

Driving Down Emissions

Transportation, land use,
and climate change



Smart Growth America
Improving lives by improving communities



**Transportation
for America**

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McKNIGHT FOUNDATION



Transportation for America, a program of Smart Growth America, is an advocacy organization made up of local, regional, and state leaders who envision a transportation system that safely, affordably, and conveniently connects people of all means and ability to jobs, services, and opportunity through multiple modes of travel.



Smart Growth America envisions a country where no matter where you live, or who you are, you can enjoy living in a place that is healthy, prosperous, and resilient. We empower communities through technical assistance, advocacy, and thought leadership to realize our vision of livable places, healthy people, and shared prosperity.

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Foreword

The connection between transportation and climate is becoming better known, but there has always been a sense by policymakers and environmentalists that the amount people drive is outside of anyone's control. As if the increase in driving is inexorable—a force of nature or, at least, economics, that is impossible to contain. Rarely do we look at the things governments are doing, at all levels, to make driving the easier choice, if not the only choice. As a result, we have this interesting and strange situation where public officials are chastising auto makers for not doing enough to improve vehicle efficiency even as they actively promote programs and investments that force people to drive more and farther every year. This is a hypocritical position that harms those officials' abilities to lead us in a positive direction and increases emissions year-over-year.

These problems with the built environment (development patterns and the transportation system) requiring more driving also lead to cost burdens and limited economic opportunities that usually fall hardest on communities of color. The current laser focus on electrifying vehicles could lead to a future where we reduce emissions, while ignoring all other tools for near- or medium- term emissions reductions and leaving all of the generational inequities in place.

Recently, I have seen increased interest in considering changes to the built environment to allow people to drive less, which is exciting. When people ask for resources explaining the connection between the built environment and climate, I have often pointed people to *Growing Cooler* and *Moving Cooler*, two excellent reports that dive deeply into the topic.^{1,2} However, they are over 10 years old, long, sometimes quite technical. They don't quickly connect policymakers with specific programmatic challenges or policy solutions. So after hearing these concerns many times from people that really want to do something about these challenges, we decided to put a resource together ourselves. With the help of the McKnight Foundation, Move Minnesota, and my incredible colleagues at Smart Growth America and Transportation for America (particularly Emily Mangan, Rayla Bellis, and Stephen Lee Davis), we present you with this report.

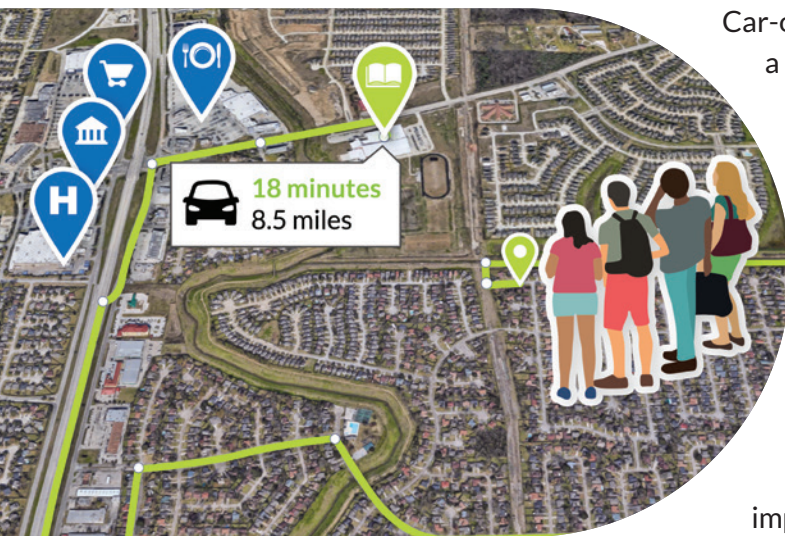
We look forward to working with advocates and policymakers to finally tackle the problems in our transportation and development programs that have forced people to drive more, spend more, and emit more year after year. Communities are constantly changing. It is time that we harness that change to make our transportation system more efficient, affordable, and accessible for everyone.

—Beth Osborne, Director, Transportation for America

- 1 Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., & Chen, D. (2007, October). *Growing Cooler: The Evidence on Urban Development and Climate Change*. https://www.nrdc.org/sites/default/files/cit_07092401a.pdf
- 2 Cambridge Systematics, Inc. (2009). *Moving Cooler: An analysis of transportation strategies for reducing greenhouse gas emissions*. Urban Land Institute. <http://www.reconnectingamerica.org/assets/Uploads/2009movingcoolerexecsumandappend.pdf>

Executive summary

Transportation accounts for the largest share of carbon emissions in the U.S., and those emissions are rising—even as emissions have decreased in other sectors. As policies and funding at all levels of government encourage more and wider highways and sprawling development, people live farther away from the things they need and the places they go, causing most people to drive more every year and generate more emissions to accomplish daily needs. Emissions have risen despite increases in fuel economy standards and the beginning of electric vehicle deployment.



Car-oriented land use and community design also play a significant role in the nation's transportation emissions. For 70 years, we have built our communities in ways that make it difficult and unsafe to access daily needs outside a vehicle. In these communities, locating jobs and services far from homes requires more driving; makes transit and sharing rides inefficient; and causes traffic and delay to grow even in communities with stagnant or declining populations.

Building communities this way also has other negative impacts, such as increased pedestrian fatalities and poor health outcomes caused by dangerous roads. These negative outcomes don't accrue evenly, either: lower-income and communities of color are more likely to suffer from asthma or other respiratory disorders because of where roads are built. Market demand for compact, connected, walkable, mixed-use neighborhoods continues to outpace supply by a very large amount, making those neighborhoods unaffordable to even the middle class, much less those that can't afford a car.

Simply put, we'll never achieve ambitious climate targets or create more livable and equitable communities if we don't find ways to allow people to get around outside of a car.

But the good news is that, when paired with other strategies, we can make a significant dent in the growth of emissions simply by satisfying the pent-up market demand for affordable homes in the kinds of walkable, connected communities where residents drive far less each day than their counterparts in more sprawling locations. And providing these more affordable homes would help make the transition to a lower carbon economy in a way that doesn't place a heavier burden on those with less means.

It's critical that we find ways to reduce emissions from transportation and land use precisely because there are other areas—food production, industry, etc.—where making significant reductions is going to be incredibly difficult or much more costly. Electrifying our vehicle fleet is an essential part of reducing carbon emissions. However, turning over the fleet will take decades, if not longer. We need to make significant reductions well before 2050, and can absolutely do so if we use all of the tools available to us.

Solutions that allow people to get around outside of the car can reduce emissions in the near term, and they come with co-benefits, like saving money on transportation, more physical activity, and access to necessities for people who don't have a car. By contrast, solutions that revolve around everyone in America buying a new car fail to account for the millions who don't drive or cannot afford an expensive, brand new electric vehicle. Put another way, if today you can't safely cross your streets, if you can't easily reach what you need quickly and easily, if you depend on transit service that's spotty or inconvenient, if you can't afford to buy a vehicle, if you are already paying more than 50 percent of your income on housing plus transportation, then merely swapping your gas cars for electric vehicles won't improve your life.

Fairness demands that we find a way to transition to a lower-carbon transportation network without leaning on a solution that just leaves more people behind. This report shows how—combined with electrification—we can reach our targets while building a more just and equitable society.

We can do this by:

- Getting onerous government regulations out of the way of providing more homes where people naturally drive less;
- Making safety the top priority for street design to encourage more short trips;
- Instituting GHG reduction and less driving as goals of the transportation system;
- Investing heavily in other options for getting around; and
- Prioritizing access to destinations.



Transportation emissions are on the rise

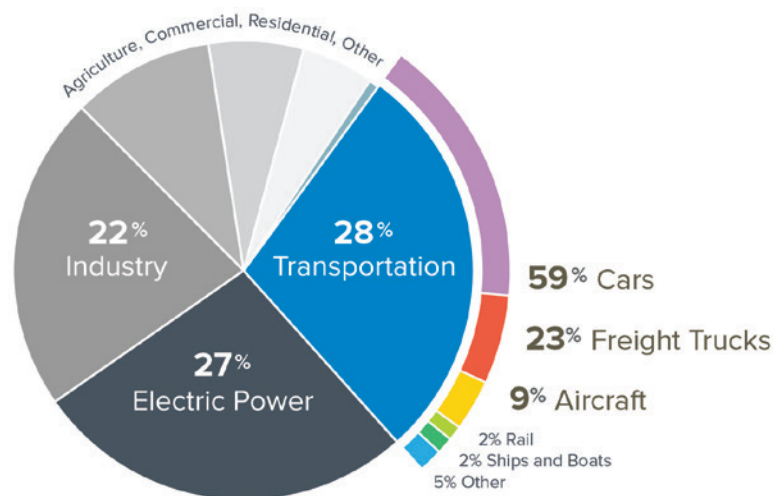
After decades of financial incentives and policies that reoriented almost all community growth around high speed car travel over ever greater distances, greenhouse gas emissions from transportation have predictably skyrocketed. Transportation is now the leading contributor to climate change in the United States.

The vast majority of those emissions—83 percent—come from the cars and trucks that people drive to the grocery store or school or that deliver our Amazon orders. All that driving is why transportation emissions keep increasing, despite gains in fuel efficiency standards and the adoption of electric vehicles.

Emissions from transportation are primarily the result of three things: the carbon content of fuel, vehicle efficiency, and the amount people drive. Between 1990-2017, we saw an 18 percent increase in the overall fuel efficiency of the nation's vehicle fleet brought on by the implementation of CAFE standards.³ But even as the fleet overall got far more efficient, emissions still rose 22 percent over the same time period.⁴ Why? A 50 percent increase in driving overwhelmed all of those improvements in fuel efficiency.⁵ This increase in driving was not just due to population growth—vehicle miles traveled (VMT) per capita grew by 15 percent over that period.

