

# **LEGISLATIVE COUNCIL ECONOMY AND INFRASTRUCTURE COMMITTEE**

## **Inquiry into the Increase in Victoria's Road Toll**

Melbourne—Tuesday, 6 October 2020

*(via videoconference)*

### **MEMBERS**

Mr Enver Erdogan—Chair

Mr Bernie Finn—Deputy Chair

Mr Rodney Barton

Mr Mark Gepp

Mrs Bev McArthur

Mr Tim Quilty

Mr Lee Tarlamis

### **PARTICIPATING MEMBERS**

Dr Matthew Bach

Ms Melina Bath

Dr Catherine Cumming

Mr David Davis

Mr David Limbrick

Mr Andy Meddick

Mr Craig Ondarchie

Mr Gordon Rich-Phillips

**WITNESSES**

Professor Chris McConville, Pro Vice-Chancellor for Research, Strategy and Performance,

Dr Ashim Debnath, Senior Lecturer in Transportation Engineering,

Professor Saeid Nahavandi, Director, Institute for Intelligent Systems Research and Innovation,

Professor Kon Mouzakis, Co-director, Applied Artificial Intelligence Institute,

Associate Professor Ben Horan, Director, Centre for Advanced Design in Engineering Training (CADET) Virtual Reality (VR) Lab,

Dr Jan Garrard, Senior Lecturer, School of Health and Social Development, and

Ms Rebecca Bartel, Co-director, Strategic Centre for Mental Health and Wellbeing Research, Deakin University.

**The CHAIR:** Welcome to the Economy and Infrastructure Committee's public hearing for the Inquiry into the Increase in Victoria's Road Toll. I wish to welcome the traditional owners of the land, and I pay my respects to their elders past, present and emerging. I welcome any members of the public that are watching via the live broadcast.

My name is Enver Erdogan, and I am Chair of the committee. I would also like to introduce my fellow committee members present with us here today: the Deputy Chair, Mr Bernie Finn; Mrs Beverley McArthur; Mr Lee Tarlamis; Mr Tim Quilty; Mr Andy Meddick; Mr Mark Gepp; and Mr Rod Barton.

To all witnesses, all evidence taken at this hearing is protected by parliamentary privilege as provided by the *Constitution Act 1975* and is subject to the provisions of the Legislative Council standing orders. Therefore the information that you provide during this hearing is protected by law. However, any comment repeated outside the hearing may not be protected. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament. All evidence is being recorded. You will be provided with a proof version of the transcript following the hearing. Transcripts will ultimately be made public and posted on the committee's website.

We welcome your opening comments but ask that they be kept to a maximum of 5 to 10 minutes to allow plenty of time for discussion and questions. Can I please remind members and witnesses to mute their microphones when not speaking to minimise any interference. If you have any technical difficulties, please disconnect and contact the committee staff using the contacts provided. Can you please begin by stating your name for the benefit of our Hansard team and then start your presentation.

**Visual presentation.**

**Prof. McCONVILLE:** Thank you for that, Mr Chairman. My name is Chris McConville. I am the Pro Vice-Chancellor for Research, Strategy and Performance at Deakin University, and I would like to thank you for this opportunity to present our work to you today and give you a view of what we can do in this field. I am going to make just a few opening remarks about the university to put some background in and then just sort of set the scene overall, but I will only take 3 to 5 minutes in order to do that.

So Deakin at a glance—just for those of you who are not so familiar with it, Deakin's vision really is to be Australia's premier university within the digital sector and with the advent of digital technologies and digital teaching brought on more rapidly, as you will be aware this year, by the pandemic which has affected us all with COVID-19. But even before that, Deakin was very well positioned in terms of our ability to deliver teaching through this sort of medium in order to do that, but also to help revitalise teaching—not just students but industries et cetera—and I think that is going to be very important in any sort of post-recovery era. In terms of the university's reputation, it sits in the top 1 per cent of universities worldwide. It is one of the top 50 young universities, and we constantly have a high level of satisfaction for the students across all the universities in the state.

