

National Highways Connecting the Country Podcast

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Host

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Panel

Pete Dyson, Senior Behavioural Scientist at the Department for Transport and co-author of *Transport for Humans*

Dr Claire Williams, chartered ergonomist and human factors specialist and Visiting Fellow in human factors and behaviour change at the University of Derby

Nick Reed, Chief Road Safety Adviser, National Highways

Kate Carpenter, Director of Operational Road Safety, Jacobs

Deirdre O'Reilly 00:42

Hello, and welcome to Connecting the Country, a series of podcast that explores the future of England strategic road network, making safer, smarter and more reliable. And we'll be doing this by talking to the people who make these possibilities a reality. I'm Deirdre O'Reilly, Head of Customer Insights and Behaviour Change at National Highways. And in this episode of connecting the country, we'll be exploring the vital role of social and market research and behavioural sciences in improving customer experiences in the highway sector. My guests for this episode are all experts in applying human-centred approaches to planning, delivering and operating transport networks. They are Pete Dyson, co-author of the book, *Transport for Humans* and former Principal Behavioural Scientist at the Department for Transport. Dr. Claire Williams, a chartered ergonomist and human factors specialist, Nick Reed, our Chief Road Safety Adviser here at National Highways, and Kate Carpenter, Director of Operational Road Safety at Jacobs.

So, I'd like to start with you, Pete. In your book, *Transport for Humans*, you make a powerful case for the people-centred approach to travel and transport. I was particularly struck by the phrase you used, that 'people are not cargo'. So, what do you think needs to change in the road transport industry to ensure people are treated like people, and not like cargo?

Pete Dyson 01:58

Thank you, Deirdre. We make the point that people are not cargo. It seems like a stunningly obvious observation, but that's usually where some of the best insights come from, I hope. And we've made that mistake, perhaps because of a necessary engineering and economic starting point. So, if we think about designing a bridge, we would design that bridge with important physical characteristics. But as soon as you start getting people to use that bridge, or painting white lines down the middle of that bridge, then people psychology comes into play. So how people think, feel and behave. And it's vitally important that we understand this, not just for the operational performance of that bridge, or that motorway,

or tunnel, what have you, but also in order to really get the most out of the infrastructure that we're designing so that it serves the people that are using it. Now, there are two really important things that I think we need to do to progress and become more people-centred. The first is to add more measures and more perspectives to the equation. So that's to balance the things that are amenable to measure - things like traffic count, or volumes. Balance that with social and behavioural insight. That can involve speaking to people. It can involve survey methods, interviews, but also more granular data that allows us to understand where people are even just coming from, going to. The second thing is to really understand the balance the operational priorities we have with customer priorities. So there's data that already exists that is still quite focused on the operational nature, which might be simple traffic volumes per hour. But from a customer's perspective, there are aspects that we'd really want to understand of how often a given person uses a service that we're providing, or what they're using it for. So I hope we can take a two-pronged approach of both bringing in more voices and more disciplines, and also rebalancing and re-cutting the information we already have.

Deirdre O'Reilly 03:52

Thank you very much. That's, that's really helpful to think about how we can start bringing the users voice into the whole infrastructure development. And that actually leads me on to my question for Claire. As a human factors and behaviour change specialist, what would you say are the fundamentals that the highways industry should be adopting to understand people's behaviours?

Claire Williams 04:14

Well, I think probably building on Pete's answer, three things springs to mind. The first thing is that there are things that are knowable, right now, there is data, there are things that we can know about people. For example, if we're thinking about designing a new sign, we know what size text should be for certain viewing distance. This is knowable. Use science to help us dig up the stuff that that is knowable. And then secondly, to build really on Pete's point, we need to get the users involved, we need to get the wider customer group involved. Participation is incredibly important. So there is the kind of standard textbook stuff that we can know. But we need user trials, we need people to be involved with our design. And I think the third thing that I would say with that, having got the data that's available already, and then creating an understanding more by getting people involved, is to have an adaptive thinking mindset, which is that even the best designs that have involved the people in their creation, change over time. We can't do a one stop shop and say, right, that's perfect design. We need to keep revisiting things. And that's not failure, that's actually a really important aspect; to be adaptive in our thinking and return to them and say, what's changed now? Why is this not working when it was before? What's going on? So I think those three things for me.

