Forward Thinking - Stuck in traffic? Road congestion in Sydney

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Australians love their cars but hate congestion. Most commuters in Sydney drive to work, and one of the big conversation topics in Sydney is just how clogged the roads have become. The city has grown by 20 per cent in the past decade, and the rate of population growth is speeding up.

Managing more congested roads is one of the most potent challenges of rapid population growth. Sydney is a very car-dependent city, even though it has higher patronage of public transport than any other Australia city.

In this Forward Thinking event, an expert panel considered:

- Can we manage Sydney congestion by working our existing approaches harder? Or has the city reached a tipping point, where a new approach is needed?
- If Sydney adopted a different approach, what could it do to keep the city moving?

Moderator: Joanna Mather, Australian Financial Review

Speakers: Owen Hayford, Partner, PwC Legal
Bryan Willey, Director Road Transport Strategy at Transport for NSW
Marion Terrill, Grattan Institute

JOANNA MATHER: Good evening everybody and welcome to this Grattan Institute event. My name is Joanna Mather and I write for the Australian Financial Review, mostly about tax. We're here to talk about traffic - congestion, more to the point. I've just moved back to Sydney from Canberra. In Canberra my commute was 11 minutes from free underground car park to free underground car park. It's been a bit harder in Sydney, but we're here and we're going to talk with Marion Terrill, who's from the Grattan Institute. She's done some analysis on what congestion looks like in Sydney and Melbourne and one of her recommendations was that we should have some congestion charging. While you probably all think that your commute to work is terrible, apparently the average commute at the busiest time of day takes around three minutes longer than the same trip in the middle of the night. Hard to believe?

So please welcome Marion. I'll tell you a little bit about her, she is the Transport Program Director at the Grattan Institute and author of the report we're going to talk about called *Stuck in Traffic? Road congestion in Sydney and Melbourne.* Her previous publications have focused on government, infrastructure, investment, cost overruns on transport infrastructure and value capture. Before joining Grattan, Marion had extensive experience in public policy ranging from authoring parts of the 2010 Henry Tax Review to leading the design and development of the MyGov account. We're also joined by Owen Hayford, who's a partner with PwC Legal specialising in infrastructure. He has provided advice to participants including government, sponsors, contractors, operators, investors and debt financiers. He is an acknowledged thought leader on public private partnerships and the infrastructure sector. Finally, Brian Willey, who is currently Director of Road Transport Strategy in Transport for NSW. He has

a background that includes buses, road network planning, performance measurement and multimodal transport planning in London. He has advised on the development of mass transit systems and led the establishment of public transport and infrastructure projects.

We're going to kick off with Marion telling us a little bit about what her research found.

MARION TERRILL: Thanks very much Joanna and thank you everyone for coming along tonight. I feel like congestion is one of those bugbears of life. We love to complain about it and I guess we're all here because we care about it one way or another. What I thought I would do is spend about five minutes telling you some of the findings that I published a fortnight ago on congestion and some of the findings were what I expected and some of them not so much. The backdrop to this though is what do we even mean by road congestion and the answer to that is not actually particularly obvious. We complain about it I think partly because we've had a lot of population growth in a short space of time. Sydney has grown by 20% in a decade and the pace of population growth is actually speeding up - I think in the past five years it was 1.76% a year and last year it was 1.86%, which might not sound like a lot but it's compounding. It's easy to remember when there weren't as many people competing for the same space. That's one reason that we care. The other is that our cities are very car-dependent. Sydney has got the biggest mode share of public transport of any Australian city, but only 25% of journeys to work are by public transport, so most people most of the time are getting around by car.

So in thinking about what is it that we're worrying about, the main way we think about it is as motorists and the things that we care about are how long is it going to take and how reliable is it going to be? I'm sure Bryan will talk more about this, but as an economist I also care about how costly it is. The delays that we all contribute to by joining the traffic add up and that's costly, but in terms of the physical capacity of the roads I don't think we're there yet. It's very rare for roads to actually breakdown in gridlock and certainly not on a regular basis, even on quite bad routes. I'll set the scene a bit with a few of the key findings that we had. Firstly, we looked at Sydney, Melbourne and Brisbane and we used Google Maps data. We picked a bundle of over 350 trips and we collected trip time estimates 25 times a day for six months. We ended up with 3.5 million of observations and what we found is Sydney and Melbourne are very alike and Brisbane is quite different. Brisbane's about half the size of Melbourne, so what I conclude from that is it makes sense to look at Sydney compared to Melbourne but not Sydney compared to any other Australian city. Sydney and Melbourne are remarkably alike, they both have their peaks at pretty much the same hour of the morning and afternoon and they tail off in the middle of the day to a very similar extent. If anything, Melbourne seems to be a little bit worse in terms of its delays and a little bit worse in terms of its reliability, which I think is very interesting for Sydney and perhaps an opportunity for Bryan to congratulate the government - I'm not sure.

So that was one important thing, but to get a bit more specific, Joanna just referred to how small the delays are and this was the most surprising thing to me. If you think about people's journeys to work, most people's trip takes less than five minutes extra in the morning peak compared to in the middle of the night and I thought how could this be? It seems so implausible, but it seems to be right and it's because most people work in a suburb very close to where they live, so that is why most people travel to work by car. Very few people work in the CBD, it's about 14%. Other employment centres are just not that big. The CBD is the most important employment centre and then there's daylight for other employment centres, but the great majority of people are dispersed among shopping centres, schools, health clinics and businesses all over the city and they live near where they work, that's why those

delays are really not affecting most people most of the time. Of course, they are affecting some people a lot, but it's very unusual for trips other than to the CBD to be delayed by more than about 15 minutes. Once you look at people going into the CBD the delays are longer, there's an average delay of 11 minutes for a CBD commute in the morning compared to in the middle of the night. So that is still not a huge delay, but I think probably what's more problematic for people is that the reliability can vary a lot and in a given week it can vary significantly.

