An Analysis of Potential Impacts of the Proposed Vehicle Miles Traveled Tax Bill in California

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Research question

The expected environmental and fiscal impact of California's new Mileage based tax system in relation to the demand for vehicles powered by electric drivetrains.

Abstract

Should a vehicle miles traveled (VMT) tax be implemented in California? I perform a literature review covering all papers that study VMT tax systems in other contexts and discuss how effective these are at reducing miles traveled and air pollution. I use California public infrastructure and vehicle sales data to show what a VMT in California would cost denizens in the state. I conclude with a discussion on the global applicability of this tax structure based on my findings. A VMT tax can be effective at solving a revenue deficit provided incomes are high enough, there are trusted institutions, and other transit options for consumers to substitute.

Keywords: Climate Change, Emissions, Greenhouse Gases, Externalities, Pigouvian tax

Introduction

In a world that is rapidly modernizing its ideologies to focus not only on thriving economies, but also on flourishing ecology; issues like climate change have come to the forefront of many global conversations in recent years. Societies are realizing that ignorance is, in fact, only short term bliss. In the long run, the future of humankind is jeopardized by current unsustainable consumerist behaviors.

In line with global ideologies, even the economic market for automotives has seemed to set its eye on a more sustainable future. The global transportation sector emits more than 7 billion metric tons of

carbon dioxide a year (Distribution of worldwide transport sector CO2e, Statista, 2024), a gas known for its devastating effects on global temperatures. Additionally, cars and vans account for a whopping 48% of global transportation emissions (Statista, 2024). The electrification of the automobile has been an idea for many centuries now, but has only become a viable commercial product within the last decade. The combination of global energy sources becoming more renewable, and cars moving away from fossil fuels, could result in a sizable mitigation to potential future externalities caused by the environmental damage produced by the transport industry. This is why it appears pertinent to study whether or not electric cars can actually change our future, and how viable global applications of environmental regulations (particularly in the field of light duty vehicles) are likely to be. This global issue will be magnified in the context of a potential new law in California that is likely to significantly reduce new ZEV (Zero Emission Vehicle) sales statewide, the overwhelming majority of which are electric cars; this new law could act as an example for other states.

California is currently discussing whether to modify their vehicle tax scheme in order to implement a more equitable per-mile tax that applies to ZEVs and gas cars alike. The state is discussing whether to implement this policy in lieu of its current gas tax or in conjunction with it. California originally proposed this bill back in 2013, however back then it was just a law that required individual cities to start moving towards monitoring congestion through the new VMT (vehicle miles traveled) system, not the outdated LOS (levels of service) system. The former is seen as more representative because the latter only measures congestion at a point, not how much the vehicle has traveled to get to that point, so a vehicle driving for a long time but meeting minimum traffic would be seen as a success not a failure. California established this law to promote areas/suburbs with multiple land-uses in the same region to avoid unnecessary travel. The original 2013 law has now evolved into a possible tax system that charges driver's a tax per mile traveled. The positives and negatives of this bill are detailed below, along with its possible impacts and viability of implementation.

The purpose of my paper is to bring together existing research in a manner that gives a holistic answer to a complicated question. The possibilities of practical application of the findings in this paper are vast, as this paper can be used to aid policy implementation in multiple different regional contexts.

I aim to answer my research question in a simple yet nuanced manner that can give many different perspectives, as the impacts of a VMT tax cannot just be viewed in a positive or negative light, it is far more complex than that.

My scope and abilities are limited that are available to the public on the internet and are accessible by me. I am aware that I may hold underlying biases but I aim to keep this paper as objective and multi-faceted as possible in order to achieve the most accurate findings.

Literature Review

Why the need for vehicle taxes is present

In the first section of the literature review we will look at papers relating to the underlying issue (overconsumption of driving) and will, hence, understand why this tax is needed.

The first paper we will look at is "Declining Motor Fuel Tax Revenue Due to Electric Vehicles and Increased Fuel Efficiency (Madeline Melby)." This study finds that over time motor fuel tax revenue has been steadily declining for 3 major reasons. Cars becoming more efficient, more electric cars being sold, and the tax rate not accounting for inflation. This means that the highway trust fund now needs handouts from the treasury to stay solvent. The study used data given by the federal government to come to this conclusion and suggests implementing a different type of tax instead of or in conjunction with the gas tax. This study supplements my research question well by helping showcase the causes for the issue of lower government revenue. However, the paper doesn't account for the environmental gains that electric cars bring, and sees them not paying taxes as dodging social burdens whereas they may actually be increasing community surplus.

