

# TRANSCRIPT

## ROAD SAFETY COMMITTEE

### Inquiry into serious injury

Melbourne — 28 October 2013

#### Members

Mr A. Elsbury

Mr T. Languiller

Mr J. Perera

Mr M. Thompson

Mr B. Tilley

Chair: Mr M. Thompson

Deputy Chair: Mr T. Languiller

#### Staff

Executive Officer: Ms Y. Simmonds

Research Officer: Mr J. Aliferis

#### Witness

Professor A. Harris, director, Centre for Health Economics, Monash University.

**The CHAIR** — On behalf of the Victorian Parliament's Road Safety Committee I would like to take the opportunity of welcoming Professor Anthony Harris to our deliberations and public hearings this afternoon. Evidence that is given to the committee is protected by parliamentary privilege. Any comments made outside the hearing are not afforded such privilege. The transcript will become a matter of public record. Just at the outset, it is helpful if you can introduce yourself prior to speaking, giving your name, your role and whether you are representing an organisation or speaking in your own capacity. You will ultimately be sent a copy of the transcript, and you are invited to correct any typographical or factual errors and return it to us, whereupon it will be placed on the record. You also have the opportunity to make comments in camera — in confidence — to the committee, where we can go off the formal record, and that part of the transcript will not be placed on record.

That is more by way of background information. I welcome you to the committee, thank you for giving your time and invite you to commence your presentation.

**Prof. HARRIS** — Thank you for inviting me. I am Anthony Harris. I am a professor of economics at Monash University. I am the director of the Centre for Health Economics at Monash, where I have been for about 20 years. My experience in road safety is somewhat limited. I was involved maybe 25 years ago in Western Australia, where I worked briefly in a road accident research unit. I have almost forgotten all of that, but I can try to recall some of that if you like.

My expertise, I suppose, in relation to this committee's work has more been in, recently, the economic evaluation of health interventions, particularly pharmaceuticals but also medical devices and general health programs, including prevention programs — falls and so on — which are similar to road safety but not exactly the same. What I can speak more on, if you are interested, are the differences and similarities between the evaluation of programs in the health sector, both in Australia and overseas, and how things are done within road safety and safety in general, because there are some differences and similarities. I can speak a little bit about that.

I suppose my experience in the last few years has been largely in the area of pharmaceuticals. As you know, Australia has a very sophisticated and refined system of evaluating pharmaceuticals prior to their reimbursement in the national subsidy scheme, the pharmaceutical benefits scheme. That involves elaborate evidence being presented on each program — each drug, if you like — including economic evaluation and valuations of health outcomes. The technique that has been used since 1993 has been to assume that what we are doing is trying to maximise a budget for health; so, we have a fixed budget for health, and we are trying to maximise health outcomes where health outcomes are measured by life years saved, adjusted for quality — what are called quality-adjusted life years.

I guess this is in contrast to what has been happening in road safety, which has been using an explicit value for outcomes — a monetary value — and working on the assumption that we can rank programs on the basis of their net benefits. In health what we have been doing is assuming that we have a fixed budget, ranking things in terms of cost per health outcome — quality-adjusted life years — basically running down the list until we run out of money. That has been the allocation process in principle. The practical differences include that we do not have to explicitly put a monetary value on life, which clearly is what has been happening in road safety. Whether we do implicitly is in question — we can talk about it — but not explicitly. It makes it politically easier.

The other issue is that we recognise a constrained budget by this kind of routine economic evaluation of every intervention and looking at its incremental cost and benefits. The disadvantage, I guess, with respect to road safety is that at least in health the outcomes are somewhat singular — it is health — whereas in road safety you may have multiple outcomes, including travel time and other aspects of the road which you take account of. It may well be that the kind of techniques we are using in health may be less appropriate; however, if you are focusing just on road safety, it seems to me they are sufficiently similar that you may want to look at what has been done.

I suppose the other issue I have noticed in your terms of reference might be consistency across sectors. Clearly this is not consistent in the sense that there is no monetary value of life being used in health; it is a cost per quality-adjusted life year. Whether the implicit value that is being used is similar is something I can talk about if you want, but clearly there is no explicit similarity.