So just to give you a few examples to bring that to life, if you're going from Cremorne to the CBD it'll take you 120% longer than in the middle of the night. In the middle of the night it would take you 7.5 minutes and it'll take you 17 on an average day, but in any given week one day it'll be 12, one day it'll be 19.5. If you're going from Ashfield it's 10.5 minutes in free flow, on average 22 minutes, but it could be 11.5 minutes and it could be 26 minutes in one week. There are lots of examples that show that variability is a real issue for people, even if the average is not that bad. We looked a little bit at causes. It's not surprising that if you are in a suburb without rail you'll probably be driving, but the other interesting challenge that you have in Sydney is the harbour. It's quite hard to manoeuvre around, so the number of bridge crossings you have is a big factor in how much delay you're likely to experience. Drummoyne and Balgowlah have got two bridges and no rail and they are pretty bad commutes actually. Willoughby East and Mosman are quite delayed, one bridge, no rail. So that's a factor which is a little bit hard to change, but it helps to make sense of what's going on. The final cause I thought I'd mention is weather. Lots of people in Sydney said to me, "Once it rains it's terrible". So we looked at the wettest week in this six month period, which was the week leading up to the June long weekend. There was heavy rainfall on the Tuesday, Wednesday, Thursday and Friday, and I don't know if this is typical, but in this very wet week we saw no difference in congestion to any other week. There is a bit of natural variation from one week to another, but in fact in one of the biggest downpours travel times were actually less delayed than average. I found that very surprising, but we found no evidence that torrential downpours made much difference.

So that's a bit of a brief overview of what congestion looked like in Sydney between March and September this year. Bad for some trips, but overall surprisingly modest.

JOANNA MAHER: Not everybody agrees that congestion charging is the way to go but, nevertheless, let's just hear from Owen on what road pricing might look like. You've done some work on that?

OWEN HAYFORD: Yes. My interest in this topic came out of one of Marion's recommendations and that was that Sydney ought to look at congestion charging as a way of managing this issue. Road user charging is something that I've been interested in for quite a period of time. I'm interested in it from two perspectives, one is our road funding model at the moment is suboptimal, it's unfair, and it's dying because it relies on fuel excise. Cars are becoming more efficient so fuel excise is falling, we're going to end up with lots of electric cars that don't use any fuel so they don't make any contribution, and there are better and fairer ways of raising the revenue that we need to support our road network. So part of it might be about the funding model, but the other part is about it could be a really useful tool for managing demand, everyone gets that, but also for managing supply, and I'll come to that. But I think if we're going to have this conversation about road user charging or congestion charging we need to get clear in our heads what the main objective of it is. Is it about a better funding model or is the primary purpose about managing congestion? Marion's report says it's about managing congestion and Infrastructure Victoria share that view, but if you have a look at the speech that the Federal Minister for

Urban Infrastructure gave at the Sydney Institute quite recently - you can download it off the web and if you're interested in this topic I suggest you take a look at it, because it's a really good speech, there's a lot of detail in there - he thinks the primary purpose of this is about a better road funding model. And just to be clear too, he's not saying it's a way of raising more funds, he's saying, "No, no, the total take would be the same, it's about raising those funds more fairly and more efficiently". He then says, "So the benefit that you get out of it in terms of managing congestion, that's incidental, a secondary benefit".

So I think we need to get clear around that because, depending on what your primary objective is, that will really shape how you form this up. My personal view is that congestion management resonates a whole lot better with the public than the funding objective. Everyone sort of thinks, "Oh well, government's got plenty of sources of funding, we don't need to fix that". So I think it's a measure that's more likely to get public support if it's about congestion management. People see and understand that problem. They don't see and understand the funding problem. So you've got that primary question and then there are two other questions about what this might look here in Sydney. The first question is what roads should it apply to and the second is what form might the pricing mechanism take? In relation to the first question, what roads should it apply to, there are three basic options that I think make sense in Sydney. You could either impose charges on entry into a particular area, like the CBD, or you could look at our key arterial roads, like the orbital network, much of which is presently charged, or you could impose these charges across the entire network. A variant of the second option with key arterial roads is maybe express lanes on certain roads and that might make sense on, say, the road to the airport. If you're trying to catch a flight and you're travelling at the same speed as everyone else, you might be prepared to pay a premium to get a guaranteed express journey to the airport so you can catch a plane and not suffer all the costs associated with that.

So that's the area and then the second thing is what form might the pricing mechanism take? Again, there are three basic options here if we're talking about cars and other light vehicles. The first is distance-based tolling where you're charged a function of how many kilometres you travel, and we have that on the M7 at the moment. The second is time-based tolling where the charges change depending on the time of day, similar to what we have on the bridge and the tunnel, and in Melbourne on the East Link toll road they charge 20% less on weekends than what they charge during the week. The third is dynamic pricing where the price changes depending on the actual demand for the road at the relevant time, so as the road becomes more congested the charge would increase until demand and hence congestion falls to a desired level, maybe a level that enabled desired travel times on that road to be achieve. Conversely, at times of low demand, when you've got lots of underutilised capacity, the price would fall until the demand comes back up. For heavy vehicles another variant is mass as well, because heavy vehicles cause more damage to the road than lighter vehicles. Returning to our primary purpose, if the primary purpose is about managing congestion then I think a regime that only applied to congested roads with prices that respond to actual demand or congestion to the relevant time would make more sense, but if your primary purpose is about a fairer, more efficient funding model that seeks to recover the incremental costs that each road user is imposing on the network then something that applies to the entire network and is based on distance and mass would make a lot more sense.

