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Roadway Costs, User Revenues and Cost Recovery Trends

Roadway expenditures are increasing while user revenues are declining and now cover less than half of roadway costs. See graphs of these trends.

21 December 2025

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Summary

This study analyzes trends in U.S. roadway spending, road user revenues and roadway cost recovery. The portion of road costs funded by user fees is declining and now cover less than half of roadway spending. Cost-recovery pricing is justified to increase efficiency, reduce traffic problems, and minimize the subsidies non-drivers must pay for facilities they do not use.

Introduction

A basic economic principle is that the prices users pay for a good should reflect its marginal production costs. This means that motorists should pay directly for using road, with fees that reflect the congestion, risk and pollution they impose. This ensures that society does not spend $2 for infrastructure that motorists only value at $1, increases efficiency by allowing higher value trips to outbid lower value trips on congested roads, and avoids forcing non-drivers to pay for costly facilities they don't demand.

There are several ways to evaluate optimal pricing. Analysis can focus on short-run costs such as road wear and congestion, or also include recovery of long-term costs such as construction and roadway land value, or externalities such as crash and pollution damages. Some experts prioritize equity goals and so consider how costs and prices vary by ability and income.

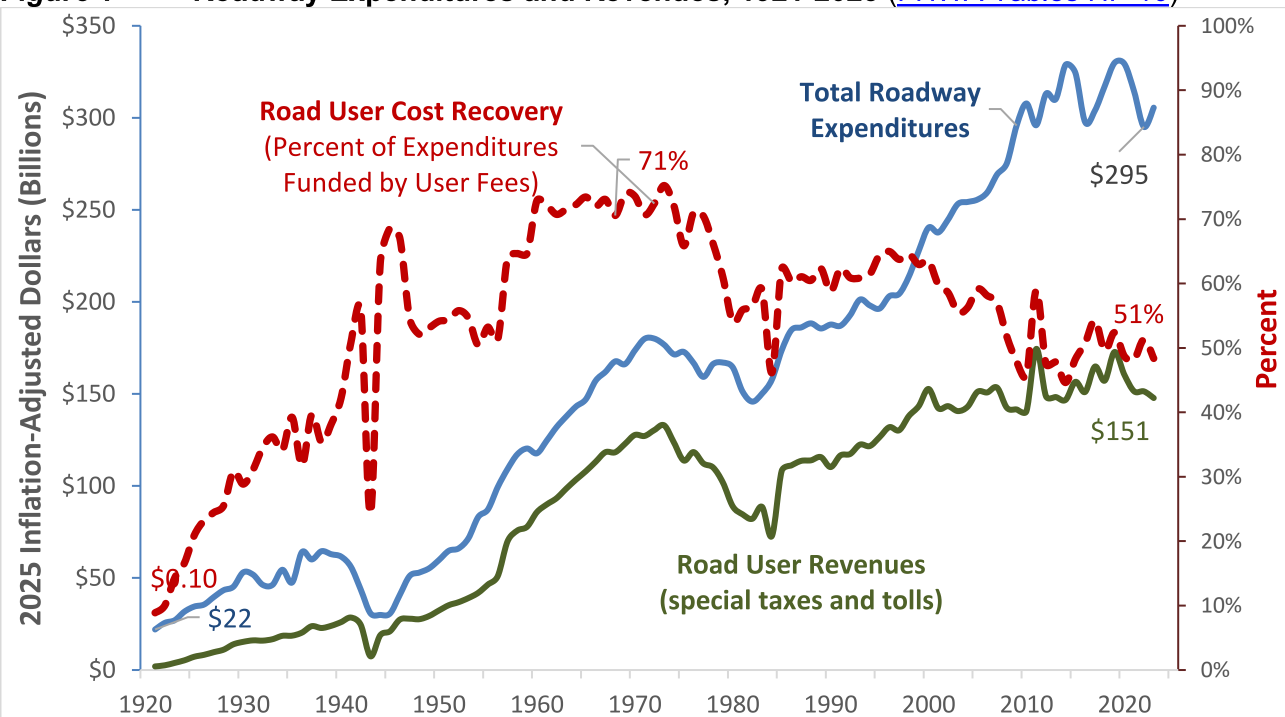
Some previous studies analyzed roadway costs and revenues, but most are limited in scope. Aleck (2025) found that from 1977 to 2022, real (inflation-adjusted) US Federal road user payments per vehicle-mile decreased by more than half, and now only covered about half of Highway Trust Fund expenditures. Analyzing state highway expenditures and revenues, Macumber-Rosin and Hoffer (2025) find that user fees fund only 73% of state roadway spending. Cooke (2025) found that the share of total road funding paid by user fees peaked at 74% in 1973 and is now about 50%.

