

The Future of Transit in Austin - an Urbānitūs Roundtable

To get where you want to go and where you need to go, you need, in a word, transit. But particularly as Austin residents prepare to vote on a massive light rail plan on Nov. 3 and attempt to come to grips with Covid-19, what should transit in the future look like?.

Providing some of the answers is Joseph Kopser, a former transport start-up CEO, who moderates this enlightening discussion featuring Dr. Kara Kockelman, a professor of transportation engineering at the University of Texas at Austin; Katie Sihler, the senior director at Cubic Transportation Systems; Jose Valera, the head of operations at Riders Share; and Robert Brehm, an associate editor at Urbānitūs.

The following is a transcript of their roundtable discussion from Oct. 12. The text has been edited for clarity.

Joseph Kopser: Today, we're discussing an important topic with Kara Kockelman, Katie Sihler and Jose Valera. Unfortunately, we're missing one guest who we were hoping to have here today, Professor Paul Anaejionu of Huston-Tillotson University, who is an expert on many aspects of the urban quality of life. After all, as we know, you can't talk about mobility and transportation without talking about that connection. But let's just jump right into it. We have a real treat: Experts in their field from every aspect of looking at this from policy, academia, operations, and implementation. We're going to start with you, Kara, a transportation expert at the University of Texas. So tell us about how you got to where you are now, and then we'll kick off this panel.

Kara Kockelman: Well, I've been a professor for 22 years here at the University of Texas. I was in the Peace Corps in between undergrad and grad school, but then I came straight here after my PhD at Berkeley. And in the Peace Corps, I was in Ecuador. But I've always cared a lot about communities, so that's why I chose civil engineering rather than another form of engineering. I was really fortunate as an undergrad to get a little taste of transportation. That influenced my decision to go into it as a graduate student, and I've always been motivated by the public and the community and the greater good in my work. I also have a master's in city planning and minors in economics and statistics.

Kopser: Excellent. I'll move to Katie Sihler, who I met nearly eight years ago, when we sat together on a panel in San Antonio, Texas. So Katie, tell us a little bit about your background and how you got to where you are now.

Katie Sihler: Sure, as Kara was talking a little bit about her education, it made me think that I was a geography major, and that led me to really like urban planning. How I ended up doing marketing and business development for transportation technology companies was a stretch, but I've always focused my career on reducing single-occupancy travel and on the behavioral change of our commuters and traveling public. And that has led me down many courses, including running the sustainable transportation program in Washington, DC, called "goodies to go," launching their capital bikeshare program, doing marketing for their transit systems and then working in many different tech environments to facilitate transport for our citizens throughout the US and Europe.

Kopser: Thank you. And Jose, I think I met you about six years ago, coming from a different angle of transportation. Since then, you've had a lot of success as well. So could you go ahead and give a quick background about yourself?

Jose Valera: So, I'm from the same alma mater as Joseph, West Point – albeit 15 years later. Eventually, I went to law school, primarily just to do something different than the army. It was a

year longer than business school, so that seemed like a longer transition to make, but I ultimately got into transportation via Joseph, starting as the general counsel at his company Ride Scout, which focused on trip planning, multimodal and the aggregation of all the modes. While Joseph was still there, we acquired another transportation company called GlobeSherpa, which was focused on public transit, mobile payments and mobile ticketing. All of this was under the umbrella of Daimler-Mercedes and their play into the mobility space. I've been in the software multimodal mobility space, primarily in the legal policy regulatory area, but I ultimately moved to the operation side and took over Joseph's old job as CEO at Mobile. In other words, you could say that I'm really on the private and software side of mobility.

Kopser: Back in the green room, Jose said it probably would have made more sense if I had given my biography first, but you did a beautiful job of explaining it. What's neat about all of this is that we all come to mobility and transportation in different ways, as your biographies indicate. In my particular case, after coming out of the army, I was frustrated by my commute here in Austin, Texas, particularly at trying to get from Circle C to and from the University of Texas, so I set out to aggregate all these different modes of transportation together. That's when I met Kara and read your work and was so impressed by it. And then a few years later, I was impressed by you, Katie, in terms of how you explain to people how important it is that we rethink mobility. So that's a segue for our first topic, which is defining the problem. The focus here, of course, is on Austin, but I think the problems in Austin are indicative of so many other cities of our size, regardless of whether you look at it in terms of transportation, population or geography. What are the problems with respect to mobility and transportation in Austin – or cities or towns in general? And after we describe the problem, we'll look at some solutions and figure out, together with questions from the audience, how people are most impacted. So Kara, can you explain what the problem is in our cities and where we're going if we don't change something?