The last thing I wanted to touch on was about the supply side. Another reason why I think this is a conversation we need to keep having is that we can do much better on the supply side by making better decisions about where we spend our road funding. Congestion occurs when there's insufficient road capacity to meet demand and you've got two basic solutions to that problem, you either reduce demand

during the peak period, and we've just been talking about that, or you increase supply, you put more road capacity in the locations where it's most needed, where there's excess demand. I think, despite the best efforts of people like Bryan and bureaucrats at Transport for NSW to direct road funding where it's most needed, the politics can result in road funding being spent on roads that are popular with voters in marginal electorates, rather than supplying additional road capacity where it's most needed. I'll throw this one out there, this will get you thinking. If responsibility for deciding how road funding was spent was taken off government road authorities and instead given to private sector road network managers, they were given an area of the road network to manage and look after and develop, those private sector road network managers would invest the funds that they have available into capacity enhancements and maintenance activities that are going to maximise the return for their shareholders. Put another way, that private sector road network manager would be financially motivated to invest the funds available in those parts of the network where there is the most demand for additional network capacity. The politics would be taken out of these decisions and we could address the supply side of this congestion equation much more effectively.

JOANNA MAHER: Excellent. Do we have enough technology to do all of those things?

OWEN HAYFORD: Absolutely. We've all got tags and whatnot in our cars and we travel on certain roads that are tolled. The M7 is a good example, as you go along it works out how far you've been and sends you a bill. No problem, the technology is there.

JOANNA MAHER: Bryan is in charge of all of our commutes, so we're going to hear from him about what keeps him up at night.

BRYAN WILLEY: I'm not sure about in charge, but thank you, Joanna. I wanted to talk about two points really to add to the discussion with a bit of context. Sydney is no different to any other Australian or New Zealand city. We have traditionally low densities and we have quite large geographic areas in our cities, which is a challenge for people in Transport for NSW to provide high quality public transport because really density drives quality public transport. For those that can see what we call the global clock behind us, if you imagine a clock with increasing city sizes around the world with Berlin being 3.5 million people and Sydney currently 5 million people, in the next 40 years we will be 8 million people. That's 3 million people coming to Sydney, that's two times the size of Adelaide. Then we end up with the big megacities at 12 o'clock, such as Tokyo at 14 million. If you look at those various cities, Sydney will be about the same size as either, depending how we cut it, San Francisco including the whole Bay area, which is about 7.7 million people, or about the equivalent size of London or New York, which is the five borough area, today. We are going to be a small megacity, yet our densities will remain relatively low, so we have a big challenge ahead of us. We want to maintain our liveability. Australian cities are traditionally very high in the liveability rankings, something we're all very proud of. At the same time, a city like Sydney is a global city and we're in competition with other cities around the world for finance, for economy, for business to come here and there's proof that agglomeration or higher densities actually drive economic development. We all know that following the downturn in the mining sector, Sydney really has played a key role in the Australian economy to drive things forward.

So the question we pose as planners is what sort of city do we want to be? The other part of the story here behind me in the global clock is the size of the blue segment. If you look at the blue segment, that's the car mode share for cities around the world. As I said, Australian cities are relatively low in

density and we have relatively high car mode shares. If we think about cities like London or New York, relatively low car mode shares in comparison and a city like Los Angeles, which is quite a megacity, has a very high car ownership. So what sort of city do we want to be, which is as much a land use story and what the public will accept as anything else, but that very much influences the congestion debate.

JOANNA MAHER: Does the quality and the cost of public transport play into those, for example, in London, New York?

BRYAN WILLEY: Absolutely. We're here to talk about car congestion, but it is a big factor in what we can provide as a government. With greater distances and smaller populations there's a higher level of subsidy that government would have to pay towards public transport. Denser cities can put public transport in and get a higher return. Transport for London, for example, in two years' time needs to be cost neutral, so the Tube, they need to fund themselves and the buses need to fund themselves. That's a challenge for a city like London. For Sydney there's a huge amount of government subsidy that goes into public transport at the moment. The government is very happy to do that, but there is a limit on what we can afford as a population.

The other point I wanted to add to the discussion was I was in Marion's position about 12 months ago as the Project Manager for Austroads' Congestion Review. Austroads are the peak authority for the road authorities around Australia and New Zealand. We did a study of congestion on the busier roads around Australia and New Zealand and we looked at a congestion intervention framework, so a guidance for practitioners like myself and road authorities on what measures and what is available to us, what policy leaders are available to improve congestion - we'll never bust congestion, but how can we manage it better? It ranges from the supply side to the demand side: building roads; reprioritising roads to public transport; better walking and cycling; immediate interventions, so improving incidence responses and we're doing quite a lot on that across Australia and New Zealand - if there's a weather event there are likely to be more crashes, so getting on top of those is quite important for our commuters; and demand management. The example I would give is we've done a lot of demand management in Sydney's CBD and since we started that campaign we've had an 11% reduction in car trips into the CBD and, over the same period, a 9.5% increase in public transport usage. So demand management is one of our key tools to improve that situation and then there's my field, which is the longer term planning, which is making sure the land use is planned to ensure that we have employment and jobs close to where people live so we reduce the demand to even travel.

To Marion's point too in her study, the average trip in Sydney during the weekday in a car is less than 5km. Most of our trips in cars are relatively short. The number of people that drive across the city is relatively small.

JOANNA MAHER: By demand management do you mean, say, putting on extra buses for an event or something as such?

