The Case for Reducing VMT

The motor vehicle travel each of us makes in our daily lives can be reduced if we can access our jobs, education, goods, and services comfortably and efficiently using transit, walking, biking, rolling, or virtually. Increasing walkability and transit service can be achieved through changes in how we plan our communities and accommodate growth, adding more housing closer to jobs, education, and services across the state, addressing the transportation needs imposed by sprawl, and expanding options that give people real choices in how to get around.

Reducing VMT on a per capita basis is necessary to make progress on the many community and state goals related to climate, health, safety, and livability. There is no one solution that will achieve all the goals; for example, many of the VMT strategies outlined later in the report will need to be employed in combination to make meaningful progress on climate mitigation. Washington's communities vary in terms of population and job density, land use patterns, and travel options. However, a variety of VMT reduction strategies can be employed to fit the needs of different communities.

This section outlines the importance of VMT reduction focusing on climate change and environment, traffic safety, economy, public health, and the equity considerations that weave throughout these topics.

Climate Change and Environment

Washington state has committed to addressing climate change through greater electrification and growing the state's clean energy sector, among other strategies. While climate change considerations in Washington include mitigation and adaptation efforts outside the scope of this work, the transportation sector has a central role within the state's climate change strategy.

Nationwide, the transportation sector accounts for more than a quarter (27%) of all US greenhouse gas (GHG) emissions, the largest share of any sector.[1] Transportation accounts for an even larger share of GHG emissions in Washington at nearly 40%. While GHG emissions from other sectors have stabilized or decreased in recent years (e.g., electric power and industry), transportation related GHG emissions are roughly 14% above baseline 1990 levels in Washington. The COVID-19 pandemic led to a decline in transportation-related emissions as remote work disrupted typical workday commute patterns, but recent data suggests this dip was temporary, as VMT has largely returned to pre-pandemic patterns.

Strategies such as vehicle electrification – along with continued growth of the state's clean energy portfolio – are important pieces of the state's climate change effort within the transportation sector. However, while these steps are necessary, they are insufficient on their

[1] EPA. (2023). *Greenhouse Gas Inventory Data Explorer*. Retrieved from Environmental Protection Agency: https://cfpub.epa.gov/ghgdata/inventoryexplorer/

own to reduce transportation related GHG emissions to needed levels over the near term. Even with 100% electrification, significant cuts in VMT are needed to meet GHG goals.[2]

A number of studies conclude that reducing VMT is key to GHG reduction. Condon showed how land use and transportation policies together can support reducing VMT and GHG production noting that without a substantial reduction in VMT, emission levels will slow but not decline.[3] Transportation efficient land use development that reduces VMT has benefits for the environment beyond reducing emissions. For example, larger homes and lots in low-density areas are associated with higher energy and water usage, as well as increased water run-off because this development type includes more roads that are impervious to water.[4]

Reduced VMT also reduces negative environmental impacts related to tire dust. Chemicals and particulates emitted by tires through standard manufacture and use create tire dust, which endanger our ecosystems, pollute the air and kill salmon.[5] And bigger, heavier vehicles, which are increasingly popular, can produce more particulate pollution.[6]

Traffic Safety

There is a direct relationship between increases in VMT and fatalities. The National Highway Traffic Safety Administration 2020 annual traffic crash data showed that 38,824 lives were lost that year, the highest number since 2007 despite the country being largely shut down due to the pandemic.[7] Fewer people on the road correlated to increased vehicle speeds resulting in 11,258 of the almost 39,000 traffic deaths.[8]

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[2] Climate Solutions. (2021). Transforming Transportation: How to cut pollution and achieve our climate goals in Washington and Oregon. Retrieved from https://www.climatesolutions.org/resources/reports/transforming-our-transportation on May 3, 2023.

[3] Condon, P. (2008). *Planning for Climate Change.* Cambridge: Lincoln Institute of Land Policy. Retrieved from http://www.sxd.sala.ubc.ca/lincoln/article_planning_for_climate_change.pdf

[4] Currey, Ganson, Miller, & Fesler. (2015). Vehicle-Miles Traveled (VMT) Impacts on the Environment, Human. *DOT Sustainability Directors Meeting.* Sacramento: State Smart Transportation Initiative. Retrieved from https://ssti.us/wp-content/uploads/sites/1303/2015/06/Ganson-VMT-Impacts-on-the-Environment-Human-Health-and-Fiscal-Health-Working-Paper-1.pdf

[5] Flores, M. (2023, January 25). *Saving Washington's salmon from toxic tire dust*. Retrieved from Department of Ecology Washington State: ttps://ecology.wa.gov/Blog/Posts/January-2023/Saving-Washington-s-salmon-from-toxic-tire-dust#:~:text=Salmon%20are%20important%20to%20our,and%20can%20run%20into%20streams.

