



Transport
Research
Institute

Transport Research Institute Edinburgh Napier University

Annual Report 2019



Informing decisions.
Shaping policy.

Our vision

“To be internationally recognised by academics, public policy makers, the transport industry and investors for the relevance, quality and rigour of our research in areas that contribute to a growing economy and more sustainable and healthy mobility.”

Welcome

Transport Research Institute Annual Report 2019

2019 saw our unique expertise in research and high quality journal papers influence at the national and international level with work for the Scottish Government and the European Commission. New Horizon 2020 projects were introduced on women and data in transport, and parking; an Innovate UK project on connected autonomous buses; and several projects on innovative traffic engineering measures. We continued to offer a cutting-edge MSc in Transport Planning and Engineering with growing student numbers, one of the very few in the world to be taught online as well as face to face.

We were disappointed to say goodbye to Prof Tom Rye who had served as Director of TRI for 4 years and 20 years in total through research and teaching at Edinburgh Napier University.

We continued to be active with media appearances in the newspapers, radio and TV. TRI hosted and organised the TDM Symposium and our annual Electric Vehicle Event goes from strength to strength.

We very much look forward to continuing on our success and working with you in 2020!

MEDIA APPEARANCES

Prof Tom Rye was quoted in a piece on new charges for car parking at work. As part of the budget, the Scottish Government allowed councils to set a levy on workplace car parking spaces. Tom was interviewed by Scotland on Sunday as part of an assessment of the Workplace Parking Levy.

Prof Tom Rye wrote for the Evening News about the costs of the Edinburgh tram extension.

Prof Adrian Davis presented to Holyrood committee on 20mph speed limits. Adrian Davis was quoted in the Scotsman, Edinburgh Evening News, STV, Cycling UK, Holyrood, Daily Mail, Local Transport Today, Courier & Advertiser.

Suzanne Meade joined: Orla Hegarty, architect and assistant professor in the School of Architecture, Planning and Environmental Policy at UCD; Frank McDonald, author and former environment editor of The Irish Times; and Catherine Martin, Deputy Leader of the Green Party in a panel debate on 'The Last Word'. The topic was: There are not enough houses or apartments being built to deal with the demand for affordable housing. But of the homes that are being built, are they in the right locations? Are we making the same mistakes we made a decade ago in building housing estates in Dublin's commuter counties, which could be contributing to urban sprawl and a return to lengthy commutes?

Prof Adrian Davis and Chris Oliver were given the opportunity by The Scotsman newspaper to outline in an opinion platform piece, "How Cycling can transform Scotland's cities". They explained why sustainable transport must be understood as critical in any strategy for Scotland to go "further and faster" in tackling climate change. The Scottish Government said it must achieve net-zero greenhouse gas emissions by 2045. Although Scotland has been innovative in carbon reduction, transport remains an Achilles heel. Sustained and strong political leadership in delivering nothing less than transformational change is required.

Richard Llewellyn discussed autonomous vehicles and road safety in a BBC Radio Five Live, Roadside Science broadcast in May.

APPOINTMENTS

Dr Grigorios Fountas became Member of the Editorial Advisory Board of the Elsevier's journal "Analytic Methods in Accident Research" (ranked no 1 journal in 2019) in both Safety Research and Transportation subject areas per its Scopus CiteScore and Impact Factor.

Dr Grigorios Fountas was appointed as Fellow of the Higher Education Academy of the UK in October 2019.

Prof Adrian Davis was appointed Chair of the Transport Working Group of the Cleaner Air for Scotland Review.

Dr Achille Fonzone was promoted from the EPSRC Associate College to become a Full College Member of EPSRC (The Engineering and Physical Sciences Research Council).

Dr Achille Fonzone was appointed member of the Steering Group on the STAR Committee.

Prof Adrian Davis was appointed member of the Programme Group on the STAR Committee.

2019 HIGHLIGHTS

EVENTS

9th International Symposium on Travel Demand Management (TDM 2019)

The 9th International Symposium on Travel Demand Management (TDM 2019), organised and hosted by the Transport Research Institute, was held at the Edinburgh Grosvenor Hotel from 19th to 21st June. The symposium was a great success with speakers from across the world, including our invited speakers: Dr Chandra Bhat, Prof Juan De Dios Ortuzar, and Prof Glenn Lyons. Presentations linked in with the research themes: Emerging services and technologies; Travel behaviour and public perceptions; Methodological advances in TDM; and Public transport and smart cities.

The presented papers were also reviewed for inclusion in a Special issue on Travel Demand Management and Smart Cities in the Journal Transportation Research part A.

The 10th TDM Symposium will be organised by the Technological University Dublin in 2021.



5th Annual Electric Vehicle Event

Prof Tariq Muneer and Yvonne Lawrie organised and hosted the popular annual Electric Vehicle Event which was held at Edinburgh Napier University's Craiglockhart Campus on 9th October.

Scottish Transport Secretary Michael Matheson MSP gave the keynote address.

Speakers included:

Andy Robinson, Head of ULEV delivery, Transport Scotland;

Björn Hasselgren, Senior Advisor at the Swedish Transport Administration, Trafikverket, Sweden who spoke about the electric road programme;

Ellie Grebenik, Senior Programme Manager – Scottish Transport, Energy Saving Trust on the e-bike grant fund scheme;

James McKemey, Head of Insights, PodPoint, the UK's leading provider of electric vehicle charging;

Dr Jonathan Cowie on the SURFLOGH project;

Colin Cochrane, Edinburgh Napier University student talked about his research on "Design of a Solar Sourced, Electrically Powered Rickshaw;"

Keith Alcock, Edinburgh Napier University student presented his research on "The thermal management of Lithium-ion batteries using foam material."

There were various vehicles on display. Alexander Dennis showcased a fully electric double decker bus and VW showcased the e-Golf. Exhibition stands were on display from SWARCO, Peddlesmart, Electric Cycle Company, EVA Scotland and Co-Wheels Car Club.

Save the date: Thursday 8th October for the 6th Annual Electric Vehicle Event where we will welcome Michael Matheson again.

(L-R: Prof Tariq Muneer, Michael Matheson MSP, Prof Simeon Keates)



STAFF ACTIVITIES 2019

Professor Tom Rye was an invited independent expert member of the Cleaner Air for Scotland Review Steering Group, which ran over 4-5 months to identify additional possible actions to further improve air quality in Scotland. Prof Adrian Davis was chair of the transport working group of the review. The Review was formally announced by the Cabinet Secretary for the Environment, Climate Change and Land Reform on 6th November during a visit to British Heart Foundation Scotland's Centre for Research Excellence. The Cabinet Secretary said: "There is a clear relationship between air pollution and human health impacts, and although we have made significant progress over recent years, more remains to be done." "The review will bring together research being undertaken by the British Heart Foundation here in Edinburgh and others elsewhere to determine how we as a nation can take further positive steps to mitigate the impact of this hugely important subject."

Prof Tom Rye chaired the 2019 annual UTSG conference at Leeds University as one of his final activities during a 3.5 year period chairing the organisation. With support from the UTSG community Tom introduced a number of innovations in the format and operation of the conference to make it more attractive to both postgraduate researchers and academic staff, not least of which was moving the conference from its traditional January date to early July. This and other innovations have been successful in attracting in a broader range of participants, with 125 abstracts submitted for the 2019 conference – a record. Tom closed the event by handing over to his successor, Prof John Parkin of the University of the West of England, in whose capable hands the organisation will continue to grow and prosper.

