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RESEARCH SUMMARY

IMPROVING THE EFFICIENCY AND EQUITY OF HIGHWAY FUNDING AND MANAGEMENT
The Role of VMT Charges

The current system of funding highways is being rendered obsolete, as increased fuel efficiency decreases revenue from gas taxes and the system's top-down structure discourages innovation and market-based solutions for congestion problems.

A new study published by the Mercatus Center at George Mason University explores the role that vehicle mile charges could play in reforming highway funding and management. Author Tracy C. Miller, an associate professor of economics at Grove City College, finds that replacing fuel taxes with a comprehensive system of vehicle mile charges—particularly if the change is accompanied by a greater role for private firms in owning or managing roads—would achieve a more efficient and equitable arrangement for funding surface transportation infrastructure and could eliminate most congestion without requiring a massive expansion of the highway network. Miller outlines the advantages of such a system compared to the status quo, and presents options for avoiding potential problems, such as privacy issues, in its design and implementation.

Please see "Improving the Efficiency and Equity of Highway Funding and Management: The Role of VMT Charges" to read the study in its entirety and learn more about the author.

KEY POINTS

- Charges for vehicle miles traveled (VMT), if adjusted by time of day and location, could lead to reduced congestion and motivate more efficient transportation choices than the existing mix of fuel taxes and public transportation subsidies does.
- VMT charges could be implemented in a way that preserves the privacy of travelers, though there may be a tradeoff between privacy and the ability to vary charges based on relative scarcity.
- VMT charges could make widespread private ownership and management of highways profitable, which would contribute to efficient resource allocation in a way that the continued public funding and management of highways, even using VMT charges, would not.

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- Less comprehensive approaches to reforming highway funding, such as public-private partnerships and tolling selected highways, may benefit some travelers—but they are inequitable and would result in offsetting external costs from traffic diverted to nearby public roads and highways.

SUMMARY

Background
States and the federal government have long relied on gasoline tax revenues to fund highway and road construction and maintenance. This system is based on an assumption that vehicles that use more gasoline are larger and do more damage to roads, so a per-gallon gas tax reasonably approximates the costs vehicles impose on the transportation system.

But growing traffic congestion, along with declining real gas tax revenues as vehicles have become more fuel efficient, has revealed the inadequacies of fuel taxes as a way to charge drivers for highway usage. Actual capacity expansions have not eliminated congestion problems. Instead, increased capacity lowers the cost of driving during peak periods, leading to rush-hour congestion increasing to its former level in a relatively short period of time.

Flaws of the Existing Fuel Tax System
The fuel tax system for funding transportation falls short in several ways:

- Fuel taxes lead to inefficient allocation of highway investment funds because they do not provide the information needed to make efficient decisions about how much or on which highways to invest.

- Fuel taxes do not provide drivers with observable or accurate signals of how costs change depending on the location and time of a trip, and prevent them from comparing the costs of alternative modes of transportation. This contributes to excessive congestion, particularly on urban freeways, which increases drivers' costs by wasting time and fuel.

Replacing the Fuel Tax System
The simplest mileage-based user fee would be uniform for all miles traveled, but it could vary by vehicle characteristics such as weight per axle.

A more comprehensive system of charging for VMTs, taking into account the time of day when congestion occurs, could accomplish three important goals:

- Earn revenue in proportion to how much people value each particular highway, thereby covering the costs of maintaining and expanding highways as demand warrants.

- Give drivers an incentive to drive less where and when there would otherwise be excess demand and severe congestion.

- Reduce or eliminate certain inequities in funding both within and between states, since revenue could be allocated based on how many drivers use each highway and how much they are willing to pay to do so.

VMT charges that vary by location would also facilitate private firms funding and managing roads and highways *without government subsidies*. The government could best contribute to an efficient allocation by enforcing rules and property rights that would require consumers to experience all the benefits and costs associated with their transportation decisions. If the DOT and other government agencies eliminated barriers to market competition and to the private ownership of roads,

profit-maximizing private firms would make changes in the transportation system that would enable participants to expand net benefits.

Equity Considerations

A VMT system may also enhance equity. For example, while heavy vehicles currently pay more in fuel taxes, they do not pay nearly enough to account for the additional wear and tear they cause. And while those who drive alternative-energy vehicles currently pay much less than those who drive traditionally fueled vehicles, the energy-efficient vehicles cause a similar amount of congestion and pavement damage.

Advocates of market equity also point out that fuel taxes are inequitable geographically, since federal spending on highways is not in proportion to revenues received from each region. While no funding system will eliminate all such inequities, a VMT system can be designed to address these equity issues better than the current system.

Privacy Concerns

Electronic mileage fees raise some concern about personal privacy, including the potential for the government to misuse the information collected about when and where people drive. Specifically, there are concerns about how information would be recorded, who would own and control it, and how it would be communicated to the agency or company responsible for billing and collection.

There are several ways to address these concerns. One approach would be to use an onboard unit that calculates charges and accepts payment within the vehicle so that no location information is communicated outside the vehicle if payment is properly made. Another approach would be to calculate prices outside the vehicle at a facility distinct from the billing office. Other approaches would give drivers choices, such as opting in to toll programs similar to E-ZPass or limiting variable pricing to certain limited-access highways while providing the option to use alternate routes to preserve privacy.

Implementing VMT Charges

One of the biggest challenges to implementing electronic user fees would be making sure that every vehicle is equipped with an onboard unit to record its mileage. This would likely be accomplished through a federal mandate—and would take at least 15 to 20 years, which is how long it would take for newer models to replace the existing US vehicle fleet.

Another challenge is that voters may view VMT charges as a tax increase. Implementation proposals may need to be structured to tie the introduction of VMT charges to the reduction or elimination of gas taxes, or to give drivers the option of switching to VMT charges in exchange for a rebate or exemption from paying fuel taxes.

Conclusion

While replacing gas taxes with VMT charges could raise commuting costs for many drivers and users of mass transit in urban areas, it would reduce the wastage of time and fuel due to congestion. Assuming privacy concerns and other political opposition can be overcome, it could give people an incentive to consider the marginal costs of each travel decision they make, so that scarce transportation resources are allocated to those uses which people value most highly.