</td>
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<td>0</td>
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<td>E3</td>
<td>Conference – extract of paper</td>
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<td>E4i</td>
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<td>0</td>
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<tr>
<td>E4</td>
<td>Conference – unpublished presentation</td>
<td>8</td>
<td>2</td>
<td>3</td>
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<td>Audio-visual recording</td>
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<td>Computer software (including digital maps, data, web outputs)</td>
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<td>Designs</td>
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<td>J3i</td>
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<td>J2</td>
<td>Creative work including in group exhibition, performance, recording or anthology</td>
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<td>Exhibition curatorship</td>
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<tr>
<td>M</td>
<td>Number of international collaborating institutions</td>
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<tr>
<td>N</td>
<td>Number of countries involved in collaboration</td>
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<td>O</td>
<td>Number of international visitors</td>
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<td>Number of overseas visits by Centre personnel</td>
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<td>Q</td>
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<td>R1i</td>
<td>Training programs/teaching packages conducted</td>
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<td>R2</td>
<td>Number of Masters students graduated</td>
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<td>R3</td>
<td>Number of Honours students graduated</td>
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<td>S1</td>
<td>Number of PhD students enrolled</td>
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<td>S2</td>
<td>Number of Master students enrolled</td>
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<td>47</td>
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<td>S3</td>
<td>Number of Honours students enrolled</td>
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<td>0</td>
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<tr>
<td>T</td>
<td>Number of early career researchers (within 5 years of PhD completion)</td>
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</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
THE AUSTRALIAN KEY CENTRE IN TRANSPORT MANAGEMENT

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