TRI was well-represented at the UTSG conference with papers from PhD students Mohamed Jama Mohamed and Augustus Ababio-Donkor, and from Dr Greg Fountas and Prof Tom Rye on the topics of:

- 'The utilisation and user characteristics of Uber services in London' – Mohamed Jama Mohamed, Tom Rye and Achille Fonzone
- 'An Empirical Analysis of the Effect of Driver Fatigue, Gender, and Distracted Driving on Perceived and Observed Aggressive Driving Behaviour' – Grigorios Fountas, Sarvani Sonduru Pantangi, Kevin Hulme and Panagiotis Anastasopoulos
- 'What is the big problem with cars? Problematisations, measures and blind spots in local transport and land use planning' – Robert Hrelja, Tom Rye and Karin Thoreson
- 'Understanding transport mode choice for commuting: The role of Affect' – Augustus Ababio-Donkor, Wafaa Saleh and Achille Fonzone

On 18th June Prof Tom Rye presented a new guide on Health in Sustainable Urban Mobility Plans (SUMPs) at the 6th European Conference on SUMPs in Groningen, Netherlands. The guide, written by Prof Adrian Davis and co-authored by Prof Rye, explains why and how public health issues should and can be incorporated into local and regional transport planning, and what can be achieved by so doing. It is one of a series of guides on topics related to SUMPs and written for the European Commission to support its urban transport policy initiatives. The guide was produced as part of the PROSPERITY Horizon 2020 project on SUMPs, of which TRI is a key partner.

Prof Adrian Davis was invited to speak about his paper 'The UK transport policy menu: Roads, roads, and a dash of multimodalism' at Transform Scotland's Member Session meeting. The paper set out the 4 main challenges to achieving large scale voluntary travel behaviour change in favour of healthy travel. STPR2 is set to be at the centre of the transport policy agenda in Scotland in 2019.

Prof Davis gave oral evidence at the session on Restricted Roads (20 mph Speed Limit) (Scotland) Bill which was examined by Rural Economy and Connectivity Committee of Parliament on 6th February.

In April Adrian Davis undertook a series of interviews with senior Road Policing officers across Scotland in order to better understand their views and rationale on 20mph speed limits. Mark Ruskell, MSP, who commissioned the work, currently has a Bill being considered in the Scottish Parliament to make 20mph speed limits the default on all restricted roads in Scotland which are currently 30mph.

Prof Adrian Davis was invited as a guest speaker to present to the Active Scotland Development Group (a Public Health led group within the Scottish Government) meeting, on the subject 'What should our Transport & Health priorities in Scotland be?'

Prof Adrian Davis was invited to give the keynote address at the Active Travel Conference in Edinburgh. The conference's theme was "Widening Access to Active Travel." Discussions involved ways of looking at how technology can help people travel more actively and examine issues surrounding transport poverty and accessibility. Other speakers included: Lee Craigie, Active Nation Commissioner for Scotland and Daisy Narayanan, director of urbanism, Sustrans and project director, Edinburgh City Centre Transformation.

Adrian was invited to speak at the Public Health Information Network for Scotland event held in Glasgow in September. He gave a presentation on 'Effective interventions in road transport to improve public health: lessons from active travel projects and programmes'.

Adrian presented at the Transport & Health workshop which took place on 22nd October in Glasgow. The event was co-organised by TRI and the Glasgow Centre for Population and Health. The Active Nation Commissioner for Scotland, Lee Craigie and Laura Murdoch, Director of Bus, Accessibility and Active Travel, at Transport Scotland also spoke.

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Prof Davis was invited to speak, once again, at The University of Oxford Global Challenges in Transport: Health and Wellbeing Course on 13th December. The Global Challenges in Transport courses are run by the Transport Studies Unit, University of Oxford. This 4-day residential course introduced the latest research on the complex relationships between different forms of transport and mobility, with health and wellbeing, including safety and air pollution. It introduced a variety of theoretical and methodological approaches and tools to consider transport-related health impacts and social equity across spatial scales, geographical contexts and transport modes. Specific attention was given to the potential benefits associated with promoting active travel and in considering how to encourage active travel, and how cycling and walking can deliver benefits to personal well-being, public health, the economy and the environment.

Professor Wafaa Saleh was invited to take part at the EC-US Round Table Panel at the 6th International Conference on Women's Transportation Issues, 10th-13th September 2019 in Irvine California. The TRB meeting aimed to identify emerging women's issues in the use of transportation; define research needs related to these issues; and stimulate, gather, and disseminate relevant research findings. Wafaa presented "Revealing actionable knowledge from data to support fair women's inclusion in the transport system".

Prof Wafaa Saleh was invited as an external committee member to participate in a habilitation committee at the University of Natural Resources and Life Sciences Vienna (Universität für Bodenkultur Wien – BOKU) on 15th October. This is the qualification to conduct self-contained university teaching and is the key for access to a professorship in many European countries. Wafaa gave a talk on the subject 'Can autonomous vehicles help reducing traffic congestion in urban areas?'

Prof Wafaa Saleh attended and presented at the 1st International Conference on Crafting Foundations for Sustainable and Inclusive Development (CRFSID-2019). The visit included academic and scholarly activities at Manipal University. ENU had an MOU with Manipal since 2011 and there have been ongoing collaborations, including a just completed undergraduate articulation agreements in Engineering and Computing.

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Professor Christiane Bielefeldt retired from Edinburgh Napier University in early 2017 from the post of Professor for Strategic Transport Management. She is now a Professor Emeritus, and has since been re-employed with part-time by Napier as an adviser for the evaluation in the H2020 project SUNRISE, which deals with mobility planning and implementation at urban district level through "neighbourhood mobility labs". Key research interests: sustainable transport; co-modal and intermodal transport; ICT in transport; urban and motorway traffic control.

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Professor Tariq Muneer gave a live internet talk on 'How clean are electric vehicles', organised by the Energy Saving Trust in July. He was invited to give a keynote speech on Electric Vehicles for the Agriculture Sector International Conference held at Maribor University, Slovenia in November.

Prof Tariq Muneer gave a keynote speech at Solaris Conference, Delhi. Solaris system of conferences was initiated at Napier university in 2003 and the first conference on solar energy modelling was held at Craiglockhart campus in September 2003. Since then this biennial event has been held under the chairmanship of Professor Tariq Muneer in Greece, India, Hong Kong, Czech, Spain, Slovenia, London, China and back again in India in February (7-9), 2019. Some 120 people attended the most recent event. Among the keynote speakers was also Professor Muneer who discussed the role of solar energy in making road transport sustainable via deployment of electrical vehicles. Note that one of the most polluted world city is Delhi which will only allow electric vehicles to be registered from year 2020.



Dr Achille Fonzone worked with the 3 Revolutions Future Mobility Program as visiting scholar at UC Davis ITS. The purpose of the visit was to explore the opportunity to discuss common research interests. UC Davis and Edinburgh Napier University have decided to carry out jointly a survey on innovative mobility systems in the US and in the UK to compare attitudes and behaviours in the two Countries. Achille gave a talk on "Where will (2 of) the 3REV take Edinburgh" at the 3 Revolutions Future Mobility Research Workshop, which saw the participation also of the key industrial players of the world of innovative mobility (from ridehailing companies like Uber and Lyft, to car manufacturers like BMW, Daimler, Mercedes, Honda). Achille was invited to hold a seminar for the Sustainable Transportation Energy Pathways Program (STEPS+), where he talked about "Passenger information and public transit performance".



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Dr Jonathan Cowie is a lecturer in Transport Economics and programme leader of the MSc in Transport Planning and Engineering. He teaches modules on transport policy, freight transport, public transport and transport economics, and has considerable experience of teaching research methods.

Jonathan gave a presentation to the SEtran Bus Stakeholders Congress along with Richard Hall, Managing Director of Lothian Buses, and Ross Martin, Glasgow Connectivity Commissioner in February. With specific reference to the bus industry, Jonathan presented an overview of the Transport Bill 2018 currently going through the Scottish Parliament, and his views, based on his ongoing research, as to the appropriateness of the provisions of the bill in addressing the issues facing the Scottish bus industry at the moment.

