

Week 1 - Shifting Gears by Dr. Susan Handy, 16th September 2022

Annotation written by Tushar Kanade

Introduction: The MIT Mobility Initiative is pleased to announce the start of the weekly mobility forum for Fall 2022 from Friday 9/16. Join us along with Dr. Susan Handy, Professor, Department of Environmental Science and Policy at the University of California at Davis as we discuss the transportation system in the U.S. that has been shaped by a core set of ideas embedded in professional practice. These ideas – freedom, speed, mobility, vehicles, capacity, hierarchy, separation, control, and technology – have produced a system in which most people are dependent on driving, with all the negative consequences that entails. Shifting to a system that offers people choices about their daily travel requires a shift in thinking on the part of the transportation profession. That shift is well underway but not yet all the way there.

Part I. Literature (for further reading about highway expansion)

Duranton, Gilles and Matthew A. Turner, \The fundamental law of road congestion: Evidence from US cities," American Economic Review, 2011, 101 (6), 2616{52. and , \Urban Growth and Transportation," The Review of Economic Studies, 03 2012, 79 (4), 1407{1440. <https://doi.org/10.1056/NEJMsa1204142>

Downs, Anthony, \The law of peakhour expressway congestion," Traffic Quarterly, 1962, 16, 393 { 409.

Hsu, Wen-Tai and Hongliang Zhang, \The fundamental law of highway congestion revisited: Evidence from national expressways in Japan," Journal of Urban Economics, 2014, 81, 65{76.

Baum-Snow, Nathaniel, \Did Highways Cause Suburbanization?," The Quarterly Journal of Economics, May 2007, 122 (2), 775 { 805.

Part II. Recent News

Sisson, Patrick (2020, March 6). *Expanding highways and building more roads actually makes traffic worse.* Curbed.Com. <https://archive.curbed.com/2020/3/6/21166655/highway-traffic-congestion-induced-demand>

Brey, Jared (2022, September 23). *Why Denver and L.A. Are Backing Away from Highway Expansions.* Governing. <https://www.governing.com/now/how-new-climate-rule-stopped-highway-expansion-in-denver>

Winters, Joseph (2022, September 8). *Against federal guidance, states plan to expand highways.* Retrieved September 9, 2022, from <https://grist.org/transportation/against-federal-guidance-states-plan-to-expand-highways/>

Part III – Direct Questions

Prof. Jinhua Zhao, Director – MIT Mobility Initiative, asked the following questions:

Q: Can you give us some about the other ideas than capacity?

A: We don't jump but it is a balance. Hierarchy and connectivity – story of what happened to the design of our local street network – Hierarchy was the dominant idea for many decades, starting before WW2. The 1990s pushback against this was new urbanism and pushed for connectivity as opposed to just hierarchy. Same thing for separation and integration. Control vs Chaos – naked streets or roundabouts – let's control it a little bit and then make drivers figure it out themselves.

Q: AVs demonstrate the importance of 'control'. On the other side, bikes and other free agent modes demonstrate that there is chaos. The choice is between better AI and better prediction vs more chaos. How do you see this developing in the future?

A: I am a bit of a skeptic of tech. Tech has rarely worked out the way it is envisioned. Flying cars are still not here after 100 years. Other times they happen but people use those tech in different ways than we anticipated. Eg. Segways – next big thing once, were going to change everything but now they are used for tourists, and mall/security. So we need to see if we can fully anticipate how they will work out.

Q: What is the transportation profession in terms of these ideas? Which ideas are more accepted and which needs more work?

A: Public agencies, consultancies, contractors, academics – broad section of people can all add value in the future.

Q: On the debate around capacity – we must recognize that the basic mobility system is not ready yet (eg. Road, rail). What is the distinction in the industrialized country vs developing country?

A: In the USA, situations where capacity expansion makes sense for some reasons need to be implemented – the rate of success depends on focus. In other parts of the world, my message would be that planners must think about decisions carefully. They do not necessarily have to follow USA model of highway dependence. There are other kinds of capacity that provide mobility and accessibility. What are the ideas that have dominated for freight?

Q: What is the federal government's role in this? We see local and state government role – but on the Federal side, is there some excitement? Recent policies such as the Inflation Reduction Act etc. are being announced that may yet spur investment. How much of this opportunity do you see from the Federal Govt?

A: State has a lot of power – State DoTs in particular are incredibly powerful in short-to-medium term action. While Federal Government is powerful, State is responsible for money allocation eg. Texas vs California.

In terms of the delayed actions in letting go of highway building plans, we are still hanging on at the Federal level to provide robust and strong direction.