BRYAN WILLEY: It could be. This is a prolonged demand management approach, so we've put extra buses in, we've re-routed buses, we've put extra services on but, at the same time, we've done advertising to encourage people to re-route and re-time their journeys, and we've also done a lot of work with employer groups to encourage them to re-time their trips so that we can spread that peak or

even encourage them to change mode. So it's a multi-pronged approach. Part of it is actually increasing capacity, increasing services and, at the same time, looking at behaviours as well.

JOANNA MAHER: Do we have any questions at this point?

AUDIENCE: Bryan, you said part of your role is the longer term planning for New South Wales. I don't want to divert the conversation from where it's already going, but autonomous vehicles are a technology on the medium term horizon which potentially could have an impact into the future. Have New South Wales thought more about what they could do in regards to planning longer term?

BRYAN WILLEY: Yes, but we'd probably take up the entire session. There are opportunities, absolutely. There are opportunities with not just the road network and better utilisation, there are opportunities with land use, particularly when we think about the need not to park vehicles, so what do we do with our parking stations, can we convert those to better use? What's driving our thinking is liveability, how can we improve the liveability of our cities and how can connected automated vehicles encourage and promote that? There are challenges and I think there's still a lot for the industry to learn and understand, the pros and the cons, and also what government's role is in regulation. Do we take a light touch? Do we take a heavy approach? I think we're still thinking about it definitely, but we haven't really got a position.

OWEN HAYFORD: I've got a perspective on that as well. There's a view that as more autonomous vehicles come to the market that over time you and I and mums and dads that presently own cars will stop buying cars and will instead start buying journeys, dialling up a car when we need it, popping in, the driverless car takes us where we need to go, we pay for the journey, we get out and avoid the cost of running cars.

At the moment road charges, where they are imposed, are levied on the owner of the vehicle. I think by the time we eventually get around to road user charging, if we ever get there - the politics is fraught. No Minister wants to say, "I'm going to introduce road user charging as a means of managing congestion". Not before the next election, that's somebody else's job afterwards, but I think in due course, as the public becomes better informed about what they're presently paying to use the roads and the unfairness in that system and how it could be made better, eventually a political champion will come out for this. That's a few years away I believe and by that point I think the days of all of us owning a vehicle will be more or less over. The politics of imposing additional road user charges on mums and dads and vehicle owners will be gone. Instead, fleet owners who are providing these journeys and making money out of the use of our public roads for which they pay no more than the rest of us, I think what will happen is they'll be the ones paying the road user charge to the public authority or the private network manager that operates the network and that'll just be a cost like all the other costs that are embodied in the journey charge they impose on the user of the vehicle.

So I think autonomous vehicles could be a bit of a game changer in terms of bringing about price signals to help manage congestion and a fairer, more effective model for funding our road network, going forward.

JOANNA MAHER: Marion, speaking of things being politically unpalatable, I think you did think that maybe some of the money could be fed back into, say, lower rego costs and things like that. Do you want to talk us through some of your findings around that?

MARION TERRILL: Yes, I think it is very politically difficult. There are a set of pressures that support the idea of road user charging and I think Owen's done a great job of explaining those. If you are going to make an argument that this is a different way of paying for using the roads rather than an additional way then it makes a lot of sense, in my mind, that you would reduce, for example, the vehicle registration, so a fixed fee of ownership where it doesn't matter if you drive not at all or if you drive every single day, you pay the same rego. So that is one thing. The Commonwealth Government worries about the decline in fuel excise and how to get another revenue base, but I think partly charging differently for using vehicles is one way. I think the other thing that people worry about a lot with road user charging is that they feel that it's unfair and regressive that everybody is paying the same amount, but people who have lower incomes live further away and that does make it very unfair. There's a lot in that, it's very complex, but I guess I would say ploughing the money into genuine alternatives and substitutes is probably quite helpful to those people who can substitute, which I don't think is everyone. There's a strong argument I think really for putting revenue from road user charging into public transport at least so that you increase the opportunity for some people to choose a different option, if they can.

JOANNA MAHER: We've seen insurance companies start to harness big data and give people discounts for changing certain behaviours, so presumably there's some scope there for that sort of thing.

AUDIENCE: The reason I wanted to speak is that I've come here after following WestConnex. I live in Balmain and there's going to be quite a bit of congestion in my area. I was surprised that you talked about liveability when at Rozelle School there's going to be an unfiltered exhaust tower and you've created a fair bit of congestion into my inner city now. The liveability index, I'm pleased to hear that you count that, but it's not mentioned in your discussion that you've created a supply of cars coming into the city. I feel that I'm not in a real discussion about Sydney congestion.

JOANNA MAHER: I think you didn't make the political decision to build WestConnex, but I guess has pollution been on the agenda there?

BRYAN WILLEY: It's hard for me to say, I'm not involved in that project, but I will say that I live in Balmain as well. I'm a Balmain resident, so I value that area. It is a very liveable area now and I'm sure it's in no-one's interests to degrade the liveability of any suburbs in our city.

JOANNA MAHER: I think Marion did look at this point a little bit, that you can't build your way out of congestion. Is that right?

MARION TERRILL: Yes. It's a complex interaction and I think your question is suggesting that WestConnex will bring more cars in. I think there's another line of argument which is that it will take cars off smaller streets and put them onto bigger streets. We could talk a bit about toll roads. Certainly if you think about a pricing regime, you do need to find a way to deal with the existing toll roads in Sydney. You do have more toll roads in Sydney than we do in Melbourne and I can see that there are more on the horizon as well, so that in itself is a fraught issue. As a city grows a lot one of the ways you make cities work is that they are not a series of disconnected villages, so you do need to have ways of connecting people. I'm not an expert on the WestConnex project particularly or in a position to talk about it in detail, but that is part of what you're doing. If you are to get the benefits of people being able to take advantage of a big and vibrant city, it does involve people being able to get around.