Kockelman: For me, it's really overconsumption due to the lack of like some kind of market feedback besides congestion.

Kopser: You're saying overconsumption of the use of transportation modes?

Kockelman: Indeed, as well as housing and all sorts of things. We are greedy animals, and it's just always been an issue. But when you get almost 8 billion people on this planet, it starts to really harm the environment in a very severe way, both climatologically and globally. It's always been kind of obvious at a local level; for instance, when my kid starts up an old car on my property, that emissions smell is so bad, and I just feel really guilty. But most people don't even notice the pollution of their tailpipes. So we have an all electric and a hybrid electric vehicle, and I try to get my household to be super-smart about location choice and destination choice and vehicle choice. But it's hard; I have a really hard time getting even my own family members to behave the way I think is more socially responsible. But if there were a market [cost] for how much more damaging that tailpipe is versus the other vehicles in our little household fleet or versus our bicycles, there would be much more of a signal to them, rather than just their mom and their their wife talking at them. And then there's location choice. We live in much bigger homes than people in Europe or Japan – it's like a 4:1 ratio at least there, especially here in Texas. It's not a healthy choice long term, as people really just don't think about what they consume. And that's absolutely true of transportation.

Kopser: That's how I know we're going to have a great conversation because I'm going to circle back to that after we get a definition from the other two and then ask about this idea that, given that the United States has always overconsumed, shouldn't other countries also be allowed to

overconsume as they become more developed and achieve more of a middle-class lifestyle? We'll come back to that. So Katie, how would you define the problem that you see today? What is the problem? And if things don't change, where are we headed?

Sihler: I think the problems with transportation affect many different aspects within a city. Kara, you were talking about emissions; well, a third of the emissions that affect climate change come from vehicles. That's huge. And it's also something that can be fairly easily fixed compared to other industries.

Kopser: And Katie, when you say vehicles, are you referring to just ground vehicles? Are you also including aviation?

Sihler: Just ground vehicles.

Kopser: Because aviation is huge as well.

Sihler: It is. And so it's things that can be fixed through technology, it's things that can be fixed through infrastructure, and it's things that can be fixed through the simple decisions that we make on a personal basis. So that's one aspect of our transportation network that needs to be fixed globally. Second, it comes down to access to jobs, health care, being able to fill your prescription at a pharmacy – different things that really impact our community overall and which lead to long-term changes and effects. And when you start to impact lower-income areas because they don't have access to fresh food, that impacts their overall health, which affects their ability to get and keep jobs. It ripples through our entire community and entire economy. And then, it just comes down to something that's even more personal; for instance, I have children, and I need to get them to different locations for soccer practice and everything else. That impacts my life when that goes for 45 to 90 minutes (although it's less now because of Covid), impacting everything else in our lives that evening. It's these small little impacts that everybody has that creates more stress. And more stress leads to different problems too.

Kopser: The second point that you brought up that I want to highlight (which is all the more reason why it's unfortunate that we don't have Paul from Huston-Tillotson her today) is the question of where you live, where you work, where you go to school, or where you choose to get your groceries and/or the other staples that make life worth living. If your mobility and the connections between all those are not reliable, affordable and dependable, you're going to run into problems with your work by arriving late, and you're going to run into problems with nutrition and accessing healthy foods. I just wanted to highlight that for the audience. Hopefully we come back to that point that you were making there. But Jose, how would you frame this? What is the biggest issue today? Or what are the impacts leading to it? And what happens going forward if we don't change things?

Jose Valera: For me, it's that we're too far from the places we want to go to, need to go to, have to go to. And what's happening is that we don't think enough about how we're too far from those things. Instead, we go the route of attacking the mode of transportation or attacking the vehicle and trying to solve a car, scooter, bike or bus problem when, ultimately, those are just means to connect the places we need to go to or want to go to. At this point, I'm pretty tired of working from home. So even if it's just down the street, I want to go.

Kopser: I heard it said best that "we're not working from home, we're now sleeping in our offices." But continue that thought.

Valera: Yeah I don't want to work from home, but I also don't want to go across town for work either. So for me, in addition to a work from home, there's a "play from home" and a "live from home." Bringing all of those things we enjoy into smaller and more local pockets alleviates that need to go across town. And I do agree with Kara that there should be a cost associated with those long trips. But unfortunately, though, burden usually ends up resting on lower-income people with less availability. When we focus on the vehicle, we don't actually distribute that cost associated with that travel; that isn't a necessity for a lot of people. But just to bring it back, I think focusing on why we're getting in or on this vehicle and where we're going, as opposed to just the mode that we're choosing to make those connections, is important.

