



TRANSPORT INTELLIGENCE DIGEST

Issue 4

<p>Date of issue: May 2017</p> <p>Contact:</p> <p>Stephen Evans E s.evans@transport.govt.nz</p>	<p><u>Contents</u></p> <p>Transport impacts</p> <p>System planning and management</p> <p>User behaviours and needs</p> <p>Around the world: research and statistical releases</p> <p>Hub Knowledge</p>
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Introduction

Welcome to the 4th issue of the Transport Intelligence Digest. This issue is a general edition highlighting recent research under the Knowledge themes and data/statistical releases here and abroad. Contributions have come from the Ministry's Financial Economic Statistics & Analysis team (FESA), Topic Knowledge Hub members and other people who have chosen to make a contribution.

We welcome contributions from anyone who reads this Digest. We ask that you ensure that you indicate which of the four knowledge themes your contribution would fall under. And that the contribution is a recent release. Contributions don't have to be about research. We have a section devoted to statistical releases and we're happy to receive contributions for that area as well.

Happy reading

Stephen

Disclaimer:

This Digest references a wide range of third party articles. Reference to these articles does not constitute endorsement by the Ministry.

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Connected and Autonomous Vehicles: The future?: House of Lords Science and Technology Committee

House of Lords Science and Technology Committee, United Kingdom, March 2017

Contributed by: Stephen Evans, Ministry of Transport

This report from the UK suggests that realising the full benefits of Connected and Autonomous Vehicles (CAVs) is likely to require new road and communications infrastructure. The report sets out recommendations for the Government to ensure it makes decisions that enable the UK to receive maximum economic benefit from autonomous vehicles. For example, it concludes that mobile phone coverage on UK roads will need to be improved, adding that the Government must take action with Highways England and Local Transport Authorities to ensure new infrastructure can be future-proofed and will not need 'expensive retro-fitting'. The Committee also heard evidence that autonomous vehicles have the potential to lower the number of road fatalities, but the eradication of human error will only be realised with full automation which could take decades.

<https://www.publications.parliament.uk/pa/ld201617/ldselect/ldsctech/115/11502.htm>

Quantifying the causal effect of speed cameras on road traffic accidents via an approximate Bayesian doubly robust estimator

Department of Civil Engineering at Imperial College London, April 2017

Contributed by: Stephen Evans, Ministry of Transport

This UK study concluded that, on average, the number of road traffic collisions reduces by 30% at sites where speed cameras are deployed. The study, led by Professor Dan Graham from the Department of Civil Engineering at Imperial College London, is based on data for 771 camera sites in eight areas across England - Cheshire, Dorset, Greater Manchester, Lancashire, Leicester, Merseyside, Sussex and the West Midlands. For control sites the researchers randomly sampled 4,787 points on the network across the same eight areas.

<https://arxiv.org/pdf/1703.05926.pdf>

Time and fuel effects of different travel speeds

NZTA Research Report 582, May 2017

Contributed by: Jennifer McSaveney, Ministry of Transport

This project investigated the effect of different maximum trip speeds for six New Zealand routes. The study recorded actual mean speeds, time taken and fuel used. Speeds of 40km/h and 50km/h were tested on three short routes and speeds of 80km/h, 90km/h and 100km/h were tested on three long routes.

On the short routes, decreasing maximum speed decreased mean speed by 7% to 14% and increased travel time by 8% to 15%. Trips at 40km/h used 3% to 5% less fuel on the two Wellington routes but the difference in fuel used was not significant on the Auckland route. On the long routes, reducing trip maximum speed to 90km/h and 80 km/h reduced mean speed and increased travel time across all routes. Reducing maximum speed from 100km/h to 80km/h reduced mean speed by 8% to 12%, increased travel time by 9% to 13% and decreased fuel consumption by 14% to 15%.

Both fuel consumption and travel time were strongly correlated with trip maximum speed on the longer routes. Maximum speed was a significant predictor of fuel consumption and travel time on the short routes but traffic and idle time also had significant effects. This project has provided evidence of the effect on fuel consumption and travel time of decreasing maximum speed.

<http://www.nzta.govt.nz/resources/research/reports/582/>



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Guide for Conducting Benefit-Cost Analyses of Multimodal, Multijurisdictional Freight Corridor Investments

Transport Research Bureau, United States, April 2017

Contributed by: Joanne Leung, Ministry of Transport

This is a guidebook for conducting benefit-cost analyses of proposed infrastructure investments on multimodal, multijurisdictional freight corridors for public and private decision makers and other stakeholders at local, state, regional, and national levels in order to arrive at more informed investment decisions. Many factors prevent decision makers from having complete and well-informed sets of alternatives and may lead to sub-optimal planning and investment decisions. The guidebook gives decision-makers, practitioners, and stakeholders an actionable resource and a reference for multimodal freight investment benefit-cost analysis, data sources, procedures and tools for projects of different geographic scales. To help practitioners get started, the guidebook is presented in a “how to” format relying on discrete steps that are accompanied with realistic and recent examples, a fully worked out case study, checklists of dos and don’ts, and supporting worksheets.

