

DRIVERLESS VEHICLES AND ROAD SAFETY

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Staysafe Inquiry

Driverless Vehicles and Road Safety

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Staysafe (Joint Standing Committee on Road Safety)

Parliament House

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About the Motorcycle Council of NSW Inc.

The Motorcycle Council of NSW Inc. (MCCofNSW) is an internationally recognised umbrella group for motorcycle clubs, associations and ride groups, in the state of New South Wales, representing over 50 clubs, with more than 41,000 riders.

Established in 1981, MCCofNSW is recognised as the peak motorcycle representative body in NSW and subject matter experts on many complex issues dealing with motorcycling including crash data and statistics, traffic data and congestion information.

MCCofNSW has published documentation that has been referenced worldwide by overseas motorcycling and traffic bodies and has produced video training films that have been utilised and referred to by many overseas trainers, researchers and ride associations.

MCCofNSW has appeared before several standing Committees and Inquiries. The MCC is often consulted on all things motorcycling by the Roads and Maritime Services (RMS), Transport for NSW and Centre for Road Safety.

We wish to thank the Staysafe Committee for the opportunity to present this submission and the views of our member clubs.

Should you require further information on the information contained within this submission please feel free to contact the Chairman, [REDACTED]

Regards,

Christopher Burns
Chairman MCC of NSW

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Term of Reference 1.

The capacity of driverless vehicle technology to deliver improved road safety outcomes including a lower road toll, and fewer accidents and injuries to drivers, pedestrians and other road users

Comment:-

A major fault with driverless vehicle technology is the fact that you are introducing programmed behaviour (the vehicle software) into a scenario where learnt behaviour is not fully compliant with the rules. A simple program that does not take into account cultural differences in various locations will never be able to maintain a safe driving environment until the rest of the road users change their behaviour. This has proven to be the case with driverless vehicles in California that have had an increased crash rate due to other vehicles rear ending the driverless car which follows the rules to the letter. We also have the instance of a Driverless car being pulled over for driving too cautiously and being pulled over by Police who could not issue a ticket as there is no driver, only a passenger.

Driverless car causes first crash;

<http://www.wired.com/2016/02/googles-self-driving-car-may-caused-first-crash/>

Driverless car travelling too slowly for police.

<http://edition.cnn.com/2015/11/13/us/google-self-driving-car-pulled-over/>

Driverless cars have crash rate double that of normal vehicles

<http://www.bloomberg.com/news/articles/2015-12-18/humans-are-slamming-into-driverless-cars-and-exposing-a-key-flaw>

The National Transport Commission's issues paper on the regulatory barriers to more automated road and rail vehicles dated February 2016 states on page 40 that:-

"Automated vehicles could potentially save many lives but through system failure they could cause the loss of a small number of others; a net gain for society but an extremely difficult problem from a community perspective".

The MCCofNSW has concerns that the 'small number of others' is likely to be vulnerable road users, in particular motorcyclists.

While it has been reported that Google driverless cars have driven 2 million miles with only a few minor collisions, the RAND Corporation has calculated that to verify self-driving cars are as safe as human drivers, 275 million miles must be driven fatality free.¹ The RAND blog notes:-

"With a fleet of 100 autonomous vehicles (larger than any known existing fleet) driving 24/7, it would take more than 12 years to drive these miles. But with 10,000 such vehicles, it would take just six weeks."

¹ <http://www.rand.org/blog/2016/02/with-driverless-cars-how-safe-is-safe-enough.html>

“What if driverless cars were permitted in some capacity even if they were not quite as safe as human drivers? The technology could be deployed sooner, but at the expense of more crashes, at least initially.”

There is no indication that the technology used in driverless cars is able to detect motorcycles as equally well as other vehicles, in fact indications are that the technology is less likely to detect motorcycles, bicycles or pedestrians at all.

A 2014 AAA report found that blindspot monitors fitted to cars detect motorcycles 26% slower and at 14% less distance than when detecting cars.²

National Highway Transport Safety Administration (NHTSA) Test Document “Blind Spot Monitoring in Light Vehicles – System Performance” (DOT HS 812 045) states :-

Not all Blindspot Monitors have the same detection capabilities or operating conditions. In vehicle owner’s manuals, many automobile manufacturers state that their systems are designed to detect only highway vehicles, not other objects such as bicycles, motorcycles, humans, or animals

Forward collision systems such as that on Volvo’s XC60 come with warnings that they do not detect small objects such as pedestrians, cyclists or animals.³

As part of the US Safety Pilot Model Deployment, the University of Michigan Transportation Research Institute has launched a motorcycle study to determine how cars, trucks, buses and motorcycles interact using V2V (Vehicle-to-Vehicle) communications technology. However, initial testing found that 2 antennae were required on motorcycles as the rider’s body would block signal transmission from a single antenna⁴. If the signal is easily blocked by the rider’s body this does not bode well for the robustness of the system to be able to warn other vehicles of the presence of a motorcycle.

Summary:-

If driverless cars are allowed to be introduced with technology that is ‘not quite there’ it is almost certain there will be an increase in crashes, at least initially.

As the technology to detect motorcycles is currently not available, then it is almost certain there will be an increase in motorcycle injuries and fatalities.

The current approach in road safety is the “Safe System” where crashes are recognised as being inevitable but the system has to be forgiving enough so there are no deaths or serious injuries.