Deirdre O'Reilly 05:36

Thanks very much, Claire. And are there any examples? Something that comes immediately to mind for me is, you know, we've got an ageing society. And so thinking about the signage that you mentioned in this example; does that need to be adjusted and changed over time?

Claire Williams 05:49

Potentially that's right. Design is necessarily discriminatory, right? All design is. But it should be intentionally so. We shouldn't inadvertently be discriminatory in our design. And with something like designing for the older, ageing population, in principle, that's one of those things that if it's visible for people whose eyesight or cognition is less than average, if you like, for one reason or another, it ought to be fine for everybody else. And so, it's about again, making sure that as we design, we're thinking about those things in the round.

Deirdre O'Reilly 06:24

Kate, your experience as both an engineer and a psychologist speaks to me about the multidisciplinary nature of delivering transport systems that work for people. And we know at National Highways, there's a really diverse range of people. And they have very diverse needs as well. And they rely on our roads every day. Is it possible to meet all of their needs?

Kate Carpenter 06:45

I think they are definitely diverse groups. We've got road users, pedestrians, cyclists, motorcyclists, car users, HGV users and so on. We've got road workers, doing day to day activities, and then major maintenance and construction. And then we've got other people affected by our network. So they might be living by the network, they might be on roads or railways over or under our networks. And we need to consider all of those people in all situations. In daytime, nighttime, different weather and so on. So thinking about how people might be affected, we might turn off street lighting, and we've got trials that show that in large quantities of data we've seen the collisions go down on those roads when we remove street lighting, but yet that's disadvantageous to people who are older. Because their eyes adapt less well to light, they're more glare susceptible, they recover less well after being dazzled. So it can unintentionally be disadvantageous for some groups when we make some decisions. Similarly, we have found that removing road markings, like centre lines make people drive more carefully, and speed reduces and collisions reduce. But the technology that we're now finding on cars as standard; the lane assist technology, can lead to errors by the vehicle if the algorithms aren't set correctly. The car sees an advisory cycle lane on the other side of the road, thinks it's their centerline and pulls the car into oncoming traffic. So it's about are vehicle going to be consistent? Different manufacturers might have different settings. Increasingly, people will be using cars mobility as a service, not owning their own car. So they'll drive different cars, they'll do different things on different days in different situations. So we need to think about the end-to-end journeys, all the different age groups, different road user groups, and try and find the best compromise for all of them.

Deirdre O'Reilly 08:27

Thanks very much. And I'd really like to kind of thank you for bringing in the issue of it being considering end-to-end journeys, because I think our customers, whether they're users or the wider citizens, think about their whole journey. And actually what you're saying about new technologies and things like that brings me on to nicely onto Nick. Because we all know that, you know, we're talking about behaviour change and influencing behaviour, but actually, what we are doing is enabling and encouraging behaviour change. And people change their behaviour, we don't change it for them, necessarily. And we can influence that behaviour. And looking at it, Nick through the lens of safety and technology, which are your

specific areas of interest. What people-focused changes have you seen in the highways sector that are enabling safer journeys and more sustainable behaviours?

