



# ***TRAVELSAFE COMMITTEE***

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## **FATIGUE SYMPOSIUM**

### **TRANSCRIPT OF PROCEEDINGS**

**Friday, 22 October 2004**

**Brisbane**

## FRIDAY, 22 OCTOBER 2004

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The forum commenced at 9.00 a.m.

**Mr PEARCE:** Good morning, ladies and gentlemen. Great to see you all here. Thank you to those people who have travelled to be here today; it is very much appreciated. I respect and appreciate the effort that you all put in in relation to dealing with road safety issues. I see a number of faces around on a regular basis and it shows that you have a real commitment to road safety. From where we sit as the parliamentary Travelsafe Committee we appreciate the good work that you are doing. We certainly attend a lot of forums, but it is great because we need to be doing that all the time to exchange information and ideas and learn what we can and then do what we can to improve road safety.

I welcome you today to our fatigue symposium. For those who do not know, my name is Jim Pearce. I am the member for Fitzroy and chair of the Travelsafe Committee of what is the 51st Parliament of Queensland. Again for those who do not know, the Travelsafe Committee is a select committee of the parliament and it is appointed to inquire into and report on all aspects of road safety and public transport in the state of Queensland. The committee has seven members and we travel to all different parts of the state: north Queensland, central Queensland, south-east Queensland. I have two members here with me today: Darryl Briskey, the member for Cleveland, and Di Reilly, the member for Mudgeeraba. I also have two research officers with me today, Rob Hansen and Lyndel Bates, who do a great job in giving the committee a tremendous amount of support.

Other members of the committee will be here from time to time during the day. If you see them around make yourself known and just have a bit of a chat to them about what you do and what we are doing here today.

When we started looking at the issue of driver fatigue we realised that certainly no-one has all the answers. Today we are all learners. We will go away and we will go to other forums and continue to learn about the issue of driver fatigue. The findings and recommendations of this inquiry into crashes involving driver fatigue in Queensland will be reported to the Legislative Assembly in May. There is still a lot of work to be done. We have already called for public submissions. We have gone through those submissions and compiled a summary of them. The committee is looking through those individually and coming up with its own thoughts on it. We will be conducting this forum today as well as going to the road safety conference in Perth and talking to some people over there, using this as a means of gathering information and coming up with ideas.

Under the Parliament of Queensland Act ministers of the government are required to provide written responses to the parliament within three months. We would hope that we can table our report by May next year and that within three months the responsible ministers will have reported back as to the recommendations the committee may make. For those who are interested, we publish the evidence, the information that we gather and reports on the Parliament of Queensland web site. This includes ministers' responses to the reports. The web address is listed on all reports when they are printed.

As you are well aware, today we are going to examine fatigue related crashes, an important issue in both road and workplace safety in Australia. Our initial research so far has suggested that fatigue is a factor in perhaps one in seven road fatalities in this state. That is just the work that we have done so far. There would probably be people here today who have a different approach to that or have different thoughts. After today's program of speakers I suspect that we will realise that driver fatigue is certainly a much bigger problem than the statistics would have us believe.

As people continue to work longer and longer hours and sleep less, burning the candle at both ends so to speak, fatigue driving can only grow in significance for governments. I know from the work that we do as members of parliament, and from my background in the coal industry, how much things have changed over the last 10 to 15 years. The number of hours public servants spend on the road, in country areas in particular, is a bigger and bigger issue. Government has to start looking at how they can address this into the future.

The response to our inquiry into fatigue crashes in Queensland has been heartening; it has been really good. I thank all of the people who are here today who have made a submission. I know that you have put in a lot of effort and have put your heart into it. That is most important; it means something to you so you actually put a lot of effort into it. It is quite clear to us as a committee that many people and many organisations around the state have the same concerns that we do about tired drivers on the road.

I want to acknowledge a couple of people here today who have come a long way. The first is Warrant Officer First Class Peta Dawe from the Army School of Transport and Ordinance in South Bandiana, Victoria. Thank you for coming. I know that you provide good driver training because I went through it myself in the Army. I also acknowledge David Rynnes, National Policy Manager of the Australian Trucking Association in Sydney; and Dr Pierre Thiffault, research analyst for Transport Canada.

If you have a mobile phone or a pager can you please turn it off while you are in the room. For your information, ladies and gentlemen, Hansard is recording today's session so that we can prepare a transcript for public distribution. I would appreciate it if those who wish to speak or get involved in the debate would move to the microphone and give their name and who they represent very clearly and make sure that they speak clearly so that the Hansard staff are able to record everything accurately. I hope that we can do our best to keep to the times today. I might get a little bit bossy at times and cut you off so that we can keep it rolling. It is Friday and people do have to travel. It is important that we keep that in mind.

I would like to introduce to you Mark King, our first speaker in this session in which we are going to focus on driver fatigue, the sleeping giant in road safety. Mark King brings over 20 years of road safety policy and research experience to this forum. He has worked for the Commonwealth, Victorian, South Australian and Queensland governments and served on numerous OECD national and state road safety committees. There is a lot of experience there. He is currently a member of the impaired driving legislation research working group coordinated by Queensland Transport. Mark lectures at QUT's Centre for Accident Research and Road Safety Queensland, known as CARRS-Q. Could you please make Mark welcome.

**Mr KING:** Good morning, ladies and gentlemen. On a fatigue day, I am very glad to be speaking in the morning rather than the afternoon when the fatigue kicks in for everybody. I am going to talk about paradigms, definitions and challenges in fatigue and road safety. Having a long background in government, I am going to take an approach which is oriented very much towards what we might be able to do about fatigue, some of the things that prevent us from doing it and some of the decisions we need to make.

First off, we know that fatigue is important for various reasons. Even though our knowledge of fatigue involvement in crashes is far from perfect, we have got some fairly consistent statistics that keep coming up: 15 to 18 per cent of all fatal crashes, which is around about that one in seven—five to seven per cent of all crashes. If you look at crashes in 80k plus zones you are going up to 25 per cent of fatalities and for fatal crashes involving heavy vehicles you have got very high rates, depending on the study you look at—30 to 60 per cent.

If you look at fatigue in a laboratory setting or an on-road setting you can show that it has effects: it reduces performance over time, it reduces your useful visual field. It does not actually do anything physiological to your visual field, but your ability to detect things in your peripheral vision declines with fatigue. You overestimate time. At a low BAC, which is legal, fatigue can impair you to the point where you are at the same level of impairment as if you were affected by an illegal BAC. It can be shown that certain hours of lack of sleep have similar effects on various laboratory tasks to different BAC levels.

Yet for all of that knowledge what we are doing is relatively limited. If you look at what we are doing with heavy vehicle drivers, that is the only area in which we actively legislate and attempt to enforce something about fatigue by restricting driving hours and through the fatigue management program accrediting companies to manage the fatigue of their drivers. If you look at other non-private vehicles such as commercial vehicles, the government vehicle fleet and other groups such as your meals-on-wheels drivers that are non-commercial, non-government, you have got no regulation at all. The only management of the fatigue of drivers that might come up is if they have a fleet management program which has some sort of fatigue component.

If you look at private vehicles, there is no regulation whatsoever for the bulk of us. This table I am displaying attempts to show that. The blue area shows the only place where we have enforcement and/or voluntary compliance through a fatigue management program which is for heavy vehicle drivers regardless of whether they are in a fleet or not. If you are looking outside of the heavy vehicle fleet and outside of private vehicles, the only areas where you might have some fatigue management is for fleet drivers in the heavy vehicle area and fleet drivers among other non-private vehicle drivers. Otherwise, on that far column we are looking at broad spectrum approaches: the advertisements that we see about fatigue and driving, encouragement to not drive when tired, that sort of thing, which is much more non-specific.

The question is: why are there so many gaps? If you look back at that table you will see there are lots of crosses. We do not do terribly much about fatigue. What I want to go through is the paradigm of impairment management. I am going to make a comparison between how we deal with fatigue and how we deal with alcohol and point out some of the reasons that we cannot deal with fatigue that easily; looking at the underlying assumptions and therefore the challenges, some of the things that we will need to consider today.

Firstly I will put up a model of the way that we often think about impairment and how it can contribute to bad outcomes in road safety. On the top line you have a couple of boxes that show normal performance leading to normal crash risk. I have put those in inverted commas because basically we do not really know for sure what normal performance is. Everybody is different to some extent. We fluctuate from day-to-day and over the course of the day, but we have this rough feeling that there is an envelope that we call normal performance. A result of that is some idea of normal crash risk. We generally accept that there will be crashes and there will be fatalities with normal driving no matter what we do, simply because we have large vehicles that weigh a lot moving around at varying speeds on a road system.

The impairment model that we tend to think of has an impairing factor which begins to feed into this process. An impairing factor such as alcohol, drugs or fatigue leads to impaired performance and that impaired performance then leads to an increased crash risk. Under that model, what are our options for managing this process? There are two main options. We could try to manage the impairing factor in some

way so that you still end up with normal performance out on the road and normal crash risk. Alternatively, you do not control the impairing factor but you do try to control the impaired performance to lead to a normal crash risk. I will go through a couple of examples in the areas of fatigue and alcohol to demonstrate what I mean. For instance, with fatigue, the impairing factor would be inadequate sleep, the impaired performance would be falling asleep while driving—this is only one of many possibilities—which leads to an increased crash risk. With alcohol, it is drinking too much alcohol, impaired judgement and increased crash risk.

Now we will look at how we manage those. For example, to manage fatigue, we could manage hours of sleep so that we could find some way—which we try to do with drivers of heavy vehicles—to prevent people from driving if they have not had sufficient sleep for the task at hand. That should lead to normal performance and normal crash risk. The alternative is that we do not worry so much about that and, instead, place devices into vehicles. There are many types of devices available. I have used as an example the ones that detect a driver's head nodding and provide some way of rousing them. When their performance starts to be impaired because their head is nodding, they are roused from that and hopefully we end up with a normal crash risk.

The main way that we manage alcohol use is by focusing on stopping driving from occurring after alcohol consumption has occurred. We focus on deterring any impaired driving in the first place by enforcement of 0.05 and random breath testing. Hopefully, this results in the general driving public performing normally and having a normal crash risk. The other model, which is our older one, looked only at driving under the influence. We only picked up people who were already driving on the road and we picked them up because their behaviour was obviously impaired. We hope that it has some deterrent value but, in general, the model is based on catching people after they have already become impaired.

I will now go through some of the reasons—looking at alcohol versus fatigue—why we do not currently have any analogues for fatigue enforcement or fatigue regulation as we do for alcohol. The first three elements I will go through are the impairing factor approach, which is focusing on trying to reduce fatigue in the first place versus trying to reduce drinking before driving in the first place. You need three things. Firstly, you need a pretty clear definition of your impairing factor if you are going to control it. With alcohol, many years ago we decided that 0.05 BAC level was our definition of an illegal BAC that would be impairing. That is pretty straightforward and very clear.

We do not have any accepted definition of fatigue, and I will come back to this later. Everybody has an idea of the subjective nature of fatigue and everybody knows some of its effects, but we do not have an accepted definition. That applies across the world throughout the scientific literature. Once you have a definition, you then have to find some way of measuring the impairing factor. That measurement technique has to be valid, which means that it measures what it is supposed to measure. It also has to be reliable, which means that if you measure the same thing several times over, you will keep coming up with the same result.

With drink-driving we know that breath analysis is a valid and reliable way of finding out how much alcohol people have in their blood. With fatigue, the main problem is that we do not have a definition. Depending on your definition, some things are easy, valid and reliable to measure and others are not. For instance, if your definition of fatigue is a certain amount of hours on a task, such as a certain amount of hours driving a vehicle, then we can validly measure that just by counting up how many hours a person has been in the vehicle. Whether or not that can be done reliably is another question, as we know from the problems with log books.

Once you have a definition and a reliable measure, you have to build some sort of enforcement or counter measure regime around it which is simple and practical. For drink-driving we have RBT and breath alcohol measurement. It is a fairly simple process. It does take a lot of resources, but it is practical and simple. For fatigue, again it depends on the definition. I have mentioned driving hours. While it is relatively simple to do something about that, in practice it may not be very practical to do something about that.

In summary, the first three lines of this particular table look at this impairing factor approach. In the area of drink-driving, we have a clearly defined concept, valid and reliable measures, and simple and practical counter measures. For fatigue, the main problem is that we do not have a clear definition. When we look for valid and reliable measures and counter measures we are really in the dark because we have not decided on a definition.

The next matter I will talk about is when you focus on impaired performance. The person is already impaired and in the vehicle, so what do we do about them? Once again, you need two things. Firstly, you need a valid and reliable measure of impaired performance. The way that is done for alcohol is to look at driving under the influence. If we define being impaired as driving under the influence, to the extent that a policeman believes someone is incapable of driving safely, then that is valid simply because it has defined itself. There is a question about how reliable that is. Would the same policeman come up with the same definition, except in extreme cases, time after time? What if a different policemen did it? There is a question of reliability, but it is certainly valid.

With fatigue, once again you are down to the problem of definition. Because you do not know exactly what you need to be looking at, you do not know whether you have a valid and reliable measure. Take, for example, the head nodding device I have mentioned. The head nodding device will validly measure head nodding because that is what it is designed to do. If that is your definition of fatigue, it is

valid and reliable. However, if you use some other definition of fatigue, then it is not quite so easy. For example, if you are trying to say that a particular cluster of reaction times and steering wheel movements are fatigue and your definition of fatigue is actually something different—the risk of crashing which has reached a certain level—then your method of measuring it in the vehicle may not be valid. You have got to try to demonstrate that.

Similarly, the counter measures involving measurement of impaired performance need to be simple and practical. DUI is observation based, which makes it not entirely simple, but it can be done with some training and it is moderately practical. Certainly if you compare RBT and DUI, then RBT—for the resources invested in it—produces a lot more deterrences than DUI.

For fatigue, it really depends. Devices can be placed in a vehicle which are simple and practical, and there are others which are really not very useful at this stage. The next two lines of the table summarise this. Looking at impaired performance, there are question marks over the way we approach both drink-driving and fatigue.

Turning finally—and this is actually quite important and I will come back to it—to the outcome. You need to have a clearly defined and measurable outcome to look at. For drink-driving, we know what a drink-driving crash is because we can measure the blood alcohol levels of the people involved. We know how to determine whether or not alcohol consumption or driving with a certain BAC has led to a crash. With fatigue, there is no such thing. When we go along to the hospital, how do we know if somebody is fatigued and how do we know how fatigued they are? When a crash occurs, how do police know if a person is fatigued or not? How can they tell, apart from building up some possible case based on information they get from the scene and people? It is quite open to conjecture and it is very vague. That view is expressed down the bottom of the table.

Looking at that table overall, on the drink-driving side, a whole lot of things are nailed down; on the fatigue side, almost nothing is nailed down. There are two main reasons for that. One is the definition of fatigue, as I mentioned, and the other is the link between fatigue indicators, driving performance and crash risk. I will speak briefly about both of those. Firstly, fatigue in road safety. I have mentioned the fact that there are a lot of definitions. People all know the subjective state of fatigue because we all feel that at least once a day and probably several times a day. In many cases it is a transient state; it does not always result in sleep. We can be fatigued in the afternoon after lunch and we will come out of it again.

Another definition of fatigue is based on observable behaviour, such as whether someone's head nods, their eyes blink too much and that sort of thing. Other definitions come down to physiological changes. People measure electroencephalograph patterns to determine whether fatigue has occurred or sleep is about to occur, and that sort of thing.

Sleepiness: people are taken into sleep labs to see how likely they are to fall asleep. Scales have been developed to try to judge how sleepy people are based on their sleep history and how tired they feel generally. They are used a lot but they are not very accurate. You can equate hours awake to BAC. Some work has been done in laboratories, looking at various tasks and how long you have to keep people awake for before they start performing a particular task at the same level as someone with a 0.05 BAC. The answer is that it depends on the task, because fatigue and alcohol affect the performance of different tasks differently. However, you get an overall flavour of what fatigue can do. It involves patterns of sleep and work—not just the amount of sleep but also the sort of work and how it unfolds over a week or a month. The outcome of the task—one of the things we looked at earlier this week in a workshop at CARRS-Q—is monotony and hypovigilance. Monotony comes from a task which is boring and repetitive. For instance, driving through a landscape that you perceive to be monotonous can contribute to a state of hypovigilance, or low vigilance, which contributes to fatigue in a roundabout way and can cause crashes.

I mentioned earlier the issue of crashes and trying to decide what is a fatigue related crash. The Travelsafe discussion paper goes through some of the issues related to that. We find it very difficult to know what is a fatigue related crash. When we try to define fatigue in terms of crashes, we have moved an awful long way from the subjective state or from observable behaviour and we are trying to judge what the impacts are way down the track.

What do we need to do? We could decide on a particular operational definition. We could actually bite the bullet and take a particular impairing factor, such as hours of driving or hours awake, and say that that is fatigue. Alternatively, we could decide on a particular sort of impaired performance. For instance, we could take a particular simple in-vehicle device and say that if you get more than a certain criterion score on that, you are fatigued. That would be the definition. That raises all sorts of questions about validity and how defensible it is legislatively, in the courts and research-wise.

It would be great if we had a physiological indicator for fatigue like BAC and we could take a breath sample from someone and say that they are fatigued. The most current information is that there is no such animal, but people are looking into it. In particular, the US military have been devoting a lot of effort to studying a whole lot of physiological indicators of fatigue—such as cognitive performance and things like that—because they need to for their operations.

I want to talk about the link to crash risk. We make the assumption that if we can find an indicator of fatigue, it will give us a clue to what someone's performance on the road will be like and that this will tell us the likely crash risk. In fact, we really have very little idea of the real links.

If you take someone in a laboratory and find that their tracking is off by 10 per cent on a particular task, it might actually be off 20 per cent on a different task depending on how hard it is. What does that mean on the roads? Does it mean that they are likely to wander out of their lane once every five minutes or once every 10 minutes? If they did, what does that mean for crash risk? How many times per whatever do you have to wander out of your lane to have an increased crash risk? How much crash risk is unacceptable? That comes back to the fact that we do not know what normal driving performance is. We only have a vague idea of the sorts of things that might contribute to crash risk ultimately.

With alcohol we are able to get past that for a reason which I will turn to now. What can we do about crash risk? Some of the people in the room would have heard about a study called the Grand Rapids study which was done a very long time ago—in the late fifties—which was made possible by the invention of the breathalyser by a guy called Bob Borckenstein who did this study in Grand Rapids in Michigan. He found a whole lot of crashes where he was able to get blood alcohol levels from the victims. Then he went back to the same places at the same times of day and had people pulled over and breath tested. From that he was able to know what the BAC levels were on the road and he had what the BAC levels were in crashes. From that and many similar studies, you have got that classic curve of crash risk versus blood alcohol level where we know that at 0.05 you have about double the risk of crashing as you have at zero. That allows us to jump looking at impaired performance and simply looking at the impairing factor of alcohol and doing something about that through RBT—that is, define 0.05 as our limit and doing something about that.

With fatigue we are not in a position to do that because we do not have a definition and we do not have any measurement we can use. If we go along to people in hospitals, fatalities in particular, we cannot tell how tired they were. The other thing we can do is use an argument by analogy, and that has been done to some extent by looking at how much fatigue it takes or how many hours of lack of sleep it takes to reach the same level of blood performance as blood alcohol. It is not perfect for all of the reasons that lab performance does not tell us a lot about what happens on the road, but it gives us some idea.

Finally, we could use a duty of care argument and say that, even though we are not really sure about what it is that is important—that is, what sorts of behaviours, what sorts of measures we can use—we have a duty of care to people on the road to make sure that they are not going to be involved in crashes or suffer as a result of someone being too fatigued. That would lead us to find some way of defining at least an extreme of fatigue and trying to do something about that. In a way we do it, because if someone is sufficiently fatigued—if their performance is affected—we can pick them up for DUI, but that is not a very good way of doing it.

What do we need to do to progress? I think the answers are that we need to find some sort of definition of fatigue that is valid, reliable and easy to measure. It is very easy for me to say that; I think it is very hard to do. Once we have a definition, we would build counter measures around the definition and the measurement technologies. Again, you need to have a way of measuring it that is simple and practical and counter measures that are simple and practical. We also need to continue to pursue some in-vehicle options based around the definition of fatigue that you use and perhaps looking at some way of picking up people who are at least extremely fatigued and then working from there. That is all.

**Mr PEARCE:** Thanks, Mark. You have certainly given us a lot to think about there. I think it has clearly come through to us already as a Travelsafe Committee that the definition of fatigue will certainly give us a lot to talk about. I will ask Mark to take some questions from the audience. Ladies and gentlemen, feel free. If you have some questions, move to the microphone and identify yourself, please.

**Mr GRIFFIN:** I am from the Main Roads Department. Mark, in the work that you have undertaken, have you been able to get any sort of correlation between fatigue in urban areas versus fatigue in the more remote areas?

**Mr KING:** Because of the problems of measurement, if you look at crash studies, crash studies tend to focus on rural areas because it is easier to pick out certain crash characteristics that are more likely to be associated with fatigue. So people have very rarely looked at fatigue in urban areas. There was a study done in New South Wales about 10 years ago which looked at it. There have been other studies which do not look directly at driving while fatigued but look at self-reports by people as to how tired they are and whether they drive. Fatigue in urban areas does come up in those sorts of studies. The actual size of the problem in terms of both the number of people driving fatigued and the crash risk involved is not really very clear, but it is certainly known to be a problem. I am not sure of the size.

**Mr GRIFFIN:** I will just make a comment. In the sense of some of the work that the department did last year, we found that there was just as much fatigue in urban areas as there was in rural areas based on the definition as per the crash data reports in the database.

**Mr KING:** Yes, you are referring to the Queensland Transport definition which, for people who do not know, involves looking at crashes that occur between 2 p.m. and 4 p.m. and between 10 p.m. and 6 a.m.—I am looking for Patrick, but he has just left the room—or if police decide that fatigue was involved. One of the problems with those definitions is that they are not fatigue related crashes really. They are crashes which have characteristics which we think might be more associated with fatigue than not. For instance, in rural areas there is a big overlap between alcohol related and speed related crashes. In urban areas, as soon as you include the 2 p.m. to 4 p.m., that is a peak time for crashes during the week anyway. A lot of those crashes will not be fatigue related crashes—probably most of them will not.

