

AARP Public Policy Institute



Transportation Funding Reform: Equity Considerations for Older Americans

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Research Report

AARP[®]

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AARP's Public Policy Institute informs and stimulates public debate on the issues we face as we age. Through research, analysis and dialogue with the nation's leading experts, PPI promotes development of sound, creative policies to address our common need for economic security, health care, and quality of life.

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FOREWORD

Congress is poised to reauthorize multi-billion dollar legislation to finance an important share of the nation's highway, public transportation, pedestrian, and cycling networks, often called the *surface transportation system*. In so doing, policy makers will consider the best ways to meet intertwined and sometimes conflicting transportation policy goals. These goals include increasing safety, enhancing national economic growth and competitiveness, facilitating greater system efficiency, and reducing environmental degradation. In deliberations over previous federal transportation legislation, substantial conflicts arose over how to balance these goals. Added to these concerns today are growing questions about the sustainability of the current methods of financing the nation's transportation network and the desirability of using alternative financing mechanisms.

The federal Highway Trust Fund, which funds both roads and public transportation, is in financial straits. The Trust Fund, which is fed primarily by a gas tax, has suffered from a diminished revenue stream and has remained solvent only through multiple transfers from the General Fund. Not only do Americans appear averse to raising the gas tax to keep up with inflation, but, because of anticipated long-term increases in fuel-efficient car ownership and possible reductions in overall driving, the ability of the gas tax to sustain current levels of federal funding for transportation is in question.

The bill that Congress ultimately passes will have broad ramifications for the budgets of state and local governments. Strapped for cash even before the recession began, state departments of transportation have had to cut projects and look for new revenue streams for essential ones. Chicago transferred its skyway to a private company for \$1.8 billion through a 99-year lease. Oregon recently completed a mileage fee pilot program that, if adopted nationally, would scrap the gas tax in favor of a tax on each mile driven. State and local governments have also turned to local option general sales taxes.

Each of these new funding mechanisms has merit; nonetheless, they presage a major shift in transportation finance policy that should not take place without a thorough review of its effects on older consumers and lower-income individuals and families. It is not enough to evaluate funding mechanisms solely by how much revenue they generate or their political feasibility.

AARP's Public Policy Institute hopes that this report will broaden the debate on this topic to ensure that the financing structure of our transportation system is fair, robust, and reliable and that it promotes transportation choices for all Americans.

Susan Reinhard
Senior Vice President
AARP Public Policy Institute

EXECUTIVE SUMMARY

Across the nation, the surface transportation network on which Americans depend is deteriorating. Existing sources of revenue used by federal, state, and local government for upkeep no longer keep pace with ever-increasing transportation needs. At the federal level, some estimates suggest that there will be a \$2.3 trillion cumulative gap between gas tax revenues and needed expenditures through 2035. Almost every state and locality faces shortfalls as well. This lack of sufficient revenue has posed a stumbling block for Congress, which must reauthorize the multibillion-dollar federal transportation law that expired in fall 2009. At the moment, crucial investment in the nation's roads, sidewalks, cycling facilities, community transportation services, and public transit systems is in limbo.

Many proposals call on government to fund the nation's transportation network in new ways that meet other important societal goals, such as economic efficiency, environmental protection, and reduction of the nation's dependency on foreign oil. Another important societal goal is equity: Are funding sources *fair*?

This report examines whether current or proposed transportation funding sources at all three levels of government are in some way inequitable for low-income people, rural residents, people with disabilities, or older adults. These questions arise because the equity of various funding sources can depend on the characteristics of the travelers themselves (such as their income or disability) as well as on how, when, where, and how often they use various transportation facilities and services. There is evidence that, overall, older and retired travelers make different demands on the transportation network than the average system user. But even if some transportation funding sources are equitable when paid, the way those funds are *spent* may not be. Older and retired travelers have, on average, very different needs than other travelers. Transportation expenditures, regardless of funding source, are inequitable if they do not take those needs into account.

Equity can and often does conflict with other important societal goals. It is difficult to envision a tax, fee, or charge that meets all the goals society has for the transportation system—raising sufficient revenue, meeting energy and environmental and congestion reduction goals, and being fair and equitable for all those who pay for and use the system. In short, there is no one right financing mechanism. But an evaluation of the equity of potential revenue sources for specific groups in society is an important part of a comprehensive assessment of alternative revenue mechanisms. It can suggest, for example, ways to remediate the negative consequences of otherwise valuable financing methods.