[6] Kolbert, E. (2023). Why S.U.V.s Are Still a Huge Environmental Problem. *The New Yorker*, https://www.newyorker.com/news/daily-comment/why-suvs-are-still-a-huge-environmental-problem.

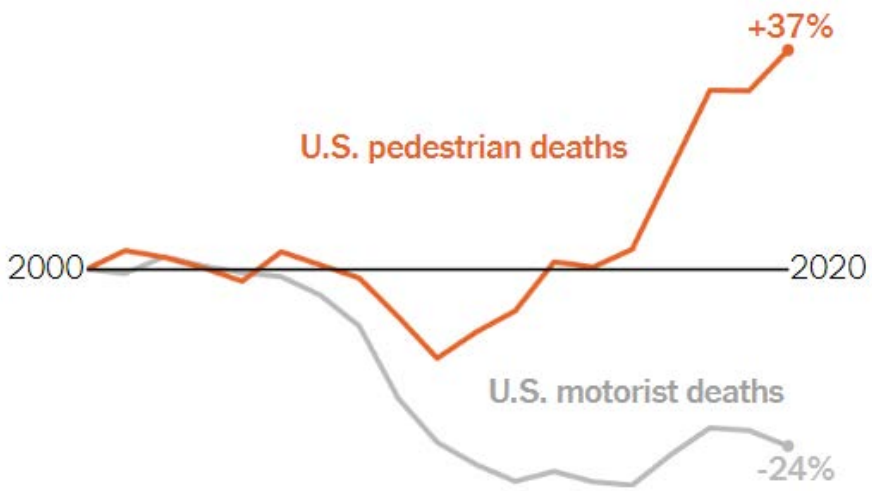
[7] National Highway Traffic Safety Administration. (2022). *Overview of Motor Vehicle Crashes in 2020.* Washington, DC: USDOT. Retrieved from https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813266

[8] National Highway Traffic Safety Association. (2023). *Speeding*. Retrieved from National Highway Traffic Safety Association: https://www.nhtsa.gov/risky-driving/speeding

As shown in Exhibit 6, in the early 2000s pedestrian and motorist deaths were both trending downward; however, more recently, pedestrian deaths have increased rapidly to where 19 pedestrians were killed each day in 2022.[9]

Since 2000, pedestrian deaths have increased by 37 percent. Although pedestrian deaths saw a reduction in 2010, they have sharply increased since then. Motorist deaths, on the other hand, have decreased by 24 percent since 2000.

Exhibit 6. Pedestrian and Motorist Deaths in the US



Source: National Highway Traffic Safety Administration, 2023; The New York Times, 2023.

In our state, Washington Traffic Safety Commission data shows 675 fatalities in 2021 compared to 538 in 2019.[10] Preliminary data for 2022 show that 745 people were killed in crashes last year, the most since 1990, with impairment by drugs and alcohol involved in more than half of fatal crashes.[11]

Crashes have been attributed to risk factors such as impaired driving, speeding, or distracted driving. However, there is a direct relationship between increases in VMT and fatalities as shown in Exhibit 7. Local and regional governments are increasingly committing to Vision Zero strategies to eliminate all deaths and serious injuries due to motor vehicles and increase options

[9] Susaneck, Adam Paul. (2023) American Road Deaths Show and Alarming Racial Gap. The New York Times, April 26, 2023. Retrieved from NYTimes: https://www.nytimes.com/interactive/2023/04/26/opinion/road-deaths-racial-gap.html