Mr. John Moavenzadeh, Executive Director – MIT Mobility Initiative, moderated the following queries from some questions raised by the audience:

Q: Increasing capacity has two impacts: Increasing VMT & Flipside of congestion being travel time. What is really important? Increasing VMT increases access, so maybe good? But customers mostly want to get faster but there is not much of an impact there.

A: When you widen the highway, decrease the price of using the highway, so economic theory suggests people will make more trips – farther destination, may change modes from bus to driving, decisions around where they live relative to work, businesses make decisions about their location, developers make decisions about where they develop their projects. Lot of these changes when you widen the highway. Research shows – some period of time, 5-10 years, 1% increase in highway capacity will produce 1% increase in VMT. Congestion levels return to the same level – do not solve for congestion. Is that a good thing? Maybe or maybe not. If it really is enabling people to do more things, then yes. But negative environmental impacts need to be considered. There was a great editorial – you may not be able to get to more things due to the secondary activities that are spurred due to this change, so the focus on accessibility rather mobility – people get to where they get to without traveling far – then congestion does not matter and therefore

Q: So much of built environment has been built for the car in the 20th century. How is this congestion tax and other short term policies to limit car/VMT perceived since there is no real alternative? Land use policies – how are they understood? Most people who voted for tram etc don't use themselves – they assume someone else will.

A: We are thinking about transit, focus on accessibility etc. Streets – doing all of that stuff and increasing density in California. But, we are hanging on to highway capacity idea. Despite our progress, we are very dependent on the car. So anytime you think about not taking care of the car, you run into these arguments. So it is a challenge – chicken and egg. Make alternatives viable before worsening driving should be considered. But if we keep expanding highways then it is self defeating. So we need to speed up providing alternatives. We need to make driving less necessary from a sustainability standpoint – from equity and economic reasons too.

Q: Jeffrey Sriver, Chicago DOT – Automobiles are inherently an exclusionary transport mode, not everyone can/should learn to drive or drive at high speed. So, providing transportation infrastructure just pertaining to cars implicitly relegates anybody who does not drive to a second-class citizenship. It is a values judgment but it is inherently wrong. How is it valuable to exclude someone who does not drive from ‘life’?

A: This is directly addressed by the first chapter on the theme of ‘Freedom’ in my book – cars allow us to do what we want to do but that is a lie – so much money, dependency, so much of population does not drive – some of these are beliefs and some ideas are values. So in hindsight, the paradox of car ownership and its relationship to freedom is indeed a paradox not as widely acknowledged.

Q: What should be the ideal tech policy towards better mobility systems?

A: To achieve a more equitable system. To do that we need to make drivers a little worse off but maybe not very much worse off. Driving has been winning for a century. Sustainable equitable system for everybody.

Q: Funds to be spent on highways expansion in LA – where are those funds being diverted to now?

A: I don't know – someone from LA can share that? LA is a good example of this confusion. Oodles of money going to improve transit system, but still more money going to the highway system.

Q: What is your research's relationship to housing policy? Land use and housing. Tell us a little more of your thinking there.

A: We cannot talk about transportation without housing. It also means to do a better job of transportation and land use. And affordable housing and where it needs to be compared to where jobs are and where transit is. Everyone says Boston and NYC but yes we need more of that. California – converting shopping centers to housing.

Part IV. Summary of Memos

Themes from Other Memos:

1. Concerns about Highway Expansion in general. Jason disagreed about the conclusion, primarily arguing that even if congestion increases, a greater number of people will be able to travel and increase net productivity/productive output.
2. Reflections on better use of transit and promotion of road-alternatives. Ao and Paul reflected that while the SHIFT calculator may be suspicious in its quantitative accuracy, it nevertheless describes the point of congestion-expansion correlation as well as can be observed. The end conclusion around humans remaining endlessly desirous of limitless travel if given an avenue is an important conclusion that planners must weight before expanding road travel options.
3. Can we extrapolate these findings to other geographies and/or categories? Manasa wonders if these geographically-restricted findings (California as per current reference) can be expanded to the rest of USA? Samuel is interested in asking if other metrics need to be, and indeed can be, measured and optimized on (including parameters such as quality of life, carbon emissions, costs, votes etc.). These extrapolations may offer more insight for future research work on highway expansion and its impacts.
4. McKenzie pointed out an interesting observation, around the false consensus of transportation policies across urban planners, engineers and the general public. The understanding that those who do not value urban safety, social cohesion, sustainability, or a sense of community, are also the ones who may not value Dr. Susan Handy's 'new values'.
5. David brought an interesting perspective around the differences between certain communities' (including MIT's) preference for a utilitarian view of mobility versus certain other communities' outlook on mobility as being hedonistic. The direction for transportation's future priorities is dependent on the specific viewpoint that gains more traction.