JOANNA MAHER: Have you spoken to your local MP, they will be helpful.

AUDIENCE: Marion, piggybacking on the back of your research, it's more of a rhetorical comment. You might be aware that over the past six weeks or so Uber has gone through a process of basically releasing all of their spatial temporal data, so at a much finer grain level now you can go and evaluate travel times for different times of the day. It might be interesting to do comparative research and see if what was reflected in Google Maps is also what's reflected in the Uber movement data.

MARION TERRILL: It's a really exciting time I think because there is a lot of data coming on-stream. We couldn't have done what we did five years ago with Google Maps. We have a looked a little bit at Uber data, but not in the last six weeks, I must admit. The advantage of Uber is they're real trips taken by actual people, so they're not trip time estimates. I think the advantage of Google Maps is the coverage. So they all bring their strengths to this and I agree, I think it could be a great place to go next.

OWEN HAYFORD: That data too could really, I think, help on the investment decision side of things as well in terms of better informing those who are charged with making the decision about where our road funding should be invested in the network.

JOANNA MAHER: Is the use of technology and data making your job easier or clearer?

BRYAN WILLEY: Yes. We have a lot of data ourselves particularly public transport information, but we use Google data in our day-to-day management of the network as well as our long term planning. So it's really useful information to understand how our customers are moving around, volumes and travel times. It's a rich tapestry of information that's out there, you know, what time businesses are open. Our challenge is to leverage into that so we can manage the road network a lot better but, equally, we want to share the data we've got with the private providers and get that information out there so that we can give our customers better journeys as well.

AUDIENCE: I'm wondering what lessons can be drawn from the experience of London, Stockholm, Singapore and other cities with congestion pricing and how would you design congestion taxes differently?

JOANNA MAHER: Who would like to go first?

OWEN HAYFORD: I'll have a crack at that. In terms of the London experience, my understanding is they had a very serious congestion problem. The Mayor at the time, I think his name was Livingstone, came out and said he was going to impose this congestion charge to alleviate that issue. At the time there was, I think, just enough support to get it through. It wasn't easy, but he did it and in the months that followed the level of public support for the scheme, when people saw the difference that it was making, it garnered a lot of support and people now look at it as a success story. Stockholm is the same, I believe. So I think there are some good lessons there for our political masters to take from this, that it's not all doom and gloom if you can bring the public with you. That's the challenge and that requires a whole lot of education. That's where these sorts of events are important, so that people get a better understanding as to what the issues are and what the options are that are available to us to manage these situations better.

MARION TERRILL: One thing that was interesting with Stockholm was that they ran it as a trial and at the end of it asked people if they wanted it to continue. Before they started 70% were opposed and after the trial 70% were in favour. I think it's because people paid a price, but they got something for it in terms of speed and reliability. The researchers went back and asked people why they changed their mind and people were saying, "I didn't change my mind. I always supported it".

BRYAN WILLEY: Transurban just did a study down in Victoria as well with the same sorts of outcomes. Those that were involved in this study where they had, I don't know, devices and they didn't actually have to pay but they had nominal charges and were being given information and whatnot, the percentage who thought it was a better system climbed significantly between what it was at the start of the study and those in favour at the end. I don't know the exact figures.

JOANNA MAHER: So it can work.

AUDIENCE: I wanted to make a couple of comments about what's been talked about tonight. I wasn't quite sure what to expect when I came to a session on road congestion, but I did expect to have an idea that road congestion was part of a transport concept rather than a road concept. It does concern me that a lot of the discussion tonight has been as if roads exist in some kind of vacuum, away from a system of urban transport that one would imagine would be a mixture of public transport and private car use. But in an age of climate change, the need for sustainability, the need to reduce our reliance on resources and, in particular, on fuel, that we'd be thinking about a system that's about reducing the impacts of the transport system overall and not just looking at how to manage congestion by charging for it. Obviously, there's a huge issue, as the lady over here raised, around WestConnex and the imposition of the toll on the M4 quite recently, which is a flat tax on the people of Western Sydney in the main who will be paying a toll for the next 40 years on that road and which will increase by 4% every year based on nothing other than that's what the government thinks they need to pay for the rest of the roads that they want to build to make WestConnex successful in terms of finding investors to invest in building the roads. That's their measure of success.

I think it was Owen who made the point let's hand over the management of congestion to private companies and then it will be driven by shareholders' profit. Well, I have to ask the question what has shareholders' profit got to do with the provision of a transport system to a city and my answer is very little, rather than, as Marion has said, if we are going to charge people to use roads or thinking about using systems like the registration etc. to reflect the real cost of roads, that should include the pollution cost, the long term sustainability costs of having roads rather than public transport etc. and it should not be taking into account private profit. Roads and public transport should be a public good that's paid for by taxpayers as a resource for the use and liveability of a city, rather than for people to make private profit out of.

JOANNA MAHER: Yes. I think the Federal Government is going to look at a road user pricing regime and this will be a great opportunity for all those issues to be canvassed. I think, Marion, you did in your research look at could there be changes to the way public transport is priced which would, while you're looking at congestion management, encourage people to use public transport?

MARION TERRILL: I did and I think your point is well-made, that this is a system and a network of which roads are a part for both public and private transport on roads, but rail is a really key part of this too.

What I looked at was the public transport corollary of road user charging, which, I have to say, Sydney does better than Melbourne. In Melbourne there's very little time of day variation and we have very sharp peaks of train usage in peak hour. Here in Sydney you do have much more time of day variation, but you've had an enormous increase, I think 10%, in patronage of heavy rail in the last year. It's very hard for a network to accommodate that and part of, I think, how Sydney has done that is by differential pricing. The essential idea of it is that you encourage people who can be flexible to take their trip at a quieter time of day. I think there is scope for Sydney to do more, but there's definitely scope for Melbourne to do a lot more.