At this point I might mention the work done by a guy called Kym Dobbie for the Australian Transport Safety Bureau where he tried to use a definition of fatigue which could be taken from crash records using objective data and then see how valid that was compared with the coroner's reports. He found that overall his numbers were about right, but he missed a massive amount of fatigue related crashes. He also included a lot of ones that were not fatigue related. Overall the numbers were similar, but he missed a lot. I do not think he broke that down by looking at urban and rural. But I think that is the problem. It is the definition of fatigue related crash that probably gives you those results.

**Ms TUTTY:** I am from the Flight Attendants Association. You talked quite extensively on the fact that we do not have a definition, and there are many aspects of this particular topic that are not able to be established as valid and reliable. Has there been much study into the impairing factors which contribute to this particular area, because they could certainly be established I think as valid and reliable to create the error chain commencement?

**Mr KING:** You are sort of talking about things like number of hours of sleep and the influence of drugs or alcohol, obesity, sleep disorders and those sorts of things. There has been. One of the problems there is that there has been a huge amount of individual variability. For instance, at this workshop that we had at CARRS-Q on Monday we had Dr Tom Balkin from the United States who works for the Walter Reid Army Research Institute. They have done studies where they have deprived people of sleep of different amounts for five days in a row. They had one particular person who on three hours sleep per night showed absolutely no change in performance—it was exactly the same—whereas other people just took a precipitous dive. So it has been looked at. One of the things which is interesting about long-distance truck driving is sleep disorders. Long-distance truck drivers happen to have the characteristics which are associated with a greater proportion of sleep disorders which leads to a greater propensity for sleepiness and therefore a greater risk of crash. So that has also been looked at. The outcome measures are usually things like their level of sleepiness. Sometimes studies are done to look at crash risk where you find out that people with sleep apnoea are more likely to have been involved in crashes in the last few years or are more likely to be involved in the next couple of years and those sorts of things.

**Ms TUTTY:** Thank you.

**Mr McKEACHIE:** I am from Queensland Transport. Mark, just a point of clarification. I know you were searching for Patrick about our surrogate definition. Just to clarify—

**Mr KING:** I see that he is back there.

**Mr McKEACHIE:** He has just ducked back into the room. But that surrogate definition relating to 2 p.m. to 4 p.m. and 10 to 6 only applies in speed zones of 100 kilometres or higher. We just use it as an indicator. I think the issue about trying to make those comparisons with time zones between the rural and the urban might have been a bit blurred because of that lack of precision in the definition.

**Mr KING:** Thanks.

**Mr PEARCE:** Are there any more questions? If not, you are getting off a bit easy there, Mark. In our discussions we have already talked about airconditioning in motor vehicles. Has there been any research done in that area? I think that too many people make the mistake of jumping in the car to go on a long trip and wind the windows up and have the airconditioning on. Having a number of people in the motor vehicle lowers the level of oxygen in the car. What sort of an impact would that have on a person—the driver—when you start looking at fatigue and drowsiness?

**Mr KING:** I can answer that in general terms. It is actually one of these issues with fatigue which becomes tricky, because we know that having a hot environment is also fatiguing. Having the airconditioning on should help you with that, but this notion of being gradually lulled into a state of less vigilance on a long trip is a problem. One of the things that was talked about on Monday and Tuesday was to try to introduce some extra vibration every now and then into the car to help keep people aroused. At the same time we know that too much vibration, while it might keep you awake early on, also fatigues you. So it is difficult to know where the balance lies.

Again, one of the issues that was raised was that, if you think about the whole of the driving task, can we do something which provides some feedback which means that we keep the task sufficiently arousing for people? One thing might be to, in that example, do something about airconditioning over time or other aspects of the vehicle. That is again being tried by the US military for fighter pilots. They found that it was something that was just so sensitive—that is, if you try to increase the difficulty of the task, you can quickly cross a fine line which makes it too hard for people to cope with because they already have some reduced vigilance. So it is a tricky question. I think that airconditioning on the one hand would help because a hot cabin does make you tired. On the other hand, yes, it could contribute to lulling you into becoming less vigilant.

**Mr PEARCE:** Is everybody fully informed now? Are there any other questions? If not, that makes us 15 minutes ahead of schedule. We might move on. Give Mark a round of applause. Thanks, Mark.

The next session, ladies and gentlemen, is something that the Travelsafe Committee is trying for the first time. We are trying to make our job a little bit more interesting each year. Last term you might be aware that the committee actually travelled to a number of cities and towns throughout the state to talk to the communities, road safety experts and all of those with an interest in young driver issues. We found that that was very rewarding for our committee because we got a lot of information, a lot of feedback and a lot

of feeling from the young people in particular as to what they thought about the issues that we were canvassing. So today we thought that we would try something different. We are going to proceed with a hypothetical crash study. Like I said, it is something completely different. It will be interesting to see what the outcome is with regard to the committee and the way that we have been doing this work.

To introduce the hypothetical crash study, those who have a good knowledge of history might cast their minds back. I say to you that in approximately 400AD Socrates invented a novel method of hypothetical argument to find errors in conventional views about knowledge and truth. Socrates analysed the definitions of such values as virtue, truth and honour, and he did this by case studies in order to reveal contradictions in the results. This section of the program will use the same methods to explore the issues surrounding the crash in which fatigue is a factor.

Today, Socrates will be played by Associate Professor Jeremy Davey. Doctor Jeremy Davey is the Deputy Director of CARRS-Q. His areas of research and interest includes workplace fleet safety programs, drug-driving and substance use in the workplace. He is a chief researcher in a number of fleet safety programs for government and industry. I would ask you to please welcome Jeremy Davey and if the panel members could come and take their positions.

**Prof. DAVEY:** I would just like to say that Mark King did an excellent presentation and answered all the questions that I was going to ask the panel. He must have seen my draft on the computer at 5 o'clock this morning. I would also like to thank Jim. Socrates sends his apologies. He actually cannot come to run the hypothetical today, so he actually asked me to come instead. I hope that I can fulfil the job.

We have Di Reilly, MP for Mudgeeraba. Di is one of the members of the Travelsafe committee. Jim Pearce, whom you have already met today, is the member for Fitzroy. We have Dr Daryl Wall, the Chair of the Royal Australian College of Surgeons; Senior Sergeant Robert Cochrane from the Accident Investigation Squad; Patrick, who disappeared earlier on today—the missing Patrick—Patrick McShane works in the data analysis section of Queensland Transport and he is back again; Jamie McKeachie, who is the acting Director of Strategic Policy from Queensland Transport; Mark King, who is one of our lecturers and researchers at the Centre for Accident Research and Road Safety; John Gray, who is within the Traffic and Safety Division of the RACQ; Ki Douglas, who is actually a medical practitioner but who is now the Principal Medical Officer with Workplace Health and Safety Queensland, which is part of the Department of Industrial Relations; Trevor Wockner from the Queensland Police Service; and Kevin Foster, who is the late ring-in.

Welcome today. I promise you that one of the characteristics about fatigue is that we should break and we should eat. I will finish on time just before 11 o'clock. Last night I got back from Townsville at 10 o'clock and I started this morning at five. As I walked out, I said 'I have things to do and it's about fatigue.' My wife looked at me and said, 'Don't tell any mother about fatigue.' So I started the day off on that and I will come back to that at the end of the day.

Basically, there are two key rules. If you can let the panel members have their say, we will have some time at the end for questions. So if you want to bring up any point, please just jot down a note yourself and we will get to it at the end. Please let the panel members have their say.

We want to run a crash scenario. This crash occurs behind Warwick somewhere early on a Thursday morning. John Gray, you are the actual person who discovers the crash. You have to go to a meeting with a local community. You have to be there. It is an 8 o'clock meeting in the morning maybe two hours the other side of Warwick, or somewhere like that. What time would you have to get up to get there?

**Mr GRAY:** Probably 5 o'clock—5 or 6 o'clock

**Prof. DAVEY:** So off you go. You are driving along. Just in the distance you see something that breaks the monotony of the trip. You start to see something different about the road. You start to see a semitrailer on the side and another sedan vehicle on the side of the road. You are coming along. It is early in the morning. You come across this crash scene. What would be the first thing that you actually do?

**Mr GRAY:** Probably pull over in a safe place, put the car hazard lights on, and then have a look around to see if anyone is hurt, who is in the car, and then just ring up the police after that.

**Prof. DAVEY:** So you have a mobile phone?

**Mr GRAY:** Yes.

**Prof. DAVEY:** The problem with your mobile phone is that when people have mobile phones, whenever you really want them, it says 'Out of range'. So you cannot dial 000. However, there is another number to dial if your carrier is not within range. As part of the RACQ's cost cutting, they went to Virgin mobile—being a young, dynamic organisation—but the only problem is that Virgin's mobile coverage is mainly in the metropolitan centres. You know that Telstra actually has coverage out there, but your network carrier does not do it. Do you know the number to ring?

**Mr GRAY:** 112?

**Prof. DAVEY:** Is that correct? It is something like that. 223? 122? Do we have any other ones?

**Mr GRAY:** Under the new system, doesn't just any emergency number work now, even if you dial

11?



**Prof. DAVEY:** I will summarise John's points. He actually does not know the emergency number. From those people in other parts of the House who are actually watching and listening to this, we are not quite sure if it is 11 or 1223.

**AN AUDIENCE MEMBER:** I am pretty sure that when you are not getting reception and you are trying to call a number, most phones actually say you can only use 112 or whatever the number is at the moment because you are not getting reception and it will tell you the only number that you can call and that is the emergency one.

**Prof. DAVEY:** That is something that we are left to find out about. But I do know that it was an issue. The ABC morning show, which has a regular road safety slot, actually ran it as an issue about two months ago. They had three or four different versions of what was the actual final case scenario. I do not think they actually found out in the end.

**Supt McINTOSH:** I was the Queensland representative for emergency 000. There is only one emergency number in Australia and that is emergency 000. What your mobile phone will do is it will tell you that you can only make an emergency call. The mobile phone then will determine where the signal comes from. You do not have to do that. There is only one number and that is 000.

**Mr HANSEN:** That was Superintendent Ian McIntosh from the Queensland Police Service.

**Prof. DAVEY:** Thank you. So the next time I look at my phone and it says emergency calls only, 112 or 122, I have to ignore that?

**AN AUDIENCE MEMBER:** Yes, you can.

**Prof. DAVEY:** You come across this crash scene. There is a semitrailer that has rolled on its side. There is a driver slumped over the wheel. You go to a motor vehicle. It is a late-model European car. There are two young women in it. Young for me is anyone younger than 50. That does not mean to say that 50 is older. I am getting into a big hole here, so I am going to get right out of it. There is a purpose behind this. They are in a late-model European car and both look very severely injured. You are unsure of their state at the moment. What do you do?

**Mr GRAY:** If the car is not in danger of blowing up, there is no fire and there is nothing happening, I will not shift them, because I am not a medical specialist and if they are not having trouble breathing or anything like that, I leave them where they are.

**Prof. DAVEY:** Are you a registered medical practitioner? Can I just check?

**Mr GRAY:** No

**Prof. DAVEY:** No, you are not. Do you have first-aid training?

**Mr GRAY:** No, I do not.

**Prof. DAVEY:** Has it been discussed that drivers should have first-aid training? We do not have the Queensland Ambulance Service here. I will go to the surgeons. I know it has been discussed in different countries of the world that part of driver licensing should be first-aid training. What would be your opinion on first-aid training at crash sites?

**Assoc. Prof. WALL:** It has a vital role. In fact, if we were to calculate who saves the patient's life, it is the firies and the ambulance officers who save the patient's life. The first hour is critical and it really focuses on airway breathing, circulation—these are the priorities—and the person first at the scene has a great chance of recognising which person has airway problems and would get that sorted out very quickly. It is a very easily taught system of priorities and drivers can achieve that level of performance.

**Prof. DAVEY:** Jamie from Queensland Transport who administers the licensing procedures, has this been considered in Queensland or in other states in Australia?

**Mr McKEACHIE:** Not to my knowledge.

**Prof. DAVEY:** Mark, do you know if it is considered as a characteristic of licensing?

**Mr KING:** Yes. I am not exactly sure of the place where it has been done. I know that there are arguments that go backwards and forwards about it. One argument is, yes, you train somebody when they get their licence, but they may never use it or it might be 20 years and something happens and they are not trained anymore. They might even do something that harms somebody. So I suppose it is difficult to move forward. It has been difficult to move forward on this sort of thing.

**Prof. DAVEY:** If I can go to the Queensland Fire and Rescue Service. You present at these crash scenes often. Do you find that first aid has often been administered prior to you getting there as a scene rescuer?

**Mr FOSTER:** Yes, fairly commonly, and if the person has stayed on the phone, they can get further advice on that treatment from Queensland Ambulance.

**Prof. DAVEY:** Somehow we have got in touch with the authorities. We have dispatched an emergency call. At the same time, another semi is coming along the road, because this road is travelled very heavily by semitrailers. Would you run out and stop the next vehicle coming along?

**Mr GRAY:** I would try to flag down the next vehicle to just offer more assistance to the site and they might know some first aid.

**Prof. DAVEY:** So you flag down the semitrailer driver. I suppose it is a comforting thought that you are not the only one on the scene?

**Mr GRAY:** Yes, that would be right. Also, probably with a semitrailer, you would get a bit of prior warning that there is actually something up ahead that could be a hazard.

**Prof. DAVEY:** So they get on their CB radio perhaps and assist.

**Mr GRAY:** Yes.

**Prof. DAVEY:** You notice the semitrailer driver jumps down. You go back. He runs over to the semi that is lying on the side of the road. You go back attending the crash with the late model Audi and you notice the semitrailer driver goes into the cabin of the rolled semi and you assume that he is in there helping the driver.

**Mr GRAY:** I would.

**Prof. DAVEY:** You would. The police come. So a call is dispatched. Once it goes through the OOO, lan, where it does then go from the OOO call if it was in the Warwick district?

**Supt McINTOSH:** It is answered at either of the two call centres in Australia. They dispatch it through to the identified call area. The call area for Warwick would be Warwick Police Station itself and it is done through a location of where the mobile cell was that picked up the mobile call and the postcode of that. Those postcodes are fed into those stations. We have 28 in Queensland.

**Prof. DAVEY:** Trevor, what happens when you get the call?

**Insp. WOCKNER:** The first thing the staff in the communications room would do is make contact with the Ambulance Service and the Fire Service to make sure they are both aware of it. Then we would be dispatching a unit out there to provide assistance to both those services.

**Prof. DAVEY:** What goes through your mind? I know that the Warwick area is often in the press. It is often in the media in terms of these types of accidents out there. How long have you served in Warwick?

**Insp. WOCKNER:** I have been the district officer there now for six years.

**Prof. DAVEY:** How many of these accidents would you have attended in those six years?

**Insp. WOCKNER:** I do not normally attend them myself unless it is a fatal. I would have probably been to half a dozen. But normally it is my staff that go out to those things and I overview it.

**Prof. DAVEY:** On this day you have a staff shortage and you have to go.

**Insp. WOCKNER:** The things that go through your mind initially would be to ensure, as I said, that the ambulance have been contacted, because the main priority is to try to save lives. But also the problem we have would be probably the communications network. Sometimes because of the location you do have very limited communications. So you have to make sure that you take everything that you need with you out to the scene.

**Prof. DAVEY:** This hypothetical is entitled 'Fatigue'. Does the issue of fatigue sit in the back of your mind? Do you think, 'I've done these crashes before'? It is early in the morning and there is just some feeling that you have seen these before. Is every one completely different or is there becoming more of a routine about what is happening in the district?

**Insp. WOCKNER:** Definitely. Over the last six years there have been a significant number of fatigue accidents. Virtually the time of the day will determine whether or not you suspect it is fatigue before you even get there.

**Prof. DAVEY:** One of the defining characteristics of data—in other words, trying to record fatigue accidents—is the time of day as an indicator?

**Insp. WOCKNER:** Yes, that is correct. That is one of the criteria they look at.

**Prof. DAVEY:** Okay. You start to get to the site. We are leaving John out there at the moment. He is still the sole caregiver within that site. What is the first thing you do when you arrive on site?

**Insp. WOCKNER:** I take it that the fire and ambulance have arrived also, because normally we arrive at about the same time. In that case we look after their best interests and we block off all the roads and make sure there is security for them and let them do their business, because they are the primary response agent at that moment.

**Prof. DAVEY:** Kevin, with you as the rescue unit and ambulance, one of these people appears to have very serious spinal injuries—a very damaged person. What are your options on that site? What can you do?

**Mr FOSTER:** The person should not be moved until we have got QAS there. We do a risk assessment on arrival. That can include whether there is a fire present in the accident, spilt fuel, et cetera. The reality is that any movement of the person is on advice from QAS and whatever medical treatment is given on site again is through QAS. We simply support them in that role.

**Prof. DAVEY:** We go back to this concept of the golden hour, which we talked about earlier. Time is ticking away. Trevor, if we look at an accident scene like this in Warwick, how long can it typically be before emergency services arrive on the scene?

**Insp. WOCKNER:** As you indicated before, it could possibly be two hours out of town. You might be able to cut that down a little bit, but that is basically what you are looking at. It is usually a fair drive out of town.

**Prof. DAVEY:** Then we arrive at the crash scene and the person is stuck in the car, which I assume can often be a not uncommon event. How long does it take, Kevin, to get a person out of that vehicle?

**Mr FOSTER:** The time it takes to extricate somebody from a vehicle depends on the manner in which they are pinned in the vehicle. A great priority is to ensure that no further injury is caused to the entrapped person. For example, at one accident we had out in the Kilcoy area the person was trapped by only one foot but it took us two hours to extricate the person without further damage because of impinging metal of the vehicle through the person's foot. We have all sorts of machinery that can do some fairly heavy work on vehicles, but you also have to be careful that it does not do some heavy work on the patient.

**Prof. DAVEY:** So it can take a matter of hours to get a person out. We are looking at four and five hours now that this person is still on the side of the road.

**Mr FOSTER:** You cannot predict that. It is a strange set of circumstances. Some vehicles are easily opened up with minimal exposure to the patient. In other cases it is long and tedious because of what I said before.

**Prof. DAVEY:** Daryl, this person is on the side of the road and ambulance make an assessment that there is serious spinal damage. What is generally the most common way that this person would be recovered? Would they be recovered to Brisbane generally?

**Assoc. Prof. WALL:** It would be possible to send a retrieval team, which would involve an experienced clinician who would work with the police, ambulance officers and maybe a volunteer, too, to help extricate the patient and also start treatment at the same time, which would involve immobilising the spine and intravenous fluids. So it would be possible, by using a second call, to start sophisticated care while the patient is still trapped in the car.

**Prof. DAVEY:** Now, you are talking about getting this team out there. How, generally, would this team get there?

**Assoc. Prof. WALL:** Retrieval teams would go over a short distance by vehicle, within 200 kilometres by helicopter and beyond that by fixed wing depending on the weather conditions, because the helicopter is not as readily mobilised in bad weather conditions.

**Prof. DAVEY:** Say we have a reasonable day and it is within the 200-kilometre radius. How long would it be, once we have made that second call, to get a team out there? Remember, the golden hour has now extended to six hours.

**Assoc. Prof. WALL:** Yes, it has. It is a diminishing return, but already much of the lifesaving activity has been initiated by the ambulance officers. Then, with telephone communication with the retrieval team, they may be able to continue the sophisticated work that is necessary to save the person's life. The helicopter probably could be mobilised in under 10 minutes and then total time for the retrieval team to get there may be as little as another 40 minutes altogether.

**Prof. DAVEY:** So we have sent a helicopter out somewhere around Warwick and they have retrieved the person. They then most likely would bring the person back to the Royal Brisbane or the PA?

**Assoc. Prof. WALL:** That is right.

**Prof. DAVEY:** In terms of the medical team, what proportion of your work involves vehicle accidents? Is it a minor proportion in terms of the trauma that you deal with?

**Assoc. Prof. WALL:** That is a very important question. The services of public hospitals are heavily dedicated to emergency work. There is an incredible interest in Queensland amongst the various staff of the hospital—nurses, administrators, doctors, anaesthetists—in the care of the injured, the care of the trauma. It is an attractive part of their career pathway. I am delighted to report that in Queensland the death rate and trauma rate continues to go down. I used to be an expert in trauma. I am thrilled to say that the death rate has halved in my lifetime in practice here in Queensland. For every person whose life is saved, there are 10 people who have been saved from very severe injury. So while we have a tremendous interest and tremendous dedication, the amount of time committed to the care of the multiple injured is not great now.

**Prof. DAVEY:** What do you put towards seeing that reduction over your time period in practice?

**Assoc. Prof. WALL:** I believe that a huge component is control over human behaviour, which is through legislation and through administration of legislation, particularly control of drinking, control of speed, car design, road design and police administration. It is clearly shown that a driver will not do what is very wise every time unless there is a high chance of them being caught. We know from studies in rural and central areas that a driver will put a seatbelt on in the city because he is likely to be caught and then remove his seatbelt when he goes to the bush. It is clear that it is not the magnitude of the fine nor good commonsense that seems to govern drivers' behaviour but the likelihood of being caught. I think that has been a huge factor in Queensland. We have reduced the death rate from 13 per 100,000 per year to six per 100,000 per year. Our figures are better even than Victoria's, temporarily.

**Prof. DAVEY:** Jim, I have heard before that country people do not wear seatbelts. Why is that? Why in your electorate do people not wear seatbelts?

**Mr PEARCE:** I am going to have to be honest with you and say that I see it happen a lot. I will be out travelling in the electorate and the farmer will drive to the front gate and be without a seatbelt. They do it because they believe that they can get away with it. I think Daryl is right. When they are in an environment where it appears they will be caught they will try to adhere to the road rules, but if they can get away with it they will attempt to do it. Even in country areas we have to be honest and recognise the fact that people go to the hotels in country areas and they know all the back roads.

**Prof. DAVEY:** They don't, do they?

**Mr PEARCE:** They probably do it in the city, too. That is a reality of life and it is just the attitude of people. It is the attitude factor that I think we have to start looking at.