This study investigates U.S. roadway spending and user revenue trends, and whether they are optimal. This should be of interest to policy makers, planners and advocates who want to increase transportation system efficiency and equity.

Data Sources
Since 1921 the U.S. Public Roads Administration and subsequently the Federal Highway Administration have published annual *Highway Statistics* reports that provide comprehensive data on roadway expenditures, revenues and vehicle travel. This study uses these data, particularly tables HF-10 (*Funding for Highways and Disposition of Highway-User Revenues*), VM-1 (*Annual Vehicle Distance Traveled*) and DV-1C (*Licensed Drivers, Vehicle Registrations and Resident Population*). In a few cases missing values were estimated by interpolation. The CPI *Inflation Calculator* was used to update values to 2025.

Results
Figure 1 shows roadway expenditure and revenue trends.

Figure 1 **Roadway Expenditures and Revenues, 1921-2023** (FHWA Tables HF-10)[1]

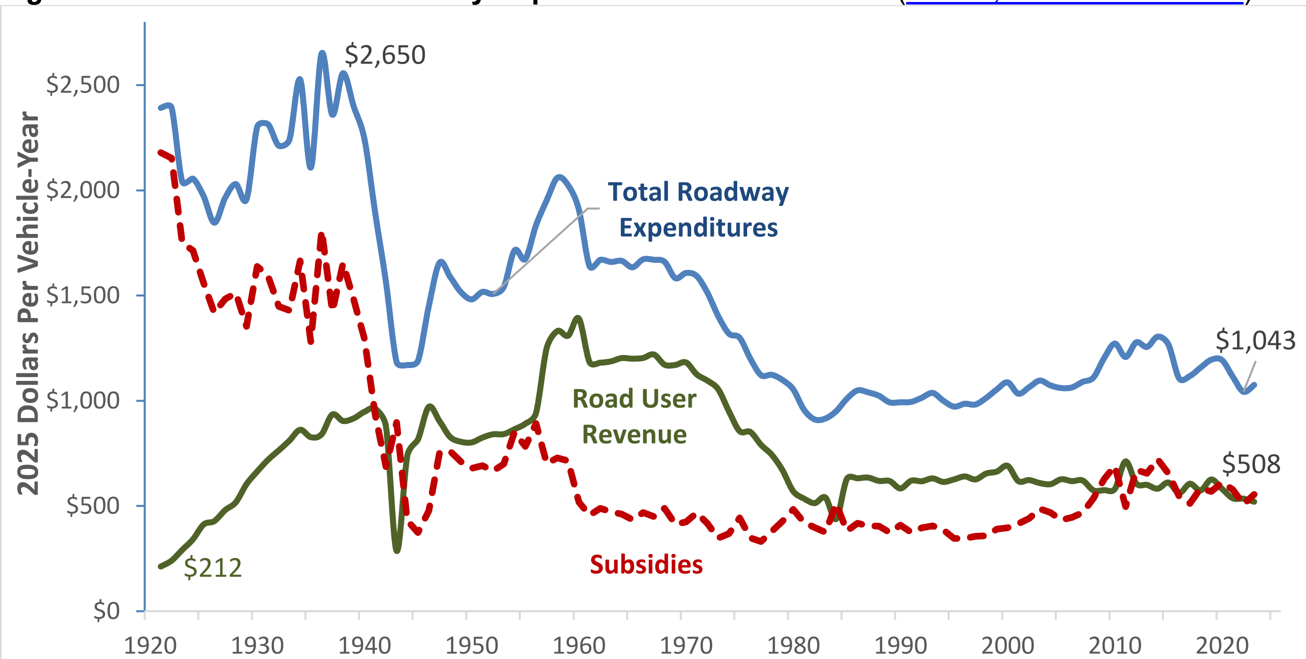


Although user fees once funded most highway expenses, local road costs are primarily funded by general taxes. In the 1960s and 1970s user fees paid virtually all federal and state highway