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Should Louisiana Raise the Gasoline Tax?

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Executive Summary

Increasing the gasoline tax is a perennial policy question in Louisiana. Calls to increase the gasoline tax and use the revenue to improve road infrastructure stall out annually but return the next year like clockwork.[1] The year 2021 is no exception, with renewed interest among some state legislators to increase the $0.20 per-gallon gasoline tax last increased in 1990— the seventh-lowest and longest-standing gasoline tax in the nation.[2] This paper will provide a nontechnical guide to the economic benefits and costs of increasing Louisiana's gasoline tax. Some practical implementation options regarding the tax's equity, revenue usage, and other issues will also be discussed.

[1] Gasoline tax hike proposals make news headlines annually. See for example, https://www.theadvocate.com/baton_rouge/news/politics/article_58ca1566-2db0-11eb-bc29-7ba2c5e19a7b.html, https://www.theadvocate.com/baton_rouge/news/politics/legislature/article_%201f782fd0-78e6-11e9-ab44-1f4d7c31f29d.html, https://www.ksla.com/story/35456074/nwla-lawmakers-weigh-in-on-proposed-gasoline-tax-increase/, and https://www.theadvocate.com/baton_rouge/news/weather_traffic/article_32ffae80-9b02-11e6-852c-6b6ab8e1c01b.html.

[2] See https://www.theadvocate.com/baton_rouge/news/politics/legislature/article_b17685ec-67ca-11eb-bc60-c3f6ab2b9624.html.

1 | Background

Gasoline taxes are a primary funding mechanism for roads in the U.S., but the level they are set at is often debated. These debates arise at both the federal and state levels, and legislation proposing changes to gasoline taxes often makes headlines due to the tax's vast impact.[3] While opponents of gasoline taxes rightly point out that the taxes can be regressive and other issues, many see the benefits of higher taxes to repair infrastructure and reduce congestion, pollution, and other societal woes caused by transportation. To determine whether Louisiana should increase its gasoline tax we must first understand the tax in the context of other state and federal policies as well as if the costs of the tax can be mitigated while the state's residents enjoy the benefits.

Every state in the union levies a tax on gasoline, though there is wide dispersion in the size of these taxes. Figure 1 illustrates state taxes for the contiguous U.S. as of April 2021. Alaska's $0.0895 cents per-gallon tax ranks lowest in the nation while Pennsylvania tops the list at $0.587 cents per gallon. The overall state average is approximately $0.30 per gallon of gasoline. Adding the federal tax of $0.184 per gallon, U.S. drivers pay an average of $0.48 in gasoline taxes per gallon of fuel purchased.

Louisiana drivers pay significantly less than others with the seventh-lowest gasoline tax in the nation at $0.20 per gallon. While Louisiana's low tax certainly reduces transportation costs for the state's drivers, it is important to note that gasoline taxes are generally viewed as user fees for roads. In other words, we use gasoline taxes to fund the infrastructure we drive on. While Louisiana drivers may benefit from paying lower taxes, these benefits are likely offset by the costs of poor infrastructure. For example, rough and damaged roads lead to additional fuel consumption, damage vehicles, cause congestion, and may lead to accidents (Hu et al., 2017; Louhghalam et al., 2015; Nyberg, Bj¨ornstig, and Bygren, 1996; Winston and Langer, 2006). It is entirely possible for these additional fuel, vehicle maintenance, time, and health costs caused by a lack of infrastructure spending to be far larger than what drivers would spend on an increased gasoline tax.

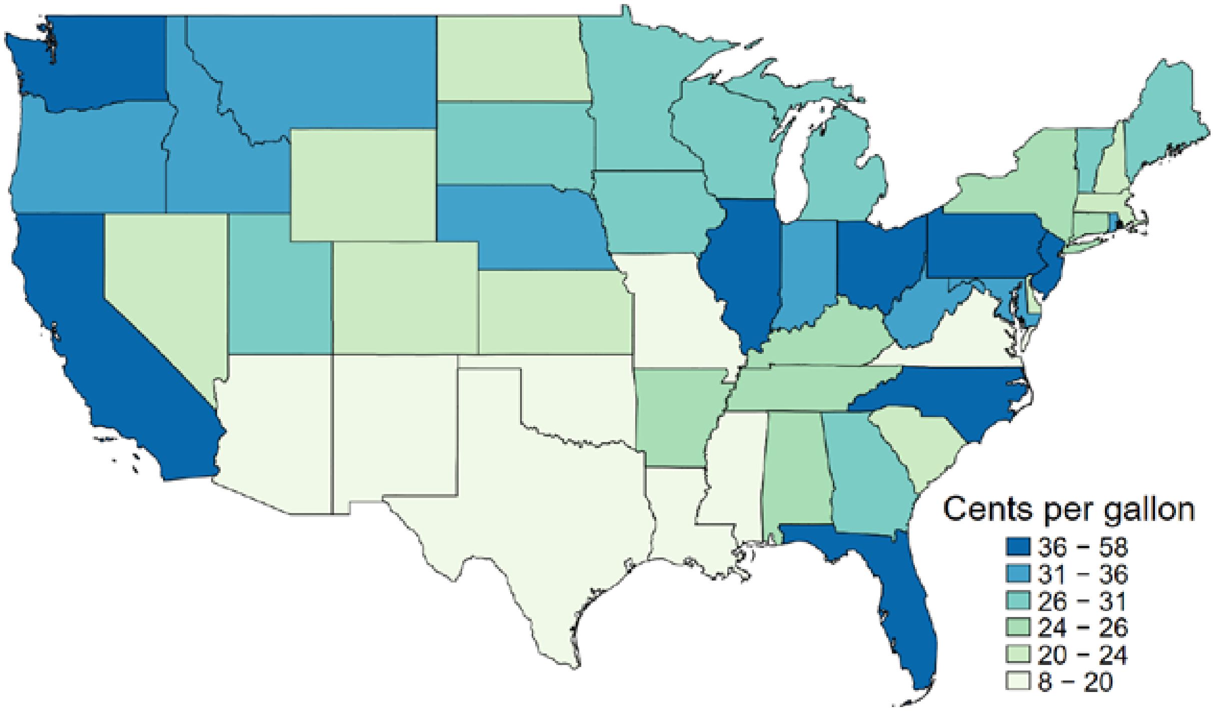
To put Louisiana's infrastructure spending into perspective Figure 2 displays per-capita infrastructure spending for the contiguous U.S. Only six states spend less per capita on their roads than Louisiana. Remember there are also only six states with lower per-gallon gasoline taxes as well. It is however important to note that Louisianans tend to drive more than residents of other states—likely due to a combination of low fuel prices, low gasoline taxes, transit availability, and residential sorting. Louisiana ranks slightly higher among states in gasoline tax revenues per capita than highway spending.