Kopser: At the end of the day, it is the people that have to move between all these places, which is the purpose of why we created all these modes of transportation. But you're right, we all too often just focus on the mode instead of the people we're trying to move. We are not fully measuring the fully burdened cost of all of our transportation choices, whether it be opportunity costs, or if you're an economically minded, to think about what else you could have been doing with that time. And you're right, Katie, without traffic right now, it's really easy to get across town. But it also means that it's also harder for people that have no access to begin with. Another thing I love pointing out to folks is that upward mobility is directly related to ground mobility. To your point, Jose, this idea of clusters of communities where you can actually walk to get all the stuff that you need or, or if you do take a trip, you can get all your services that you need either in one trip or brought in to you more easily through delivery, perhaps even drone delivery one day. So Katie, let's turn to you. What are some of your recommendations to get at some of these problems we've just described?

Sihler: Well, I think there are some short, medium and long-term solutions. Looking at the short term, we can really turn to technology and connect to different modes of transportation and in an efficient way. Technology has given us those tools; we started that with Ride Scout and the work that was done there. That's just grown tremendously. And then there are other forms of micro mobility that have emerged over the last few years. So that solves a lot of the connectivity issues between different modes. I think there's some continued growth that can happen there. Project Connect, which will put in new rail and services and connect different areas throughout the entire Austin area, is huge. If that doesn't happen, the city will not grow and will not continue to be successful. That's an investment that everybody needs to agree on. You just can't expect the federal government or the state government to come in and wave a little magic wand and fix that; we've got to make the right vote there. And then long term, it really is about land use and changing our perceptions regarding what are the most important things you want at different phases of your life. For instance, you get married, you have kids and everybody moves out to the suburbs and gets an acre-and-a-half and a huge house and now a big commute. And then they're driving their kids across town for soccer practice like me. That's been ingrained in American society since the baby boomers in World War II. And that is not necessarily a solution that is sustainable. In the United States in the long term, it's about changing what we think, but also having the right policies to provide the environment that people want closer to the city to have the connectivity, so they don't always have to hop in a vehicle to do things.

Kopser: Indeed, we're going to come back to that. And hopefully, Robert, you can remind us at the end about this idea of the different needs that you have at different points of your life. With Project Connect and providing better density, what we mean by density is just looking at the physics: We want to be a bigger city, and if we want to grow and have opportunity, it means that more people will be traveling a little more close together. Now, don't worry about COVID, we'll

talk about that safety side of it; it just means we all can't ride in a single-occupancy vehicle with tons of space and steel and glass around us. But I like your short-term and long-term approach there, Katie. So Jose, what do you think needs to be changed in order to solve the problem that we described in the first session?

Valera: I agree that we have to have some honest truth about the fully burdened cost of transportation. But I also think we have to do it in the context of what I would call the fully allocated rewards of transportation as well. So when we start evaluating what the cost of the transportation is, and who has to bear that cost, we have to look at who also reaps the reward of that transportation. As a specific example, I do think that there should be congestion pricing, as I don't think that the carrot will ultimately change human behavior. I think that it is a combination of the carrot and the stick. But I don't think that that sticks should just be used on the people who are driving cars because they're driving that car to get to a business that may or may not pay them a living wage and that then reaps quite a bit of benefit from having 300 or 500 people drive 50 miles across town to arrive. So when we do start looking at congestion pricing to fully pay that fully burdened cost, we also have to make sure we allocate that cost accordingly. And it should be based on who's getting the rewards from that. That way, we're not just punishing someone who has no choice but to get in their car but also punishing a system that encourages that to happen. So when we start that conversation and look at the costs of congestion, let's look at who's getting the benefits from it as well and make sure we allocate that.

Kopser: Well said. So Kara, back over to you in terms of solutions.

Kockelman: So it's credit based, Jose and Katie. So everybody has a budget, maybe \$25 a month or whatever the revenues divided by the number of drivers or the system's users. They don't have to have a car or drive; they can use those revenues for something else, like bus use and bike rentals, or maybe even kayaks down on Town Lake or donate them to single-parent working households. It could go to people they feel really need them, and there could be some kind of application process that is essentially managed. Basically, everybody owns the road space, this scarce commodity, together. It's like a tragedy of the commons, of course, because it's difficult to charge and exclude people from using these. But now thanks to cellular and GPS systems on vehicles, it's going to be a heck of a lot easier – even easier than those 50- or 25-cent toll tags that we have in our windshields. It's a lot more expensive to do it with the camera system. But those gantries are ugly and are based on radio frequency ID. So we can do a lot better than that, and Singapore is showing us the way right now.