Despite the history and the basic facts at hand, most of the recent conversations in environmental circles, in the media, and amongst even the most well-intentioned policy makers have focused solely on converting the vehicle fleet to electricity, leading us to run the very real risk of repeating the same mistakes that got

2018 U.S. GHG EMISSIONS BY SECTOR & SOURCE⁶



3 Bureau of Transportation Statistics. Average Fuel Efficiency of U.S. Light Duty Vehicles.

Retrieved from: <https://www.bts.gov/content/average-fuel-efficiency-us-light-duty-vehicles>

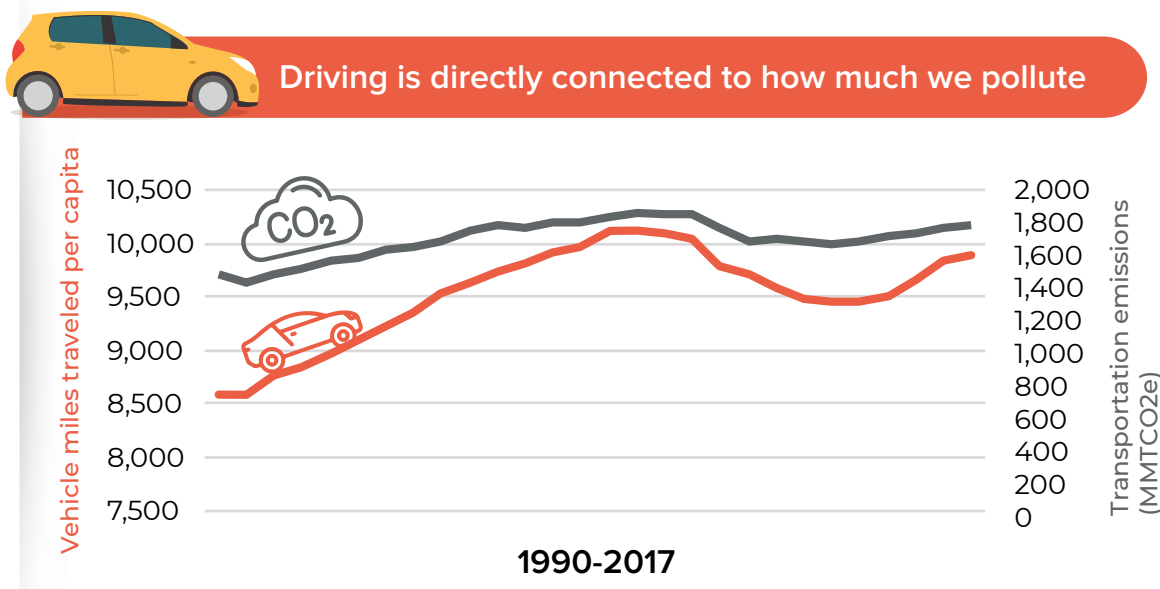
4 U.S. Environmental Protection Agency. Greenhouse Gas Inventory Data Explorer. Retrieved from:

<https://cfpub.epa.gov/ghgdata/inventoryexplorer/#transportation/allgas/source/all>

5 Calculated using the Federal Highway Administration data. All years available from: Federal Highway Administration. Table VM-2: Vehicle-miles of travel, by functional system. Highway Statistics. Retrieved from: <https://www.fhwa.dot.gov/policyinformation/statistics.cfm>

6 EPA Fast Facts On Transportation Greenhouse Gas Emissions. (2018.) <https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>

us here. What if, instead of only trying to make our existing cars cleaner, we decided to think a little bigger, asking, “what if we had fewer vehicles per capita, and were able to drive them less each year?”



Vehicle miles traveled per capita⁷ and transportation emissions, 1990-2017⁸

The limitations of electric vehicles (EVs)

Cleaner and electric vehicles are essential to reducing emissions, but only addressing vehicles is insufficient and foolish. For one, it takes a long time for the vehicle fleet to turn over. Even if Americans purchased nothing but electric vehicles starting today, gas-powered cars would still be on the road for at least another 15 years. The International Energy Agency projects that with the right policies in place to support electric vehicle adoption, they will still only make up 30 percent of the market share by 2030, and under current policies, they will account for just 7 percent of the global vehicle fleet by 2030.⁹ The transition to a fully electric fleet will likely take even longer due to the economic slowdown as a result of COVID-19, as higher EV prices compared to gas-powered cars could make consumers reluctant to purchase an EV.¹⁰ Plummeting oil prices are also easing some of the consumer impetus for EVs among those that would choose to buy a car during the downturn.

Despite an aggressive effort to promote electric vehicle adoption, and higher fuel efficiency standards, multiple states have determined that they will not be able to reach ambitious climate targets through vehicle electrification alone. Modeling consistently shows that rapid emissions

⁷ Eno Center for Transportation. (2019, June 7). U.S. VMT per capita by state, 1981-2017.

<https://www.enotrans.org/eno-resources/u-s-vmt-per-capita-by-state-1981-2017/>

⁸ U.S. Environmental Protection Agency. Greenhouse Gas Inventory Data Explorer. Retrieved from:

<https://cfpub.epa.gov/ghgdata/inventoryexplorer/#transportation/allgas/source/all>

⁹ IEA (2020), Global EV Outlook 2020, IEA, Paris <https://www.iea.org/reports/global-ev-outlook-2020>

¹⁰ Adams, E. (2020, March 19). COVID-19 is bad for the auto industry—and even worse for EVs. Wired.

www.wired.com/story/covid-19-bad-for-auto-industry-worse-for-evs/

THE HIDDEN ENVIRONMENTAL IMPACTS OF DRIVING



reductions depend on taking fewer, shorter car trips and shifting trips from cars to transit, walking, and biking.

California has found that even if the state meets its ambitious target of 15 percent zero emissions vehicles on the road by 2030—ten times the current adoption rate—every person in the state would still need to drive less. They would need to reduce their daily VMT by 20 percent below present per capita VMT—4.5 fewer miles per day by each person—to reach the state’s 2030 climate target.^{11,12} Over in Hawaii, a recent report from Smart Growth America and Rhodium Group found that, in order to meet that state’s ambitious climate goal of 100 percent clean energy by 2045, Hawaii will need to reduce VMT by improving transit and encouraging walking and biking.¹³ Minnesota has also found that the state will need to reduce driving to reach its climate targets, even as they work to increase the adoption of EVs.¹⁴ Within Minnesota, even assuming a 65 percent on-road EV adoption rate in 2050, Minneapolis found that VMT will need to be reduced 38 percent to meet an 80 percent carbon reduction goal.¹⁵

Further, emissions and the impact of transportation on climate and communities go beyond the tailpipe. Batteries for EVs are also currently fairly carbon-intensive to manufacture, as are the vehicles themselves, negating some of their short-term benefits in reducing emissions.¹⁶ Building

11 Next 10. (2019, October). 2019 California Green Innovation Index, 11th Edition. Retrieved from:

www.next10.org/sites/default/files/2019-10/2019-california-green-innovation-index-final.pdf

12 Small, A. (2019, Sept. 23). Switching to EVs en masse could help bring down planet-killing carbon emissions. But Americans also need to drive less, right now. Bloomberg CityLab.

<https://www.bloomberg.com/news/articles/2019-09-23/electric-vehicles-alone-won-t-stop-climate-change>

13 Smart Growth America. (2018, April). Transcending Oil: Hawaii’s path to a clean energy economy. Prepared for Elemental Excelerator. Retrieved from: <https://smartgrowthamerica.org/resources/transcending-oil-hawaiis-path-clean-energy-economy/>

14 Kaul, G. (2019, Jan. 25). Minnesota has done a pretty good job reducing greenhouse gas emissions from electricity generation. Reducing emissions from transportation could be harder. MinnPost. www.minnpost.com/environment/2019/01/minnesota-has-done-a-pretty-good-job-reducing-greenhouse-gas-emissions-from-electricity-generation-reducing-emissions-from-transportation-could-be-harder/

15 City of Minneapolis. (2018, December). Minneapolis 2040 Plan. <https://minneapolis2040.com/>

16 Eckart, J. A. (2017, Nov. 28). Batteries can be part of the fight against climate change - if we do these five things. World Economic Forum. www.weforum.org/agenda/2017/11/battery-batteries-electric-cars-carbon-sustainable-power-energy/

and maintaining roadways cause emissions. And the very existence of large amounts of pavement increases the impacts of rising temperatures due to the heat island effect, which is more likely to impact communities of color.¹⁷

We will need ever more pavement for ever more cars, whether they are gas or electric.

Electrifying the fleet will indeed bring numerous benefits, but simple changes to allow more people to live in places where they can drive less and take shorter trips will be vital for making up the difference. With nearly half of all car trips just three miles or less, these VMT reductions could easily be met by switching more trips to other modes of travel such as walking, biking, or transit.¹⁸

Prior to the public health and economic crisis caused by COVID-19, national VMT was projected to continue to rise at a rate of roughly one percent per year for the next thirty years. While VMT dropped briefly during spring and summer of 2020, we are already seeing Americans begin to drive more, and these trends are likely to continue just as VMT increased after the 2009 recession. The projected growth in driving will continue to overwhelm the emissions-savings from more fuel efficient and electric vehicles.

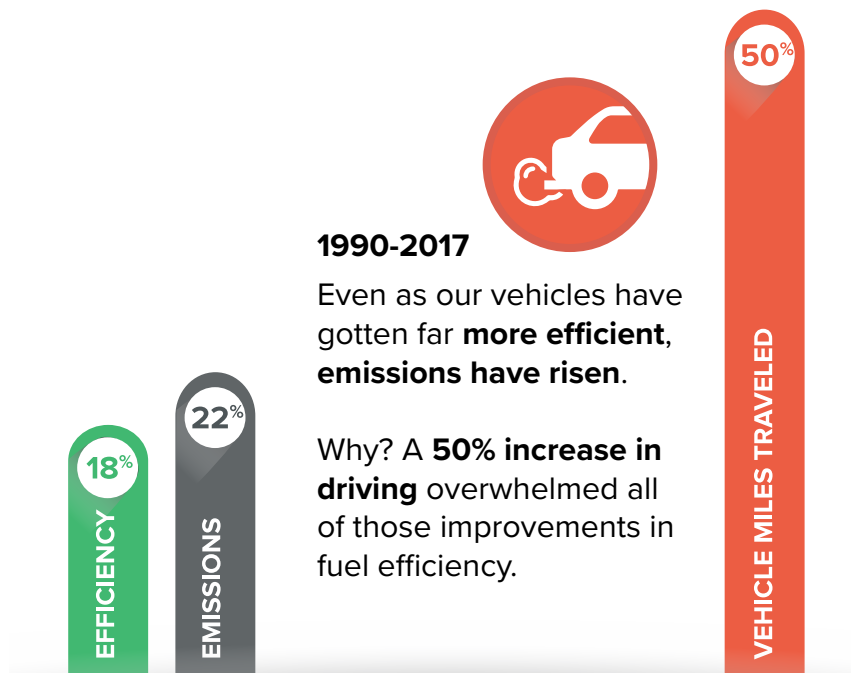
Further, an analysis by the International Energy Agency based on the *World Energy Outlook 2019* found that consumers' appetite for SUVs will offset emissions savings from electric vehicles. SUVs consume about a quarter more energy than medium-sized cars, and they make up around 40 percent of annual car sales as of 2019, compared with less than 20 percent a decade ago. IEA writes, "If consumers' appetite for SUVs continues to grow at a similar pace seen in the last decade, SUVs would add nearly 2 million barrels a day in global oil demand by 2040, offsetting the savings from nearly 150 million electric cars."¹⁹ We need to find ways to reduce driving rates altogether, because trends in the fleet makeup are sending us in the wrong direction.

