

TRANSCRIPT

ROAD SAFETY COMMITTEE

Inquiry into serious injury

Sydney — 5 August 2013

Members

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Mr T. Languiller
Mr J. Perera

Mr M. Thompson
Mr B. Tilley

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Witnesses

Dr R. Mitchell, senior research fellow, and

Dr M. Bambach, senior research fellow, Transport and Road Safety (TARS) Research, University of New South Wales.

The CHAIR — Dr Mitchell and Dr Bambach, on behalf of the Victorian parliamentary Road Safety Committee I thank you for attending here today to speak to the issues pertaining to our inquiry in relation to serious injuries. By way of background, the evidence that you give here today has the benefit of parliamentary privilege. If there are any comments you would like to make off the record, then we can go into an in camera session. You will receive a copy of your transcript, and you are invited to correct any typographical or factual errors and return it to us. It is envisaged that it will be placed upon the Hansard record. We have a number of questions we would like to ask you, but I invite you to speak generally to the issues, and we look forward to your contribution.

Dr MITCHELL — Thank you. I guess we would all agree that road trauma is a significant public health issue and that there is a need for accurate and timely information in order to be able to monitor road trauma trends over time, to evaluate the effectiveness of different road safety interventions and to inform new policy initiatives and road safety strategies. The best available evidence needs to be made accessible and available from all agencies to record information on road trauma, and this possibly could be through something such as a data warehousing function.

It appears that in Victoria data linkage capacity needs to be further explored, as no one dataset can provide all the information needed to inform road safety efforts from the crash risk factors to the crash circumstances to the injury outcomes. We at TARS Research have found it useful to link data collections together — so, for example, linking police-reported road crashes to hospital admission records, to get some more detailed information about the injuries that people are receiving in road crashes, and I guess if serious injuries following road trauma are going to be monitored over time, there is a need to agree on a definition of serious injury by all agencies.

Using definitions such as ‘admission to hospital following road trauma’ — these types of definitions can be influenced by changing hospital admission practices over time. There are also a wide range of hospitalised injuries that occur, from simply admitting someone to hospital to observe them following concussion, to dislocations, to minor fractures such as a fracture of the wrist, to then major organ and spinal cord damage, which would be more severe. I guess we need a robust measure of serious injury that will not be influenced by artefact.

One of the estimates that can be used, such as the threat-to-life measures, such as the ICD-based — that is, the international classification of disease-based — injury severity score, the ICISS, might be one of the best options to use as it is likely to be less influenced by artefact. I guess that is all I would like to say, just by way of introduction.

The CHAIR — Thank you, Dr Mitchell. I invite Mr Perera to ask the first question.

Mr PERERA — The TARS submission refers to a discrepancy in the actual cost of treatment in trauma centres and the allocation of predetermined financial payments for patient episodes under the Australian refined diagnosis-related groups (AR-DRGS), with the AR-DRGS being shown to substantially underestimate the costs of treatment. What impact does this discrepancy in costs have on the capacity of trauma centres in New South Wales to respond to serious trauma on a day-to-day basis?

Dr MITCHELL — I am not sure that it would have any influence on the day-to-day practices because if someone is injured, they come in and are treated, but over time the Australian refined diagnosis-related groups are not accurately reflecting the severely traumatically injured individuals, especially ones that have multiple injuries and then people who might have complications following those injuries. The AR-DRGS codes are set based on what is usual, and often people with road trauma, with multiple injuries, do not quite fit the box of what is usual.

Mr PERERA — So they always underestimate?

Dr MITCHELL — Yes. It underestimates the overall cost, over time.

Mr PERERA — To what extent is the discrepancy in costs a common issue in other Australian jurisdictions? How can it be resolved? Do you know about any other jurisdictions?

Dr MITCHELL — I have not looked at any in particular; I have just been looking at the trauma centres in New South Wales.

Mr PERERA — All right. TARS Research states that one of the identified priorities for injury surveillance is increasing the integration and accessibility of injury data through data warehousing and data linkage, which you mentioned. What data linking, if any, exists in New South Wales between the relevant road safety agencies in respect to crash and trauma data?