Louisiana's low spending has had ramifications for the transportation network. The American Society of Civil Engineers (ASCE) rated the state's 61,300 miles of public roadways a "D" letter grade.[4] The ASCE also ranked Louisiana second in the U.S. in terms of the number of structurally deficient bridges by area (though the state also ranks fourth in the nation in total bridge area). Further, the road network ranks poorly as measured by the International Roughness Index (IRI), a widely used measure of road quality. Louisiana ranked in the bottom three and five states in terms of urban and rural road roughness in 2011, respectively (Nehiba, 2020).

[3] See for example https://www.reuters.com/article/us-usa-trump-infrastructure-idUSKCN1FY33T, https://www.theadvocate.com/baton_rouge/news/politics/article_58ca1566-2db0-11eb-bc29-7ba2c5e19a7b.html, or https://www.theadvocate.com/baton_rouge/news/politics/legislature/article_1f782fd0-78e6-11e9-ab44-1f4d7c31f29d.html.

[4] See the report card here https://infrastructurereportcard.org/state-item/louisiana/.

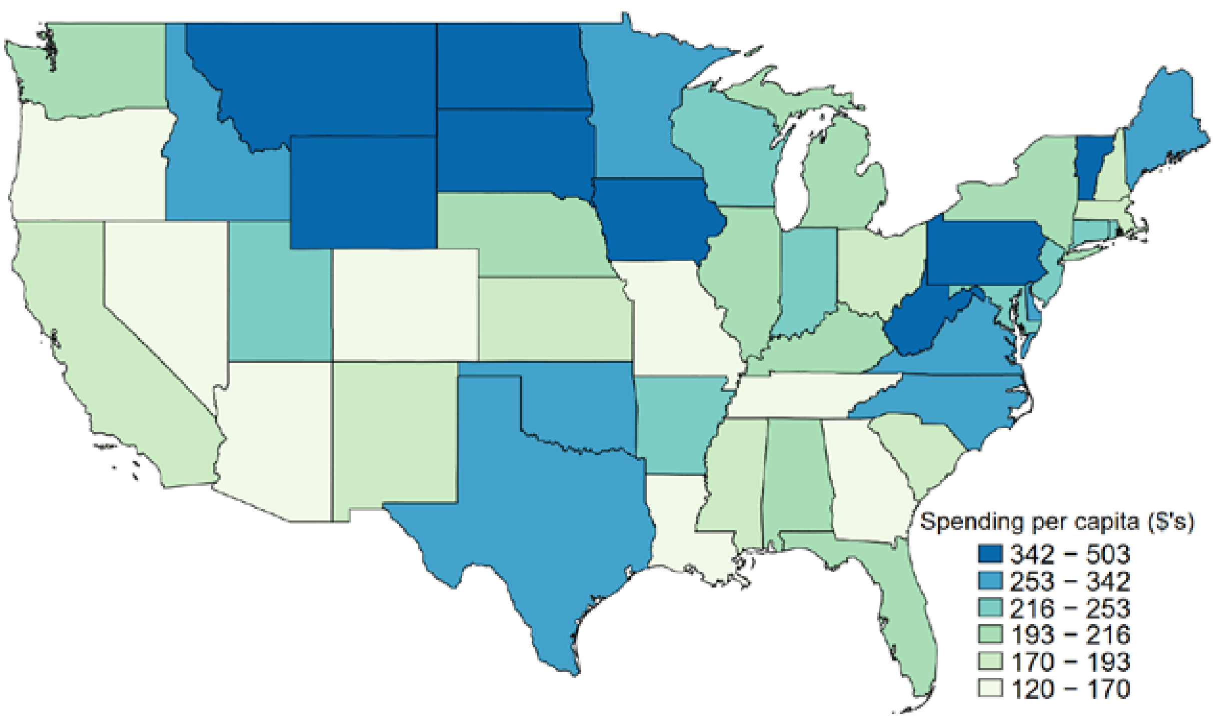
Figure 1: Gasoline Taxes by State



Notes: Figure depicts gasoline taxes in cents per gallon across the U.S. Gasoline taxes depicted are current as of April 2021.