The other similarity is that in both cases the philosophy behind this is to look at individuals' values regarding outcomes. It seems to me that in the road safety literature there is a push towards willingness to pay as a measure of the value of life, which is based on individual preferences. In health the so-called quality-adjusted life year is also based on individual preferences. It tends to be done using similar kinds of questionnaires to get at the value of health stakes. So there is a similar philosophy in terms of what counts as individual preferences and trade-offs; however, overlaid on that there is also a social preference about how you then value those individual values. It seems to me that this might be treated differently between the two sectors. I will just leave that as an overview and answer some questions.

**The CHAIR** — Thank you very much.

**Mr PERERA** — Professor, the committee understands that you have been involved in road crash cost research in the past.

**Prof. HARRIS** — Yes.

**Mr PERERA** — Could you provide us with a brief overview of that research and whether any of the findings could be applied in our current investigation?

**Prof. HARRIS** — The research was 25 years ago, so it is a bit hazy in my mind, and also I am not sure how relevant it is now to today's cost. This was work done in Western Australia. At the time — and even now — Western Australia was at the forefront of using data linkage. There were excellent datasets which were able to link individual road crashes through from place to road crash type through to hospital records. We looked at what kind of hospital admissions there were by road crash type.

The paper we published in fact did not use the road crash type; it used AIS, abbreviated injury scale. What it showed was that there was quite a considerable variation in hospital admission costs across parts of the body and by AIS category. That was not consistent in the sense that some parts of the body had relatively high costs for lower grades of injury, whereas others had high costs for high grades of injury. A head injury was the most expensive, and the severe ones were either fatal or had very high hospitalisation costs. The next highest were lower body injuries, but it seems that even the more minor injuries were relatively high in terms of hospital costs. I could not see why that was the case, but clearly it makes a difference what type of crash it is and what kind of injury you have to your immediate hospital cost. The hospital costs were relatively high sometimes — \$14 000 or \$15 000 per hospital stay. This was in 1988, which was a long time ago.

Subsequent work which I was not directly involved in with David Andreassen actually used that data to look at the costs for particular crash types. From memory I think he found that head-on crashes were the ones that cost the most in terms of hospital costs, but we only looked at acute hospital costs, not at long-term costs. I do not know whether that is relevant or how it helps you out. I suppose what it does show is that one can use the abbreviated injury score to map onto hospital records and costs. What we used were the ICD-9 codes, which are hospital admission codes. That can presumably still be done if that is something you would want to do.

**Mr ELSBURY** — Thank you very much for your presentation. Earlier on you did touch on the willingness-to-pay model; you only briefly mentioned it, really. To what extent is the willingness-to-pay methodology used by health economists?

**Prof. HARRIS** — I think it is regarded as experimental. It is not used. There have been a number of studies over the years. I cannot think of a single policy that has been affected by a health economics study that had willingness to pay in it, if we are talking about impact. It is regarded as of high academic value and interesting. There are a lot of developments in its use and an increasing belief that it is perhaps less biased than it once was in terms of its technique, but in terms of its policy impact, no country that I am aware of uses economic evaluation to reimburse or pay for health uses cost-benefit analysis, and therefore it does not use willingness to pay.

**Mr ELSBURY** — Would it be an appropriate method to use?

**Prof. HARRIS** — As I mentioned before, the advantage it has — leaving aside its disadvantages — is that it is, at least in principle, capable of valuing multifaceted outcomes. You are not restricted to a single outcome, so it allows you to balance road safety with other aspects of transport in this context.

In health it would be possible in principle to balance lifesaving/quality of life with convenience, if convenience was an issue. That is where it has been used — in studies looking at: does this new treatment mean that people do not have to come to the doctor as often or do not have to use as many injections as they did before. There are aspects of quality of care in addition to health. I think it has got its benefits there.