In an effort to reconcile the lost income, the government can choose to implement a tax on all cars, possible impacts of such a tax are explored in the paper "Aspects of Environmentally Beneficial Tax Incentives. A Literature Review (Angela Köppl Margit Schratzenstaller)." This paper deeply analyzes the drawbacks and advantages of using tax incentives versus direct taxation. The literature review finds that while there are a few negatives to tax incentives (eg they can often be regressive when implemented for environmental purposes because being eco friendly in the first place is expensive, eg installing solar panels) they are usually more economically efficient, because the government has to use less time and effort on policing and

resultantly it is less costly to society (other than foregone taxation revenue). This paper can tie into my thesis well as its findings can be used to propose a solution that is both universally helpful but also malleable enough to suit an individual country's needs based on the economic context of that country (for example, accounting for income levels, income inequality and transport alternatives).

Overconsumption of driving

The subsequent set of papers relate to the efficacy of a tax in changing the market equilibrium, in this case we will look at the market for "miles driven", an example of a market failure where primary issue is overconsumption of a demerit good (driving) with the negative externality of emissions.

In respect to this, the study "Effects of a mileage tax for trucks Simon Luechingera,b,* , Florian Roth" aims to (and has) found the impact of a mileage tax on trucks in Switzerland. It was found to reduce truck traffic by 4-6% after the imposition of mileage tax instead of a fuel tax. The paper utilized a regression discontinuity design accompanied by a synthetic control method to ensure accuracy. This paper finds a negative correlation between mileage tax and distance driven by trucks in Switzerland starting in 2001. However this paper examines exclusively trucks, whereas my paper aims to focus on LDVs (Light Duty Vehicles). Additionally, only 13,000 out of the USA's 12.2 million trucks are currently ZEVs (an underwhelming 0.1%) (Washington Post, 2024). Comparatively, nearly 9% of all LDVs are ZEVs (Edmunds, 2024). This means that Californian EV drivers will have a much larger magnitude of change in their net tax payment as they are used to paying 0, whereas the Swiss truck drivers in the study merely substituted a gas tax for a VMT tax, hence we can infer that the reduction in miles driven will be far greater for LDVs.

Another useful paper is "Estimating the Effectiveness of a Vehicle Miles Traveled Tax In Reducing Particulate Matter Emissions (Jordan Carroll-Larson and Arthur J. Caplan)." Their study finds that a simple tax of $0.003 per passenger car mile and $0.01 per light duty truck mile (mean annual tax burden of $128 per household) results in a lowering of annual particulate emissions by between 7% and 11%, depending upon the stubbornness of household driving habits. Additionally there is a 7-12% decrease in emissions depending on the income of the household, households with more than 2 cars tend to be more inelastic in response to the tax, whereas single vehicle houses are more elastic. This paper is great as a way of representing a possible microcosm of what a more widespread law could result in as it looks

specifically at a region in Utah. However, Utah, a state known for its rural nature, has a very different geographical demography to California. The more urban Californian population relies on personal transport less, meaning they are more sensitive to price changes as they have readily available alternative modes of transport, hence one can infer that a similar tax rate would result in a more volatile reduction in emissions compared to Utah.

A final paper that could help understand the impact of taxes on emissions is "Charging Drivers by the Pound: How Does the UK Vehicle Tax System Affect CO2 Emissions? (Davide Cerruti · Anna Alberini · Joshua Linn)." This study compares the various types of carbon/emissions taxes in the UK and contrasts these taxes against each other to debate which one has the greatest reduction in emissions and emission levels of cars sold. They used a projection model to find the reduction in levels of high emission cars sold in the UK. This study found that when a direct tax on emissions is present, the average emission levels of cars fell a lot, but the actual miles driven didn't, cars just became more fuel efficient. The issue with this paper is that it doesn't account for external circumstances in an area and therefore its results are highly localized to the UK, whereas the results of my review will aim to be more global.

Evaluation of a VMT tax

The final subcategory of papers we will review are papers related to possible flaws or points of evaluation in a VMT tax.