Source: US Federal Highway Administration. https://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm

Figure 2: Highway Spending Per Capita



Notes: Figure depicts highway spending per capita for each state in 2019.

Source: U.S. Census Bureau. https://www.census.gov/data/tables/2019/econ/state/historical-tables.html

These transportation funding issues that have largely contributed to the state's infrastructure woes have worsened over time as two factors have reduced Louisiana's per-mile gasoline tax revenues. First, because the state has not increased its tax in decades— the gasoline tax has remained stagnant since January of 1990—inflation has reduced the purchasing power of the per-gallon tax. Second, because vehicles have become more fuel efficient—in large part due to federal Corporate Average Fuel Economy Standards—vehicles travel further per gallon of gasoline. This means that our roads see more miles driven, but gasoline tax revenues *per mile* have fallen.

Figure 3 depicts the number of months since each state last changed their gasoline tax relative to April 2021. Louisiana has the longest-standing gasoline tax in the nation with 375 months since it was last changed. Importantly, that is 375 months of inflation eroding the value of gasoline tax revenue for the state. Texas, New Mexico, Colorado, and Delaware have also gone an extended period without changing their tax, but much of the nation has changed its tax in the last 3–4 years. Indeed, even many states typically considered conservative on the political spectrum have recently increased their fuel taxes, suggesting that gasoline taxes need not always be a partisan issue.

Figure 4 plots Louisiana's inflation adjusted gasoline tax from the time it was last changed in January of 1990 through 2019. As the baseline is 1990, the value of the $0.20 per-gallon tax is exactly $0.20 at the beginning of the period, but the purchasing power of the tax steadily decreases. At the end of 2019, the value of tax has nearly halved in real terms. This suggests that each gallon of fuel sold in Louisiana in 2019 can provide only half the infrastructure funding (in real terms) that it could in 1990.

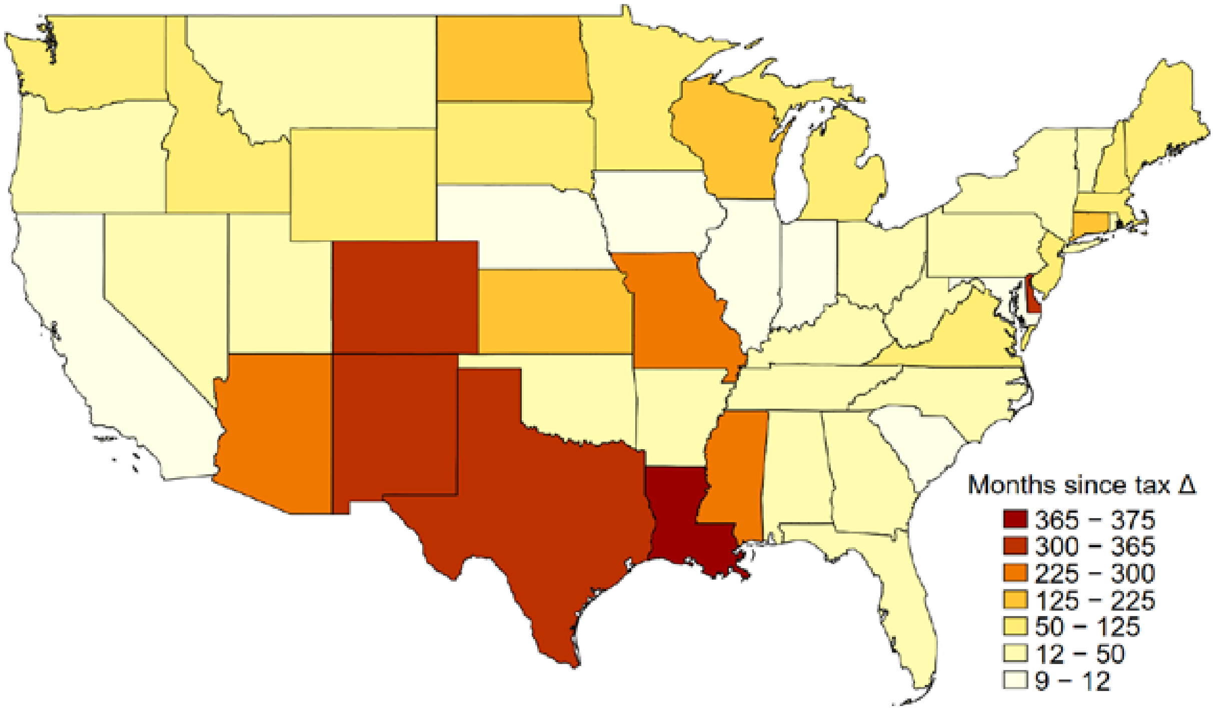
Figure 5 plots how *per-mile* gasoline tax revenue has changed over the same period due to increasing average fleet fuel economy. Because fleet fuel economy is determined by both fuel economy standards and consumer preferences (drivers are more likely to purchase efficient vehicles when fuel prices are high) the per-mile value of Louisiana's fuel tax has not decreased as steadily due to fuel efficiency as it has due to inflation. There is however a significant decline in per-mile revenues over the period of nearly 9 percent, a figure that will continue to grow as fuel economy standards are required to rise by 1.5 percent annually through 2026.[5]

Finally, Figure 6 combines the revenue decay from the previous two figures to illustrate how both inflation and fuel efficiency have led to a decay in per-mile gasoline tax revenues within the state. The cumulative effect of these factors on per-mile revenues is large. Revenues have declined from over 1 cent per mile to less than half of a cent per mile.