Kopser: What is Singapore doing specifically?

Kockelman: For 30 years, they've been doing congestion pricing. They also have an auction for vehicles, and once you buy the medallion because you were high enough in the auction, you can keep that vehicle for just six to eight years or so. And so the minimum price of buying an automobile in Singapore is like \$100,000. And then after six or eight years, you have to rebid to keep using that vehicle or another vehicle. So right off the bat, very few people have vehicles and the ride-hailing companies are doing great because these guys who do have these medallions can serve everybody. And so it's working really well. But at the same time, congestion is completely managed by the system of gantries, which are pretty nicely done in that gorgeous setting versus the way we do it with these really large multi-lane freeways with frontage roads. Things are at a smaller scale there because they don't allow everybody to just buy a car; they ration that car purchase and then use the money on those auctions to pay for a first-class transit service. So, we could also do that if we don't want to give credits back to

people; we could plow that into bike lanes, sidewalks, e-bikes and some transit services, which tends to be pretty expensive because the cars are pretty special. Transit is also only on very fixed routes, especially rail lines. And then of course, transit drivers are very expensive. So we're looking forward to a future of much more demand-responsive, autonomous, smaller vehicles rather than these huge boats – which slow down traffic even as they're trying to help us with congestion because they actually create a lot of friction around them.

Kopser: What I think is important about Singapore, and really any dense city in which you have a lot of people living per square mile, is that you can find other ways to move them around rather than just the single-occupancy vehicle and engage in experimentation. So Jose, we're going to come over to you to start this next question, which is the notion of looking out for everyone. That means that if we're just designing a transportation system for some of the people, then we're not going to have a transportation ecosystem for all the people. And I love sharing the story of what I mean by that in Austin from a personal example: When I was taking the bus commuting to and from work downtown to the southwest of Austin, it would just be me and my briefcase on the bus at the end. One day, as I stood up and began to walk out, the lady the bus operator said to me, "So you're a business guy." And I said, "Well, yes I am." And she looked at me and said, "I don't see many businesspeople on this bus." And it was so telling that the transit industry, as exposed now by COVID, has become the backbone that took so many of our foundational workers to and from work. Meanwhile, many people had the luxury of staying at home and working behind a camera. But there are a lot of people who require other modes of transportation because they themselves can't afford their own car. So speak to this idea of social opportunity. What do you see? What do you think is going on?

Valera: This goes back to my earlier point of when we decide to assess the cost, we need to do so with the context of understanding who's getting that reward from paying that cost. And I think what happens quite often in land use or transportation policy is that there'll be a view that truly is the most efficient, highest and best use of that land resource, and also that transportation resource, almost from a theoretical perspective. And yes, when it's applied, it'll move the most people the most efficiently and allow the most people to live in a place most efficiently. And 10-20 years from now, it will be a more efficient use of the space and the way we move. But there's always a cost associated with that transition. And too often, that cost is paid by people who once lived in East Austin, like where I grew up. So there is going to be a personal cost to that to build that better, more efficient future. And that burden and cost is paid, oftentimes, by people who have to live 25 miles from where they work. And so as we apply what is a more efficient use of space and transportation, we need to again recognize that that cost is often paid by people who have paid it again and again and again. So for example, Hispanic people and the African American community lived downtown but moved east of the highway to East Austin. But now land is most desirable and, in some ways, more affordable in East Austin, so we can put more density there, but then that will again result in a cost of displacement for the people who were already displaced once. It's really about looking at not asking the same people to make sacrifices again, again and again for the best and highest use, or recognizing that's what you are doing and trying to balance that.

Kopser: Well said. So Kara, has your research looked at anything about the distribution of costs? What has your research shown, or even your own personal or professional passion, in looking into this?

Kockelman: Well, another friend of ours is Michael Weber, who's a mechanical engineer and a global energy expert. What he's always said to me is we can have clean, cheap energy; we just

have to move to renewables as quickly as possible. Utility-scale solar is such an amazing technology. It's such a low price at 4 cents per kilowatt hour. So I really do think that you can have the kind of energy to create concrete and steel and air-condition a big home, but land use patterns will still be a problem, as will congestion. But in terms of climate change and energy and maybe emissions, we can do a heck of a lot better through demand management on the energy side. And so I do think [some developing] countries can leapfrog us, and we do see that in Africa with solar installations and things like that. We didn't really realize until maybe the 1960s and 1970s that the climate was going to change on us. We started warning people at that point, but very few would listen until they could actually see the tremendous damage that's happening now.

Kopser: Yes. And to that point, Katie, what would you want to add about who's paying the costs for these changes? Or how did we get to now, and what do you see going forward?