**Prof. DAVEY:** We have got the helicopter, the helicopter has gone and we have started the medical procedures. We have evacuated the most critical care person off the site. We then start going back to the actual scene itself. Does the investigation start straight away at the scene? Is there some sort of summary that is going on?

**Insp. WOCKNER:** Most definitely. We have a running sheet that we keep back at the communications centre but, more importantly, when I attend that scene I would make sure that my traffic investigation squad officer has been nominated and is in the progress of getting out to the scene. Then they would be starting to do their investigations of the incident.

**Prof. DAVEY:** You notice a semitrailer involved. Would you go and try to find the log book? Is that one of the first things you are trying to look for in terms of a scene investigation?

**Insp. WOCKNER:** Provided it is a safe area to go into, without fuel spilling everywhere, et cetera. If the Fire Service says it is all right to go in, that is the first thing we would be looking for, as long as there are no persons in that vehicle.

**Prof. DAVEY:** Do you often not find the log book?

**Insp. WOCKNER:** It is a common occurrence, yes.

**Prof. DAVEY:** We go back to the early scene where John saw another truck driver running into the cabin. Could that have something to do with the log book disappearing?

**Insp. WOCKNER:** It could have, yes. It is a common occurrence.

**Prof. DAVEY:** Once a crash occurs a log book disappears. What are some of the reasons put forward for that?

**Insp. WOCKNER:** The first thing that comes to our mind would be the fact that they had not taken their appropriate breaks and they had not filled out the log book. That is very common also. So they would take that log book and hide it somewhere, hopeful that we would not be able to pinpoint it back to fatigue.

**Prof. DAVEY:** Isn't that an offence? Haven't they committed an offence by not being able to produce a log book?

**Insp. WOCKNER:** That is correct. They must produce it on demand, but sometimes the penalty of not producing it is less than the penalty of the non-compliance.

**Prof. DAVEY:** Jamie, do you know what the penalty is for not producing a log book?

**Mr McKEACHIE:** I am guessing it would be in the order of \$200 to \$300.

**Insp. WOCKNER:** That is correct.

**Prof. DAVEY:** So one of the key strategies that Mark mentioned before about managing fatigue—we are only looking at the heavy vehicle industry at the moment—is the actual vehicle log book. So in a major incident it often disappears?

**Insp. WOCKNER:** That is correct.

**Prof. DAVEY:** So we have lost our key management tool. If we start to run through and look at that, we start to get this idea of fatigue. Ki, how do you classify fatigue in terms of your work? What do you categorise as fatigue?

**Dr DOUGLAS:** I have my definition in my presentation, which is sitting in my bag, but it is a subjective feeling of tiredness. I do not have a stronger definition than that, but it is all very subjective. It is really based, to my way of thinking, mainly on how much sleep a person has had in the preceding days or nights.

**Prof. DAVEY:** So, looking at this case, we would be looking at how long that driver has been on duty?

**Dr DOUGLAS:** It is not just time on duty; it is actually time asleep and how much time they have slept—whether it was fragmented or sleep that was continuous. You would look back over the last few days; it is not just the night before.

**Prof. DAVEY:** So if we had our logbook we could see how much sleep a person has had?

**Dr DOUGLAS:** I have never seen a logbook, I have to say.

**Prof. DAVEY:** Trevor, you have seen a logbook. Does it have how much sleep a person has?

**Insp. WOCKNER:** No, it actually shows how long the break is that they have taken. It is not going to necessarily have the sleep; just the break.

**Prof. DAVEY:** So our management tool, again, is not necessarily a good management tool to identify fatigue; would you agree with that?

**Dr DOUGLAS:** I would agree with that.

**Prof. DAVEY:** We go back to the other vehicle, the new Audi. As we said, there were two females driving. Again, that is interesting because it tends to be males in road crashes; would that be correct, Mark?

**Mr KING:** Yes, males are much more likely to be involved in road crashes, particularly the more severe ones.

**Prof. DAVEY:** Why is that?

**Mr KING:** A combinations of things. They tend to drive more often than women do. If women and men are in the same car, it is more likely that men are driving. That is changing. Men on average do a lot more driving than women, and certainly in rural areas they do more driving. Then there are a whole lot of issues with younger male drivers being more likely to want to drive simply because they enjoy driving. Also they tend to be sensation seekers and take risks.

**Prof. DAVEY:** In this case we have two young female drivers. We find out that they have come from Sydney. They have gone through university and they have jobs. One has a job with a major accounting firm and the other has a job with a major law firm where they have billable hours. Their days are broken up into six-minute slots of chargeable, billable hours. What is the world coming to! They plan for this long weekend at Noosa and they live in Sydney. So they have worked through till 3 in the morning before they left because they had to get their billable hours up. Now, we have talked about the truck driver. Jamie, truck drivers have to be careful in terms of how they approach their driving and the employers have to be careful. There has been a case in Queensland recently where I think the employer was held responsible.

**Mr McKEACHIE:** Yes, the area of regulating for fatigue and driving hours for heavy vehicles is undergoing significant change at the moment. One of those is in relation to a concept called chain of responsibility, where off-road parties can be held responsible if they cause a breach of a driving regulation on-road. In the case you refer to, a company director was held to be responsible for the way they rostered and directed their drivers to meet certain deadlines, and that caused a breach of the driving hours regulations.

**Prof. DAVEY:** Going through this, Robert, in your accident investigation do you look back into the history of these types of drivers or do you investigate only the crash scene?

**Snr Sgt COCHRANE:** No, the driver's history would be looked at and certainly their background. Not all crashes are attended by police with some advanced training in crash investigation. This scenario dictates because of the seriousness of the crash it would be attended by an officer with some advanced training in crash investigation. The driver's history would obviously be looked at. One of the problems is that until about 15 years ago most crashes were investigated by asking witnesses or drivers what their recollections were, and that has been found to be not the greatest way to go about a crash investigation because people's recollections are not always that accurate. They remember little snapshots of a short time frame of two or three seconds, and they tend to fill in the gaps to make sense of what they can remember.

Over the last 15 years our focus has been more and more on physical evidence and the physics involved in the crash and collecting evidence from the scene, rather than focusing just on what drivers or witnesses say. Part of our problem in this scenario here would be that by the time a crash investigator got to the scene there would be tow trucks, ambulances, fire appliances, other police vehicles driving over the shoulders of the roads where vital evidence is—i.e. tyre marks leading up to the crash scene. So a lot of evidence is destroyed prior to an investigator getting to the scene.

**Prof. DAVEY:** We were talking about a driver from interstate when we are starting to look at the driving history. Can you go and find out what happened previously with these two young girls from Sydney?

**Snr Sgt COCHRANE:** Yes. It could be a matter of asking them during an interview process. It could also be a matter of checking working hours with an employer. There are ways of going about finding out what a person did prior to the crash.

**Prof. DAVEY:** Again, as a professional investigator of serious crashes, when do you start to click on to the fatigue?

**Snr Sgt COCHRANE:** It would be something that would be suspected when you are advised of the job. If it is an early morning job on a straight country road, straightaway the wheels would be turning that this could be a fatigue related crash.

**Prof. DAVEY:** So we have some reasonable belief that there is a fatigue related crash. The logbook may have disappeared out of the semi. We hear that that actually happens. We also know that there is

legislation and there have been examples where companies have been prosecuted for pushing drivers in terms of the semis.

Let us go back to our two young women who have worked until 3 o'clock the night before. The night before that they went out to a party, and the night before that they went out for dinner. However, we have found out that they have been working at least 12-hour days to try to build up their six-minute slot billable hours to allow them their long weekend. Is KPMG Peat Marwick, as their employing firm, held liable for these people who have been working 12- or 13-hour days for three days in a row, Ki?

**Dr DOUGLAS:** I think the lawyers would say it would depend on the circumstances, and the facts revolve around them. I am sorry I did not bring our lawyer with us. Twelve hours by itself is not desirable but lots of people do it, and a 12-hour day shift is a lot different from a 12-hour night shift in terms of the effect on fatigue.

I think you mentioned they went to a party, et cetera. So there has to be a balance between what was expected of them at work—whether that was fair and reasonable—and some personal responsibility as well. So what they did after-hours knowing that they were already tired. There has been some precedent in the court—and I have a couple of cases to present later—where judges do take into account the person's movements, jobs and everything else they have done in the preceding 24 to 48 hours. I cannot give you a yes or a no answer because I would have to know a lot more about the job and whether it was self-driven—because they wanted to get away for a weekend—or whether it was a constant expectation.

I know what you mean about these billable hours because I have talked to young lawyers before. You cannot get eight or 10 billable hours in eight or 10 hours. It does not work. So inevitably they are all working 12 hours or longer. I should ask before I really put my foot in it: are there any lawyers in the audience? I think we would need to take legal advice on that—not from the same firm, of course.

**Prof. DAVEY:** It then goes to the point that was brought up before. We had this crash on a country road. What say these two young women were involved in a crash at 2 o'clock in the morning in Sydney coming home? If you went to a crash at 2 o'clock in the morning in Brisbane, does it then strike you as a fatigue crash?

**Snr Sgt COCHRANE:** Quite possibly, yes. I think fatigue is always in the back of a crash investigator's mind. It is always a factor that should be considered.

**Prof. DAVEY:** What happens when you find out they were coming home from work? Do you drop it out?

**Snr Sgt COCHRANE:** Part of the investigation process would be to track their movements. This could be done through mobile telephone records to find out where they were at a particular time through which tower they made a mobile telephone call. So on a country road if they are travelling long distances you can almost plot their route along a highway if they are making continual mobile calls, what time they left, where they started their journey and what time they anticipated to arrive at their journey's end.

**Prof. DAVEY:** What say you found out that perhaps this crash did not occur in Warwick and it happened here in the city, in the metro area, and they had just simply been at work for 14 to 15 hours? Is that a fatigue crash?

**Snr Sgt COCHRANE:** In my mind, yes, because if they have been at work for 14 to 15 hours that has an impact on their ability to drive a car safely.

**Prof. DAVEY:** Would you say that crashes in the city areas are often underreported in terms of being fatigue crashes?

**Snr Sgt COCHRANE:** In my opinion, yes.

**Prof. DAVEY:** Dianne, you represent the Gold Coast region, a metropolitan region. Are you finding these types of issues problematic for people in your electorate—long working hours and 'as I leave, don't tell my mother about fatigue'?

**Mrs REILLY:** Yes, absolutely. Mudgeeraba is one of those strange Gold Coast seats in that it is a little bit urban and a little bit rural because it is in the Gold Coast hinterland. But looking across the Gold Coast as a whole a high proportion of the population is working in the hospitality industry and is doing a lot of shiftwork. So it is certainly a very high factor and it could be a higher factor than we think.

I think generally people on the Gold Coast and in urban areas understand, know and believe that they get tired when they drive, but they believe the crashes happen in the country because of fatigue. Crashes do not happen to them in the city because they do not have as far to drive. 'I'm tired but I'm going to get there soon. It's only a short distance.' I think that is the educative process we have to undergo. I do not think you can just say that you do not get tired or have fatigue crashes in the city; you do, but people do not believe that is going to happen to them.

**Prof. DAVEY:** Patrick, I do not know if this is your area, but when you look at rural areas the rural people always say, 'It is those city people who have the crashes. They just keep driving through.' Is that correct?

**Mr McSHANE:** I do not think it is correct. Since 2000 police have been recording the origin of journey of controllers involved in crashes. We have been able to do some analysis on that. It seems to be Brisbane

fairly localised. About 80 per cent of drivers involved in fatigue related crashes are within 150 kilometres of where they started their journey.

**Prof. DAVEY:** Everyone has gone quiet. So this scenario may not necessarily be a common one in that it is someone from Sydney who crashes near Warwick. It may be someone from Toowoomba who crashes near Warwick. It more likely may be someone from Warwick who crashes near Warwick.

**Mr McSHANE:** That is correct.

**Prof. DAVEY:** With our road safety campaigns, Jamie, how are we targeting fatigue? What have we been doing at the moment to target fatigue?

**Mr McKEACHIE:** In terms of public education it is getting the message out about safe driving behaviour, making sure you are rested before you embark on a journey. Particularly at peak times and holiday times we get these messages out. There is advertising of the Driver Reviver sites, stressing to people they should break their journey every two hours for at least 15 minutes and they should take advantage of those sorts of things. Do not take alcohol the night before; certainly do not take it while you are driving. There are those sorts of messages, trying to impress upon people that they should not do what these people in this scenario which you have described have done. They work and then try to drive all night.

**Prof. DAVEY:** So often it is about drivers taking responsibility.

**Mr McKEACHIE:** Yes, indeed. All drivers are required to take responsibility for their actions on the road, whether it is obeying the laws or having due care and attention or due regard for their fellow road users.

**Prof. DAVEY:** Taking up this theme of responsibility and due regard—what generally happens when you speak to the truck driver? Do they admit guilt, or does any driver admit guilt?

**Insp. WOCKNER:** We find basically that truck drivers will not admit any guilt. The passenger vehicle is bit of a different story. Most of the times they are only too willing to tell you what has actually happened, and then we deduct from that whether or not they have done anything wrong or not.

**Prof. DAVEY:** Why is that?

**Insp. WOCKNER:** That is a hard question. I don't know. I think that essentially you have professional truck drivers and that is what they are—they are professionals. They know what to say and what not to say.

**Prof. DAVEY:** I notice on my insurance it actually says if I have an accident basically say nothing. 'Do not admit liability' it says on one of my advisory cards. We do not have anyone from the insurance industry here at the moment? We do. Why does that happen? I am not after a legal justification.

**Mr SOPINSKY:** That, of course, would be an attribution for blame and settling the costs of any insurance claim that came out of that incident.

**Prof. DAVEY:** So in a way it is an advice and a standard practice where people do not admit liability.

**Mr SOPINSKY:** Well, certainly I can speak on behalf of AAMI Insurance, not all insurers. However, I do not believe we actually have that advice in our current policy document.

**Prof. DAVEY:** Does this concept of people not admitting liability cloud what actually led the research? Does that cloud what you actually find and how to find it?

**Insp. WOCKNER:** I come back to the comments of my colleague down there before. Essentially, we rely upon the evidence there to be able to fully investigate an accident of that nature, and if we cannot get that then we have to start looking elsewhere to try and determine the cause of that accident, so it is a very difficult issue.

**Prof. DAVEY:** We heard this morning about fatigue being hard to define. Ki, you said fatigue was very hard to define, but if you were giving assured advice to some drivers, or even in the workplace and industry, what are the characteristics that you would look for?

**Dr DOUGLAS:** Of when they are—

**Prof. DAVEY:** When someone is fatigued.

**Dr DOUGLAS:** The evidence is that everyone knows when they feel tired, particularly in relation to driving. I think it is all on the Queensland Transport web site, amongst others. But it is the yawning, it is the sort of droopy eyes, it is the not being able to sit still in the seat and fidgeting all the time. If it gets really bad, you know, you sort of suddenly nod and wake up again. People actually recognise when they are tired. What they then do not do is stop, and that is the problem we have. I think Mark was talking about in-vehicle alarms that can alert you when you nod off too much. I think people have done some work on blink rates. But none of that is going to work unless the car is immobilised in some way or the person will pull over and stop.

As far as I understand, the literature shows that people do recognise the early hours of feeling tired; they simply do not do anything about it. They think they can push through. I might ask around the room: how many people have been in that situation where they know they feel tired and they think, 'Oh, I'll just go another few minutes. I'll wait till the next town; there's a KFC somewhere', or whatever? Rather than pull  
Brisbane

over there and then or change drivers—if you are driving with another person—they keep pushing through because they think they will be able to overcome it. The evidence shows that you cannot overcome it. It is not something that is a matter of willpower. Once you get so tired that you are in that situation of hypovigilance, et cetera, you actually do not have much control. If you do not pull over soon, you are going to be in strife.

**Prof. DAVEY:** I hear of this thing called micro sleeps. Is that an indicator of fatigue? What are micro sleeps? Mark?

**Mr KING:** Yes. You will often see it—I see it with my mother-in-law when she comes over to visit.

**Prof. DAVEY:** That is just outright fatigue.

**Mr KING:** I will have to stop her from reading the transcript, I think. But someone gets tired and they will nod off. It might only be for a short time—a minute or two—and then they will be awake. You can say to them, 'Oh, you were asleep then. We heard you snoring' or whatever, and they will not actually be aware that it happened. You close your eyes. It is just for that little extra bit too long and you have drifted off. You can flick them open again and think nothing has happened but it can have been a minute or two. In a driving situation that can be quite catastrophic.

**Prof. DAVEY:** Daryl, we go back to the person in the hospital. Would you do a blood analysis of the person, in terms of medical procedures, to see what they actually had in their blood?

**Assoc. Prof. WALL:** Blood analysis may be justified by the clinician if they think it would influence the treatment or help the patient get better quicker. It is not required by law, and it is still up for investigation. Presently doctors are protected if they choose to take that blood sample, but overall doctors are not greatly enthusiastic about routine breath testing of all accident victims unless the matter is cleared by legislation still under review.

**Prof. DAVEY:** So, Robert, if the person was comatose, would you request a blood specimen?

**Snr Sgt COCHRANE:** It would be nice to get a blood specimen. It is not always possible because of the condition of the patient. If the patient's injuries are life-threatening injuries it may not be possible to get a blood specimen.

**Prof. DAVEY:** Jamie.

**Mr McKEACHIE:** Yes, the legislation does allow police officers to request it.

**Prof. DAVEY:** Does it have to be supplied?

**Mr McKEACHIE:** My understanding is there is an agreement that it will be if it is so requested.

**Prof. DAVEY:** What about if one of the drivers was fatally injured? Are fatals blood tested?

**Snr Sgt COCHRANE:** Normally under the new Coroners Act 2003 a blood specimen would be taken during an autopsy if an autopsy was undertaken.

**Prof. DAVEY:** The presence of drugs or alcohol, if that is identified; does that affect the outcome of insurance cases or third party insurance?

**Mr SOPINSKY:** It certainly does.

**Prof. DAVEY:** So the presence of a drug; does that prove impairment or fatigue?

**Snr Sgt COCHRANE:** It could indicate fatigue, particularly with amphetamines.

**Prof. DAVEY:** So does the insurance follow the same line as a police investigation in terms of proof, or are you able to work without those and simply decide that there was the presence of a drug in someone's blood?

**Mr SOPINSKY:** As an insurer, we would certainly be relying upon the information provided by the police—the investigation reports or crash reports provided by the police we would rely on. Certainly for an insurer, if you were outside the law and you were operating a vehicle your insurance is null and void.

**Prof. DAVEY:** If we look at the truck driver, would it be a consideration or a possibility, Trevor, that there may have been some amphetamines involved with a truck driver?

**Insp. WOCKNER:** It is certainly a consideration, and that is something that the investigating officers would look at and, if necessary, make that a requirement—the provision of blood.

**Prof. DAVEY:** Ki, do amphetamines increase your performance? As a driver, does it keep you alert?

**Dr DOUGLAS:** I should pass this over to another medical colleague. Sure, they keep you alert, but they probably impair your performance.

**Prof. DAVEY:** Daryl, what would you say?

**Assoc. Prof. WALL:** They do increase your attention, but it fluctuates. The problem with all stimulants—such as coffee, chocolate and chewing gum—is that the stimulus that you get is relatively short lasting and unpredictable. Once the effect wears off there is a high likelihood that very serious inattention will start developing, and that short interval between inattention and a disaster may be as little as 30 seconds. So it really concentrates inattention into a very short period. I think this is critical. People should be familiar with their response to any strategies they might take to overcome fatigue.



**Prof. DAVEY:** So another way of combating this, I suppose—the fatigue associated with the substance use—is to take more drugs again?

**Assoc. Prof. WALL:** It is a ploy, but that just increases the likelihood of the onset of inattention to be more precipitous again. So with each strategy the precipice gets closer and steeper so that the consequence would be not just inattention but unconsciousness.

**Prof. DAVEY:** Then what happens if we find out that a person has been driving these 12-hour shifts with some rest breaks but is constantly taking amphetamines over a period of weeks to do this. What would their performance be like?

**Assoc. Prof. WALL:** We have talked about professional truck drivers. They are very, very skilled at recognising warning signs. They are also very skilled at recognising danger signals on the highway. Their level of performance in the presence of fatigue is remarkable. They also team up, too, because they will communicate with each other over hazards and so they are alert through their environment and their CBs. They actually help each other to overcome their profound fatigue. An inexperienced driver is at much greater risk of the consequence of fatigue.

**Prof. DAVEY:** We have talked about these truck drivers. We have talked about the fact that there is actually legislation—there are laws—about this, a type of fatigue, however we manage this. However, Trevor, what you find out, as your investigation goes on, is that a couple of your officers actually pulled up this Audi. They recognised the Audi because there were two young women in the Audi. They were police officers out past Warwick—and that is an unusual sight—but they did make the comment to you that they looked tired; they seemed tired. They talked to them and they found out that they were coming from Sydney and they were going for a long weekend to Noosa. Could your officers make them pull over and have a sleep?

**Insp. WOCKNER:** No, not at all.

**Prof. DAVEY:** However, could you pull the semi over and could you find reasons to make the semi have a rest? Could you put the semi off the road for a period of time?

**Insp. WOCKNER:** If they have not taken prescribed breaks, yes.

**Prof. DAVEY:** So we have some system, however fuzzy it is, to control the semi. However, even though your officers identified the people as being tired, they knew they came from Sydney, they knew they had been driving so many hours and they knew they had worked the night before, there is no power to actually stop them and make them hop out of their vehicle.

**Insp. WOCKNER:** That is correct, and what normally would happen is that a police officer would recommend to them that they take a break, but most of them just continue on their way.

**Prof. DAVEY:** So you know of police officers who have recommended—and you have recommended yourself—that people take breaks and they just continue?

**Insp. WOCKNER:** That is correct, yes. It is fairly common.

**Prof. DAVEY:** We talked about the truck drivers with drugs. However, we found that to pass the time of day or to pass the time of morning these young girls actually took some speed on the way up from Sydney. We looked and we found that there was speed in their system. Is that common, Mark?