Dr Jonathan Cowie was in Mechelen in Belgium in February as part of the EU Interreg project Surflogh, where TRI and Sestran are working with four other project partners examining the commercial possibilities for urban freight consolidation centres. At the steering group meeting, Jonathan presented the early results of the critical literature review and then with the other partners visited the pilot which is being established in the city. This should provide interesting contrasts with the pilots in Edinburgh and also Groningen, as the approaches being taken to the establishment of these is quite different in each city.

In April, Dr Cowie visited the Zedify depot in Glasgow, located on the south side of the River Clyde. Zedify Glasgow are the operators of the Surflogh Edinburgh pilot and as such Dr Cowie was keen to see a fully functional cycle logistics last mile hub in action. Whilst there, Jonathan spent over three hours in discussions with Mr Charlie Mulholland, Managing Director of Zedify Glasgow/Edinburgh, considering the practicalities of cycle urban logistics in different urban contexts, as well as wider issues such as Zedify's proactive employment practices, key factors in building up a client base and some of the basic economics of urban logistics. Jonathan was also shown the Zedify IT systems app and various cycle related equipment and given a demonstration by Charlie as to how NOT to ride a tricycle cargo bike, i.e. on two wheels! In May, SEStran and TRI jointly hosted the mid-term conference of the EU Interreg NSR funded SURFLOGH project.

Dr Cowie was also invited to speak at the 5th Annual Electric Vehicle Event in October to talk about the SURFLOGH project.

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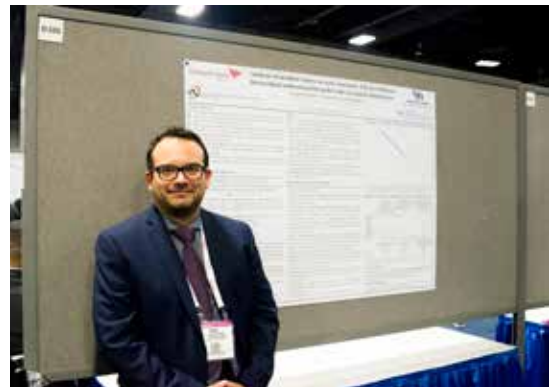
Richard Llewellyn's research work has focussed on his current PhD topic: 'The Influence of Active Road Studs on Safe Driving Behaviour'. He continued to teach modules in transportation. Richard was a Programme Committee Member on Scottish Transport Applications and Research Conference (STAR) and Member of the City of Edinburgh Council's Urban Design Panel. The panel reviews and advises on major new developments at the pre-planning application stage and provides comment and feedback to applicants. Richard was invited to be the Conference Chair for the Smart Urban Freight Logistics Hubs (SURFLOGH) conference held in Edinburgh, on 29th May 2019. He was invited to speak at the Safer Roads, Safer Vehicles, Safer Road Users, Safer Speeds Conference in Stirling. Title of presentation was "Fear of the dark? Managing safe self-regulation of older drivers at night."

Dr Grigorios Fountas shared findings of his research endeavours in the ANT 2019, the 10th International Conference on Ambient Systems, Network and Technologies, which was held between 29th April and 2nd May in Leuven, Belgium. Specifically, he presented three research papers in the areas of traffic safety and public perceptions of emerging transportation technologies.

Grigorios presented at the 5th Annual International Conference on Transportation, which was held in Athens, Greece from 3 to 6 June, 2019. The Conference was organized by the Athens Institute for Education and Research and focussed on various aspects of transportation research, practice and education.

Dr Grigorios Fountas presented at the Workshop "Urban Vulnerability, risks, safety, and security" held in Beijing, China on 5th and 8th November 2019. The aim of the workshop was to enable Early Career Researchers to identify emerging security challenges posed by and to urbanisation, and to explore how these challenges can be addressed through transdisciplinary research that dissolves the boundaries between disciplines to better address real world problems and widen stakeholder engagement.

Dr Grigorios Fountas presented research papers at the TRB Annual Meeting in Washington. Greg has been very active over the last few years in TRB's annual meetings through presentations, publications and participation in Committees' activities. Specifically, he serves as co-Chair of the Transportation Research Board Paper Review Subcommittee ABJ80 on Statistical Methods and over the last two years he has been leading the paper review process for the manuscripts submitted to Committee ABJ80 for presentation and publication.



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Dr Nazan Kocak

Dr Nazan Kocak was a Senior Research Fellow at TRI. Having worked in academia, consultancy and local government, Naz has 360 degree experience in development and execution of transport policies and strategies; transport and traffic modelling; scheme appraisal; public transport schemes; active travel (walking and cycling) planning and scheme design; and urban and street design in the light of the Scottish Government's Designing Streets policy.

Naz worked on the Park4SUMP and PROSPERITY projects.

Dr Mark Taylor is a Lecturer in civil engineering and his research interests include cycling infrastructure, asset management, human vibration exposure, offsite prefabrication and automated construction. Mark developed a high-tech bicycle which measures cyclists' exposure to potentially harmful vibrations from uneven road surfaces and could be used to check the safety of cycle lanes and other routes. Research found that a large number of people in Scotland who cycle for leisure or as commuters were showing symptoms of a condition called Hand-Arm Vibration Syndrome (HAVS). In April, at the request of the international standards organisation (ISO), a working group held a meeting to review the evidence in support of a new proposal to investigate the viability of assessing hand transmitted vibration exposure on the human.

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Dr Zuansi Cai's research interests include groundwater risk assessment of fracking for shale gas, water resources and climate change. Currently, Zuansi is collaborating with research Prof Tariq Muneer in Renewable Energy and Electric Vehicles. His earlier research experience included solid waste technology, soil and groundwater remediation, flow and transport modelling as well as uncertainty quantification.

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Lucy Downey is a Research Assistant with experience in modelling public transport, mode choice, transport accessibility, road safety, pedestrian and driver behaviour. She was involved in the Continental Style Zebra Crossings project. She worked on the CAVForth project and was instrumental in the organisation of various workshops that took place. Lucy joined Yvonne in representing TRI at the Scottish Transport Show (pictured below right).

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Dr Damian Stantchev is a Senior Research Fellow and is involved in the SUNRISE and PROSPERITY projects. He continued in his role as external examiner and Member of the Complaints Commission for the 'Industrial Buying Behaviour' module at the University of Agder, Norway.

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Yvonne Lawrie continues to provide support to TRI's Director and staff, Head of Research, School Director of Research, PhD students, visiting students and the School of Engineering and Built Environment. Yvonne organised the 5th Annual Electric Vehicle Event in October and is organising the 6th event to be held on Thursday 8th October 2020. She was a key player in the organisation of the TDM Symposium on 19th-21st June 2019. Yvonne arranged a TRI stand at the Scottish Transport Show at the Corn Exchange on 25th September. She co-ordinates the Advisory Board meetings and other seminars. She compiles TRI's Annual Reports, Newsletters and other marketing material. She manages TRI's blog and twitter account and deals with stakeholder engagement and general enquiries.

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NEWCOMERS TO TRI

Akin Obafemi joined TRI as a PhD student and will be studying 'Group activity and travel scheduling with shared autonomous vehicles.'

Prof Pat Langdon joined the School of Engineering and Built Environment in November and will act as Interim Head of TRI. His previous work included world-leading research into the Inclusive design of products, interactive TV, and inclusive applications of wireless communications in developing countries, as well as Robotics and AI (ML, computer vision) for transportation. He is also interested in Connected and Autonomous Vehicles.

