TRANSCRIPT

ROAD SAFETY COMMITTEE

Inquiry into serious injury

Canberra — 6 August 2013

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Dr G. Dolman, head of bureau,

Mr T. Risbey, research manager, safety and maritime analysis, and

Dr M. Harvey, research manager, regulatory reform and investment analysis

Bureau of Infrastructure, Transport and Regional Economics.

The CHAIR — Good morning. On behalf of the Victorian Parliament's Road Safety Committee, I would like to welcome representatives from the Bureau of Infrastructure, Transport and Regional Economics to our hearing today. Thank you for attending, gentlemen. We look forward to your important contribution to our inquiry in the realm of serious injury as part of the ongoing work of the Road Safety Committee of the Victorian Parliament.

You will get a copy of the transcript of today's hearing. Feel free to make amendments to any typographical and factual errors and return it to us. It is envisaged that your commentary will appear on the parliamentary website under the Road Safety Committee. Should there be any remarks that you wish to apprise us of in camera, we can go off the formal record if there did happen to be any thoughts or views that you thought you could wisely convey to us which might help us in our work but which are not necessarily for public domain exposure.

I invite you, Gary, to speak to your submission to us today, following which we have about 14 or so questions that we would like to run by you.

Dr DOLMAN — Thank you for inviting us here today. The Bureau of Infrastructure, Transport and Regional Economics, or BITRE, is the research arm of the Department of Infrastructure and Transport. Our role is essentially to undertake research and produce statistics to support the policy and program development of the department. I note that as the government has now assumed a caretaker role, we will be able to answer only matters relating to facts, but I think that probably covers all your questions anyway.

The CHAIR — I trust that in the national capital that is always the case.

Dr DOLMAN — Yes. Part of our current work is to produce indicators for the National Road Safety Strategy. The bureau has developed a national crash database, which captures key data on crashes, vehicles and people for both fatal and injury crashes. We are working with jurisdictions on standard key definitions to make that database happen. We already report fatality indicators, but in signing up to the strategy all parties have agreed that it would be useful to extend the reporting to serious injuries once a reliable national source of serious injury data has been developed.

My first points relate to your terms of reference (b) and (c), relating to the processes to facilitate accurate, consistent and timely reporting, and best practice definitions and measures. We consider that a common definition of 'serious injury' is currently a missing link in measuring and reporting in road accidents and road safety in Australia. Fundamentally, it would be very difficult for Australia to effectively monitor progress towards the current National Road Safety Strategy target of a 30 per cent reduction in serious injury until we have that consistent definition agreed and being reported on by all jurisdictions.

However, there has been quite a lot of progress in that regard. In June 2010 all jurisdictions agreed in principle that there should be a common definition adopted, which is 'confirmed admitted to hospital', irrespective of the length of stay. This is the same definition that has been adopted by the Australian Institute of Health and Welfare in their series, which has been reporting on national road injuries since 2001. We commend Victoria for using that definition already, and we note that New South Wales and the ACT are also in the process of moving towards that common definition.

However, other states are still in the process of developing their plans to ensure that will be able to meet their commitment to use that common definition. Some of the states have indicated some of the challenges, including having a process to confirm that people who were taken to hospital were actually admitted. Another hurdle is that only some states are currently reporting where an overnight stay is occurring or a stay of more than 24 hours, so someone might be admitted and released prior to that and that is not recorded at the moment.

We also have some unpublished data — we hope to publish it at some point in the future, but at the moment it is unpublished — looking at the effectiveness of a whole range of road safety measures for reducing both fatalities and serious injuries. That covers, for instance, looking at the effectiveness of seatbelts, speed and alcohol testing which are proving to be the most effective measures. It has also highlighted the fact that there seems to be a difference between how road fatalities and hospitalised injuries are travelling. Up until about 1999 both were decreasing as a result of the implementation of those measures; however, since then, while there have continued to be reductions in fatalities, the reductions in injuries have not been at quite the same rate. We are trying to understand what is happening there.

The CHAIR — When do you envisage that study being published?

Dr DOLMAN — We would hope by the end of this year. We are looking at international experience as well as Australian experience in that regard. One of the reasons that we think there might be a discrepancy is that there seems to be an increasing number of injuries to motorcyclists and pedal cyclists that are not being reported through the normal road casualty statistics, but they are coming to hospitals. So particularly in single-vehicle accidents people are going directly to hospitals and being treated but they are not reporting those accidents to the police.

Rather than waiting for a perfect definition of 'serious injury', we recognise that there are different objectives and it is worth taking the best possible definitions for a range of purposes. For national reporting purposes we think that rather than going for the perfect definition it is important that we have a definition that delivers timely results so that we can see what is happening and also a nationally consistent definition.

We are also aware of what is happening internationally, where the international traffic safety data and analysis group of the OECD, referred to as IRTAD, has found that serious injury is often underestimated partly because of the data gaps in reporting serious injury. They think it is important to have joint analysis that involves collection of data from both the police and hospital records. They have recommended the use of a measure called the 'maximum abbreviated injury scale'. It is a bit of a mouthful, but essentially that is a medical diagnosis that rates the seriousness of injuries when people arrive at hospital.

Ideally we would see being developed a system that should automatically capture three key pieces of information for every crash injury: firstly, the admission status, so whether or not someone is admitted to hospital; secondly, ideally, the medical rating of the severity of their injury; and thirdly, the duration of their stay in hospital.

Turning to some of your other terms of reference, regarding term of reference (a), the methodology to identify the cost of serious injury, I just wanted to note that the bureau has a long history of producing reports on the costs of serious injury and road accidents more generally. The most recent report is our publication *Cost of Road Crashes in Australia 2006*, which was actually published in 2010; 2006 is the reference year that we used for the data. I have a copy of that if you would like to have it. I can table that later.

The CHAIR — Thank you.

Dr DOLMAN — This report estimated that the annual cost of crashes was $17.85 billion in 2006, using a modified human capital approach to human losses. It also undertook sensitivity analysis that considered an alternative approach — the willingness-to-pay methodology. That alternative approach increased the value of costs to $27.1 billion a year. That willingness-to-pay value is the value that is cited in the National Road Safety Strategy 2011–2020, which has been agreed to by all Australian governments. Also agreed to in that strategy is that we should move to the willingness-to-pay model as a basis for accounting. The report was also our first crash cost report to use the 'admitted to hospital' definition; that is the definition we favour for regular reporting of injury data.