Just a few comments on our impact in the road safety area: Deakin is making a lot of contributions across the road safety research area, not just in Victoria, but nationally and internationally, working with the Transport Accident Commission and other road safety organisations. We have a major focus on lots of different aspects of road safety, ranging from using intelligent systems and machine learning, optimising models for understanding road safety and vehicle issues, moving all the way through to autonomous vehicles coming through, and also in terms of using technology for helping road safety, driver training and young driver training in particular, overall—the large combination of our ability to not only look at the statistics and analyse the data but also to help inform how we move forward in order to increase the safety levels on the roads in Victoria going forward. And this covers all aspects of it from the engineering side of things—the practical—to looking at psychology and particularly in ways of changing behaviour in drivers et cetera.

I am going to stop there now and just simply introduce the team from Deakin: myself, Dr Ashim Debnath, Professor Saeid Nahavandi, Professor Kon Mouzakis, Ben Horan and Jan Garrard. And as I said, Rebecca Bartel will be standing in for John Toumbourou. At this point I would like to say that is just our opening statement and to open the floor for questions through the Chair.

**The CHAIR:** Thank you for that presentation. I might start by going to our Deputy Chair to ask the first question and then to Mr Lee Tarlamis. Deputy Chair, would you like to go first?

**Mr FINN:** Yes, I will do that, Chair. Thank you very much indeed. I direct my question to—and quite a crew we have here today, good to see you all—Professor Toumbourou and Rebecca Bartel. Given that we do have a significant psychological problem at the moment in a number of people with the extended lockdown, I am just wondering: what impact does psychological conditioning have on people's driving? I mean if people are feeling down, do they drive in a way that they otherwise would not or does it have no impact at all?

**Ms BARTEL:** Deputy Chair, I will have to take that on notice. John Toumbourou unfortunately cannot be here today due to personal circumstances, and he has not briefed me clearly on how he would like me to respond to that question. So if you do not mind, I will take that on notice, and I will get back to you as soon as possible.

**Mr FINN:** Thank you very much. Thank you, Chair.

**The CHAIR:** Thank you. Can I just also request that we do not have the screen sharing? Thank you very much for that. I might pass over to Mr Tarlamis to ask a question.

**Mr TARLAMIS:** Thank you, Chair, and can I thank the many witnesses that are here today to answer all of our questions and also for Deakin's comprehensive submission. I just wanted to ask about the recommendation which relates to the post-COVID environment and the recommendation that relates to road safety targets and strategies that aim to improve the safety of all road users with an increased focus on vulnerable road users and ask if you could elaborate on that little bit further. I am not sure who that is best directed at, so I will allow you to decide who is best placed to answer that question.

**Dr DEBNATH:** Thanks for the question. Maybe I can start, and others can join after this. During the COVID time we have seen a significant change in focus in how we travel in and around our neighbourhoods as well as from one place to another, and these changes need to be reflected in road safety development because some of these changes may stay with us for some time, particularly in relation to our movements in the active travel space—pedestrians and cyclists, for example. Changes—if there is a greater intake of cycling, for example, which should be promoted—and our road safety policies, our practices related to how we propose and maintain our road infrastructure, should incorporate this positive change in active travel.

Now, so far, in the history of road safety management and planning there has been a greater focus on car travel. With the change in focus related to active travel our overall strategies should take into consideration active travel aspects. How exactly to do that? There can be various avenues to do it. There is perhaps a need for more research in terms of understanding the perception and the need of people—how we want to see our future mobility needs to be fulfilled in and around neighbourhoods. In terms of developing solutions, whether it is related to road infrastructure or technological solutions, connecting people from one with another, there are various avenues that could be possible which should be explored. I would welcome if any of my colleagues want to join here.

**Dr GARRARD:** Maybe I will jump in there and say that it is worth remembering with the apparent increase—I have not seen the measurement, but I am sure it is accurate as well as anecdotal—and a lot more people walking and cycling during COVID restrictions, it would be fantastic, because there are multiple benefits in terms of health, environment, road use efficiency, congestion and all of those factors, to continue to encourage that. There is a very strong link between the safety of vulnerable road users, particularly pedestrians and cyclists, and their participation in walking and cycling to get around as a form of active transport. So if you improve road safety for those road users, it really is a win-win-win situation in terms of encouraging all the benefits that come with promotion of active transport.