LEAVERS

We were sorry to say goodbye to the following members of staff and wish them all the very best. We look forward to continuing to work with them in the future:

- Prof Tom Rye left at the end of October having served as the Director of TRI since 2015. Tom was previously involved in teaching and research activity at Napier between 1996 and 2012. His current affiliations are Professor of Transport Policy at Molde University College, Norway; Principal Research Fellow at the Urban Planning Institute of Slovenia in Ljubljana; and Research Fellow, Geography Department, Autonomous University of Barcelona, Spain.

- Richard Llewellyn left to take up the post of Graduate Development Manager at Transport Scotland, whilst continuing with his PhD research at Edinburgh Napier University.

- Nazan Kocak left the university towards the end of the year.

- Dr Kathryn Stewart is enjoying her free time to pursue her own interests. Kathryn Stewart had a background in mathematics and worked primarily within areas of mathematical modelling and optimisation of transport systems at Edinburgh Napier University.

- Dr Suzanne Meade joined Transport Infrastructure Ireland after graduating in October.



ASSOCIATE RESEARCH FELLOWS

Chris Oliver was appointed as Associate Research Fellow in February and was made King James IV Professor at the Royal College of Surgeons of Edinburgh. Chris is a retired orthopaedic trauma surgeon from the Royal Infirmary of Edinburgh and has over the last three decades worked on many aspects of Data Visualisation for medics and doctors. Early in his career he worked to improve bioinformatics education for surgeons and has studied knowledge transfer with infographics and complex network analysis of social media networks. Chris gave the Royal College of Surgeons of Edinburgh King James IV a professorial lecture on Friday 22nd February at the Digital Health Product Forge Hackathon, <https://productforge.io/> (held in Edinburgh between the 21st and 24th February 2019). The Chief Medical Officer, Catherine Calderwood attended and mentored during the Hackathon. Chris is known as the Cycling Surgeon and can be followed on Twitter @CyclingSurgeon Website CyclingSurgeon.Bike.

Kirsty Lewin previously worked for the Scottish Government's Energy and Climate Change Directorate, where she focussed on Climate Change plans, the Adaptation Programme, Climate Challenge Fund and Climate Justice Fund. She also worked in the Transport Directorate and during that period worked closely with City of Edinburgh on its plans for congestion charging in the early 2000s. She is also a Sustrans UK Trustee, and the Centre for Climate Justice Advisory Group.

Professor Mike Maher is a Professor Emeritus. He continues to be on the Editorial Advisory Board for Accident Analysis and Prevention. He has been involved in two projects with Atkins: one for the DfT on the effect on accidents of the increases in HGV speed limits, and another for Highways England on the development of methods for the measurement and forecasting of the impacts of incidents on the strategic road network. He is an honorary professor at University College London.

David Scotney is a continuing board member of the Tayside and Central Scotland Regional Transport Partnership (Tactran), a reviewer for the Transport Planning Society's Professional Development Scheme and a programme committee member for the STAR conference. He is undertaking research on mainly historical aspects of transport development and their potential lessons.

David Hunter joined TRI as an Associate Research Fellow in June 2015. David has long been involved in developing accessible and sustainable transport services and is active in a number of voluntary, professional and statutory bodies including the Mobility and Access Committee for Scotland.

Emeritus professor Steve Stradling served for ten years (2009 -2019) with the group of transport psychologists that comprised the Course Development Unit of the UK National Driver Offender Retraining Scheme (NDORS), reporting via UK Road Offender Education Ltd to the National Police Chiefs Council, designing and evaluating eight different divergence from prosecution courses for errant motorists in England and Wales. From 2017 he acted as an expert advisor to Driver2020, a large-scale national evaluation of six different interventions aimed at improving safety in young and novice drivers commissioned by the Department of Transport through the DVSA and administered by the Transport Research Laboratory. He continues as a judge on the annual Prince Michael International Road Safety Awards scheme. The charity busking band for which he plays conga drums were given the Queen's Award for Voluntary Service in 2016. They have raised over half a million pounds for Cancer Research UK, playing in town centres, artisan markets, community centres and retirement homes.

ADVISORY BOARD

The TRI Advisory Board first formed in 1996 had its final meeting in 2019. We are now working on developing a smaller group whose expertise can be drawn on, on a more ad-hoc basis, to assist us in developing key areas of the TRI Strategy. We would like to express our immense gratitude for the many years of service and extremely helpful advice provided by our former Advisory Board members:

Prof George Hazel (Chair)

Dr Steve Cassidy MCILT – Managing Director, Viaqqio Ltd, part of the ESP Group

Professor Richard Allsop (Emeritus Professor of Transport Studies at UCL)

Emeritus P Keith Dickinson (Higher Education Consultant & Academic Adviser)

Neil Johnstone (CONSULT-NJ LTD)

Laurence Kenney (Transport Scotland)

John Martin (Transport Consultant)

Alex Macaulay (Partnership Director of SEStran)

Dr Kit Mitchell (Emeritus member of TRB and member of CIHT)

Neil Paulley (Visiting Professor at the University of Surrey, retired)

Martin Richards (Executive Chairman of MVA until his retirement)

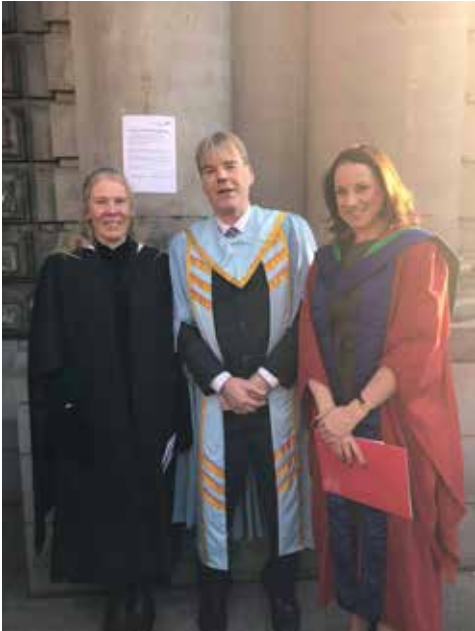
Kirsty Lewin (Sustrans UK Board Member)

PHD COMPLETIONS IN 2019

We were delighted to see two of our PhD research students graduate in October.

Suzanne Meade received a Doctor of Philosophy for her research entitled 'Modelling and analysing cyclists' road safety performance in Scotland'.

(L-R: Kathryn Stewart, Jonathan Cowie, Suzanne Meade)



Ke Du received a Master by Research for her research entitled 'Transportation Engineering - green port strategies in China'.

(L-R: Kathryn Stewart, Ke Du, Jonathan Cowie)



MSc STUDENTS

Congratulations to Eric Lesley, MSc student who won the Tom Riddell prize at CIHT Scotland's annual dinner 2019, awarded for excellence in a transport subject at postgraduate level!

Our MSc students also enjoyed their graduation in October.



In April 2019, various MSc students and academic staff members of the Transport Research Institute visited Ljubljana, Slovenia, in the context of a field trip to a city with major transportation advances over the last 15 years. The staff of the Urban Planning Institute (UIRS) in Ljubljana warmly welcomed the TRI representatives through a set of presentations and tours across the city's pedestrian, cycling and public transport infrastructure. It should be noted that over the last two decades, the sustainable transportation network of Ljubljana has been significantly expanded, whereas in 2016, the city won the European Green Capital award.