Sihler: Well, as Jose was talking about that, it was making me think also of the importance of talking about who's benefiting from these changes. At the risk of generalization, in talking about the benefits, even for Project Connect, a lot of people say, "I don't ride the train; I don't want to. Why would I support that?" But if you ride the train, you're making my travel better, and you're making my life better, because now you have access, maybe, to a better job and maybe better health care.

Kopser: Raising the overall tax base?

Sihler: Yes. So even if you're not having a direct one-to-one impact on it, you still have these ancillary benefits that come through. And so if you're having ancillary benefits, you should also have the ancillary burden of that cost, and they're trying to fund a lot of that project in particular through the tax base. So we need to show both sides of that coin and better explain it.

Kopser: Indeed. We're going to segue here, as it's halfway through the discussion. I've got one more question for all of you as a group, and after that, we'll go to Robert for questions from viewers. We've said this several times, but with Project Connect, there's this idea that you have to move people more efficiently, and one of the best ways to do that is to move them in more efficient people movers so that they have less need to take their own personal car. But I have heard, Kara, critics of Project Connect say, "Why would we invest all this money in infrastructure when autonomous vehicles are just going to solve all of our problems?" You do a lot on the subject of autonomous vehicles, so can you speak about them and how they may not necessarily be the cure-all that people think they will be?

Kockelman: Certainly, making driving easier has made us in this country live farther from one another and travel more in terms of miles traveled per year per capita than in other countries. That's what creates the real congestion on those limited rights of way, which are so contentious to expand and so ugly to expand. We already devote so much of our ground to transportation services and parking those big vehicles and things like that. So I don't think they're going to save us, certainly, but they can be so much more demand-responsive and therefore competitive than these fixed-route services that are going to take up a lot of space. So Katie's saying, "Oh, it's going to be so much better for my commute if you get on the train," but a lot of that train is at grade and takes up entire lanes of traffic, and then at the stations, it takes up more. And then there's the buses; if you give them their own right of way, they get to go faster, but they may be terribly slow because of the gridlock that we saw in our downtown every evening before COVID. And indeed, they take up a lot of space. So I think a bike is probably the most efficient mode, as

you can then put bikes on the front of a bus. But of course, there's time that the others sitting on the bus have to wait for that person to get her bike on and off, and that's no fun. So I hope Cap Metro will actually spend that money on smaller vehicles that are much more demand-responsive instead of the \$1.70 that this new system is going to cost per passenger mile, which is almost as much as the \$2.00 Uber and Lyft charge us per mile. We're using a Prius, which is a hybrid vehicle, or a Chevrolet Bolt, for example. And of course, Cruz, which is part of GM, is planning to do that. And they'll probably have even more efficient vehicles. And so the cost of all that could be just 50 cents per passenger mile rather than the almost \$2 that we'd be spending from our property taxes to move people long, mostly just along the two rail lines, which have a very limited set of origins and destinations versus where you need to go. So Katie, I don't think people getting on that bus are going to make your soccer drive much easier, quite honestly, but I think people getting out of pickup trucks, Suburbans and Escalades and getting into small right-sized vehicles and using tools that we already have, like carpooling [could make a big difference]. We could do a lot better than we're doing right now without anything fancy and without any real investment. I also think parking spaces should charge for those longer vehicles; I don't think those longer vehicles should be able to park with their end sticking out. I don't think they should be able to park in the same slots as the people who are driving the smaller vehicles; those guys are much more efficient and getting people inside [vehicles] is helpful.

Kopser: So you've identified a number of ideas, and there's a common theme of getting more people into a particular space. So Katie, I'm going to take that question and ask it in a slightly different way to you, because you did mention technology, multimodal, connections between all these different modes, as well as land management. So in your eyes, what does this future look like for people who don't necessarily buy into Project Connect right now? How might land use be impacted by multiple modes of transportation and the ability to access transportation easily? And what might it look like going forward if we choose not to?

Sihler: So car management is something that has come up as we look at all these new forms of transportation that have come out in the last few years. For instance, how do we manage existing parking garages for numerous forms of transportation? Do you have recharge zones in parking garages at nighttime where that garage is used for, maybe, transfer points in a bid to reconstruct that space so it better utilizes what's available at the time. Cities are already looking at that, but I don't think there's a perfect solution to it yet. Parking management companies are looking at that, because they have a lot of these parking spaces and garages, and they're saying, "Alright, what are we going to do if these autonomous vehicles come out?" But I think we're 10-15 years at least away from that point. What I get excited about when I think about autonomous vehicles is the access it gives to mobility-impaired people. And as we've seen with COVID with access to social experiences, we've seen people basically suffer a failure to thrive because they're not getting access to social experiences. Hopefully you can get yourself to your doctor's appointment or to the pharmacy, or maybe you just need a one-way trip to your job, but you have a way home. Or maybe you just need to go see some friends and things like that. That's what gets me excited about autonomous vehicles, especially as we are all spread out, and you're not next door to your parents anymore and can't take care of them all the time.