The first paper that displays a flaw in VMT taxes that we will examine is "How regressive are mobility-related user fees and gasoline taxes (Edward L. Glaeser, Caitlin S. Gorback, and James M. Poterba)." The paper finds that while Pigouvian taxes can help offset environmental externalities and fund transportation infrastructure, these policies could be regressive. The authors used a mix of basic and complex economic theory to come to this conclusion. This paper provides great perspectives on the pros and cons of pigouvian taxes and helps analyze how environmental taxes can often aid ecological causes but affect social causes detrimentally. For example, a "progressive" VMT tax with tiers of taxation (like income taxes) may unfairly benefit families with multiple vehicles as each individual vehicle is less likely to drive many miles, and will hence stay out of the highest tax bracket. As a counterpoint, ZEVs tend to be less affordable than gas cars, hence by taxing them in any form the Gini coefficient in a country could be reduced.

Another point of evaluation in the scenario a VMT tax is implemented is that tax evasion could increase, this is discussed in "Missing miles: Evasion responses to car taxes (Jarkko Harjua, Tuomas Kosonenb, Joel Slemrodc)." The study finds that tax evasion in Finland occurs due to Finland's environmental taxes. Cars that have been used and imported to Finland have their miles overstated so they pay less in taxes. The study found that when the Finnish government increased car taxes the quantity of used cars sold decreased (due to the 6.5% tax increase on heavily emitting cars, but not by much, and amongst tax evaders, didn't change at all. This paper offers insight into human behavior when it comes to automotive taxes, but the response may defer based on the method of monitoring, for example, if California chooses to pursue self reporting, tax evasion may be far more rampant than taking odometer readings or using traffic cameras to monitor distance traveled.

Methodology - Breaking down the impacts of a VMT tax

In this section I examine how we can simplify the overarching question of "effects of a VMT tax on emissions" by breaking up various aspects of Car composition and the effect that taxes have on quantities of cars sold.

While electric cars are often hailed as being much cleaner than gas cars, the scale of this statement is often exaggerated. In actuality, the manufacturing and usage of an electric car can be fairly detrimental to a regions' ecological health almost as much as a gas car. The primary negative environmental externalities relate to the source of its energy, along with the type and disposal of its batteries after their life cycle finishes.

In respect to the first point, only about 20% of our planet's energy comes from sources other than fossil fuels (United Nations, 2023). This means that despite the fact that a ZEV doesn't directly emit greenhouse gasses into the atmosphere, it indirectly still contributes to emissions on our planet as most ZEVs are electrically powered, and electricity generation is still largely done through the burning of fossil fuels. However this contribution is still noticeably less than direct emissions, the average fossil fuel power plant is greatly more efficient than your average internal combustion engine (ICE), the thermal efficiency of fossil fuel plants is approximately 40% on average (Geospatial, 2010), whereas gas cars have efficiencies that vary between 11% and 27% (Harvard.edu, 2020). This means that your average ZEV emits less than half of what your average gas powered

car does due to its usage, a figure that will keep shrinking as the world transitions to renewables and nuclear power.

However, a major argument against electric vehicles (which as previously mentioned make up the overwhelming majority of ZEV sales) is that their batteries, once disposed of, are greatly damaging to the disposal site. The average lifespan of an electric car battery is only a decade or two (JD Power, 2022), hence, considering the recent explosion of popularity of these cars in the last decade, we have 5-10 more years to figure out as a planet how to manage the lithium waste, a problem that is yet to be solved. Not only is the disposal of batteries dangerous, as their contents is highly toxic and known to leak into the atmosphere and nearby watersheds, the production of the battery itself is often extremely polluting as well (Earth.org, 2023); numerous protests have been held by local communities where manufacturing plants are located. The table below shows the proportion of emissions produced by a car at every stage of its lifespan.

Vehicle Type	Estimated total emissions over lifespan (tonnes CO2e)	Total estimated emissions created in production (tonnes CO2e)	Proportion of emissions created during production
Gasoline powered vehicles	24	5.6	23%
Electric vehicles	19	8.8	46%

Table 1: Vehicle emission breakdowns by power type.
Source - *LifeCycle Analysis of UK road vehicles* , March 25, 2022.
Data based on a 2015 vehicle in use for 150,000km using 10% ethanol blend and 500g/KWH electricity.

