

Transport Research Group, University of Waikato

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THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato



TRG - a multidisciplinary research group

20+ year history, formerly as Traffic and Road Safety, TARS

Psychology

Prof Samuel Charlton – driver behaviour

Prof Nicola Starkey – driver behaviour

Assoc Prof John Perrone – visual perception

Technical support/lab manager

Economics

Prof Frank Scrimgeour - economic
analysis of infrastructure investments

External stakeholders

NZ Police, NZTA, Automobile Association,
Midland Regional Trauma Group, ACC

Engineering

Prof Mike Duke – electric vehicles

Law

Prof Barry Barton - environmental law

Gay Morgan -effectiveness of legislation

Computer Science

Assoc Prof Ryan Ko – cybersecurity

Environmental Planning

Prof Iain White – spatial planning

Research approach / philosophy

International reputation for research on fundamental cognitive and performance processes involved in driver behaviour – **Everyday driving**



Our research is part of the Safe System approach: designing the road transport system to fit the needs and capabilities of its users

Driving simulator: Virtual environment



*“Drivers’ response to warnings/
information provided by in-vehicle
applications/ systems” (TAR16/18)*

Virtual environment - complete control of road layout, traffic, and road design and collection of various performance measures (speed, SDLP, brake reaction time etc.)



Driving simulator: Video environment

Video environment: Driver controls their speed and 'steers'



Findings verified using on-road testing




"Perceived risk, speed and countermeasures"
(AARF) Charlton & Starkey, 2016

Eye tracking and picture sort

Eye tracking: Tobii Pro Glasses
*“Drivers’ response to warnings/
information provided by in-vehicle
applications/ systems” (TAR16/18)*



Picture 15



For each of the following three questions circle the number that best describes the road in the photo above.

1. Comfortable	1	2	3	4	5	Uncomfortable
2. Easy	1	2	3	4	5	Difficult
3. Monotonous	1	2	3	4	5	Varied

What speed would you choose on this road? _____ km/h

What is a safe speed on this road? _____ km/h

What do you think the speed limit is on this road? _____ km/h

If you were driving this road how safe or unsafe would you feel?

Safe (at rest or parked)	1	2	3	4	5	6	7	8	9	10	Unsafe (immediate danger)
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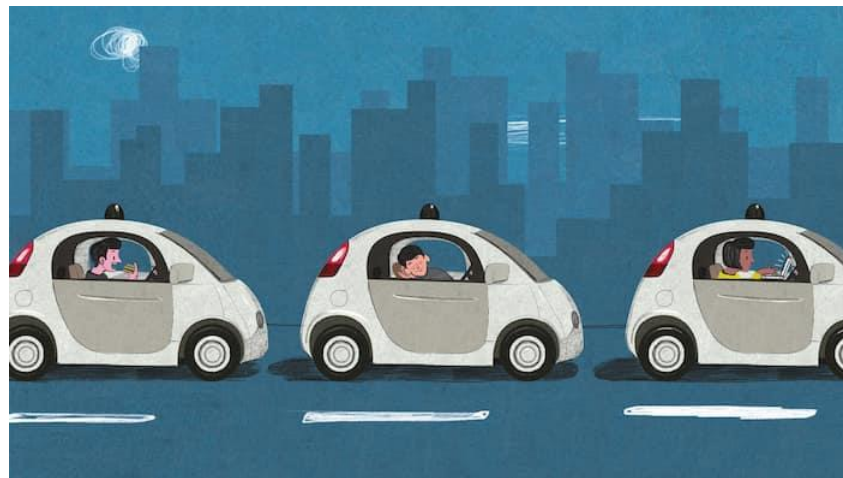
Picture sort and questionnaire booklets:
“Predictability and Credibility of Speed limits”
(AARF, NZTA)

Questionnaires and group interviews



Telephone and internet surveys
“Prevalence and impairment effects of drugged driving in New Zealand” TAR14-25

Internet surveys and group interviews
“The NZ public’s readiness for connected- and autonomous- vehicles” (TAR16-26)



Translation into practice

Project	Application
Overtaking lane markings	Became standard in 2000
Priming and memory of road hazard signs	2005 expansion of chevron sight board use
Mobile phones & distraction	2009 NZ Land Transport (Road User) Rule Amendment
Self-explaining roads	2010 Redesign of Glen Innes roads & 2012 govt Safer Journeys strategy
Drinking & driving	2014 NZ Land Transport (Road User) Rule Amendment
Road markings, risk perception & speed	used on SH alternate route after 2016 Kaikoura earthquake
Road markings for speed	trial in planning stages

Selection of peer-reviewed journal articles

- Charlton, S. G., Starkey, N. J., & Malhotra, N. (2018). Using road markings as a continuous cue for speed choice. *Accident Analysis and Prevention*, 117, 288-297. doi:[10.1016/j.aap.2018.04.029](https://doi.org/10.1016/j.aap.2018.04.029)
- Charlton, S. G., & Starkey, N. J. (2018). Transitions within a safe road system. *Accident Analysis & Prevention*, 121, 250-257. doi:[10.1016/j.aap.2018.09.022](https://doi.org/10.1016/j.aap.2018.09.022)
- Charlton, S. G., & Starkey, N. J. (2018). Memory for everyday driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, 57, 129-138. doi:[10.1016/j.trf.2017.06.007](https://doi.org/10.1016/j.trf.2017.06.007)
- Malhotra, N., Charlton, S., Starkey, N., & Masters, R. (2018). Examining ironic processes in tourist drivers: Driving on the unfamiliar side of the road. *Safety*, 4(3), 1-13. doi:[10.3390/safety4030028](https://doi.org/10.3390/safety4030028)
- Starkey, N. J., Charlton, S. G., Malhotra, N., & Ameratunga, S. (2017). Prevalence of psychotropic drug use prior to driving. *Journal of Transport & Health*, 4, 108-117. doi:[10.1016/j.jth.2016.12.004](https://doi.org/10.1016/j.jth.2016.12.004)
- Charlton, S. G., & Starkey, N. J. (2017). Driving on urban roads: How we come to expect the 'correct' speed. *Accident Analysis and Prevention*, 108, 251-260. doi:[10.1016/j.aap.2017.09.010](https://doi.org/10.1016/j.aap.2017.09.010)
- Starkey, N. J., & Isler, R. B. (2016). The role of executive function, personality and attitudes to risks in explaining self-reported driving behaviour in adolescent and adult male drivers. *Transportation Research Part F: Traffic Psychology and Behaviour*, 38, 127-136. doi:[10.1016/j.trf.2016.01.013](https://doi.org/10.1016/j.trf.2016.01.013)