costs and about three-quarters of total roadway costs, but since then inflation-adjusted roadway spending increased much more than user revenues so, user fees now finance only half of total road spending.

This indicates that road user fees never fully cover roadway costs; in the 1960s and 1970s they funded most *highway* spending, but approximately 27% of roadway expenditures are local taxes spent on local roads; during the last four decades federal and state governments have increasingly used general taxes to support the Highway Trust Fund. Between 1960 and 2023 total vehicle travel increased about 4.5 times, from 718 billion to 3,262 billion VMT, and inflation-adjusted roadway spending increased 2.5 times, from $118 billion to $306 billion, but road user revenues only increased 74%, from $85 billion to $148 billion, so road user cost recovery declined from about 75% in the 1970s to about 50% now.

[1] Road User Revenues include special fuel taxes and road tolls. Total Roadway Expenditures reported here exclude non-highway spending such as tax collection expenses and the Mass Transit account.

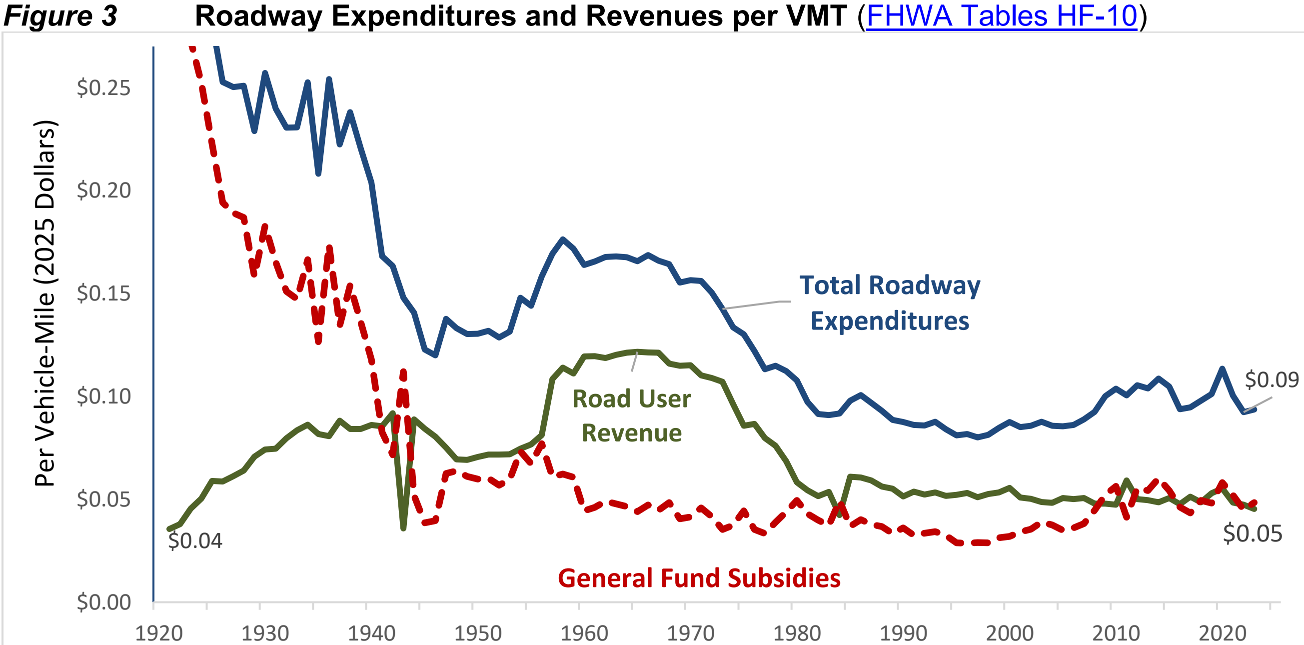
Figure 2 **Per Vehicle Roadway Expenditures and Revenues** (FHWA, HF-10 and DV-1C)



