

A Path Forward for Distance-Based User Fees

Demonstration uses shared mobility fleets to test feasibility

“Vehicles that don’t use gasoline still contribute to the deterioration of roads and bridges. Distance-based user fees can be applied to any type of vehicle regardless of its fuel source and maintain the foundational “user-pays” principle of road financing.”—*Frank Douma, Humphrey School*

Why Was the Study Needed?

Dependence on the motor fuel tax as a revenue source will become increasingly difficult for transportation agencies in the coming years, as the number of vehicles on the road that use little to no gasoline—including electric vehicles—is expected to grow quickly. To continue providing a strong transportation system, transportation agencies will need new financing tools to supplement shrinking revenue. A logical way to backfill this lost revenue is a distance-based user fee (DBUF)—a fee calculated based on how far one drives rather than how much gas one burns.

A Real-World Demonstration

A broad implementation of distance-based user fees would need to address a number of policy concerns. Most importantly, the systems should not violate privacy rights, be a hassle for drivers, or cost the government an excessive amount to collect.

To explore whether these challenges could be overcome, the Minnesota Department of Transportation (MnDOT) partnered with shared mobility (SM) fleet operators to conduct a demonstration of distance-based user fees. The project also included an autonomous vehicle simulation to understand how a mileage fee might be charged and collected on these vehicles.

During the 12-month demonstration period, MnDOT used existing technologies embedded within SM vehicles to automatically calculate the distance-based fees. These factory-installed “telematics” capabilities enable reporting of the distance travelled and the time the travel occurred, the core data needed for distance-based fee calculations. Privacy of individual driver’s data is ensured because all trip data reported for fee calculation and collection is aggregated by the SM provider before being shared with the state.

This vehicle telematics platform is likely a model for what most new vehicles will be capable of in years to come. Already, this factory-installed technology has become commonplace, and industry analysts expect the embedded technology to become universal soon.

What Did the Researchers Do?

As part of the project, researchers at the Humphrey School of Public Affairs evaluated the demonstration based on its feasibility, efficiency, adequacy, and equity. Work included policy research, financial analysis, and outreach and education efforts. Specifically, they looked at the implications of distance-based user fees on privacy, equity, and administration costs, all of which are often raised as obstacles to distance-based fees.



Key Findings

The evaluation found that the shared-mobility approach has several important advantages:

- **Privacy is possible:** Privacy concerns were essentially non-existent; personal data was collected in ways that customers consented to when they enrolled, and the only data reported to state tax collectors was aggregate distance traveled by the overall fleet.
- **Hassle-free for drivers:** With this method, drivers do not have to buy or install new equipment or report distance travelled to tax collectors. In fact, they don't have to do anything differently.
- **System security:** Using the shared vehicle approach, it is much more difficult for typical users to avoid fees by altering embedded telematics equipment. This is essential to system integrity and revenue collection.
- **Streamlined collection:** A fleet focus allows the government to collect from a relative handful of fleet operators (who already have the embedded telematics needed for data collection), not from millions of individual vehicle owners.

Conclusions

The demonstration's fleet-focused approach to collecting distance-based fees is technically feasible, relatively straightforward to manage, and carries significant advantages over other collection approaches for distance-based fees.

While this project looked at shared mobility fleets, there are many other types of fleets that could use this approach. These include government vehicles, ride-sharing companies, food delivery services, package delivery companies, and freight haulers.

About the Research

- Final report: *Minnesota User Based Fee Demonstration* (CTS, Dec. 2021).
- Research team: Frank Douma, Jerry Zhao, Camila Fonseca, Raihana Zeerak, Adeel Lari, Lee Munnich, Meredith Benesh, Humphrey School of Public Affairs; Joe Loveland, Loveland Communications.
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What Are Shared Mobility Vehicles?

The researchers used this definition: Shared mobility includes carpooling and vanpooling, ride-sourcing services provided by transportation network companies such as Uber and Lyft, and car-sharing services that provide their customers either one-way trips or two-way trips (Zipcar and HOURCAR). With shared mobility services, customers essentially rent the use of vehicles for a relatively short amount of time—perhaps for a few hours.