<http://www.trb.org/Main/Blurbs/175606.aspx>

Measuring integration and urban sustainability with indicators - Monitoring progress towards integrated public transport

International Transport Forum, April 2017

Contributed by: Tim Cross, Transport Data Knowledge Hub

This paper proposes a framework to monitor progress towards improved integration in public transport. The framework adapts some elements of Transport Sustainability Barometer (TSB) which is a tool to assess transport sustainability in Swedish cities. The suggested indicator set follows the complex hierarchy of layers in integration (Process – System – Quality and Use). The selected indicators allow progress to be monitored from two perspectives, objective evidence and citizens’ perceptions. The proposed framework is only the first step towards a tool to monitor integration in public transport, and we provide recommendations to further develop a tool in consultation with its intended users.

<https://www.itf-oecd.org/sites/default/files/docs/measuring-integration-urban-sustainability.docx.pdf>

How to make a driverless car 'see' the road ahead

The Conversation, March 2017

Contributed by: Jennifer McSaveney, Ministry of Transport

This article looks at the technologies involved in allowing driverless cars to see/sense the road around them. These technologies range from radar based range only sensors (good for obstacle avoidance, but which cannot read existing signage or other road users signals), to vision based systems. Vision based systems have the advantage that the road environment is designed for a human driver who can see, but lighting plays a major role and variations due to things such as weather (eg rain/fog/snow) can introduce problems. Another problem is the ability to train the car systems to learn to recognise things in images, and to become as clued up and aware as a (hopefully more aware) human driver.

<http://theconversation.com/how-to-make-a-driverless-car-see-the-road-ahead-74529>

Young Driver Safety: A review of behaviour change techniques for future interventions

Royal Automobile Club (RAC) Foundation for Motoring Ltd, United Kingdom March 2017

Contributed by: Stephen Evans

This UK report found that few young driver interventions are adequately evaluated and of those that are, the vast majority have not led to demonstrably improved road safety among those exposed to the intervention. The report comprises a review of behaviour change techniques for future interventions, exploring what lessons can be learned from other sectors. In particular, the report shows what can be learned from the effectiveness and use of behaviour change techniques in areas of public health, and which techniques have improved intervention success. It concludes that road safety interventions should include the behaviour change techniques which have been found to be effective in other areas of health, including: 'prompt specific goal-setting', 'prompt self-monitoring of behaviour', 'provide information on consequences', 'plan social support or social change', 'provide instruction' and 'provide feedback on performance'.

http://www.racfoundation.org/assets/rac_foundation/content/downloadables/Young_driver_safety_a_review_of_behaviour_change_techniques_for_future_interventions_MSullman_March_2017.pdf

How dangerous is cycling in New Zealand?

Journal of Transport and Health, March 2017

Contributed by: Ralph Samuelson & Jennifer McSaveney, Ministry of Transport

This paper compared the injury risks of typical exposures to road cycling for transport with other common activities including do-it-yourself repairs (DIY) at home, horse riding, quad bike riding, rugby union and snow sports in New Zealand. Cycling on the road half an hour three times a week was

similar to DIY twice a month and safer than horse riding 1.5 h twice a week (5-fold difference in injury claims), skiing half a day for 4–5 times per year (140-fold), and playing rugby once every 3 weeks (530-fold difference). In statistical terms, based on moderate injuries, cycling is less dangerous than many recreational and every day activities. The paper concludes that fear of cycling in car-dependent New Zealand arises mainly from other causes than risk of injury, associated with the marginal status of cyclists on the public road.

Media release: http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11816885

Article: <http://www.sciencedirect.com/science/article/pii/S2214140516303656> (a subscription may be required to access the full paper)

Incorporating and assessing travel demand uncertainty in transport investment appraisals

Motu, Institute for Transport Studies, University of Leeds and QTP Limited, February 2017

Contributed by Tony Brennand, NZ Transport Agency

Uncertainty is pervasive when it comes to transport investment decision. While it is natural to improve the traffic forecasts that inform such decisions, it is also important to acknowledge that fundamental uncertainty exists about the future. Consequently, a process is required that acknowledges and addresses these uncertainties as part of improving investment decisions. This paper explores the uncertainties within transport modelling and the ways that flexibility in the face of uncertainty can add value to a transport project. Insight into value is revealed by way of examples of real options. Likewise examples of adaptive management are explored. A process is recommended that explores the nature of the key uncertainties pertaining to a transport investment and that actively searches for robust solutions in the face of uncertainties. This process transparently sets the trade-offs inherent in alternative solutions in front of decision makers.