6. Michael mentioned an important point around the seemingly zero-sum dichotomies that transportation priorities seemingly get defined as. However, the possibility of combining seemingly opposite priorities – such as speed and safety – is an enticing question for future transportation policy.
7. Spencer mentioned that the increase in congestion caused by induced demand on account of highway expansion may not necessarily be a bad thing, in so far as the objective of transportation systems is to increase throughput of travel within a given timeframe. This is an interesting observation and reflects back on much of economic development goals for planning authorities.
8. Kentaro pointed out that it is a bit appalling that models that do not factor induced demand are still used despite sufficient advancements in demand modelling over the past five decades. While the VMT calculator is a useful tool, there should be even more rigorous quantitative methods used in demand modelling by planners.
9. Yen-Chu pointed out that equity could be a conflicting theme to resolving congestion via congestion-pricing etc., an important reflection as planners aim to bring about ‘new values’ around justice, fairness and equity alongside older metrics of development.

My Reflection

- The talk by Dr. Susan Handy was remarkable in a variety of macro-level schools of thinking through some of transportation's wide-ranging goals and challenges. Considering her own background in transportation disciplines spanning a nearly 30-year-career since her PhD in 1992, her talk reflected deep expertise from decades of research. Her primary focus on the relationship between highway width and congestion metrics simultaneously harked back to the long-term policy levers of highway expansion and the consistent lack of resultant progress in adding true capacity to transportation networks.
- It was also evident that Dr. Handy was talking about the ‘shift’ in transportation trends from the perspective of her new book titled ‘Shifting Gears’, and which was premised on a list of fundamental principles that have so far given grounding to transportation as a field. These ranged from Freedom, Speed and Mobility to Vehicles, Capacity, Hierarchy, and finally to Separation, Control and Technology.
- The ‘shift’ away from these old ways formed the crux of the talk, and the shift included a pivot to new ideas, namely: Justice, Slow (speed), Accessibility, People, Demand, Connectivity, Integration, Chaos and Agency.
- Dr. Handy mentioned that the interspersed relationship between the old and the new ideas is an inevitable clash of societies rooted in different stages of development and different eras of urban planning priorities. This back-and-forth has been perpetually retardant of the true introduction of the new ideas.
- Her central idea – that of highway expansion efforts not resulting in greater capacity but resulting in greater congestion – reflected on the fact that planners and policymakers ignored induced demand and its outsized effects on any expansion plans. In fact, the fact

that the concept of induced travel demand captured the attention of a large part of media for a consistently long period of time was testament to the impact of this discovery. This was further elaborated in the coinage of VMT (vehicle miles travelled) and the formation of an induced travel calculator. Estimates for some projects as per this calculator had documented that current forecasting models did not accurately capture the induced travel.

- As a final couple of reflections, Dr. Handy mentioned that while the official guidance of the environmental review process incorporated the VMT/induced demand calculator, there have been several pushbacks from various governmental agencies. This is primarily due to the fact that the government has to work to change its plans drastically if the induced demand is accounted into their past and present developmental plans. That would increase costs, increase time to delivery of projects, and further delay a lot of established processes, a combination of which is a huge deterrent for the government to accept the induced demand calculator.
- Most of the questions dealt with the VMT calculator and inertia of car-based infrastructure, and Dr. Handy's response covered a sweeping focus on rail/transit solutions and not road-based solutions.
- To close off, Dr. Handy mentioned that she is a bit skeptical of technology's implementation and actual use-case as it takes a long time to implement them, by which time their contextual usage changes dramatically.

Part V. Other Information

Moved Audience Q&A to Section III

Shifting Gears

Toward a new way of thinking about transportation

Susan Handy

September 2022

An interesting transportation moment!



The North Houston Highway
Improvement Project
\$7 billion to widen I-45



Project Connect from Capital Metro.
A transit plan designed to connect Austin.

A METRO | projectconnect

Austin's
Project
Connect
\$7 billion to
expand and
improve transit

Paradigm Shift in Transport Planning in the U.S.?