Kopser: You mentioned places: I miss places; they were so much fun. Jose, a lot was said since my original question, so feel free to react to the original question or take anything that you heard and react to that before we go to Q&A from the audience.

Valera: Essentially, part of the endeavor of Daimler-Mercedes and BMW in engaging with Ride Scout and GlobeSherpa was in preparation for a world of autonomous vehicles. With

autonomous vehicles, the no-brainer use case that I believe should absolutely be the target is getting people to eliminate their second car. It's a more modest goal than getting someone to get rid of their only car. So I think certainly starting there makes a lot of sense. If the purpose is to reduce the single-occupancy vehicle ownership usage and to provide that on demand, I'm fully on board. Where I have concerns is when we see it as a potential replacement of, or its success comes at the expense of, public transit because regardless of how good we get at autonomous vehicles, public transit remains the best way to move people from a geometry perspective. We do need to destigmatize it, we need to improve it and make it as it is in Europe, where business folks and everyone else travels on it. Ultimately in Europe, part of that is due to the extreme cost of car ownership. And so again, a little bit of the stick has to be there. Nevertheless, I also think that while public transport is a municipality-run program that accounts for the public good, the leaders in autonomous vehicles might not necessarily take into account [the public good] since they are ultimately private businesses whose goal is to pursue profits. Still, that can and must be aligned with the public good, and it needs to be aligned with public good. But ultimately, there is something special about public transit in that it is a public good and a public service. As such, it accounts for people who need it in a way that an autonomous fleet probably will not for the first five to 10 years. I think this goes back to the cost. All transportation is subsidized in one way or another, either by you, if it's your car, or by venture capital money, if it's Uber and Lyft, as their drivers are not employees, so they're not paying for health care. It's all subsidized by someone, as is public transit. So I think recognizing that taking the full cost and the full allocation of the rewards of the public transit nodes is part of that system and calculus that needs to happen. But ultimately, I think that a connected world has to have public transit as the backbone. You have to get both public transit and all the other modes working together and aligned. If we're reducing single-occupancy vehicles, autonomous vehicles can and will help with that. But again, let's just start with the second vehicle – a more modest goal.

Kopser: I like using the analogy of the human body and the circulatory system in terms of the heart being able to pump into the larger arteries that carry the most blood. And then as you get further and further out, the blood vessels get smaller and smaller to the capillaries, meaning that you're able to put people in and take them out of the system. Katie's point is well-taken with autonomous vehicles: Let's first start with the mobility-impaired, senior citizens or those with disabilities that don't allow them to travel as easily now. That, for one, will save thousands of lives due to operator-induced accidents. And Kara's point about the shared use of this mobility asset goes to your point, Jose, that we will be able to reduce the number of cars sitting in our driveway and then improve overall quality of life. So that's why I like having smart people like you as a part of this discussion. So Robert, what are some of the questions coming in?

Robert Brehm: Awesome, we have a couple of questions. But the first one I want to talk about is growth, which we know very well in Austin. Austin Chamber of Commerce put out a report on Oct. 8 that said 168 people moved to Austin every single day between 2018 and 2019 and that Austin is the number-one metropolitan area in the United States in terms of the share of new residents in the total percentage of the city. So how do you manage to make sure that transit policy keeps up with astronomical growth like that?

Kopser: So who wants to take that? Jose?

Valera: I think it's even a little bit inherent in the question, as it's about solving a people problem with a transit solution. And so right now, when we think of where people want to go out, it's Sixth Street, South Congress and maybe a little bit of North Loop. Now everyone has to get to those three places, but where does the cluster work? North Austin, a big cluster downtown, South

Austin. And so as we accommodate these 168 people that come every day, if we're going to send them to the same places to work, the same places to play, we're not going to be able to solve it with just a vehicle-based solution. I think it really comes down to creating those smaller live/work places in new places where we traditionally haven't had them in Austin, and really creating smaller neighborhoods with some commercial and entertainment aspects, as well as green spaces and other places.

Kopser: Kara, Katie, anything you want to add to this notion that Jose brought up, which is we would need less if we live closer to all the things that make life worth living?