Dr MITCHELL — We have linked police-reported road crashes, so that was using data from the Transport for NSW CrashLink data collection. We linked that to Australian Bureau of Statistics mortality information, so we had all the deaths, and then we linked that to the New South Wales hospital admissions data collection, so we had people who had been admitted to hospital, and then we also linked it to people who had been presented to hospital — so people who had just gone to the emergency department. So that was the New South Wales emergency department data collection.

I know in New South Wales there is also the New South Wales Institute of Trauma and Injury Management. They have a trauma database, and that is mainly all the individuals who are severely injured from trauma who have an injury severity score greater than, I think, 12. However, at this stage that information would be a bit difficult to link because in the central database they do not have the names of the individuals, so you would have to go back to each of the 12 major trauma centres.

Mr PERERA — So you link by name?

Dr MITCHELL — In New South Wales we have the Centre for Health Record Linkage, known as CHeReL, so they actually do the record linkage for us. They use probabilistic linkage techniques, and it is a combination of factors — first name, surname, address, age, gender, date of admission to hospital, date of crash. They use a combination of information to do the linkage.

Mr PERERA — If the offender is dead, the police are not interested in collecting crash data. This is what we have heard from other witnesses, in some cases. So would that be a problem for police data?

Dr BAMBACH — Not for deaths. They get all the deaths.

Mr PERERA — They get all the deaths?

Dr BAMBACH — The Transport for NSW Centre for Road Safety have a special procedure if a person dies following a road crash, so they absolutely collect all the deaths, yes, in their database.

Mr PERERA — Thank you.

Mr TILLEY — I want to explore something that is not particularly favoured and somewhat muddies the water in all of this, and it is privacy. So I want to talk a little bit about privacy. What in your view are the privacy considerations and concerns that arise with linking data? How could these be overcome?

Dr MITCHELL — For us, one of the things that has been adopted to allay privacy concerns is that the data linkage is done by an external agency such as CHeReL. CHeReL receives the names, addresses, all that kind of identifying information. None of that goes to the researchers, but likewise, CHeReL do not know the reason why the person is in hospital, they do not know any details of the crash, they do not receive any of that information. All they receive is the variables that they need to link and a unique identifier from the data custodian of CrashLink. CHeReL then does its linkage, creates a linkage key and then has the unique variable from the data custodian. It attaches the linkage key to that and sends it back to the data custodian, who then provides us with the linkage key and the information without any identifying information. So we hopefully do not see anyone's name or address or anything like that.

Mr TILLEY — It sort of does not help the perception out there, sometimes.

Dr MITCHELL — Yes. I guess in some cases, if you did various cross tabs of information, so if you were particularly looking for someone and you knew they had a car crash in a particular suburb and you knew their age, you could do various cross tabs of the information to look at it, but for us, we are more looking at a population level. We are here to inform road safety policy. We do not get down to the unique individual

records. At TARS Research we always make sure that we have enough cell sizes when we present our information so that no individual can ever be identified.

Mr TILLEY — Terrific. The Traffic and Road Safety Research submission refers to New Zealand as an example of where an intergovernmental agreement has been established across various government departments and the Accident Compensation Corporation to facilitate the collection, monitoring and reporting of injury incidence. What can Australian jurisdictions learn from the New Zealand experience with regard to enhancing the collection, sharing and reporting on serious injury data? I think you have led into that a little bit. This is one of those prepared questions. You may have some examples from your experience.

Dr MITCHELL — For us, having all the government departments agreeing on a definition, agreeing on what they are going to collect and agreeing on what they are reporting on is beneficial. It is less confusing for everybody else. In particular they had a definition that defined ‘serious injury’ using the ICISS codes for the threat to injury. Having a one-size-fits-all definition is very good because you are talking about apples and apples and not apples and pears.

Mr TILLEY — That is right. I think we have captured that.

Mr ELSBURY — In your view, why is it so important to determine an appropriate definition of ‘serious injury’? How does it affect other policy tasks such as calculating the cost of injury or developing countermeasures?

Dr MITCHELL — It is important to have an agreed definition of ‘serious injury’, especially if you are looking at Australia-wide comparisons, because at this stage Transport for NSW defines ‘serious injury’ as ‘They went to hospital and were admitted’, whereas in Victoria you have ‘They went to hospital and they may or may not have been admitted’. So I think having an agreed definition is the best way forward.