Finally, with respect to term of reference (d), which relates to reductions in fatalities and serious injuries from different countermeasures and the costs of those countermeasures, I just point to one of our publications: it is the research report that we concluded on the evaluation of the national Black Spot program. That report found that fatality and casualty crashes at treated black spots were reduced by 30 per cent and property-damage-only crashes by 26 per cent. Over the six years that were studied there were 2027 black spots treated. That involved the saving on average of 24 lives a year. In economic terms that program has proved to be very valuable and performed well, with an estimated benefit-cost ratio of 7.7 at a 3 per cent discount rate.

Finally, as you can see today I have Dr Mark Harvey and Mr Tim Risbey, who are the authors of those two reports. Hopefully they can help with some of the more technical questions you might have.

The CHAIR — Thank you. Now it is time for questions. We look forward to your responses, and if there is anything you would like to take on notice and get back to our secretariat on, feel free to do so. We would also value any spontaneous remarks that may complement our terms of reference.

Mr ELSBURY — The committee understands that Australia is one of the few jurisdictions that still uses the human capital approach to calculate the social costs of crashes. Can you explain why this is so?

Dr DOLMAN — As I said, the strategy that has been agreed by all governments is pointing us to use the willingness-to-pay methodology rather than the human capital approach. I think there is a commitment to move to that approach. I think the willingness-to-pay approach is seen to be theoretically a stronger methodology. However, there are a number of practicalities about implementing that approach. We are on the way to moving towards that approach. I think there is value to looking at both approaches together so that you can see the differences between them, because they show different things. Understanding what contributes to both and the differences gives you a greater understanding of the matters that contribute to the costs of crashes.

In terms of moving to the willingness-to-pay approach, you are probably aware that there is an Austroads-funded project that is looking to implement that and resolve some of these methodological issues. The willingness-to-pay approach is also quite expensive. It is quite a large project — I think in the order of $1 million. Again all the states and the commonwealth are contributing to it through Austroads. But it involves large surveys. There are also a number of technical issues that need to be resolved to ensure that there are not biases introduced in that approach.

Mr ELSBURY — Would you like to elaborate on what those methodological issues are and whether or not you think they can be overcome?

Dr HARVEY — For the willingness-to-pay approach the current best practice methodology is to use stated preference surveys where they develop a series of questions in which people have to make hypothetical choices in which they trade off safety against time and money, and that is then subjected to statistical analysis. There is the issue of people making hypothetical choices, called hypothetical bias. That is a concern. There has been quite a lot of research done in the marketing research area on the difference between how people answer these hypothetical questions and how they actually behave. That is one issue.

Another one is: having developed a statistical model of people's preferences you then have to multiply it by numbers of vehicle kilometres to translate it into an overall value. The problem is that with the human capital approach there is a lot less uncertainty, but with the willingness-to-pay approach there is a much greater spread of possible results depending on a whole range of factors, in particular how the survey is carried out and random statistical factors.

Mr ELSBURY — If we were moving towards a willingness-to-pay model just because we do not like how it comes out, we are tempering it. I do not understand why we would be doing that.

Dr HARVEY — No, we are not tampering it.

Mr ELSBURY — Tempering.

Dr HARVEY — Tempering? What you mean by that?

Mr ELSBURY — You have said it comes out as being a very expensive model, but we are mucking around with the formula because we do not like the result.

Dr HARVEY — It is not that we do not like the result. We like the result.

Mr ELSBURY — Okay.

Dr HARVEY — One of the reasons why people are interested in moving to willingness to pay is that it produces higher values, at least for fatal crashes. The problem is that in the Austroads study they estimated that to do a nationwide survey would cost in the order of $1 million, so it is expensive. We need jurisdictions to put in agreed shares. It is quite an expensive exercise. It was pioneered by the New South Wales RTA, which did one several years ago; I am sure you are aware of it. We have the benefit of the lessons learnt from that, but I would say it is just a question of the expense.

Mr ELSBURY — I am glad you raised the fact that New South Wales has moved towards that, because that is part of my next question. Given there is agreement from state, territory and commonwealth ministers to develop a willingness-to-pay value for road crashes, and at least one jurisdiction, being New South Wales as we

have already mentioned, is already using values derived using the willingness-to-pay approach, do you think it is appropriate for Victoria to continue using the current hybrid human capital approach to derive crash costs?

Dr HARVEY — I do not think it is for me to say what Victoria should or should not do. I might point out though that there is also the Austroads guide to project evaluation, which is updated every two years by ARRB in Melbourne. They agreed that they would present unit costs for crashes using both approaches and leave it up to jurisdictions to decide which one they would adopt. Also the Austroads report recommends as an interim measure that we use the RTA values. However, they also pointed out that the willingness-to-pay approach leaves out a lot of the other costs of crashes that individuals do not incur, such as the costs of traffic delays, emergency services and correctional services, which add a certain percentage onto those costs. They should really be added on, and the bureau's report does in fact make estimates of those costs.

Mr PERERA — A number of submitters and witnesses to this inquiry have proposed that Victoria use an interim WTP estimate based on the New South Wales WTP values until a national WTP study is completed. What are your views on importing those values for use in different jurisdictions such as Victoria?

Dr HARVEY — It may be that road users in Victoria have different preferences to New South Wales motorists. Also, the New South Wales surveys are restricted to just a couple of roads close to Sydney. I would not want to use a value that was too different from the bureau's human capital approach, but since the bureau has used the hybrid approach, the gap between the two has narrowed. I myself would not see any major objections to Victoria using the willingness-to-pay approach. Also, given that there is a great deal of uncertainty about this, I think there is some advantage in agreeing on a particular number to use and saying, 'This is the number we will all use'. That way you have comparability between cost-benefit analyses across different projects and different jurisdictions. Do you see what I mean? I am saying that consistency is also important, as well as the absolute size of the number you are using.

Mr PERERA — Any other issues for using New South Wales-specific values?

Dr DOLMAN — I just note that in our report on the economic and social costs of road crashes we do have a table in there that looks at a number of different values that have been calculated using both the human capital method and the willingness-to-pay method. I guess the human capital approach we have produced stands out as being lower than those other measures but not so much so for the cost of injury and disability — more on the fatality side of things, because that is more difficult to quantify. However, the Australian case study also stands out as being at the higher end of those. We have also provided estimates that have been made in the United States, the United Kingdom and New Zealand which fall in the middle of those values.