Table 1 shows that if we can improve the production methodology of EVs, their environmental impact will be further greatly reduced. Moreover, it is important to remember the primary ecological advantage that electric cars hold is their potential reductions to future emissions, not just their current improvements in comparison to gas cars. Nations around the world have started using less fossil-fuels and replacing them with nuclear energy and various renewable sources. As previously discussed, a growing proportion of world energy is being produced renewably, this can be seen from the fact that the emissions per KWH of electricity has already fallen over 50% between 2015's value of 500g/KwH to under 170g/KwH in the UK, the country in which the data in table 1 was sourced from (Carbon

Brief, 2024) therefore, the indirect emissions from electric cars will reduce greatly, making them an even more favorable choice over gas cars. If this trend of increasing efficiency of electricity generation continues at a reasonable pace in the USA (as it has in the UK), a reduction of approximately 12 tonnes of CO2e over the lifespan of an electric car is a very feasible projection for 2030. However, this does mean the longer it takes to implement a VMT tax, the less powerful the impact will be on reducing emissions, as they are naturally reducing due to the factors stated above.

The final portion of this methodology for finding the effectiveness of a VMT tax is discussing the effectiveness of the tax in reducing the amount of distance driven. As discussed in the paper "Estimating the Effectiveness of a Vehicle Miles Traveled Tax In Reducing Particulate Matter Emissions (Jordan Carroll-Larson and Arthur J. Caplan)." a VMT tax of just 0.3 cents a mile reduces particulate emissions and mileage per household by 7-11% depending on the income level of the household. Therefore it is a fair assumption that a more drastic tax, such as the one being proposed in California of 2- 4 cents per mile will result in an even higher reduction in total travelled miles, however the reduction in the emissions diminishes the longer the tax takes to be implemented.

Analysis through Case Study (microcosm for Global applicability) - California

The pre-existing gas and car tax in California are set to approximately 78 cents per gallon (aggregated) as of 2024 July. These taxes fund local roads along with highways that run in California, these taxes are largely excise taxes with approximately 3% of them being VAT on the price of the gas that day. The average Californian pays $240 a year in gas taxes, but this includes the drivers of electric cars and hybrids, who pay much less, sometimes even nothing.

To begin with, the current tax burdens and tentative future tax burdens for the average California household are shown below if the state chooses to implement the VMT tax in addition to the existing gas taxes.

Monthly-Mileage MPG (Tax Burden Before)	400	500	750	1000	2000
15	15.89	19.87	29.80	39.73	79.47

20	11.92	14.90	22.35	29.80	59.60
25	9.54	11.92	17.88	23.84	47.68
30	7.95	9.93	14.90	19.87	39.73
40	5.96	7.45	11.18	14.90	29.80
50	4.77	5.96	8.94	11.92	23.84

Table 2: Tax Burden for Gas Cars (Before)
Note - Figures represent tax burden in USD pre-implementation of VMT at July 2024 levels

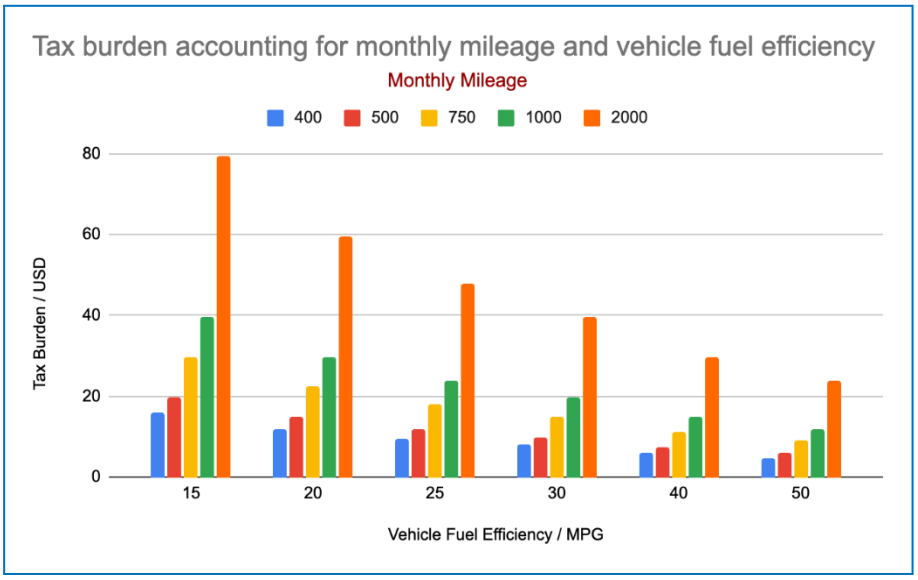

Chart 1 (Accompanying Visual Aid to Table 2)