Louisiana's gasoline tax is objectively low and has remained stagnant for decades—allowing the tax revenues and purchasing power of those revenues to deteriorate due to inflation and improved vehicle fuel efficiency. Simultaneously, the state's low infrastructure spending (largely funded by fuel tax revenues) has led to a transportation network in need of repair and improvement. While federal funds are a critical part of state-level infrastructure funding, these funds cannot be the sole long-term solution for Louisiana's funding shortfalls.

[5] See the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule issued by the National Highway Traffic Safety Administration and Environmental Protection Agency at https://www.nhtsa.gov/corporate-average-fuel-economy/safe.

Figure 3: Months since Gasoline Tax Change



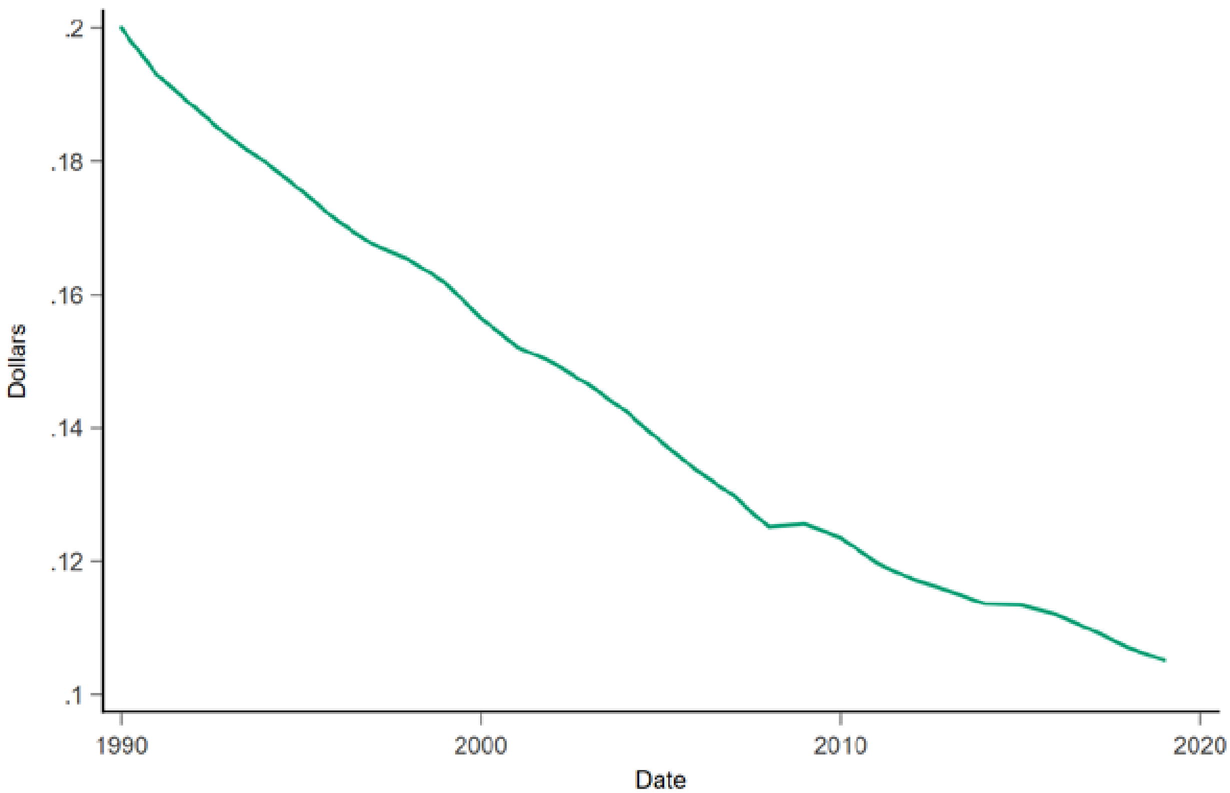
Notes: Figure depicts how many months it has been since the state last updated its gasoline tax, regardless of whether this change was an increase or decrease. Months since is measured from April 2021.

Source: U.S. Federal Highway Administration. https://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm

This is especially true for funds made available through Coronavirus aid.[6] Further, many federal funding opportunities require matching funds from the state, so expanding Louisiana's state revenues may increase the potential to receive federal support. Other short-term funds, like using the state's temporary sales tax revenue for infrastructure funding, will provide just that—a temporary solution to a long-term problem. A robust and sustainable plan to improve the state's infrastructure is required. Increasing the gasoline tax can be a cornerstone of this solution, but we must first carefully and objectively consider the economic costs and benefits of higher fuel taxes.