It is worth pointing out that these things are all measures to estimate the cost of statistical life and the cost of injury. There is no right answer, so these are really just alternative methods that can be used. They all have their own strengths and weaknesses. As Mark pointed out earlier, one of the weaknesses, potentially, of willingness-to-pay is that you are asking people hypothetical questions and they will give answers which might be somewhat different to the answer they would give if they were to actually come up with the dollars themselves. There are ways of correcting that, which I do not think we answered your earlier question with. There are methods to try to correct for those biases that are inherent in the methodology, but I guess there is no way of being absolutely sure that the willingness-to-pay method, wherever the data is collected, is absolutely a pure measure. It is an estimate of something that is quite abstract.

Mr TILLEY — Can I just ask: the table you were referring to — can you tell us what page — —

Mr RISBEY — Actually, probably the better one is figure 3.1 on page 24. That actually summarises individual countries — both human capital and willingness to pay. It is on page 24 of report 118.

Mr TILLEY — Thank you.

Dr HARVEY — I would just like to raise another issue there. If you look at the comparisons between willingness to pay and human capital values, you find that there is a much greater difference for fatal crashes than for serious injury crashes. In some cases, looking at comparisons with overseas, the injury crash values are even lower under willingness to pay. One of the problems there is that with a fatality, it is pretty clear what a fatality is, but there is a huge range of serious injuries, from quadriplegia at one end to, I suppose, just broken bones at the other end. This was a problem they found with the RTA study: the values for serious injury crashes

initially seemed far too low. The lesson learnt from that is that the people who were being surveyed had in mind a much lower level of injury than what the people running the study had in mind, so they actually ended up having to redo the survey a second time because of that.

Mr PERERA — The committee understands that some WTP values comprise both the direct cost of crashes and the WTP values provided by survey participants to reduce their relative risk of injury or death. Do you think it is appropriate to include both direct and WTP costs, or should the WTP value exclude the direct cost of crashes?

Dr HARVEY — What do you mean by 'direct cost'?

Mr PERERA — Direct cost of hospital treatment, property damage — —

Dr HARVEY — I did mention that before — that in the pure willingness-to-pay approach you are asking individuals what they are willing to pay to reduce the risk of a crash. They are not going to take into account the broader societal costs, such as traffic delays, police and emergency services, legal expenses or correctional services. They ought to be estimated separately and added on to the willingness-to-pay value.

Mr PERERA — Several submissions suggest it would be appropriate for the WTP approach to be adopted in Victoria to calculate the social costs of serious injuries if it is also used across policy areas. Do you agree with this statement?

Dr HARVEY — That it should be used across different policy areas?

Mr PERERA — Yes.

Dr HARVEY — I think it is desirable. I might point out that with the Austroads study for which I was project manager, we also asked ARRB what the cost would be of expanding it to include willingness-to-pay values for rail accidents and aviation accidents. They estimated it would cost an extra $100 000 — about $50 000 each. They did not think it was that much extra to expand the questionnaire to cover aviation and rail. I think it is an advantage, particularly from a transport portfolio perspective when you are comparing investing money in different transport modes that we are using and taking a consistent approach to safety. In principle, it could and should be extended further to other areas, such as health, but whether people in those areas would want that, I do not know.

Mr PERERA — Would there be any ramifications of adopting the WTP approach in the road safety area if it is not used in other policy areas? For example, might we disadvantage policy areas which do not use WTP when allocating resources?

Dr HARVEY — What sort of other areas were you thinking of?

Mr PERERA — Any other area.

Dr HARVEY — Such as health?

Mr PERERA — Health, disability.

Dr HARVEY — It could have implications for the overall level of resources that governments put into health and infrastructure and other areas, and they are normally high-level budgetary decisions. In principle I think it makes a lot of sense, but you also need to take account of the fact that people put different values on willingness to pay to avoid dying in different ways. We find that even with aviation versus road; the value people would put on avoiding dying in a plane crash is much higher because people have a stronger aversion to dying together in large numbers and when they are not in the driver's seat and do not have control. That seems to make a difference. When you compare that with dying of, say, cancer in the health area, I am not sure how that would come out; I am not a health economist.

Dr DOLMAN — I think in practice, though, it is unlikely to make a huge difference. I am not fully across the methodologies the Victorian government uses to assess different investments — road investments versus, say, an investment in health — but I think it is unlikely that you are using directly comparable methods anyway. It would only be an issue, I think, if you were using cost-benefit analyses on a similar basis to make those

decisions. Using the value of a statistical life that was higher for road infrastructure investments in one case and a different value of life in health investments — that is where it could potentially make a difference, but I suspect that in practice that is not exactly how decisions are made.

Mr PERERA — Is your implication that the same values should not be used?

Dr DOLMAN — Ideally, in a pure world, the same values should be used — sorry, the same methodology to assess the values because, as Mark said, people might place a different value of dying in hospital to dying in a car crash, but you could potentially use the same methodology, the willingness-to-pay methodology, to calculate the value of a statistical life that is then fed into a pure process of calculating the benefits and costs of each of those projects and then have a decision-making process that works purely on that benefit-cost analysis. But in practice that is not exactly how government decisions are made. It is one of the inputs that goes into it, but there are also a range of other inputs that go into how governments decide about how much they invest in health and roads. I suspect that in a lot of cases there is no direct comparison between those projects — there is a separate process that decides how much is invested in projects in health and then a different process operates for roads.

The CHAIR — In your view, what is the most appropriate methodology for determining WTP values — for example, revealed preference, stated preference, contingent valuation et cetera? Which of these provides the most robust WTP value?

Dr HARVEY — With the Austroads study, the consultants, ARRB, interviewed a number of Australia's leading practitioners in survey methods, and it was universally agreed that the stated preference method is the one that we should follow. I think the contingent valuation approach has, to a large extent, been superseded by stated preference. With revealed preference data, you have to find a specific incidence where people are actually trading off, say, time against safety. It is difficult to find a specific case of that and come up with a result that you can feel confident can be applied across the board. I would say that the consensus of expert opinion is stated preference methodology, based on that Austroads report.

The CHAIR — Thank you. The committee notes that the WTP values derived in New South Wales were based on survey participants responding to reduction of risk questions in relation to serious permanent injuries. Given that Victoria does not use that definition, nor is it clear what injury scale this definition is based on, do you think that it is appropriate that the New South Wales WTP values are used in Victoria?