Monthly-Mileage (VMT Tax Burden After)	400	500	750	1000	2000
All cars	8, 12, 16	10, 15, 20	15, 22.5, 30	20, 30, 40	40, 60, 80

Table 3: Tax Burden for Electric Cars (After). Note - Cells display potential tax burden based on tentative tax rate ($0.02/$0.03/$0.04 per mile) which is yet to be decided as the law is still being discussed.

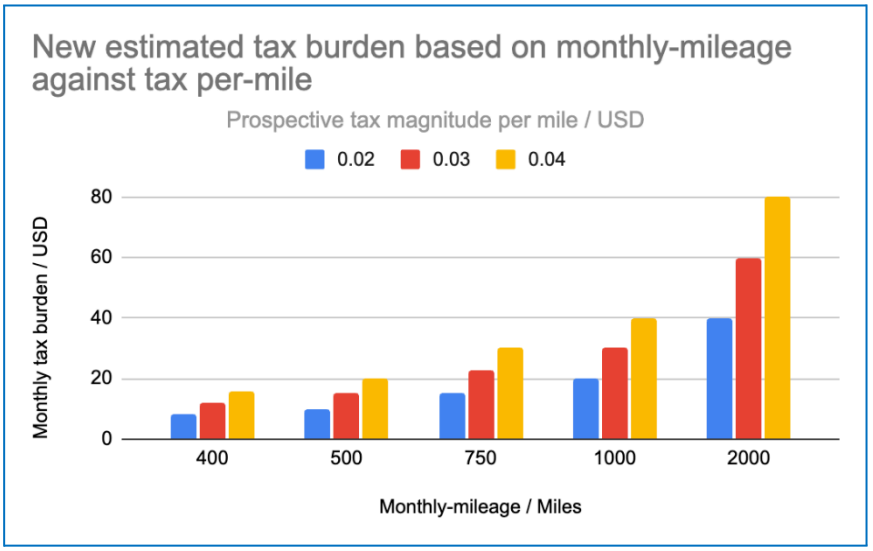

Chart 2 (Accompanying Visual Aid to Table 3)

Monthly-Mileage MPG (Total Tax Burden After)	400	500	750	1000	2000
15	23.89 27.89 31.89	29.87 34.87 39.87	44.80 50.30 59.80	59.73 69.73 79.73	119.47 139.47 159.47
20	19.92 23.92 27.92	24.90 29.90 34.90	37.35 42.85 52.35	49.80 59.80 69.80	99.60 119.60 139.60
25	17.54 21.54 25.54	21.92 26.92 31.92	32.88 40.38 47.88	43.84 53.84 63.84	87.68 107.68 127.68
30	15.95 19.95 23.95	19.93 24.93 19.93	29.90 37.40 44.90	39.87 49.87 59.87	79.73 99.73 119.73
40	13.96 17.96 21.96	17.45 22.45 27.45	26.18 33.68 41.18	34.90 44.90 54.90	69.80 89.80 109.80
50	12.77 16.77 20.77	15.96 20.96 25.96	23.94 31.44 38.94	31.92 41.92 51.92	63.84 83.84 103.84

Table 4: Tax Burden for Gas Cars (After). Note - Cells display potential tax burden based on the conjunction of July 2024 gas

TAXES AND TENTATIVE VMT TAX RATE ($0.02/$0.03/$0.04 PER MILE) WHICH IS YET TO BE DECIDED AS THE LAW IS STILL BEING DISCUSSED.

The tables above are calculated using current gas tax rates and predicted future VMT (vehicle miles traveled) charges. These calculations are likely to remain accurate as long as 3 assumptions are held constant, tax rates, fuel efficiency and driving habits. These are expounded upon below.