[6] See for example the Plan to Rebuild Infrastructure and Reshape the Economy and American Rescue Plan https://www.nytimes.com/2021/03/31/business/economy/biden-infrastructure-plan.html, https://home.treasury.gov/news/featured-stories/fact-sheet-the-american-rescue-plan-will-deliver-immediate-economic-relief-to-families.

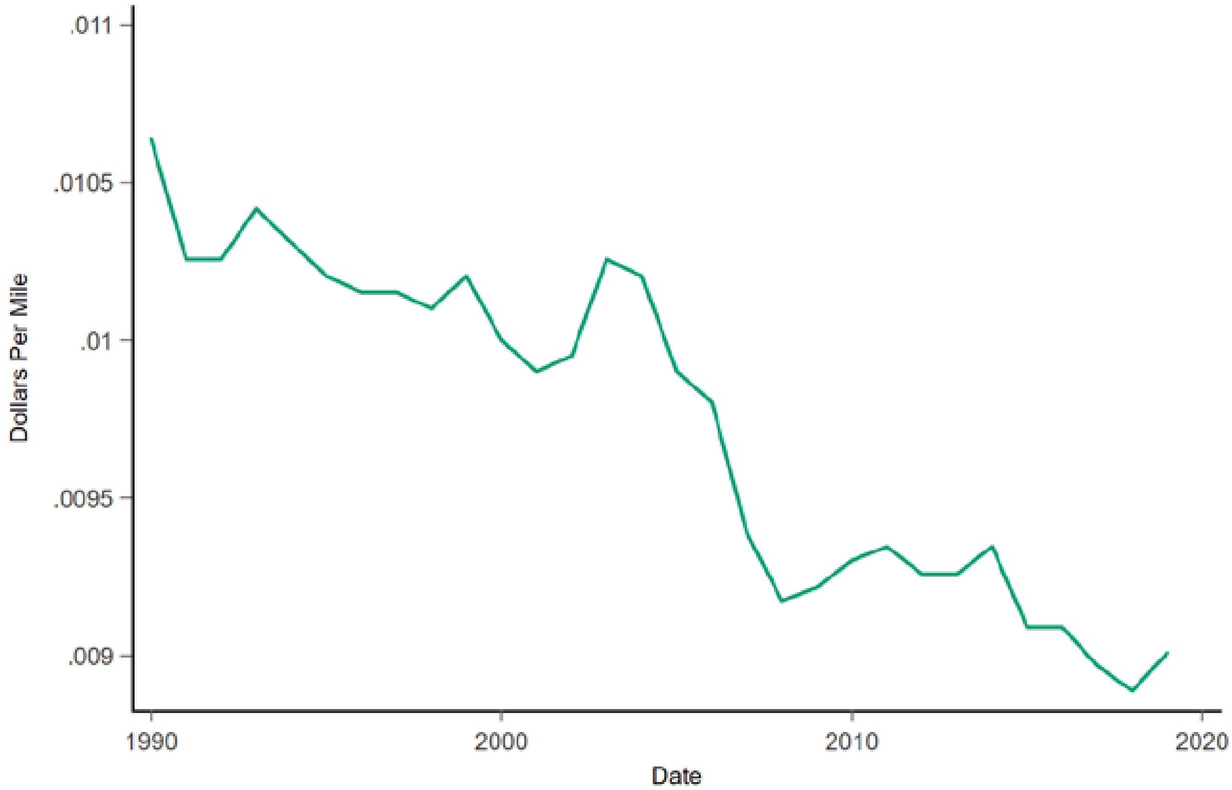
Figure 4: Effect of Inflation on Louisiana's Gasoline Tax Value



Notes: Figure depicts the real purchasing power of Louisiana's $0.20 per-gallon gasoline tax from the time it was last updated (January of 1990) through 2019. Gasoline tax was inflation adjusted using the CPI.

Source: U.S. Federal Highway Administration https://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm, Bureau of Labor Statistics https://www.bls.gov/cpi/research-series/r-cpi-u-rs-home.htm, and author's calculations.