Dr HARVEY — Again, I would expect them to be not wildly different from the human capital approaches. If they were, then I would be concerned about them. They are much higher for fatals, which we expect, but the difference for the serious injury crashes is not so great. I have also mentioned that there may be some differences in preferences, willingness to pay by Victorians, as compared with the particular New South Wales road users who were surveyed, but we do not know in what direction that would go. I would see no serious objection to Victoria using the New South Wales values in the interim. In the longer term, though, I think the approach recommended in the Austroads report would be better followed, where we agree to fund a national survey.

The CHAIR — Thank you. I now invite Mr Tilley to run through a number of questions.

Mr TILLEY — Thanks, gentlemen. I have a number of prepared questions for you, so I will be reading off the sheet. By and large you may have already addressed some of those questions. I am trying to get some plain English and practical examples that you may be able to apply to your response. What, if any, would be the impact of using the willingness-to-pay values to assess the social cost component of transport projects if other component costs such as travel time and congestion are not calculated using the willingness-to-pay model — that is, would the adoption of willingness to pay place safety considerations above other considerations when assessing transport projects?

Dr HARVEY — For most major road projects, the safety benefits are a fairly small proportion of the total. Certainly for non-urban ones, where you are talking about 3 to 5 per cent. It may be higher for some of the urban ones. My feeling is that even increasing the value of safety is not going to make a great deal of difference to the benefit-cost ratios. Also, the willingness-to-pay approach has its greatest impact on the value of fatal crashes, and they are a tiny percentage of total crashes. My view is that I do not think it is going to make a great deal of difference.

There is a separate category of project, black-spot projects, in which safety is the main benefit. It will increase their benefit-cost ratios, but unless governments decide to put more money into black-spot projects and take it away from other projects, it is not going to affect the allocation of resources. I think some of the road safety advocates are hoping that this change to willingness to pay will make a great difference in how road projects are prioritised. My feeling is that they will be disappointed.

Mr TILLEY — What about some of the social considerations in this model, such as congestion and those types of things?

Dr HARVEY — The other benefits from road projects are primarily reductions in congestion and savings in time and vehicle operating costs. For most road projects that is the main objective of the project, and safety tends to be a secondary consideration, although it is generally a benefit. They constitute the bulk of the benefits, and changing the value for safety will not make a great deal of difference.

Dr DOLMAN — I think it is worth also saying that these two things are not necessarily in conflict. Most projects improve both travel times and safety, so there is often no inherent conflict between the type of project that you fund that will deliver both outcomes.

Mr TILLEY — Moving right along, if I may indulge you, gentlemen, organisations have name and structure changes from time to time. So that I can better understand when I ask the questions, how long have you been providing expert experience and knowledge? You had a name change from the Bureau of Transport Economics. I just want to try to get a bit of a feel before I go onto the next question.

Dr DOLMAN — Sure. The bureau has been in existence for over 40 years. It was established in the early 1970s; 1971 it was established. It was originally called the Bureau of Transport Economics. It is the same organisation. At various times we have had different things added into the name, but it has always had 'bureau of transport' and 'economics' in there. 'Infrastructure' was added in 2007. I think 'regional' was added prior to that, in around 2000 or something like that. Communications has been part of our responsibility I think for only about two or three years of the bureau's existence. Personally I have been at the bureau since 2007. I think I am the most recent arrival. I think Mark has been there longer.

Dr HARVEY — I arrived in 1990. I am a specialist transport economist. That is what I have done throughout my entire career.

Mr RISBEY — It was 1994, actually, so we have all been here a while.

Mr TILLEY — Terrific. Given where I want to go with this next question specifically, at least two of you gentlemen may have some experience with a staff paper back in 2005, when it was the Bureau of Transport and Regional Economics. Before I go on, I do not know if you are familiar with the paper entitled *External Accident Costs of Motor Vehicles Revisited*.

Mr RISBEY — Yes, and I think there have been at least five other reports that we have done over this. The one which we based our report 118 on, our starting point, was actually report 102, which I think was published in 2000. I know Johnson Amoako, who actually worked on report 102. Was that staff paper from 2005 from Dr Johnson Amoako or was that from someone else?

The CHAIR — Lyn Martin.

Mr RISBEY — Oh, yes. I know Lyn Martin.

Mr TILLEY — Sorry, I am not trying to confuse you. I am trying to set up the question.

Mr RISBEY — I am just trying to put that in context, where the methodology comes from.

Mr TILLEY — I simply refer to a quote from the author, saying:

> An 'economically correct' approach to road safety would involve some mix of safer roads, safer cars and safer driving with the level of expenditure on each option stopping at the point where the marginal returns were equalised across the options.

It was a staff paper given by Lyn Martin to the 28th Australasian Transport Research Forum between 28 and 30 September 2005, and the quote appears on page 1. My question in relation to that statement is: are you able

to expand on these comments, particularly with reference to government balancing its resources to deal with road safety risks and the point at which those resources might be better spent dealing with other injury risks?

Dr HARVEY — I do remember the paper. I do not think I have read it, but I discussed it with the author when she was in the bureau. The advice given there is the standard textbook economist's approach to things. If you have a given sum of money and you want to allocate it to different policies, then you would want to look at what benefits $1 gives you in each of the alternatives — the marginal benefit, if you like. In this case we are saving costs, so it is marginal costs being saved. If one policy option gives you a higher marginal benefit than another, then you should divert resources into the one where the highest is. When they are all the same you have the optimal allocation of resources.

I think it is sound advice, if you are considering a given amount of money for safety, to look at the different options. You have a range of policy options, including spending on infrastructure and education and also spending on enforcement. A greater police presence can improve safety. Changing speed limits imposes costs on people, with slower times, but improves safety. You can also compare that extra economic value to improved safety with spend, putting resources into alternative uses as well. That is the traditional textbook economist's approach to resource allocation problems.

Mr TILLEY — Following that up, given that all Australian jurisdictions have adopted a Vision Zero approach to road safety, is it possible to follow the economically correct approach to road safety referred to in this excerpt?

Mr RISBEY — Are you referring to the national road safety strategy there? The target reduction was, I think, a 30 per cent reduction in fatalities and a 30 per cent reduction in serious injuries.

Mr TILLEY — Yes.

Mr RISBEY — I think it starts by saying that no road trauma is acceptable, but in terms of the target, they are the targets in the document. Is that the context?