17 Jesdale, B., Morello-Frosch, R., & Cushing, L. (2013, July 1). *The Racial/Ethnic Distribution of Heat Risk-Related Land Cover in Relation to Residential Segregation*. *Environmental Health Perspectives*, 121(7). <https://doi.org/10.1289/ehp.1205919>

18 National Household Travel Survey. Vehicle trips. <https://nhts.ornl.gov/vehicle-trips>.

19 Cozzi, L. and Petropoulos, A. (2019, Oct. 15). Growing preference for SUVs challenges emissions reductions in passenger car market. International Energy Agency. <https://www.iea.org/newsroom/news/2019/october/growing-preference-for-suvs-challenges-emissions-reductions-in-passenger-car-mark.html>.

Finally, it makes no sense to leave other strategies for lowering emissions from the transportation sector on the table while waiting decades for the full benefits of electrifying transportation, especially when replacing a gas-powered car for an electric vehicle would still continue the gross inequities and negative public health impacts of the current transportation system. Allowing people to drive less also reduces household transportation costs, making economic mobility more available to people who might not have money for or want to spend their money on a car—whether electric- or gas-powered.



More highways, more driving, more emissions

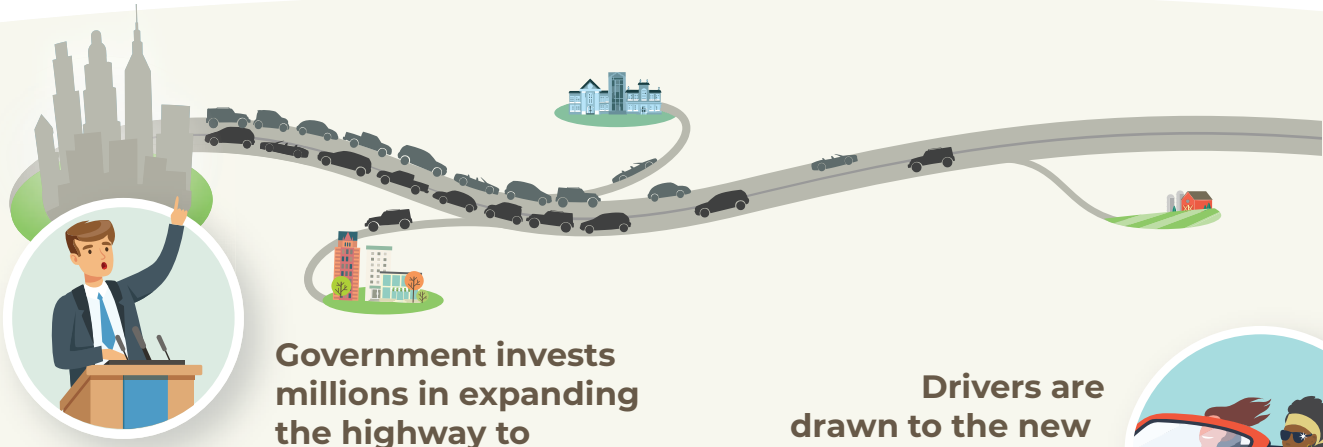
Improvements in vehicle efficiency and vehicle electrification are being undermined by the fact that federal policy incentivizes car trips over all other trips, and the way we design and spend money on our roadways. New highways, roads, and lanes induce more driving (VMT), which leads to more emissions and ultimately more congestion, a feedback loop referred to as “induced demand.”²⁰ The evidence for induced demand is overwhelming.²¹ For example, one recent study suggests driving increases in exact proportion with increases in lane-mileage—a 10 percent increase in lane miles can lead to a 10 percent increase in driving.²²

20 Schneider, B. (2018, Sept. 6). When traffic-clogged highways are expanded, new drivers quickly materialize to fill them. What gives? Here's how “induced demand” works. Bloomberg CityLab. www.citylab.com/transportation/2018/09/citylab-university-induced-demand/569455/

21 Litman, T. (2020, July). Generated Traffic and Induced Travel Implications for Transport Planning. Victoria Transport Policy Institute. <https://www.vtpi.org/gentraf.pdf>

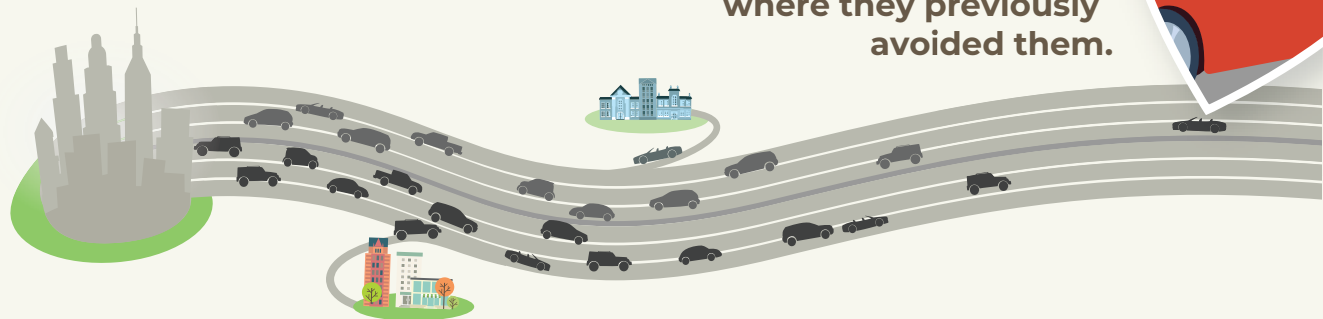
Induced demand

How highway expansion actually creates more traffic

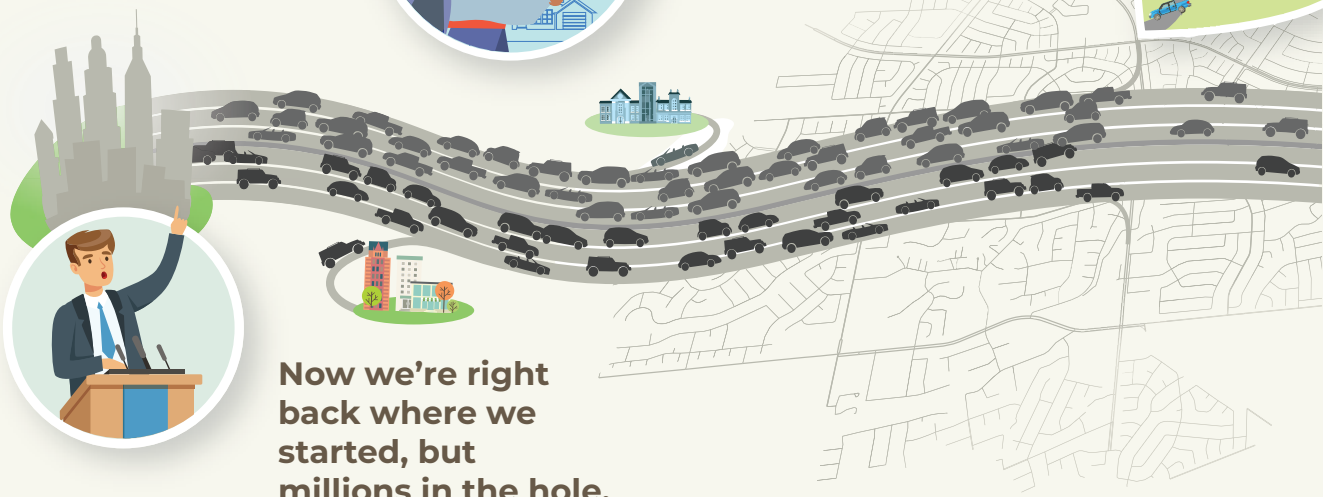


Government invests millions in expanding the highway to “alleviate” congestion.

Drivers are drawn to the new open road, even adding new trips where they previously avoided them.



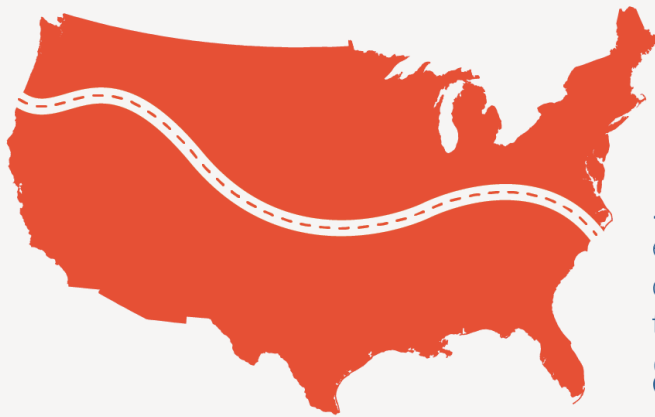
Development follows, prompting more (and longer) car trips.



Now we’re right back where we started, but millions in the hole.

In an effort to curb congestion in urban regions, we have spent decades and hundreds of billions of dollars widening and building new highways. That rate of expansion significantly outstripped the 32 percent growth in population in the largest 100 urbanized areas over the same time period. The full public road network across all jurisdictions grew by 223,494 lane-miles nationally between 2009-2017, enough to build a new road back and forth across the U.S. 83 times. State transportation departments have added 5,325 lane-miles just since 2015.²³ This growth of the road network has led to a predictable increase in driving. Profligate spending on highways also undermines the relatively limited investments in low-carbon transportation options like biking, walking, and transit.

Between 2009-2017, the full public road network has grown by
223,494 lane-miles...



...that's
enough to
drive across
the U.S.
83 times²¹

We're emitting more because we're driving more

Americans now drive more than just a few decades ago. From 1980-2017, per capita VMT increased by 46 percent.²⁴ In absolute terms, VMT increased by 57 percent in the top 100 urbanized areas between 1993-2017, significantly faster than the 32 percent population growth in those areas. This means we are driving more per person. In 1993, on average, each person accounted for 21 miles of driving per day in those 100 urbanized areas. By 2017, that number had jumped to 25 miles per day.²⁵

Every year, Americans need to drive farther just to get to work, school, church, and the grocery store. Why and how did this happen?