The Old Way:

Make it easier to drive



The New Way:

Make it easier to NOT drive



Ideas that dominate U.S. transportation policy

Freedom	Cars give us freedom
Speed	Faster is better
Mobility	Congestion needs solving
Vehicles	Streets are for cars
Capacity	We need more of it
Hierarchy	Design to match function
Separation	Modes should not mix
Control	Drivers need rules
Technology	Segways solve everything



Shifts away from the traditional ideas

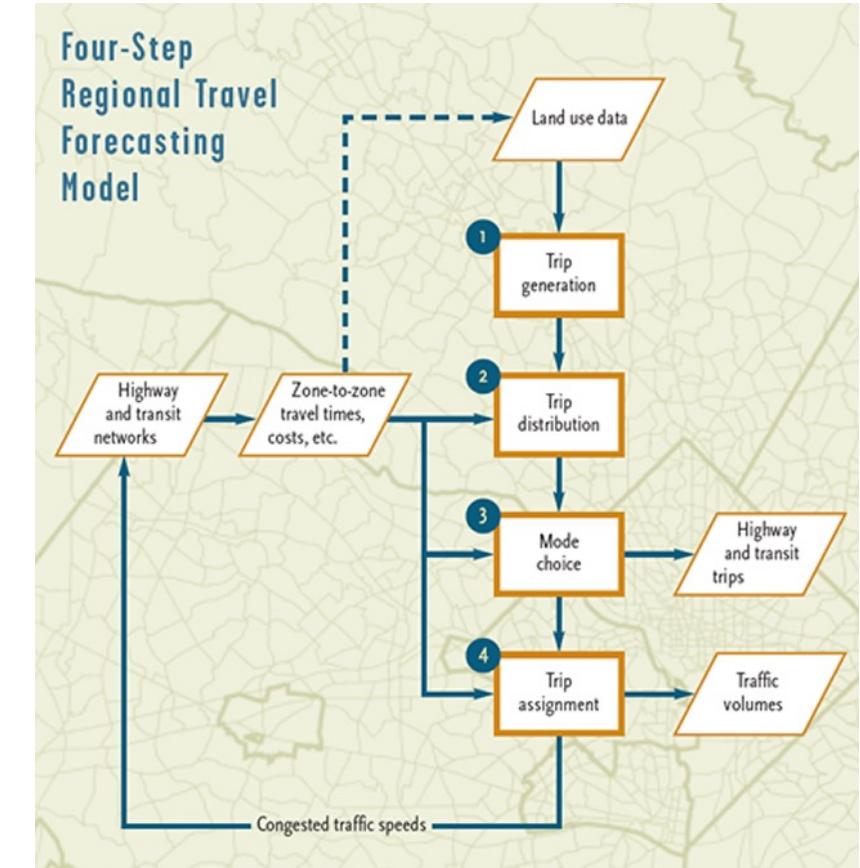
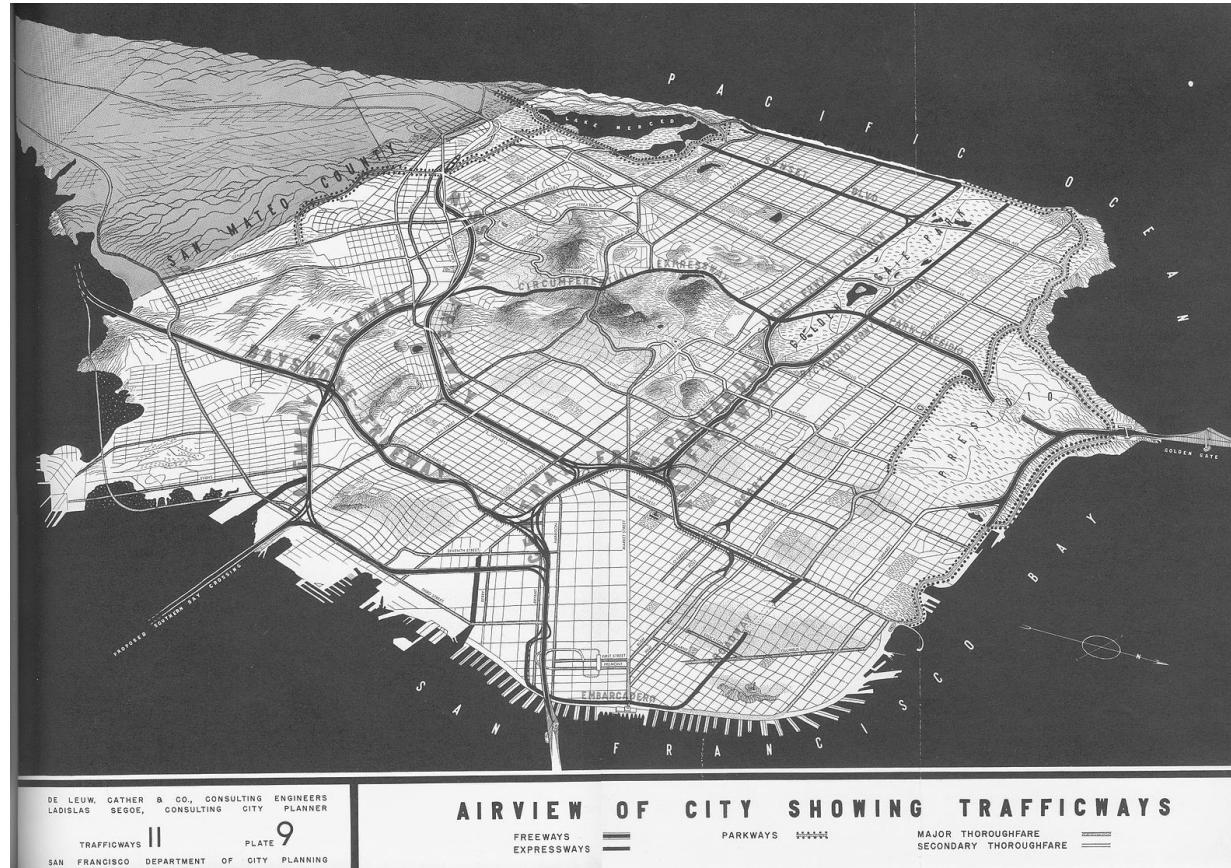
Freedom	Cars give us freedom	But do they really?	Justice
Speed	Faster is better	But slower is safer	Slow
Mobility	Congestion needs solving	But not with access	Accessibility
Vehicles	Streets are for cars	And for people	People
Capacity	We need more of it	Or maybe not	Demand
Hierarchy	Design to match function	And networks that link	Connectivity
Separation	Modes should not mix	Except when they should	Integration
Control	Drivers need rules	But not always	Chaos
Technology	Segways solve everything	Depending on us	Agency