Mr TILLEY — Yes. I think Western Australia in particular is making that statement.

Dr HARVEY — I have spoken with Lyn Martin, the author of the paper you referred to earlier, about Vision Zero. I suppose the problem that she and other economists have with that is that we do not put an infinite value on human life and safety. If we did, we would give up driving altogether; it is too dangerous. While safety at any cost sounds good and it sounds very ethical, in practice we are going to accept a certain level of risk. We just cannot put unlimited resources into and make unlimited sacrifices for safety.

Dr DOLMAN — I might add, too, that the points that were made in that paper are actually quite consistent with the national road safety strategy. Essentially we are looking at a holistic approach — looking at safer roads, safer vehicles, safer drivers et cetera. These tools that we have been talking about are really just looking at how you allocate those resources to achieve those ends in an optimal way.

Mr TILLEY — Thank you. Moving on and referring to the recent paper that you referred to earlier, the committee understands that BITRE is working with jurisdictions to develop a consistent set of data in a national crash database, referring particularly to page iv of *Social Cost of Road Crashes in Australia: the Case for Willingness-to-pay (WTP) Values for Road Safety*. You probably have that document in front of you; you have been talking to it. Are you able to provide an overview of this work and explain whether such a database would include medical as well as crash information? I heard you speak before about some of this stuff.

Mr RISBEY — Yes. Working with jurisdictions, as it says here, we have actually got crash information back from 2008 to 2010, being the base period for the national road safety strategy. All jurisdictions have provided information on the crash, both the vehicle and the people. It is not everything, so unlike some of the ARRB work, which basically gathers all the crash information, we gathered enough information to report on the indicators which, at least in terms of fatalities, have already been agreed for the strategy — for example, seatbelt use and speed, if it is known, key variables around those sorts of things.

We have got out to all the jurisdictions a technical paper talking about the definition of a crash, how you would go about standardising things like seatbelt use and vehicle types. There is a huge variation in vehicle types.

There is a lot of interesting information but, if you cannot compare it, it is useless. We have put that database together and the results were in the implementation report for the strategy, which is on the web. I think it is at the back of that. They are just basic indicators: numbers of people killed; numbers of young people, old people; seatbelt use; crashes involving people who were over the limit. They are those sorts of basic indicators of both drivers killed and, where appropriate, people killed in crashes involving those factors. We built that database and we have put location information, GIS coordinates, with that and road types — all that sort of basic information that is useful in deriving the sorts of indicators that will be useful for the strategy.

Dr DOLMAN — I might just add, in terms of the specific questions about injuries, as I said in my opening statement, we are trying to work to a common definition of 'serious injury' equalling 'confirmed admitted to hospital, irrespective of the length of stay'. That is the information that we are trying to get from states. We have not actually achieved that for all jurisdictions yet, because there are some problems in all jurisdictions meeting that definition. It is one that Victoria meets and New South Wales and ACT are looking to meet, but other jurisdictions have raised issues about how they currently collect data, that it does not quite match that definition. It makes it very difficult to compare what is happening state to state without a common definition. So we are still quite a long way off, I think, from moving to the ideal where you might have some score about how seriously they were injured based on a medical assessment at the time of admission. Ideally we would love to be able to have that in our database, but we have a long way before getting agreement on a consistent lower level definition before we start moving to that more detailed information.

Mr TILLEY — We talk about speed in every jurisdiction around the nation. In some of the conversations in relation to speed it is all evil; it is the causation factor in the vast majority of our serious injuries and fatalities. Speaking from practical experience, I represent a country electorate where we have significant distance, and we are seeing that the nation is getting smaller. Our infrastructure is changing. We talk about speeding in built-up suburban, metropolitan and city areas, but also travelling from a major regional centre on a major national highway. We take into consideration a lot of the work that is done overseas, where we see other countries where speed limits are significantly higher than this nation. The incidence of crashes and fatalities on those roads is not that necessarily significant.

Probably one view, if you are able to, is that some of our infrastructure is actually built for capacity to take higher speed limits. For example, my understanding is that the Hume Freeway would have a capacity to be able to increase its passenger vehicles to some extent. Do you have a view in relation to specifically where you do not have the congestion and other issues in built-up areas compared to travelling and making this nation a bit smaller? We have also had debates about fast trains and getting from point A to point B quicker and those types of things, but what about regional centres and getting to major cities? We have seen an increase where I live, on the border of New South Wales and Victoria, such as the major build-up of the city of Wodonga, where now you can travel to the nation's capital in the same time it takes you to drive to Melbourne, with the projects there.

Dr HARVEY — Speaking as an economist, you can take a cost-benefit analysis approach to that question. You can ask, 'What is the value of the time and vehicle operating cost savings of the increase in speed?'. Then you can make an estimate of the cost of the extra crashes and multiply them by your values and see how they compare. But it goes back to an earlier question you asked about Vision Zero. I suppose there is an ethical question here: are we willing to accept this cost for this greater benefit? There is also the issue of enforcement. Even though we have speed limits, a lot of people do not stick to them. I just thought I would throw that in.

Mr TILLEY — I can speak from practical experience; I spent a number of years on the highway patrol.

Dr DOLMAN — I might add as well that in the unpublished work I spoke of earlier we are looking at long time series and the effects of different strategies that have been applied. We are looking at that jurisdiction by jurisdiction for Australia but also internationally. Essentially that shows where there have been periods of increased speed limits. I think the Victorian government had a period when it increased speed limits. I know the New South Wales government also had a short period when speed limits were increased for certain classes of road, and you do actually see an increase in fatalities during those periods. I think those things do have implications.

The only thing I would comment on is that from our international comparison the one thing that does stand out for Australia is that we tend to have actually relatively high speed limits not on divided roads, where we are with most other countries, but on two-lane country roads, which are probably in your electorate. That type of

road, relative to other countries. A number of other countries that have decreased both their fatality and serious injury rates have actually had a systematic process to decrease speed limits. We also see from the fatality statistics we look at that there is actually an increasing trend in single-vehicle accidents on country roads, so that is one type of accident that has been increasing over the last decade or so. I guess there are a number of challenges around that, and, as Mark said, it is always a trade-off. You can increase or reduce distances by increasing speed, but I think there is significant evidence that that does come at higher road tolls and higher injury rates.