AUDIENCE: You've spent a lot of time talking about the future and broader objectives of roads, so buses, congestion, and also about the funding model which is broken. I think Owen, you articulated where we'd like to see ourselves in the future where you're using price to direct investment and maintenance almost as flavours of a regulated utility model. In order to get there, what do we have to do now? You mentioned politics before, but what are the actual challenges to overcome now? Is it weak political will? Is it misunderstanding of the community? How do we overcome that? As we're all here in our free time on an evening and we're all keen transport enthusiasts, I'm sure everyone is keen to hear how we can advance this reform process.

OWEN HAYFORD: Yes, weak political will is part of it. That's because there's weak community support for it and, as we've seen from tonight from the questions, there are valid community concerns about potential options. I've been misunderstood if people think I'm advocating that roads should become a mechanism for private sector profiteering. That's not what I was advocating at all. What I was advocating was that roads are an important part of our transport network. There's congestion and congestion is going to get worse and I was advocating that there's a mechanism available to us that we should look at to better manage that congestion.

Now, in terms of steps, Marion mentioned the trials as one way of building better understanding amongst the community about how this might affect them, what the benefits might be, and what the costs might be. If you read Minister Fletcher's speech you'll see that, quite validly, he is very concerned about the distributional impact of this. So he's saying, "Look, it's not about a money grab. We don't want to get any more money from taxpayers. We just want to get it in a fairer, more transparent way that will improve the efficiency of our transport network". But he is very worried about who the winners will be and who the losers will be, who will pay more and who will pay less, and the fairness associated with that and those who are disproportionally affected, how can we ensure that it's fair and it doesn't impose disproportionate burdens on others? I think the inquiry that the Federal Government has committed to have in relation to this topic will provide a good forum for exploring some of those issues and working out how it might work and whether this idea really would produce a better outcome for everyone than the present system, because unless it does - and it's not proven yet - then why would you bother? So I think that's part of the steps, but the trials and whatnot I think are an important part of that as well.

MARION TERRILL: You could imagine Sydney or Melbourne, one of the State Governments trying it out in one of the bigger cities and seeing what happened, perhaps with some support from the Federal Government. So it seems to me that it's an issue which the Commonwealth and the State have both got an interest in. The Commonwealth is kicking off its inquiry one of these days, it seems to be taking a while, but actually this issue would really be owned by the State Governments. So you would think that the main interests of the Commonwealth really is in fuel excise and I guess that's why I think it

would probably be a joint effort in some sense, but perhaps with the dollars from the Commonwealth, if they can find some.

JOANNA MAHER: I think Malcolm Turnbull talked about the "30 minute city" did he not? Did you think that was possible? Do you know what I mean?

MARION TERRILL: I do.

JOANNA MAHER: Perhaps you can explain it to me.

MARION TERRILL: What I think the Prime Minister meant by the "30 minute city" is an idea that people won't need to travel more than 30 minutes to get between home and work, so there'd be a combination of dispersed employment opportunities, but good ones, with great transport connections. Who wouldn't want this? There's a very interesting observation across time and across geography that most people, on average, are not willing to spend more than about half an hour commuting one way to work anyway, but as cities grow really fast, as Sydney and Melbourne have, then keeping up with population growth is a real challenge. So it's a very worthwhile aim, but it all depends on what you think you're going to do to get it. Often governments try to encourage employment to be outside of employment centres or in some way not where employers want to locate, they try to have inducements or encouragement for employers to set up in precincts in hubs and when they do that it's been not really a shining success most of the time. But transport can certainly make those distances smaller and those times manageable.

JOANNA MAHER: Can I see a show of hands of who spends more than half an hour commuting to work? I suppose, because we're in the CBD, that's what the difference is, yes?

MARION TERRILL: Public transport maybe? I don't know.

AUDIENCE: I was hoping to follow up on Owen's point about network operators having a role in all this. Leaving aside the profit issue, what sort of skillsets would they bring and how would those skillsets be different to, say, what toll operators bring? Could you unpack that a little bit?

OWEN HAYFORD: It's a good question. The idea for this comes from other utilities where government has decided that the best role for the government is not to be the utility provider, it's to regulate the utility and allow the private sector to provide the utility service. Applying that to the road sector, the sort of concept I have in mind would be the network in New South Wales, let's say, is divided into certain areas and the Network Manager is given responsibility for managing that part of the network, which is a role presently performed by RMS and local councils. They'd have a contractual right to do that and to charge people for the use of that part of the network and government would regulate what could be charged, the upper and lower limits, to make sure that it was appropriate and profits would also be regulated. At the moment large parts of the network are maintained by the private sector. The private sector helps Transport make decisions in relation to where the maintenance work should be done, what sort of maintenance work should be done, is it just patch or spend significant money now to avoid the need to do lots of patching later on, this sort of stuff - I'm probably not explaining this very well, Bryan! The other skillset I see come into this is more transparency and different drivers around those investment decisions. None of us want to be paying so that someone can profit, but we need these utilities and if the profit levels are regulated so that they're not making more than a reasonable return on the funds that are invested - this occurs in other utility sectors and we all live with that.

JOANNA MAHER: Today, in fact, the government intervened on the NBN.

OWEN HAYFORD: Yes. Electricity is an example. I think unfortunately we've got rising electricity prices so that's just going to scare everyone even more, but the reason why we have rising electricity prices is because politicians have interfered with the market and required certain amounts of renewable electricity.

JOANNA MAHER: So Bryan what - I interrupted you Owen, go ahead.

OWEN HAYFORD: No, it's probably best I stop there!