The issues, as I am sure you are aware, are that it does not produce particularly consistent results across the studies, that it has the potential for bias in terms of numerous things, with hypothetical bias being the obvious one, because it is a hypothetical scenario; it is not a real one. By and large anyone can use actual studies — wage studies of course and travel cost studies — but most of the literature is based on hypothetical questions that people are asked. You are always open to bias, not just in terms of the way people respond but the way in which you frame the questions. In any of these surveys you are limited by what you can possibly ask people, the scenario you draw up. Any scenario is a snapshot of what you are trying to ask, so in that sense there is some bias built in.

**Mr ELSBURY** — Do you see a way of managing the bias by using different determining values of the willingness to pay, such as revealed preference, stated preference or contingent valuation? Do you see any strengths in either of those types of weighting of the question?

**Prof. HARRIS** — My understanding of revealed preferences is that would not really be a questionnaire; that would be based on, say, a wage study where you would look at differences in wages in risky and non-risky occupations or look at choices people made about travel time — actual choices they made with known risks. There the biases are more in terms of the context. So you ask someone, ‘How much premium do you need to work down a mine?’. You ask how relevant is their answer to that question, and how much are you going to pay to travel down the Tullamarine Freeway knowing what the risk of death is? I am not sure those contexts translate, so there is that kind of bias there.

In terms of what you call a contingent valuation or discrete choice, they are pretty much the same thing. They are asking people hypothetical questions about hypothetical scenarios. You can make them as realistic as possible. You can ask people who have experience, which is helpful. I do not see any point in asking people about how much they value yellow parrots when they do not ever go to the Amazon to see yellow parrots, or wherever these things are. But if you ask them questions about the road they travel on, then I can see that at least you are minimising that kind of bias. I think you have to make the context as real as possible to the persons answering the question. They have to have some experience of it; otherwise I am not sure it is really very valuable.

You have to have the relevant factors in there that they are considering, which I think is difficult, and you have to be able to test that they are thinking about things you are asking, because I think a lot of people just ask questions and then do not test to see whether what the person was thinking was what they were answering the question on or whether it was some emotion you had about the time.

I think there are things you can do, but I remain a bit of a sceptic, I guess, about how ultimately useful they are at this stage. I think that is probably how I would summarise it.

**Mr ELSBURY** — I suggest you get comfortable here. I have got a bit of a monologue before we get to the end of this question.

**Prof. HARRIS** — That is okay.

**Mr ELSBURY** — What are the ramifications, if any, from adopting the willingness-to-pay approach used by transport economists in the road safety area if it is not used in any other policy areas such as health? For example, the committee is aware that the value of a life year in the road transport area might be substantially higher than the equivalent amount used to assess the therapeutic drugs as part of the pharmaceutical benefits scheme. Do you think the use of willingness to pay in one area or a higher willingness to pay derived from the value of a life year amount might disadvantage policy areas that either do not use willingness to pay or do not share the same value of a life year amount?

**Prof. HARRIS** — I get the question.

**Mr ELSBURY** — I am tired after asking it.

**Prof. HARRIS** — In a sense there is not really a technical answer to that one. It is true that throughout public expenditure there are different values for almost everything. In a way I am not very qualified to answer that one. It depends on whether people are prepared to live with inconsistency and also the extent to which using different values for outcomes actually influences public policy. That is a question for you rather than me. If decisions are made about the allocation of budgets to agencies on the basis of the value they get for money, then, yes, it will have an influence on that, but I am not clear that is how you are actually making decisions about how much money to give the health department here in Victoria versus VicRoads. It is true that the higher the value of outcomes they choose, and if that has some influence on budgetary decisions, then the more money you will give to areas which use a higher value for outcome for a given cost. That is kind of obvious.

**Mr ELSBURY** — That is what we are talking about here, because it is being used as a tool to explain why a project needs to go ahead before anything else, because it could be that if you are using willingness to pay as the model and you are saying this particular intersection needs a complete upgrade, you can say, ‘With the injuries that have occurred here in the past that are worth X dollars, we would be saving that every year if we were to do this treatment and that treatment’.