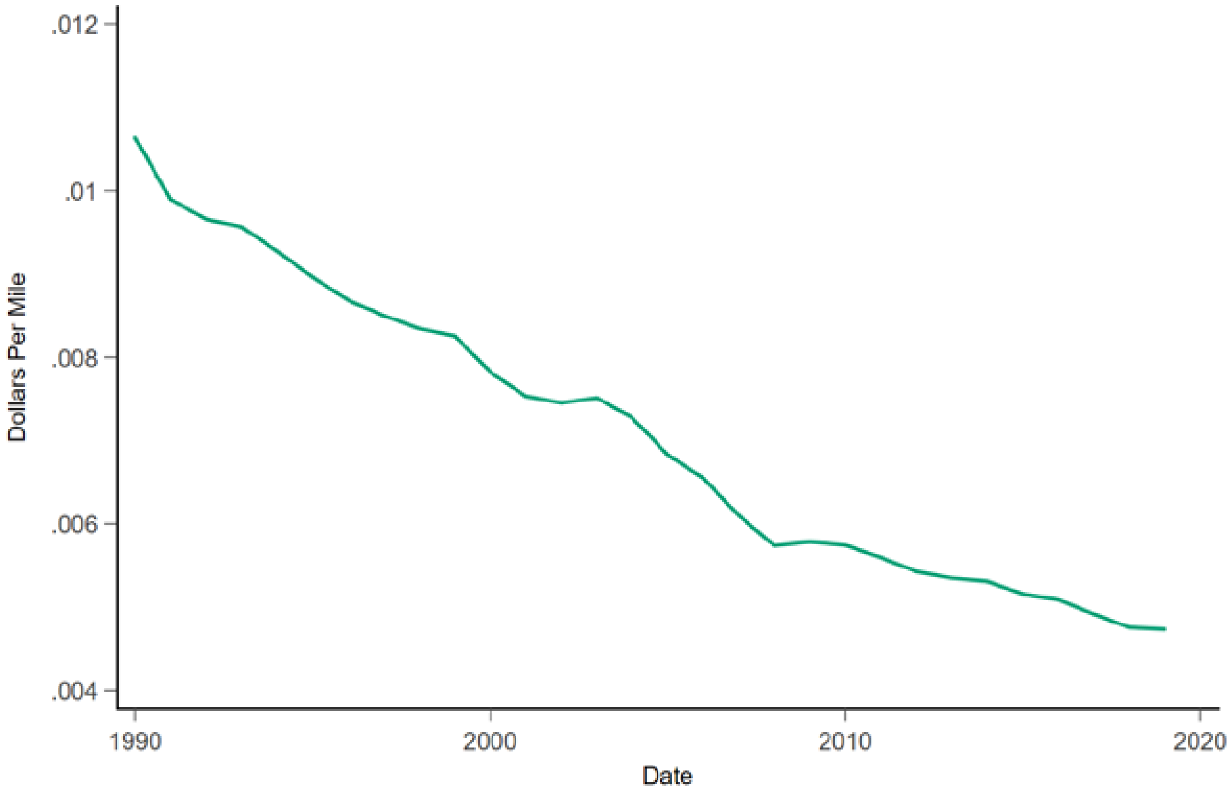
Figure 5: Effect of Improved Fuel Economy on Louisiana's Per-Mile Gasoline Tax Revenues



Notes: Figure depicts the average per-mile revenues from Louisiana's $0.20 per-gallon gasoline tax as measured by dividing the per-gallon tax by average fleet fuel economy from the EIA from the time it was last updated (January of 1990) through 2019.

Source: U.S. Federal Highway Administration https://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm, Bureau of Transportation Statistics https://www.bts.gov/content/average-fuel-efficiency-us-light-duty-vehicles, and author's calculations.

Figure 6: Cumulative Effect of Inflation and Fuel Economy on Louisiana's Per-Mile Gasoline Tax Revenues



Notes: Figure depicts the inflation adjusted average per-mile revenues from Louisiana's $0.20 per-gallon gasoline tax as measured by dividing the per-gallon tax by average fleet fuel economy from the EIA from the time it was last updated (January of 1990) through 2019. Gasoline tax was inflation adjusted using the CPI.

Source: U.S. Federal Highway Administration https://www.fhwa.dot.gov/policyinformation/motorfuelhwy_trustfund.cfm, Bureau of Labor Statistics https://www.bls.gov/cpi/research-series/r-cpi-u-rs-home.htm, Bureau of Transportation Statistics https://www.bts.gov/content/average-fuel-efficiency-us-light-duty-vehicles, and author's calculations.

2 | Issues and Benefits of Gasoline Taxes

2.1 Major Issues

2.1.1 Gasoline Taxes Can Be Regressive

Gasoline taxes—like many policies that uniformly tax individuals—have the potential to be regressive (Bento et al., 2009; Nehiba, 2019; Spiller, Stephens, and Chen, 2017). Gasoline taxes may disproportionately impact low income individuals who already spend a higher share of their total income on transportation. Critics of gasoline taxes rightly point to this potential regressivity as a major issue.

However, gasoline taxes need not be regressive. There are numerous policy modifications that could make a gasoline tax less regressive. The most attractive of these policies are revenue-recycling schemes. In these settings, revenue generated from the gasoline tax is used to offset the gasoline tax burdens of lower income individuals. Spiller, Stephens, and Chen (2017) outlines a partial revenue-recycling program that makes a gasoline tax 15 times less regressive while maintaining 85 cents of each dollar of revenue raised. Such a policy may be beneficial to consider even if the state cannot increase the gasoline tax.

2.1.2 Gasoline Taxes Imperfectly Target Road Usage

Gasoline taxes are often viewed as user fees to fund road infrastructure and repair. Our current per-gallon gasoline taxes do not perfectly align with this notion though. For example, we can consider two separate trim levels of Toyota's 2021 Corolla line — the XSE model gets an estimated combined (highway and city) 34 miles per gallon while XLE model gets a combined 32 miles per gallon.[7] While these vehicles are nearly identical in shape and size, a driver can lower their tax burden by choosing the more fuel-efficient vehicle. Put simply, a driver's total tax burden depends on how much fuel they burn which is not perfectly correlated with the amount they drive. Further, other vehicle characteristics are important when considering how much each driver should be charged using public roadways. Heavier vehicles—particularly heavy-duty trucks—cause a large share of road damage (Cohen and Roth, 2017). While heavier vehicles also use more fuel, fuel usage and weight are again not perfectly correlated.

