Arthur Jones (00:06):

Transportation is still the highest source of greenhouse gas emissions in the US and one of the greatest carbon contributors globally. Governments and local authorities are continually researching ways to drive positive change through legislation and policy, and a large part of this will come down to urban mobility and transportation planning. To make the right decisions in these fields, we need the right data and measurement tools. Case in point, the Transportation Climate Impact Index by Street Light Data. Their report covers how metros in the US rank across eight key factors and reveals the major mobility trends impacting climate.

(00:45):

In this episode, we discuss urban mobility and its role in climate change. We explore how to build a climate resilient transportation system, one that offers social, environmental, and commercial value. Our celebrated guests explain why urban mobility is one of the most critical areas of the climate response, and more importantly, how we can better design our cities for greener futures with cleaner air and less traffic. Today we're speaking to Dr. Laura Herschel, CEO of Street Light Data, and Vice President of Transportation Software Jacobs, and Jenny Jones, Head of Transport Planning for Europe at Jacobs.

(01:22):

Before we get started on the main topic, could you both please share some information about your backgrounds and how you're working to drive innovation in the transportation industry? Laura, if I could start with you, that'd be great. I know you're the founder of Streetlight Data and I know there's a fascinating origin story behind it.

Dr. Laura Schewel (01:40):

Sure. I was in grad school in 2009. I started a PhD at UC Berkeley. I wanted to focus on the topic of emissions, climate emissions from transportation. As I had been studying that, and in previous jobs, a real lack of data was a consistent problem. We would get a question like, "Oh, well if this characteristic of driving change, if people drove half as much to the store as they do today, what would the impact be on emissions?" And there would be no ground truth data. And I realized that we were making billions of decisions in the US, at least, based on a survey that was done every five years for maybe 100,000 families. And that's an insane situation to be in for something that important. That was the same time that iPhones and Androids had really started to become popular and were capable of back grounding, which means running more than one application simultaneously. So, I thought, "Hey, everybody's actually carrying around something that could measure transportation. Maybe there's something here."

(02:40):

That was roughly the origin story. It very much started as a academic project. And as it evolved, I was in Silicon

Valley, so I thought, "Hey, for this summer somebody offered to frame it as a business." There was a business plan competition at the business school with money, like real money you could win. So I thought, "I'll just make a pretend business." And that was 13 years ago and it's been a real business ever since. That's the origin story.

Arthur Jones (03:09):
That's an amazing story. So, Jenny, I know that's quite a tough one to go after, but would you mind also sharing some of your background?

Jenny Jones (03:18):
Absolutely. For myself, I started out studying Geography at university and I chose to do that because it's a subject I found really fascinating because it explores the real world and it works and how it works together and analyzes the kind of wealth of connections that there are between the human world, huma society, and the natural environment. So, I loved all of that and I wanted to understand more about that. I wasn't really confident that I'd be able to find a career that actually made use of what I'd learned there and even replicated some of that kind of cross-cutting interaction of the world we live in. But I joined a consultancy as a graduate transport planner, and I was actually quite delighted to find a career which ticked some of those boxes, in fact, most of those boxes. I quickly immersed myself in using analysis and data, and like Laura says, looking for how do we find that data?

(04:08):
At the time, primarily, I was going out on the street collecting some of that by hand and observing how the traffic was moving and how things were fitting together, and understanding the evidence that is behind some of our clients' challenges and helping them to develop those solutions that are actually going to make a real difference for the community.

(04:26):
Over the years I've worked with many clients, particularly in the UK local government sector, and I've also developed and led teams across all of the transport planning areas of capabilities and modeling policy strategy, more the engineering side as well, shaping our skills and our offer to meet those evolving client needs. I now head up our UK and Ireland Transport Planning Team at Jacobs, which incorporates around 400 people across the country. We're working with our clients every day to try and solve some of these challenges.

Arthur Jones (04:55):
That's fascinating. It's amazing to hear how data obviously plays a crucial role for both of you within transport planning. It leads beautifully into the next question, which is why is urban planning mobility a critical area for sustainability on a global scale?