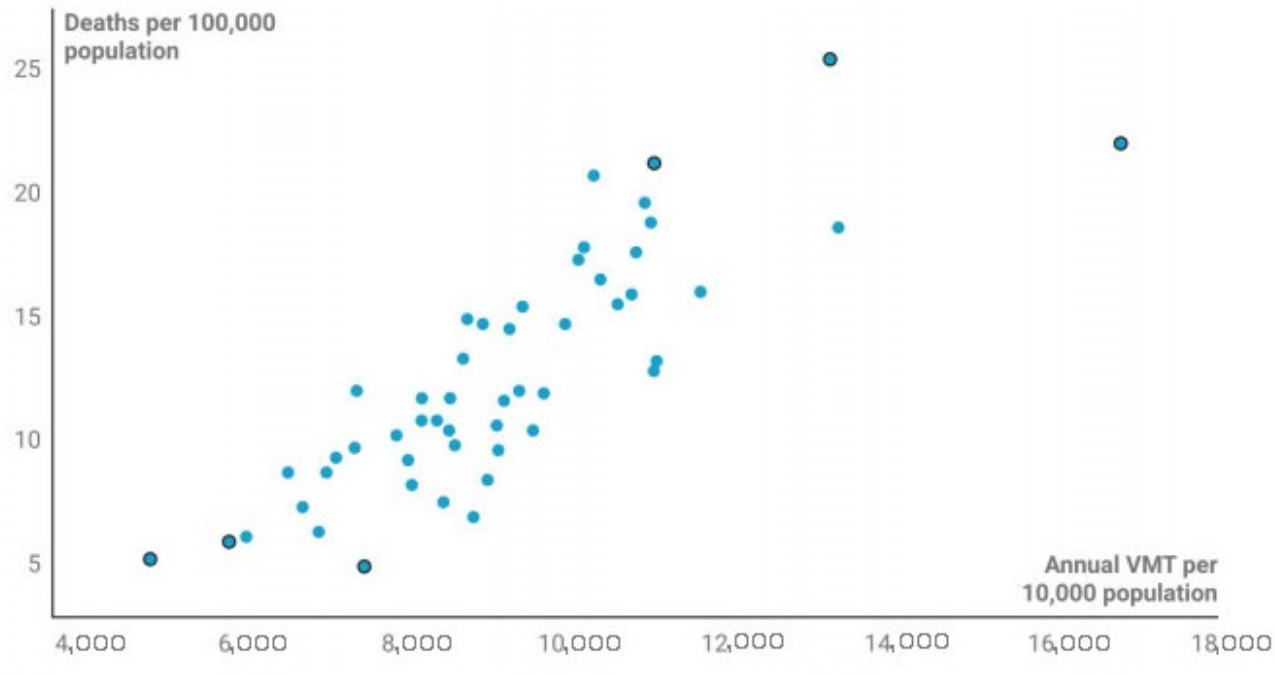
[10] Washington State Traffic Safety Commission. (2022, September). *Fatalities from Crashes Involving a Motor Vehicle in Washington Dashboard*. Retrieved from Washington State Traffic Safety Commission: https://wtsc.wa.gov/research-data/fatalities-dashboard/ on June 6, 2023.

[11] Washington State Traffic Safety Commission. (2023, January 18). *2022 Saw Most Traffic Deaths on Washington Roads Since 1990.* Retrieved from Washington State Traffic Safety Commission: https://wtsc.wa.gov/2022-saw-most-traffic-deaths-on-washington-roads-since-1990/ on June 6, 2023.

to get around.[12] This means expanding our safety focus to include transportation options that reduce the need to drive, and pursuing strategies like traffic calming and other engineering approaches to lower speeds and improve safety, while also continuing to enforce traffic laws. Updating to "self-enforcing" road designs will provide drivers with cues in the built environment to support the appropriate speed for land-use context and expectation of people crossing the road to reach destinations.

Exhibit 7 illustrates the correlation between traffic fatalities and mileage across different states in the US. The horizontal axis represents annual VMT per 10,000 population, ranging from 4,000 to 18,000. The vertical axis represents the number of deaths per 100,000 population, ranging from 5 to 25. The data indicates that the concentration of traffic fatalities is within the range of 8,000 to 12,000 annual VMT per 10,000 population and 10 to 20 deaths per 100,000 population. However, deaths below 8,000 annual VMT per 10,000 population are still observed. Put simply, actions that increase VMT also increase traffic fatalities.

Exhibit 7: Traffic Fatalities Versus Mileage for US States



Note: Chart created with Datawrapper.

Sources: Litman, T. (2022a, October 19). A New Traffic Safety Paradigm. Victoria: Victoria Transport Policy Institute. Retrieved from Streetsblog NYC: https://www.vtpi.org/ntsp.pdf; Insurance Institute for Highway Safety, 2020.