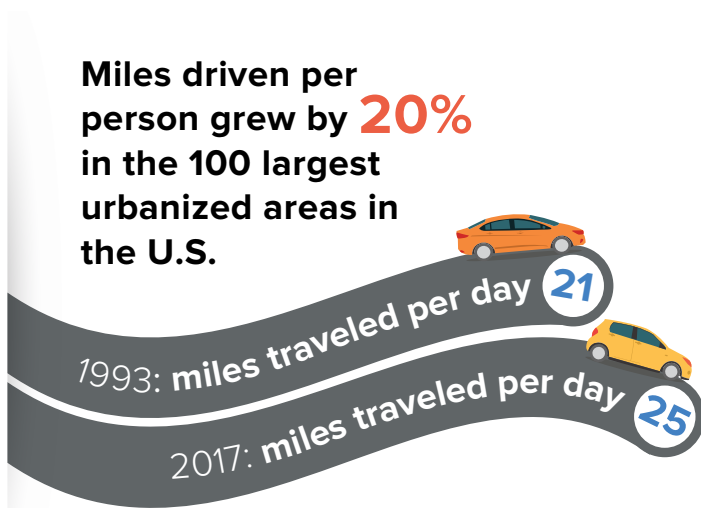
21 Hymel, K. (2019, April). If you build it, they will drive: Measuring induced demand for vehicle travel in urban areas. *Transport Policy*, Volume 76, 57-66. <https://doi.org/10.1016/j.tranpol.2018.12.006>

23 Transportation for America. (2019, May). Repair Priorities 2019. <http://t4america.org/maps-tools/repair-priorities/>

24 Eno Center for Transportation. (2019, June 7). U.S. VMT per capita by state, 1981-2017. <https://www.enotrans.org/eno-re-sources/u-s-vmt-per-capita-by-state-1981-2017/>

25 Transportation for America. (2020, March). The Congestion Con: How more lanes and more money equals more traffic. <http://t4america.org/wp-content/uploads/2020/03/Congestion-Report-2020-FINAL.pdf>

Sprawling, car-oriented development is leading to more driving



Transportation for America, The Congestion Con, 2020.

Where we live and how we get where we need to go is no accident. It is the result of a series of decisions made at the federal, state, and local levels of government ranging from zoning laws, to subsidies for gasoline, to the low level of federal support for public transit. But much of the increase in driving comes down to how we have designed and built our streets, roads, and highways, and the billions we pour into this system each year with little accountability for spending it well.

Americans drive so much because the physical layout of our communities has given us little alternative. For decades, fueled in part by federal transportation and land-use policies, we have built homes ever farther from workplaces, located schools far from the neighborhoods they serve, and isolated other destinations—such as shopping—from work and home. From World War II until very recently, nearly all new development has been planned and built on the assumption that people will use cars every time they travel. And so car trips have increased in number and distance while walking and public transit use have remained relatively flat over the past few decades. It is hard to see how quality of life or freedom is enhanced by forcing people to drive more to get to daily needs by putting those needs farther and farther away from them.

Millions of Americans suffer long commutes in traffic, spending a large portion of household income to own and maintain multiple cars, because they have been left with no other options. As a result, people are spending a lot to pollute more. Yet the deep irony is that there is huge unsated demand for communities where it's safe and convenient to take transit, walk, and bike to get around, but

What is sprawl? Any environment with a:

- population widely dispersed in low-density residential development;
- rigid, government-mandated separation of homes, shops, and workplaces;
- lack of activity centers where jobs, retail, and services are co-located allowing several trips to be combined into one; and
- disconnected network of small roads that empty onto high-speed highway-like roads with long blocks and little-to-no safe space for those outside of a vehicle.



Clustered development allows drivers to take fewer, shorter trips

Every day Jane drops her granddaughter off at daycare, drives to work, and picks up groceries on the way home. Walking, biking, rolling, or transit are usually safe and convenient options.

Sprawling development requires drivers to take more trips—and longer trips.

Like Jane, every day Jeremy drops his daughter off at school, drives to work downtown, and picks up groceries on the way home. Walking, biking, rolling, and transit are not safe or realistic options.



policy decisions that prohibit building or adding housing to those types of places and require streets designed for cars to move quickly have artificially constrained the supply of these places. That means it is expensive to live in an area where you can pollute less.

Communities designed where a car is required for all trips, along with transportation policies and engineering standards that measure success by the *speed of the car travel* rather than the time and distance of the trip, has pushed people to homes that are farther from job centers and other destinations such as education, food, and health care. When high-speed driving is the goal of transportation investments (made possible through highways and wide arterial roads) other modes of travel become impossible, and people are forced to drive more and farther. Building and maintaining roadways and other infrastructure to get people quickly to distant development creates a feedback loop of more driving, congestion, and distant development.

This cycle comes with heavy costs. It leads to unsustainable increases in infrastructure spending from all levels of government and raises household expenses through increased transportation costs. When looking for housing they can afford, many people “drive to qualify” for housing farther away from job centers, but this potentially more affordable housing also incurs significant transportation costs that often aren’t considered as they have to take longer and more trips.²⁶ This means both the government and people have to spend more while polluting more.

26 See the Center for Neighborhood Technology’s interactive Housing and Transportation Index tool: <https://htaindex.cnt.org/>



Shepherdstown, WV, is more than three times as dense as Kansas City, MO.

Compact places in rural America

We often imagine rural America as wide open spaces dotted with farms. In reality, rural America is punctuated by small downtowns that feature businesses, shops, and housing—features of mixed-use developments typically associated with urban areas. Many rural small towns have a compact and walkable downtown, featuring a mix of land uses, strong population and employment centers, and gridded, walkable streets. Small downtowns can be just as populated per acre, walkable and vibrant as big cities. In fact, Shepherdstown, WV, with a population of less than 2,000 people, has more than three times the population per acre Kansas City, MO, and twice that of Orlando, FL.²⁷

24 The United States Census Bureau. (2010). Retrieved from the World Population Review: <https://worldpopulationreview.com/us-cities/>

25 The United States Census Bureau. (2010). Retrieved from the World Population Review: <https://worldpopulationreview.com/us-cities/>

Sprawl also costs the U.S. economy more than \$1 trillion annually.²⁸ Why? Because sprawl requires greater spending on infrastructure, public service delivery, and transportation—particularly per capita. It costs much more money to maintain roads and sewer lines and utilize garbage trucks and school buses for households that are spread far apart compared to ones that are clustered together.²⁹ In exurban America, it can take a quarter-mile of sewer pipe to service one house. It's far more cost-effective when that same length of sewer pipe can service 100 or 200 residents in a slightly more dense quarter-mile city block. Building walkable, connected, neighborhoods and communities costs one-third less for upfront infrastructure, saves an average of 10 percent on ongoing delivery of services, and generates 10 times more tax revenue per acre than conventional suburban development.³⁰ Each year, the most sprawling American cities spend an average of \$750 on infrastructure per person, while the least sprawling cities spend only \$500.³¹



Two areas within Savannah, GA seen at the exact same scale. Sprawl requires greater spending on infrastructure, public service delivery, and transportation.

Despite this, all major American metropolitan areas continue to sprawl and grow at their fringes, fueled in part by federal transportation dollars and policies, and accelerated by state or local land-use and zoning policies. Scores of local and state leaders claim climate change is a priority, but relatively few of them directly address the development patterns that guarantee increases in both VMT and GHG emissions.

28 Victoria Transport Policy Institute. (2015, March 19). Analysis of Public Policies that Unintentionally Encourage and Subsidize Sprawl. Prepared for the New Climate Economy. <https://newclimateeconomy.net/content/release-urban-sprawl-costs-us-economy-more-1-trillion-year>

29 Joe Minocozzi of the firm Urban3 and Charles Marohn of the nonprofit organization Strong Towns have written extensively about this issue: <https://www.strongtowns.org/journal/2018/8/22/the-more-we-grow-the-poorer-we-become>

30 Smart Growth America. (2013, May). Building Better Budgets: A national examination of the fiscal benefits of smart growth development. <https://smartgrowthamerica.org/app/uploads/2016/08/building-better-budgets.pdf>

31 Victoria Transport Policy Institute. (2015, March 19). Analysis of Public Policies that Unintentionally Encourage and Subsidize Sprawl. Prepared for the New Climate Economy. <https://newclimateeconomy.net/content/release-urban-sprawl-costs-us-economy-more-1-trillion-year>

The other negative impacts of sprawling development

Artificially pent up market demand for walkability generates inequity

Americans pay a premium for housing in livable, walkable communities accessible to transit, a phenomenon the National Association of Realtors called “the public transit effect.”³² Six out of 10 people said they drive because of a lack of other options and in 2017, 62 percent of Americans reported that nearby transit would be important in choosing where to live and 54 percent cited nearby bike lanes and paths.³³ As an example, consider San Diego, where housing prices have gone up 70 percent in the last six years and the mayor is seeking to address this issue by making it easier to build more housing near transit.³⁴ Decades of out-migration from cities has ended in most big cities and most are experiencing a rebirth of new residents and investment, a trend which has not been upended by the COVID-19 pandemic, according to early data. Zillow’s research showed that “suburban housing markets have not strengthened at a disproportionately rapid pace compared to urban markets.”³⁵ Even during the pandemic, large numbers of people are not fleeing the cities for the suburbs.

Yet government-mandated zoning requirements are preventing the market from adding to the supply of walkable, transit-served communities to meet this growing demand, driving up property values in these areas dramatically—often to levels that make these communities unaffordable to those who could benefit from them the most. More housing near transit and communities where people can live, work and play is needed to meet the demand and reduce the price pressure.

Due to the growing lack of affordable housing in cities and walkable places, low-income people have been pushed to the suburbs, where there are fewer transportation options and people are disconnected from jobs and services. One study found that residents in low-income suburban neighborhoods with access to transit can reach just 4 percent of metro area jobs with a 45-minute commute.³⁶ This means many people without access to a car can’t get to jobs without a car, further trapping them in a cycle of poverty.