<http://www.nzta.govt.nz/resources/?category=60&subcategory=103&audience=&term=608>

The close to home effect in road crashes

Safety Science, Volume 98, October 2017

Contributed by: Jennifer McSaveney, Ministry of Transport

Traditionally it has been anecdotally stated that most crashes occur close to home, however there have been no studies explicitly looking at this while taking into account relative crash risk and distance from home. This study empirically addresses this by looking at travel from the New Zealand Household Travel Survey and crash data from 1 July 2013 – 30 June 2014, and distances from home. Analysis shows that on average, drivers are indeed more likely to crash close to home, with injury crashes being over-represented on roads close to home, even when controlling for exposure. The effect holds for male and female drivers, but not for novice (learner) drivers. Compared with crashes further away, crashes close to home are more likely to involve alcohol and diverted attention, and less likely to involve driver fatigue. The close to home effect may be related to complacency when driving on familiar roads.

<http://www.sciencedirect.com/science/article/pii/S092575351730783X> (a subscription may be required to access the full paper)

Travel time savings and speed: actual and perceived

NZTA Research Report 568, May 2017

Contributed by: Jennifer McSaveney, Ministry of Transport

This project aimed to understand time saving as a motivation for New Zealand drivers' speeding behaviour in the context of other motivations for speeding, and to investigate the effect of education designed to improve participants' understanding of the costs and benefits of speeding.

The project consisted of four parts: an initial survey on attitudes, education for drivers, a follow-up survey, and collection of real driving data from a small sub-sample of drivers.

Results showed that while some drivers sped to save time, drivers more strongly agreed they chose not to speed due to the safety risk and penalties if caught speeding. Respondents tended to overestimate the time savings at high speeds and underestimate the time savings at lower speeds. Most drivers were aware that increasing speed above 100km/h would use more fuel and the majority gave estimates of the fuel savings close to the correct amount.

Following education, drivers' preferred driving speed and the speed they considered to be speeding decreased. Fewer drivers said they chose to speed because they believed it was safe to do so or because of the influence of other drivers. Drivers did not improve in their ability to accurately estimate travel time savings from increased speed; however, they gave lower estimates for the amount of time that would be saved by increasing speed.

<http://www.nzta.govt.nz/resources/research/reports/568/>

Around the world: research and statistical releases

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The TRIS and ITRD database (TIRD)

The TRIS and ITRD database (TIRD), March 2017

Contributed by: Tim Cross, Transport Data Knowledge Hub

The TRIS and ITRD database (TIRD) is an integrated database that combines the records from several sources: the US Transport Research Board (TRB), The Transportation Research Information Services (TRIS) Database and the OECD's Joint Transport Research Centre's International Transport Research Documentation (ITRD) Database. TRID provides access to more than one million records of transportation research worldwide. This includes references to books, technical reports, conference proceedings, and journal articles in the field of transportation research. Close to 600 serial titles are regularly scanned and indexed for TRID. TRID's focus is transportation research.

<https://trid.trb.org/results#show-filters>

Great Britain

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Vehicle Licensing Statistics: Annual 2016

Department for Transport, United Kingdom. April 2017

Contributed by: Stephen Evans, Ministry of Transport

In the United Kingdom the number of new ultra low emission vehicle (ULEV) registrations reached a new high in 2016, correlating with the overall trend for the total number of new vehicle registrations. DfT statistics show that nearly 42,000 new ULEVs were registered in the UK during 2016, a year-on-year rise of 40%. The figure of 41,819 amounts to 1.3% of all new vehicle registrations - up from 0.9% in 2015 and 0.5% in 2014. In total, 3.3m vehicles were registered for the first time during 2016, the highest annual total ever recorded. Representing a year-on-year increase of 2.6%, the figure is also 2% higher than the previous peak in 2003, when 3.23m new vehicles were registered.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/608374/vehicle-licensing-statistics-2016.pdf

Europe

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Six road safety statistics: What is behind the figures?