Per vehicle roadway spending is much higher than road user revenues, requiring subsidies from general funds.

Figure 2 shows these trends measured per vehicle, and Figure 3 shows trends per vehicle-mile.

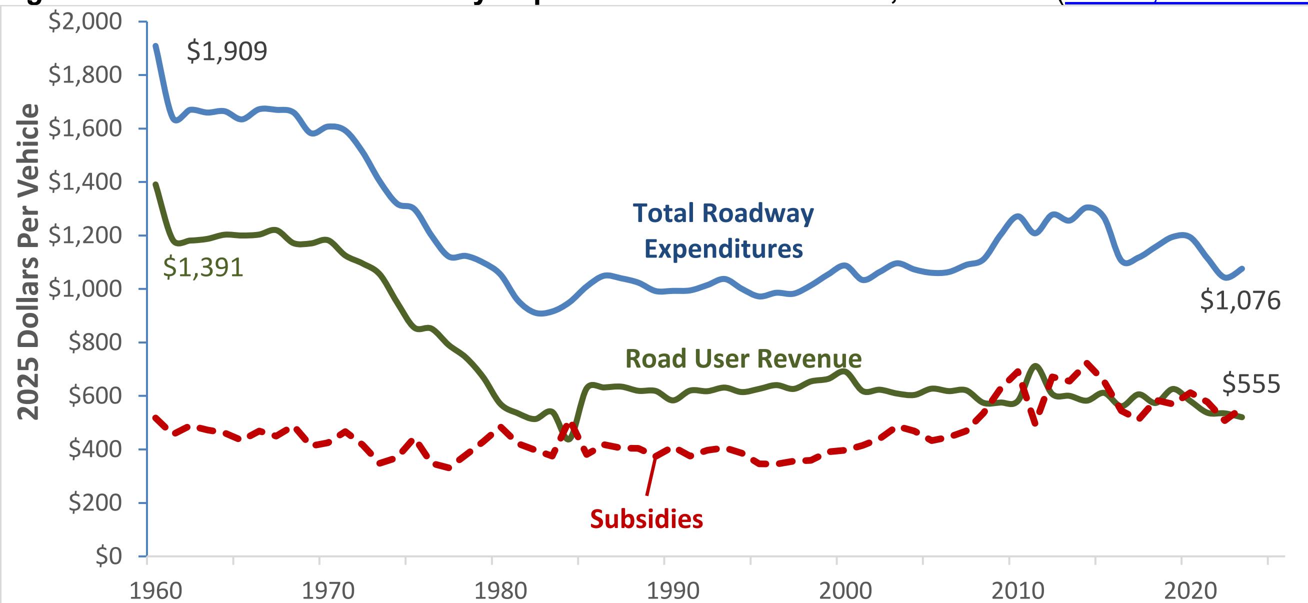
Figure 3 **Roadway Expenditures and Revenues per VMT** (FHWA Tables HF-10)



Roadway spending per vehicle-mile has declined, and user revenues even more. About half of roadway expenditures are now subsidized by general funds.