Capacity



Mo Pac Expressway
Austin, TX

“Observe and Provide” to “Predict and Provide”



Induced Travel

“A newly opened... or widened street immediately becomes glutted by the access of cars that hitherto have reposed more in their garages than they have utilized the streets.”
– Los Angeles official, 1920s

16 *disP* 190 · 48.3 (3/2012)

“You can’t build your way out of congestion.” – Or can you?

A Century of Highway Plans and Induced Traffic

Brian Ladd

Brian Ladd is a Research Associate in history at the University at Albany, State University of New York, and the author of books on German urban history as well as *Autophobia: Love and Hate in the Automotive Age* (University of Chicago Press, 2008).

Abstract: The phenomenon of induced traffic was recognized (if rarely measured) even before the automotive age. Its existence calls into question the effectiveness of road construction as a solution to traffic congestion. Why, then, has it rarely been factored into highway investment decisions? An examination of references to induced traffic suggests that it posed an inconvenient complication to a consensus that had emerged by the 1920s. That consensus endorsed automotive mobility along with a commitment to keep building road space as long as traffic grew to fill it. Recent research challenges the factual assumptions underlying that consensus, but has not yet overturned the deeper beliefs upon which it rests.

Understanding Congestion

Transportation scholars often agree with anti-highway activists that the long-standing failure to take account of induced traffic has sometimes discredited transportation policies (e.g., Metz 2008b: 31–33; Gorham 2009; Litman 2011). However, little has been done to incorporate the phenomenon into decisions about transportation investment. Indeed, its very existence has often been denied. To understand why, we must turn our attention to the history of urban street congestion. Disputes about the existence and extent of induced traffic are a consequence of efforts to reduce congestion, in particular, the long-standing belief that the solution to congestion is the construction of more road space.

Congestion has always been mainly an urban issue. Street congestion is an old problem in major cities, one that was much lamented, but little analyzed. In other words, those who decried congested streets rarely explained why they saw congestion as a problem, as Asha Weinstein’s study of Boston in the 1890s and 1920s has shown (Weinstein 2002; Weinstein 2006). Furthermore, congestion was typically not defined with any precision. The American traffic expert Miller McClintock admitted as much in 1925:² “The term congestion as generally applied

Downloaded by [The UC Davis Libraries] at 11:44 07 December 2017

“Increasing Highway Capacity Unlikely to Relieve Traffic Congestion” Handy, 2017

POLICY BRIEF

National Center for Sustainable Transportation

Increasing Highway Capacity Unlikely to Relieve Traffic Congestion

Susan Handy
Department of Environmental Science and Policy
University of California, Davis

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Issue

Reducing traffic congestion is often proposed as a solution for improving fuel efficiency and reducing greenhouse gas (GHG) emissions. Traffic congestion has traditionally been addressed by adding additional roadway capacity, such as constructing entirely new roadways, adding additional lanes to existing roadways, or upgrading existing highways to controlled-access freeways. Numerous studies have examined the effectiveness of this approach and consistently show that adding capacity to roadways fails to alleviate congestion for long because it actually increases vehicle miles travelled (VMT).