JOANNA MAHER: Bryan, what percentage does New South Wales Transport spend thinking about improving existing capacity as opposed to building new stuff?

BRYAN WILLEY: Well, as a proportion of the network, we're not building much. A lot of our efforts go towards managing the network and the challenge, if you like, in the Eastern part of Sydney in particular, where the infrastructure is quite mature, is better use. How can we use the network better, how can we make our roads more walkable, how can we improve public transport and how can we make the environment better, even to the point of what fleet - we're getting diesel vehicles at the moment, we need to change that and work towards our government target of net zero emissions. A big part of that is mass transit, but there are parts of Sydney in the West particularly, the growth areas, where there's going to be a population the size of Adelaide over the next 40 years. We need to provide roads but also public transport as well, rail and bus networks, so that - and going back to the "30 minute city" discussion, which I kept quiet about - it is, for me, as someone who grew up in Penrith and now lives in Balmain, as much about social equity and having equal advantage across our city. I can tell you, people in Penrith do not have the same access to facilities, to education, to even healthcare as people in the Eastern suburbs. The "30 minute city" tries to rebalance that and certainly we've been doing a lot of work with the Greater Sydney Commission on how we can achieve that. Once again, to go back to the Congestion Interventions Framework, this is a very complex issue, it's multifaceted and it's a challenge.

JOANNA MAHER: Has any city got it really right? Is there a "30 minute city" in the world? Tokyo someone said.

BRYAN WILLEY: Hobart.

JOANNA MAHER: Canberra. How far is it, 20 minutes?

BRYAN WILLEY: I was a bit flippant, but it is about size. The bigger a city becomes, the longer commutes become, particularly if you live on the periphery. Once again, it's about social equity. Not everyone can afford to live in the inner city. People in cities live on the outskirts because that's where they can afford to live, especially young couples and young families, so we need to find the balance. But yes, the larger the city, the longer that commute is. I've lived in cities around the world and you can live very close to the core and have a hellish journey just because of the sheer number of people. It's a challenge.

AUDIENCE: I sympathise with the lady here, who is also apparently one of a great number of people who live in Balmain. I'm a sample of one. I used to commute to the city from Balmain. I'd get on the bus

and it didn't matter within reason how long it took because I could do other things on the bus. When I drive out of Balmain to go anywhere else my personal experience seems to be that the traffic in Sydney is just horrific. I had a job in the '70s where I used to drive all the time and I can't remember it being anything like it is now. There does seem to be a bit of a disconnect between what was being presented and my personal experience of how Sydney is. Jennifer Hewett in your newspaper some time back wrote an article about getting a cab in Tokyo and the traffic is very, very good because the underground rail system is so good. I've been to Tokyo a few times, I've kept below ground most of the time, so I don't know what the traffic is like, but the rail system is fantastic. Also, I just wonder about this data and you saying was it 5km or 7km the average commute? With the tax system and the enormous transaction costs in moving within Sydney, I find it very hard to believe that people live that close to their work. I mean, if they change jobs, people are talking now about $100,000 in transaction costs to move house and buy and sell in Sydney.

I guess I just wanted to put it out there over 30, 40 years of living in Sydney what it's been like, my personal experience, and also ask those questions about the international perspective. That graph you put up, Sydney's population density is incredibly low compared to even Los Angeles and it's got similar car usage levels. I can't see the future in roads. Is there a possibility of there being massive public transport? Because really the rail system in Sydney is something that basically hasn't been built much upon since the 1930s, it seems to me.

JOANNA MAHER: Marion, do you want to talk about averages can be a bit misleading?

MARION TERRILL: Yes. It's true, I think a lot of people do experience the city in a very wide variety of ways, so a few comments I'd make. It was the most surprising finding to me as well and we spent a lot of time checking the integrity of that result and then trying to make sense of it. One thing about Sydney that is a really important part of this is the CBD is very dense. It's very dense in an economic sense, but that economic density goes out quite far, much more so than it does in Melbourne. The other thing about Sydney is its residential density is quite high for quite a long way, again, much more so than Melbourne, so you do have a lot more people living in the suburbs around the CBD, but also the ones around them. That really dense residential core goes out quite a long way and what that means is there are a lot of people there both living and working. I'm not sure how many kilometres away Balmain is, but the result that I have focused on here is about people who are commuting by driving. I think you're talking about driving from Balmain but not for a work commute, is that right?

[Response inaudible]

MARION TERRILL: Yes, I think it does drive people crazy. So, a couple of things. The inner area extends out quite a long way and those are typically the areas that are best served by public transport and where people can take public transport and for those CBD commutes I think they largely do, much more so, again, than they do in Melbourne. There are quite a few factors at play here, but the reason why people avoid taking their cars is because it is terrible if you do and those CBD commutes, even if it's a very short distance, are quite delayed and also quite variable. But in the end we had 3.5 million observations in this dataset, so it was a finding that when you take an average of CBD commutes across the city, that is the finding really, an average of 11%. There is quite a high variability, but getting up much above 20 minutes extra or 25 minutes extra probably for the CBD commutes is not that common.

JOANNA MAHER: Feel sorry for the people who have to come across the Spit Bridge apparently.

MARION TERRILL: Yes.

JOANNA MAHER: Did you have something to say, gentlemen?

OWEN HAYFORD: We probably remember the worst ones too. Just on that last bit about the variability, every day I commute to work and I think right, if I've got to get there for a meeting at nine o'clock or nine thirty, what's the worst scenario going to be for me? I've got to get to that meeting on time, so I've got to leave and allow for that worst scenario. Then I'll get there five/ten minutes early most of the time and I'm wasting all this time. When people ask me what my commute time is it's that worst case scenario, not the average.

