

TRANSPORTATION

Why widening highways doesn't reduce traffic congestion

It has to do with a phenomenon called induced demand.



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California prides itself on its climate leadership. And the state's work on transportation – its largest source of emissions – is no exception; its electric vehicle policies **have been adopted** by other states across the country. Sacramento lawmakers have also taken ambitious steps to reduce car use altogether, developing regulations aimed at reshaping communities to encourage walking, biking, and taking public transportation.

But on-the-ground reality often doesn't live up to this vision. In particular, communities throughout the state continue to invest heavily in highway expansion projects that undermine efforts to change how people get around. Because of a phenomenon known as induced travel, these projects lead Californians to spend more time, not less, behind the wheel.

Amy Lee, a postdoctoral scholar at the [**UCLA Institute of Transportation Studies**](#), has spent years studying induced travel and the politics of highway expansions in California. Yale Climate Connections spoke with her to learn more.

This interview has been edited and condensed.

Yale Climate Connections: Can you give me a high-level overview of induced travel? How does it work?

Amy Lee: So the biggest factor that people consider when deciding how to get around is cost. That's a matter of dollars, but also time – time is a really, really important factor in how we travel. When a particular roadway is congested, traveling on it can take a long time, or an unpredictable amount of time, which discourages people from using it.

Highway widening is kind of like putting travel on sale. It attempts to reduce congestion by expanding the amount of roadway supply, reducing the time cost of travel for travelers using it. So let's say traffic kept me from going to a restaurant I really like that's 20 miles away, but after the highway is widened, I can go there more frequently. Or I might choose a doctor in the next town over as opposed to the one in my neighborhood.

We rearrange our travel patterns because of highway expansions, and the new driving that results is what we call induced travel. And research has shown that because of induced travel, congestion returns to previous levels about five to 10 years after the highway is widened.

YCC: Is this something that's been discovered recently, or have we known about it for a while?

Lee: We've measured this for a really long time. It's been observed for at least 100 years, and it's been measured with increasingly advanced statistical methods since the '70s and '80s.

YCC: So highway expansion clearly seems problematic from a transportation planning perspective. Can you say more about how it affects climate change?

Lee: There are several ways. One is that the materials involved in physically making highways and roadways – **concrete**, aggregate, asphalt – are incredibly carbon-intensive. Highway expansions emit a lot of carbon in

their production.

Then, once highways have been built, we develop our communities around them, building further out along these highway corridors, which generates auto use, which leads to more emissions. Right now, automobiles run mostly on fossil fuels, and this seems like it will be the case for a long time.

Highway expansions can also make it more difficult to get around urban neighborhoods. I live in a city with the classic set of highways that were built right through downtown to bring suburban commuters into the metropolitan core, severing neighborhoods like mine from the city center. To get downtown from where I live, you have to cross under the highway two times. Researchers have been doing really cool work about how that impedes walking and biking. As roads are expanded, not only do your shopping mall or your doctor's office go further down the highway, but it also becomes a lot harder to get around your own neighborhood without driving, even if you're just going a short distance.

YCC: I imagine there's also a massive opportunity cost to highway expansions. They're expensive, and that's money that's not spent on other things.

Lee: Absolutely. It's not for lack of funding that we don't build, say, transit and bicycle infrastructure everywhere. In California alone, about \$30 billion are slated to be spent on transportation in the next fiscal year – that is an astronomical amount of money. So we have the money; it's just how we choose to spend it. And historically, and even today, a lot of it goes to highways and highway expansion.

Transportation folks love to say, "Oh, but we can't just shift money around, because it's not one big pot from which every single project's funding comes." And that's true; there are lots of pots that have been created by legislation. If we wanted to change those policies, we could. I won't discredit how hard it would be, though.

YCC: For your Ph.D. dissertation, you interviewed dozens of people involved in highway projects in California. What did you learn about how they think about induced travel and climate change?

Lee: There's a wide array of ideas about induced travel. Some people see it as a first-order priority that needs to be addressed in policy and in projects and that our goal in the transportation world should be mitigating effects on climate. That is not a super widely held view, though.