32 Cleaver, J. (2017, July 5). *Fast Track to Skyrocketing Real Estate Prices: The New Public-Transit Effect*. Realtor.com. <https://www.realtor.com/news/trends/public-transit-effect-real-estate/>

33 Broberg, B. (2017, Dec. 21). 2017 Community Preference Survey. National Association of Realtors. <https://www.nar.realtor/on-common-ground/2017-community-preference-survey>

34 Dillon, L. (2019, Feb. 25). *After decades of suburban sprawl, San Diego eyes big shift to dense development*. LA Times. <https://www.latimes.com/politics/la-pol-ca-big-cities-housing-plans-san-diego-20190225-story.html>

35 Zillow. “Zillow 2020 Urban-Suburban Market Report” (August 2020.) <https://www.zillow.com/research/2020-urb-suburb-market-report-27712/>

36 Kneebone, E. (2017, Feb. 15). *The changing geography of US poverty*. Brookings. <https://www.brookings.edu/testimonies/the-changing-geography-of-us-poverty/>

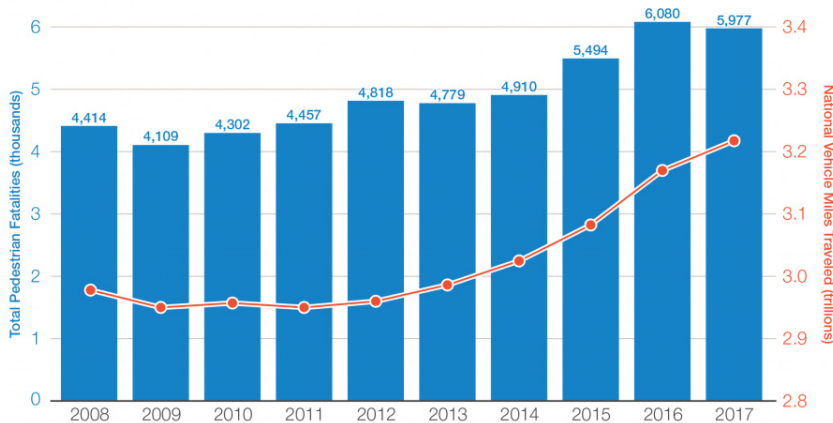
At the same time, companies of all sizes are relocating to or deciding to start up in walkable downtowns and communities with transit to ensure access to a high quality workforce.³⁷ Companies are choosing walkable downtowns because that's where talented workers want to be. These places reinforce companies' brand aspirations, allow them to be close to their customers and partners, support creativity among their employees, and help these companies live up to high standards of corporate responsibility. Amazon's recent search for HQ2, where access to transit was a core requirement, is just one example of this trend.

Despite the demand for denser and more walkable neighborhoods, it is illegal to build anything except single-family detached houses on roughly 75 percent of land in most cities.³⁸ Neighborhoods designed only for single-family detached houses, even if there's massive market demand for other types of housing, forces longer car trips, makes transit inefficient, and increases emissions.

Dangerous to be a pedestrian

Our default, one-size-fits-all approach to roadway design prioritizes moving cars as fast as possible, regardless of the context or what's around the street or road. Most roads are designed to support higher speeds than the speed limit. People follow the design cues, even though that speed is not a safe one.³⁹ This creates unsafe and unpleasant conditions for pedestrians in most of the country, making it nearly impossible for most Americans to access their daily needs without getting in a car. And by overwhelmingly supporting highway construction and incentivizing highway-oriented development, development gets stretched out to the scale of a fast-moving car, not the person walking. Other options like transit, walking, and biking become increasingly unsafe and inconvenient.

Pedestrian fatalities have been steadily increasing. 2016 and 2017 were the most deadly years since 1990.



Between 2008 and 2017, drivers struck and killed 49,340 people on foot throughout the United States. That's more than 13 people per day, or one person every hour and 46 minutes. It's the equivalent of a jumbo jet full of people crashing—with no survivors—every single month. Pedestrian deaths have been steadily rising since 2009, reaching levels not seen in three decades.⁴⁰

37 Smart Growth America. *Core Values: Why American companies are moving downtown.*

<https://smartgrowthamerica.org/resources/core-values-why-american-companies-are-moving-downtown/>

38 Baca, A., McAnaney, P., & Schuetz, J. (2019, December 4). "Gentle" density can save our neighborhoods. Brookings.

<https://www.brookings.edu/research/gentle-density-can-save-our-neighborhoods/>

39 Eric Dumbaugh, Dibakar Saha, Louis Merlin (August 13, 2020) *Toward Safe Systems: Traffic Safety, Cognition, and the Built Environment.* <https://journals.sagepub.com/doi/abs/10.1177/0739456X20931915?journalCode=jpea>

40 Smart Growth America. (2019). *Dangerous by Design 2019.*



Roadways have become more dangerous since the coronavirus pandemic led to shutdowns and less driving overall. The roadway fatality rate increased 20 percent while driving decreased 17 percent in the first 6 months of 2020.⁴¹ As the roadways have emptied, speeding has increased by a great amount—a logical outcome when roads are designed primarily for speed. The National Transportation Safety Board found that between 2005 and 2014 speeding contributed to about the same number of vehicle crashes as alcohol-involved crashes.

Environmental impacts of sprawl

Expanding roads and developing previously undeveloped natural lands has other environmental impacts beyond increased VMT and transportation emissions. Well managed agricultural and natural lands act as a “carbon sink,” drawing down carbon from the atmosphere, which helps combat climate change. They provide opportunities for recreation, wildlife habitat, groundwater recharge, and flood control.⁴² Paving over these lands permanently alters the environment and removes the opportunity for the land to be a carbon sink. Emissions on paved over land are significantly higher than emissions from natural lands or cropland.

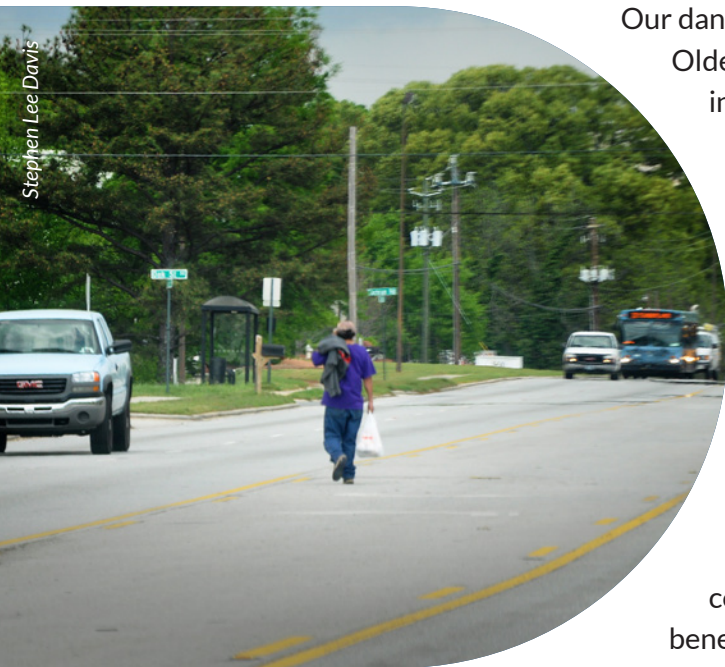
Impermeable surfaces such as roads and concrete contribute to surface runoff which frequently contains pollution such as pesticides, fertilizers, and petroleum. This runoff from pavement and concrete eventually gets back into the water system and pollutes it.⁴³ Extensive impermeable surfaces also contribute to the heat island effect, where developed regions can become warmer than undeveloped surroundings, forming an area of higher temperatures.⁴⁴ These areas can lead to increased energy demand and emissions through the need for air conditioning, can compromise human health, and can impair water quality.

<https://smartgrowthamerica.org/resources/dangerous-by-design-2019/?download=yes&key=45905789>

- 41 National Safety Council (2020, September). https://injuryfacts.nsc.org/motor-vehicle/overview/preliminary-estimates/?utm_medium=email&_hsmt=95238820&_hsenc=p2ANqtz-R71iptURclSGB-PCSo7FUKb4aQnoX-xuOnBEDG5DHMiXaORRqcDi-WHSh5Y3d3vw97D0nDra7Y155qzJ-FHySCPJ2lrAfuYnOiSIGlOUuhRpC7ul&utm_content=95238820&utm_source=hs_email
- 42 American Farmland Trust. (2018, May 9). Farms Under Threat: The state of America’s farmland. https://s30428.pcdn.co/wp-content/uploads/sites/2/2019/09/AFT_Farms_Under_Threat_May2018-maps-B_0.pdf
- 43 U.S. Environmental Protection Agency. Basic Information about Nonpoint Source (NPS) Pollution. <https://www.epa.gov/nps/basic-information-about-nonpoint-source-nps-pollution>
- 44 U.S. Environmental Protection Agency. Learn About Heat Islands. <https://www.epa.gov/heat-islands/learn-about-heat-islands>

The negative impacts are felt disproportionately

Transportation has long acted as an economic barrier in the United States, disproportionately harming people of color and low-income people. Because of the onerous regulations that mandate sprawling development, car ownership is a prerequisite for accessing jobs, food, healthcare, and other necessities in many regions as a result of how our communities are built. Sprawling development makes public transportation inefficient to operate, producing infrequent, inconvenient, and unreliable service. Fewer than 10 percent of Americans currently live within walking distance of frequent transit, and people of color disproportionately rely on transit.⁴⁵ Latino workers commute by public transit at nearly three times the rate of white workers, for example. And workers of color are overrepresented among public transit commuters among long commutes greater than 60 minutes.⁴⁶ Improving service to provide a more viable alternative to driving expands access to opportunities for those riders.



Our dangerous streets also don't imperil all Americans equally. Older adults, people of color, and people walking in low-income communities are also disproportionately represented in fatal crashes involving people walking.

Even after controlling for differences in population size and walking rates, drivers strike and kill people over age 50, Black Americans, American Indian or Alaska Native people, and people walking in communities with lower median household incomes at much higher rates.⁴⁷

Reducing the need to drive and providing safe, affordable, and convenient alternatives to driving isn't just a necessary step for our climate; it's a critical component of a just climate transition that helps bring benefits to those who need them the most.

45 Data for Progress. (2020, March). A Green New Deal for City and Suburban Transportation. http://t4america.org/wp-content/uploads/2020/03/20.03_GND-Transit_use_v4.pdf

46 Austin, A. (2017, Nov. 15). To Move Is To Thrive: Public Transit and Economic Opportunity for People of Color. Demos. <https://www.demos.org/research/move-thrive-public-transit-and-economic-opportunity-people-color>

47 Smart Growth America. (2019). Dangerous by Design 2019. <https://smartgrowthamerica.org/resources/dangerous-by-design-2019/?download=yes&key=45905789>

How can we grow equitably and efficiently?