**Mr KING:** It is becoming more common. I am not exactly sure of the rates. It is something that has been a growing phenomenon among young people in general, and it is becoming more prevalent among women, yes.

**Prof. DAVEY:** Among women as well.

**Mr KING:** Yes.

**Prof. DAVEY:** I see you nodding there, Daryl. Do you have something to add to that in terms of the profile of substance use in accidents, et cetera?

**Assoc. Prof. WALL:** Yes, Jeremy. We now know that the recreational drugs are as commonly involved in aberrant driver behaviour as alcohol; it is just that we are not looking for it as often now. It is also, of course, well known that not only are about 50 per cent of men involved in drug experimentation but about one in five women are involved in drug experimentation, too.

**Prof. DAVEY:** We know that this drug experimentation is going on. We know that people are driving. Trevor, can you pull the people up? Do you test them for drugs?

**Insp. WOCKNER:** No, there is no provision for that at the moment.

**Prof. DAVEY:** We test for alcohol, as Mark pointed out before.

**Insp. WOCKNER:** Yes, we do the random breath testing.

**Prof. DAVEY:** But we do not have a simple, portable, efficient means of drug testing at the moment?

**Insp. WOCKNER:** No, that is correct. Basically, what you have to rely upon is the level of indicia, so slurred vision or making basic observations of the driver themselves. Sometimes from our perspective it is very difficult to detect the presence of drugs in that environment, whereas with alcohol obviously you have the smell of alcohol, the slurred speech and vision impairment and those types of things that we look at.

**Prof. DAVEY:** We have got a crash investigation report. What type of data does Queensland Transport get in terms of fatigue crashes? What data do you work from, Patrick?

**Mr McSHANE:** To determine?

**Prof. DAVEY:** What is the type of data? Do you get a police report that says this is a fatigue crash?

**Mr McSHANE:** We get the police report that itemises the characteristics of the crash: the time of crash, the day of week, the nature of the crash, whether it was a single vehicle or multi vehicle. A single vehicle would be an overturn or a hit object or hit parked car. We also get the police crash description and contributing circumstances to that crash that help us determine fatigue. The police can note it. The police can identify the crash as being a fatigue related crash. Queensland Transport also use a surrogate measure of time of day, type of crash and the speed zone as an operational definition to identify that crash as fatigue related. Based on the description that the police provided they may also note that the driver was drowsy, in which case we would augment that and identify that as a fatigue related crash.

**Prof. DAVEY:** Mark, as a researcher, what would improve your research in the area in terms of data; if you had one wish in terms of fatigue?

**Mr KING:** The ideal thing would be if we had some way of telling, after someone has been involved in a crash and even after they have been killed, of how fatigued they were, which would be some sort of physiological indicator. I think that is something that is probably impossible, but that would make things very easy.

**Prof. DAVEY:** I will leave the data field and get back to the reality. I am not quite sure whether it is Robert or Trevor, but I will go back to a police officer in Warwick. If you were a police officer and you had to go and visit the parents of those young girls—is it the police officer's job to visit the parents of those young girls and advise that someone has been killed?

**Insp. WOCKNER:** That's correct, we would be the first person to go in.

**Prof. DAVEY:** How many times have you done that in your life?

**Insp. WOCKER:** Numerous.

**Prof. DAVEY:** Robert, can I ask you that, too?

**Snr Sgt COCHRANE:** In the past, quite often, but in Brisbane it is normally not the crash investigator's role to advise the next of kin of a death, although our investigators do liaise with family members during the course of the investigation.

**Prof. DAVEY:** So really someone from the local area?

**Snr Sgt COCHRANE:** Probably the first police on the scene in Brisbane would advise the family of a death.

**Prof. DAVEY:** Can you run through for me one of your last experiences when you had to advise a family member of a death?

**Insp. WOCKNER:** It has been a considerable time for me now because of my position. I suppose the thing that goes through your mind initially is that you have to try to deal with not only your own grief of having to go and give that message over but also try to deal with the grief of the next of kin. The first question that normally they ask is how and when, and they want to know every bit of detail that they can get. That is a very difficult thing to be able to explain to them. Most times they ask to see the deceased or their next of kin. And, of course, if it is a fairly traumatic type of accident you have to try to persuade them that that would not be in their best interests. That is again a very difficult thing to do.

**Prof. DAVEY:** What do you do afterwards?

**Insp. WOCKNER:** Well, what we actually have now is we have a critical incident debriefing.

**Prof. DAVEY:** In Warwick?

**Insp. WOCKNER:** Yes. We have our peer support officers and those types of things. One of my basic functions is to ensure that any of my staff that attend a serious injury accident or fatality, particularly if it involves children, that we involve the peer support officer in that process. Normally we are a fairly close-knit group of people, as most emergency service people are, and you tend to support each other.

**Prof. DAVEY:** Di, in wrapping up I have three more points to make. You are a relatively new member to the Travelsafe Committee and a new member to parliament?

**Mrs REILLY:** This is my second term, and I was on the Travelsafe Committee.

**Prof. DAVEY:** As a member of the Travelsafe Committee and coming from Mudgeeraba where people would firstly think there is not an issue with fatigue—as you pointed out you live an area of great numbers of shiftworkers and you have people coming through the coast area—what has been the most enlightening issue on the fatigue area that you have found since you have been on the committee?

**Mrs REILLY:** Most enlightening—that is a really hard question. I think one of the really frightening things that I have found in the fatigue submissions that we have had in and the data and research we have been looking at is how much young people are affected by fatigue. Last term we completed an inquiry into novice drivers and their overrepresentation in the crash statistics and fatalities. During that time we looked Brisbane

at a whole range of factors as to why that was the case. Fatigue was kind of in there, but it is not until now, when I am looking at fatigue, that I realise that fatigue could be playing such an enormous part. If you look at the Gold Coast again, we have young people predominantly involved in the tourism hospitality industry, young people who predominantly want to go out and socialise before and after work, who are working a whole range of shifts and young people predominantly being involved in serious accidents. It is all coming together.

**Prof. DAVEY:** Not ignoring the issue of fatigue on rural roads, one of the growing issues perhaps of this decade in terms of fatigue is the metropolitan fatigue—the metro fatigue. Metro fatigue, Davey, 2004. Never miss a citation!

**Mrs REILLY:** I wish I had thought of it. I've only got Mudgeeraba.

**Prof. DAVEY:** Jim, you have been around—it is either that or the Queensland sun—for just a bit longer. Fatigue is nothing new in rural areas; would that be correct?

**Mr PEARCE:** I would not say that it is nothing new, but there are certainly a number of people in the work force, in particular employers in the area that I represent, who would say—and I will talk about the coal industry—fatigue to them is really not an issue for people who go out on the road to drive, because they see their responsibility as ending at the gateway to the mine lease. They see it as the responsibility of the driver once they get outside that mine lease whether they are fatigued or whether they are in a condition to drive.

**Prof. DAVEY:** It is the responsibility of the driver. Is it the responsibility of the driver to get home as well? They have been at work; they have a family; they want to get home.

**Mr PEARCE:** All good reasons for anybody to want to get home from work and unfortunately police statistics in the Nebo area show that most run-offs and rollovers can be contributed to fatigue. There are other factors, of course: the road, the hour of the day and oncoming lights and those sorts of things. But drivers are working these 12 hour shifts, sometimes six and seven days straight, and then jumping in a motor vehicle and trying to drive 300 or 400 kilometres to home because they want to get home to their family.

**Prof. DAVEY:** What is it about our community that we accept death on the road? We accept people being killed on the way home from their shift in the Nebo region, or we accept someone being killed on the road from Blackwater to Rockhampton after they have worked 12 days. Why do we do it for motor vehicles?

**Mr PEARCE:** It is a bloody good question, isn't it? The argument that I put up when I was doing media with regard to some of the reports on the young driver investigations that we had last year was that if there had been one or two deaths in Iraq the whole country would be up in arms and wanting our troops brought home. We are losing 300 to 400 people on Queensland roads and people seem to think it is a natural occurrence. It is attitude. People have to start changing their attitude and start thinking that this is a reality, this can happen to me, and it is not going to be just somebody else.

**Prof. DAVEY:** Has it been that we just have this cultural love affair with the car and that we just accept it? Di, for a second term member of parliament, if you were sitting on the illicit drugs committee, that would seem sexy, would it, as compared to the Travelsafe Committee—not to say that road and transport seems boring to people.

**Mrs REILLY:** Absolutely. There are a whole range of topics that people find a lot more pressing than Travelsafe—than road safety. Unless they feel it can directly affect them and unless it is something that is so obviously blatantly illegal or immoral like illicit drugs or narcotics then they do not tend to get very excited or very passionate about it.

**Prof. DAVEY:** Yet our research shows that more people in Australia die because of road accidents than they do because of heroin overdoses. We do not have a Premier's or a Prime Minister's special committee into the investigation of road accidents as we do with illicit drugs at the Commonwealth level. Your point was that it does not affect them. It is interesting that you said that, because you are both actually members of local constituencies. I would have thought road accidents affect everybody.

**Mrs REILLY:** There is a kind of a dichotomous sort of attitude in the community. The most common complaints and issues that are brought to me are traffic congestion and hooning. 'There are all these hoons. I can't sleep. I can hear them. It is dangerous. You have to get them off the roads. Oh, and in the morning I couldn't get to work because I was stuck in peak hour traffic.' When you break that down and say, 'What about your responsibility as a driver? Are you doing the right things as a driver? Are you sure that the rest of your family is? What if that was your teenage son who was out there driving noisily and loudly in your car?' The reply is, 'Well, it is not, it is not, it is not. It is never me; it is always someone else.' So they think road safety and the trauma that is associated with crash statistics is about someone else. For them it is about their own personal comfort and making sure that no-one else—none of those other bad drivers—create an unsafe situation for them.

**Prof. DAVEY:** In terms of summing up, can I just have a show of hands of those people in this room who have had a family member or a close friend who has been either seriously injured or fatally injured in a motor vehicle accident? Can I have you raise your hand. That is not bad, actually, for something that

doesn't actually affect people, is it? I think that that is the issue. Would you say that that is one of the issues, that it is actually about everyone, Jim?

**Mr PEARCE:** Definitely it is about everyone, but how do get everybody to have the same attitude about what they do out on the road. I have an electorate that covers 44,000 square kilometres so I spend a lot time on the road and I just can't believe what I see out there. It is about attitude. You know, 'Stuff you, mate. I'm going to go round you whether you like it or not,' and, 'I'm going to slip in there in front of you,' or, 'I am going to sit right on your backside.' I do not know how you fix that. Having the police out there enforcing the law; you get the silly buggers ringing me up and saying, 'I got booked in this area. I want you to do something about the ticket I got.'

**Mrs REILLY:** I have exactly the same experience. For every five phone calls I will get from someone complaining about speeding down their local street, I will get another two calls from someone who got a ticket that week saying, 'It wasn't me. I wasn't speeding. It was the car behind me.' Or, 'Why is there a speed camera on this street? It should be somewhere else.' It is really hard for us to marry that up: do you want road safety or do you not?

**Prof. DAVEY:** Yet three quarters of the people in the room have had a member of their family or close friend either seriously injured or killed. I promised people I would finish on time because of fatigue. I will go back to you, John. It has been a big day. You finally got to your meeting. Were you coming home that afternoon?

**Mr GRAY:** I had a recent example where I did stay overnight.

**Prof. DAVEY:** You were going to do the right thing and going to stay overnight. However, your boss, the chief executive officer, Alan Terry, rings you and says, 'Look, we—as in you—have an important meeting at 6 o'clock in the morning; I want you to be here.' What do you do?

**Mr GRAY:** Coming from a road safety field I would make sure that I was okay to drive in the first place. I value my life more than my job. I would make sure that I got adequate rest. I would probably drive in the night-time, but make sure I was still awake.

**Prof. DAVEY:** You got up at 4 o'clock that morning. Your wife has got a new baby; it had reflux all night. Then you got in the car, drove past Warwick, attended the accident, went to the meeting. Alan Terry rings and you make sure you drive at night; you make sure that you have enough sleep that night to get back to Brisbane. How much sleep is enough?

**Dr DOUGLAS:** It depends how much sleep John had the night before and the night before that and the night before that.

**Prof. DAVEY:** But the baby is only four weeks old.

**Dr DOUGLAS:** The law courts say six hours. If it is less than six hours, you will go to jail. There has been a precedent to show that.

**Prof. DAVEY:** You cannot have six hours. What do you do?

**Mr GRAY:** I would say that I will be late for the meeting.

**Prof. DAVEY:** I hope so. Thank you, everybody.

The forum adjourned at 11.00 a.m.

The forum resumed at 11.34 a.m.

**Mr PEARCE:** The next session is 'Fatigue: An International Perspective' presented by Pierre Thiffault from Transport Canada. Pierre is a research psychologist with 15 years experience in road safety dealing with matters such as high-risk drivers, young drivers, drink-drivers, recidivist offenders, speed management and driver fatigue. He is currently working in the area of transport fatigue as a researcher at the Road Safety Directorate of Transport Canada. He has been to Australia on a couple of occasions already and he thinks it is a great country. We welcome you here once again, mate.

**Dr THIFFAULT:** Good morning. It is a pleasure to be here this morning. I will be talking about driver fatigue. I will give you an overview of my presentation right now. This morning I will give you a few words about epidemiological data. In Canada we do not really have a lot epidemiological data. Mainly what we have when I looked before I left is national crash databases with police reports, so I am going to give you a little bit of that. I will give you a few rates that we have now, but I will give you mostly epidemiological data in the literature and we can talk about the problems that we have in assessing this problem. I will give you a few elements of the Canadian Fatigue Task Force, which is aimed at the general driving population. I will not be talking about commercial vehicles this morning. Another group is working on that. I am not aware of this issue right now, so I will not be talking about rules and regulations about hours of service and so on. Then I will switch to my thesis. I did my thesis on driver fatigue on a driving simulator and I will give you an overview. I published two articles last year and I will give you a rapid overview about that. I want to say that the views that I have represented here stem from my personal views and my professional opinion about these issues. It does not necessarily represent the Canadian government's view of these issues. I just started to work there and I am not involved with the fatigue issues at this moment, but I will be in November when I join that group. So I need to tell you that this is mostly my professional opinion as a researcher.

If we look at crash data first, we all know that there is a problem to identify the rates—the presence of fatigue in crashes. Most of the time we rely on what the police officer thinks when he goes to the scene and looks at the scene. In most jurisdictions you have on a police report a box that you can check for fatigue or sleepiness or drowsiness, and it changes from one jurisdiction to the other. Most of the time we think these databases under-report the prevalence of fatigue in crashes and the prevalence of fatigue on the roads, because it is not only in crashes. We have to see the importance of drowsiness in the driving population. Usually the rates range from one per cent to four per cent. It is widely understood that it should be a lot higher than this. I looked in our national databases for 2001. For fatal crashes, when fatigue and inattention are checked in the boxes, it is only 6.34 per cent of the cases. If you look at fatigue alone, it is only 1.5 per cent. In Canada we are starting to work on this issue and the population is not too much aware. I think that in Australia there is more interest in the general population. You have more workshops and international conferences and so on. I do not know how this relates to the subjective evaluation by the police at the crash site, but maybe that could affect it.

In Canada we do not really talk about this too much. It is really just picking up. Researchers have been aware of that and much research has been done to look at a different set of criteria than just police reports—that is, perhaps criteria such as the vehicle left the road without attempting to break to avoid the accident or the driver was alone and so on. From every study, the criteria are different and the rates are different. To give you an example, in the Horne and Reyner study fatigue was involved in 16 per cent of road crashes and 23 per cent of those occur on more monotonous roads. The problem of monotony is what I am going to talk to you about this morning. There are always more fatigue related accidents on monotonous roads. The Fell study found that fatigue was involved in six per cent of crashes, 15 per cent of fatal crashes and 30 per cent of fatal crashes on more monotonous roads. This is a lot more than the 1.5 that is found in our national database. In France, the analysis of a sample of 300 crashes led to the identification of hypovigilance as a primary causative factor in 34 per cent of fatal crashes.

Another way to look at this problem is to ask drivers about their own experience about sleepiness and drowsiness at the wheel—that is, survey data. An American survey in 1999 found that 62 per cent of drivers felt drowsy while driving in the past year, 27 per cent nodded off while driving—I think that is quite high—and 23 per cent knew someone who had a fall-asleep crash. In the McCartt et al study in 1996, 54.6 per cent of people drove drowsy in the past year, 22.6 per cent of drivers fell asleep once or more in the past and, surprisingly, only 2.8 per cent crashed after falling asleep. So you have 20 per cent who fell asleep but did not crash, which is a little odd. Interestingly, 1.9 per cent crashed due to fatigue but without falling asleep. That is interesting to me because I am interested in the problem of hypovigilance where your performance is altered before you start to feel drowsiness but is fatigue related. In an old survey from Tilley et al, 64 per cent of the drivers drove drowsy and seven per cent crashed because of drowsiness. Overall, the rates differ. It depends on the way you are looking at it, the databases you are looking at and the criteria you are using. But there is an international consensus today that fatigue related accidents are a pretty serious issue that have to be attended to quite urgently. It is a pretty hot topic in road safety. There is a lot of money going into this area right now and a lot of laboratories around the world that are working on this.

In Canada we have the Canadian Fatigue Task Force. It is in the strategy to reduce impaired driving. You will find it in the emerging issue category because it is an emerging issue in Canada. The mandate of this task force, firstly, is to provide a definition of impairment through fatigue. I think you are all aware that we have a definition problem. I started to work on my thesis on fatigue about 10 years ago. The first thing that I was asked for was a definition. This was my doctoral question. I thought I would just open a book and there would be a definition. But, no, I had to work a month on that and I had to invent something—that is, for a definition. So it is very hard. In science, our tools are not mechanical; they are conceptual. So if we do not have good tools and if we do not use the same tools, then we do not do the same work, so it is still a problem. I think that this speaks for itself about the complexity of it. So the first mandate is to provide a definition.

We want to determine the magnitude and depth of the problem of impairment through fatigue. We want to assess this and build new databases to look at this problem. It is a very early stage of this task force. It has just completed the terms of reference. So this is what we are aiming to do. We will analyse existing strategies and best practices world wide to prevent and manage fatigue in transportation. We will identify new strategies—and we will have to be creative—and examine information gaps. We need to evaluate Canadian stakeholders and their responsibilities and how they can work together on this problem. We need to establish performance measures to assess the evolution of the situation.

The target group of this strategy is not drivers of commercial vehicles. There is another whole group that works on that issue and works on regulations for hours of service and so on. That is not the case here. We are looking at the general driving population. We have target groups in the general driving population, but we do not only aim at these target groups, we aim at ordinary drivers. We will however focus on new and young drivers, shiftworkers, people suffering from sleep disorders and drivers whose lifestyle affects the quality and quantity of their sleep.

I will deal now with the elements of the strategy. The research component is about a definition, as I said. We also want to address endogenous and exogenous factors related to driver fatigue. This is a little bit of my contribution about exogenous factors. My thesis is about task induced fatigue. Endogenous factors are the basic and most fundamental factors. This is what determines the basic state of preparation

of the person to complete the task and relates to fundamental brain arousal at a given point in time. This relates to sleep factors, time on task and so on. This is what contemporary driver fatigue research is looking at at the moment. However, there are also exogenous factors. As a psychologist or a psychophysiological, I am aware of the whole field of vigilance studies that have been looking at fatigue and transportation between 1955 and 1990. They were looking at the impact of task characteristics and the monotony of the task on brain alertness and vigilance in performance. We know that the task you are performing also has an impact on alertness at the same time as endogenous factors, so it is a systemic interaction. I will get back to this.

However, Transport Canada will be looking into both these causative factors for driver fatigue. We want to profile target groups, to evaluate assessment tools and to review best practices. At the public education and awareness level, we will build up committees on different regions of Canada with all of the jurisdictions that are involved to address this problem in a collaborative way. We want to make some general prevention strategies for driver fatigue and target it to different types of fatigue like endogenous or exogenous fatigue and also target it at different high risk groups of the population. We want to look at how the media is treating this problem and how they are communicating this to the Canadian population.

We are looking at the role of policing as well, because it is fundamentally important in road safety. The police are the strongest tool that we have because they are on the road and the drivers relate very strongly to the police. We want to be sure that the police are very strongly involved in the partnership and that they have a leading role in this partnership. We want to increase police resources to work on this problem of fatigue. We want to be sure that the police have this clearly on the agenda and that the public knows that. It is important that the public is aware that the police are aware of the importance of driver fatigue.

We want to coordinate prevention and enforcement. We know that this is very important, and we have been successful in changing the behaviour of drivers about driving while intoxicated with alcohol. Coordination of prevention and enforcement is fundamental. We want to train enforcement personnel—that is, police officers—to better detect fatigue both at the scene of a crash and by looking at the behaviour of drivers on the road. We want to focus on the holiday season. As you know, Canada is a very big country—like yours—and people travel very far. Most of the time they are going away from Canada on their vacations. They want to go to the beach, which is 2,000 kilometres away. So you have the ordinary dad and ordinary mum who work all of the time who just drive short distances and then go for a 2,000 kilometre drive—and they have to get there because there is a hotel waiting. So there are a lot of problems and a lot of accidents. We will focus on this season with the police force, like we do with the Christmas season for drinking and driving.

At the road infrastructure and standards level, we currently have rumble strips on our roads and we are building more rumble strips. We will work on rest area facilities and more rest areas of higher quality so that people can rest more efficiently. We are going to work on roadside visual stimulation to alleviate fatigue and drowsiness. This relates to the exogenous factors that I was telling you about. In relation to the monotony of the road scene, this is going to be related to its research component, but it will probably also have some implications for countermeasures. We will review in-vehicle devices that aim at preventing and managing driver fatigue. At the legislative or regulatory level, at this point we are reviewing what other countries are doing to see if we can assess their effectiveness and look at the evaluative studies throughout the world to assess how people are dealing with this and then we will make our decision.