Another potential contributor to rising fatalities is larger average vehicle size and weight due to the growing prevalence of SUVs, a category that now surpasses passenger cars in vehicle

[12] *Vision Zero Network*. (2023). Retrieved from Vision Zero Network: https://visionzeronetwork.org/about/vision-zero-network/

sales (including electric vehicle sales).[13] A recent study found that more than three thousand deaths would have been avoided between 2000 and 2019 if all the drivers of SUVs in the US had instead been driving cars.[14] Reducing VMT does not directly influence vehicle size, but it can reduce the number of hours that heavier vehicles with higher kinetic energy are out on the road, therefore reducing the exposure risk.[15]

Traffic safety is an important element supporting VMT reduction. Changes that make people feel safer walking and bicycling encourage mode shift for those who can choose between multiple modes and improve safety for those who have fewer options available.

Economy

Land use and transportation strategies that reduce VMT also increase business activity and return on investment for infrastructure projects. Human scale mobility, which prioritizes walking and biking in city design (bike lanes, compact land use, small block sizes, etc.) has resulted in increased revenues for businesses and jurisdictions.[16] A study of cities that added protected bike lanes (including Seattle) found a positive correlation with increased revenue for the surrounding businesses. Retail businesses along Second Avenue in Seattle saw an increase in sales and employment, while food service establishments along Broadway saw the greatest increase in revenues.[17]

A potential method of boosting economic growth while simultaneously decreasing VMT is to repurpose parking spots into spaces for human-centered use. The conversion increases economic opportunity.[18] Research found that converting parking spaces into more compact and frequently used spaces, like dining areas, parklets, and bike share docks had the dual effect of increasing bike use and decreasing car congestion and emission. This led to an improvement in the economic outcome for local businesses.[19]

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[13] Kolbert, E. (2023). Why S.U.V.s Are Still a Huge Environmental Problem. *The New Yorker*, https://www.newyorker.com/news/daily-comment/why-suvs-are-still-a-huge-environmental-problem.

[14] Ibid.

[15] Although it did not pass, House Bill 1674 (2023) would have added information at point of sale about the safety record of vehicles. https://app.leg.wa.gov/billsummary?BillNumber=1674&Initiative=false&Year=2023

[16] Smart Growth America and The State Smart Transportation Initiative. (2021). *Drivers of VMT and Priority Reduction Strategies: Washington State.* Washington, DC: Smart Growth America.

[17] PeopleforBikes. (2020, April 22). *Study Finds Bike Lanes Can Provide Positive Economic Impact in Cities*. Retrieved from Transportation Research and Education Center Portland State University: https://trec.pdx.edu/news/study-finds-bike-lanes-can-provide-positive-economic-impact-cities

[18] Bike Lanes, on-street parking and business - TCAT.CA. (2010). Retrieved from https://www.tcat.ca/wp-content/uploads/2016/12/Bike-Lanes-On-Street-Parking-and-Business_-A-Study-of-Queen-Street-West-in-Toronto%E2%80%99s-Parkdale-Neighbourhood.pdf

[19] Pratt, L. (2011, August). National Association of City Transportation officials. Retrieved from https://nacto.org/docs/usdg/parklet_impact_study_sf_planning_dept.pdf

Public Health

Higher VMT is linked to several public health impacts. A 2012 health impact assessment found that changing the built environment to increase concentration and diversity of uses and improving public transit was associated with increased levels of physical activity, as well as reduced collisions and improved air pollution.[20] Neighborhoods that require residents to drive for daily activities have been linked with social isolation, anxiety, and increased blood pressure.[21] Even walking to and from transit stops can confer health benefits compared to long solo driving commutes, which have been associated with higher levels of stress and depression.[22] Land use patterns that necessitate driving also make it more difficult for older adults to age in place and maintain their independence.

As urban centers become more expensive, market forces often drive lower income households to move further away to locations that are not well served by transit. And since housing that is affordable for lower-income households is often found in communities that are adjacent to industrial uses, airports, highways, and railways, these households are more likely to be exposed to the negative heath impacts from air and noise pollution. It is important to deploy anti-displacement strategies and develop affordable housing near transit and within walking distance of frequent destinations to provide equitable access to the public health benefits of human-scale community design.