STUDENTS PRESENTING PAPERS

Augustus Ababio-Donkor presented his paper in workshop 8 "Beyond the Farebox: Sustainable Funding of Public Transport by Better Understanding Service Values." He presented part of his PhD research work on: "The role of personal norms in the choice of mode for commuting". Thredbo16 was organised by the "International Conference Series on Competition and Ownership in Land Passenger Transport (Thredbo Series)" in August 2019 at the Nanyang Technological University, Singapore. Thredbo 16 was hosted by Nanyang Technological University and the Land Transport Authority (LTA) of Singapore. The Thredbo Series is directed towards policy makers, planners, decision makers on infrastructure and service operators, consultants, researchers, academics and students. It is an international forum for examining passenger transport and ownership issues, reporting on recent research and experience and developing conclusions on key issues. Augustus found this was a great opportunity for discussing his research work in operational and policy context together with other academics and students, policy makers and industry operators to write a report based on the presentations and intensive discussions centred on the presentations and the theme of the workshop. He would recommend the Thredbo conference to other research students.

(Augustus pictured in Singapore below)



Mohamed Jama Mohamed presented his research on transport policy implications of shared ridesourcing services during the 15th World Conference Transport Research (WCTR 2019), in Mumbai. He chaired a session on 'Public transport in urban areas' as part of the transport planning & policy topic area and Mohamed's paper has been shortlisted for a special issue publication.

Mohamed also participated in the 3rd WCTRS young researchers' conference (WCTRS_Y) which was held on Sunday 26th May. The conference has been extremely successful with over 1000 participants from 65 different countries.

Benjamin Afuye attended the 10th Applied Human Factors and Ergonomics (AHFE) International Conference 2019 to present a topic that was drafted from his EEG research study title: 'Road surface roughness and urban bus ride quality in Edinburgh: An EEG approach'.

PhD RESEARCH TOPICS IN 2019

PhD Student: Sayed Mohammed Faruque

Research Topic: *Ownership and ridership models of driverless vehicles*

This research endeavour aims at providing insights into whether and how people will own and use of driverless vehicles (DV) fractionally in Edinburgh. With the rapid advancement in automation and robotics, DVs can replace human driving to a significant extent. This prediction implies that DVs can enhance the use of shared or fractionally owned vehicles. Unless conventional vehicles can make room for them, DVs will create more instance road traffic condition. On the contrary, the deployment of fractional share and usage of DVs can result in lower-traffic volumes and more efficient vehicle usage. In this context, the shared use of DV can offer affordable mobility and can make cities more liveable. Empirical researches discussed car usage pattern as a result of shared DV adoption, but the possible choices of fractional ownership at the household level are underrepresented in the existing literature. The proposed study applied an ordered regression approach in explaining the relationship between present attitudes on travel sharing (e.g., mode, frequency, and companion) with characteristics of travel sharing (e.g., cost, time, comfort). The city of Edinburgh and its suburbs was the study area. Following the approach of the Scottish Index of Multiple Deprivation (SMID), online questionnaire survey invitations were distributed to 7,500 randomly selected addresses during August - December 2019. Questions on present car-sharing patterns, factors of car share and rideshare, and fractional DV ownership and ridership scenarios were part of the survey questionnaire. Survey results indicated that to share a car, higher income (e.g., more than 50k), age (e.g., 25 to 55 year), graduate-level education, a household with children, lower car ownership and occasional sharing tendency are the significant factors. For rideshare, a rider prefers a known person than strangers to share the ride. Cost-wise, the attraction of ride-sharing primarily stems from the reduction of the trip cost and the desire to get rid of maintenance and parking costs. Besides, the possibility to eliminate the burden of ownership supports the use of non-privately owned vehicles. Statistically, individuals are more inclined to own a private DV or to use a DV taxi service than to fractionally own a DV. In general, respondents are more willing to share DV rides with known people. Millennials are more likely to adopt fractional ownership and ride-sharing with DV. These findings support that generation variation is a factor in choosing new technology like DV (Anderson, 2015).

PhD Student: Ke Du

Research Topic: *Intermodal transport green port benchmarking application on Chinese ports*

Ke's research was on the green port strategies in China. Her study focused on understanding the gap between developed and developing countries in green port strategy application by analysis of ports in China. The study also searched the proper model to monetarize external environmental costs caused by different transport methods to find the best environmentally friendly modes of transportation in coastal cities. In the final stage, the proper strategy for Chinese green port management was discussed under Chinese policy background.

PHD STUDENT RESEARCH TOPICS IN 2019

PhD Student: Alan Rehfishch

Research Topic: *A social equity impact assessment of Scottish transport policy*

Ensuring a fair distribution of both the benefits and costs of public sector policies across society is central to the work of the Scottish Government, which has defined its core purpose as "... creating a more successful country, with opportunities for all of Scotland to flourish, through sustainable and inclusive economic growth".

This overarching purpose influences the content of Scotland's second National Transport Strategy, which sets out a vision for a transport system that is sustainable, inclusive, safe and accessible, with a particular focus on reducing inequalities. These priorities are backed by a significant transport budget, approximately £2.3bn in financial year 2019/20, which accounts for 6.7% of the Scottish Government's total budget.

Despite these policy and financial commitments, a considerable number of people in Scotland find it difficult, time consuming or prohibitively expensive to travel to work, access essential services or engage in social activities. Research undertaken by Sustrans indicates that 488,000 Scottish households were in "high risk" areas for transport poverty. Households that tend to live in more deprived areas.

The question then is "Why is there an apparent disconnect between policy aimed at producing socially equitable outcomes and the concentration of transport disadvantage in areas of deprivation?". Are the costs and benefits of transport policy and investment being distributed fairly across society? More fundamentally, what would a fair distribution look like? How can you measure the distribution of the costs and benefits of specific policy interventions across social groups?

This research aims to answer these questions, through engagement with policy makers, stakeholders and the travelling public - with the goal of defining a fair distribution of costs and benefits and developing a tool that can be used to assess the impact of individual transport policy interventions against that definition. This tool will then be tested and refined through a number of case studies, looking at the equity impact of several recent Scottish transport projects and policies.

PhD Student: Akin Obafemi

Research Topic: *Group activity and travel scheduling with shared autonomous vehicles*

Full automation of vehicles is expected to make vehicle or trip sharing easier than ever. This particularly applies to small or large groups of travellers with similar trip characteristics. This research focuses on the identification of optimal scheduling of Shared Automated Vehicles (SAV) taking into account the spatial and temporal patterns of various activities for small-scale groups (e.g., households) or large-scale groups (e.g. organizations). The main goal of this study is the development of algorithmic modules for the production of optimal schedules and travel plans that could be leveraged by entities with consistent travel patterns.

PhD Student: Augustus Ababio-Donkor

Research Topic: *Applying behavioural economics in modelling and analysing the demand for public transport using MINDSPACE and Structural Equation Modelling*

The demand for travel is derived from people's need for social and economic activity participation because this is necessary for human existence, the level of this activity participation measures the economic vibrancy and success of a city and mostly correlate the level of road traffic congestion. Meanwhile it is conventionally accepted that the most efficient and sustainable way of addressing the travel demand for activity participation is through the use of public transport. This has led to several transport related research, and subsequently, schemes to promote public transport patronage. Notwithstanding, traffic in major UK cities maintain an upward trend whilst public transport ridership is recording a decline. It still remains uncertain as to which factors are most important in influencing mode choice decisions.

Traditional travel demand models explained, travel choices based on the attributes of the travel modes available and the socio-economic characteristics of the decision maker. This method has been widely criticised for not taking into account for attitudinal, social and psychological factors which have been found to influence travel choices. This has led to the development of latent/hybrid choice models that account for the heterogeneity of decision makers by incorporating elements like comfort, safety, risk etc in the decision making process. However, recent studies in the field of cognitive psychology, behavioural economics and consumer behaviour suggest that consumer decision is largely influenced by a framework called "MINDSPACE" (mnemonic for Messenger, Incentive, Norm, Default, Salience, Priming, Affects, Commitment and Ego). It is therefore suggested that individual transport behaviour could be modelled and better explained using MINDSPACE.