I also mentioned earlier that when you are admitted to hospital there are degrees of seriousness of your injury, so having a more robust idea of what a serious injury is means you are less likely to be influenced by things like hospital admission practices and that type of thing. When you are calculating costs, you are going to calculate them based on how many people are defined as having a serious injury. If you are not all counting the same thing, the baselines for the costs are all going to be different.

Dr BAMBACH — It also depends on what you are trying to achieve in terms of countermeasures. Obviously in the past we focused on trying to reduce fatalities. When you are looking at injury, if someone just gets a broken wrist or a concussion in a road crash, that is actually a reasonably good outcome, whereas if they got organ injury and multiple fractures, that is the sort of group or person that you need to have a closer look at to see how those sorts of crashes might be reduced with certain types of countermeasures. It also affects what you focus on in terms of crash motives or vehicles or road user behaviour that you want to try to address and reduce.

Mr ELSBURY — Thank you very much for that segue — the next question is actually about countermeasures. The committee received 36 submissions as part of this inquiry. A recurring theme in most of them is the lack of information about term of reference (d), the correlation between different countermeasures and reductions in trauma. Is TARS Research aware of any studies or research that has determined which countermeasures have reduced trauma, and if so, by how much?

Dr BAMBACH — Cycling helmets is one we have looked at. For example, you can look in the data about the sorts of injury rates and head injuries that cyclists get. Quite a bit of work has been done with vehicle design via ANCAP, the Australian New Car Assessment Program. Possibly not quite so much has been done in Australia because we are a bit small, but the US run a similar program and they have done quite a bit of work looking at how changes in vehicles have reduced certain types of injuries and the severity of certain types of injuries.

Mr ELSBURY — Just taking you back, what did you find in your inquiry about the use of bicycle helmets? Sometimes this discussion comes up because we have free bicycles in the CBD of Melbourne and the argument is that you should not use a helmet because it is going to wreck your ‘do’. It actually discourages people from using those bikes. What did you find in your study?

Dr BAMBACH — The effect of helmets was pretty large. Overall there was a 74 per cent reduction in the risk of head injury for those who were wearing a bicycle helmet.

Mr ELSBURY — That is unbelievable.

The CHAIR — Just on that, in Victoria it is mandatory to wear helmets when riding bicycles as a result of the work of Frank McDermott, who did a study over 20 years ago. Has there been any mandatory use of helmets in New South Wales, or do you have the evidence but it has not followed through to becoming mandatory?

Dr MITCHELL — Yes, it is mandatory.

Dr BAMBACH — It is mandatory but not everyone wears them. There were around 6700 cyclists in our study — this was using the linked dataset we already mentioned — and about one-third of them were not wearing helmets. It is mandatory but a lot of people do not wear helmets. In New South Wales the police let it slide a lot of the time; a lot of people do not get pulled up by the police, so they just keep doing it. But it is mandatory.

The CHAIR — When was the law amended in New South Wales?

Dr BAMBACH — I think it was 1991, or in the early 1990s.

Dr MITCHELL — It differed for children and adults by about six months.

Dr BAMBACH — Yes, but it was about 1991, I think.

Mr PERERA — The ability to identify cost-effective countermeasures relies on evaluations of these countermeasures. Given that many submitters noted that there are a limited number of evaluations of existing countermeasures, and that it is more appropriate to look at the combined impact of countermeasures, how can decision-makers discern what works from what does not?

Dr MITCHELL — That is a tough one. As researchers you look towards the gold standard, so you want to do a randomised control trial or that type of thing. But we cannot randomise people to wear or not wear a bike helmet, so we would be looking more towards doing different types of studies around following cohorts and case-control studies, like we did for our bicycle helmet study. I agree that it is difficult to tease out each component. If you are looking at car crashes, it is difficult to tease out speeding, fatigue, whether or not people were wearing their seatbelts and alcohol consumption, because a lot of those factors combine.

Dr BAMBACH — I have seen a couple of studies around countermeasures in roadway design. I have seen a couple of studies looking at things like what are the injury and fatality rates of vehicles hitting utility poles or trees compared to the installation of roadside barriers. There is a little bit of stuff around road design countermeasures as well, plus the ones I previously mentioned. There is a little bit around vehicle design as well.