Equity Considerations

A 2021 study of off-site VMT mitigation in California found that communities disadvantaged by land-use, transportation, and other policy decisions and actions have significantly lower VMT than more affluent ones, tend to be less sprawling, have significantly higher percentage of households with no vehicle access, and significantly higher access to transit.[23] However, overburdened communities are much more likely to be negatively impacted by the consequences of a car-centric environment. As traffic deaths across the country have risen, Exhibit 8 shows that Black and Latino residents are more likely to be the victims of traffic deaths. The COVID-19 pandemic was initially blamed for this increase in deaths due to less congested roads that encouraged speeding—a side effect of roadway designs that support and encourage higher speeds. However mental health, substance use problems, and general frustration resulting in road rage have also contributed to this trend. Additional explanations include the lack of safety features in the older vehicles driven by lower income individuals and

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[20] Perdue, L. e. (2012, December). Rapid health impact assessment of policies to reduce vehicle miles traveled in Oregon. *Public Health Vol 126, Issue 12*, pp. 1063-1071.

[21] Currey, Ganson, Miller, & Fesler. (2015). Vehicle-Miles Traveled (VMT) Impacts on the Environment, Human. *DOT Sustainability Directors Meeting.* Sacramento: State Smart Transportation Initiative. Retrieved from https://ssti.us/wp-content/uploads/sites/1303/2015/06/Ganson-VMT-Impacts-on-the-Environment-Human-Health-and-Fiscal-Health-Working-Paper-1.pdf

[22] Legrain, A. E.-G. (2015). Am stressed, must travel: The relationship between mode choice and commuting stress. *Transportation Research Part F: Traffic Psychology and Behaviour, 34*, 141-151.

[23] Serena E. Alexander, M. A. (2021). *Safeguarding Equity in Off-Site V quity in Off-Site Vehicle Miles T ehicle Miles Traveled (VMT).* San Jose: Mineta Transportation Institute Publications. Retrieved from https://scholarworks.sjsu.edu/mti_publications/377/

the choices rooted in racism that systematically carved high-speed, arterial roads through communities of color.[24]

Exhibit 8 displays the rate of U.S. passenger vehicle deaths by race. People who are Black have a higher rate of vehicle deaths than other racial groups, accounting for 8.21 deaths per 100,000 people. People who are either Latino or White accounted for 6.81 and 6.33 deaths per 100,000 people, respectively. People who are Asian had the lowest rate of passenger vehicle deaths, with 1.42 deaths per 100,000 people.

Exhibit 8. Rates of US passenger vehicle deaths, 2019

Note: Data understates all death rates because race is not recorded in all crashes.

Sources: National Safety Council, The New York Times, 2023.

Low-income neighborhoods are less likely to have sidewalks, marked crosswalks, and nearby access to parks, making it more likely for people of color and low-income individuals to be killed while walking or biking. Using data from 2017, one study found that "fatality rates per 100 million miles traveled are systematically higher for Black and Hispanic Americans for all modes and notably higher for vulnerable modes." Although White Americans biked almost four times the distance per capita as Black Americans, Black Americans died at 4.5 times the rate per mile as White Americans.[25] Put simply, biking puts one at greater risk for collision fatalities, yet Black Americans, who bike proportionally less than white Americans, are still far more likely to be killed by motor vehicles.

The current model of dedicated roadway funding, parking requirements, and undervaluing non-auto modes of transportation is inherently inequitable. North American motorists only pay directly for half of their roadway costs, a small portion for their parking costs, and less for the congestion, risk, and pollution costs they impose on others.[26] All communities are subsidizing the high cost of driving, but these impacts are felt more by low-income communities. For example, parking minimums add hundreds of dollars to housing costs and result in many car-

[24] Leonhardt, D. (2022, August 23). Race, Class and Traffic Deaths. *The New York Times*, pp. https://www.nytimes.com/2022/08/23/briefing/traffic-deaths-class-race-covid.html.

[25] Raifrman, M. A., & Choma, E. F. (2022). Disparities in Activity and Traffic Fatalities by Race/Ethnicity. *American Journal of Preventive Medicine, 63*(2), 160-167.