Sihler: I also think it's about density and how we build housing, especially in the urban core. And if we can increase those density numbers to get more quality housing.

Kopser: How do you address that with the NIMBYs or the YIMBYs who say "yes in my backyard," but the YIMBY lives next door to the NIMBY.

Sihler: That's a problem that's been occurring for hundreds of years. It's either for the greater good, and you've got to showcase those benefits. I also think we probably need to do a little market research as to why those 168 people are coming in every day. What is it about this area that people want? And how do we make sure to address those wants because you want a certain amount of continued growth for economic prosperity? How do you incorporate those wants in a sustainable manner? And I don't know what those are yet.

Kopser: I'm going to pick up on Kara's reaction because there's two schools of thought: One says yes to growth for continued growth's sake, and then there's another body of work out there that says, no, we just we just fooled ourselves; we don't need growth. Kara, do you want to pick up on that idea? Is growth good? And do we need more growth?

Kockelman: I never understood policymakers. I think they were chasing artificially low unemployment numbers or something, and that's why they were always trying to chase growth because they wanted to keep unemployment artificially low and make people better off at the low end of the scale, but it always comes back to bite them. If people flood in, you're constantly exhausted trying to keep the unemployment rate artificially low or something. So Austin is very fortunate in that it has wonderful, highly educated people, a pretty good climate, a really nice setting, a very thoughtful and excellent city council and leadership, as well as a lot of wealth.

Kopser: But am I hearing you say that we don't need to be growing anymore?

Kockelman: Never. Well, we don't control that 168, you guys. We have a free market economy on home sales and development. And there's plenty of green space and brown space that will get developed that we don't control at all. Just stopping it would be sort of silly and strange. We can't be like Minneapolis and allow every single family dwelling unit parcel to develop three-fold, but we can be like Vancouver and allow every unit to have a granny unit on site. I was so disappointed in so many of my neighbors who voted against that because when they buy their house, their neighborhood has to look like that until they die. And of course the next person who buys a house like that doesn't want it to change either until they die, so it'll never change.

Kopser: So you've got some NIMBYs living next to some YIMBYs.

Kockelman: No, you've got people who are unrealistic. You bought that parcel, so you can control that parcel, sir, but you cannot control all the thousands of parcels around you; that is so bad for your community. These are really silly things. We don't have that control, and we shouldn't try to exercise it unless we want to be authoritarians.

Kopser: We'll come back to that notion because I want to play devil's advocate, but let's first go to Robert and see if we have any more questions.

Brehm: We have a question here from Christine. She asks whether there are any conversations about rail between Austin and San Antonio, such as revisiting the Lonestar rail idea. I know that Governor Abbott recently said he was going to look at the bullet train between Houston and Dallas. I wanted to get some of your guys' thoughts on those ideas.

Kockelman: I think high-speed rail is really tough to acquire right away and not have so many stops that you end up slowing it down. And it's also not highly energy efficient even though you think rail is energy efficient. Anytime you build very special vehicles, and you only run them every 30 minutes or something, it's really expensive. And those speeds lead to a lot of drag and a lot of energy demand. So I don't generally recommend it given that we're going to have self-driving vehicles which is going to be like a train ride in your own car so you don't have to go drive 10 miles to get to a station and then make a decision about whether you have to rent another car when you get. So I don't see how they make money.

Kopser: So the interesting thing about the right of way for the rail between Austin and San Antonio has to do with the quarries that are between here and San Antonio. So we had this amazing catch-22 where we as a region continue to grow, and that growth requires concrete, homes, cars, buildings, and much of that quarry rock come from the ground under us on which we walk, or in this particular case, near to where the train is going. And so therefore the owners of the train line who have customers in the quarry companies don't want to give up the ability to move that rock. Now, let's say the governor forces them to allow more passenger rail to reduce traffic on the I-35. If it's sharing the rail line, the quarry rocks get precedence over people. Supposedly there's analysis out there that looks at the present and future value of the quarries themselves that says, just buy them out and give them all the profits they would have achieved over the next 20 years. Then, if you reinvested that money in more developments of autonomous vehicles and concentrated passenger rail between Austin and San Antonio with two stops in Kyle and New Braunfels, you would greatly reduce the amount of traffic on the I-35. I'm still bullish on high-density, passenger travel, whether it's an autonomous vehicle, bus or rail line. In many ways, all these ideas are blending together. Robert, any other questions out there?

Brehm: Yeah, let's do one more from the audience. We got a question that's for Joseph, but anyone else can answer as well. Your book notes that there's a generational gap when it comes to major infrastructure, as we haven't had any major public projects in many years, and we continue to struggle to support them as a society. I'm from Colorado, and anything you would see is from 1935 or 1940 during the New Deal. Why haven't we done that in so long? And how can we get back to doing that?