Mr PERERA — The supplementary question covers the same thing. Do you think it is possible to identify the cost-effectiveness of a given countermeasure based on a collective approach, or alternatively through forecasts of potential benefits as identified in the research literature?

Dr BAMBACH — I will continue on from what I was just saying. The road design one — it is kind of crude to say this — is actually a cost-benefit analysis, which is the current procedure for that. For example, if you are going to decide to deploy a roadside barrier, you estimate how many crashes you expect. Say there is a utility pole right next to the roadway, you look at that design and you estimate, from the traffic volume and various other factors, how many crashes you might expect into that pole and then you look at the severity of that crash compared to if there were a barrier there, which would be much lower. Through a sort of a crude value you can estimate the cost of the crash and then make a cost-benefit analysis of whether or not you should put in a barrier. So it is one area where I have seen a cost analysis involved.

Dr MITCHELL — I am just guessing that, if you did have a crash that involved fatigue, speeding and alcohol use, you would have to then create some sort of measure of contribution of each of those factors. You

could then try to cost the crash, but you would have to attribute a different amount of cost for each issue, and it would be quite difficult, I think.

The CHAIR — There are just a couple of other questions that I would not mind running through. In our previous inquiry we received some evidence and commentary from Raphael in relation to roadside barriers. At the time that we were working through our report we did not have immediate access to your concluded studies. Do you have any commentary in relation to the use of the wire rope barriers. They had a lot of interest amongst the motorcycle fraternity in Australia as being detrimental to safety outcomes, as opposed to other barriers, in the cause of accidents.

Dr BAMBACH — Yes. I was actually working with Raph on that stuff, so I can answer that. The cable barriers have been shown, both in Australia and other countries, to be really effective in terms of reducing the severity of vehicle crashes. The issue to do with motorcyclists has been much more difficult to get a handle on, because as yet, because of the quite recent nature of the installation of cable barriers, there have been so few motorcycle crashes into these barrier systems. Our study in Australia and the corresponding study in the US have not been able to gather enough data to really make any sensible conclusions about the relative severity of the cable barriers compared to the other types, for motorcyclists. So that question is still up in the air a bit, really. They are just such a rare event that we cannot really say one way or another. But absolutely, there have been quite a number of studies now in terms of the effectiveness of cable barriers for vehicle collisions, and they are really effective for those.

The CHAIR — Thank you. I note also that there has been a journal article, to which you have been a contributor, entitled ‘Can SNOMED CT as implemented in New South Wales, Australia, be used for road trauma injury surveillance in emergency departments?’. Can you expand just a little bit upon that paper and its intent?

Dr MITCHELL — What we found when we linked all the data collections together is that we were not really getting the full potential from the emergency department data collection. New South Wales had changed its classification system from using the ICD 10 — the International Classification of Diseases, version 10 — to the SNOMED classification scheme. The way it had been implemented in New South Wales was kind of holus-bolus. It is a classification scheme in millions of diagnoses and external cause codes and anything and everything can be selected to be a diagnosis from the crash. Instead of separating out the diagnoses codes from the external cause codes — and by external cause I mean a road crash, a fall or a drowning — they have just put them all in together. It is quite difficult to then ascertain the reason why people were presenting to the emergency departments.

Using the linked data collection, we could actually look at the police-reported crash data to see why the person had been presented to the emergency department, looking at whether they were a vehicle crash, a pedestrian or a pushbike, and then compare that with what had been entered using the SNOMED, and SNOMED just was not working very well at all. We were having very strange classifications being entered. I remember that one of them was actually ‘chocolate’, and I was thinking, ‘What?’. The trauma nurses can enter things in text themselves. They can also use drop-down codes. With the variety of responses you can get, it is just not conducive to try to count up the number of presentations to emergency departments for road trauma, just as it is being implemented. I think SNOMED would be quite useful, but how they have done it is not working.

Mr TILLEY — I suppose there are other jurisdictions and other institutions. We will go overseas and ask them questions about SWOV. In your recent comments you were talking about ANCAP, but in Australia’s experience, with the compatibility of motor vehicles particularly, does that play much into consideration of all this? We have a significant number of larger vehicles versus smaller ones. Regardless of the safety standards of a particular motor vehicle, if it is a small one and it comes up against larger one, with a heavier suspension such as a four-wheel drive, does that come into consideration?