European Commission. March 2017

Contributed by: Stephen Evans, Ministry of Transport

The European Commission has released a fact sheet outlining 2016 road fatalities data across the EU. The report finds that European roads remain the safest in the world: in 2016, the EU counted 50 road fatalities per one million inhabitants, against 174 deaths per million globally. Last year marked a turning point in reducing road fatalities: after two years of stagnation, the number of those who lost their lives on the roads was reduced by 2%. 25,500 people were killed in 2016, 600 fewer than in 2015 and 6,000 fewer than in 2010. This represents a 19% reduction over the last six years.

[http://europa.eu/rapid/press-release MEMO-17-675_en.htm](http://europa.eu/rapid/press-release_MEMO-17-675_en.htm)

Australia

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Drivers Licences in Australia

Bureau of Infrastructure, Transport and Regional Economics (BITRE). February 2017

Contributed by: Stephen Evans, Ministry of Transport

This information sheet presents an estimate of the number of driver licences in Australia from 1922 to 2016. Also included are estimates of driver licences in each Australian State and Territory from 1922 to 2016. Long-term trends in licences per person, both Australia-wide and in each State/Territory, are shown to be in the form of saturating logistic curves. These are modelled, first for Australia in aggregate, and then for each State/Territory. One finding is that from the current estimate of 17.2 million drivers on the road in 2016, the total should increase by about 25 per cent to 21.7 million drivers by 2030.

https://bitre.gov.au/publications/2017/files/is_084.pdf

Light commercial vehicle safety

Bureau of Infrastructure, Transport and Regional Economics (BITRE). April 2017

Contributed by: Stephen Evans, Ministry of Transport

In 2015 crashes involving light commercial vehicles in Australia accounted for 262 road deaths (21 per cent of road deaths), down 3.7 per cent on 2014. Deaths in crashes involving light commercial vehicles were down 5.0 per cent on the National Road Safety Strategy base period 2008–2010, significantly less than light passenger vehicle involved crashes (16.4 per cent). While this is partly due to greater exposure (kilometres travelled by light commercial vehicles increased at almost five times the rate for light passenger vehicles between 2008 and 2015), the fatal crash rate for light commercial vehicles is still 17 per cent higher per billion VKT than for light passenger vehicles.

https://bitre.gov.au/publications/2017/files/is_087.pdf

HubKnowledge

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Sharing transport data, evidence, knowledge, research, information, capabilities and ideas

The Transport Knowledge Hub has been set up for providing a channel for people and agencies that generate, supply, and demand transport data, information and research to communicate, collaborate and share research of interest. The Hub strives to encourage collaboration and raise awareness of related work and future opportunities or needs.

Upcoming Hub Events

November 2017

The 4th Transport Knowledge Conference, will be held on Monday 27 November 2017, Auckland - in conjunction with the 39th Australasian Transport Research Forum (ATRF) which will be held over 3 days 27 to 29 November.

Following the ATRF, the Ministry will host a 1.5 day OECD/ITF Roundtable event in Auckland on 30 November & 1 December in Auckland (venue to be confirmed).

Further details about these events will be released in the near future.

Please email knowledgehub@transport.govt.nz to express interest for these upcoming events.

News

The main development since the last edition has been the formation of a **Decision Board** to determine and approve research projects. The current members are:

Tim Herbert – Ministry of Transport
Bob Alkema – NZ Transport Agency
Simon Douglas – NZ Automobile Association

On behalf of the Knowledge Hub, the Ministry has released two new publications:

- A first edition of the **Transport Research Register** which aims to show what research has been done or is underway and inform on future research needs/gaps and avoid duplication. This will be next updated at the end of July: <http://www.transport.govt.nz/research/transport-research-strategy/>
- The **Stocktake of Information and Data Sources** which is a stocktake of New Zealand transport information and data sources held by public sector agencies as at August 2015. It was prepared as part of the Transport Domain Plan process. <http://www.transport.govt.nz/assets/Uploads/Research/Documents/Domain-Plan-Stocktake-March-2017.pdf>

The **Cross Agency Governance Committee (CAGC)** met in April to ratify the Decision Board's Terms of Reference, strategic challenges and action maps. The next meeting will be held in July.

The **Transport and Environment Knowledge Hub** has added an Emissions Group which is a specialist forum that is part of the Transport and Environment Knowledge Hub. The Group has a technical focus and brings together researchers interested in transport emissions (harmful air

pollutants and greenhouse gases) to enable information sharing and collaboration in areas of mutual interest. Read more about the Emissions Group on the Environment Hub webpage <http://www.transport.govt.nz/research/transport-knowledge-hub/environment/>

A reminder that the **Knowledge Hub webpage** is on the Ministry of Transport's website here <http://www.transport.govt.nz/research/transport-knowledge-hub/>