**Prof. HARRIS** — The short answer is yes, it must do. It does even within health, for example, where some areas are subject to strict economic evaluation, particularly drugs and medical devices, but prevention is not — which is a pilot of road safety. Prevention is the poor cousin of health expenditure; it gets less money than drugs, hospitals or medical services. One might argue it is because they are not able to make that case in terms of the cost–benefit of investment and prevention. That is an issue about them not being able to quantify the outcomes. Clearly if they could quantify the outcomes and then use the much higher value, they might be able to make that case. I think the long answer is: yes, it must disadvantage those with a lower value for health outcomes to the extent that those health outcomes are the same.

That said, context is everything. There is no reason why a life saved should necessarily have exactly the same value across sectors, because the context in which that life is extended — no-one’s life is ever saved, because we all die, of course — and you get extra life years is different. Even within health, for example, the National Institute for Health and Clinical Excellence in the UK has decided recently that it will pay more for extra years of life where those years of life with current diseases — so quality-adjusted life — that are life threatening. It has a higher willingness to pay for quality-adjusted life years in cancer, for example, than it does in arthritis. I happen to think that is a bit strange, but that is what they have decided, and they feel that this is quite reasonable, the context being one about fear of death and the closeness to death.

One could think of other contexts in road crashes that are different from health where you might say that even though individuals may value those life years the same, or they may not, we as a society might choose to pay more for a life year gained in road safety than we do in health. I am not arguing that, but I can see people make that argument. You might not want to make it. Which way around you want to do it, I do not know. But it is true that many people would argue that the context in which the decision is made is different and has an effect on a social value of those things. Hence we pay all this money to avoid shark attacks and so on.

**Mr PERERA** — Professor, a number of submissions have canvassed the use of ‘burden of injury’ measures, such as disability-adjusted life years and quality-adjusted life years, to monitor road safety and measure long-term injury consequences. What are your thoughts on their use for this purpose? Do you have a view on their use for other purposes, such as calculating the costs of road trauma?

**Prof. HARRIS** — I think they are useful for monitoring purposes. Disability-adjusted life years and quality-adjusted life years are pretty much the same thing; they are different names, but they are pretty much the same concept. Burden of illness as a sum total of those at a point in time or over time is not a way to make rational decisions about how to make investment decisions. They are not designed for that. They are good for giving a picture and looking at trends, and so identifying areas where you might be concerned, but they are not a tool for making decisions about where to invest, because they say nothing about the cost of the investment. They are just about the potential outcomes that you might gain from doing something. They say nothing about the effectiveness of the interventions nor about the cost of doing them.

There has been a trend in recent years to use burden of illness in health as a means of identifying areas where one ought to invest. I think that is mistaken, because the fact that something has a large burden of illness does not mean that you have anything available to do anything about it or that it would be the most cost-effective use

of your money to do that as opposed to something which has less burden but you have much more effective techniques to do something about. I think they have their place in monitoring. I would be very wary about using them as a means of making investment decisions.

**Mr PERERA** — They are just a guideline?

**Prof. HARRIS** — As a guide to how things are going, as a monitoring post intervention. I should say that we do not do that particularly well in health — I am not sure how well you do it in road safety — which is monitoring the long-term impact of decisions we have already made. We are very bad at that, so if we think about the pharmaceutical benefits scheme, we are not particularly good at monitoring whether things remain cost effective, taking drugs off once they have been on or changing their prices. Things go onto the medical benefits schedule, but they never come off, because we do not do very much long-term monitoring of cost effectiveness — and I am guessing you do not do much of that in road safety either. I think that would be valuable, and in that context QALYs and DALYs, or any measure of outcome long-term measurement, would be a useful thing to have, because life changes. You invest in something now, it has a good return, but that does not mean it continues to be.

**The CHAIR** — Thank you, Professor Harris. I will refer to a couple of further terms of reference. We will move on to (d) and (e). Term of reference (d) entails determining the correlation between reductions in fatalities and serious injuries, including for different levels of severity resulting from different road safety countermeasures. Term of reference (e) is to identify cost-effective countermeasures to reduce serious injury occurrence and severity. The question is as follows. The ability to identify cost-effective countermeasures relies on evaluations of these countermeasures. Many participants in this inquiry have 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. Is it appropriate to assess countermeasures as a group — that is, collectively? If so, how can decision-makers discern what works from what does not? How does this work at a policy level, where the allocation of resources and priority setting are sometimes based on comparing the cost effectiveness of individual road safety measures? I am happy to repeat those questions if you would like me to.