Assumption 1, Constant Tax Rates: Since the implementation of the most recent iteration of the gas tax in 1993, the US federal gasoline tax has been unchanged at $0.184 a gallon (failing to account for 113 percent inflation from 1993-2024) , while the federal highway system used to be able to operate on earnings from federal gas taxes and tolls/fees alone, it now requires handouts from the government for a large portion of its budget, the most recent package known as the Bipartisan Infrastructure Law provides $550 billion over fiscal years 2022-2026. While an increase of the federal gas excise tax is greatly needed, it is unlikely to happen anytime soon, as it seems the government would rather take on more debt than lose popularity with the voters. In California, residents also pay roughly $0.6 a gallon in state excise taxes and an additional 3.8% of the fuel cost (on average) on local/state sales taxes; these have historically increased at a rate of 0.28 cents a year since 2019 (as shown in the chart below). This tax is likely to keep rising at a similar rate, which is important, but not too relevant as it is simply keeping in line with inflation levels which have averaged 3.8% between 1993 and 2023. Finally the state/local sales taxes have fluctuated when administration in parliament changes, but California historically has not been much of a swing state, so these are unlikely to change too much in the near future. The assumption of a constant tax rate is wrong, but by assuming a constant rate of growth, keeping in line with, or below, inflation, we can simplify our findings to get a constant value for gas tax rates in relation to income (which should hopefully rise at a similar rate to the taxes).

Assumption 2, Constant Driving habits: Historically people have been driving further distances to get to their job due to urban sprawl and the rapid urbanization that causes it. But now people are shifting towards more environmentally sustainable driving habits as governments are encouraging multi-use residential areas. So assuming constant driving habits in the long run would likely be a fallacy. However, driving habits seem to be holding steady for at least the next 10 years, as despite people moving away from excessive driving worldwide, in the USA, urbanization and city expansion seems to

remain the norm in most states, so assuming similar driving habits will remain steady would not be unreasonable. However, should any major innovations occur in the next decade (like the legalization of air transportation, like drone taxis, or the legalization of fully autonomous cars) occur, then these habits would naturally change rapidly.

Assumption 3, Fuel efficiency constance: With the modernisation of the automobile, fuel efficiency has gotten better at. every turn, but now we appear to be reaching a plateau point in history, this could be because innovation into the internal combustion engine has halted, due to firms favoring spending their budget on electric drivetrain innovation, furthermore, we have reacher a natural maxima to the level of fuel efficiency we can achieve for common automobiles that can be viable commercially sold. Therefore, it would be a fair assumption that fuel efficiency will remain stable for the foreseeable future.

Overall, based on the current socio economic atmosphere in California, along with the trends discussed above, it is a fair assumption that if the proposed law were to pass through the state government, then it would not only reduce the miles driven by an estimated 10-15%, but would also bring an estimated $11.7 billion (Assuming VMT rate of $”0.03” per mile) multiplied by (“12,524” average annual mileage of californians, (The Zebra), 2024) multiplied by “31.1 million” registered cars, (US Motor vehicle registrations in 2022, Statista 2022) into the government's coffers, and if a reasonable part of the tax is allocated to CalTrans, then it could afford to remain solvent without government stimulus or handouts. However, the tax needs to find a manner in which to be progressive, as California is already the 4th most unequal state, with a Gini coefficient of 0.4953, indicating high levels of income inequality. Considering that the rich tend to be able to afford property in more expensive areas, often having to drive less distances to their workplaces, the miles tax could unfairly impact the lower socioeconomic class that can’t afford to live close to their workplaces. This could result in either an increase in usage of public transport amongst lower income groups (contingent on regional availability) or an increase in relative poverty levels if the tax results in unavoidable spending increases. However, considering that the rich also disproportionately own ZEVs, any sort of implementation of the tax could help reduce income inequality. Additionally, mitigation strategies such as subsidies for low-income households or the implementation of a progressive tax rate (possibly based on price of vehicle) could negate the regressive nature of the tax. Moreover, in rural counties, which are often already lower-incomes areas, the lack of

access to public transport and charging stations mean personal gas-powered vehicles are a necessity, hence the current gas-tax does not encourage alternative transport, it only acts as an additional financial burden, hence, the introduction of a VMT tax could create more parity between the tax burden borne by rural and urban areas. As a final consideration, even though there is a likelihood that the proportion of electric cars on the road decreases in relation the gas cars (as there is no longer as much tax benefit), the overall decrease in total cars on the road are likely to more than compensate for any environmental issues that might have been caused, hence this tax could have a positive socio-economic and environmental impact, a rare phenomena.