Since gasoline taxes do not directly tax individuals for how much they use roads or the damage they incur, it is fair to ask if we should use gasoline taxes to fund our road infrastructure. There may indeed be policies better suited for funding infrastructure; however, it is important to note that many of these policies—like a tax on vehicle miles traveled— are potentially even less popular than a gasoline tax. In addition, gasoline taxes are particularly well-suited to price carbon emissions since burning a gallon of fuel produces the same amount of carbon regardless of vehicle.[8] Though they may be imperfect, gasoline taxes are more feasible from a political economy perspective and, as will be discussed in more detail below, still offer significant societal benefits.

[7] See https://www.fueleconomy.gov/feg/PowerSearch.do?action=noform&path=1&year1=2021&year2=2021&make=Toyota&baseModel=Corolla&srchtyp=ymm&pageno=1&rowLimit=50 for more details.

[8] Burning a gallon of gas (approximately 6.3 pounds) produces 20 pounds of carbon dioxide. See https://www.fueleconomy.gov/feg/contentIncludes/co2_inc.htm for more.

2.2 Benefits

2.2.1 Funding Benefits

As mentioned above, Louisiana's transportation infrastructure rates poorly relative to the rest of the nation. Improving the transportation network is one of the major goals of the current state administration, and addressing the state's reported $12.7 billion backlog of transportation construction projects is at the forefront of this effort.[9] The existence of such an enormous backlog suggests there is no shortage of infrastructure projects with benefits that far exceed their costs waiting to be implemented.

Repairing and improving damaged roads, fixing structurally deficient and functionally obsolete bridges, and addressing other infrastructure needs can provide great economic boosts to the state. These improvements can reduce congestion, pollution, and fuel waste while improving safety, greatly increasing economic efficiency, and providing jobs to the state's residents. As a tangible example, Louisiana is home to five of the top 20 ports in the nation as measured by tonnage.[10] Reducing congestion in port areas could allow more goods to flow throughout the state, bolstering economic activity. At a more personal level, drivers could expect reduced wear and tear on their automobiles, extending the lives of the vehicles and reducing repair costs.[11]

2.2.2 Correcting Externalities

Beyond the obvious benefit of generating revenue to fund road infrastructure, gasoline taxes are capable of better aligning the private and social costs of driving (Nehiba, 2019; Parry and Small, 2005; Spiller, Stephens, and Chen et al., 2017). Driving generates negative externalities—costs that accrue to an individual that did not choose to incur those costs. For example, when you drive your car, pollution is generated in the form of particulate matter, nitrogen oxides, carbon dioxide, and other pollutants (EPA, 2020). Emissions from transportation are a major contributor of climate change (AMS, 2019; Lindsey, 2020), reduce worker productivity (Chang et al., 2016, 2019; Graff Zivin and Neidell, 2012; He, Liu, and Salvo, 2019), cause respiratory illnesses (e.g. asthma) (Deryugina et al., 2019; Sheldon and Sankaran, 2017), and impose a number of other costs on society. Despite the real and significant pollution costs created when you drive your vehicle, you are not charged for the damage done to other individuals (who have no say in how much you drive/pollute). The private costs of driving that you face are therefore much lower than the full societal costs of driving.

These external costs are not limited to pollution. Every driver contributes to congestion when they enter a crowded road (Vickrey, 1969). Similarly, even if a driver is rear ended and not considered "at fault" for an accident they are involved in, the accident would not have occurred if they were not on the road. A recent review of the literature found estimates of these marginal external costs to be substantial. Carbon damages are valued between $0.01 and $0.06 per mile, local air pollution up to $0.03 per mile, traffic congestion between $0.03 and $0.07 per mile, and traffic collisions between $0.02 and $0.06 per mile (Butner and Davis Noll, 2020).

[9] See https://gov.louisiana.gov/news/improving-transportation.

[10] See https://www.bts.dot.gov/content/tonnage-top-50-us-water-ports-ranked-total-tons.

[11] ASCE reports that Louisiana drivers pay an unnecessary $667 in costs due to driving on damaged roads per https://infrastructurereportcard.org/state-item/louisiana/.

3 | Additional Policy Options

3.1 Index the Gasoline Tax to Inflation

As discussed above, proposals to increase the gasoline tax are brought forward frequently. These discussions could be largely eliminated—saving policy makers' time and allowing them to focus on other important issues—if the gasoline tax were automatically adjusted for inflation. This type of inflation pegging already exists in many states across the nation. For example, Michigan, California, and many others vary their gasoline taxes based on the Consumer Price Index (NCSL, 2020).[12] It is possible for these adjustments to be made annually or quarterly.

It is also possible to index the gasoline tax to other metrics. For example, Georgia indexes their tax to both inflation as well as vehicle fuel economy (NCSL, 2020). This means that as vehicle fuel efficiency increases, Georgia's fuel tax will adjust accordingly. This type of adjustment brings the gasoline tax much closer to a tax on vehicle miles traveled and improves (though does not perfect) the tax's targeting of road usage.

3.2 Local Policies for Local Problems

Gasoline taxes are largely levied at the federal and state levels, but many transportation issues are local in nature. Congestion is a major issue in Baton Rouge and New Orleans, but of little importance in the rural regions of Louisiana. Likewise, pollution damages from transportation are concentrated in urban areas. If the societal costs of driving vary across these areas, an economically efficient gasoline tax policy would vary across regions as well (Nehiba, 2019).