Mr TILLEY — As I said, gentlemen, that was a bit of an indulgence, but, if I may, one more is that there is something in this nation, particularly in the Victorian jurisdiction, with the economic approach and the compatibility of our motor vehicle fleet. Given our small, medium and four-wheel-drive vehicles and the impacts in relation to that, do you have any comment that might be able to assist the inquiry in relation to that?

Dr DOLMAN — I think we have done some analysis on that; I just cannot recall that. I know it is an issue, and definitely where you have a fleet that has greater diversity in size of vehicles you end up with more serious accidents, clearly. Trucks and small cars are the obvious example, but I think it applies no matter what the diversity is. The system is safer if you have vehicles of a similar size or, particularly, mass. We might have some further information, unless you have anything to add — —

Mr TILLEY — Yes, because, if I may add, some of my concerns and observations, when you see the fleets from overseas and everything and see our fleet in various jurisdictions of the nation, are that it is quite diverse compared to other parts of the world, yet we take on board a lot of the studies and the research from overseas, where their fleet is completely different. When you are taking your modelling, it would have maybe some economic disparities.

Dr DOLMAN — It does, and that is why we essentially just use Australian data. Where we can we try to draw on international experience, but we recognise the differences. That also applies to some of those studies on speed as well; often the very countries with the highest speed limits or unlimited speeds, such as Germany, have very good road networks as well — large networks of divided roads, which are less common in Australia.

Mr TILLEY — Thank you.

Mr ELSBURY — Another one of these prepared questions: a recurring theme in this inquiry is the impact of the severity classification on the calculation of crash costs. Currently Victoria and other jurisdictions use a police definition of 'serious injury'. The proxy used for 'serious injury' in the police definition is a hospital admission; however, this proxy does not provide an injury scale and has been described as a blunt resource-based measure. A majority of the participants in this inquiry believe that a serious injury measure in Victoria should be replaced with the ICD-based injury severity score, ICISS, a threat-to-life measure. In your view, how critical are injury definitions in assessing crash costs?

Mr RISBEY — Just referring back to the cost of road crashes and report 118, when we looked at the serious injury costing we actually did quite a bit more than we had previously done. We were fortunate enough that the Transport Accident Commission actually provided us data giving us profiles of injuries. I think it was by type of injury; I cannot remember whether there was a severity rating. The officer who did this particular piece of work has left, unfortunately, but we did actually take into account both the severity and the disability weightings. When we actually did the human capital, which I think Victoria still uses, we actually took it on board from a degree of severity in order to calculate the values. Of course we do not know who has been killed or injured, so when you are actually deriving numbers for the cost-benefit analysis you use a standard definition — and, yes, we did use 'admitted to hospital', which is your own definition.

One of the consequences, by the way — you may be aware of it — was that compared to the previous report it actually reduced the value of a serious injury. I know that there are some people not very happy with that; however, it was a 24-hour admission definition that was previously used. I think, when I looked at it, it reduced it by about 30 per cent — the actual value of a serious injury was defined as 'admitted' only. So that was roughly the order of magnitude, from memory. Obviously the definition affects the value.

It is not true to say that we did not take on board the injury types and the severity. We did our best to look at the types of injuries and do disability weights. In fact, we looked at both. Obviously they had an injury, but after six months was the definition we took. The ABS definition of 'disability' kicks in at six months. Then we looked at

degree, whether it is a limb or traumatic brain injury or spinal injury. So we actually looked at the sort of level of expected disability results and looked at a lifetime profile for the people. Basically, you group that all back together and derive some values. Yes, they are blunt, but also we put in there — I think it is severe and profound disability — numbers which are probably quite low. It is up the front, in the executive summary:

> Estimated losses from a person suffering a profound impairment were $3.82 million —

which is essentially higher than for death. I know that there are awards made by the courts that are much higher than that for those types of injuries. So there is the opportunity for people who want to use them. If you know more about your crash types and the locations and the types of injuries that you might be preventing through your black-spot program — pick a program — you can actually use different values if you actually know more about the types of crashes.

Mr ELSBURY — Would you have said that if we had had an ICISS rating that would have changed the methodology you would have used?

Dr DOLMAN — No. I think it is probably worth saying that there are two aspects to this. When it came to doing the detailed analysis for the cost of road crashes, as Tim was just describing, we were able to get that detailed information on different types of injury and severity of injury, because we were able to go back to crosschecking hospital records, so we were not using just the police records. However, when you are collecting routine statistics, there are some other issues. You want timely information and you want information that is comparable with information in other jurisdictions and internationally, so there it is more challenging and that is where we use the police records. As I said in my opening statement, we are keen to get everybody on the page, I guess, to have at least that level of reporting.

However, we do see benefits in moving to a system of routine reporting that has some estimate of the seriousness of the injury, so a medical assessment of the seriousness of the injury. The problem with that, though, is just the resources that it takes to be able to get that. So somehow you have to create a connection back between the police reporting and the hospital reporting and you have to have quite detailed reporting from the hospital in terms of them rating the seriousness of the injury and collating that all back into a common set of data.

Mr ELSBURY — So having a central data collection system would assist in that?

Dr DOLMAN — Yes, definitely.

Mr ELSBURY — Similar to what WA and New Zealand have, where they collect everything together and churn out a set of figures?

Dr DOLMAN — Yes. That seems to be one of the problems with the systems and where states are struggling at the moment to be able to report. They do not have a connection between the police reporting around the vehicle and other aspects of the crash and the hospital reporting what happens to the person when they come to the hospital.

Mr RISBEY — Can I just add there that about four of the jurisdictions do not have a process to confirm admission, so they just know that a person was taken away in an ambulance. It might be that 30 or 40 per cent of those people taken away in an ambulance were not actually admitted. If you look at their definition of a serious injury as taken to hospital, their numbers will be 40 per cent higher than Victoria's.

The CHAIR — I will just interpose with another question, which is: would Victoria only use the BITRE costs if our definition remained broadly aligned with the definition used by BITRE? To put it another way, if we were to recommend ICISS, would we need to remain aware that BITRE costs may not align?

Dr DOLMAN — I am not sure we have enough information to be able to answer that. Maybe that is one we could take on notice, if you like, and look at the differences. I am not familiar enough with the system that you are talking about to be able to say whether or not our approach in the detailed report aligns with that other system.