This research aims to investigate the effect of MINDSPACE in travel decision making and build upon the extant travel choice models by incorporating elements of MINDSPACE as latent factors in calibrating a latent travel mode choice model using structural equation modelling.

PhD Student: Benjamin Afuye

Research Topic: *Investigation of operational and perceived characteristics of buses in Edinburgh.*

Improved urban bus operational performance characteristics provide significant opportunities to generate a number of positive outcomes such as increased public transport modal shift, reduction of road traffic congestion and the emissions of greenhouse gases and local pollutants. Vehicle Speed-time profile factors are often complex, changes over time and some occurs in so many directions. This study is aimed at investigating the performance of buses in Edinburgh, utilising some readily available advanced technology. The driving cycle of typical buses in Edinburgh will be measured, analysed and assessed. The characteristics of the driving cycles of the different types of buses will be used to assess the operational performance of each type of studied bus. Then the perceived performance of each of these buses measured by the emotional and reported reaction of the users will also be analysed and compared. Finally, a detailed comparison and analysis of the two results will be performed to assess the operational and perceived quality of Edinburgh buses.

PHD STUDENT RESEARCH TOPICS IN 2019 continued

The work is novel in a number of areas: a) the investigation and comparison of the driving cycle of different types of buses in Edinburgh b) the use of advanced technology to monitor and analyse passengers' responses to bus operations, and c) comparing operational characteristics of buses with perceived performances obtained and drawing conclusions on any links if applicable.

PhD Student: Emine Zehra Akgun

Research Topic: *Investigating how consolidation centres can reduce emissions and congestion caused by freight transport in urban areas.*

This project presents an analysis of policymaking by local authorities in the context of urban freight transport (UFT). UFT has been given very limited or no space to freight in local transport plans. The main problem is that local authorities do not see policy making as a systematic process when it comes to regulating UFT. It is crucial to emphasise the necessity for disaggregating different elements (i.e. high-level goals, objectives, on-the-ground requirements, norms and specific instruments) of policy in order to construct accurate models of policy dynamics. Local authorities are lacking this process of disaggregation, which this project aims to investigate through case studies. The sequence of the case studies is designed to first to provide a broader perspective on policy making and policy choice of local authorities. Later, the discussion focuses on a particular UFT policy via identifying local transport policies as a means of support to develop and to encourage the use of urban consolidation centres (UCCs). The first study investigates particular influences such as policy context, resource availability and the need for legitimacy on how local authorities seek and select UFT specific policies. The second study investigates how local transport policies work in conjunction with stakeholder collaboration as a means of supporting mechanisms to enable the development of public-led UCCs. The third study focuses on the UCC users, and the aim is to investigate the willingness of retailers to subscribe to UCCs when local transport policies (both existing and potential policies) are introduced.

PhD Student: Mohamed Jama Mohamed

Research Topic: *The use of UberPOOL and its Relationship with Public Transport.*

The growth of shared ridesourcing services such as UberPOOL in cities around the world is having a disruptive impact on conventional public transport and taxi services. The rapid growth is creating challenges and opportunities for transport authorities, who so far have been slow to respond to the demands from these new mobility services in terms of policy and operations. Shared Ridesourcing services such as UberPOOL are part of a wider sharing economy, which is driven by technology and innovation, with a focus on finding ways to accomplish things quickly and easily. UberPOOL has been operational in London for several years; however, its impact on conventional public transport is not well known.

This research aims to develop an understanding of ridesourcing services usage characteristics and how such services work with traditional public transport modes. In addition to exploring the implications of UberPOOL on conventional public transport, both in terms of policy and operations.

PhD Student: Richard Llewellyn

Research Topic: *The Influence of Active Road Studs on Safe Driving Behaviour*

Richard Llewellyn has been continuing his PhD study entitled "The Influence of Active Road Studs on Safe Driving Behaviour". Following on from his earlier case studies at Sheriffhall Roundabout on the Edinburgh City Bypass and the A1 in the Scottish Borders, a further installation of the road studs has been completed at the Old Craighall grade-separated junction near Edinburgh. Richard has undertaken before and after video surveys at the junction and is currently investigating whether the active road studs might replace road markings in certain circumstances. This additional work will form part of his final PhD thesis, due for completion in December 2021.

PhD Student: Suzanne Meade

Research Topic: *Vulnerable Road Users Safety Performance in Scotland*

Vulnerable Road User (VRU) road safety performance has lagged behind the improvements achieved for motorised users despite having the same road safety targets for reduction across EU and UK. Scottish policy aspirations aim to increased mobility alongside commitments to improve road safety, which poses the question: Why has VRU road safety performance not improved in tandem with motorised modes over the past decade in Scotland? The aim of the research is to investigate whether there is a VRU SiN effect in Scotland due to increased mobility and examine if there are wider spatial, demographic and policy differences affecting VRU safety performance. Equity within the transport system for VRU is essential for those who do not have the choice or access to a private car due to deprivation, age, gender, disability, and location.

PhD Student: Yusong Zhang

Research Topic: *Analysis on the Latest Bike Sharing Schemes in China*

Recent fast rising and falling of private operated Free-floating BSSs (FFBSSs) in China and then other nations like UK and US since 2016 attracts many attentions with their successes and problems. To address the problem and improve the FFBSS's success and sustainability, it is important to identify the factors affecting the success of the FFBSSs, and then improve the operations. The first thing to achieve this objective is to define the success of the FFBSSs from different perspectives. Comparing with the public BSSs, private owned FFBSSs have more objectives, and many of them may at odds. Based on that, it is crucial to understand the basic demand of all participants and try to meet all those objectives. And after carefully reviewing the literature, it is appropriate to assume that there are conflicting objectives from different stakeholders, such as private profits and public benefits. And the lack of the understanding and balancing of those objectives is a key to un-success and un-sustainability of the current FFBSSs. The research is to address these issues.

PROJECTS ACTIVE IN 2019

Projects that TRI researchers participated in during 2019 are listed below, with details of funding bodies and collaborating partners.

SUSTAINABLE ENERGY AND TRANSPORT

Prof Tom Rye (Project Lead), Dr Nazan Kocak, Dr Damian Stantchev:

PROSPERITY (EU Framework Programmes)
[September 2016 - 31/08/2019]

PROSPERITY is an Horizon 2020 project in the CIVITAS family of projects on sustainable urban mobility. It aims to enable and create a culture shift in government agencies and local authorities to support Sustainable Urban Mobility Plans (SUMP). The project focuses on promoting and supporting a broad take-up of SUMP especially in countries / regions and cities where the take up is so far so low. It aims to achieve this by providing mechanisms and tools for national / regional agencies to take a leading role in the development of SUMP; and building professional capacity through peer-to-peer exchange programmes and tailor made training programmes on various aspects of SUMP and/or innovative approaches in sustainable urban mobility. This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 690636.

The objectives of this project are as follows. The project will:

- Produce a culture shift in terms of environment for Sustainable Urban Mobility Plans (SUMP) in member states and in the organisational culture of transport planning in city authorities.
- Get ministries and national agencies to play a national leading role on SUMP, as in many member states these are the organisations from which cities take their main direction; where ministries are already playing this role, to support and strengthen their approach.
- To provide mechanisms and tools for ministries to take this lead role.
- Analyse clearly the problems of (lack of) take-up of SUMP – to understand from cities themselves why they are not taken up and then to help cities to address these barriers.
- Get more cities to take up effective high quality SUMP that are in line with EU SUMP guidelines – both directly through cities' involvement in the project and indirectly through more cities hearing about SUMP in their country from the project.
- Ensure that these SUMP contain and will lead to implementation of a broad range of innovative sustainable transport measures.
- Build cities' capacity to develop and implement SUMP that genuinely reflect the spirit of the EU SUMP Guidelines, rather than being mandatory documents written to fulfil a requirement linked to major transport infrastructure documents.
- Deliver a measurable impact such that by the end of the project 250 cities in twelve member states will be implementing SUMP, when they were not at the beginning of the project.