An increase in VMT attributable to increases in roadway capacity where congestion is present is called “induced travel”. The basic economic principles of supply and demand explain this phenomenon: adding capacity decreases travel costs, so when prices go down, the quantity of driving goes up.¹ Induced travel counteracts the effectiveness of capacity expansion as a strategy for alleviating traffic congestion and offsets in part or in whole reductions in GHG emissions that would result from reduced congestion.

Key Research Findings

The quality of the evidence linking highway capacity expansion to increased VMT is high. All studies reviewed used time-series data and sophisticated econometric techniques to estimate the effect of increased capacity on congestion and VMT. All studies also controlled for other factors that might also affect VMT, including population growth, increases in income, other demographic factors, and changes in transit service.²⁰

Increased roadway capacity induces additional VMT in the short-run and even more VMT in the long-run. A capacity expansion of 10% is likely to increase VMT by 3% to 6% in the short-run and by 6% to 10% in the long-run. Increased capacity can lead to increased VMT in the short-run in several ways: if people shift from other modes to driving, if drivers make longer trips (by choosing longer routes and/or more distant destinations), or if drivers make more frequent trips.²¹ Longer-term effects may also occur if households and businesses move to more distant locations or if development patterns become more dispersed in response to the capacity increase. In addition, research finds the full impact of capacity expansion on VMT materializes within five years²² and another concludes that the full effect takes as long as 10 years.²³

Capacity expansion leads to a net increase in VMT, not simply a shifting of VMT from one road to another. Some argue that increased capacity does not generate new VMT but rather that drivers simply shift from slower and more congested roads to the new or expanded roadway. One study does not support this argument. One study found “no conclusive evidence that increases in state highway lane-miles have affected traffic on other roads” while a more recent study concluded that “increasing lane kilometers for one type of road diverts little traffic from other types of roads”.

Increases in GHG emissions attributable to capacity expansion are modest. One study predicted that the growth in VMT attributable to increased lane miles would produce an additional 43 million metric tons of CO₂ emissions in 2012 nationwide.²⁰

National Center for Sustainable Transportation • 1

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“A capacity expansion of 10% is likely to increase vehicle-miles-travelled by 3% to 6% in the short-run and 6% to 10% in the long-run.”



Highway 37

Gerald Meral [jerrymeral]
Sent: Thursday, May 11, 2017 2:18
To: Handy, Susan

Dear Dr. Handy

I read with interest your recent op-ed in the LA Times. I am working on a story about how highway expansions are often working to increase traffic and displace people from their homes, using the revenue from tolls.

You make the excellent point that if there were no toll, a dollar price tag would be put on where the benefit goes. Whether widening a highway is a good idea or not depends on whether widenings lead to more traffic and more pollution.

If there were no toll, a dollar price tag would be put on where the benefit goes. Whether widenings lead to more traffic and more pollution.

Many thanks for your time and assistance.

Jerry Meral

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 Jerry Meral, PhD
 Director
 California Water
 Natural Heritage
 Council

jerrymeral@gmail.com
 415-717-8412

From: Dillon, Liam
To: Susan Handy
Subject: Induced vehicle travel questions
Date: Monday, August 2, 2021 2:24:07 PM

Re:

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Hi Professor Handy-

My name is Liam Dillon and I'm a reporter with the LA Times. I'm writing because myself and a colleague are working on a long-term story about residential displacements for more recent highway projects across the country and trying to understand the extent to which such displacements are continuing to occur disproportionately in Black and Latino neighborhoods. One broader aspect we'd like to address is the issue of induced vehicle travel for highway expansions and I'm hoping we could chat about that. Might there be a good time this week?

In preparation for the call, I'm wondering if you have authoritative figures on the how traffic congestion didn't improve/worsened on two major recent projects that people may be familiar with across the country: the I-405 "Carmageddon" expansion in LA and the I-10 Katy freeway expansion in Houston. I saw that your 2020 paper references the I-405 project so perhaps you could walk me through those findings. Thanks again for your time and assistance and I'm looking forward to speaking with you!