Mr RISBEY — Can I give a preliminary answer? In terms of what we have here, in terms of just human capital costs, we costed a hospital admission. We took the Australian Institute of Health and Welfare national

numbers, even though they are up to five years out of date, in terms of the total number of people admitted, because they estimate a number for national and it is admissions. So we did actually cost that; we costed it on the basis of admission. As I said, the consequence was that for some jurisdictions that had a different definition it actually reduced the cost of a serious injury. Does that answer the question?

It was basically an admission — the reason being, by the way, in terms of discussions with jurisdictions, Victoria included, that it was generally thought of as being for reporting purposes. This is what it is for. What we are doing in the crash database is quick reporting, within six months or nine months into the actual year, of some base level number of serious admitted-to-hospital-type injuries. That is the objective so that within a reasonable time frame, if there is a significant increase in numbers of hospital admissions, then processes can be put in place to address that. I mean, that is where we want to get to in terms of the reporting.

Mr ELSBURY — Just going back to the willingness-to-pay studies, considering that we already have information from New South Wales and that a number of people who have come to submit to the inquiry have said that it is quite reasonable to extrapolate across the whole country, what impediments, if any, would you see to completing a nationwide WTP study?

Dr DOLMAN — Essentially, that is the study that is under way through Austroads.

Dr HARVEY — It is not actually under way. There is a scoping study. When the jurisdictions find the money to do it, that is something for the future. The report makes the recommendation that we use the New South Wales values in the interim. I might point out, too, that Australia is fortunate to have some of the leading academic researchers in the field of stated preference surveys, at the University of Sydney and the University of Technology, Sydney, and they were interviewed for this report. I think we are well placed to go ahead and do such a study, but, as I said, we need to find the funds for it.

Mr ELSBURY — I am going a little bit scattergun here, but you said that in jurisdictions where speed limits have been increased there was an increase in the number of fatalities occurring. I am just wondering whether there is any information available that would show whether it was due to increased speed or because people felt that they could just drive faster anyway and whether there were more excessive speed crashes because of the increase.

Dr DOLMAN — I do not think we have that detail. At the moment all that we have observed is that in the long-term history of the fatalities in a particular jurisdiction you can see the point and you know when the speed limit was increased and then decreased again at a later point in time and you can see that there is an increase in the numbers of fatalities that occurred throughout that period and that it dropped back down. So it goes up. It is only a small amount, but it is a large enough change that you can observe it in both New South Wales and Victoria.

Mr RISBEY — That is adjusted for the kilometres travelled.

Mr PERERA — In addition to suggestions for a new serious injury measure based on a threat-to-life measure, there has been a suggestion that Victoria introduce an injury outcome or disability measure such as disability-adjusted life years. Given that an outcome-based measure could take an extended period of time to compile, how would costing models such as the human capital approach deal with such a measure when calculating crash costs?

Mr RISBEY — As you are well aware, there are different methodologies for costing injuries. I think for high threat the numbers I have seen indicate around 25 per cent. Personally I think the numbers of high threat to life have been increasing since we looked at this in 1996 versus 2006. At least in the official reported crash statistics it is pretty clear that there has been an increase in the degree of seriousness of the injuries. I think that was fairly clear when we looked at this. It shows up in the ABS figures; to the extent that that information is there, it shows up there as well in terms of numbers.

I come back to the point when we looked at and took on board different methodologies. In terms of losses — the costing bit — we took into account the level of impairment, so a form of disability-adjusted life year. For example, for traumatic brain injury there were a couple of reports — one on spinal and one on traumatic brain injury — that we looked at. We looked at the outcomes of people who have that type of injury. We knew the

numbers, roughly, and estimated the numbers of the most serious types of injuries and the outcomes. We actually took that on board.

We looked at the profile of losses. About half of the people with traumatic brain injuries seem to have some degree of recovery and the other half do not, in terms of clinical outcomes. We took that on board in terms of the disability-adjusted life years. When we were looking at people long term, over 20 or 30 years, we took that weighting into account. Previously it was quite blunt. Back in report 102 they said, 'If you have a serious injury, you've lost 100 per cent; if you have a minor injury, you have lost 5 per cent or 10 per cent'. There was this blunt approach. We did not take that approach. We looked at a profile of injuries and we took on board the disability-adjusted life years and the weights for different injuries that people suffered.

We all crunched that down and got a number. It is true that you may not like the number, but in terms of the severity, as I said, you could use a $3.4 million or $3.5 million number if you are talking about a traumatic brain injury that results in permanent incapacity. That is probably quite low. That might also be the case for spinal injury or quadriplegia. There is scope within what we did. If you know more about the crashes you are preventing, you use different numbers as appropriate.

Mr PERERA — So is it an estimation based on historical data?

Mr RISBEY — Yes.

Mr PERERA — So in the future when the science and technology develops that could be different?

Mr RISBEY — Yes, it changes. In fact you see that in terms of the profile of fatalities and serious injuries. It is quite clear — and you would be aware — that fatality numbers have generally been coming down, at least up until last year. But serious injuries, from what we can tell, have actually been increasing. That is a function of all sorts of things, including vehicle technologies and better roads and everything. That is why people like to take the 2006 number and then just add inflation to it. But when people do that I caution them that they have to look at the change in both the reduction of fatalities but also the increasing severity of the serious injuries.

Mr PERERA — Thank you.

Mr TILLEY — Before I ask the next question, for the propriety of the witnesses and the further evidence we are going to hear, I have a small request that we might just clear the room. The next witnesses may already be in the gallery. I would like to ask a question that will not affect the inquiry, if that is all right.

The CHAIR — Yes.

Mr TILLEY — In the context of countermeasures it has been identified from submissions that it is difficult to specify the cost-effectiveness of individual measures. We have spoken about ABS, and EBS has been sold to the nation by original manufacturers as the silver bullet — those types of statements. How does this work at a policy level, where the allocation of resources and priority settings are sometimes based on comparing the cost-effectiveness of individual road safety measures?

Dr DOLMAN — To some extent our black-spot evaluation did include that. That included just over 2000 different treatments of a whole range of different types. What we did as part of that evaluation is look at the effectiveness of the different treatments, including the cost-effectiveness. That was done on a cost-benefit basis. We could tell how many accidents were prevented and which treatments were most effective in preventing those accidents, and we also had a measure of how much those measures cost.

Mr TILLEY — It would be fair to say that 2000 treatments is quite a large list. Are you able to take into consideration what some of them would be?

Dr DOLMAN — Do you want to talk to that?