I will switch to my thesis now. It is a little odd, but I think it will interest you. First of all, I have to define the concepts of vigilance and fatigue. It is quite straightforward for vigilance. Vigilance is directly related to alertness, so to be vigilant is to be alert. It is related to brain arousal. It comes from a French tradition, and today French researchers still talk a little about vigilance as being awake—that is, are you vigilant, are you awake? Today in the scientific field it is understood that vigilance relates to sustained attention. Being vigilant is a cognitive process, an attentional process; it is to be able to maintain your attention on a source or a signal for a prolonged period of time. Interestingly, the definitions are related because to be able to maintain your attention you have to be alert. In fact, there is a direct causal relationship between alertness and the level of vigilance. When you move along the continuum of alertness, you move along the continuum of vigilance. When you are less alert, you are less efficient to detect the signals in the vigilance task.

Fatigue is more complicated. When I wrote my articles, I looked at all of the driver fatigue literature. I had piles and piles of documents and I went through all of the definitions. There are many definitions and somehow they kind of relate to the same general concept. Fatigue reflects a decreased capacity to perform, along with the subjective states associated with decreased performance. In the literature on driver fatigue there is a lot of work on subjective fatigue. This is so because we think that, if people were able to detect their fatigue more precisely, they would be able to adapt and do something about it. So there has been a lot of work in this field. It turns out that people are able to detect their fatigue, but the problem is mostly that they do not do anything about it. They are able to see that they are drowsy—when drowsiness starts to be more important—but most of the time they just do not do anything about it. They just keep going.

The driver fatigue literature states that vigilance decrement is the most robust effect of fatigue and sleepiness. They are both closely related. Vigilance decrement is one of the numerous effects of fatigue. The way I see it, there is a continuum of alertness or wakefulness—a physiological, energetical process

which relates to brain arousal. This is the fundamental data. When you move on this continuum from more to less alert, this would be the fatigue phenomenon, to my mind. You are becoming less alert. When you become less alert, many phenomena will occur at different levels of human functioning. It is very complex. Many things will happen. You will have some causal neurological and physiological processes. You will also have some behavioural phenomena. You will have some subjective phenomena—like boredom or not wanting to continue performing a task, or a little depression—but you will also have cognitive phenomena, the most important of these being the vigilance decrement. You are less efficient to look at a monotonous source or signal for a prolonged period of time. You are less efficient to check a system or you are less efficient to drive on a monotonous highway, because a monotonous highway is about signal detection and lane deviation and so on. That is the way I define this phenomena.

What are the causes of driver fatigue? If you take the alertness continuum as a central variable, then we have to say that multiple factors can act upon alertness, thus multiple factors can act upon vigilance, thus multiple factors can account for driver fatigue. It is a very complex situation. The alertness outcome variable is the result of a very complex systemic interaction between many factors. It is very hard to disentangle the role and importance of each of these factors. First of all, we can define them and classify them, and this is what I did in my thesis. We talked about exogenous and endogenous factors. The endogenous factors relate to the basic state of the person. They are the most fundamental factors because they give you the state of the brain at a given point in time, irrespective of the nature of the task. So these are sleep related factors—that is, sleep problems, time of day, time on task and so on.

That is what contemporary driver fatigue studies are looking at. Now you also have exogenous factors that relate to task characteristic, and it is clear that—it is widely understood and accepted—that task characteristic has an impact on brain alertness at the same time as endogenous factors. So it is a continuum there also that goes from very monotonous, low demanding tasks to very high complexity and overdemanding tasks. What we know from physiological studies is that the monotonous and low demanding tasks have a temporary effect on alertness—that is, it is a phasis decrement of alertness—and it will take alertness down. High complexity and very complex tasks will take alertness up. It is also temporary and these modifications are there while the low demanding task is present or the overdemanding task is present.

What is important to understand is that both endogenous and exogenous factors are always involved. They are both always present. It is always their interaction—their systemic interaction—that determines the level of alertness at the end of the road. The General Theory of Systems, that I think is very important here, tells you that if you want to understand an outcome as variable as complex as alertness, you have to put into your equation all of the important factors. If you forget one of these factors—if you just look at endogenous factors and sleep problems and so on—that is good, but you will not have a good prediction for your alertness level. We see that current mathematical models of driver fatigue are not looking into exogenous factors. Maybe it is very hard to do so, and this is an open question. But from what I have seen, they have quite low predictive validity for the moment. In other words, the basic state of the person is fundamental. The endogenous state of the person is the fundamental data, but it will be modified in most cases by what the person is doing and in what condition the person is doing it.

A way to present this is with this chart on the screen. It summarises what I just said. So endogenous factors and exogenous factors are both feeding at the same time into alertness. They are joint influences, and sometimes they go in the same direction. So you can have a tired person going on a highly monotonous road—this is the very worst case scenario—or you can have an alert person in a surprising or interesting environment, and this is the best case scenario. Sometimes they will go in opposite directions. We can talk about endogenous and exogenous pressure, and it will be their joint influences that are going to determine the level of alertness at this time. This will in all cases feed into your vigilance capacity, and this will impact on driving performance and on-road safety. As I said, this study is about exogenous or task-induced fatigue. I am not saying that endogenous fatigue is not important; it is fundamental. I am just saying that today we need to go back a little bit to exogenous fatigue the same way that vigilance researchers tackled this problem more than 15 years ago.

In almost every study that you will see on driver fatigue you will find at the beginning of the first paragraph that this problem is more likely to occur on highly monotonous roads. Models have been put forward to explain this. So you have the classic physiological paradigm of habituation—that is, when repetitive stimulation comes to the brain, the brain tends to shut down its response to this stimulation in order to save some resources because this is not relevant. It is constant. So if you have a lot of repetitive stimulation, the brain is going to shut down other responses and there is going to be an inhibiting response that is going to spread out to the cortex and then your alertness goes down. With regard to other models there is the ecological perspective of driver fatigue, which I think it is quite interesting to read. This research trend says that fatigue is not solely within the brain. That is more an anthropological view, but it is quite interesting. It says to better understand the problem of driver fatigue, you have to look at a person interacting with an environment. When we know how the alertness process works, it makes sense. There is highway hypnosis, and that is very interesting, and also the Driving Without Attention Mode.

In general, in all of these models you will find that monotony is said to decrease alertness. This decreasing of alertness will impair vigilance and this impairment of vigilance will alter driving performance. All these models have different mechanisms. However, it is suggested that if you alleviate monotony you could have at least some temporary restoration of alertness and vigilance. This could be an idea to think

about. We could work on countermeasures to alleviate driver fatigue maybe on a highly monotonous road where we have observed that we have more fatigue related crashes or black spots. But this remains to be tested, and that is what we did here.

The aim of the study was first to evaluate the impact of the monotony of landscape on driver fatigue and we also had an objective to observe the effect of environmental ruptures of monotony on driver fatigue—that is, can we alleviate vigilance decrement by observing monotony on the road. This study was done on a driving simulator. I will be quick because I cannot go into details, but I will be happy to answer all of your questions. We studied driving behaviour of our subjects on two 40-minute drives. Forty minutes is short, but when you work on task-induced fatigue this is the interval that the task usually lasts. Both roads were low demand and monotonous. That is important, because I wanted to be able to compare them. If I put a very monotonous road and a very highly stressful road, there would not be any interesting result for application. We cannot say, 'We're going to make our highway very stressful and full of houses.' That just would not work, so I worked on the repetitive aspect and the random aspect and a little bit on the nature of the stimuli.

In one case it was a straight highway and the subject was driving in the middle of the right lane. They have to control their speed; it is a nice simulator. They are driving in the middle of the right lane. There is a little bit of wind randomly added to the simulators, so they really have to drive the car. If not, if it is a straight line on a simulator you do not have movements or it would be too easy. In the more repetitive monotonous road, there were pairs of trees appearing at the rate of one per second at 110 kilometres an hour. It is visible to the infinity, and I can tell you that 40 minutes of this is very long. I did not get a lot of handshakes after the experiment. There were a lot of handshakes before, but afterwards they went really crazy.

In the other scenario I just changed—it is like changing a television channel—the scenery. It was the same road because I wanted to be able to compare all things. Here I had random trees, houses and farmhouses. The road would go over a bridge with a large blue river underneath it, but there was nothing surprising. It is only things that you would find normally in a natural setting. Then we observed the behaviour of our subject. I have the results if you want, but I will give you a synthesis of the results. First, we have a time on task effect. That is very significant. So we really have a strong indication of fatigue related driving performance so we really have a task induced effect. Second, we had more driver fatigue on the more monotonous road. I could show you how I reached that conclusion, but trust me on that. There was a small effect. It is not a big effect, but there was a small effect and I interpreted this accordingly.

We did a small manipulation of the monotony factor. The implication of this is that we believe that if the ruptures of monotony that we use here that are very mild had a small effect, then maybe ruptures of monotony of another nature could have a stronger effect, but this remains to be tested. Stronger ruptures of monotony, non-natural or unexpected stimulations, stimulations with a strong target value or a very strong perceptual value or stimulations that have a content that could activate some higher cognitive function that will make you think or count or all of those could have a higher effect, but we need to test this. This is where we are at now. We have just opened the door and we can go in this direction. Overall, the data suggests that monotony factors and task-induced factors should be included in driver fatigue models and that they deserve some attention in terms of interventions because they are clearly part of the aetiology—the development—of the problem.

I now want to say a few words about individual differences, because that really stood out. In vigilance studies you will find two things that come back over and over. First, the performance of the subject will decrease with time on task. Second, there are large individual differences in the way it decreases. Some people are very good at these tasks and some people are not good at these tasks, and that happens over and over, so it is fairly normally distributed in the population. What we think is that people react to the most important characteristic of these tasks, and that is the underdemanding or low demanding or boring aspect of this task. We believe that this could be related to some biologically oriented personality dimensions that relate to the need for stimulation.

You all know that we all differ according to the need for stimulation. Some people are very quiet. They like predictability in their life and some are just a little bit more crazy. They need some thrilling activities. You can see that in what you eat, the people you meet, the trips you take and the way you do things in life. This relates to sensation seeking. Sensation seeking is a dimension that is clearly related to risky driving. If people want to have some changes in their physiological activation, they guide their life accordingly. We all know that they have more violations and crashes. The other side of the medal is that they have an aversion for boredom and unarousing task conditions. I made the hypotheses that they could react more negatively to more monotonous road conditions when it resembled a vigilance task. Extroverts are closely related in this regard to sensation seeking. In the literature you will find that being more stimulus hungry than introverts, extroverts would show poor performance on vigilance tasks given the unarousing characteristic of these conditions.

There is a grey zone between both of these concepts, and we are tapping right into that grey zone. It is the same factor measured differently, and this factor is the need for stimulation. What we did is we measured these dimensions and we related this with regression analyses to the performance of a subject on the simulator. So we could confirm that sensation seeking is significantly related to driver fatigue in this study. It explained to us 0.8 per cent of the variability of the data on the more monotonous road and five per cent on the less monotonous road. So sensation seeking has a significant impact, but it had a stronger



impact on the more monotonous road environment, so sensation seekers would be more affected than those people who are low in sensation seeking and this was more strongly occurring on a highly monotonous road environment. Also we had an interaction with extroversion—that is, with those people who are sensation seekers and extroverts. This interaction was only occurring on the more monotonous road environment, so these people could be an at-risk more population.

What do we do with this? We believe that the measurement of these dimensions could be interesting to consider in a global evaluation of professional drivers. It is a global evaluation that could be more comprehensive. We see the application of this not for selection of drivers, because personality dimension is just one thing. The personality is a complex thing. You have attitudes and other personality dimensions, and a person is so complex that you cannot have an evaluation and select a driver on the basis of one aspect of his personality. Sometimes attitudes are going to counterbalance the effect of personality dimension and so on. So what we think is that we could use this, however, with the consent of the employee and they could be interested to do so. It is a kind of counselling approach. With the consent of the employee we could select activities or roads that would be best suitable for them, because these questionnaires are very valid. So this could lead to better job satisfaction and better efficiency and could have a positive impact on road safety. However, it all remains very exploratory and we really need to further validate this in laboratory or field studies. I am going to stop there and would be happy to answer your questions.

**Mr PEARCE:** Are there any questions for Pierre?

**Mr DOUGLAS:** I am from Main Roads. I notice you had highway hypnosis up there. We had a letter from some fellow who said that line marking was contributing to fatigue possibly in the same way your simulation was with the trees flashing by. He said that instead of having continuous white edge lines we should be creating breaks in them at random intervals. Is that something that anyone has ever done any research on?

**Dr THIFFAULT:** I am not aware of that, but it would be a good idea. Do you mean the dots in the middle of the road, the non-continuous line? It could be more random?

**Mr DOUGLAS:** His view was not the centre line but the edge lines. He said in Europe they have breaks in their edge lines

**Dr THIFFAULT:** They are monotonous? They are regular?

**Mr DOUGLAS:** In Australia we have solid unbroken edge lines and in Europe they have broken edge lines. He was of the view that that broken treatment was a good fatigue countermeasure.

**Dr THIFFAULT:** If you talk to many other people, they are going to give you other examples. This monotony, there is not a lot of factoring in for this, because it is brand new. Sleep researchers have been taking the lead on driver fatigue studies, and it is very good because they have done some wonderful work and have some new rules and regulations. This is fundamental, but we need to complete this task now, I think. Researchers are doing that and I think that we have to keep on doing that now with all the technology for research that we have.

We are just starting. We could work on that. You could put some stimulations on the environment. You can put some instrument in the car that could change the monotony—change the nature of the task a little bit. But when you talk about this, people are reacting because it is very new. We have to be creative about this. So it is mainly a research agenda for the moment in terms of application. I think that we have to wait a little bit.

I will give you one example. Do you know what bothers me the most when I drive? It is my wipers. I can handle them when they are just on once in a while, but when it is all the time, I have to shake my head. It is monotonous. The brain reacts to monotony. You know hypnosis? You have seen all the movies about this? We react to repetition. Your life depends on your ability to be alert. There are two ways to think about monotony. You have the quantity and the rhythm of the stimulation. The quantity would be easy to quantify. But you also have the meaning of the stimulation, which is more subjective and personalised. There is a lot to talk about.

**AN AUDIENCE MEMBER:** I am Dr Ki Douglas from Workplace Health and Safety, Queensland. I am just wondering if you are aware of any companies that are using personality testing for these traits of hypersensation seeking and for extroversion? I am not even necessarily thinking about truck drivers, but perhaps even drivers of lighter commercial vehicles?

**Dr THIFFAULT:** I was in Nottingham last month for the international conference of traffic and transport psychology. There was one company doing psychological testing with a whole complex battery of tests to test the drivers. The two main characteristics are sensation seeking and aggression as they relate to risky driving. However, we could also tap into boredom and the need for stimulation.

This is just one example, I am sure, but probably there are bigger fleet companies that do this. I will not put my hand in the fire, but I know that it exists. I know that people are selling this material. So there are probably buyers out there because they probably did some studies to know if this was pertinent.

**AN AUDIENCE MEMBER:** I am Neil Ross, a sleep advocate. My question relates to shiftworkers working full-time shiftwork, going to work in the dark, coming home in the dark, and the correlation between that and seasonally affected disorder.

**Dr THIFFAULT:** What is your question exactly?

**AN AUDIENCE MEMBER:** Is there a correlation between the two?

**Dr THIFFAULT:** Between seasonal disorder and the dark?

**AN AUDIENCE MEMBER:** Yes, permanent shiftwork in the winter time—going to work in the dark and coming home in the dark.

**Dr THIFFAULT:** I get what you mean. I think that it is an interesting issue, because we know that seasonally affected disorder is related to light. Maybe people who work only in the dark have it. Maybe more are caused to have this disorder. But I am not aware—apart from thinking that it is an interesting issue, I do not really see any correlation with my thesis that I can bring you. But I think that you have a very good and interesting point. Since I am going to join this new group now that is going to look more at truck drivers and endogenous factors, you have just given me a good idea. Thank you.

**AN AUDIENCE MEMBER:** Thank you. I will have half of the rewards.

**Dr THIFFAULT:** Yes, I will remember your name.

**Mr PEARCE:** Could everybody thank Dr Thiffault. Our next session is Driver fatigue and workplace safety: Queensland, national and international perspectives. This section of the session will be presented by Ki Douglas. Ki is an occupational physician, Principal Medical Officer for Workplace Health and Safety in Queensland and Manager of the Occupational Health Unit in the Department of Industrial Relations. In her previous role Ki was involved with driver fitness and co-authored the first draft of the National Road Transport Commission's medical fitness guidelines for commercial vehicle drivers. Ki has also written health assessment guidelines for industries with shiftworkers involved in road and maritime transport. Her concern in relation to fatigue stems from a review that she undertook of the introduction of 12-hour shifts in underground coalmines and in banking operations. Ki is particularly interested in how to assist employers and workers in managing the risks of fatigue whilst operating in a society that seemingly demands unrestricted business hours and service. Please welcome Ki.

**Dr DOUGLAS:** Thank you, Jim, for that introduction and thank you also to the Travelsafe Committee for allowing me this opportunity to speak on what is a very serious and important topic. If anyone is feeling like the person in that photograph, would they please get up, move around, and get themselves a bit more alert. What I am going to talk about today, which is not quite what the organisers particularly asked for, is sleep physiology. The previous speaker covered very well all the exogenous factors involved—those factors outside the individual—that contribute to fatigue related car crashes. I was going to talk a little bit more about some of the internal factors. But I do not want to cover ground that people already know everything about. I know that we have the Ambulance Service here today. Is everyone else fairly clear about circadian rhythms, sleep rhythms, REM, non-REM sleep and the effect with age? Does anyone want me to talk about that? That might be a better question. We can skip quite a few slides, if that is the case.

We will talk about some of the legal cases, which I was asked to speak about. The previous speaker just mentioned the correlation with blood alcohol levels. This was work that was done and I think that various researchers have repeated it. I do not want to really go into how they measured it. It was in a couple of groups. We were kept awake for 28 hours. I will just point out to you that after you have been awake for 17 hours—I do not mean at work, I mean awake—your performance with monotonous and other tasks is equivalent to a blood alcohol level of 0.05, which is the legal limit. If you get to about 28 hours, it starts to get towards 0.1. So that is just something to keep in mind—this equivalence of impairment, which has been alluded to by previous speakers. I think that has great implications for all people who work long hours, particularly if they have big family responsibilities at home and have a long commuting drive.

The other thing that I wanted to mention was driving and sleep. Part of the problem of having crashes that are fatigue related is that we are asking people often to drive at the time at which they are least capable. That is something that I do not think that we, as a community or as a society or as employers, really give enough thought to. People have done surveys of workers particularly on 12-hour night shifts and found that they are significantly more sleepy at the end of the shift, technically at about 7 a.m. That is exactly when they need to drive home. The research shows that if they have further than 20 minutes to drive, their accident rate starts to increase and they rate themselves as being more tired.

There has been a little bit of discussion about what is a definition of fatigue. I do not have a better one than anyone else. I got this one from the literature. Subjective experience—and that is our problem; it is something that we all feel inside—is that it is associated with a decrease in performance. That part of it at least is a little bit measurable. But the thing that I want to concentrate on is this notion of poor judgment, because that I think is something that people are not so aware of—that once you get to the point of being tired and very fatigued, your judgment as to how tired and fatigued you are starts going off and you are not able to make a decision to stop doing what you are doing. We talked about this in the hypothetical this morning. People get to a stage that they can all recognise. All of us can recognise the early symptoms of fatigue—and I will just put them up; this is on the Transport web site—the yawning, the rubbing of the eyes, the fidgeting, trying to stay in the lane. You find that when you are driving you might veer a little bit. You personally may not notice that, but certainly your passenger will. Also, another symptom is missing road signs. But the big thing is that you get to a point where you do not have the ability to actually judge your own alertness and your own ability to drive, but we all know when we are getting tired.

So I will ask again, because I asked this morning: how many of you have reached that point where you are yawning, you are fidgeting and you know that you are tired? What do you? Wind down the window? A few nods. Turn on the radio a bit louder? A few nods. That has been studied and the research shows that that will last about 15 minutes in terms of increasing your alertness. It will rapidly tail off. How many of you at that stage, even though you may have only another hour to go or even half an hour to your next destination, would pull over? A few of us. I would expect everyone in the Travelsafe Committee to have put their hand up. That is very important, because what the research shows about alertness in that situation is that if you stop, if you then have a cup of coffee and then have a 20-minute nap in the car, that might get you by for another hour or two, but not much longer. But at least it will give you enough time to, hopefully, get you to a town, depending on how far out in the country you are, to have a proper rest. Beyond that point, particularly if your fatigue is due to sleep loss, there is almost nothing that you can do other than getting some sleep. That is another important point—that there is not any substitute for not having sleep.

I have some data. This is not car data, but I think that it is interesting in terms of the research that was done. Maastricht is a lovely town in the Netherlands. They did a prospective study. That meant that they gave out questionnaires to about 7,000 workers and then a year later they found out how many accidents had occurred. So they did the questionnaire about fatigue beforehand. The results show that if you are fatigued or if you are very high on this need for recovery scale—and I will tell you what that is in a minute—you have over double the risk of having an accident at work. The sort of questions they asked people were—and you were supposed to say yes or no to these; how much it applies—'I find it difficult to relax at the end of a working day.' We have a few people who might put up their hand for that one. 'By the end of the working day, I feel really worn out.' We have a few people who can say yes to that. 'Because of my job, at the end of the working day I feel rather exhausted.' I sometimes think that I was asked to give this talk because I am one of these fatigued people—an absolute expert. 'After the evening meal, I generally feel in good shape.' Do we have a few people who can say yes to that? That means that you are not fatigued if you can say yes to that one. 'In general, I only start to feel relaxed on the second non-working day.' This is all about the need for recovery. 'I find it difficult to concentrate in my free time after work.' Do we have people who get home and they are so edgy that they kick the cat, their spouse cannot speak to them until they have settled down? I had a husband like that. He changed when he stopped driving to work and caught the train. He was a totally different person when he could actually nap on the train. 'Generally, I need more than an hour before I feel completely recuperated after work, or when I get home from work I need to be left in peace for a while.' 'Often, after a day's work, I feel so tired that I cannot get involved in other activities.' 'A feeling of tiredness prevents me from doing my work as well as I normally would during the last part of the working day.'