AN AUTONOMOUS BUS SERVICE FROM PARK & RIDE ACROSS FORTH BRIDGE TO EDINBURGH PARK TRAIN & TRAM INTERCHANGE (Innovate UK)

[1 Apr 2019 - 30 Nov 2021]

CAV Forth is a collaborative project part funded by the UK Governments' Centre for Connected and Autonomous Vehicles (CCAV). A consortium of UK partners are in the process of designing and developing a fleet of full size autonomous buses that will service a new Stagecoach operated route running from Ferrytoll P&R in Fife, across the Forth Road Bridge into Edinburgh Park's transport interchange. The project will convert five full-size Alexander Dennis single decker manually driven buses into autonomous vehicles. These self-driving buses will provide a service capable of carrying up to 42 passengers 14 miles across the Forth Bridge to Edinburgh Park Train and Tram interchange. With buses every 20 minutes this could provide an estimated 10,000 weekly journeys, and support the case for rolling out similar services across the UK.

We will support the company in this project by way of undertaking a work package of innovative attitudinal surveys with users and non-users of the autonomous buses in the project. It will include surveying participants who have actually experienced riding on full size autonomous buses on a scheduled service using the normal road network. It will provide a unique and in-depth insight into the public perceptions of such provision.

The UK's first full-sized autonomous bus was trialled in March by Stagecoach in a Manchester bus depot. This forms the basis for a more significant autonomous vehicle trial due to get underway in 2020. That will see five buses operating in



PROJECTS ACTIVE IN 2019 continued

autonomous mode in public service between Fife and Edinburgh, across the Forth Road Bridge Corridor as part of the CAV Forth Project. This much more ambitious trial brings together Stagecoach, Transport Scotland, ADL, Fusion Processing, ESP Group, Edinburgh Napier University and the University of the West of England.

TRI and Stagecoach hosted a public consultation event on 12th September at the Edinburgh Park Premier Inn. They spoke to commuters and drivers who will be sharing the road with these computer driven vehicles to understand how they feel about this emerging technology, hopes and fears, and how they might expect the service to look, feel and interact.

Stagecoach East Scotland and Edinburgh Napier University hosted an open Design Jam on the 12th October at the Apex Waterloo Place Hotel, Edinburgh. Our 'Design Jam' event brought together East Scotland's citizens with researchers, designers, developers and Stagecoach leadership to co-design how this service works for real people. The goal was to bring together 60+ members of the public (all with different view points and transport needs) to co-design the UK's first autonomous bus service alongside our project partners, researchers and decision makers. They explored acceptance of the technology, how the service can be inclusive & accessibility, what makes for a positive passenger experience and how we can add moments of delight into this futuristic service.

MOBILITY MANAGEMENT AND TRAVEL PLANNING

Prof Wafaa Saleh (Project Lead), Augustus Ababio-Donkor:
DIAMOND (EU Horizon 2020 Project)
[1 Oct 2018 - 31 Oct 2021]

Current transport systems do not sufficiently take into account physical and social characteristics of women in the design of products and services, and in fostering women's employability in the industry. Technologies such as data mining and analytics, together with the use of elicitation techniques to gather and analyse information from different stakeholders, allow the generation of actionable knowledge for addressing gender-specific needs for transport decision-making, planning tools and methods. DIAMOND will exploit such technological advances and innovations, to (i) analyse real-world scenarios where these open issues exist, and (ii) take concrete action, to create a fair and inclusive transport system. DIAMOND's main goal is to turn data into actionable knowledge with notions of fairness, in order to progress towards an inclusive and efficient transport system. This objective will be achieved by the development of a methodology based on the collection and analysis of disaggregated data, including new sources, analytics and management techniques. Thus this allows to identify, design and evaluate specific measures for fulfilling the needs and expectations of women as users of different transport modes and as jobholders in the sector. The knowledge gathered in the data analysis will then be fed into a toolbox that will provide recommendations on how to achieve fair inclusiveness for women in each of the identified use-cases. Interdisciplinary

analysis combining methods from social sciences and computer science will contribute to fairness of the model and its results (i.e. condition of being free from bias or injustice). To proof actionability, this project will make concrete advances in four real-world scenarios (use-cases) where inclusiveness is currently a central issue: 1.- railways and public multimodal transport, 2.- Vehicle Dynamics control towards autonomous driving, 3.- vehicle sharing and 4.- corporate social responsibility and employment.



Prof Tom Rye (Project Lead), Dr Nazan Kocak:
Park4SUMP (EU Horizon 2020 Project)
[1 Sep 2018 - 28 Feb 2022]

Parking management should be an important part of sustainable urban mobility planning (SUMP) but unfortunately, it is one the most underdeveloped segments. Most EU member states lack national level policy and guidance on parking. PARK4SUMP aims to change this, because good parking management has proved to be of utmost importance. It frees the public space, supports local businesses, reduces search travel, generates revenue, increases safety, supports urban planning and can make cities more attractive. The general concept is to take the very best parking management examples, contexts and expertise in Europe, learn and profit from these, and transfer them on a large scale and in the best way possible to new cities. This covers raising awareness and gaining acceptance among relevant stakeholders; building capacity, particularly among cities that have difficulty in picking up such policies; stimulating further innovation; and achieving wide roll-out and transferability. Park4SUMP will work on traffic and travel avoidance; it will support less car dependent lifestyles and put into practise innovations in planning and location policy. It will also optimise the use of existing infrastructure. Furthermore the modal shift towards more efficient modes like walking, cycling and public transport will be encouraged. Convincing arguments to incorporate parking management can be given: it has low costs, it pays for itself, it delivers money, it is easy to implement and to modify and it can be done in incremental steps. The main expected impact will be cities with strongly improved parking policies that are creatively used to improve the quality of life and business in cities and develop the cities in a more sustainable way. Park4SUMP aims to establish parking management as an essential part of SUMPS of its leading, follower and external follower cities. Park4SUMP will deliver behaviour change whilst generating revenue.

PROJECTS ACTIVE IN 2019 continued

Dr Achille Fonzone (Project Lead), Prof Christiane Bielefeldt, Dr Damian Stantchev:

SUNRISE [1 May 2017 - 30 Apr 2021]

SUNRISE will develop, implement, assess and facilitate learning about new, collaborative ways to address common mobility challenges at the neighbourhood level. Towards this aim, 6 cities will foster collaborative processes in specific neighbourhoods as "Neighbourhood Mobility Labs" with the explicit mandate to implement innovative solutions for and with their residents, businesses etc. SUNRISE rests on several pillars: A) Utilisation of neighbourhood-specific opportunities. B) Co-creation of solutions, i.e. through strategic civic-public alliances C) Socio-technical nature of solutions as combinations of services, social arrangements, rules, technologies or small infrastructures etc. D) New forms of synergies between bottom-up and top-down. All SUNRISE activities are structured along the following phases of the innovation chain: 1) Co-identification of mobility problems; 2) Co-planning / co-selection of solutions; 3) Co-implementation of solutions; 4) Co-evaluation; 5) Co-learning and uptake. The SUNRISE action neighbourhoods will use a blend of proven state-of-the-art online and face-to-face participation techniques and will establish longer-term collaborative forums. These will systematically involve citizens, businesses, NGOs, local authorities, academics etc. – always with a view to also involve under-empowered sections of the population like migrants, women, older and young people. Alongside the mobility benefits for the action neighbourhoods, the project will result in a suite of products – most prominently the SUNRISE Neighbourhood Mobility Pathfinder – which will be provided to European cities, their stakeholders and citizens through a powerful exchange process to inspire and inform change across Europe.