Allowing counties or parishes to set their own gasoline taxes would allow them to better align the social and private costs of driving within those counties or parishes. Rural areas could implement the minimum state-level tax while urban areas plagued with congestion and pollution could implement higher taxes. These location-specific fuel taxes could also help ensure that public goods are provided with funds largely from the local area.

3.3 A Road-Usage Tax for the Future

As highlighted above, gasoline taxes are not perfect. For many reasons, charging road users by miles driven is likely better than charging them per gallon of gasoline consumed. A true per-mile charge would be much closer to a user fee than a gasoline tax because high mileage drivers can sort into vehicles with high fuel efficiency (paying less in fuel taxes) and many transportation externalities are more correlated with miles driven than fuel used (with the exception of global pollution). Further, though they make up a very small segment of the vehicle fleet, electric and alternative fuel vehicles often do not pay any fuel tax though they still use the roads.[13]

While there are many options for funding road infrastructure other than gasoline taxes, a vehicle miles traveled (VMT) tax that charges road users based on how much they actually use roads is one of the

[12] The Consumer Price Index measures inflation by examining how prices for consumer goods and services change over time.

[13] Davis and Sallee (2019) find that gasoline tax revenues in the U.S. are reduced by approximately $250 million annually due to electric vehicles.

most appealing options. Such a policy can align the private and social costs of driving while funding infrastructure as opposed to other policy options that do not vary with mileage. For example, higher vehicle registration fees to fund road infrastructure charge individuals the same amount whether they drive 50 or 50,000 miles a year, raising equity concerns.

VMT taxes are already being tested in other states. For example, Oregon has an opt-in VMT tax that allows drivers to replace their gasoline tax charges with a VMT charge. This system allows Oregon to examine the costs and benefits of a VMT tax on a small scale and examine different technology options. Louisiana may benefit from implementing a similar pilot program, potentially getting a "head-start" on what very well could be the future of infrastructure funding.

Of course, VMT taxes are not without opposition. They require either somewhat frequent (e.g., quarterly or annual) odometer readings to be performed, some type of GPS monitoring system (often already installed in the vehicle), or other technology to monitor a vehicle's mileage. This undoubtedly raises privacy concerns, which is one reason beginning an opt- in program may be beneficial for the state. Proving that a high level of privacy can be maintained will likely be paramount to a VMT tax's success. VMT taxes may also face regressivity concerns similar to gasoline taxes. These concerns can of course be overcome with various revenue-recycling programs discussed previously and perhaps more easily overcome them than in a gasoline tax setting as the VMT tax would be an entirely new policy.

Finally, if Louisiana did implement a VMT tax pilot program, it may be beneficial to set the tax slightly lower than an equivalent fuel tax (with predetermined increases to eventually make the gas and VMT taxes equivalent). The lower VMT tax may help induce drivers to switch to the VMT tax and increase program participation. Further, it would alleviate some regressivity concerns in the early years of the program as participants would be reducing their tax burden relative to the gasoline tax regime.

4 | Conclusion

Louisiana's low and long-stagnant gasoline tax has led to equally low levels of road infrastructure funding, resulting in a transportation network objectively ranked and widely viewed by the state's drivers as being in poor condition. Though gasoline taxes are not a perfect instrument for raising infrastructure funds or correcting the numerous negative externalities driving creates, they are a well-established policy option that can generate large benefits. Using parameters widely accepted in the literature, it is possible to project some of the effects of a recently proposed $0.10 per-gallon gasoline tax increase in Louisiana.[14]

Using a fuel price elasticity of vehicle miles traveled (VMT) of -0.1 (a measure of how responsive drivers are to fuel costs), the $0.10 fuel tax increase would decrease VMT in the state by 178 million miles annually (for reference, 42 *billion* miles were driven in Louisiana in 2019).[15] Though miles driven falls, the higher tax would produce an additional $186 million annually in tax revenue to contribute to infrastructure improvements. Further, the tax would reduce congestion, collisions, local air pollution, and carbon emissions valued at $42 million annually.[16] Though drivers will lose the benefits from trips not taken after the gasoline tax increase, the large reductions in external costs and potential benefits from infrastructure improvements make a gasoline tax increase a viable policy option. Further modifying the legislation by implementing revenue recycling to reduce the regressivity of the tax or allowing local taxes to target areas with high external costs could also increase the benefits of a gas tax.

[14] The proposed plan would raise the gasoline tax by 10 cents in the initial year with more gradual increases in the ensuing years until the tax reaches a total of $0.42 per gallon in 2033. See https://wgno.com/news/la-lawmaker-pitches-gas-tax-hike-to-tackle-14b-infrastructure-backlog/ for more details.

[15] A fuel price elasticity of approximately -.1 is common in the literature, see Gillingham (2020) for a recent review of these estimates. Louisiana's VMT figures can be found at http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Data_Collection/Inventory%20Reports/Daily%20Vehicle%20Miles%20Traveled%20(2019).pdf

[16] This calculation uses carbon damages from IWG (2016) and damages for congestion, collisions, and local air pollution from FHWA (2000). All values inflated to 2019 dollars.

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