The following two graphs focus on trends since 1960.

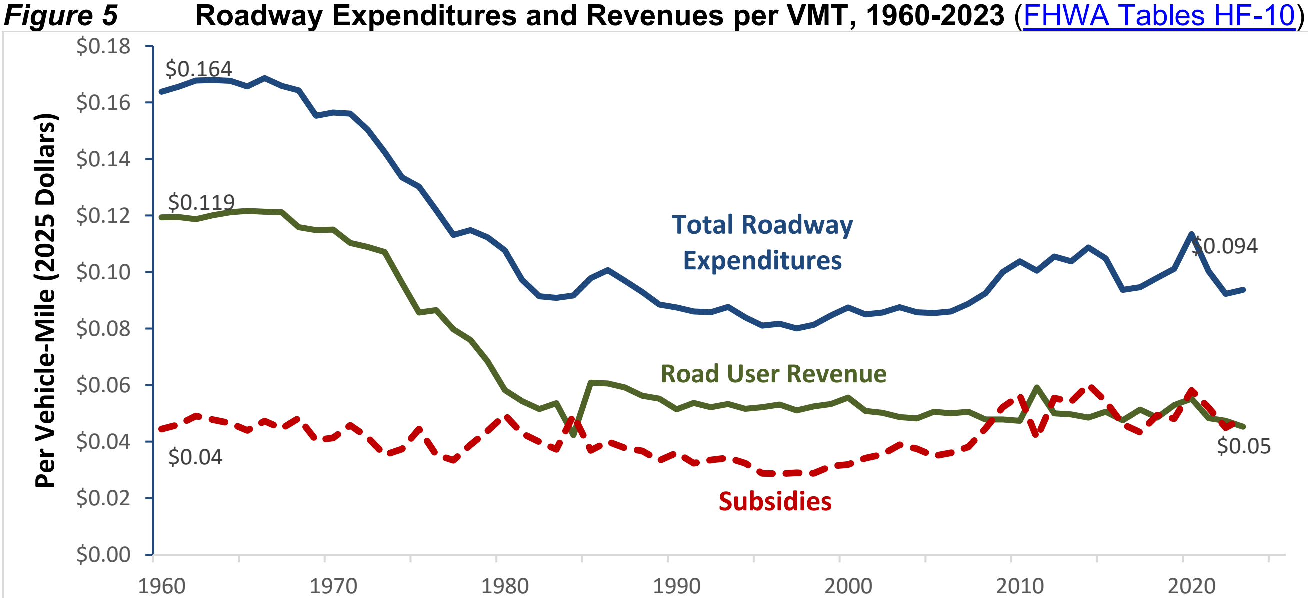
Figure 4 **Per-Vehicle Roadway Expenditures and Revenues, 1960-2023** ([FHWA, Various Years])



Since 1960 inflation-adjusted road expenditures and user revenues declined while subsidies increased to more than $500 per vehicle-year.

In the 1960s, roadway spending exceeded 16¢ and revenues 12¢ per vehicle-mile in current dollars, but because user fees did not increase with inflation or fuel economy (from 12 miles per gallon in 1960 to 24 in 2024), cost recovery declined. More than half of roadway costs are now funded by general taxes.

Figure 5 **Roadway Expenditures and Revenues per VMT, 1960-2023** ([FHWA Tables HF-10])