AUDIENCE: We spend a lot of time advising our clients on the impact of transport systems, public transport and so forth, on the investment decision, whether you're buying your home, a commercial property, a development site and so forth. Obviously, this is an intensely interesting session. I confess to being somewhat disappointed at the premise underlying it and in this respect I repeat the last question's sentiment and the lady in front of me. The premise seems to me to be completely inverted. Underlying this entire presentation is an endorsement of the internal combustion engine and the idea of the use of the motor vehicle as a mode of conveyance at the expense of so many other alternatives. We are one of the only cities in the world currently engaged in putting this sort of infrastructure in, whereas more developed and more densely populated cities in the world are actually ripping them out - South Korea, the LA experience and so forth across the board. We in Sydney and in Australia are running counter to world's best practice. At the same time, we have other government instrumentalities and regulatory bodies promoting an agenda which is completely inconsistent with the use of the motor vehicle and I instance, for example, the importance being placed on urban density and master planning.

So we have a situation where we have the left hand, for example, promoting urban density to perhaps remedy that slide where, according to my reading of it and I'm a long distance from it, we were the least densely populated of the international cities on that pie graph. There are government bodies trying to remedy that and rely on public transport in that solution on the one hand, whereas on the right hand we have a 1950s' solution that focuses on the internal combustion engine. That per se, as far as we're concerned, is an absurdity. I've spent, coincidentally, all day today in a series of seminars held by various bodies around town and the unanimous view is that the advent of the autonomous vehicle and the electric vehicle is absolutely inevitable and is going to come quicker than all of us imagine. Nowhere in the thinking are these roads and the ideas that have been propounded here featured prominently. It seems to me that we are living in an Ice Age where the tail is wagging the dog and we're actually contradicting ourselves in our major planning initiatives. When you look at the topography of Sydney, the intersection of waterways, the fact we're all squished into a very narrow area between the mountains and the sea, there is a very real question topographically as to whether roads are appropriate, and that's before you start to talk about the advent of artificial intelligence and autonomous vehicles. The very same State Government that is pushing these roads and causing mass devastation in areas in the Inner West and so forth is the very same government body that is advocating urban density. If the left hand doesn't know what the right hand is doing, then God help us all.

JOANNA MAHER: Great. Like I say, it's probably something you need to take up with politicians rather than in a policy discussion.

AUDIENCE: I grew up in the Netherlands. We talked a lot about road and congestion pricing at least for the last 15 years and failed miserably. I was a bit surprised, you said that most of the trips are very short, but the average extra time for travel was about five minutes extra?

MARION TERRILL: Yes, so that's on journeys to work and it's across the whole of Sydney.

AUDIENCE: So most of the short trips are taking about five minutes longer on average?

MARION TERRILL: Yes, that's right. These are car trips, so the average car trip is around ten minutes in the middle of the night and 15 on average or a little bit under 15 in morning peak.

AUDIENCE: I think that's about 50% extra travel time, so I don't think that's very little. Is that all work? Have you differentiated between school travel as well?

MARION TERRILL: Although that's journeys to work, everyone who's travelling at that time for any kind of reason gets caught up in it. So many people are travelling for work, but there are students, there are shoppers and people with appointments, people making deliveries. There are all kinds of things that collectively make that up.

AUDIENCE: Because the conclusion and mention about liveable city, I do think they're fantastic cities to live in, Sydney and Melbourne, but I wonder whether transport is the best aspect of the liveability of it. Being a dad with young kids, I find my kids are locked into the house. When I grew up I played in the streets, I roamed around. I was fairly free and could move where I wanted, but my kids cannot cycle anywhere. They cannot even play in the streets of the neighbourhood. In fact, the average construction site has a much lower speed than the average neighbourhood. I live at the end of a cul-de-sac and my kids have to be careful not to be run over by cars.

JOANNA MAHER: Yes, I think there's much more to talk about but we've run out of time, unless you had any specific comments about that?

BRYAN WILLEY: A couple of points. As a few people in the audience have mentioned, we've focused very much on cars. A lot of the roads we're talking about that are congested we're talking about from a vehicle perspective. You have to bear in mind that those roads have traffic signals and those traffic signals are there to allow pedestrians to cross. Some of these roads are very important for public transport. The activity that happens with public transport and people stopping and the land use being activated, shops, you could look at a certain perspective and argue they create congestion. In fact, that's about liveability. It's about people accessing shops, it's about people doing their business and it's about driving the economy as well. So congestion is not necessarily a negative thing. Congestion is something that just happens in a city because there are other people using it. There's land use happening, there's people walking across the road, there's people accessing bus stops, and that means that vehicles stop and go and that stops other cars from going. So I really do want to make a point we are just looking at cars here and congestion is not a bad thing, because there are other things happening.

I've got young kids as well, so you touched a nerve here. I live in Balmain, we've got a 40km/hr zone and my kids can't play in the street. It's a one-way street, it's very local, but I'm acutely aware too, having grown up in Penrith, that there are many places in our city where that's not happening. So from my perspective, as someone who's responsible for road strategy, as part of our looking at making the Sydney more liveable about local streets, that's where people live and we want to improve the amenity, but I would also say that we are all responsible. There's only so much State Government can do, there's only so much practitioners can do. Having lived around the world in many cities, and you've lived in the Netherlands no doubt, we have a very car-dominated culture and we have too many people in our city that jump in their cars, feel isolated from the rest of what's around them and drive accordingly. So I think there is a whole education process and behavioural issue that we need to address as a culture. That's a long journey, but I think discussions like this very much help with that journey.

JOANNA MAHER: Please join with me to thank our guests. I want to thank you very much for coming and also the New South Wales State Library for having us. I'm sure the experts will take more questions if you've got them - I've just dumped them in it! Thanks very much.

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