Kopser: Well, I think in many ways, it goes back to where Jose led off of this point about who pays and who benefits. So much of what was built comes out of the 1950s under President Dwight Eisenhower. He wanted to make sure that we would have the ability to move troops and specifically nuclear weapons by ground, if necessary, to be able to fight the Soviets, whether they were coming from the east or the west. Out of that came the interstate highway system.

What he never intended for was the fact that we would have highways running or interstates running inside of cities. That was never supposed to be part of the plan, but it happened. Those large expenditures came out of an era in which individual tax rates – income tax rates – and corporate tax rates were much higher. So we were paying for infrastructure, building the bridges and the infrastructure that ironically provided access to rail, shipping, ports and highways that facilitated more commerce to be moved and distributed and the movement of people all around the United States. That one-two punch of prosperity has been something that baby boomers, I'm looking at you, have not, in my opinion, kept up with by paying for the infrastructure. The best example of that is the gas tax. We haven't changed the gas tax since 1993. And yet, vehicle travel and vehicle efficiency performance have changed greatly, meaning that we're getting very little from that gas tax anymore to pay for infrastructure. You get what you pay for; you're either going to pay for it as you go, as we were building infrastructure 50-70 years ago, or you're going to pay for it again after the stuff starts falling apart, which not only impacts lives, but it'll also impact our economy. So thank you for asking that question. Okay, let's go run around the horn. In looking at Austin and mobility, what are the factors to be considered? If I could give you a magic wand what would you do? Katie, we'll start with you.

Sihler: If I could just replace every single vehicle on the planet with a zero-emissions vehicle, I think we'd be in such a far better place. I think it's also about making sure that we look at the human factors. Tech companies put a ton of time, energy and money into understanding the user experience of their products. We need to do that to understand the user experience of our cities and how people move. Now, I know there's a ton of research done on that, but we need to make sure the personal decision-making goes into that design and how we move forward. But that's just my marketing hat I'm putting on too. But thank you.

Kopser: It's the human side of this. Thank you Katie for being a part of this. Kara, the magic wand is yours. What do you want to see done differently?

Kockelman: I want gas taxes way up at a minimum of another 25 cents per gallon. This is embarrassing. They're 40 cents per gallon, and they've been that way for 27 years. It's a result of Grover Norquist's pledge, I'm afraid. I can't believe we continue to allow these behemoths. It's just so embarrassing. I don't care if it's an all-electric Hummer; cars really need to be a lot smaller if you want to deal with congestion, parking, sight distances, safety and pedestrians surviving our crashes. For this, electric bikes are fantastic. Regular bikes, of course, are fantastic too, as is trading in dirty vehicles; these things are pretty easy to do. We really can do a lot better in filling those seats, and in the long term, I think Cap Metro will use its incredible tax rate to buy efficient travel for people that's much more demand-responsive and much more point to point. And, of course, focusing on low-income people rather than subsidizing people who already have a lot of income is crucial. But we'll all be able to take part in that because it will be a lot less expensive to get those kinds of rides. It'll be \$1 per mile or less.

Kopser: Thank you. And Jose, you've got the magic wand now.

Valera: This is probably a very self-serving wish, but it would be for private companies to account for the public good so that it is closer to their driving motivation than it is now. And then on the flip side, I'd like to see public entities partner with those private companies so that they develop a greater risk tolerance to try new things with these innovative mobility companies. I'd like to see them have a better understanding of what goes into making a private company successful. In that way, you'd have the private companies going a little bit further down the public good road, and the public entities being able to take advantage of all the new innovation

and technology while doing so with an understanding of what it takes to be a successful private company, so that they both move forward together, and they both grow.

Kopser: Excellent. I want to thank the three of you for being a part of this. I've enjoyed the conversation, as much as I've enjoyed any conversation talking with the three of you over the last 10 years. We have big problems ahead of us, but I always remain an optimist that working together, we can solve these things, because like I mentioned earlier, you always get what you pay for. And through good policy and good decisions, we can have better ground mobility, which will lead to better upward mobility. So Robert, thank you for asking us to be a part of this today and cover an important subject for Austin and for your followers and readers. Anything to add as we close out?

Brehm: No, I just want to again thank all the panelists and Joseph for moderating. And I want to thank everybody who's watching live right now on Facebook, and everybody who's watching on YouTube after the fact. So down below in the description, you'll be able to see information on all the panelists here and where to find more content from us at urbanitus.com and facebook.com/urbanitus. Thank you all again for joining.