The other thing I would like to say is that I think in a lot of our road safety strategies we all strongly believe in the foundation, which is the Safe System approach, but often we look at what is a safe system through the lens of being a motor vehicle occupant. My argument over several years now has been to look at: what does a safe system look like through the perspective and the lens of a pedestrian? What does a safe system look like for a cyclist? There are certainly some universal measures that improve the safety of all road users, but there are also quite a number of specific measures we could take to specifically improve safety for our more vulnerable road users. I do not know if anyone wants to say any more or ask anything about that.

**Mr TARLAMIS:** Thank you.

**The CHAIR:** I might actually pass over to Mr Barton and then Mr Quilty in that order. Thank you.

**Mr BARTON:** Thank you. I do not know who to address this to, but one of the areas that I am concerned about is fatigue—fatigued drivers. We know these days people are doing multiple jobs and working funny shifts and all that sort of stuff, and we also know that a fatigued driver can be more dangerous on the road than someone who is over .05. Has anybody got any research on or are you doing any work around fatigue management for drivers—and not just professional drivers but people jumping in cars and going on for a 12-hour break when we finally get to go for a drive?

**Prof. McCONVILLE:** Maybe I can just say something. Again I think that is more to do with the health psychology of that, and unfortunately John Toumbourou is not with us today. But there is quite a lot of research looking at the effect of, particularly, tired drivers and the impact they have. If you consider the decreased use of the roads over the last six months in that respect, the statistics would be very different if you collected them more recently and if you compared them to last year or the year before. It is something which is an active area of research. We could probably get you some information on that.

**Prof. NAHAVANDI:** We have been involved in the area of autonomous systems, both human-in-the-loop and human-on-the-loop—not human-out-of-the-loop; we strongly believe that the human plays a major role. We have used various technologies collecting various biofeedback signals such as eye movement, eye tracking, functional near infrared and EEG and then tried to use various AI techniques and then collated that with human behaviour and driving style as well. So we are doing some research on that. In addition to that, we have placed in our experimental vehicles some cameras, forward looking. In particular we have been looking at vulnerable road users—cyclists and motorbikes—and we have developed some AI techniques where we can predict the intentions of vulnerable road users. The idea there is that we then bring that information to the control of the vehicle so the vehicle ahead of time knows what human intentions are, whether they are leaning forward or whether they are changing lane, to assist the driver in terms of safe driving. Thank you.

**The CHAIR:** I have got Mr Quilty, and then I will go to Mr Gepp and then Mrs McArthur in that order. Mr Quilty.

**Mr QUILTY:** Thank you. Now, we have heard from previous witnesses that there are problems with data collection, and you refer to it in your presentation. If you could redesign the system of data collection from the ground up to give us better data so we can know what is causing accidents, how would you do it? What would you do?

**Dr DEBNATH:** I can take that. First of all, thanks for that question. If we are given the opportunity to deliver a system from scratch, we will be more than happy to do that, and at Deakin we have got all the capability that is needed to do that. Having said this, how can we approach a fresh look at collecting road safety data? So predominantly we have been using police-reported crash data. As the committee and everyone knows here, the data is collected as the crashes happen and it is reported to police, and some details about crashes and

the crash-involved people and the vehicles are collected in that process. Data also comes from hospital admission systems as well as insurance datasets. There has been some good work done in recent times in terms of linking the data, but if we take a step back and look at all of these datasets, these are crash data of what has happened—we try to record information about how things happened, what was involved, what were the important factors and so on. How accurately and how in depth we can record that information, that is a different question, but essentially all that we are looking at is events that have happened already and events which are quite random and can be highly varied spatially as well as temporally.

So if we try to look at a particular road intersection, for example, the number of crashes over a given time period sometimes can be low because of that randomness. A small number of crashes may not help us to statistically evaluate or examine the factors which are involved in those crashes, so a fresh look is needed in the data collection process. Some ideas that we have put forward there in our submission are to look at near misses and at data sources coming from other avenues. For example, we can look at user-reported crash data. We can of course look at police, hospital, insurance and ambulance data, but the near misses or conflicts should also be considered, these are events which happen before a crash occurs. In many cases these near misses and conflicts have got a large number of events over a small period of time, so if we look at a small period of time, even though we may not have a number of crashes to examine because of the randomness of crashes, we may have got a large dataset in terms of near misses and conflicts to look at, which not only gives us a large dataset but also tells us a lot of information about pre-crash situations. So we get to know proactively what to do to prevent the crashes rather than looking at crashes and trying to find out what we could have done.