Jenny Jones (05:11):

I think it's really important. I think in higher income countries across Europe and such as the US, transport is a sector that's responsible for over a quarter of greenhouse gas emissions, for example. And it contributes to lots of negative impacts such as air pollution, noise pollution, habitat fragmentation, all of which are factors behind some of the current climate emergency. And cities, where a lot of our people obviously live, therefore can't require a significant proportion of the global energy consumption and the emissions. So a focus on delivering sustainable urban mobility, I think, is really important to help us to reduce the emissions to pollution, the congestion to manage that and contribute to the environmental goals.

(05:50):

But I also think if you plan urban areas really well and they're well designed, you can promote efficient land use, so reducing urban sprawl, minimizing the need for really extensive transport networks which support sustainable development. And if you do all of that really well, you can actually reduce some of the need to travel at all. And efficient transport systems, incorporating all of those different modes and giving people that choice really enhance economic productivity by connecting people to the jobs and the education, the markets that they need, which then obviously contributes significantly to the economic resilience and competitiveness of the cities.

(06:32):

Clearly in a lot of cases in planning, we're not starting from scratch. We're working with what we've got and what other generations have left us with. But in developing those urban areas, I think it's really important that efficient land use is considered to get those sustainable outcomes. In the UK, we've got new government proposals to look at a program of new towns, for example, which will give opportunities to plan mobility alongside digital accessibility and spatial proximity. We call that triple access planning which really helps to make sure that we're achieving those sustainable outcomes. It's really important that everybody has access to affordable and efficient options, which actually also helps to promote social equity and inclusion by connecting people to their friends and family and their work. And promotes social mobility as well, so we don't leave parts of the population behind through that planning process.

(07:19):

I think as electric vehicle uptake is increasing, that's supporting a reduction in some of the emissions. We've got around, I think, 22% of new car registrations in Europe are now EV, which is really positive, but it's not the full answer for our cities. Public transport, pedestrian-friendly cycling modes are really shown to improve overall health and well-being, which is a really important outcome that I think we should be looking at as well and also benefits quality of life. Those are some of the reasons I think that it's really important.

Arthur Jones (07:51):

Great. I'd like to get Laura's take on that as well, because I'm sure you identify with a lot of those challenges as

well.

Dr. Laura Schewel (07:57):

Absolutely. I agree with everything Jenny just said. I think transport planning is simply the most important part of transportation, but because it is not the most glamorous, it doesn't generate the most money, it doesn't have a big photograph you can take of a groundbreaking of a giant bridge, it doesn't always get the respect it deserves. But it is definitely the most important part. Because if you build something the right way, you will affect emissions, you will affect the economy, you will affect social mobility for the next 50 years. And if you decide to build the wrong thing, no matter how pretty it looks or if you use sustainable concrete or whatever, that barely matters compared to the choice.

(08:40):

I think we have this history in the United States of always wanting to build more roads. There's a lot of background we don't have time to go into on that. But there is nobody in the transportation industry who thinks that building another road is going to reduce congestion in the long term, and that's always the excuse given. "Oh, we've got traffic jams, we've got to build a new ring road, we've got a new build a new highway extension, we've got to add three lanes." We keep on making this decision to build more, and that, again, has been shown many times, including by Street Light Data, to induce more driving, which eventually creates the same level of congestion. We just get on this hamster wheel of building and building and building and driving up VMT and driving up VMT.

(09:23):

We're doing this at the same time we say we have these big emissions reduction goals, and that is just the planning and smart planning and wise policy decision-making driven by data is the only way we can get off that hamster wheel and really start to hit our climate goals. Because I am an electric vehicle fan, I drive an electric vehicle, but it is only a partial solution and we are relying too heavily on it and not enough on planning right now.

Arthur Jones (09:51):

I think that I'll take a step back there. You mentioned VMT, I'm guessing is that vehicle miles traveled?

Dr. Laura Schewel (09:54):

Yes, vehicle miles traveled.

Arthur Jones (09:57):

Thank you.

Dr. Laura Schewel (09:58):
Or vehicle kilometers traveled for our global audience.

Arthur Jones (10:00):
I think that that links to the next question, which is I'd love you to share a bit more information on that Transportation Climate Impacts Index Report that your team has just published, Laura. I think that some of the things you've mentioned kind of deals with some of those points, but if you could elaborate some of the biggest findings, especially with your sustainability lens on that, that would be amazing.