Dr BAMBACH — Yes, that is an issue. There is a bit of work being done at the moment, especially in the US, because they have just introduced a new regulation called CAFE. I do not know what it stands for, but it is an emissions reduction regulation under which all the vehicle manufacturers have to reduce their emissions by 5 per cent every year until 2025.

Mr TILLEY — So smaller cars.

Dr BAMBACH — Yes. Obviously that is going to lead to smaller cars for some manufacturers. The idea of whether that is going to reduce road safety is a really hot topic in the US at the moment, so there are a lot of studies being done. When you do a car for ANCAP you run the car into a wall at the one speed, but if that small car then runs into a big car it is a quite different situation.

Mr TILLEY — Or close to the speed of 100 kilometres an hour each.

Dr BAMBACH — Yes. So that is obviously an issue. There is a bit of work being done in Australia on that, but in the US it is a big deal at the moment. There is a lot of stuff being done on that.

Mr TILLEY — Certainly Australia does some fantastic work, including the research you do yourselves. I think we can stand on our own with some of the things that we do in certain jurisdictions in this nation. It is good to invite comments from people in other countries and I suppose the benefit is a peer review.

Coming to the question: according to the submission from the Institute for Road Safety Research in the Netherlands, 'road crashes resulting in fatalities are different types of crashes than road crashes resulting in serious road injuries'. SWOV suggests that the causes of crashes resulting in serious road injuries can be traced to system errors rather than extreme behaviour. On this basis, SWOV concludes that policy aiming to reduce the number of serious road injuries needs to be different from policy aimed at a reduction of road fatalities. What are your thoughts on those statements?

Dr MITCHELL — How are they defining 'serious injury'? When we were looking at analysing the information from our linked data collection, we did find quite similar contributing factors around fatigue, alcohol and speeding contributing to the serious injuries, as opposed to also contributing to the fatalities. We have not really gone in depth into the particular types of crashes, at intersections, corners or things like that, to see if there are differences between fatalities and serious injuries, but we found quite common scenarios generally.

Dr BAMBACH — I think you find the same themes. I would certainly say that the two groups are slightly different. For example, like the one that you mentioned in the fatalities, you do tend to see these really extreme examples, with a motorcyclist doing 200 kilometres an hour. You get that really extreme stuff, but at the same time I think you also do tend to find similar themes, like Rebecca said — like fatigue, alcohol and speeding. So you do find different themes, but I think that they can be seen as different groups, too.

Mr TILLEY — Have you ever looked at fatigue in vehicle design, the causal factors in vehicle design itself and what effects that has on fatigue?

Dr BAMBACH — Not the vehicle design itself; they take all human factors out of that. But obviously all the gadgets they design for lane warning, when you drift out of a lane, and all that stuff are obviously human factors, but the vehicle design itself and the safety features in the vehicle, like airbags and seatbelts and everything, are all regardless of human factors. They do a standard test — —

Mr TILLEY — But airbags give out a certain frequency. They can shake people to pieces over sustained periods. Particularly in heavy vehicles, that can create fatigue on sustained driving. In this nation we are always looking at driving hours, alcohol and substances in relation to fatigue rather than the design of vehicles, particularly when you see airbag suspension and the factors there. I have not been able to find anything anywhere to say that any research has been done in that regard.

Dr BAMBACH — Yes, that is interesting.

Mr TILLEY — That is assuming you have to comply with the standards, but our heavy vehicle fleet does not have to.

Dr BAMBACH — I had not actually even thought about that.

Mr TILLEY — Maybe whet your appetite a little bit.

Dr BAMBACH — I know with cars obviously a lot of their features are designed for comfort and they have various — —

Mr TILLEY — Actually we are starting to see bags coming into motor vehicle suspension now.

Dr BAMBACH — Interesting.

Mr ELSBURY — I am interested in CHeReL, which is an interesting acronym. What kind of a lag is there in these datasets that you are receiving from when an incident happens to when you receive the information?