This sort of questionnaire was actually validated by the people who did this study and it is a survey that companies could use among their own staff to find out just whether your rostering or your work life balance is actually happening and just as an estimate of how tired your work force is. This again is not road accidents, but I will come to them in a minute. This is just industrial data which shows that there was an increased risk of accidents when people are tired. What you see is that the risk of accident increases slightly after the fifth hour, falls a little, but then it is doubled. So after 12 hours your risk of having an accident at work is double that of someone who has worked for only eight hours or so. The same would obviously, I assume, apply to driving.

How tired are we? Last week at the epidemiology conference in Melbourne Professor Gander from the Sleep Research Centre in New Zealand presented this data. They surveyed 10,000 adults in this age group. Thirty-seven per cent of people said that they never or rarely got enough sleep. I will ask that same question in the room today. How many people feel that they get enough sleep every night? There are a few, but it is not the majority of you. I think the Australian data—I have not seen it; I do not know if it has been done—would be very similar.

They correlated this with car accident risk. So they asked them, 'Have you had a motor vehicle accident in the last three years?' and they controlled for confounding factors such as age and gender. We say 'gender' because men do more driving, so you have to control for that. They found that your risk of having an accident, if you are one of these people who feels that he or she never gets enough sleep, is 1.26 times that of every other driver on the road who has enough sleep. In terms of endogenous factors, or personal factors, sleep loss is a major problem for our society.

Another study was done in New Zealand of people aged 20 to 60 years. They surveyed 4,000 people, and they wanted to know who has chronic sleep loss; that is, problems with sleeping for more than six months. Twenty-five per cent of people said yes. So this is the working age group—age 20 to 60—and a quarter of people in New Zealand in that age group do not get enough sleep and have not done so for over six months. There are a whole lot of reasons for that. Work is one of them, and it is probably a major contributor. Family responsibilities could be another, as could the exuberance of youth and burning the candle at both ends. We all can probably remember that time. Some of us are probably still having that time.

This is data on car accidents. This is Norwegian data. They looked at people who had an accident and put in an insurance claim for a motor vehicle accident. They got a 30 per cent response rate. They actually sent out questionnaires to about 27,000 people. They asked them, 'Was fatigue a contributing factor?', so this is self-reported. Sleep or drowsiness was found to be a contributing factor in at least

four per cent of all accidents and 18.6 per cent of accidents which occurred at night, which probably does not surprise anyone. You will probably hear more data this afternoon about Queensland's figures.

They also asked this same group of people whether they had fallen asleep some time during driving. You can see that a third of men admitted to this, as did about 13 per cent of women. When you look to truck drivers—this is from another study that was quoted by the previous speaker—nearly a half of truck drivers admit to falling asleep some time during driving. I think I share the previous speaker's astonishment that we do not see more accidents. If half of them have lived to tell the tale, that in itself is surprising. The figures for the previous 12 months for falling asleep are a little bit less but still not great.

Truck drivers are notorious for not getting enough sleep. I think that is also no surprise to people. This is American data that was presented at the International Sleep Loss Symposium last year in Sydney. As you can see, just over a third get less than six hours sleep a night. I want you to remember that figure of six hours because I am going to come to it when we talk about legal cases. I should say how this was measured. Whether this has any application I don't know, but they have a little wrist watch called an Actigraph which actually measures wrist movement. The theory is that if it does not move very much you are obviously asleep and when it is moving you are not asleep. So it is one validated way of measuring whether people are asleep or not.

This screen is about drivers in Australia. This is data reported last year at the same conference. I do not think I need to explain sleep apnoea to you because you have probably all heard about it. Again, this is in heavy transport drivers in terms of people who have full-blown obstructive sleep apnoea syndrome. So they have been to a sleep centre, they have been diagnosed and they have probably been given some treatment. A good 16 per cent had the full syndrome. These are people we are all sharing the roads with. There is no reason to believe that it is confined to truck drivers. The same statistics more than likely apply to people who just drive cars.

The other data from this is that the average age of these people was 42 to 48 years. There was an association of obesity—about 80 per cent were overweight or obese—but you do not have to be overweight or obese to have sleep apnoea. Forty-five per cent of these people averaged less than six hours sleep a night. That is Australian data.

In relation to excessive daytime sleepiness, some of that is going to be related to the sleep apnoea. Some of it is what we call poor sleep hygiene. That is about people who do not have a routine for going to sleep. They do not have the hot drink of milk, no television in the bedroom or a routine for having a hot bath or reading a book. Whatever it is it does not matter, as long as you have some routine so that you know that when you have gone through that ritual you will be asleep. Many people do not have that or, in Queensland weather, they do not have airconditioning. Or if they are trying to sleep through the day they do not have blackout curtains or they have noisy neighbours because they have not negotiated for no lawn mowing during the day when they might be trying to sleep. Medications can cause excessive daytime sleepiness—Valium, various antidepressants, antihistamines—and then there is the medical condition of obstructive sleep apnoea and others which are more rare like narcolepsy.

This screen shows one of the tests. Everyone should just have a look at these questions and test themselves. This is a validated scale to test for obstructive sleep apnoea or symptoms thereof. The question is, 'How likely are you to fall asleep in these situations?' I keep looking around the room because I need to know whether any of you are in this category.

In terms of obstructive sleep apnoea, I used to say, 'Nobody ever falls asleep in one of my talks,' until I went to a sugar mill up north and one person did fall asleep. He was a rather overweight supervisor. I said to the occupational health nurse, 'Make sure that man goes to a respiratory physician and gets checked out for sleep apnoea.' It emerged that that particular supervisor was on his last warning. He was on night shift. He kept being found asleep on the job and everyone just thought, 'He's just a ratbag. He burns the candle at both ends. He doesn't really put a focus on work.' It turned out that indeed he did have sleep apnoea. He was a new man after he had some treatment and also kept his job, which was much more important to him.

This sort of sleepiness scale is used by doctors. I think it actually forms part of the medical assessment of transport drivers. The reason it is important is that there is validated research to show that if you get a certain score on the questionnaire—the normal score is 10 or less—then your risk of car crashes greatly increases. You can see that that level of 16 or more, which is virtually a diagnosis of obstructive sleep apnoea, is related to six to 16 times the risk of having a vehicle accident. The other thing to remember is that the longer you stay awake—the bottom line shows a figure of 20 or more hours awake—your risk of accident in this study was said to be 56 times that of someone who had not been awake for that length of time.

I just want to mention a few legal cases. I just make an apology first in case anyone knows the people related in this particular case. This particular one was in 1992. I just want to highlight the difference in the way the courts treat fatigue related accidents, back then and now in 2004. This particular case was about a BMW driver who set out from the Gold Coast to drive to Sydney at 11 o'clock at night. He had three young women in the car with him. He had slept for about four hours from about 5 o'clock that afternoon. That is unusual, because we do not normally sleep very well at that time. Even if we get sleep, it is not the sort of full rested sleep that you would get at night. So he set off driving. One of the women drove the first 400 kilometres and then he took over at about 3.30 a.m. At 6 a.m. he failed to take a bend, hit the gravel, Brisbane

hit a tree and then hit another tree. By this stage he was 30 kilometres out of Kempsey. The woman in the front passenger seat was killed. The two others were seriously injured. When the police asked him what happened, he said, 'I don't know what happened. I was driving. I was thinking about stopping in the next town. The heater was on. I lost control. I must have gone to sleep.' So he gave evidence that he did not feel sleepy but intended to stop at the next town for breakfast. This was an appeal case and the judge said—

In the present case, where there was evidence that the applicant fell asleep at the wheel and there was no real evidence that he had any warning of the onset of sleep—

I actually don't believe that—maybe not the onset of sleep, but I think some time before then he may have felt tired—

... his actions while he was asleep were not voluntary and could not amount to driving in a dangerous manner ... There was no evidence that the applicant (driver) was affected by alcohol or drugs. There was evidence to the effect that he had had adequate sleep before commencing to drive and that he had no prior warning, or otherwise ought to have known, that he was about to fall asleep.

That is what the court found in 1992. If we come to 2004, this is a very recent case in the District Court of Queensland. It concerned a man who drove a car in a state of fatigue and veered off the road causing injury to his passenger. The sentencing judge had this to say—

You displayed disregard for the safety of other road users and, in particular, your passenger. And to that extent it could be said you acted with some degree of recklessness.

So in the previous case it was, 'It's not your fault. You didn't know. You had a bit of sleep. You tried. You just couldn't help it.' In this case now, 12 years later, it was seen to be recklessness. The judge said—

I do not think, unlike the situation in the case of Wood—

This was another case that happened in Western Australia involving a young woman driver who killed a pedestrian, who drove in a state of fatigue and actually got a prison sentence—

... that it was so much a selfish disregard as you did stop when you felt fatigued, and you did attempt to refresh yourself at the top of the Sarina Range, and you did, I am satisfied, honestly believe that it was safe for you to proceed ... On my calculations, you had only about 45 minutes sleep in the previous 21 to 24 hours.

The judge gave some reasons for that. Apparently this person's dogs went missing for three hours and he had to find them and also his car broke down. Nevertheless, he did not sleep. The judge went on to say—

I also agree ... that the message must be conveyed to other road users that people who risk driving tired, risk imprisonment if their driving puts the life and health of other road users at risk. There is thus a need for general deterrence.

Accordingly, the judge sentenced him to 12 months imprisonment suspended for two years, 100 hours of community service and 12 months loss of licence. I put up these two cases to just show that the courts are taking a much tougher stance.

In terms of truck driving, the Brambles case, which occurred a couple of years ago, is another one. The only thing I wanted to mention about this was that two road trains hit each other and one driver was killed. They both alleged that the other was at fault, or their companies did. They were going around a bend but one did not take it. The judge deemed the driver who survived, who was from JP Keune, a competent and experienced driver but he found some of the evidence unreliable, particularly in relation to how much he had slept the night before. They called in Professor Hartley from Murdoch University as an expert witness in fatigue. He gave evidence that the risk of an accident increases fourfold—so four times the risk of an accident—if you have had less than six hours sleep. To me that is actually a legal precedent. If a similar case occurred again that may well be used. The judge found that the risk of him falling asleep at the wheel was increased by his lack of sleep the night before. He made no findings as to the actual hours of sleep, only that it was less than six hours. He therefore awarded damages to Brambles of that amount.

In terms of workplace health and safety, do we take prosecutions? Generally speaking, in relation to car accidents, truck accidents or anything on the road the lead agencies are Queensland Police and Queensland Transport. We have not yet taken any action. That is not to say that we would not, but our first problem would be that we would have to establish whether it is a workplace.

To answer the question of whether it was a workplace, you have to ask whether work was likely to be done. It is fairly obvious with a commercial truck that it is a workplace, but if it is someone driving home from work in their own car it is not actually a workplace. So that presents a legal impediment for us. That does not mean that the employer will be free from any litigation because a person is still covered by workers compensation and the person can also sue at common law. So it does not let employers off the hook. It just means we do not have any statute that we can try them on.

The second thing we would have to establish beyond a reasonable doubt was whether people were free from death, injury or illness. That is dealt with under section 22 of our act, where every person has an obligation for workplace health and safety for themselves, their employees and others who may be affected by their actions or business undertaking. So we would be asking: how has the employer managed the risk?

I have to say that we have not really done much in the way of investigation of these cases because, generally speaking, it tends to be trucks, it tends to be on the road and it tends to be Queensland Transport. Journey incidents we do not necessarily know about. But some of the factors we would take into Brisbane

account—as I think would the police—would be their duty history, their roster times at work, their sleep history, their sleep quality, the time of day of the event, the type of event, the role of the worker, whether the driving time or the lack of sleep would cause impairment and whether driving without rest was causally related to the accident. So we would have to prove that beyond a reasonable doubt. You have heard from previous speakers that that can be very difficult to do; to prove that fatigue was the cause of the accident. Often it is by exclusion because you did not find anything else because everyone on the scene is dead.

Then we would look at whether the employer had implemented any controls and whether the employer knew or ought to have known that that person was on the road driving when he or she was not in a fit state to drive. That is opposed to the driver being, as my legal colleagues put it, 'on a frolic of his own', meaning that it had nothing to do with work. Maybe they had a late night, they went to a party, et cetera.

The defences under our legislation are that we expect the employer to take reasonable precautions and exercise due and proper diligence. You have to prove that the accident occurred but you had no control over it. It is a lot easier when it is someone's own car in which they are driving home from work and there is no shiftwork involved. It would be very difficult to prove that, unless you had a proper fatigue management in place, if you are an employer of people driving heavy vehicles.

In terms of how an employer might manage the risk, the take-home message for employers is to protect the workers' opportunity for sleep. You are probably wondering what that means. It means really looking at rostering. So no quick shifts. If someone finishes at 11 a.m., they are starting back at 7 a.m. and they live an hour or more each way from work, they are not going to get six hours sleep. So you really have to think about rostering and where people live. Short-staffing is another issue. I was at a workplace the other week—and this is not a good shift role model to use—where workers started at 3 in the afternoon and worked through till midnight normally. If they were short-staffed they could still be there at 3 a.m. Similarly, their day shift started at 3.30 a.m. My only comment to that is that it is probably not a good start and stop time for any shift, and there will be inherent risks in that which I would expect the employer to have a look at.

A sensible employer will make arrangements for a casual pool of workers so that they will not be caught short-staffed and have to extend the shift of people who have already worked 10 or 12 hours shift by another two or three hours, thus putting them at risk of an accident. That is particularly important for government departments which provide services to remote communities—or any company, really, which has people driving long distances. Queensland is a big state. I had no idea how big it was until I moved up from Sydney in July 2000, and now I cover the state in terms of my role in workplace health and safety. There are long drives between places—long drives. So every department or company that has people doing those long drives must have a policy, and they must implement it, on controlling the hours of driving in remote areas.

We advocate a risk management approach. That is required by our legislation. No matter what the risk or hazard is, you must take a risk management approach. I think I might leave it at that. As I say, we have to protect the opportunity for sleep and make sure that it is possible for people to get home safely from work. I will take any questions now.

**Mr PEARCE:** Thanks, Ki. That was excellent. Are there any questions for Ki?

**Ms TUTTY:** I asked a question earlier about contributing factors. To me, the employer can do so much to prevent the contributing factors that lead to fatigue. In our industry particularly we have a real problem in that the industrial safety nets have diminished at the expense of commercial pressures. Perhaps nurses are in this category, too. Crew can be on call for 12 hours, get called in and then work for 12 hours. Then they have a minimum rest when they get to their destination of 10 hours and then are called back the next day to work another 12 hours. They rotate in that way—12 hours on, 10 hours rest. Included in those 10 hours is travel to and from their place of rest. They are in different time zones and in different accommodation without the appropriate type of standard accommodation to deal with shiftwork and appropriate rest. This can go on for six days consecutively and then we throw them out on to our roads. Often, in Brisbane particularly, they have an hour trip to or from the airport. Something definitely needs to be done to bring these contributing factors under control. There does not seem to be any legislation that we can go to to assist us in assisting not only our members but also the people on the roads around them.

**Dr DOUGLAS:** I think you have made a very important point. I can only give you an example from the power utilities industry and I can tell you how one company deals with this. They have people working at power stations in remote areas. They have contractors who come in. These contractors want to do the job and be in and out as quickly as they can and get back to their home base, because the more time away from the job means less money. They have written into their contracts for their contractors that they must include an overnight stay if they are to work at this power station and they are not to go home at the end of the day. They have to stay in the local town.

With their own workers who are on 12-hour shifts—and it is a bit of a drive from the power station to the local town—they provide a bus so that those employees do not have to drive that distance. That is not something that is very easy for every employer to do, but fatigue management is a joint responsibility. It is the responsibility of employers and employees. It will not be solved by either one side doing everything or the other side making all the concessions. So both sides have to discuss this and work out what is the best way around it.

We are happy to assist where we can in telling you at least what the research shows and what we would expect you to do in terms of fatigue management. But I do not imagine we are going to solve all those problems here today or even in the next year or two. This is something for which a whole societal change is required. We did not get cheaper air fares for no reason, I am sure; in the same way that we all like to shop until 9 or 10 o'clock every night of the week and we are not thinking about the people who are working in those shops at those hours. We really have to have a combined approach from those who benefit from those extended hours and those who have to work them and the employers who have to provide a safe system of work. I know I have not answered the question but it is not simple, as you well know. I think we can get there if we all try together.

**Ms TUTTY:** Often when workers try to contribute by giving the employer information about fatigue, they are often told that perhaps they are not suited to the job, and that is not a way of dealing with the issue at all. It just compounds the issue.

**Dr DOUGLAS:** We call that the 'blame the worker' effect. We see it a lot in accident investigation. There is a joint responsibility. Workers do have to turn up to work fit for work, not having partied all night, et cetera. It becomes very difficult if you have young children. We have heard examples of babies being awake all night, and that is certainly very common. But, on the other hand, the employer also has to make some allowance for the work-life balance, particularly in relation to what are reasonable rostered hours, taking into account people's commuting times. Because commuting times have increased. That is my view of it. I have never in my life lived anywhere more than about five to 15 minutes away from work, because until this job I was on call for nearly 25 years. For the last few years I have lived on the range 30 kilometres out of Toowoomba, and I cannot drive each day. It would be impossible. I have the option of renting somewhere in town and driving home on Friday afternoons and coming back Sunday nights. I come back Sunday night because you cannot come back on Monday morning to Brisbane without going through horrendous peak hour traffic and then having to do a full day's work on top of a three-and-a-half, sometimes four-hour drive with all the hold-ups. Normally the drive would be two hours. That is an individual choice. It is also an individual choice to work elsewhere. But not everyone has a choice of where they work. So we are really reliant on employers, in cooperation with their employees, to come to a reasonable system of work that protects everyone.

**Mr PEARCE:** As there are no more questions, thank you very much, Ki. Ladies and gentlemen, that concludes the first half of the forum. We will resume after a lunch break.

The forum adjourned at 12.52 p.m.

The forum resumed at 1.30 p.m.

**Mr PEARCE:** Our next session is Queensland Transport's fatigue management program. The speaker today is Jamie McKeachie. Jamie McKeachie is the Director of Policy Implementation in the Land Transport and Safety Division of Queensland Transport. In this role Jamie and his team are responsible for the review of existing fatigue management practices and the development of the national fatigue management regime. Jamie has been with Queensland Transport for seven years. Prior to this he has had a variety of jobs in both the public and private sector including a 20-year career in the Commonwealth Public Service and running his own small business. Welcome, Jamie.

**Mr McKEACHIE:** Thanks, Jim. As you might tell from the program that was handed out this morning, Dr Graham Fraine from our department was due to give this presentation but he sends his regrets because he has come down with the latest flu lurgy. I will do my best to go through his presentation.

Thanks for the opportunity to speak this afternoon. As many speakers have said this morning, no one agency or jurisdiction has the complete answer. I am not in any way presenting what we are currently doing as anything more than that and our best attempt in collaboration with our partners and other agencies to deal with this issue of driver fatigue.

Just as an overview of the presentation, I will be going through how we define fatigue related crashes in Queensland. You have heard a little bit about that this morning so I will not dwell too much on that. Then there are some statistics for the last five years in relation to fatigue crashes, and then there are some of the initiatives that we are undertaking, either individually or in collaboration with other industry and agency partners, in the areas of legislation, education, engineering and new technologies.

We have heard this morning that the way we categorise our fatigue related crashes is effectively on two bases. The first is those reported by the Queensland Police Service in relation to their assessment of causal factors involved in the crash. As a surrogate evaluation, or key performance indicator, we also include this other surrogate measure, which is of single vehicle crashes in speed zones of 100 kilometres or higher that have occurred during those time zones. Those time zones, as we have heard from other speakers this morning, very much reflects the fatigue research into the low circadian rhythm point and the natural body clock of when people are less alert. We understand that New South Wales and Western Australia includes this surrogate crash measure in their statistics as well. Whilst there is not a nationally consistent definition, the Australian Transport Safety Bureau has been trying to develop an operational definition of fatigue related crashes but that has not been adopted by all jurisdictions Australia-wide. So perhaps that is one of the issues that we do need to pay attention to in terms of coming to grips with an agreed national standard of how we measure these particular instances.

In relation to crash data, in the six-year period from 1998 to 2003 there were 6,846 crashes where fatigue was identified as a contributing factor. That makes up about 5.4 per cent of the total number of road crashes during that time. But of interest is the proportion of fatal crashes fatigue is identified as contributing to. It is identified as contributing to 13 per cent of those crashes. Whilst the incidence of fatigue related crashes is relatively low, the severity of them is particularly high. From 1998 to 2003 there were just over 2,100 fatal or hospitalisation crashes which contributed to just over 2,800 casualties. Not surprisingly, as we have heard from other road safety research, the majority of those casualties were males—68 per cent. The highest representative group of those casualties—and again not surprisingly from other research that we find in relation to our road toll and road casualties—was in the 17 to 20 year age group. They represent 19 per cent of those crashes whilst only representing six per cent of the population. Drivers understandably contributed to 61 per cent of those who were involved and passengers 35 per cent. Motorcyclists, interestingly, only accounted for four per cent of the proportion of casualties. Perhaps that is to do with having to stay alert to stay upright.

The controller is most at fault. Interestingly, we heard some statistics this morning—and there were some issues raised this morning in our hypothetical—that light vehicle drivers, as the controller, were most at fault in 86 per cent of those serious crashes; truck drivers, nine per cent; motorcycle riders, as I said, four per cent; and bus drivers, cyclists and pedestrians were less than one per cent.

Where are the crashes occurring in Queensland? Not surprisingly they are occurring on our main transport corridors leading north up the coastline and heading west out through the Darling Downs. In terms of geographic location, in Brisbane city these crashes occurred eight per cent of the time, the rest of the Brisbane statistical division nine per cent, provincial cities 15 per cent and the rest of Queensland 68 per cent. That has just covered, in a broad brush, the statistics. I am sure we can make this presentation available for those of you who are interested in those particular numbers.