Dr HARVEY — We developed a list of separate black-spot treatments, including things such as roundabouts, traffic signals and median strips, and derived measures of their effectiveness for reducing crashes of different severity levels. We also obtained information on the costs of implementing the treatments and worked out benefit-cost ratios. For a small subset of intersection treatments we even had a look at the traffic delay costs and benefits as well. We did not do that for all of them because it is quite difficult. I am currently

managing an Austroads project to develop a spreadsheet tool that will estimate the traffic delay costs of intersection treatments in order to compare that with the safety benefits and to give you a broader approach to developing black-spot programs.

Mr TILLEY — So some of them are education programs.

Dr DOLMAN — Yes. The black-spot ones, of course, are narrowly targeted at a specific bit of infrastructure. Then we had the nationwide or statewide policy changes. In principle you can assess them in the same way. You would probably want to get statistical studies from overseas to see what effectiveness they have had there, or you could look at past data. There is another researcher at the bureau who has been looking at the effectiveness of seatbelts. You can look at that in hindsight and see what effect that has had. You are taking out all sorts of extraneous factors as well as statistical methods to do that so you can zero in on the exact effect of that measure. If you have information available from overseas or from past experience, you can get an idea of their effectiveness in reducing crashes and you can do the cost-benefit analysis.

Mr TILLEY — So there has not been a lot of the detail when it comes to, say, airbags? The fleet has had a significant change. ABS has been with the fleet for quite a number of years now.

Dr HARVEY — Electronic stability control.

Mr TILLEY — ECS is a new phenomenon. The jurisdictions are mandating these types of things through ADRs.

Dr DOLMAN — We are looking at that through that long-term study I have spoken about. That shows that the really big things that have happened since the 1970s have been seatbelts, random breath testing and enforcement of speed limits, so essentially speed cameras. They are the three big things that have made a significant difference. The individual changes to vehicle technologies do not really show up in that data — the long-term trends. However, you do see things like the different rules that apply to drivers once they have their P-plates, which have made a difference as well, and to some extent you can see differences in how those have applied internationally — —

Mr TILLEY — So the graduated licence schemes.

Dr DOLMAN — Yes. You can see reductions. A number of states and a number of international jurisdictions have applied restrictions on younger drivers, and you can see how effective those have been. New Zealand is a case in point, I think, there. However, as part of the introduction of the Australian design rules, for example, for the electronic stability control there was a detailed analysis done to look at how effective that was as part of the regulatory impact statement that was done prior to the decision being taken to introduce that.

Mr TILLEY — So what about private organisations and groups that by and large may be funded by the taxpayer from jurisdictions or nationally? Does the ANCAP rating system, for example, ever play in that field — the influence it may have on the economic considerations and the information they put up?

Dr DOLMAN — I do not think we have the expertise or the experience to be able to answer that one.

Mr TILLEY — All right. I just ask the question. Thank you.

The CHAIR — Can you discuss cost-effectiveness in terms of countermeasures other than road infrastructure treatments — in terms of enforcement, training, licensing and other countermeasures?

Dr DOLMAN — Probably not in much detail. As I said, we still have a piece of work that is under way that is looking at that. Definitely speed enforcement is something that you see as being effective in that work. Other parts of our department have done work on developing the National Road Safety Strategy that did look at that in more detail, but we have not actually looked at that. Beyond the things I mentioned — speed enforcement — you can also see, sort of, that the enforcement of random breath tests also makes a difference, and some of those new laws applying to younger drivers have also been seen to make a difference. Overseas there is some evidence that lowering blood alcohol limits has also made a difference. I think in France and some of the Scandinavian countries they have made changes that lower the road toll, and — —

Mr TILLEY — If I can interrupt, it would be fair enough to say that that would be a notion of social attitudes to the consumption of alcohol as well. That would have a significant difference on the outcomes in this nation.

Dr DOLMAN — There is actually an interesting example. I think it was in Finland where they introduced — this was in the 1970s or 1980s — random breath testing but never actually followed up with any enforcement. You saw a very interesting pattern where the number of accidents went down initially, and then people worked out that it was not being enforced, so they went back up again. Then they started to enforce it. There are some interesting big experiments you see when you start to look at how policies have been implemented across different jurisdictions.

The CHAIR — Good. Thank you. During public hearings in Sydney yesterday the committee was told that in some road safety projects the benefit-cost analysis comprises 10 per cent of the project assessment, with the remaining 90 per cent being based upon WTP. Is this an appropriate way to assess projects on a conceptual basis?

Mr RISBEY — I am not quite sure I understand that.

Dr HARVEY — I am surprised to hear that.

Dr DOLMAN — Normally willingness to pay is one of the methodologies that comes into play when you are calculating the benefits for a benefit-cost analysis, so I am not quite sure what they were talking about without having seen their submission or read their statement.

The CHAIR — Noted. We can follow that through further in correspondence.

Dr HARVEY — It may be the point that when you are assessing projects, the cost-benefit analysis is just part of the process. There is the environmental impact statement, there are legal assessments, financial, strategic merit tests. There is a whole range of ways in which governments look at projects besides cost-benefit analyses.

The CHAIR — Yes, all right. A further question: in your view, what is the most accurate way to calculate the value for risk reduction of a serious injury? For example, is it feasible to derive this value based on a fraction of the cost of a fatality, or should it be estimated separately?

Dr HARVEY — There are two aspects. The first one you mentioned is the risk. That is the reduction in the number of crashes. The other one is the costs.

The CHAIR — What is the most accurate way to calculate the value for risk reduction of a serious injury?

Dr HARVEY — Okay. So we are looking at willingness to pay to avoid serious injury compared with a fatal crash?

The CHAIR — Yes.

Dr HARVEY — The most accurate way is to treat them separately, and in stated preference surveys they would do that. They would give people different questions concerning risk of fatal crashes versus risk of serious injury crashes, but, if you are in a hurry, you might make one a proportion of the other if you did not have the information available.

The CHAIR — Thank you. Gentlemen, thank you very much for taking the time to appear before us this morning. As I indicated earlier, you will get a copy of the transcript, and once you have completed a review of it, amending typographical and factual errors, please return it to us. We appreciate the time you, Dr Dolman, Dr Harvey and Mr Risbey, have given to us and the expertise you have conveyed in your answers to the questions. Thank you.

Dr DOLMAN — Thank you.

Witnesses withdrew.