Dr. Laura Schewel (10:20):
Sure. It's a great report that really exemplifies some of the trends Jenny and I have been talking about. What we did is we broke the United States down into metropolitan areas. So for the US, we throw around the term cities. Often the city is just a small part of what you mean when you say Chicago or New York or something like that. We have cities that are surrounded by counties and they create this area that is one economic life unit. So we analyze these metropolitan statistical areas and we analyze them on a bunch of different factors, and one was the average vehicle miles traveled, VMT, per capita. Another was the truck miles driven per capita. And then another one is the number of pedestrian miles walked and bike miles biked per capita, and transit and EV penetration.

(11:07):
We measured all these things because when we talk about sustainability, people want to talk about all these elements. But the only two that actually create emissions are the vehicle miles traveled in cars and the truck miles driven in the trucks. Those are the most heavily weighted in our score.

(11:24):
As an interesting example this year, the San Jose metropolitan area, which is south of the San Francisco metropolitan area, but still considered, I'd say, the tech Silicon Valley world, ranked the highest, even though it has very mediocre transit usage. Everybody assumes it's always going to be New York, because they have extraordinary transit and tons of walking, which they do. New York was number two. But San Jose was number one because they're still driving less per person. And when you think about New York, it's not just Manhattan, it's the whole area and there is a lot of driving per capita.

(11:56):
So what we see there is I think this truth that if you want to make a city more sustainable, you could get half of the people out of their cars, which is hard in America and other places, or you could get the people in their cars to drive half as many miles. That seems like a more attainable goal for a lot of segments of the population, and it's very important that we keep that goal in mind. And I think that that book illustrated that.

(12:23):
We also see some really interesting trends where in the pandemic we saw biking and walking shoot up for recreational and other purposes. Driving plummeted. In most of the US, driving is back to where it was before the pandemic, which is disappointing. I really hoped we could have locked in some of those VMT savings with behavior change. But we see that driving is happening as much as before, but at different times of day and in different parts of the metro area. So we've replaced maybe commuting, which has gone down a lot, with other forms of driving, which is something we really need to work on and will change how we think about smart planning as planners.

(13:02):
But what we also see is biking has stayed high, which is great. It's very good for health. It's very good for the community. But it also means that maybe biking is not displacing driving; it's doing something else. It's an important challenge for us as planners because we were like, "Oh, we build more bike lanes, more people will bike, it'll be more sustainable." It's certainly healthier, but if it's not displacing driving, maybe it doesn't achieve the carbon goals in the same way we expected.

(13:30):
There's a lot of really interesting post pandemic facts that come out of this data that I think are really important for planners to contemplate, and maybe different country by country as different countries return from the pandemic in different ways.

Arthur Jones (13:45):
As you mentioned, the wealth of data seems amazing and the insights that you're taking from that are great. I'm going to push you a little bit further for that. What would you say are the biggest lessons from that research, and how can we apply them to transport and urban planning now?

Dr. Laura Schewel (14:01):
I think the biggest lesson is if you don't have some density, which means lots of things to do packed into one place, almost nothing you do can really overcome that problem. The cities that are just double, triple amount of emissions per capita of our top cities are in these very sprawled out places that have very limited controls to push for urban density. And I don't mean necessarily Manhattan high rises. It doesn't have to be that kind of density. But you get, again, bringing back the example of San Jose, it's mostly single family homes. There's plenty of apartments, but we're not talking 50 stories. We're talking five stories, and then single family homes that maybe have just less sprawl between them. So I think that to me is one of the biggest takeaways, which is that's the fundamental planning decision you need to make.

(14:49):
I also think that we were lazy in our assumptions coming out of the pandemic. We were like, "Great, we showed

VMT can drop. Tons of people are now working from home. Everybody got used to a new way of life." And we didn't do work to lock in some of those benefits, and that is alarming to me because it was an extraordinary opportunity.

Arthur Jones (15:14):
Jenny, how do these lessons from these US metros in this report, how does it compare with the challenges and the opportunities with future urban mobility in the kind of European cities?