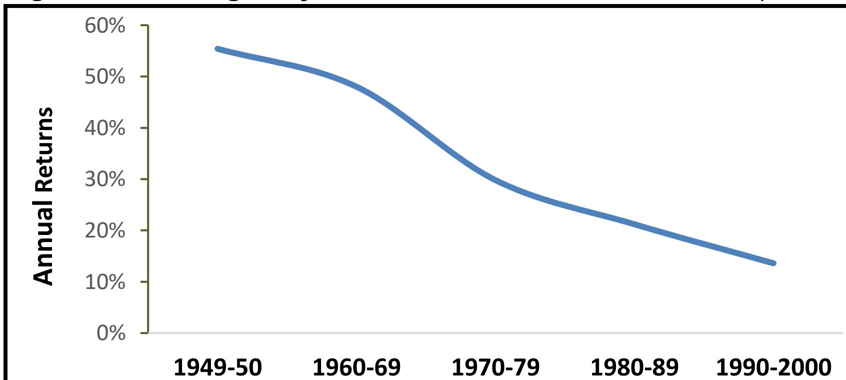


Since 1960, road spending per vehicle-mile declined by half and user revenues declined by two-thirds, so user fees now only fund about half of roadway spending.

What is Optimal
What roadway spending and user revenue levels are optimal?

Although the first paved roads serving an area can significantly increase accessibility and productivity, adding capacity provides declining marginal benefits. The graph below shows how highway investment economic returns declined between 1950 and 2000. The book *Overbuilt: The High Costs and Low Rewards of US Highway Construction* (Guerra 2025) argues that highway investments were economically excessive. Similarly, "Paved with Good Intentions: Fiscal Politics, Freeways, and the 20th Century American City" (Brown, Morris and Taylor 2009) concluded that many urban highways are overall economically and socially harmful. Multimodal planning, TDM incentives and Smart Growth policies tend to provide better economic returns and benefits (Melo, Graham and Canavan 2012). Transport Australia report, *Road Pricing and Transport Investment* (TA 2025) recommends cost recovery road pricing.

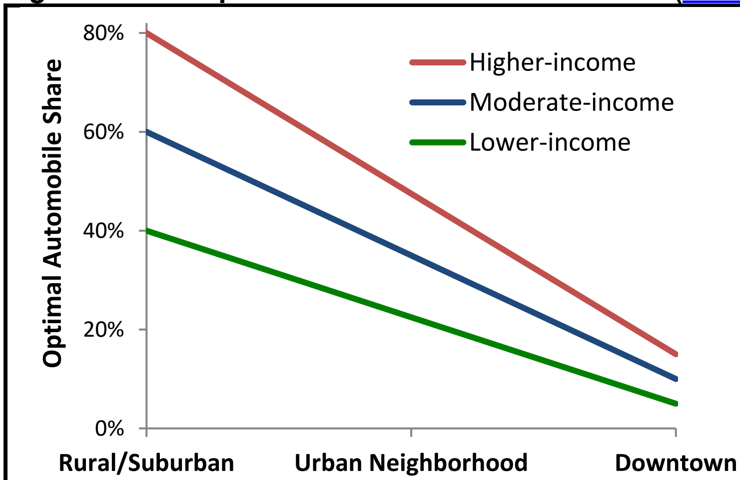
Figure 6 **Highway Investment Economic Returns** (Eberts 2009)



U.S. Highway investment economic returns were high during the 1950s and 60s when the Interstate first developed, but have since declined, and are now probably below returns on other investments, suggesting that urban highway expansions are generally poor investments.

Rational transportation investments should reflect geographic and demographic conditions. Denser and poorer areas should spend less on roads and more on affordable and efficient modes, as illustrated below. This suggests that past spending patterns were probably rational but excessive: large investments were justified to build the national highway system but this was overbuilt, particularly in urban areas; other types of transportation improvements could provide greater benefits overall.