Dr MITCHELL — If we are linking the police-reported road crash data, Transport for NSW would not make that available to us until they release their annual statistical statement, which is their annual report. They like the minister to release that and then the information becomes available for general use. It would be a couple of months after the end of the calendar year before the information could be made available. In terms of hospital admissions, that information is routinely linked by CHeReL every six months. However, I have heard that from October they are going to be linking that information routinely every three months, and it would be the same for the emergency department data collection.

There have been a few issues around the mortality data in Australia. I am not sure if you guys are aware that no Australian mortality data has been released by the Australian Bureau of Statistics since 2007, because the ABS has identified that the legislation does not allow it to release data for research purposes, and instead of changing the legislation it decided to stop releasing data to researchers, which has meant that each registry of births, deaths and marriages in each Australian state is now going to be charged with policing mortality data in their state. They have put together an Australian coordinating centre, which will be the Brisbane office of births, deaths and marriages. They will be coordinating the release of the mortality data. They have been going at this for a while now because they have had to review lots of legislation in each state and also the privacy legislation. They are just now at the stage of developing application forms for researchers. I would not see mortality data being available until probably early next year.

Mr ELSBURY — Okay. With the information you receive, are there still gaps that you would like to see filled?

Dr MITCHELL — No. One of the things I am particularly interested in is follow-up after trauma, so looking a month down the track or two months, a year, two years, or five years down the track to see how people are going after their injury. But I know in Victoria you have the Victorian outcomes registry, which does a really good job.

Mr TILLEY — If you could just have a bit of a dip at the definition of ‘injury crashes’, where would you see it in simple black and white language? As the lowest common denominator, what would you suggest would be the best definition for an injury crash?

Dr BAMBACH — The serious injury?

Mr TILLEY — Serious injury, yes.

Dr BAMBACH — We have been looking at using a definition which corresponds to a mortality rate of the specific injuries they receive of about 4 or 5 per cent. For example, an organ injury in the chest, say a lung contusion, overall might have roughly a 5 per cent mortality rate, so we would consider that a serious injury. We do that by looking at all the ICISS codes for the injuries and looking at huge databases. You can get a mortality rate overall for all the specific injuries and then you can make a list of what you call serious. If they get any of those injuries, they have been seriously injured.

Mr TILLEY — So where would you put, say, a fracture or a broken limb?

Dr BAMBACH — Simple fractures would not count. Complex, open fractures would be classified as serious under that. It is quite similar to the US system where they use an AIS — they use the abbreviated injury scale. They call an AIS injury of three or more a serious injury, so one and two, like simple lacerations or contusions and simple fractures — that sort of stuff — do not get called a serious injury.

The CHAIR — The role of telematics and ITS in injury prevention — is that something you have considered in any of your work?

Dr BAMBACH — Telematics? What do you mean exactly by telematics?

The CHAIR — I think it is a description that is applied to the technology that is able to measure speed over distance against speed limits. It is available to measure traffic movement and driver behaviours.

Dr BAMBACH — No. The only electronic systems I have heard of are in the US, where some of the manufacturers are starting to make crash — what are they called? When you have a crash it sends a signal to emergency services.

Dr MITCHELL — BMW is doing that. The vehicle itself contacts the — —

Dr BAMBACH — It says there was a certain deceleration event, so they can say, ‘It might be more serious, or not’. There are a few simple things like that, but they are the only things I have heard of.

Dr MITCHELL — Wasn’t it if the airbag went off?

Dr BAMBACH — Yes, they have different metrics. They could say, ‘Yes, there has been a crash’, and give an idea to emergency services of how severe it might have been. I have heard of that, but that is all.

The CHAIR — We thank you very much for taking the time to prepare a submission and speak to it and for responding to questions. As I indicated before you will get a copy of the transcript. It will be available to be corrected for any typographical or factual amendments. Perhaps you could then return it to the secretariat. We envisage that it will be placed on our website. If you have any other thoughts or insights you would like to contribute to our inquiry, we would be happy to take them on board as well, respecting your academic expertise in the field and the value of that skillset to the work of parliamentary committee inquiries. We thank you for your time.

Dr MITCHELL — Thank you. When will your findings be available?

The CHAIR — I surmise towards the end of the first quarter of next year.

Dr MITCHELL — Excellent, thanks.

The CHAIR — Thank you.

Witnesses withdrew.