ROAD SAFETY

Prof Tom Rye (Project Lead), Prof Adrian Davis, Lucy Downey
Continental Style Zebra Crossings (Rees Jeffreys Road Fund Project)

[1 Dec 2018 - 30 Nov 2019]

TRI, in partnership with Transform Scotland, are conducting research to assess the feasibility of making continental-style zebra crossings legal on Scottish roads (Funded by RJRF). Zebra crossings without flashing amber Belisha Beacons or zig-zag markings are not legal on public roads in UK. In contrast, in continental Europe, zebras marked only by signs are standard. The research will consider continental-style zebra crossings impact on pedestrian safety, attitudes and experience. The study design includes literature review, observational studies, postal survey, key stakeholder consultations, analysis of the legal and policy framework and, finally, on-road tests involving installing two continental style zebra crossings on public roads in Scotland.

STREET DESIGN

Provision of consultancy services and technical support to the City of Edinburgh Council in preparation of new Street Design Guidance for Edinburgh.

Dr Nazan Kocak (Project Lead), Richard Llewellyn

City of Edinburgh Street Design Training

[1 Feb 2018 - 31 Jan 2019]

ACTIVE TRAVEL

Dr Tom Campbell (Project Lead), Prof Geraint Florida-James, Dr Mark Taylor

BIKESENZ: GETTING TO GRIPS WITH CYCLISTS' COMFORT

[8 Jul 2019 - 7 Oct 2019]

The aim of this project is to develop a novel anatomically informed bicycle grip with the potential to reduce wrist injury/fatigue and improve comfort among cyclists by distributing load more evenly and reducing pressure.

PROJECTS ACTIVE IN 2019 continued

ESSENTIAL EVIDENCE 4 SCOTLAND

The Transport Research Institute continued producing a fortnightly one-page plain-English set of summaries on aspects of transport planning from robust peer reviewed studies.

In the busy world of transport planning, access to peer reviewed evidence is both time consuming but also often impossible without a university library card! But even overcoming such hurdles, then finding the material is often problematic and time-consuming not least because of the searches required and also because academic language, the jargon, can provide yet another barrier. Knowledge translation services can, therefore, be a critically important way for practitioners to have access to the most robust and recent peer reviewed evidence at their fingertips.

The value of de-jargonised summaries of robust academic evidence being made available, particularly to those in transport planning service delivery and associated disciplines is, arguably, that it can help improve policy making and practice. Concise summaries addressing a range of sustainable and health promoting aspects of transport, from behaviour change to infrastructure interventions can also be of value to consultancies, advocacy groups, and public health practitioners working across Scotland.

The ultimate aim is to increase the use of robust evidence-based research in order to improve the health outcomes of local authority transport interventions. At least twenty one page summaries are being issued in the first 12 months. Over a longer period the ambition is to build a library of accessible summaries of peer reviewed evidence increasingly known of and used across Scotland.

The free series of Essential Evidence 4 Scotland is drafted by Adrian Davis, Professor of Transport & Health. This series is match-funded by Paths for All.



MARITIME TRANSPORT, FREIGHT AND LOGISTICS

Norwegian Research Council, November 2015 to October 2019

Dr Yuhong Wang

The SeaConAZ project represents a holistic perspective on the supply chains of consumables produced in China destined for European retailers. The focus of the project is on exploring the potential of a system changing approach, where the point of cross-docking and consolidation of less-than full container consignments (LCL) into full container loads (FCL) for a single, or cluster of, retailing points is moved from Europe to China. The academic consortium for the SeaConAZ project comprises universities and research centres in Norway, Sweden, UK, The Netherlands and China.

Dr Jonathan Cowie (Project Lead)

Smart Urban Freight Logistics Hubs

[1 Jun 2017 - 31 Oct 2020]

All cities and regions face challenges related to freight flows entering and leaving central areas which negatively impact on air quality, noise, road safety, climate and the general attractiveness of the centre. SURFLOGH aims to examine, through action research, the role of strategically located urban freight centres in connecting long-distance freight transport to last mile distribution. The project will provide the partners with best practices regarding the development of urban freight hubs in cities, the successful introduction of zero-emission vehicles for last-mile transport and innovative strategies for cooperation in the logistics chain.

TRI is working in conjunction with SEStran in leading on the development of business models for urban freight hubs. Our business models will focus on the scalability and applicability of models for different locations and circumstances, and practical lessons and insights from our work package will be published via case studies. The prime pilot in Edinburgh, an e-cargo bike last mile delivery service, has been established for just under a year, and in conjunction with the business partner, research is on-going with regards to current issues and the potential business opportunities that the initiative presents.



ACADEMIC VISITORS IN 2019

Academic visitors who spent time at TRI during 2019 included:

- **Bengi Aytac and Merve Ozcan** came over in April from Karadeniz Technical University, Turkey. (Mentor: Dr Achille Fonzone).

Bengi: "I spent two months at TRI from April to May 2019. During my time at TRI, I had the opportunity to research on carsharing in rural areas with Dr. Achille Fonzone and Dr Grigorios Fountas.

Since carsharing service has not implemented in my country yet, studying on this topic provided me valuable insight into the shared mobility. Joining TRI, even if for a short time, was a great experience that expands my knowledge in my academic studies. Moreover, the university environment and the city of Edinburgh were very beautiful and it was nice to be part of that both socially and academically. The staff at TRI was very helpful and friendly, thank you once again."

- Dr Piera Orofino spent 3 months with us from Politecnico di Bari, Italy to study transportation with Dr Achille Fonzone as her mentor.

- Dr Eulalia Jadraque is a frequent visitor from University of Granada, Spain with an interest in solar energy. (Mentor: Prof Tariq Muneer).

- Caterina Malandri (Cate), University of Bologna, Italy came back to see us from July to September to continue her interest in transport modelling. (Mentor: Dr Achille Fonzone).



(Léa D'Almeida pictured above)

- **Léa D'Almeida** visited us from EIVP, France. "I'm currently finishing my master's degree in urban engineering in the Engineering School of Paris City (EIVP).

Last summer, I did a three-month study and research internship under the supervision of Tom Rye, former head of the Transport Research Institute, where I was nicely welcomed among his team.

During my internship in collaboration with the TRI, Transport for Edinburgh and Serco, I studied the carbon footprint of the Just Eat Cycles programme thanks to a life cycle assessment (LCA).

My research showed that the bike sharing scheme is actually saving carbon dioxide equivalent emissions compared to the modes of transport by which its users previously travelled, but that it is essential to optimize rebalancing operations and to manufacture bikes as near the point of use as possible to further reduce carbon emissions. With the last ongoing adjustments, I hope to be published soon." Léa's work will support a larger PhD project on shared bike schemes. (Mentor: Prof Tom Rye).



(Paolo pictured above at TRI's 5th Annual Electric Vehicle Event)

- **Dr Paolo Intini**, visiting researcher from the Polytechnic University of Bari, Italy came here in September for 2 months to study in depth micro-characteristics of urban traffic crashes through advanced statistical techniques in the context of the Pa.S.S.S. research project funded by the Italian Ministry of Transport and Infrastructures/Municipality of Bari. (Paolo has been working with Achille Fonzone and Grigorios Fountas on producing a joint paper for inclusion in a journal). (Mentor: Dr Achille Fonzone).

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If you would like further information on any of the projects or details contained in this Annual Report, please contact Yvonne Lawrie at the address below:

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