Nick Reed 09:11

Thanks, Deirdre. Well, I think I wanted to start by just reflecting on how every trip is different. So every driver is different, not just individuals we are different in each vehicle, but also you know, I am different from one day to the next. I'm getting older aren't we all, but also my mood changes my motivation changes the reason for my journey might change. So that has an effect. Every trip in itself is different, you encounter different weather conditions, traffic conditions, pedestrians, and so on. And then every vehicle is different, so you might be in one vehicle one day or a different vehicle the next. The vehicle itself is getting older, the tires might be older. So it's really challenging to expect behaviorally focused interventions to have that uniform effect across the transport system. When you introduce a new measure, you've got to see it through all those different lenses, all that complexity that is there behind each trip that is taken by customers on the network. And you know, when we've got these challenging targets around safety, we want Vision Zero, no one killed or seriously injured on the network. We also want net zero from the network, we want a network that is sustainable. To achieve that, without behavioural change, is going to be really challenging. Looking at Paris as an example where they've introduced massive changes to encourage active travel, walking cycling, to improve safety to improve sustainability of transport in the city, we've had a similar thing in London with the low traffic neighborhoods. Recent Department for Transport stats showing the majority recognise that there was a need to act, and that there was a benefit introducing low traffic neighborhoods. But of course, there was always that tension with a vocal minority who were opposed to the introduction of those measures. So again, we need to be careful on how those measures are introduced, make sure we're explaining the benefits as they are introduced. And then the other example I had was variable speed limits. Now on a controlled motorway, so motorways where you have gantries that can display speed limit information, those speed limits can be adjusted in order to reduce congestion, in order to prevent congestion from building up. Now, it's a fantastic measure, it means you get much better throughput on the network, you reduce congestion, you reduce emissions. But you have to be careful in that in doing so, when people then don't encounter congestion, even though their speeds have been moderated by the variable speed limits, they then think well, why was my speed reduced? I was just able to continue my journey. Surely, I should have been allowed to carry on at the maximum speed limit? So yeah, just being careful that people understand why you're introducing that variable speed limit measure, and that they realise the benefit that has been achieved through its introduction.

Deirdre O'Reilly 12:08

So thanks very much for that, Nick. And I totally take the point about actually having to give people a rationale for what they're doing and frame it in a way that is understandable to the audience that you're targeting. And actually, you also bring up the point that technology in of itself isn't the solution. That it has to be combined with an understanding of the customer's and their behaviour. And I'll ask Pete to come in on this because I think is the book, *Transport for Humans* actually deals very interestingly, with the whole idea that actually there are other skills that are involved, not just the motor skills, and there's other skills in using the network, for example, our own network, the strategic road network?

Pete Dyson 12:49

Yes, for sure. I mean, when we stand back, we have to acknowledge that travelling, mobility, getting from A to B is skillful. I mean, ideally, we're trying to make it less skillful, which is part of it being inclusive and accessible. But right from a young age, there are skills of orientation, but also trip planning, working out where the roads go, or where they integrate with buses, or trains or other services. There are many skills that we can take for granted. For sure, we saw the introduction of satnavs, some 20 odd years ago, we only notice technology has really gained a lot of traction once we take it for granted, and we start noticing it. But the disciplines of psychology and behavioural science and behavioural economics do get us into that domain of how people fundamentally choose to travel. And there are interventions that sit around the infrastructure that can start shaping travel demand, shaping people's needs, that we also need to acknowledge alongside the hard and fast engineering that comes first.

Deirdre O'Reilly 13:50

Thanks very much. I think yeah, talking about the supply side, which we were talking about earlier with the infrastructure and the demand side, and how we can influence that I think is really important as well. So following that up, Nick you know, there's been tremendous improvements and introduction of technology, particularly in vehicles, amongst other things. And we've got in the strategic road network, we're delivering digital for customers as well. But we are living in an ever changing social and demographic and technological context. You know, things are moving at pace. What role do you see behavioural science continuing to play in this space?

Nick Reed 14:23

Yeah, I think there are three aspects where behavioural science and technology really come together to enable the sorts of changes we'd like to see around safety and sustainability. Firstly, is understanding the needs of the customer the transportation needs of the country, even. We also then can use that data to predict the impact of the sorts of intervention that we'd like to make whether it's a new junction design, a new road layout and new technology being introduced. We can use models to understand the likely impact and the likely costs and benefits of introducing that that new measure. And I've been involved in a number of projects where we've used that that kind of approach. There was a study in Greenwich called merge Greenwich, in fact, where we looked at the introduction of an automated bus service, and we looked to see, if we adjusted the ticket price of the automated bus service, how would that affect the change of mode of users of that transport service in London. So, we were looking to see can we get people to migrate from individual car journeys into this automated, lower impact form of transport. And that tool was really powerful in making that assessment. I was also impressed by recent work looking at how COVID changed people's speed choice on the network, and how on quieter roads, it seemed there were more frequent high-speed events observed on the network. So even though the number of vehicles using the network was lower, the risks didn't go down by the same amount. There was, there was still a slightly elevated risk caused by people choosing higher speeds. So really interesting insights we can derive from that data. Then lastly, it gives us the tools to affect the kind of changes we're interested in. So for example, the Go Left campaign that National Highways adopted to inform users about what to do if their vehicle gets into

difficulties. Very simple, very powerful message, but very clear guidance to drivers about what to do. Similarly, the Space Invader campaign that's been running recently, advising drivers not to follow too closely to the vehicle in front and these kinds of impactful, consistent messages help us to achieve those safety goals that we have.