The views are usually more along the lines of, "Yes, climate is a big problem, we need to address it, but we have really bad congestion in our community, and it's an urgent problem, so we just need to do this project now." People talk about problems with freight, about community members coming to council meetings and saying it's hard to get their kids to school – in a lot of communities in California, the main way to get around

is on the highway. So for them, while climate mitigation is a very important goal, it is not today's problem. It's tomorrow's problem, and what they need to do today is relieve congestion, and the way to do that is to expand the highway.

There's also a very technocratic debate about induced travel going on – although some would say that it is a philosophical debate being carried out under the facade of a technical debate. It has some parallels to climate denialism, with its varying levels of denial. You don't hear a ton of people just outright say, "I don't believe in induced travel," although that does happen sometimes. Others say they believe in induced travel as a general concept, but that they don't think that's what will happen in their own communities. Or they think, "My project is exceptional and will not induce travel."

YCC: And if I'm understanding correctly, California has climate-focused policies in place to discourage highway expansions that would result in induced travel, but these expansions happen frequently anyway. Is this accurate?

Lee: Yeah. You do hear some people say, essentially, "Yes, there are greenhouse gas goals in California, but there are many goals, and there has been no ranking or prioritization of these goals. So why should transportation focus on climate as opposed to economic development?" So California has a policy about it, but it does not reign supreme in many actors' minds.

If you were to take up one of my hobbies, listening to public meetings, you'd hear that pretty frequently. People say things like, "This project is not aligned with the goal of reducing carbon emissions, but this is a really important freight corridor." And most appointed and elected officials seem to be loath to do anything that could be perceived as harming freight and economic activity. As one person said to me, "Goods movement projects are like mother and apple pie – everyone loves them, except for the communities who have to live near them."

YCC: Freight and "goods movement" being essentially semi-trucks, I assume?

Lee: Yeah. There was even a carve-out for freight across all of California's transportation and climate policy. It's only about passenger transportation, despite trucks causing massive air pollution, health risks, lots of carbon.

Another issue that can't be ignored when thinking about highway expansions in California, and the U.S. more broadly, is the big political economy built up around large infrastructure projects. There are a lot of people who produce the concrete and aggregate for highways or work for the construction companies that build them. And in California, where you have a supermajority of Democrats in the legislature, the labor and trade unions are really strong players. So while there is policy to reduce emissions, you also have a lot of material interest

in construction of big transportation capital projects, and these groups have the ear of elected officials. There's a lot of money to be made from that \$30 billion in transportation funding.

YCC: To me, one of the reasons induced travel is such an interesting concept is that it basically means that you can't have a transportation system based only on cars that people will actually be happy with, because you'll never be able to build your way out of traffic jams – they're essentially baked in. Is that an accurate understanding of the issue?

Lee: Yeah, and that's what California's **climate and transportation policy** was trying to get at: reducing auto dependence by doing coordinated land use and transportation planning so that there could be more multimodal accessibility, essentially. The idea is to give people more options to use travel modes like public transportation, walking, and biking.

It's a fabulous vision, but how it plays out in practice is really where the rubber meets the road. And as many people from all over the policy arena of transportation have told me, the most salient political issue for many elected officials, especially at the local level, is traffic congestion. People at the local level hold a lot of power; the policy arena in transportation is very fragmented. And congestion is a really salient issue for local politicians. They need to show that they are trying to do something to help it, even if it doesn't fix it in the long run: They just have to get reelected.

It's rare for local politicians to reach for upstream solutions like facilitating new housing in urban areas, which can help people walk and bike to their jobs instead of getting on the highway. Housing development is a slow process, and it isn't controlled publicly in the United States. Transportation, on the other hand, is publicly funded. So local elected officials use transportation as a field to try to deliver for their constituents.

Expanding highways also just seems like an obvious thing to do. Improving housing options and mass transit are more effective ways to help people avoid congestion, but that would involve trying to make them imagine a different future. Whereas with highway expansions, you're just telling them, "I'm gonna help that highway you're on all the time." So it feels very obvious and direct.

And most elected officials are not steeped in this stuff, right? It's not like they're getting a lecture on induced travel when they take office.

But you're never going to solve congestion this way; we've shown that time and time again. Everyone loves to hold up Los Angeles as a car city, and it's also a prime example of, "Look, they built as many highways as you possibly can, and there's still congestion."