Jenny Jones (15:26):
It's interesting actually, because that density point I think is really important, and a challenge perhaps that's shared between the US and UK in comparison to Europe is the low end density nature of some of the urban environments. You've got the urban sprawls, as Laura mentioned, in the US, and the focus on kind of mid or low rise housing in a lot of cities in the UK, which makes the viability of some high-quality public transport networks a real challenge. And they're often a key part to the solution to providing people with access to that more sustainable, longer distance journey, which gets them to their job in a way that is efficient. There's been some research carried out by Center for Cities in the UK, which says that the UK's big cities can't reach European levels of public transport accessibility just by expanding their public transport systems; they need to increase housing density too to allow people to live closer to the public transport stops and to make high frequency services more commercially viable. So that brings together kind transport planning, data, and urban planning. We'd have to bring all of those elements together to really help to solve some of those future challenges.

(16:34):
One of the other areas I was just going to touch upon, particularly around reducing the car VKMs and supporting modal shift to the more sustainable modes, obviously that's a critical challenge and it is really hard, and we often build things and they don't come. But I think one of the things that we have learned, particularly in the UK and possibly some of the European cities, is to live with that very constrained level of space that's available in some of the historic centers. And that might be different for some of the US cities, I guess. But with space at a real premium, congestion levels very high, air quality often low, that resulting battle for the road space for all modes and the need to transition away from the private car to make space for those modes is the big challenge.

(17:18):
But that has led to some really important development of skills in analyzing the movement of all modes, but also the purpose. It's really important that we get behind why people are doing things, and that helps us to develop the strategies and do that front end traffic engineering design to really optimize the sharing of that

limited space for a variety of users and get the most out the space that is available. So leading to industry leading, walking, cycling; PT, public transport type schemes which are safe and also attractive.

(17:47):
I think one thing that's also come to the fore is that the skills in the engagement of a full breadth of stakeholders has also been really important, particularly in the UK. We've got the UK media weighing in on that perceived battle war between cyclists and motorists, for example. That's just one area, one example. But managing the misinformation that can go around sharing some of the evidence to support why that change is important is really, really key.

(18:14):
The other area I think which I'll also touch upon is just what we talked about transition to EVs. And it doesn't solve every problem, but it's clear that people will need to drive for lots of different purposes, and transitioning to EV is a really, really important part of that solution in terms of reducing transit based emissions. Access to EV charging actually is a really key area at the moment in the UK, certainly something that we are really helping our clients with and looking at how best to implement charging infrastructure to maximize access in an equitable way without undermining other sustainable travel choices. That's where we are using Street Light Data as one example to get really valuable insights into supporting the right decision making in that kind of area, so lots of opportunities I think there.

Dr. Laura Schewel (18:57):
Jenny brings up an important point, which I need to restate because I'm so into transportation, but transportation is not an end in itself. With very few exceptions, no one is driving around just for the fun of driving around. They're driving around because they have to do something. And so housing, economic development, there is no transportation planning without those things. They are two sides of the same coin. And one of the interesting trends we've had in the US is we had, mostly because of racism, flight from urban cores in the '70s, and the high income nice places to live were in the exurbs. Now for most American cities, not all, but most, that aesthetic has flipped and the old urban denser cores are now highly desirable and have become extremely expensive. So what we see is that now these leafy suburbs all of a sudden are the cheaper places to live. You have your young families, your low income folks, your minorities are having to move further and further away, and that creates many problems, including a big transportation cost burden. It's expensive if your job is here and you live over here to drive 20 miles there and back. It's expensive to get to the hospital and the grocery store. And, transit tends not to be as functional in those places. The legacy transit that there is in the urban core.

(20:20):
For example, in the city I live in, a mid-sized city called Richmond, Virginia, I live in the densest part of the city, which is a bunch of townhouses. I hope that term is translated. It's houses that are side by side by side. We

have fantastic transit. It's free. I can walk to 8 billion things, hospitals, grocery, whatever, schools. Our neighborhood is becoming so desirable that we've priced out huge portions of the population for whom those amenities in walking and transitable places would be an extraordinary economic lift. And that, I think, is the new story of the American planning conundrum, is that all of these assumptions that all of our models are based on have flipped in the last 10 years, because especially housing, but all the other uses and the price of those uses are really what drives transportation behavior.