Applicability worldwide

As we have just done for California, we must now determine the likely impacts of a VMT law on a global scale. However, as every nation is different, I categorize nations by their levels of economic development as individually analyzing every country's specific socio-economic context is not a feasible task.

For simplicity, I start analyzing the more-economically developed countries (MEDCs) These are nations classified by their high levels of disposable income and generally high quality of life. Most MEDCs currently provide tax incentives for driving electric cars, similar to California. Considering this, a VMT law could be equally beneficial for these countries provided they have alternative modes of transport or impose the law only on individuals above a certain income level. Failing to impose either of these would leave the already struggling families feeling even more beaten down and as previously discussed could lead to a widening rift between income levels. If the above are successfully implemented, a VMT tax bill would likely bring more government revenue which can be used on improving infrastructure in an economy, which would create more factor mobility and make driving easier, ensuring a constant flow and effective use of tax dollars. One risk is public backlash; most MEDCs already have high tax rates.

Another type of economy we need to evaluate is emerging economies (EEs). These are countries that were historically low income but have now started industrializing and are growing their economies at fast rates and improving their living standards as well. These countries usually have quickly increasing disposable incomes, which often leads to mass purchases of private vehicles. While these

countries tend to enjoy growing economies, they also account for over half of all world emissions, with India and China alone accounting for over 40% of global greenhouse gas emissions (European database for global atmospheric research). These countries could greatly benefit from an increase in road taxes as they usually suffer from heavy congestion along with their environmental perils, but governments are often reluctant to do so as they are worried this would impede economic growth and cause political unpopularity. Therefore, despite the fact that most EEs could desperately use less congestion and cleaner skies, they are often desperate to maintain their high levels of economic growth (rightfully so) and pull their nations out of poverty. Therefore, I believe a VMT tax in these types of nations would be unpopular but effective, because electric vehicles are usually a lot cheaper in these economies (like BYD, which costs the same as the median gas car in China) and therefore a larger proportion of them tend to be on the road and hence more tax revenue will be brought in to help pay for the (usually) desperately needed road maintenance and upkeep.

The final economy type is a low-income country. These are often characterized by limited development of infrastructure, low/no median disposable income and lower access to services like running water. According to the World Bank, these countries are all located in Africa with the exception of Afghanistan. A VMT tax is unlikely to have much/any impact on socioeconomic development in these nations. This is because automobile ownership is under 10% in every LIC, indicating that the revenue for governments will be marginal. Additionally, these countries don't account for a sizable portion of eworld emissions anyway, hence any environmental benefit will be of not much impact on a global scale. Finally, due to high levels of corruption and tax-evasion that occurs in these economies any revenue from implementation of further taxes is unlikely to provide a meaningful benefit to the public, hence rendering the tax largely useless.

Additionally, it is important to remember that a country's economic status is not the only determinant in the likely success of a VMT policy. Other factors can include the countries cultural attitudes towards driving (for example Switzerland has a culture of using public transport and biking, hence a VMT likely won't have a big taxpayer base) or a country might have cars that are so expensive a relatively minor tax (like a fuel tax) won't make a difference as it is a such a small proportion of the car's price (like in Singapore, where cars are so expensive that 83% of commuters list public transport as their primary mode of travel, (The Straits Times)).

Conclusion

In summary, in this paper, I evaluate the benefits of a new tax for California for the state budget (fiscal approach) and environment. The fiscal benefit will come in the form of the dearly needed VMT revenues that can aid Caltrans in local highway maintenance and will allow them to reduce reliance on handouts from the federal government. Environmentally, even though the tax will likely reduce the proportion of electric cars to gas cars sold, it will also reduce the overall amount of cars driving, which will definitely help reduce emissions (because even electric cars indirectly pollute, so less cars is always better). My overall recommendation would be to move forward with the VMT tax, but in order to mitigate the possible regressive nature of the tax I would recommend implementing a progressive tax rate to in counties where public transport lacks, however in areas with sufficient public transport, I would instead recommend incentivizing it through subsidies (partially/fully funded by the VMT tax) as this could have a more lasting positive impact on the community; if more commuters use public transport, it's revenue increases and hence it's quality will improve, creating a positive self-perpetuating cycle. This thesis is only valid for California though, and as previously discussed, regional context (even within California) can greatly differ the impacts of a VMT tax like the one proposed.

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