So collectively data from different road environments and different types of road users from various sources need to be collected in a centralised and a streamlined approach. What type of data to collect, how to ensure quality and consistency, which is very, very important, across multiple datasets, this is something that is a matter of research, and we have got significant capability in that area to provide input into that.

**The CHAIR:** Thank you.

**Prof. NAHAVANDI:** In terms of data collection, just to add a little bit more, a lot of vehicles these days have engine-management systems, they have computers, they have various types of sensory systems. Now, maybe it is not a bad idea to have a similar concept to aircraft—to have like a black box and then to collect some critical data that post accident can be analysed properly in terms of how the driver was driving the vehicle and then what were the forces and then how the vehicle was behaving when the vehicle hit another vehicle or just when the vehicle hit something. I think that piece of information often is critical as well as the other things my colleague mentioned.

**The CHAIR:** Thank you. I might pass over to Mr Gepp and to Mrs McArthur.

**Mr GEPP:** Thanks, Chair, and thanks, everyone, for being with us today. A couple of questions. Firstly, I guess, a comment from whoever the relevant person might be. It has always struck me as odd that we stick our most inexperienced drivers in probably the most unsafe vehicles on our roads. That is probably around affordability. I know that probably for everybody on this hook-up right now their first vehicle was probably a pretty old vehicle in the fleet, not one of the newer ones with safer technology. So if you could comment on that. Secondly, if any research has ever been done that you are aware of that displays the optimum driver experience age—not age in years but the number of years that they have been behind the wheel—what those attributes look like and whether or not we have calibrated any of our policies, our public policy positions, around road trauma and driver education to ensure that we are fast-tracking people to get that optimum experience level.

**Assoc. Prof. HORAN:** Look, I think I certainly agree with you in terms of younger people being in the most unsafe cars. There is a need to understand the number of years, a sweet spot, in terms of getting a driver ready for the road. What we have said, and it links back to terms of reference 7 and the recommendation we have made there, is that while some of these problems might be difficult to overcome, there is an immediate opportunity to better train younger drivers for operating different vehicles, in different situations, and given the amount of time we have to train them to be on the road, we can do more.

I think we can do this using virtual reality technologies, which are now ready and people can use them. I see a gap and an opportunity to provide this as part of the graduated licensing system that is in place, as well as the

driver testing that is there—not just for investments in this technology and research into this technology, but it can span the whole suite of driver training and awareness needs all the way through to aged drivers as well, which is another high-risk group. I am sorry I could not comment on your question specifically, but I do think there is a big opportunity for us to better prepare our younger drivers for being alone on the roads.

**The CHAIR:** Thank you. I might pass over to Mrs Beverley McArthur.

**Mrs McARTHUR:** Thank you, Chair. Anybody can answer my question. I just want to give a major shout-out to Deakin. It is a wonderful university operating on two campuses in my electorate of Western Victoria Region, at Waurin Ponds and at Warrnambool. You do great research, working with industry in innovative ways to make us—

**Mr GEPP:** They have some outstanding alumni too, Mrs McArthur.

**Mrs McARTHUR:** Oh, gosh, Mr Gepp, it is so fantastic that you are here. What an export from Deakin. How could we want for anyone better?

I am interested in what you could do to solve one of the problems in my electorate, which is the incidence of accidents where an ambulance is called that involve international drivers. We know it is about 20 per cent of the accidents where an ambulance is called that involve international drivers. Of course, we do not know how many near misses there are. We do not even know how many accidents are caused where police are called but an ambulance is not required. You can get plenty of anecdotal evidence from the locals, and I notice you have said, I think, that that is a good idea—or a previous presenter might have suggested that locals do have a lot of knowledge in this area. We totally accept we need far better data collection.

Is there any research being done into how we could test international drivers before they actually hire a car, especially after they have stepped off a plane at Tullamarine and before they head off down a dual highway but then end up on a single-lane road? One of the hardest roads to drive on is the Great Ocean Road. Have you done any work in pretesting or testing of drivers who hire cars before they get in a car?

The second aspect I wonder if you might address, because you referred to motorcyclists in your submission, is the impact that wire rope barriers have in the incidence of motorcycle accidents. I do not mind who answers the question.