Sincerely,

-Liam

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Liam Dillon
 Staff Writer, Housing Affordability
 Los Angeles Times

Guide in Jackson Hole, WY. I cover often the idea of induced demand, conversations in our county.

at learning more about how these more roads work and when they

'd love to connect and talk more

Induced Travel Calculator

Volker, Lee, and Handy, 2018-2021 now with support from Caltrans

The screenshot shows a Microsoft Edge browser window with the URL <https://blinktag.com/induced-travel-calculator/> in the address bar. The page title is "Induced Travel Calculator". The main content area has a dark blue header with "Induced Travel Calculator" and "Calculator About". Below this is a white section with two sections: "Overview" and "How to Use". The "Overview" section contains text about the calculator's purpose and scope. The "How to Use" section provides instructions for entering project length and geography. A blue button labeled "More about this calculator" is visible. Below this is a "Calculator" section with a sub-section titled "1. Select facility type" containing a radio button for "Interstate highway (class 1 facility)". The taskbar at the bottom shows several open files and the system clock at 12:55 PM on 12/8/2019.

“This calculator allows users to estimate the VMT induced annually as a result of adding general-purpose or high-occupancy-vehicle (HOV) lane miles to roadways managed by the California Department of Transportation (Caltrans) in one of California’s urbanized counties (counties within a metropolitan statistical area (MSA)). The calculator applies only to Caltrans-managed facilities with Federal Highway Administration (FHWA) functional classifications of 1, 2 or 3. That corresponds to interstate highways (class 1), other freeways and expressways (class 2), and other principal arterials (class 3).”

<https://blinktag.com/induced-travel-calculator>

Underestimation of induced VMT in the environmental review process

Volker, J., A. Lee, and S. Handy. 2020. Induced Vehicle Travel in the Environmental Review Process. *Transportation Research Record*, 2674: 468-479.

Project	Additional Lane Miles	Calculator estimate of Additional VMT/Year	EIR estimate of Additional VMT/Year
Interstate 405 HOV Widening Sepulveda Pass, Los Angeles County	10.2	87.8 million	n/a
US Highway 101 HOV Widening Marin-Sonoma Narrows	32.2	129.1 million	11.5 million (peak hour)
State Route 1 HOV Lanes Santa Cruz County	17.8	57.4 million	7.9 million
State Route 210 Mixed-Flow Lane San Bernardino County	16.4	34.3 million	25.1 million
State Route 99 Six-Lane Project South Stockton, San Joaquin County	7.2	14.4 million	n/a



Transportation Analysis Framework First Edition

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Evaluating Transportation Impacts of
State Highway System Projects

California Department of Transportation
Sacramento, California
September 2020

“The NCST Calculator incorporates elasticities of VMT with respect to capacity increases, drawing on the best available peer-reviewed papers on the topic... **The use of these elasticities in the estimation of induced travel is reasonable.** However, analysts need to be aware that they are long-term average elasticities for the particular highway types and contexts studied. Some project-to-project variation is to be expected. Recognizing this, the guidance in Section 4 advises using the Calculator’s results to benchmark results from other methods, and it also provides analysts with an opportunity to document **why particular projects can be reasonably expected to result in changes that vary more substantially from the Calculator’s results.**”



Surface Transportation Innovations

Robert W. Poole, Jr., editor
January 2022

"...some groups are likely to use this faulty tool to try to prevent state transportation departments from building any new urban highway capacity. Project experts need to explain the flaws and limitations of this calculator so that transportation agencies are not hoodwinked into using this flawed tool."

Beware the “Induced Demand” Calculator

By Baruch Feigenbaum

Recently, the Rocky Mountain Institute (RMI) created the State Highway Induced Frequency of Travel (SHIFT) calculator that purports to measure long-run induced vehicle miles traveled and emissions impacts from capacity expansions in urban areas. The calculator uses lane miles and vehicle miles traveled (VMT) data from FHWA. It was modeled on a calculator the group created for Colorado.

Unfortunately, the calculator makes questionable assumptions, has major limitations and calculates induced demand incorrectly. Its real goal seems to be to prevent the construction of any new urban roadway miles.

The calculator treats all new travel as bad. Yet, increasing roadway capacity in urban areas has at least three benefits. First, new road capacity creates economic benefits. It allows employees to reach a larger number of employers in a given time, creating a better match between employees and employers. It promotes economic activity by increasing the number of consumers that can reach businesses in 15 minutes.

Second, new roadway capacity has safety benefits. Many suburban roadways are widened from narrow, curvy two-lane roads to four-lane divided highways, partly for better mobility but also for increased safety.

Third, new roadway capacity can reduce greenhouse gas emissions if it allows free-flowing traffic to replace stop-and-go traffic (free-flowing traffic generates less greenhouse gas emissions).

Los Angeles Times

710 Freeway expansion dropped after decades of planning, marking a milestone for L.A.



“A decades-old plan to widen one of America’s busiest cargo corridors was scrapped Thursday, as transportation officials acknowledged they must find a new way to lessen traffic without adding lanes.”