[26] Litman, T. (2023). *Are Vehicle Travel Reduction Targets Justified? Why and How to Reduce Excessive Automobile Travel.* Victoria: Victoria Transport Policy Institute. Retrieved from https://www.vtpi.org/vmt_red.pdf

free individuals subsidizing the parking costs of their car-dependent neighbors.[27] The negative externality impacts a low-income household far more than a higher-income one, since they are already paying more for housing as a share of expenses. This effect extends across almost every aspect of a household budget where vehicle parking minimums are in effect; groceries cost more to pay for the parking lot outside the store.

VMT reduction programs can be designed to support equity goals. Recent research by the Victoria Transport Policy Institute discusses vehicle travel reduction strategies and the distribution of impacts.[28] Flextime and telework benefit different types of drivers, including low-income and high-income drivers, as well as non-drivers. For non-drivers, the strategies that provide benefits include improvements to transit and ridesharing options, active and micro mode improvements, smart growth and complete streets, parking unbundling and cash out, and road tolls and fuel taxes.

While fuel or carbon tax increases, parking fees, and road tolls may harm low-income drivers, they can be designed to mitigate the harmful effects while still providing positive benefits, especially to lower-income households who do not drive. Low-income drivers benefit from car sharing, distance-based insurance and registration fees, and parking cash out. High-income drivers benefit from parking management, parking fees, road tolls and congestion pricing.

Both low-income and high-income drivers might encounter transportation changes from designs supportive of mode shift; changes such as road space reallocation can actually improve vehicular throughput while providing space for other modes. Additional benefits offsetting the short-term disruption of a design change include traffic evaporation, mode shift potential, and the ability to move more people in a given amount of space when more spatially efficient modes are provided and inviting.[29]

Both micro-level changes (adding sidewalks or streetscape urban design features) and macro-level ones (adding housing near transit) allow more people of all income levels to reduce their car dependence in the long term. This may become more important as new vehicles become more expensive, which could ultimately impact the used car market putting vehicles further out of reach for the lowest income households.[30]

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[27] Litman, T. (2022). Evaluating Transportation Equity: Guidance for Incorporating Distributional Impacts in Transport Planning. *ITE Journal, 92*(4), 42-49. Retrieved from https://vtpi.org/Litman_ITEJ_Equity_Apr2022.pdf

[28] Litman, T. (2023). Are Vehicle Travel Reduction Targets Justified? Why and How to Reduce Excessive Automobile Travel. Victoria: Victoria Transport Policy Institute. Retrieved from https://www.vtpi.org/vmt_red.pdf on May 3, 2023.

[29] National Cooperative Highway Research Program. (2022). Guidebook for Roadway Cross-section Reallocation. Retrieved from https://www.trb.org/Publications/Blurbs/182870.aspx on May 3, 2023.

[30] Karaian, J., & Smialek, J. (2023, March 4). Is the Entire Economy Gentrifying? *The New York Times*, pp. https://www.nytimes.com/2023/03/04/business/economy/premium-prices-inflation.html.

The US has prioritized infrastructure that requires residents to own private vehicles.[31] Recent research for the Washington State Transportation Commission's road usage charge pilot found that while the average US household spends 13% of its household budget on transportation, those with incomes of $30,000-$49,999 spend 20% and those with income less than $30,000 spend 40%. This research also found that households with lower incomes drive fewer miles each year than higher-income households, who take more discretionary trips.[32]

Lower-income households may feel there is no option but to live far from work and/or access services due to housing costs. Policies to reduce VMT must consider whether people have options to travel to school, training, or education opportunities to ensure they are equitable. Affordability can be addressed through VMT reduction strategies by decreasing the cost and distance of travel by investing in an effective multimodal transportation system and prioritizing affordable housing near major transit hubs and employment centers. These are not new strategies, and the tools are known—e.g., the strategies identified in the Department of Commerce's guidebook on transportation elements of comprehensive plans. There are on the ground examples here in our state as discussed in the second VMT proviso report.

[31] Institute for Transportation & Development Policy. (2019, May 23). *The High Cost of Transportation in the United States*. Retrieved from ITDP: https://www.itdp.org/2019/05/23/high-cost-transportation-united-states/

[32] BERK, Yates Consulting Group, and CDM Smith. (2022). *WA RUC Equity Research and Outreach.* Olympia: Washington State Transportation Commission. Retrieved from https://waroadusagecharge.org/wp-content/uploads/2022/06/WA-RUC-Forward-Drive-Equity-Research-and-Outreach-Final-Report.pdf