Deirdre O'Reilly 16:47

Thank you very much, Nick. An interesting point to consider is the conflict between what people want as an outcome such as safer journeys and sustainable journeys, and the resistance to things that could help deliver those outcomes, such as speed enforcement. Claire, what does this tell us about how the physical and social environments affect how we behave?

Claire Williams 17:07

Yeah, it's a real issue, isn't it? I think some of the conflict arises because of the reality of how the different outcomes actually play out for people. Because think if you ask: Do you want safe roads, do you want sustainable transport? Of course, they'll say, yes, they also want to be comfortable, they also want to get from A to B fast, they want efficient journeys, they want good value. The issues that there are though, there's a lot of different outcomes actually, that people want. And some of those play out in the moment ways. So you know, when you're uncomfortable on a journey, you know when it's slow, right, those are things that are happening in the moment. And they're concrete, and they're personal. Whereas, you know, sustainable travel and the impact on the environment is abstract. It's down the road away, as it were, and it's global. It's not just affecting you as an individual. And safety is somehow in the middle isn't that you know it when it's not there, but actually, it's an abstract idea. And so, most people will want all of these things. Some of them are much more amenable and much more immediate to people, so decision making is often much more around those concrete, personal, immediate things, because it's harder to keep those other things in your mind I think. And so I think that speaks to the issue that people do want sustainable and safe things, we need to make it easy for them to see how what they do in the moment actually would play out in favour of those bigger goals I think.

Deirdre O'Reilly 18:45

thanks very much. I think that's really powerful about you know, sort of humanising these things and bringing them into the in-situ situation. So, Kate,

Kate Carpenter 18:53

We know that people will actually want to be in the majority. So if you give my information, so if we've seen it in taxation, we say pay your taxes, most people do, take your litter home, most people do, and if you give them that information, I think you can change how people perceive something, you're not changing what they want, but you're changing how they perceive it, and it stops feeling like a big brother intervention and it becomes this is how we're doing things that you want you asked us to do. I think you said we did is a really helpful approach.

Deirdre O'Reilly 19:27

Thank you very much. And I think you know, the signs that signals really do help with reinforcing that and giving people the agency to be able to, to follow and comply with the

rules more easily. And kind of moving on. To keep out what other people have said in the podcast today. What are you most optimistic about? And what are we already learning from behavioural sciences that are helping to improve people's journeys?

Pete Dyson 19:48

I'm optimistic that as a discipline, I mean, this term behavioural science is relatively new. And I think there are some experts in many fields that are saying hang on a minute, am I a behavioural scientist now? And these are professors of psychology or professors of human factors or whatever, what have you. But it's a helpful umbrella term, because it looks at all the disciplines that look at how people think, feel and behave. And fortunately, there are many fantastic courses and graduates and experts emerging in these fields that would love to apply theory and insight to real world problems. And there are many organisations that are well placed to be front runners in creating jobs, creating teams, creating programmes, wider programmes of work of collaborating that call upon those skills. The other thing I'm optimistic about is that through the advent of newer technologies, especially digital technology, we can amass more data on people's behaviour, and we can also have greater access to run smart experiments. Either in the real world where we could have field trials we have ability to test and measure things that we didn't before, but also phenomenal ability to start looking at people's reactions in controlled settings of how people's cognition works, how their sight works. And clearly advances in neuroscience are now trickling down into our real world understanding of how to make, as we've heard today, better lighting systems, better road signage, and perhaps some of the more fundamental things besides.