1. Meet the demand for homes in walkable, compact neighborhoods
2. Build safer, walkable streets
3. Set targets for VMT and GHG emissions reductions
4. Provide transportation options and make transit a priority
5. Prioritize connecting people to destinations

The built environment can, in fact, change rapidly. Many communities and states have demonstrated that comprehensive reforms can both reduce the need for driving, and improve overall quality-of-life. They have responded to public demands and market forces pushing for denser development and walkability. The emissions reductions that accompany these transformations are a welcomed co-benefit of this shift. Before we dive into the five recommendations, here are two stories of success:

Minnesota: reducing VMT per capita and transportation emissions

Unlike nationwide trends, Minnesota has successfully reduced both VMT per capita and emissions from transportation in recent years. While transportation emissions increased overall in the 30 years since 1990, they dropped by nearly 15 percent between 2005 and 2017 according to national data from the Energy Information Administration (data provided by the State of Minnesota indicates an 8 percent drop over the same time period).^{48,49} Minnesota has seen this decline partially because the state kept growth in driving in check. While total VMT has risen slightly, per capita VMT declined 3.5 percent between 2005 and 2017.



Opening day on the Green Line in the Twin Cities.
Flickr photo by Michael Hicks.
<https://www.flickr.com/photos/mulad/14238058898/>

48 U.S. Energy Information Administration. (2020, May 20). Transportation energy-related carbon dioxide emissions. Retrieved from: <https://www.eia.gov/environment/emissions/state/>

49 Minnesota Pollution Control Agency. Greenhouse Gas Emissions Data. <https://www.pca.state.mn.us/air/greenhouse-gas-emissions-data>

A number of Minnesota communities have made strides in recent years to increase access to transit, biking, and walking options across the state. The Twin Cities region, home to 65 percent of the state's population, invested in two light rail lines and two bus rapid transit lines, facilitated in part by a dedicated sales tax. In addition, communities have begun to redesign main streets in smaller communities around the state, like the complete streets make-over of Alexandria, MN, aided in part by interdisciplinary knowledge and resources made available through the state's Toward Zero Deaths initiative and statewide Complete Streets Policy.

The City of Minneapolis also passed a comprehensive plan in 2018 that eliminated single-family zoning and parking requirements, which together could have a substantial impact on transportation emissions in the region.⁵⁰ These changes will encourage denser urban development and make it more affordable to live in the city, mitigating future sprawl and the additional driving it would cause.

Minnesota's progress is just a start. The state still has a legacy of prioritizing highway infrastructure that will continue to have lasting impacts without further change. Sprawl continues to force more driving—in fact, most of the state's VMT increases have also occurred in the counties surrounding the Twin Cities, according to MnDOT, while driving rates in rural areas have remained largely flat and driving rates in the center cities of Minneapolis and St. Paul has fallen 6 percent since 2000.^{51,52} Yet it is noteworthy that Minnesota has had this success in reducing VMT while building a strong economy. By building on this progress, providing alternatives to driving, and improving local land use regulations, Minnesota can continue to reduce transportation emissions and provide a model for other regions to follow.

Read a longer case study about Minnesota's progress and challenges in reducing VMT and emissions from transportation here: <https://t4america.org/maps-tools/driving-down-emissions/>

Seattle: A comprehensive approach to reducing the need to drive

Seattle has demonstrated that a thriving metropolitan region with a growing economy and population does not have to be synonymous with more driving and more emissions. Between 2006 and 2017, Seattle's population increased by 23 percent, yet daily traffic volumes declined slightly, by 5 percent. Transit ridership increased 46 percent over that time.⁵³ Seattle's rate of driving alone to work fell nine percentage points between 2010 and 2019 at the same time that employment boomed and downtown Seattle added over 90,000 jobs.⁵⁴

50 Britschgi, C. (2020, March 11). Minnesota Is Latest State to Consider Ban on Single-Family Zoning. Reason. <https://reason.com/2020/03/11/minnesota-is-latest-state-to-consider-ban-on-single-family-zoning>

51 Minnesota Department of Transportation. (2019, September). Vehicle Miles of Travel Trends in Minnesota: 1992-2018. http://www.dot.state.mn.us/traffic/data/reports/vmt/VMT_Trend_Report_2018.pdf

52 City of St. Paul. (2019, December). Saint Paul Climate Action & Resilience Plan: A framework for our community to address the impact of climate change. See page 43. <https://www.stpaul.gov/sites/default/files/Media%20Root/Mayor%27s%20Office/Saint%20Paul%20Climate%20Action%20%26%20Resilience%20Plan.pdf>

53 Seattle Department of Transportation. (2018). 2018 Traffic Report. https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/Reports/2018_Traffic_Report.pdf

54 Commute Seattle. (2019, April). 2019 Seattle Center City Commute Mode Split Survey Results Report. <https://commuteseattle.com/modesplit/>

Seattle has significantly expanded both bus and rail transit over that time period, leading to a 20 percent increase in transit boardings over that time, even as many other cities have seen declining ridership.⁵⁵ The city raised funds to expand bus service in 2014 through a voter-approved \$60 vehicle registration fee and a 0.1-percent sales tax hike, adding 270,000 additional service hours. As a result, Seattle has been able to drastically increase the percentage of householders within a ten-minute walk of relatively high frequency transit service (running at least ten minutes) from 25 percent in 2015 to 70 percent in 2019.⁵⁶ Seattle has also taken other steps to reduce driving and advance the city's climate goals, including reforming outdated parking regulations to reduce the parking spaces developers are required to build.⁵⁷



Buses in downtown Seattle, where the share of drive-alone work trips dropped from 50 to 25 percent during a period when 60,000 jobs were added downtown. Flickr photo by SounderBruce.

1 Meeting the demand for homes in walkable, compact neighborhoods

The good news is that we can actually reduce our emissions significantly by meeting this pent-up market demand for new homes and businesses in locations that result in shorter trips, fewer trips, and more trips taken by other lower-carbon modes.



As noted above, to see the unmet demand for homes in these kinds of places, simply look at the prices of homes near transit, in walkable neighborhoods, or in any part of a city where a mix of housing types and land uses allows people to live within walking or bicycling distance of some of the destinations they need to get to every day. In most metro areas, the most expensive housing per square foot is often in these kinds of locations—mounting evidence of unmet demand for more housing, whether single-family homes, duplexes, rowhomes, mid-rise or larger multifamily buildings.

Investors, buyers, and renters in the 30 largest metro areas are willing to pay more for real estate (office, retail, and multi-family housing) in walkable, urban areas, compared to

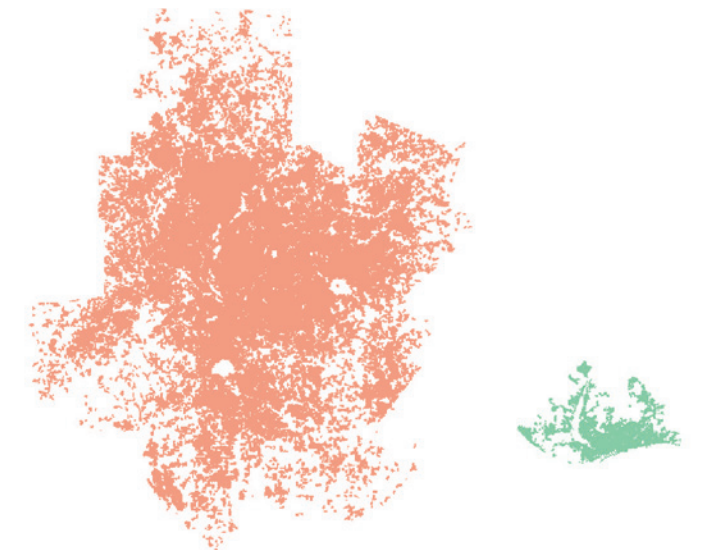
⁵⁵ *ibid.*

⁵⁶ City of Seattle. Access to very frequent (10 minute) transit service. [https://www.seattle.gov/transit/route-improvements/access-to-very-frequent-\(10-minute\)-transit-service](https://www.seattle.gov/transit/route-improvements/access-to-very-frequent-(10-minute)-transit-service)

⁵⁷ Bellis, R. (2018, April 16). Seattle's parking reform. State Smart Transportation Initiative. <https://www.ssti.us/2018/04/seattles-parking-reforms/>

drivable sub-urban areas—an average of 75 percent more per square foot. When it comes specifically to multifamily rental housing in these metro areas, rent per square foot in walkable urban areas is 61 percent higher than it is within car-oriented areas. We see evidence of this unmet demand in every region of the U.S.; for example, Denver, Houston, Miami, and Boston all have a rent premium of more than 80 percent in their walkable urban areas.⁵⁸ Prices are higher in these areas simply because there’s not enough to meet the growing demand.

Simply by finding ways to satisfy this unmet demand, states and cities can make a significant dent in emissions. That’s because **with more compact development, people drive 20 to 40 percent less, at minimal or reduced cost, while reaping other fiscal and health benefits.**⁵⁹ Whether people care about reducing their own emissions or not, by providing more opportunities for them to live where emissions are naturally lower per person, we can work within the market to help address climate change.



ATLANTA AND BARCELONA IN 1990

City	Population	Urban area	Transport carbon emissions
Atlanta	5.2	4,280	7.5
Barcelona	5.33	162	.7
	million	km ²	tons CO ₂ /ha/an (public + private transport)

Source: *Transit and Density: Atlanta, the United States and Western Europe*, Bertaud and Richardson, 2004

The truth is that building more homes and adding space for new jobs and businesses in these areas—heavily in demand—are critical to getting lower per capita emissions, and not just from transportation. Low-density suburban development produces 2-2.5 times as much emissions per person as high-density urban development.⁶⁰ Frustratingly, it is the lower density development that most development rules favor or, usually, dictate.

For example, the New York City metro area, with a population of 20 million, accounts for the largest total share of driving-related CO₂ emissions among U.S. cities. But, adjusted for population, New York’s per capita transportation emissions are among the lowest in the country thanks in large part to dense development, ample transit,

58 The George Washington University School of Business & Smart Growth America (2019). *Foot Traffic Ahead: Ranking walkable urbanism in America’s largest metros*. https://smartgrowthamerica.org/app/uploads/2019/06/Foot_Traffic_Ahead_FINAL-compressed.pdf

59 Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., & Chen, D. (2007, October). *Growing Cooler: The Evidence on Urban Development and Climate Change*. https://www.nrdc.org/sites/default/files/cit_07092401a.pdf

60 The Global Commission on the Economy and Climate. (2018, August). *Unlocking the Inclusive Growth Story of the 21st Century: Accelerating climate action in urgent times*. <https://newclimateeconomy.report/2018/cities/>

and walkability.⁶¹ The much lower population metro area of Boise, Idaho has low total transportation emissions *and* low per capita transportation emissions thanks to a relatively compact downtown and high population density.