Arthur Jones (21:14):
That's fascinating, but I am going to turn it back on you and ask you, with that challenge, how do you see the future evolving? Besides the fact that you have the access to the data that you are getting through Street Light, what do you think the solution is to planning that where you don't have that inequity happening?

Dr. Laura Schewel (21:33):
We see some positive trends. One is, because of the data, we're able to convince people that it's happening. It's very hard to change the core assumptions of planners and policymakers and community leaders who've been assuming the same things for a long time, like convincing the public that transit is not necessarily best done at 8:00 to 9:00 AM and 5:00 to 6:00 PM. That A, that's not when peak traffic is anymore, and B, for the people who really need transit to get to work, that's not when their working hours are. So that's one of the really powerful ways data can help is to help unseat some of these core assumptions that opens up people's minds.

(22:19):
I also think that we have a history in planning of, in very good faith, doing our best to plan and say, "If we plan like this, the future we think will be like that." Which is really hard, because you're making decisions that'll last 20 years in the future. Nobody has any idea what's going to happen. Most of our big plans were made before Uber existed, not to mention pandemic. It's just a very difficult thing to do, so I don't blame the industry. But also, we're not great at checking to see if our predictions were right. So I think, again, a role of data is to say, "Hey, let's check. We said we were going to put in this off ramp because it would reduce congestion here. It's been up for two years. Is it working? No? Well then, let's dig into it and see maybe we need a left turn arrow." So I think a little more courage to be wrong, which is hard, especially in political landscapes, is very important.

(23:11):
But ultimately, I think that the fundamental trend that the denser areas are becoming more expensive is because they're more desirable. And that says that the emotion of the community is in the right place. We all want this thing that if we all could have it would be better for the climate, for economic equity. So we need to, through expanding housing and through, do you know the term NIMBYism? Does that translate to the UK? Not in my backyard.

Jenny Jones (23:40):
Yeah.

Dr. Laura Schewel (23:41):
We need a little more courage to overcome some NIMBY instincts to make that, again, I don't want to say urban because I don't mean everything is Manhattan or downtown London, that denser life to make that more available to the population. So I think we're starting to see some success stories in a few cities. And we see some policies. Unfortunately, congestion pricing got delayed in New York. We are not following London's example in the timely manner I wanted us to be. But that trend is coming up more and more and it points to some of the right macro directions.

Arthur Jones (24:18):
Jenny, do you identify with some of the things there that Laura said?

Jenny Jones (24:22):
It's going to take some time. It's going to take some thinking. It's not something you can wave a magic wand with. But I think being intentional about it, really thinking outside the box, making sure you're forcing yourself to do that. And I do think data is really, really important as a basis for debunking some of those myths and some of those really entrenched views that we might have. We are all guilty of it. We have our internal biases that we develop over time and ways we've done things. We're trying to vision and validate more so now. We're not predicting and provide it. But even so, you've got to keep challenging yourself. There's lots of evidence around even gender in transport and the fact that there's a huge data gap there, and we really don't understand a lot of what's going on there and how we actually make a provision transport-wise that's really going to benefit that part of 50% of the population.

(25:11):
So as Laura says, I think it's really critical that we keep pushing the boundaries of what data can tell us because that's going to be an important part of the foundation for how we understand the world and make changes to it.

Dr. Laura Schewel (25:24):
I have one more thing, just a little spice. So, I've been on collaborating. We work at Jacobs and we touch a huge proportion of the world's transportation infrastructure at some point in its life. That's an extraordinary opportunity. I have been on many projects where the transportation professionals, let's just take the example of reducing congestion, which is usually one of the main reasons people say they're doing something like building a road. All the Jacobs professionals involved know that this thing will reduce congestion, say, building a new four-lane highway, real example. But we are doing it because the client demands it, and we do serve our

clients. But we have the opportunity because we are equipped with big data from things like Street Light, but also the global data of our reach and our vision and understanding on what's happening on the globe, to try to persuade them otherwise. And I think that is incumbent on us as practitioners who have a mission of climate, which Jacobs has, of being data-driven, which Jacobs has, and of providing advisory services. This is the most important advice we could give, and I think it's an amazing opportunity to push ourselves to give it more often, even though it might be a little uncomfortable.