I think there's a very good chance that there could be a real transformation at play here. And I think one clear shift could be moving from seeing people as the problem to solving people's problems. And that would be a big transformation. And it's very achievable in the next five or 10 years for this to really be the decade where there is a great deal more cooperation. And there's a great deal of stepping back and thinking where our priorities lie, and how this could be a piece of a moment in time where we really design systems that last for the future. And we are vision-led in thinking about what the road network, in this case, serves what the wider purpose of it is, and the problems and mistakes that from the past that we can rectify. Now that set aside well, for years to come.

Nick Reed 22:06

I think I have a similar response really. And the optimism I have is around, an example I can give is CCAV – so the Centre for Connected and Autonomous Vehicles. They're a group that's come together from the Department for Transport and the Business Ministry to look at the way the UK is going to introduce connected and automated vehicle technologies. And their flagship piece of work over the last year or so has been a consumer engagement exercise, where they're going out all around the country, to talk to everyday folk, and understand their impressions of connected and automated vehicles. Really having that dialogue to understand, you know, this is something that seems to be coming. Is it what you want? Could it address some of your mobility needs? And I think that focus that that's been given to what is fundamentally sort of a technology innovation that's been coming for many years, the attention that's been given to how the public would accept this technology, embrace this technology. I'm always cautious about using the word 'acceptance' because it feels like it's something that you grudgingly have to accept something that's being done to you, when

fundamentally this is something we should be doing together. It's something that should be done with the communities that are affected by this technology. So, you know that emphasis that is shifting towards behavioural science as a partnership with technology, I think is really powerful. And, you know, not least my role, coming from a psychology background, but having that input into National Highways as Chief Road Safety Adviser thinking from a psychology and behavioural science perspective, I think that's cause for optimism from my from my side.

Deirdre O'Reilly 23:52

Thanks very much, Nick. And I think it's really interesting bringing together those kinds of engineers and the social scientists, because I think engineers genuinely do take a human perspective they are delivering and designing for people. And if we can bring those collaborations and those disciplines together, I think can be incredibly powerful. But then thinking about what we need to be designing for the future, I think that's a really big, big challenge, where we want to continue to be customer centric, and even be more customer centric over time. So as a final question: How do you think National Highways, but the industry more widely can build capability and can build that collaboration and that capability in that multidisciplinary approach to be becoming more people-centred?

Kate Carpenter 24:39

I think it is, it links to the discussion we had earlier around, joining up the different layers of highway networks and thinking about the future, as Nick said. It's the technology future where our vehicles going where subsistence going, including what we haven't talked about Micromobility but on all the networks, that's an increasing area, but where the individuals are going, so thinking back our collective future, as well as our individual future, and more of that cross fertilisation within the industry, I think what will help us meet the needs of the people that we're serving, both on the network and near them better in the future.

Claire Williams 25:17

I mean, it occurs to me, as we were discussing earlier about the idea, to an extent of changing our model of a road, from a purely practical thing to a social environment almost. And the idea that one can be a citizen of the roads, I suppose. And I think that is beginning to take traction, we have to be careful not to impose a kind of model onto things that isn't there. But actually, as we look at it in the round more, it will change I think how we work together to achieve the outcomes that, you know, we do all sign up to, I think. I think that is a fruitful seam of future work, actually, to really move things along.

Nick Reed 26:10

I think it comes down to raising awareness of the people who have these skills, your psychological skills, sociological skills, behavioural science skills, the value they can bring to an industry that literally affects everyone. You know, movement, we depend on movement. If it's to get to school, to get to work, to get to a medical appointment, supply chain, you know goods, moving from, from factory to shop, and so on, and I think that really is an exciting career, something where you can really have that impact and where your views will, will be increasingly important as we embrace the behavioural science aspects of how transportation is achieved.

Deirdre O'Reilly 26:49

That's a brilliant note to end on. Thank you very much. I think it really sums up the importance of and, you know, come that brings us right back to the title of these podcasts: Connecting the Country. I mean, that is what we're doing. We are, as you say, a mobile society and so this is fantastic.

So I just like to thank Pete, Claire, Nick and Kate for helping bring this whole area of work to life. And thank you too, for listening. And if you enjoyed this podcast, please make sure to subscribe and share it and until next time, goodbye