Communities can shorten distances between destinations by building a variety of housing types to meet the growing demand for them—such as condominiums, townhouses, or detached houses on smaller lots—and by building offices, stores, and other destinations closer together rather than on the fringes. This makes neighborhood stores more economically viable, allows more frequent and convenient transit service, and helps shorten car trips.

This can be done on a town-by-town basis, but federal support would make it easier and faster. It is important to realize that **the current legal approach to development was created and promoted by the U.S. Department of Commerce in the 1920s.**⁶² Today that history is mostly forgotten and the states and federal government claim no responsibility for the century old land-use rules, rarely participate in any effort to fix the current problems that their actions caused, and expect each locality to fix the problem individually. Federal policy can and should play a role in helping localities update their development codes, many of which are based on this early 20th century model and are long past due for an update.

Much has changed over the last 100 years, and federal policy should provide communities with a new template for growth, one that allows for shorter trips and makes it safer and easier to walk, bike, and take transit between destinations. That might mean convening a new advisory committee on zoning as we approach the 100th anniversary of the last major federal effort to address land use issues.⁶³ Such an approach could provide modern guidance to localities and a basis for updating federal laws, regulations and procedures to meet today's needs.

61 Popovich, N. & Lu, D. (2019, Oct. 10). *The Most Detailed Map of Auto Emissions in America*. *The New York Times*. <https://www.nytimes.com/interactive/2019/10/10/climate/driving-emissions-map.html>

62 The federal government last provided significant zoning guidance with the Standard Zoning Enabling Act of 1925, which provided model language for zoning ordinances. Read more: <https://www.planning.org/growingsmart/enablingacts/>

63 American Planning Association. *Standard State Zoning Enabling Act and Standard City Planning Enabling Act*. <https://www.planning.org/growingsmart/enablingacts/>

2 Build safer, walkable streets

Public transit, biking, and walking are most useful when streets are designed to provide people with safe and convenient access to get around in those ways. Streets with slower speeds are more economically productive, inviting, and climate-friendly. They are also far safer: At 23 miles per hour, there's a 10 percent fatality rate for pedestrians struck by a car. That fatality rate rises to 50 percent at 42 MPH.⁶⁴ They enable environments where people will spend time and linger, creating a sense of civic community; a sense of place. Streets like this—a main street, a commercial node, the place where everyone goes to walk and shop—are the basic building block of creating and capturing long-term value. And most cities and towns, whatever their size, would never survive without these incredibly financially productive corridors.



Nearly every daily trip for the 300+ homes and as many as 680+ cars pictured here requires a journey of at least a few miles on the same two-lane highway.

When neighborhoods and commercial areas lack a network of smaller well-connected local streets, cars pile onto major roads even for very short trips (such as between a grocery store and adjacent pharmacy that do not have connected parking lots). This means drivers have to take more trips, which creates more emissions. All of this makes walking, biking, and transit less viable options and encourages or forces people to drive who might otherwise choose to walk.⁶⁵

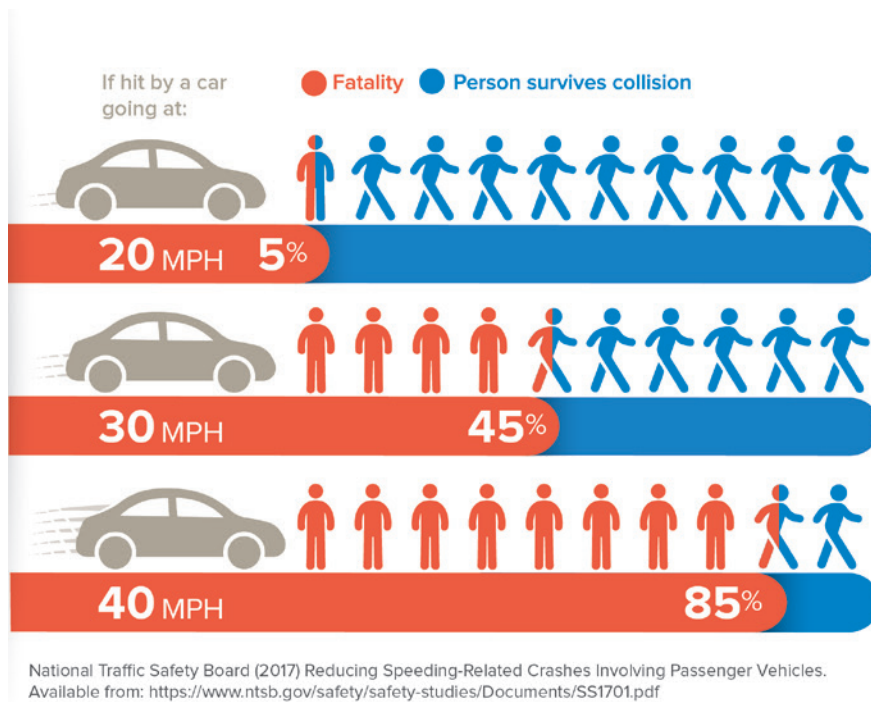
Today, most roads—not just highways—are designed to move personal vehicles at the highest speeds possible (almost always faster than the posted speed limit). The irony is that this approach fails on two counts: Every arterial road filled with curb cuts and left turn conflicts is both unsafe for people walking and functions poorly at actually moving cars quickly without delay.

Complete Streets, on the other hand, are designed and operated to enable safe access for people of all ages and abilities, be they pedestrians, bicyclists, transit riders, or motorists. Complete Streets make it easy to cross the street, walk to stores, or bicycle to work. They allow buses to run on time and make it safe for people to walk to and from transit stops. Prioritizing Complete Streets are part

⁶⁴ Tefft, B.C. (2011). *Impact Speed and a Pedestrian's Risk of Severe Injury or Death*. AAA Foundation for Traffic Safety. <https://aaaafoundation.org/impact-speed-pedestrians-risk-severe-injury-death/#:~:text=The%20average%20risk%20of%20death,Risks%20vary%20significantly%20by%20age>

⁶⁵ Transportation for America. (2020, March). *The Congestion Con: How more lanes and more money equals more traffic*. <http://t4america.org/wp-content/uploads/2020/03/Congestion-Report-2020-FINAL.pdf>

of valuing access to destinations rather than speed of travel, which is a blunt, poor proxy for whether or not a transportation system is actually working to accomplish its core function of safely getting people where they need to go, however they choose to get there.



Even in communities served by transit, incomplete streets may discourage residents from fully using the service. Nearly every transit trip begins or ends as a walking trip—but the disconnect between transit and road planning means dangerous street design prevents many people from accessing transit stops in a safe and convenient manner. If a driver is choosing between a store that has parking spaces a short distance from the front door and a second store with a parking lot four blocks away which requires crossing six lanes of traffic, which store would they logically choose? This is what we do to transit riders when we fail to connect stops and stations to networks of safe, complete streets—we hamstring the ability of transit to effectively serve all riders.

We need a strong federal Complete Streets policy that requires state departments of transportation to consistently plan for all people who use the street, including the most vulnerable users. Federal policy must also open the door for flexible guidance to allow planners and engineers to make innovative decisions about how to design roadways to accommodate all users. Federal policy should also require that all roads in developed areas be designed for slower speeds and to support people traveling both in and out of a car in order to dramatically improve safety and create a more hospitable environment for traveling outside of a car.⁶⁶

⁶⁶ Federal policymakers in the House recently passed an infrastructure package with a five-year transportation reauthorization proposal, the INVEST Act, that makes substantial advancements toward many of the recommendations in this report. The INVEST Act supports biking and walking with a comprehensive approach to improving safety, measures and tracks important outcomes like GHG emissions and access to jobs and services, and supports transit with more money and better policy. While not a law yet, this House proposal provides an important baseline for future changes needed. Read more about the INVEST Act here: <http://t4america.org/tag/invest-act/>.

Another way to create safer streets would be to simply require states to reduce the number of pedestrian fatalities year after year—with whatever means they deem best suited to the challenge—with the billions in federal dollars that they receive each year. In 2012, Congress gave states wider discretion over transportation spending in exchange for a weak, opaque system of performance management and “accountability.” States are currently required to set targets for transportation safety, state of repair and traffic movement, but the targets can be to perform worse (e.g., a “safety” target of more roadway deaths) with no rewards for hitting targets and little-to-no penalties for missing them. While some states and localities have established their own Vision Zero policies to create accountability in their efforts to reduce and then eliminate pedestrian fatalities, there is next to no accountability at the federal level and a number of states have taken advantage of federal flexibility to set unambitious safety targets that simply predict the continuation of current trends of rising fatalities. In 2018, 18 states set targets for more non-motorized users to be killed and injured compared to the most recent year of data reported at the time.⁶⁷

Requiring states to set targets to reduce pedestrian fatalities would demonstrate whether or not states are making progress in creating safer streets. To hold states accountable, those that don’t reduce pedestrian fatalities should have to dedicate highway funds towards implementing complete streets designs.

And we need more high quality data on the street conditions where fatalities and serious injuries occur nationwide to help us better diagnose and solve the problem.

Set targets for VMT and GHG emissions reductions

The federal performance management program referenced above should also include GHG emissions and VMT per capita measures, and give states and metro areas wide latitude for how they want to meet goals of reducing them. As with all performance measures, states failing to achieve their goals should be penalized. States that exceed goals should be rewarded.

However, states need not wait for the federal government to require the basic step of measuring VMT and GHG from transportation. They could be doing that right now. Frankly, it is hard to take elected leaders at their word when they call themselves leaders on climate and fail to even measure how their own programs impact GHG emissions—much less prioritize the investments that would reduce those emissions.

Measuring and reducing emissions and VMT would require states to employ a variety of strategies, including investing in a range of transportation options and land-use decisions that could help meet the pent-up demand for homes in places that result in less driving. These strategies come with a host of benefits including reduced congestion, lower household transportation costs, safer streets, more attractive communities and better health outcomes.

⁶⁷ Read more about the phenomenon of states aiming for the same number or more people to be killed while walking in the “State Safety Targets” addendum to *Dangerous by Design*, last published by Smart Growth America in 2019. <https://smartgrowthamerica.org/dangerous-by-design/>

4 Provide transportation options and make transit a priority

Federal law allocates twenty percent of the highway trust fund to public transit and spends the remainder on highways. Transit is an essential service which millions of Americans rely on in both urban and rural communities, and is critical to the functioning of cities of all sizes. Chronic underfunding has left too many communities with deteriorating systems and infrequent, unreliable service, failing to provide Americans with a transportation choice other than a car. Insufficient funds for transit have resulted in an estimated \$99 billion maintenance backlog.