² <https://www.calif.aaa.com/content/dam/ace/pdf/2014-blind-spot-monitoring-report.pdf>

³ <https://www.youtube.com/watch?v=MfOgwrhJG8A> (5.43 mark)

⁴ <http://umtri.umich.edu/2014-global-symposium/2014-global-symposium-program>

Presentation by James Sayer and response to questions

Driverless vehicles need to fit within the Safe System approach and not be the cause of crashes that result in death or serious injury.

Term of Reference 2

The extent to which current road safety policies and regulations in NSW anticipate the introduction of driverless vehicle technology, including driverless heavy vehicles, and any regulatory and policy changes which will be required

Legislation is required to ensure that sensors and systems used in automated vehicles are of a standard that is able to detect and respond to motorcycles to avoid crashes.

Legislation is required to ensure that manufacturers and designers are fully aware of their responsibilities to protect vulnerable road users from injury.

The “Safe System” of road safety and the body of law around liability and responsibility has been developed from the premise that individuals are in control of their actions and of the vehicle they control. The corporate entity responsible for providing driverless vehicles for use on roads must be treated at law as if they were the driver as a “natural person”. The responsibility for a crash caused by the actions of a driverless vehicle cannot be separated from the vendor of that vehicle

Litigation is an expensive means of determining liability and obtaining compensation. Manufacturers and designers of automated vehicles will have access to financial resources which can't be matched by individuals. Legal aid, funded by the manufacturers, designers and owners of driverless vehicles, will need to be made available to all individuals so case law is not established at the expense and disadvantage of those individuals involved in crashes with driverless vehicles.

There is a distinct risk that individual drivers will be diminished at law in disputes with corporate vendors of driverless vehicles.

There needs to be certainty that sufficient data is captured, particularly multi-dimensional video data (similar to Google Street View), to determine who was at fault in the event of a crash. Access to this data needs to be guaranteed regardless of privacy issues so that liability for the crash can be determined.

If access to appropriate crash data can't be guaranteed, then the default position needs to be that the vulnerable road user was not at fault so they can access compensation. The owners of driverless vehicles must not be provided superior privileges through regulatory protection

Term of Reference 3.

The preparedness of NSW road safety regulators to meet the challenges extended by driverless vehicle technology

In her testimony to the US Senate Committee on Commerce, Science, and Transportation, hearing titled “Hands Off: The Future of Self-Driving Cars”⁵, Mary Cummings from Duke University stated:-

“NHTSA needs to provide leadership for a testing program that ensures that self-driving cars are rigorously tested for what engineers call the “corner cases”, which are the extreme conditions in which cars will operate.”

“... the complexity of the operation and testing of robotic self-driving cars necessitates strong leadership by NHTSA, which has generally been absent.”

In answer to questions from the Committee, she expressed concern that NHTSA currently lacks the resources and expertise to provide the strong leadership required to ensure driverless cars were rigorously tested prior to their introduction.

If NHTSA is ill prepared to meet the challenges extended by driverless vehicle technology then NSW road safety regulators are likely to be similarly ill prepared.

Term of Reference 4.

The experience of other jurisdictions in Australia and overseas in adopting and adapting to driverless vehicle technology

A number of Australian jurisdictions have undertaken ‘demonstrations’ of driverless vehicles as have a number of overseas countries.

These demonstrations should not be viewed as a substitute for rigorous testing.

It remains doubtful that the technology is ready for widespread deployment. Particularly so when one takes into account the recent demonstration in South Australia which was a complete failure resulting in the SA Transport Minister crashing into a stationary Kangaroo. What was not reported was the fact that the vehicle also hit a replication of a child.

<http://www.adelaidenow.com.au/news/south-australia/transport-minister-stephen-mullighan-ploughs-into-kangaroo-during-driverless-car-demonstration/news-story/35f76b7bc7f5828afb3bfe79deca0802>

⁵ <http://www.commerce.senate.gov/public/index.cfm/2016/3/hands-off-the-future-of-self-driving-cars>

Term of Reference 5.

Other related matters

Legislators will need to take into account the reality of automated systems. Firstly, the behavior of automated cars will be from written code, not learnt behavior. Secondly, recognise and consider how many times your automatic windscreen wipers or automatic headlights do not operate as designed. Then we need to seriously think about updates to software and how often they fail or need to be rolled back and look to your home PC or even large scale software rollouts in your workplace as perfect examples of how imperfect software can be.

How will an automated car deal with road works and dirt road detours? If the cars onboard mapping system decides that no road exists there what happens next?

How will an automated vehicle deal with traffic lights that are malfunctioning, or with a Policeman directing traffic?

Can you send your automated vehicle off on it's own to pick up the fish and chips from a neighbouring suburb, or send it to the railway station to pick up your grandmother? If it causes an injury, who then is liable? The "driver" of the driverless car cannot render assistance to an injured party. Nor can the driverless vehicle comply with Rule 287 except via some technology for translation.

Eye contact with a driver can no longer occur, which would lead to diminishing courtesy between drivers. Courtesy extended by one driver to another is commonly through eye contact and small gestures, providing direct wordless communication that reduces stress and likelihood for errors of judgement. An individual driver, or collectively more than one driver, may not follow the road rules precisely in order to assist an awkward situation, such as another driver reversing a boat trailer into a narrow garage from a busy street.

Pedestrians commonly rely upon eye contact with a car driver prior to stepping onto a pedestrian crossing or crossing a street with no crossings in a congested area. A pedestrian cannot communicate with a driverless vehicle in any way.

Will driverless cars be permitted to tow a trailer?

How do you deal with drunk passengers/owners/drivers?

Autonomous vehicles create more questions than answers and need to be dealt with cautiously and slowly.

Ultimately if you don't wish to drive, just catch a bus.

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