Given the national debate over alternatives to the gas tax, and the wide variety of new or expanded financing mechanisms being adopted at the state and local levels of government, this is an opportune time to examine the equity of various transportation taxes, fees, and charges.

What Is Equity?

Determining equity ultimately comes down to the question, what do we think people *should* pay in various circumstances? Should people who rarely use the transportation system pay as much as frequent users? Should low-income people pay the same amount to use the transportation system as those whose income is higher? Should people living in rural areas have to pay more to receive services because such services are often more expensive to provide in low-density areas? Should people pay for the congestion and

environmental costs they impose upon society? All of these questions highlight four major ways to conceive of and to measure equity:

Payment related:

- *user pays*
- *ability to pay*

Expenditure related:

- *compensatory*
- *needs-based*

The first two concepts deal largely with the equity of the ways revenues are *raised*. The last two have more to do with how, when, and where the revenues are *spent*.

The *user pays* equity concept suggests that taxes or fees are equitable if people pay in proportion to their use of the transportation system and the costs that they impose on that system.

The *ability to pay* concept suggests that financing mechanisms are equitable when poorer people pay a smaller share of their income in taxes or fees than do wealthier people. If low-income people pay a greater share of income in fees or taxes than higher-income people, such fees or taxes are said to be regressive.

The conflict between these two definitions of equity is clear. Under the *user pays* concept, the income of travelers is irrelevant. It is their travel behavior that determines the equitable level of payment. Conversely, under the *ability to pay* principle, traveler behavior is either irrelevant or less important than how paying a tax or fee affects the income of those travelers.

Compensatory equity refers to the process of compensating those who suffered inequities in paying a tax or fee.

Needs-based equity refers to the concept that the transportation system should also respond to travelers with special needs.

It is important to remember that equity evaluations are *relative*. No current or potential funding source can be evaluated in a vacuum or compared to some “perfect” funding source with no negative equity implications. Most transportation taxes, for example, are regressive, but some are more regressive than others. Most taxes used to fund transportation have some link to system use, but some are far less linked to system use than others.

Financing Mechanisms and Their Payment-Related Equity Implications

The Fuel Excise Tax Weighed Against More Direct User Fees

The nation’s transportation system is funded from a combination of federal, state, and local revenues. The major source of federal and state revenue—fuel excise taxes—has long been justified on the *user pays* equity concept. Historically, fuel excise taxes were a sufficient measure of system use. The more one drove, the more fuel purchased and the more excise taxes paid. But as traffic congestion rises, these taxes are increasingly less linked to system use, because they do not charge proportionately more for driving during the peak period. And while those who drive heavy, gas-guzzling or polluting vehicles buy more fuel and thus pay more in fuel taxes, all

evidence suggests that they do not pay enough in additional fuel taxes to offset the significant damage they do. This allows drivers to partially escape the financial, pollution, and health costs that they are imposing on others and creates excess demand for new highway capacity. Fuel excise taxes are also regressive and thus violate the *ability to pay* concept. Furthermore, the long-term sustainability of this revenue source is in question. Revenues are contingent on fuel consumption—a relationship inherently counterproductive to meeting the nation’s environmental and energy independence goals. The pressure to address global climate change and dependency on petroleum-based fuel sources, coupled with technological advances, could lead to a radical increase in the use of more fuel-efficient and alternative fuel vehicles.

Because of these shortfalls of the gas tax, transportation economists have embraced more direct user fees. These road pricing strategies take the form of tolling and mileage fees. Like the gas tax, these user fees are regressive. If they are imposed in addition to fuel excise and sales tax, older people on fixed incomes who must travel to congested areas, along certain routes, or at certain times may find their transportation expenses increase dramatically. Moreover, older people who driver older, heavier vehicles may be charged proportionately more for each trip if road tolls vary with these factors. But for older people who are not poor and who have travel patterns more typical for their age group, these mechanisms may be more equitable, despite easy assumptions to the contrary. Older people on average make fewer trips, travel fewer miles, travel less on interstate highways, and travel less in the peak period than younger people. Thus, older travelers who do not drive during congested times or routes or on tolled highways will not subsidize those who do, as they often do when paying fuel taxes.

Use of Federal Income Taxes for Transportation Increasing

The federal income tax is generally conceded to be the most progressive of all taxes, but it has no direct link to transportation system use. Nonetheless, Congress has chosen to offset almost \$35 billion in recent Highway Trust Fund shortfalls with transfers from the General Fund, which means that transportation expenditures are being funded in part by the federal income tax. Ultimately, this tax may better meet *ability to pay* concerns, but it will do nothing to meet the nation’s environmental or energy challenges. Like the gas tax, it will not lead to more efficient use of the transportation system.