**Dr DEBNATH:** I will give it a try. Firstly, the international drivers question: driver training and how we maintain our ability to drive is an issue not only for international drivers but I think across the whole driver population, so that issue of whether we look at treatments, for example, going through training after a certain time period of getting the driver licence, doing repeat educational trainings and so on. This has been discussed quite in detail in the literature. In relation to international drivers, particularly what comes ahead of road safety issues, perhaps, is the practicality of it—someone coming here for tourism purposes, if we take an example, going to the Great Ocean Road, a lovely road, as you have used that example. So in terms of practicality, how do we come up with a system that allows testing whether a driver is properly equipped to drive on Australian roads? It is a big issue. However, road safety always encourages us to push our limits and to come up with innovative solutions. I do not have an innovative solution off the top of my head, but I am pretty sure that at Deakin we have got people to work together to find something, and we will be very happy to look into this if there is significant interest in it.

Moving onto the second question, motorcyclists and safety barriers, it is again a very important road safety issue. When people talk about barriers and motorcyclists, what I have heard people saying is that no barrier is the best safety barrier for motorcyclists. There are pros and cons for barriers to motorcyclists. Now, there has been a significant push in recent times with the wire rope road safety barriers, particularly because of their forgiving nature in terms of absorbing impact force and making sure that the damage to vehicles is less. When it comes to motorcyclists and these wire rope barriers or other types of barriers, I try not to think what can happen when a motorcyclist hits a barrier. It is quite distressing, but perhaps the safety barriers are there maybe for other types of road users primarily. For motorcyclists, would there be a need for a second layer of protection which could be fitted with motorcyclists or the vehicles themselves? That is an area perhaps to look at, but in terms of safety barriers there are benefits overall for various types of road users. So it should not be overlooked that we do not use road safety barriers because they do not give the intended benefits for motorcyclists.

**Prof. NAHAVANDI:** If I may, just to add a little bit more, I think maybe one scheme could be, before international drivers arrive, if there is an online course, using a virtual reality course or simulator or simulation, where they can get some sort of pass and then they can use that as an incentive for the car hire company then to give them a discount. So it is a secondary licence. You first have a drivers licence but then you have another licence where the person already has the experience in the virtual world using Australian roads, and creating a simulation environment like that is not very challenging. At Deakin University we have several motion simulators as well as virtual reality and augmented reality simulation and simulator environments. So definitely it is doable, and maybe airports could have a simulator that is a fun thing that the person can jump in and can go through some extreme conditions.

Inside our simulators we train drivers—drivers of different types, big vehicles, small vehicles—in extreme scenarios, extreme situations where you never want to be there. The majority of people in the society, maybe they have never experienced, for example, blackout, skids on the road or how to operate anti-lock brake systems properly and adequately. So these kinds of simulators they can be the key and critical things in the society to reduce the number of accidents through education. Thank you.

**Dr GARRARD:** Can I maybe jump in there and say there might be a place for this at the point of hire of hire vehicles when international travellers come to Victoria. I am reminded of an experience I had a year or so ago when I and my family hired a four-wheel drive vehicle to ride across the very sandy roads on Fraser Island. The hire company warned us before we came to come half an hour early because we needed to watch a video about how to safely drive those four-wheel drive vehicles on the very sandy tracks through Fraser Island. So there may well be an avenue for doing it at that point of hire, with due warning and just a very simple, clear video: this is how you drive safely on Victorian roads. Just a suggestion.

**The CHAIR:** Thank you. If the committee does not have any more questions, I might actually just wrap it up there and on behalf of the committee just thank the whole Deakin University team. If it were not for the pandemic, we were planning to visit the Waurn Ponds campus later this year. I am aware of all the great work that Deakin University is doing in the road safety space, so please keep it up. It has been a pleasure to have you all on here, and I really enjoyed reading the submission and the presentations today. Thank you again.

**Prof. McCONVILLE:** Thank you for that, Chair. I would like to reiterate the offer for the committee to come and visit the various campuses and see the various facilities that are on offer. We would like to offer that—whenever it is possible, of course. We do not know quite when that will be, but hopefully soon.

**The CHAIR:** Hopefully very soon—before the year's end.

**Prof. McCONVILLE:** Thank you.

**The CHAIR:** Fingers crossed. It was a pleasure to have you all on today. In relation to the committee, we will now have a break for 45 minutes for lunch, and I will see you all at 1.45. Thank you.

**Witnesses withdrew.**