Arthur Jones (26:42):
Speaking of uncomfortable, I've still got one more challenging question for you. How do we reconcile the need for fewer vehicle miles or kilometers traveled with the commercial transport demand for more highways and roads? Because you've pretty much mentioned it there, Laura. So how do you reconcile it?

Dr. Laura Schewel (27:01):
I don't think in the US and the UK and countries as developed as the US and the UK there is a commercial demand. I think there may be a demand for more mobility. We have plenty of roads. There's only a problem if all of us want to drive on the same road at the same time. With smart planning, we have all the roads we need. We just need to distribute the traffic more wisely and to create the same economic activity with a fewer miles traveled through better planning.

(27:30):
I'd say there's also a commercial demand because it's a big project and lots of people make lots of money and get to take pretty pictures when you build a new highway. But that is the trend I think we need to advise our clients against. It's better to spend that money in maintenance, making the roads, say, more complex, have bike lanes or bus only lanes or things like that. That's a better way to create that commercial market than to build more roads.

(27:56):
Now, some other countries that are still building their first cities and have population explosion beyond what we see in US, UK, and other parts of Europe, that may be different.

Arthur Jones (28:07):
Jenny, any insights on that from your side? I know Laura mentioned the kind of multimodal use of streets and roads, and you've mentioned that before. But is there anything else you'd like to add to that or give your take in it?

Jenny Jones (28:21):

I think in terms of the commercial side of the usage of the network, the last mile bit is something that I think we're really focused on. That last mile delivery we know is there's lots of evidence, so that's going

to exponentially increase. People aren't always now, which is a good thing, they're not necessarily traveling to the shops all the time, but the consumption is coming to them. That's causing some quite difficult challenges in particularly our urban areas, city kind of areas. So how do we transition that last mile aspect to a much more efficient, more sustainable? Use of cargo bikes is one example of how we've transitioned to a quite different way of getting the same effect. And that's all emerging. There's lots of really good work happening across that, across the country, and across lots of different cities on that front. So that's possibly one way that we can start to look at shifting some of that. So we're using the roads, we're using the infrastructure that we're developing for other purposes to actually benefit that commercial side of the network.

Arthur Jones (29:20):
What excites you most about the future of urban mobility and transportation? And this time I'll start with you, Jenny.

Jenny Jones (29:28):
I think not knowing what the future will hold, but being able to influence some of it is really exciting, and helping to set that vision and develop the creative and appropriate solutions. I think that's part of what drives us as professionals really. As we've talked about, there's a lot to do. But I think specifically embracing the technological advances which will transform mobility in exciting ways. So more intelligent information to inform people about their choices, how they can access the network, and that will hopefully drive some positive environmental outcomes, social change and inclusion. Behavior change is an interesting one for me as well. I think that's a really significant area, and it's something that often falls into the background sometimes where we're focused on the building the infrastructure, and then we get surprised when people aren't using it. It's really important that we do that alongside, and that's where I think as we've discussed, the data can really help to get us to understand why people are traveling, how we get people to think differently about how they travel for certain purposes. I think that's an exciting area to keep exploring.

Dr. Laura Schewel (30:30):
For me, something that's been exciting me recently is I've been doing this for 18 years and when I started transportation was very niche and very nerdy. Occasionally I go back and I teach a course or speak at an event, and transportation has become so cool, and urban planning has become so cool, and the demand for the graduate programs has skyrocketed. The interest in a huge variety of people who don't just come from an engineering background has skyrocketed. So many people are realizing how inherent it is to these big issues like climate change and social equity. That makes me happy because the challenges are scary and hard to overcome, but I see so much energy coming in behind us that makes me really excited.

Arthur Jones (31:25):

Thank you both for an amazing interview and discussion. I found that very interesting. I think that's just fascinating to hear how transportation has become such an important catalyst socially and economically and how data plays a role in all of that. So, thank you both for joining me today and for all your insights. I really appreciate it.