Allocating just 20 percent of federal funds to transit underfunds maintenance needs and makes it difficult to build new or expand existing transit systems. In order to maintain essential service and protect public transit systems for the future, we must provide the necessary resources. That 20 percent number is based on a bargain made by the 98th Congress with President Ronald Reagan in the early 1980s to raise the gas tax. It is time to update this deal for the 21st century. Congress should provide at least as much funding to transit as it does for highways.

The federal government should also provide transit with funding for their operations. While the federal government will help local communities build new public transit, it provides limited support in small and rural communities and no support in urban areas to operate their systems.⁶⁸ Operating support is essential to ensure public transit agencies can provide safe and reliable service. This has become particularly clear in the COVID-19 pandemic because of the number of essential workers who keep our medical facilities and groceries operating who also rely on transit.

5 Prioritize connecting people to destinations

We fail to invest in climate-friendly infrastructure that would reduce transportation emissions and prioritize shorter car trips because we don't measure the right things. Instead of measuring how well our infrastructure can connect people to their destinations, we measure speed and traffic flow on roads. Instead, we should measure how the system, and any new infrastructure investment, connects people to jobs and services by all modes of travel.

This approach would capture and value shorter car trips as well as biking, walking, transit, and passenger rail trips, making it easier to compare all transportation options and determine where access by different modes (especially for lower income



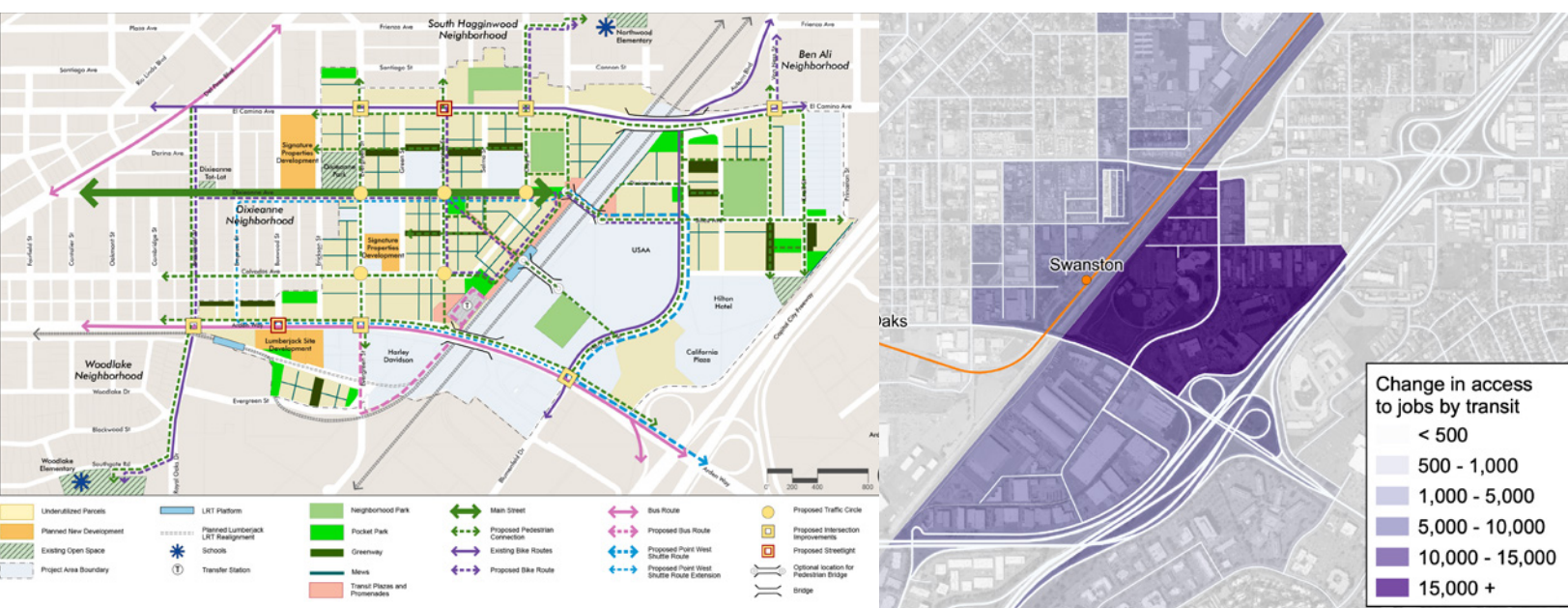
Stephen Lee Davis

⁶⁸ Rall, C. (2020, April 27). How is COVID-19 impacting rural transit in Oklahoma. *Transportation for America*. <http://t4america.org/2020/04/27/covid-19-impacts-on-rural-transit-in-oklahoma/>

Americans) is lacking. It would also allow policymakers to compare a transportation investment versus a land use change. In other words, policymakers could determine whether it is more cost effective to invest in a major expansion of the transportation system or to provide housing people can afford closer to the things they need.

The two graphics on this page illustrate how measuring accessibility works in practice. The first image, from the City of Sacramento's Swanston Station Transit Village Plan, shows proposed walking, biking, and transit improvements around a light rail station east of downtown Sacramento.⁶⁹ The second graphic, produced by the State Smart Transportation Initiative, uses modeling tools to show how many more jobs would be reachable by transit as a result of those relatively small improvements.⁷⁰ This is a far better way to help choose between various transportation investment decisions: Will this investment help more people reach their destinations, by any mode?

Congress should require the USDOT to collect data necessary to measure access to jobs and services, and set national goals for improvement. The transportation bill passed in the summer of 2020 by the House of Representatives does just that, and the Senate's bill passed in 2019 includes a pilot program to allow some states and metropolitan planning organizations to learn how to use this measure and apply it to their programs. Hopefully, when these bills are taken up by the new Congress, it will retain and build on this commitment to measure transportation in a way that is more equitable, more climate friendly, and more meaningful to the public.



69 The City of Sacramento. (2007). *The Swanston Station Transit Village Plan*. <https://www.cityofsacramento.org/Community-Development/Planning/Long-Range/Transit-Oriented-Development/Swanston-Station-Transit-Village-Plan>

70 State Smart Transportation Initiative. (2017, July). *Connecting Sacramento*. <https://ssti.us/connecting-sacramento/>

Conclusion

Reducing transportation emissions and reducing the distance we drive is both needed and possible. The vast majority of Americans are clamoring to spend fewer hours behind the wheel, not more. Only a cynic would declare that Americans **want** to drive more and more each year to accomplish all they need to do each day, or that success should be measured based on how much farther more people have traveled. Polling and consumer preference research has consistently shown that millions would prefer to live in walkable, connected places where trips are short and there's a menu of options for getting around. Yet one of the biggest obstacles to meeting that demand is onerous government regulation and policies—at all levels—that makes it nearly impossible to build more housing in places that fit this bill, or to retrofit streets to make more areas safe to walk or bike in.

Let that sink in: millions of Americans would love to live in places that guarantee shorter trips, fewer trips, more ways to get around, and less emissions—whether climate change is their motivating factor or not. But millions of these Americans can't find a place they can afford because of zoning requirements that make it either incredibly difficult or downright illegal to meet this demand, and because transportation designs and objectives that make it dangerous to try to get around in the other places without a car.

Considering that just 1 to 6 percent of all urban land in large metropolitan areas on average is truly walkable, we've created a scenario where those who would most stand to benefit from lower transportation costs—lower-income Americans, people in communities of color—are shut out because the scarcity makes many of them affordable only to people with far greater means.⁷¹ Lower-income Americans will bear the brunt of the effects of climate change, yet they're stuck trying to find housing in places where there often is no clean, easy, convenient way to get around, even if they

71 The George Washington University School of Business & Smart Growth America (2019). *Foot Traffic Ahead: Ranking walkable urbanism in America's largest metros*, 9.
https://smartgrowthamerica.org/app/uploads/2019/06/Foot_Traffic_Ahead_FINAL-compressed.pdf

desire one. If they can't afford a car then they have no choice but to limit the possibilities for their lives to what can be reached on dangerous streets by foot or bike, or via infrequent buses or trains on underfunded transit systems that fail to connect them to opportunity, even if the emissions are low. Finding ways to put more housing in places where people can drive less—and make those homes attainable and affordable for everyone—will be a key aspect of transitioning to a low-carbon economy in a way that doesn't just place a new burden on lower-income Americans. We need more options beyond “purchase an expensive brand new electric vehicle” to truly solve our climate crisis in an equitable way.

When it comes to electric vehicles, we absolutely should electrify the entire vehicle fleet, as soon as possible, and in an equitable way. But we will fail if we limit our thinking to big, long-span, silver bullet solutions like electrification, while ignoring the low-hanging fruit all around us. We must use every single tool we have.

We also cannot reduce GHG emissions in a way that continues the harsh inequities of our current system, providing access to economic mobility only to those that can afford their own car. Creating better cities and better places to live will reduce GHG and provide that access to all, but it requires us to rethink how we allocate space within them, and decide if we need so many vehicles in the first place and why we need to drive them more and more each year. People want to get out of their cars or at least drive less today. Why are we prohibiting that—and the greenhouse gas reductions that would come from it?

Cars, whether electric or not, create so many negative side effects that go far beyond the tailpipe.⁷² We need to think bigger than merely swapping electric vehicles for gas vehicles and then filling up the same six or eight or 12 lanes of traffic. We need to ask questions more like: “Do we really need those lanes in the first place? Are they truly helping us get where we need to go each day?”

Lastly, the ideas represented in this report show that reducing emissions from transportation is entirely doable—which is a good thing, because there are other areas where making significant reductions will be far more difficult. While we don't want to repeat the economic conditions of the COVID-19 pandemic, the massive drops in traffic and emissions during the shutdown showed us the potential benefits of lowering driving rates, even if just a modest amount. And while we have no idea how to completely electrify our fleet of vehicles or how long that transition will take, we can absolutely lower emissions in a short time-frame by meeting the demand for more housing in smart locations—helping millions of Americans who want to live in places where they can emit less and drive less find ways to do so. The urgency of our climate crisis requires it.

72 Emissions Analytics. (2020, March 6). Press release: Pollution from tyre wear 1,000 times worse than exhaust emissions. <https://www.emissionsanalytics.com/news/pollution-tyre-wear-worse-exhaust-emissions>