

Assessment of Prospective Mileage-Based Fee System to Replace Fuel Taxes for Passenger Vehicles in Pennsylvania

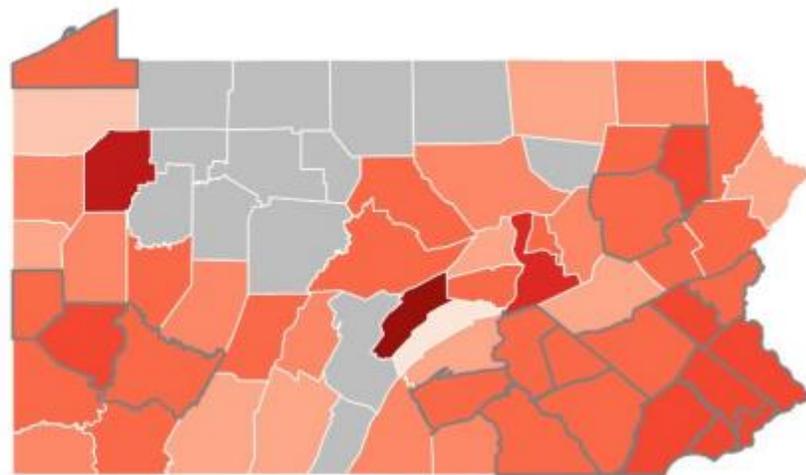
Purpose: State and federal fuel taxes have not been adjusted for inflation and thereby been effectively reduced by 70% in the last 25 years, putting significant strain on budgets needed to fund highways and public transit systems. The project team set out to determine what alternative fees and programs could work to replace the fuel tax revenues by performing an analysis on the mileage-based user fees (MBUF) needed for tax revenue.

Approach: The project team reviewed close to 120 million records from annual PA vehicle inspections across fifteen years to develop high-resolution estimates of per vehicle annual vehicle miles traveled (VMT) aggregated at the state, county, and ZIP code level. Using web scraping, the team assessed each vehicle's fuel economy to develop fleetwide fuel economy estimates for different areas across Pennsylvania. Based on these estimates of VMT and fuel economy, the team estimated the annual cost to vehicle owners of the existing fuel tax compared to a MBUF at various rates.

Key Findings: Based on their estimates, researchers discovered that the 'balance point' for fees to be between 2.4 and 3.2 cents (¢) per mile (i.e., the per-mile MBUF rate at which 50% of the jurisdiction would pay less or as much per year as they currently do in fuel taxes) would vary by county and ZIP code. The team also found that vehicles registered in urban areas travel 10-30% fewer miles per year and consume about 10% less fuel per year than average. Their results show that a shift to MBUF's will, in general, lead to drivers in urban areas and drivers of hybrid electric vehicles paying a higher amount than they currently do. In contrast, drivers in suburban and rural counties will spend less each year.

Conclusion: With the decline of the fuel tax revenues and the increasing proportion of fuel-efficient hybrids and electric vehicles in Pennsylvania's fleet, some form of 'per mile' tax will likely replace gasoline taxes. PennDOT could use inspection records to develop a estimate of their program designs. However, several additional factors still need to be considered including racial and income inequities, consumer perception of a new funding regime, and privacy concerns when collecting data to develop the VMT estimates.

Balance point (\$/mile) ■ 0.024 ■ 0.026 ■ 0.028 ■ 0.030 ■ 0.032



Research Team:

- H. Scott Matthews (Principal Investigator)
<https://orcid.org/0000-0002-4958-5981>

Project Record:

- <https://ppms.cit.cmu.edu/projects/detail/297>

Follow Us:

 www.facebook.com/traffic21.tset

 @Traffic21CMU