**Prof. HARRIS** — No, I get the point. It is a very difficult question. It is a question that has been asked also in health. When I mentioned prevention, it is exactly the same issue — that many of the interventions that take place in the prevention sphere are also multifaceted. You get a quick campaign along with something else along with something else. There are techniques one can use to value the whole package. That tends to be what people do. As you say, they value the whole package of measures together. It is possible in a good, properly designed study to disentangle those, but those are not easy studies to design. They are expensive, and I do not think you could easily do them retrospectively.

My impression of the evidence in road safety, and I say this really as an outsider, is that most of the evidence is not experimental. It is retrospective observational studies. You have an intervention. You do a before-and-after study at best. You look at what the crashes were before; you look at the crashes after. It is subject to all sorts of contamination, including, as you say, all sorts of other things happening at the same time of which the things you have talked about are some. A much better design of course is to do a randomised trial or some sort of cluster controlled trial where you put the intervention in some place in some form. You put a different form of it somewhere else and you randomise the sites through different types of intervention. It gets much bigger, but you can do it.

I guess the short answer to your question is that it is possible in well-designed studies to disentangle the individual components from a complex intervention. What it means is that the study would tend to be designed before the intervention, it would be a randomised study, it would involve a much bigger group of locations possibly and it would be quite expensive. I do not know how expensive; I have never tried to do it in this sphere. But it would be more expensive than the kind of thing that you are doing now, which is just, 'Let's put this barrier in. Let's see what the crashes are now and let's compare them with what they were before', which seems to be what has been typically done.

If you want to disentangle, you have to have a much more sophisticated study design, which will be more expensive, and it will have to be preplanned. It is not impossible, but it is more difficult. I think it is worth doing, because as you say, if you are really interested in what is working and it is entangled up with other things, it is not very helpful, unless you cannot ever disentangle it, in which case there is no point in taking one

out and that does happen. If it is a true bundle, which you cannot disentangle ever and you are always going to do that complex intervention, then there is not much point in working out which part of it worked. It depends on the question.

**The CHAIR** — Thank you.

**Mr PERERA** — Professor, in your view, what is best practice for evaluation studies?

**Prof. HARRIS** — The best practice?

**Mr PERERA** — Yes.

**Prof. HARRIS** — The best practice is one that minimises biases, and that is a glib answer to the question. In the health sphere, the gold standard is a double-blind randomised control trial, so I would have to say that was the gold standard. Anything other than that runs the risk of bias. On the other hand, the problem with randomised control trials is that usually they are small, the context is usually very tight and we tend to have to make them very constrained, so the realism becomes less, if I can put it that way — in other words, what we call in the formal literature their ‘external validity’. Your ability to generalise from them is more limited the more you tighten them up. The more you tighten them up, the less bias there is and the better quality of evidence on exactly what you have done in that population at that time. But if you want to transfer it from an urban to a non-urban population with older drivers and not young drivers, then you may not be able to do that. That is the problem with those experimental designs: the generalisability can be limited unless you make them bigger. As I said before, you do something like a cluster design or you give it to young drivers here and old drivers there and have a whole lot of arms to the trial, but that gets big and expensive.

The short answer is yes. I think a double-blind randomised controlled trial is always the best quality evidence in terms of internal validity. For generalisability I think either you need a larger trial or you may have to adapt that to do it at different locations. But it seems to me that randomisation is a better way of going about it than before-and-after-type studies or case-control studies or any observational studies. You are always going to be limited in the quality of the evidence.

**The CHAIR** — Professor Harris, on behalf of my colleagues I would like to thank you for the time you have given today and for your expertise and your contribution to the work that is being undertaken at Monash University.

**Prof. HARRIS** — Thank you, very much.

**Witness withdrew.**