Turning now to the legislation. There is, as we have heard this morning, particular difficulty in legislating for something that you cannot specify. It is this issue of a definition that makes it incredibly difficult to try and then turn that into a prescriptive regime that you might be able to turn into legislation. A couple of state jurisdictions have attempted to do this. In Victoria they have introduced a clause into their dangerous driving act which provides that negligence may be established if a person knew or reasonably ought to have known that there was an appreciable risk of them falling asleep. In New South Wales they introduced the sleepy drivers legislation in 2001 that provides a licensing authority with the power to suspend a licence if that driver has caused death or grievous bodily harm through their becoming incapable of controlling the vehicle; for example, by falling asleep or loss of consciousness.

In Queensland we have legislation in the Criminal Code and in our transport legislation which works to the same sort of effect. Under the Criminal Code dangerous operation of a motor vehicle is covered and under the transport legislation mental or physical incapacity is also covered, as is the requirement to drive with due care or attention.

We heard earlier that the area where there is significant legislative coverage is, of course, in the area of heavy vehicle transport, and that also covers buses and trucks on our roads. I will just turn to a bit of an explanation of how our current legislation works. Our current legislation has three tiers effectively in relation to heavy vehicle regulation: that is, standard hours; a transitional fatigue management scheme; and a fatigue management pilot which we in Queensland have been operating as an innovative way for drivers and employers to manage the fatigue of their drivers.

The rationale for the current prescribed hours is a bit obscure. It probably finds its genesis more in industrial relations law than it does in any transport law insofar as it requires drivers not to drive or work more than 14 hours a day, 12 of which is driving; that they have to take a break after five hours and those sorts of things. That legislation, as I said, probably has more to do with work conditions and how long people work before they are allowed to have a lunch break and so forth, and then perhaps any signs behind fatigue, causal factors and so forth.

The current regime was implemented in most states and territories other than Western Australia and the Northern Territory in about 1998-99. In WA and NT they operated under a workplace health and safety arrangement rather than under transport law. Yet our current arrangements do not account for time of day factors. They also do not account for the cumulative effect of fatigue, and there is little flexibility. The rest breaks can tend to be arbitrary. A driver might find themselves out in the middle of nowhere in the afternoon heat and it is time for their rest—their half hour rest break—and they are obliged to do so.

The focus is also on working hours and not on rest and fatigue mitigation, which is another issue that we are very conscious of. For that reason, significant work has been happening at the national and state level in relation to a new heavy vehicle fatigue management regime. Much of the research we have heard about this morning has been factored in in relation to creating the opportunity for sleep. It is based on a fatigue expert group design principles about circadian rhythms, time on task, et cetera. It shifts the emphasis to managing fatigue rather than driving hours. It tries to remove the anomalies in work and rest requirements, better address the fatigue causal factors, increase the flexibility and accountability, and provide guidance and education and also increase compliance.

The proposed legislation also has a three-tiered approach which introduces a standard hours regime of 12-hours work and/or driving so the distinction between work and driving has been eliminated. Then there is a base fatigue management level and an advanced fatigue management level for those



operators who wish to go to higher levels of flexibility associated with higher levels of accountability and compliance.

The new regime also introduces a general duty to manage fatigue. This is a concept that is found in occupational health and safety law about general duties of employers, and that concept has been introduced into the new policy regime. Increasingly, the overlap between transport law and workplace health and safety law is becoming less distinct. The distinction between them is becoming less and there is more overlap between those two pieces of legislation. As we heard this morning, the cabin of a truck is well and truly, in workplace health and safety law, held to be a workplace and therefore employers have obligations in relation to their employees in those areas. Also, as I understand how that applies, that sort of extension can also be implied to the owner-drivers who make up a large proportion of our heavy vehicle fleet.

The new proposal also introduces a fatigue code of practice so that if an agency is wanting to know how best to mitigate fatigue risk a code is available for them to refer to and apply. It could, in certain circumstances, be shown that they have taken reasonable steps if we wish to come and assess or investigate or take prosecution action against a company in relation to chain of responsibility. The new policy dimension extends the existing Queensland lead in terms of chain of responsibility. Queensland is one of the first state jurisdictions to introduce this concept of chain of responsibility and to apply it in both the investigative and prosecution sense in terms of fatigue.

The example I gave this morning in relation to that company was a significant watershed. But the new policy proposal—which has been voted on by transport ministers in principle, approved and is in the throws of having the final elements worked through to go back to transport ministers in the middle of next year—extends that chain of responsibility and introduces concepts such as the code of practice to show that an operator might be able to demonstrate that they have taken reasonable steps to prevent or mitigate the fatigue in their work force. It also introduces improved record keeping and work diaries and a risk based categorisation of offence with concomitant sanctions applied to the elements of the risk. There is also discussion at jurisdictional and national level about the introduction of penalty points to drivers in relation to fatigue offences which do not currently apply. I will not dwell on that any further than I have but I would just say that that is a significant work in progress that has been going on since the mid 1990s. This is probably a once in a generation opportunity to introduce a significant change to the way that we do manage fatigue in the heavy vehicle driver industry. It has been done in association and consultation with the industry and stakeholders as well as state and territory jurisdictions.

Turning now to education, I touched on this a little bit this morning in relation to some of the activities that we have undertaken in Queensland. One of the things I would like to highlight is the microsleeps campaign that some of you might be aware of that featured Dr Karl Kruszelnicki in his purple shirt with the clocks all over it—only he could get away with wearing something like that. It was an ad that had been crafted and displayed in other jurisdictions. We took it up here as a very useful tool to get the message across about microsleeps, about that nodding off for three or four seconds, and if you are doing significant speeds on roads that that might potentially cause accidents and bring you to grief. That was supplemented by an outdoor billboard poster—which some of you might have seen—with a pillow on it with 'Rest or RIP' which has been out and about for a number of years. There has also been radio advertising. That mass media was supported by a huge publicity campaign promoting Driver Reviver, trip planning, regular breaks and those types of messages that I have mentioned this morning. Last Christmas that was supported by a community service campaign by McDonald's and Channel 9 with the production of a number of holiday driving and road safety community service announcements. We cannot underestimate the benefits that those sorts of community service announcements from those sorts of agencies or media outlets do contribute to getting that message across.

Most of you would be familiar with the Driver Reviver program where you pause and have a cuppa or a biscuit. You used to get Kit Kats when it was sponsored by them but I don't think that is the situation any more; I think it is sponsored by a different mob. Driver Reviver stops are incredibly valuable, in particular during peak holiday periods. They are staffed by volunteers in all of those areas who give of their time freely. Many of them are open 24 hours a day. It is not an insignificant contribution that community members make in relation to road safety.

There is also a couple of initiatives specific to highway corridors. The Bruce Highway corridor initiative involved coordination of resources across stakeholders, including Queensland Transport, the Queensland Police Service, RACQ, Main Roads, Emergency Services, Education, Health, truck operators and mining operators. It involved coordinating an approach to managing fatigue on that particular sector of the Bruce Highway. There was also the fatigue buster travel diary which was initiated in the school holiday period that targeted children. If any of you are old enough to remember the old days of playing 'spotto' as you were driving along with your parents, it was similar to that. I think the aim was to see how far you could lift your father off the seat by yelling it out. These sorts of things are aimed at kids to encourage them to encourage their parents to take these rest breaks, spot things along the way and make sure that they are a key influence on the driving behaviour of their parents. That worked particularly well. At the end of the journey they could enter a competition which had a significant holiday as a prize. That was another good initiative.

There was also the Fatigue Sucks campaign toward the end of 2002. It was a novel, cost effective but simple way of getting the message across. Police and transport inspectors on the Bruce Highway and Brisbane

the Peak Downs Highway stopped and chatted to heavy vehicle drivers about fatigue issues, giving them the message to stop, revive and survive. They were given a bag of lollies with a fatigue message attached to it in a Main Roads wrapper. 'Fatigue Sucks' comes from the lollies they were given.

Turning now to some engineering initiatives, my Main Roads colleagues in the audience are probably more experienced to talk about these things than I am and I will defer to them if there are questions afterwards about this. Some of the initiatives Main Roads has been providing are fatigue advisory signing in relation to 'Take a rest and refresh' and 'Break the drive, stay alive'; signs about the provision of rest areas; and signage in relation to a particular rest area coming up in five kilometres, the next one after that is X hours or X kilometres away so that people can start to make judgments about their fatigue levels and driving capacity—to either pull up now or to move on to the next one; audible edge lines, which is edging that creates a noise if a vehicle's wheels cross over it; and rumble sections of roads. This morning we heard about the issue of monotony. Some of the roads have been constructed with rumble strips in them to relieve that monotony, in particular on long, straight stretches of road. Main Roads has also taken account of that monotony issue by implementing curvilinear road design rather than having straight road alignments.

Other things that it has done in relation to this is improving the delineation and the use of line marking, reflective raised strips, chevron marking, widening of seal to the shoulders, and removal or shielding of trees and roadside obstacles so that if people do run off the road the severity of the impact is significantly lessened.

Moving on briefly to some new technologies, we heard this morning of a couple of devices that are being looked at across the country and across the world. They effectively fall into two broad categories. There are performance based tools that monitor the driver's command inputs for steering, braking and their movement of the wheels and so forth to test whether they are maintaining an acceptable level of attentiveness while they are driving. Another category is the biological or physical tools that look at fluctuations in eye movement, facial features and so forth. There is currently some work going on in Canberra where a particular instrument is being trialled; we are watching that with some interest. Most fatigue monitoring devices use an alarm to alert the driver. Potentially these things need to become more active than passive so that if those sorts of sensations are measured the vehicle scales down until it can eventually be stopped. I believe that they are experimenting with those things internationally.

On 2 September this year the Premier pledged that Queensland would investigate and potentially trial new technologies such as eye pupil movement alarm devices for fatigued drivers. We are currently developing a proposal for the trial of pupilometry devices for detecting and measuring fatigue in drivers. We expect to have that proposal for that trial worked up in the next month or so. One concern is that the fatigue warning devices might induce drivers to over-rely on these technological advances rather than concentrating on their own physiological circumstances and making those decisions for themselves.

Finally, talking about strategic partnerships in relation to research, cross-agency collaboration and working groups, both Queensland Transport and Main Roads continue to implement and monitor a broad range of strategies to reduce fatigue through legislation, as I have covered, education and engineering measures. We also partner with other government agencies and key stakeholders: for example, Queensland Transport and Main Roads are working with CARRS-Q and the James Cook University on a five year research program to reduce the incidence of the economic, medical and social cost of road crashes in rural Queensland—a significant project.

We are also working with the Department of Industrial Relations to develop and implement measures to address and reduce work related trauma. We are also looking, with the DIR, at targeting industries that are overrepresented in fatigue related road trauma. It is our intention to educate those employers and employees about the dangers of driving tired, their duty of care and the impending chain of responsibility processes that are being expanded as I have described.

We are also working in partnership with central region agencies, including the Central Queensland University, to look at the problem of driving while fatigued. Particular emphasis is being placed on the mining industry. We are also involved in several light vehicle fatigue working groups and cross-agency workgroups, in particular in relation to fleet safety. That is all I have to say. We will make this presentation available for those who might be interested in the statistics. I am happy to take any questions. Thank you.

**Mrs REILLY:** I am Dianne Reilly. I am on the Travelsafe Committee with Jim. I do have many opportunities to ask you questions but I just wanted to refer back to the education campaigns because I am wondering what evaluation has been done or if you have any results from those campaigns to show us what you think might be working best.

**Mr McKEACHIE:** I do have some stats here on the evaluation. The evaluation of the microsleeps campaign indicated that the number of drivers who admitted driving tired did decrease from 34 per cent to 29 per cent. Awareness of the warning signs of fatigue increased from 59 per cent to 85 per cent. The number of drivers who confidently identified ways to avoid driving tired rose from 68 per cent to 84 per cent. The campaign achieved a 63 per cent prompted awareness. The awareness of fatigue as a road safety issue doubled. Recent research showed that 86 per cent of motorists were aware of driving tired as a road safety issue. This represents a significant increase from 56 per cent in 1997. All motorists who said that they had seen the latest billboards, the 'Rest or RIP', said that the billboards made them feel that they could have a crash if they drove tired and 97 per cent said that the billboards made them feel more inclined

to plan ahead to avoid driving tired. So that was a pretty good, strong awareness of those campaigns. Thank you for the question.

**Dr DOUGLAS:** Ki Douglas, Workplace Health and Safety Queensland. What about including questions on fatigue, like that survey you had, as part of the driver licensing testing so that young people at the start of their driving careers are aware of all those issues?

**Mr McKEACHIE:** We are more than prepared to take on those sorts of recommendations. I understand that our main instruction booklet, 'Your keys to driving in Queensland', which is available to all learner drivers, covers those issues about alertness and fatigue and so on. Introducing them perhaps into a testing regime may well be one of the recommendations that we are prepared to have a look at.

**Mr PEARCE:** It looks like we have one recommendation already. We will move on. Just so everyone is aware, the presentations made today, with the support data that you have been able to see up on the screen, and transcripts of proceedings will be available on our web site in about two weeks. It will be there for your information.

This is the last formal presentation today. It will be followed by an open floor discussion where I want to give you the opportunity to put forward some ideas, comment on what has happened today or say anything you want to to the committee. As you have been good enough to come here I want to give you the opportunity to have some input if you feel you have something that you want to say to us.

The final session, 'Policing Issues and Fatigue', will be presented by Inspector Trevor Wockner of the Queensland Police Service. He has been an officer in the Police Service for 34 years, the last six as district officer at Warwick. I think it is fair to say that working to reduce road crashes and injuries, particularly those involving fatigue, is his passion. In fact, Trevor has been recognised for his work and he was the recipient of a road safety award set up by CARRS-Q and the RACQ. He has worked closely with Queensland Transport and the Department of Main Roads on coordinated education, engineering and enforcement strategies to reduce traffic incidents in his district. Trevor will be joined by Tony Platz, the district manager of Main Roads in the Southern Downs border district, and Sergeant Ross Waugh, the Warwick district traffic coordinator. I would appreciate it if you would make them feel welcome.

**Insp. WOCKNER:** It is certainly a pleasure to give a presentation to you about something I believe in very passionately—that is, fatigue management, particularly from a policing perspective. I know that you have heard plenty of statistics, but I propose to present to you some statistics that are relevant to the Warwick police district and to Queensland in terms of fatigue related accidents. I will also look at some of the current limitations and anomalies in enforcement legislation and the difficulties encountered by police, particularly within my district. I will provide some recommendations that I believe are appropriate. It is pleasing to see that a lot of these issues have been addressed by previous speakers.

Firstly, I will give you an overview of my police district. I am the manager of all of the police within the Warwick police area. Our district extends from Cunningham's Gap, not far from Ipswich, out to approximately 100 kilometres away from St George and down to the border and north up to Greenmount, not far from Toowoomba. It is a fairly wide area and it contains three major towns. More particularly, four interstate highways travel through it which carry around 3,500 to 4,000 vehicles per day. This is not a lot in terms of what you see in metropolitan areas, but it is fairly significant for a rural community such as ours. More importantly, 1,000 of those 4,000 vehicles a day are heavy vehicles. These vehicles are travelling along the New England Highway, for example, bringing traffic from the eastern seaboard and also from Sydney. We also have the Cunningham, Barwon and Gore highways which link up to the Newell Highway in New South Wales, bringing traffic from South Australia and Victoria.

I would suggest that it is difficult for anyone other than emergency services personnel to truly appreciate the personal trauma of attending fatigue related fatalities and serious injury accidents or the frustration of being unable to effectively deal with the problem of fatigue driving within our area. Later you will see how serious this problem is across the state and, more particularly, in the Warwick district. Many people ask me what makes fatigue different to any other accident. I am sure you people share an enthusiasm for fixing this problem—that is why you are here. Imagine for one minute a vehicle travelling at 100 kilometres an hour and, without warning, colliding head-on with another vehicle or hitting a tree. You can see the results for yourself in these slides.

A van leaves the outskirts of Sydney heading towards Queensland. It arrives on the outskirts of Warwick at 5.15 in the morning. A utility travelling in the opposite direction is confronted with a vehicle approaching it on the incorrect side of the road. The result? Two dead—very young people at that—and four seriously injured. They include a number of small children who are scattered across the roadway. As you can see, the vehicle burst into flames. Imagine for one minute being the police, ambulance or fire service personnel arriving at that scene. A sedan leaves a small town outside Newcastle travelling to Queensland. In the early hours of the morning the vehicle collides with a tree. Just note the state of the front section of that vehicle. Surprisingly enough, this scene is only a very short distance from the previous slide—same location involving fatigue. A young man leaves his home to drive to Queensland after a day's work. His vehicle overturns. Finally, a young man and his partner leave their home in southern New South Wales travelling to Queensland in their four-wheel drive ute. A short distance from Cunningham's Gap and a short distance from a Driver Reviver site, it travels onto the incorrect side of the road into the path of a B-double. It is also hit by a truck travelling in the opposite direction. The vehicle burst into flames. Unfortunately, both occupants died and another person was seriously injured.

In the last financial year, there have been quite a considerable number of fatigue related fatalities. The southern police region, which I am a part of—the total area extends from Ipswich to Toowoomba to Warwick to Roma and Charleville—by far outweighs anywhere else in the state in terms of fatigue related accidents. Of these, seven of the fatal crashes were in my district. It is not a point that I am proud to get up and talk about. We are very energetic in the area of enforcement, but when you feel helpless to do anything it is very frustrating. Looking at five years of data from within the Warwick police district, statistically, fatigue accidents directly relate to 58 per cent of the total fatalities within that district—basically, 30 out of 51. Unfortunately, those figures have increased in the last two weeks. Of the 30 fatigue related fatalities, 46.6 per cent involved trucks and 53.5 per cent involved passenger vehicles. Of the fatigue injury accidents, 72 per cent involved trucks. For that five-year period in my area, 14.1 per cent of the total traffic incidents involved trucks.

As I said, policing is very aggressive within my district and I make no apologies for that. However, as I indicated, one-fifth of every vehicle on our highways are trucks. Under the circumstances, there is very little that we can do. We have issued in excess of 1,800 logbook breaches. That is just a small tip of the total traffic flows in our area. There is only so much that we can do. Intercepting vehicles of this nature is very time consuming and can be very dangerous if there is not an appropriate area to pull people over. Of the fatigue fatalities within the Warwick police district, 47 per cent were Queensland drivers. I make this point now: they do not come from my district. Some 53 per cent are interstate drivers.

I would like to make some basic observations. Firstly, I will comment on the logbook system and how effective it is from a policing perspective. Generally speaking, I can say with confidence that transport drivers are generally not complying with fatigue legislation. Experience has shown that many truck drivers do not take their breaks and are exploiting deficiencies in the system. Logbooks—commonly known as 'lie books' by most truck drivers—are just not working. One main problem we have is the provision of powered interception sites. I acknowledge that I do have the full support of my colleague from the Main Roads Department. We have worked tirelessly with Queensland Transport to address these problems, but there is only so much we can do. Imagine trying to pull up a B-double on these roads and trying to speak to the drivers. They are very agro at any time.

It is not uncommon for drivers to carry more than one logbook, and they will produce whichever one they want to whenever they like. They normally acquire the second book by reporting the first one stolen or lost. When intercepted, they will report that their book was lost the day before or they will present falsified documents. There is evidence available that some drivers are driving from places such as Townsville and Cairns and other northern towns non-stop to the border—to my area. I have spoken to some of these people. They do this because they realise our weaknesses. We do not have enough people on the ground to cover the amount of traffic travelling on these roads. That is no fault of the Police Service or anyone else.

When they get to the border, they realise that there are safety cameras in place in New South Wales. Safety cams are very effective in regulating the movement of trucks across the border. In effect, these truck drivers will take chances and run risks, hoping to get to the border without being detected. They then have 12 hours to travel through New South Wales. If they are heading for Sydney, that is not a problem. They get there, unload, turn around and come back. They take their break, hit the Queensland border and again take the chance of running to wherever they want to go.

Generally speaking, the enforcement of fatigue legislation is predominantly performed by travel branch personnel. They are very light on the ground, given the enormity of the task of trying to undertake all of the enforcement. We have general duties officers in operation, but the enforcement aspect of fatigue management is a very specialist task, and we are competing against professional drivers who know the system back to front. They know how to exploit it and they know how to answer our questions. There are simply not enough specialist police officers and we can only do so much in a 24-hour period. A point one of the presenters made earlier is the extensive network that these drivers have at their disposal. They have a CB radio system that will alert them to the presence of not only dangers but also police. They know well and truly in advance where we are operating from and they take evasive action or they pull up and fill out their 'lie book' to use to their advantage.

One particular example that comes to mind is when we were conducting a border operation. We do quite a few of those—that is, pulling up every vehicle that comes across the border over a 72-hour period. During this period, one particular driver begged us to put him off the road. I will leave it to your imagination why he was driving like that. Drugs are clearly evident in the heavy vehicle industry, particularly amphetamines. Obviously they are used to keep drivers awake. We have had drivers tell us that without drugs there would be more fatigue accidents involving trucks. Further, the supply of suitable prescription drugs for heavy vehicle drivers would be a positive move towards reducing fatigue accidents. As I said, during recent border operations we conducted within my district over two 72-hour periods, we used Customs—something innovative. We got them in there to use their ion scanners. With 547 trucks, they took samples from each of those trucks from the steering wheel, the log book and other locations within the truck within hands reach. It would surprise you to know that, out of 547 trucks, 197 positive hits were accounted for, predominantly for amphetamines.

The next problem that we have is that it is very difficult for us to identify drug-drivers, and we made mention of it this morning in the case study. It is basically very difficult looking at an individual to determine whether or not they have drugs on board—very difficult. Our findings are that drivers, particularly

professional drivers, only take enough to keep them going. Therefore, it is very inconspicuous. We cannot rely on such things as indicia to the same level we do for drink-driving. The most obvious things with drink-driving is the smell of alcohol, slurred speech and so on.

When you look at passenger vehicles, it is quite apparent that there is very limited legislation available for us to control fatigue. Drivers are travelling long distances without breaks, and each of those slides you saw before of those accidents—and I could have produced many of them for you—they had all travelled after having worked a full day at their place of employment. Unfortunately, by the time they get to my district they are only two hours from Brisbane and it is a great time to get in their comfort zone and then they drop off and that is the last thing they remember. Some of those drivers actually came from northern Victoria nonstop—straight through. The other point to keep in mind is that it is not just tourists who are travelling. We have professional drivers, carriers, salesmen and all of those groups that do not fit within the heavy vehicle industry. In effect, they are driving equally the same distances and for the same periods of time, yet we are not even regulating them.