Figure 7 **Optimal Automobile Mode Shares (**[Litman 2023](#)**)**



Transportation investments should reflect geographic and demographic conditions. In affluent rural and suburban areas more than half of trips can be efficiently made by automobile, but this should decline in urban neighborhoods where infrastructure, congestion, crash risk and pollution costs are high

This table critiques various arguments used to justify roadway underpricing and subsidies:

Table 1 **Roadway Underpricing Arguments and Counterarguments**

Argument	Counterargument	Optimal
Everybody uses roads so everybody should pay, including non-drivers.	Although roads do provide basic access that benefit everybody, this only requires minimal capacity. Motorists should bear the additional costs of roads designed to serve their needs.	User fees should recover all roadway costs, with higher prices for larger and more polluting vehicles, and peak-period driving.
Roadway expansions reduce traffic congestion which benefits everybody.	Urban roadway expansions provide little long-term congestion relief and degrade access by other modes.	Implement cost-effective congestion reduction strategies before expanding roads.
Roadway investments increase economic productivity and development that benefit everybody.	In urban regions with mature transportations systems, productivity declines with increased road supply and increases with improvements to non-auto modes and density.	Governments should invest in the most cost-effective accessibility improvement strategies which are seldom roadway subsidies.
Road user fees, such as fuel taxes and road tolls, harm lower-income motorists and are regressive.	Roadway underpricing tends to harm low-income travellers overall by increasing traffic and automobile dependency. User fees are less regressive than most other roadway funding options such as sales taxes.	Planning should favor affordable modes. If roadway underpricing is justified for equity's sake, it should be targetted rather than provided to higher-income drivers.
Roadway spending and subsidy estimates are exaggerated. About 15% of road user revenues are diverted to non-auto modes and transportation demand management (TDM).	Non-auto mode improvements and TDM programs benefit motorists by reducing congestion, crashes and chauffeuring burdens, and are justified to mitigate road and traffic external costs.	Roadway cost accounting should generally include expenditures on all facilities and services that benefit motorists or mitigate traffic problems, including non-auto modes, TMD

There are few rational justifications for roadway underpricing and subsidies.

This suggests that in areas with mature transportation systems there is little reason to underprice and subsidize roadways. Roadway underpricing increases traffic problems including congestion, crashes, pollution and sprawl-related costs, and is unfair to people who drive less than average. For efficiency and fairness' sake transportation subsidies should favor affordable and efficient accessibility options rather than automobile travel. For example, governments should invest at least as much to support a non-auto trip as is spent to subsidize comparable auto trips; parking subsidies should be cashed out so non-drivers receive equivalent value; and governments should support affordable housing development in accessible areas as an alternative to expanding roadways to serve more urban-fringe drives.

There is some ambiguity as to how to measure roadway costs, revenues and subsidies. This study used lower-bound roadway cost and subsidy estimates: it excludes FHWA spending on mass transit, although they benefit motorists by reducing traffic congestion and crash risks, nor does it account for external costs such as parking subsidies, uncompensated crash and environmental damages caused by roads and vehicle traffic. More comprehensive analyses indicate lower roadway cost recovery and greater underpricing (Litman 2026; TA 2025).

Conclusions

During the last century, inflation-adjusted road spending increased with population and vehicle travel growth. Per capita, per vehicle and per vehicle-mile, roadway spending was much higher during the 1960-70s and subsequently declined by about half. This was rational; it reflected declining marginal benefits of expanding a mature roadway system. Roadway user revenue declined even more than spending. Contrary to popular assumptions, user fees never fully paid roadway costs; although they once funded most federal and state highway programs, local roads and a growing portion of highway expenses are funded by general taxes that people pay regardless of how they travel. These subsidies now average more than $500 per vehicle-year and nearly 5¢ per vehicle-mile, and are increasing. These are lower-bound estimates; vehicle travel underpricing is even larger considering other external costs such as parking subsidies, congestion, crash and pollution costs.

This is inefficient and unfair; it results in vehicle travel that is economically inefficient because its costs exceed its benefits, traffic problems increase, and non-drivers are forced to subsidize often-wealthier motorists. For efficiency and fairness, roadways should be funded by user fees with higher prices for larger vehicles and urban-peak driving.

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Note: data for this study is in the *Roadway Funding and Spending Trends* spreadsheet at www.vtpi.org/rsft.xlsx.

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