Why Drivers Could Soon Pay \$23 to Reach Manhattan

New York City wants to reduce emissions, tackle congestion and increase transit investment. Experts say the plan is critical to the region's long-term health.

 Give this article  



“It could soon be more expensive to drive through Manhattan’s most densely packed streets, as a tolling program that aims to reduce traffic in New York City crossed a major hurdle this month.”

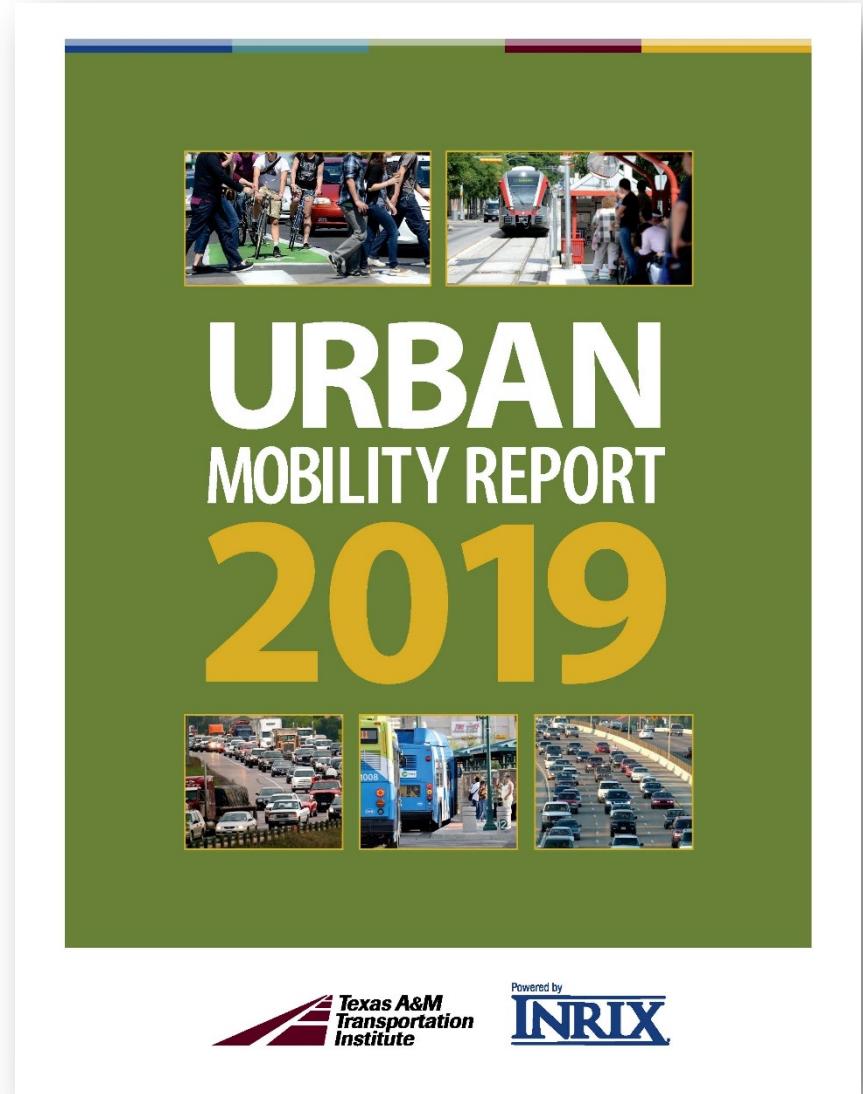
Shifts away from the traditional ideas

Freedom	Cars give us freedom	But do they really?	Justice
Speed	Faster is better	But slower is safer	Slow
Mobility	Congestion needs solving	But not with access	Accessibility
Vehicles	Streets are for cars	And for people	People
Capacity	We need more of it	Or maybe not	Demand
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Separation	Modes should not mix	Except when they should	Integration
Control	Drivers need rules	But not always	Chaos
Technology	Segways solve everything	Depending on us	Agency

Throw everything at it

“Along with illustrating the problem, researchers also stress the same straightforward solutions they’ve long advocated: **more of everything** — roads, transit, squeezing as much efficiency out of the existing system as possible, reducing demand through telework, better balancing demand and roadway capacity by adjusting work hours, and smarter land use.”

— News release for the TTI Urban Mobility Report



An example

Marin and Sonoma's SMART Train



Highway 101 Marin-Sonoma Narrows





Wouldn't it be nice to be free
from my car?

Do I need to get
there so fast?

Aren't there
better ways to use
our street space?

Flying cars? Really?



Shifting Gears coming from MIT Press in Fall 2023!