One thing I will say is that roads are not to blame within my district. Those accidents all occurred on wide sections of road, and probably the fact that they are such good roads is contributing to our problem. I have heard Pierre speak before about monotony, and I believe that plays a big role in this whole process and the problem itself. They have travelled all the way from Sydney or Victoria. They hit our roads, and again they realise that they are only two hours away from Brisbane and they crash.

Some of the recommendations that were put forward I fully endorse, in particular the provision of audible rumble strips and lines. I would suggest to you that those in themselves and by themselves are not enough. Those rumble strips have to be supported with appropriate signage so that when they do go over these rumble strips the first thing they see is a sign saying, 'Take a break'. As you can see from the small signs on the bottom on my slide, these are signs that have been erected on a trial basis within our district only in the last three to four weeks. We have a number of others also. It is about trying to break the monotony—that is, innovative signs—but the audible lines also have to be there and the rumble strips across and strategically located within black spot highway areas. As I said, the signage must also be positioned in the same locations where you have these rumble strips and audible lines.

Rest areas and Driver Reviver sites play an important part in the overall process. If you are going to warn people about fatigue, you must give them opportunities to be able to pull up through rest areas or Driver Reviver sites. One thing about Gladfield in my area is that it has won a number of awards for the number of people who are pulling up. With Main Roads we have used the traffic counters and have established that with the total volume of traffic flowing through there we are actually only picking up about five per cent to eight per cent of the total number of people travelling the roads. I have spoken to many of the people who pull up. One thing that does come out is that when we had Kit-Kats it was very important. It encouraged the kids to say, 'Pull up. I want a Kit-Kat.' We have now lost it, and no-one likes dry biscuits, particularly kids.

The other point we all need to be mindful of is that our holidays do not align with southern states. With the Driver Reviver sites particularly in our area, they operate on public holiday days and also the beginning and the end of school holidays. I can say with confidence that with our area and a number of other strategies that we have put in place which I will refer to later on we have actually reduced our fatalities and injury accidents significantly within those periods when we are operating and doing these strategies. But when you do not have it operating, all of those accidents there occurred outside these periods.

One main thing that we focused on in our district is what I call the three E committee—that is, the three things that we can do to have an impact on traffic accidents. The first is engineering, the second is education and the third is enforcement. Enforcement changes people's perspectives of situations. One thing that we have done up there with the support of Main Roads—and I am quite proud to say this—is that they fund to a large amount, something like \$300,000 over a number of years, to use variable message boards. Again, that breaks the monotony. We use high-impact messages and then we support that with maximum saturation of police on the highways so that they know that it is no idle threat. We say 'Radar ahead' and we do have a radar ahead, and that is very positive. It shows what we can do with the right resources.

One thing I will say about Driver Reviver sites is that we need to expand the whole process, in my view. We need to have more of them strategically located. We might have to look at partnerships—and I know that they have in other centres throughout Queensland—with 24-hour service stations and fast food outlets like McDonald's, because we have to put as much as we can on the ground to achieve the desired result. The other thing is that at all these locations, as Jamie rightly indicated before, we have volunteers. The same volunteers from every community group are there religiously. They get very little recognition, but certainly the sites do with good performance. One thing that my staff and I believe is that we need to start looking at community groups such as Lions, Rotary and even P&Cs and provide some sort of financial incentive to them to participate in that process. It then becomes a worthwhile venture for them and of course the funds go back into those very worthwhile areas.

I believe that technology is the answer for us. One important area is that most vehicles in this day and age have computers in them, particularly trucks. I might also say that a lot of these truck drivers override those systems. This particular device you see on the screen is fitted in a truck. Basically, the driver will key in their particular code so it is unique to them and the whole journey is logged on the computer.

What we have to have the ability to do as police is to intercept them and access that information. If they have breached the fatigue legislation, we have something there that is tangible. It tells us exactly what they have done wrong and we can download that information for evidentiary purposes. There will be no need for log books or lie books, because it is already accounted for here. Similarly, in the passenger car area, most vehicles these days are fitted with computers. So the same sort of opportunity is there for us down the track in terms of enhancing technology and the way we use it.

In terms of vehicle fatigue alarms, most high performance vehicles and luxury vehicles now are fitted with these types of devices. I know that our SS patrol traffic branch vehicle has it and every two hours the alarm will go off. Of course because of the car's continuous use, my drivers get very frustrated with it. But it has the desired effect, so certainly the technology is there. It just needs some very hard decisions to be made at the manufacturing level.

I now turn to community education and awareness. It was interesting to hear many speakers talk about this earlier and how we are progressing in this area. That is a very positive move, but one thing I know is that unfortunately the fatigue message that is going out does not relate to my particular district. I do not relate to it, because I do not believe it is addressing the problem in the relevant state where my problems are coming from. What we have done in the past with the New South Wales police is joint messages targeting Sydney and places like that during those holiday periods. I believe that that is working quite well. I wish I could come up with something now to try to wake a few people up when it is quite apparent that it is getting to that time of the day.

I believe that the national and local media campaigns need to be very flexible. We need to have some say in what goes on in terms of media campaigns, whether it be radio—we do not hear a lot on the radio, but we should—TV and also in the print media. It is very important from our point of view. With regard to school lectures—and I heard this mentioned earlier—there is certainly an opportunity there. Similar to what we have done with the drink-driving campaign and the seatbelt campaign, we can make a difference and target those children now. They will become the drivers of the future and we might be able to break this trend that is occurring. Roadside signage, as I indicated before, needs to be a shock and awe approach. It needs to wake the people up and let them know what they are facing, because as you heard earlier this morning most people say, 'It won't happen to me,' but it does. Most importantly, as I indicated before, if we have these computers in these vehicles and we have the capability of downloading that information, we need to have the necessary legislative authority to enable that to happen. If you give us the authority to do, in the appropriate manner, what we have to do, I believe that is the true way of educating the motoring community about how important this issue is. It is the same as seatbelts and drink-driving, because they are all on a par.

It is very important that, with technology as its advances, we have this capability to do random fatigue testing—the same as we do with RBT because that does have an impact. If you see a police car on the side of the road, you know what I am talking about. The main thing that I would like to leave you with is that, whatever happens from here, we need to move forward. We need to use legislation, technology, education, awareness campaigns and engineering to reduce this senseless and controllable loss of life. I am confident that we can achieve that. We have shown that before, with drink-driving, et cetera. So I want you to work with us and make sure that we make it happen. Are there any questions? Thank you.

**Mr PEARCE:** Thanks, Trevor. You certainly gave us a lot to think about there. It just proves to me again that if you give people who are actually involved in whatever it is at that grassroots level—the people who are out there on the ground doing the work day after day—the opportunity to have input into how we can change things and make things work, take them on, because we have to give them that opportunity, because that is where it comes from. That is no disrespect to people sitting in government agency offices trying to make decisions, but if they are not experiencing what is happening, they really are not in the same position to make the commonsense decisions. So I thank Trevor again. That was an excellent contribution. I appreciate his frankness.

The next session that I was alerted to earlier was that we would have an open forum situation where I want you people out there to get up and make comment. As you know, it is all being recorded and we will be able to take on board and have a good look at anything that you might put forward—any ideas, comments about today, any failings of the system—whatever you think that we can do to improve it in the future. So is anybody interested in making some comment, because when we do that, I am going to ask Di Reilly to sum up and that will be the end of the day.

**Ms TUTTY:** This actually follows on from what Trevor was just speaking about. Perhaps as part of the whole strategic partnerships that you have with community groups in making sure that people do stop, especially on long journeys—you could channel the traffic and make sure that you can form strategic partnerships with maybe fuel stops. Then you can do your random fatigue testing at the fuel stops, because once they run out of fuel, or they are about to, they have to stop somewhere. They have to have a break. So if we can somehow make sure that where people access fuel is channelled so that they have to stop, that is where you set up your driver reviver systems. Maybe our fuel tanks are too big today. People can make that trip from Victoria right up to Warwick. If fuel tanks have the capacity that lets them get that far, we are just exacerbating the problem.

**Mr PEARCE:** That is looking at other ways so that we can get the message through to people and providing the opportunity for them to stop at these driver revivers. I was actually surprised at the statistics, Brisbane

which are really very low, for the number of people who are out on the road and who actually stop. A couple of times, just in my capacity as the chairman, I have stopped unannounced. I do not tell people who I am, because I do not like doing that. They want to nail me for other things. I have just stopped and asked them questions. I actually did some work on one at Wowan a couple of years ago. There was a fellow there who I had spoken to and who had driven nonstop from Adelaide. He was going to Airlie Beach to see his mother and father for the weekend, staying for about 36 hours. He was going to stop and then he was going to drive back. At the time I said to him, 'You're a bloody idiot, because you are not only putting yourself at risk; there are other people out on the road who you are putting at risk as well.' But I bet he did not take any notice. Is there anybody else who would like to make a comment?

**Dr DOUGLAS:** Last year at the sleep loss symposium, there was some American research presented on a hand-held fatigue measurement device. Mostly it was to do with reaction times. I cannot remember whether it was a noise or a light and you had to hit a button. But the trouble at that time was that it was validated only if you had pretested the person when they had had a normal sleep and then you compared them with their reaction times after a full shift or when they had had some sleep loss. It would be very good research, I think, if someone could develop a simple roadside testing unit, which is hand-held, on reaction times and perhaps have these almost as a self-testing unit at driver revival stops, for instance.

**Mr PEARCE:** Is there anybody with a knowledge of technology? Can we do that sort of thing? It is worth asking the question. Would anybody like to make any comments, or are you all happy with what has happened here today?

**Insp. McCOOMB:** I have just a comment in general. As I listened today, I found it very informative and very useful, but one of the things that has not got a great deal of coverage is the media. I noticed in a couple of forums that I have been to surrounding these issues that we do not tend to involve the media in coming to these things. It is interesting that, as we go along, the media choose to criticise as a general course the police for hiding when detecting speed offenders and doing a whole lot of other things in the process. The media love to grab the headlines when some sort of horrific crash occurs and then look for somebody to blame in the process as well. I just wonder at times whether the media should not be more involved in these sorts of forums to get them on side, to push the message to the public about the importance of these issues.

**Mr PEARCE:** That is fair comment, but let me respond by saying that as the chair of the committee, we put out quite a number of press releases with regard to things that we are doing. It is very, very rare that they take the issues up and try to run them for us, which would be of benefit to us. I spoke to some media here earlier today. They knew that this was on, but there is no-one here. I do not know how we get them involved. Maybe we have to be more direct in our approach to the different areas of the media when we hold forums like we are holding today. We will certainly take that point on board and make a bigger effort, because you are spot-on. The media help us tell the story. If anybody has any ideas when you leave here today that you might like to put forward, feel free, because we want to take those ideas on board and see what we can do to develop ideas and recommendations that we can put forward to the minister and back to the respective departments. So we might just leave it at that.

**Mr HANSEN:** Can I take advantage of this opportunity to ask a question of this group. Are there any interventions or program that you people know about in other jurisdictions that we do not have in Queensland that the committee maybe should have a look at?

**Mr PEARCE:** We will be making inquiries in other states, but if you are aware of it, or any other initiatives, or incentives, or whatever.

**Mr HEATHER:** One of the measures taken in Europe historically that goes around the control of labour in the workplace is the limit on the number of hours which may be worked by any employee, and it is not per employment contract. So it does not matter how many employees you have; it is around how many hours per week you work. Bearing in mind that a large proportion of the drivers who are hurt or who die are, in fact, either on their way to work or work in haulage in some way, shape or form, to actually limit the number of hours that they work or, the flip side of that, to regulate the amount of rest that they have—not the opportunity to rest, but to regulate the actual rest because fatigue clearly is inversely related to the amount of rest that you have, the quality of rest—those two things go hand in hand. So whilst I realise that the employment contract has no bearing, or the regulation of the employment contract has no bearing on drivers of private cars, there is still some drivers out there who are obviously employees and that would have some impact.

**Mr PEARCE:** Thanks very much, ladies and gentlemen. I will now hand over to Di. She can do a little bit of a summing up for us. Di has a background in journalism. That is very helpful to the committee when we want to put press releases together. Certainly, she has had some experience in workplace health and safety. She was elected to parliament in February 2001 and served on the Travelsafe Committee in the last term of the parliament and also this term. We have looked at the issues of rural road safety, public transport in south-east Queensland, young drivers and work related driving.

**Mrs REILLY:** I do not know what it is about fatigue, but there is something about the topic when reading through the submissions—whether that was late at night because that is the only time that I had a chance to do it or early in the morning before I got ready for work—that made me fatigued. So I do not know if talking about fatigue also has same effect. Can everyone just stand up and sit down again? You all  
Brisbane

know this trick. Stretch, check the person next to you and make sure that everyone is awake and interested. That is good.

We have covered a lot of difficult ground today. One of the things Jim started off by saying is that one in seven crashes could be attributed to fatigue. Since then we have had a smorgasbord of statistics. Dr Pierre Thiffault's statistics were intriguing and interesting as well and I think gave us an idea of just how broadly we can statistically measure fatigue. We heard a figure of one in four. Then we had fatigue and inattention grouped together—I am really keen to see us do a little bit more on that—with a figure of 6.34 per cent, or fatigue only with a figure of 1.5 per cent. I do not know how we get that separation. In America fatigue was identified in up to 16 per cent of crashes involving fatalities on monotonous roads. Then we heard about fatalities on monotonous roads up to 30 per cent. So statistics can be measured and stretched in many different ways and forms. I think that is because there is so much, as our speakers have said, that is subjective about fatigue.

I suspect, from what we have been reading and hearing about so far, that the specific definition QPS and Queensland Transport use in identifying single vehicle crashes in zones over 100 kilometres an hour and at those particular times of day—10 till 6 and 2 till 4—gives us a lot of indicators. If there has been an accident and there is only one vehicle involved we think that something has to have happened there, that the driver must be at fault, rather than another driver if there are two vehicles involved. But then as we have heard from Trevor, the head-on vehicle crashes on country roads are very often clearly fatigue related as well. So even though our definition is not perfect, I think it is still underreporting rather than overreporting. I think of my own experience of driving when I am feeling tired. We can probably all relate to this. I can think of the little things that happen in not paying attention. If we tie inattention to fatigue more frequently, we can probably eliminate some aspects of inattention that are fairly new, like using mobile phones or changing CDs. If we take that out as a factor of inattention and establish that that was not happening when the crash occurred, then something else was happening to cause the driver to lose their focus and their attention on the road.

In relation to speed, we could identify what kinds of speed. How much was the speed over the prescribed limit? Where was the speed occurring? What was happening before the driver was speeding? Was it a long period of speeding with lots of lane changing or was there a creeping speeding effect? The times of day that that happens could relate to that crash. I think speed could certainly be broken down better to draw a link to fatigue. So if anything, I think we are underestimating the problem rather than overestimating it, which is part of the reason we were so interested in running a fatigue inquiry.

I was really fascinated by the discussion on the impairment paradigms, the potential for countermeasures and the definition of impairing factors. I am really interested to work out exactly what is happening to the fatigued driver. I think there is a little bit more we can do on that. We heard a bit of talk about the head nodding or what the eyes might be doing. Perhaps we could do some more analysis with other people who are in the vehicles when we can. Obviously a fatigue crash is so severe and there are often not a lot of witnesses that we can speak to. If there are high levels of fatalities, of course, it is very hard to extrapolate that information. But where possible, we should maybe be doing a little more to find out what other people in the car thought was happening, if they also weren't all asleep. What was the driver's demeanour prior to the onset of a crash?

The definition problem is an enormous one. I think you could broaden the definition with the danger of collecting other crash factors and causal factors without doing too much damage to fatigue as the main source of concentration. I would rather that we include fatigue more rather than try to leave fatigue out, if that makes sense. How do the police feel about that? I am not sure. I am getting a pretty good feeling from the police here today, in the discussions I have had with them, and my local police that they pretty much have fatigue in the back of their minds almost all the time when investigating a crash and go through a bit of a process of eliminating everything else. On the Gold Coast and in the hinterland, most often when I ask police about a crash, even in an area that is quite urban, it is rare that they do not mention fatigue, even if that has not been the major causal factor that they have identified, whether it be speed or even alcohol.

We talked before about the correlation between blood alcohol concentration and fatigue. If you are tired and you have just one drink, it is going to have a much bigger effect on you than if you were not tired to begin with and had maybe two drinks, so that causes a big problem. With the sorts of workplaces and the sorts of work environments we have, it is not unusual—and people feel quite comfortable—to have one drink after work. But if you have had a week or a period of eight-, nine- or 10-hour days and your Friday afternoon finishes with just one or two drinks and you are not thinking about and should not be worrying about drink-driving because you know that you have not had too much to drink, or you do not think you have, then that edge line becomes very close and fatigue is going to creep in there, too—much more so than if you had not had all of those factors in there, as in the alcohol and fatigue as well.

Another thing which I think we need to consider is urban sprawl—the shape, the design of our cities and what people are doing when they are going to work. Suburbs are spreading further and further away from our business and our city hubs, so people are driving a little bit further to get to work than they used to. It is just that little bit further. Parts of the hinterland in my electorate that are 10 to 15 kilometres away from work move very quickly from being an urban environment with lots of life and lots of changes in the traffic environment to a quiet, winding, dark road in a semicountry-looking area. I think they are of particular concern as well. That is maybe something that we have not been thinking about. If that driver has gone off the road or is speeding by a few kilometres over the limit and there are other factors that we think might be



the cause of the accident, I think you could probably draw back again to it potentially being fatigue. I think we have to broaden our approach to managing fatigue before we can get around to managing it a little bit better.

Countermeasures are enormously difficult, as we have all heard, because you cannot measure fatigue as such. I really would like to see us support the Police Service in enforcement, but we have to get to a point in time where we can better measure, with some sort of technology, the onset of fatigue. We need to try to give some tools to the police to be able to identify fatigue better. I do not know what they are. I have not seen any technology that is getting close to that yet.

I saw some technology a few years ago just after I had left the workplace health and safety arena and was writing about workplace health and safety issues, and it was about drink and drug testing. There is a performance indicator being used to measure a person's work performance. This is used when people arrive at work. It is less invasive than taking saliva or blood tests but it measures whether or not a worker is impaired. It measures their performance via an IT based reaction system. That identifies, no matter what the causal factor, that person's ability to perform in the workplace. We have to try to find something that is a bit like that, and I would like to see research encouraged in this area, too, so that when the driver gets into the car they will have to go through some sort of process to measure their performance.

I was really interested to look at the personality related issues with these supersensitive or extroverted personalities and the correlation to work. I think there is an enormous opportunity for workplaces and for employers to better place or better identify which of their employees should be driving for work or driving their work cars. The whole area of commercial light vehicle operators I do not think has been dealt with adequately. We are doing some work in the heavy vehicle industry and, even though the logbook system leaves a lot to be desired, if we can move to electronic logbooks I think that will be a big improvement. Enforcement of even a basic logbook on light vehicle commercial operators would make a big difference.

I have moved away from summarising the day to giving you my own thoughts. I do not know if that is what you were really seeking. The aspect of monotonous driving, while being vital, could perhaps distract us from what is happening before the driver gets into the car. I think we can do a lot more work on that. We need to look at the nature of the workplace. Workplaces are far more mechanised than they used to be. People are sitting down for work a lot more and are spending a lot more time at a computer or in an isolated work environment. Even if you are part of a team and there are many people doing the same thing, you still spend a lot of time by yourself on a phone or a computer, and that does not create enough oral stimulation. When you get up from that and get into a car, you are still by yourself. I think that is a dangerous thing to think about: that is, if fatigue is increasing or if we are not identifying how much fatigue is out there.

Mental fatigue versus physical fatigue we have perhaps concentrated on a bit because it is easier to do so. People who are on their feet who are working in hospitality or tourism are moving around or are physically active. They will be physically exhausted. That is easier to put your finger on than thinking about the public sector, which could probably do a lot better in identifying ways of protecting their employees from sleep related or fatigue related driving incidents. Just because they have not been working physically hard does not mean they are not mentally tired. I think that sums up where I am at the end of this week and where Jim is, too. We are in danger, we parliamentarians.

I do not have anything further that I want to add. I want to thank you all for coming today and spending all this time. We have probably raised more questions and given you more things to think about. You have certainly given us some more ideas. Throughout the day I have jotted down a few things that I would like to formulate perhaps into recommendations and certainly take back to the rest of the committee to discuss. I can tell you that the committee is very interested in this issue. I will not say 'excited' because you cannot get excited about fatigue. You wish you could. You wish people in the community would get more excited about it, and road safety as a whole, but it is one of those issues that we grapple with because we know it is really difficult to get the right answers. The committee is committed to finding some answers and to moving forward. So we will take these ideas back and keep working on it. We plan to report to parliament in May. I know there is a lot of interest amongst the other MPs about it, too. So there will certainly be a discussion in the parliament about it at some point.

I want to congratulate those of you who are working in the field and encourage you to continue to do so. I certainly encourage you to build on and continue to maintain these partnerships where you have to work together because no agency can do it on its own. I really want to encourage those links between workplace health and safety, Industrial Relations, Police, Queensland Transport and Main Roads and other agencies who are sharing information.

I want to thank Hansard, who have put up with a lot from us today. It has been a challenge and a bit of an experiment, too. This room has been fairly newly renovated, so we will see how using it in this way, with the technology having just come on board, has worked out. We hope that we can improve on it down the track for any future symposiums.

I want to thank our research staff because they have done an enormous job. They are certainly very excited, as they are about every inquiry we run. They are very dedicated and committed people—Rob, Lyndel and Tamara. We should probably give them a round of applause because they have done really well. Our ever able and wonderful chair, Jim Pearce, has an unflinching commitment and dedication to all Brisbane

Travelsafe Committee—Fatigue Symposium

things related to road safety and indeed to his electorate. It is a pleasure to work with him and be guided by him. I thank everyone for their attendance today. Have a safe trip home.

The forum adjourned at 2.57 p.m.