Several Local Revenue Sources Meet User Pays Concepts

The single largest source of local government revenue for transportation has traditionally been the *ad valorem* or property tax based on land and property value. Because transportation improvements generally raise the value of adjacent land, levying a property tax on home- and landowners based on the value of that land is a proxy for the benefits received from nearby transportation facilities. Most analysts find property taxes to be mildly regressive, with the burden being heavier on people older than 65 than those younger than 65, especially in states that do not offer tax relief.

Developer exactions, impact fees, and benefit districts are a rapidly growing way for cities and counties to finance infrastructure. By law, they must be directly related to the costs of the local transportation improvements and/or the local benefits conferred. These revenue sources are regressive, as most are levied as flat fees that do not vary with the price or value of the property. For example, the impact fee for a \$1 million home is generally the same as that for a \$150,000 home, a cost that is ultimately borne by the home buyer.

General Sales Taxes Are Inequitable

The financing source that most violates both *user pays* and *ability to pay* equity standards is a general sales tax. Sales taxes are extremely regressive in initial impact, and there is little way to avoid them. While individuals might avoid gas taxes by not driving or moderating their driving, it is hard to avoid purchasing all the items on which general sales taxes are imposed in most cities (e.g., food eaten out, over-the-counter medicines, clothing). Nonetheless, the use of general sales tax to fund transportation improvements has been growing. A general sales tax applied at the local level may better address the *user pays* equity standard than if the same tax were imposed by the state, because the benefits of transportation improvements may be closer to the taxpayer. The improvements funded by a retail sales tax, for example, while failing to link payment to transportation system use, may provide benefits even to people who infrequently travel by car or public transportation. Living in a community with uncongested roads, a good transportation system, or a safe cycling network may have intrinsic value. These amenities may make the community safer or more pleasant, or attract new business that in turn improves the economic base of the city. It may be for these reasons that voters have approved the use of general sales tax in recent referenda.

Greater Emphasis on Compensatory and Needs-based Equity Would Help Older Americans

There are a number of situations where older and retired people may be inequitably burdened by a variety of actual and potential transportation financing approaches. To the extent this is true, there are ways to offset those inequities. Compensation can be accomplished by providing offsetting payments or offering in-kind services. Some travelers can be directly “made whole” through reduced fees or taxes or by receiving tax rebates. Payment inequities can be addressed indirectly through the ways the revenues are spent. The most common form of compensatory equity in transportation is to increase the kind or level of alternative transportation services.

To equitably provide transportation services, whether or not the revenue sources were equitably raised, the government must ensure that those services are structured and delivered in ways that specifically address the issues faced by people with special needs. This becomes even more important if users were also burdened by unfair taxes and fees. This view of equity recognizes that different people, such as older travelers, low-income workers, or people with disabilities, require different services and different service attributes than the general public. Often these needs are not based on how much money they have. Certainly people with more money can meet some of their additional or special needs without government assistance. However, many needs cannot be met by individuals no matter how well-off they are. Most people do not have enough money to build sidewalks in their neighborhood or improve paratransit services in their community.

Transportation service delivery needs to be improved and augmented to meet the needs of older travelers. To compensate for the unfair burden many may face in paying certain taxes and fees, government policy at all levels must seek to expand, improve, and enhance a wide range of transportation infrastructure, facilities, and services, with a clear and specific focus on the needs of older and retired people. Increased investment in public and community-based transportation options, highway modifications, driver assessment and training, pedestrian facilities, and attention to urban design and land use policies would help to ensure that those who pay receive their fair share of benefits.

Table ES-1
Relative Equity Performance of Various Funding Options

	User Pays Equity Considerations	Ability to Pay Equity Considerations
Motor Fuel Excise Tax (cents/gallon sold)		
Sales Tax on Fuel (percent/fuel price per gallon)		
Carbon Tax		
Traditional Tolling		
Variable Price Tolling		
Mileage Fee		
Income Tax (dedicated share of Federal General Fund)		
Vehicle Registration Fees (based on vehicle weight)		
Vehicle Registration Fees (based on vehicle value)		
Driver's License Surcharge		
Vehicle Sales Tax		
General Sales Tax		
Benefit Assessment District		
Impact and development Fees		
Developer Exactions		
Property taxes (w/out relief based on age and income)		

Scored along a continuum from: (Does not perform well) to (Performs well).

Table ES-1 shows the relative performance of various funding options evaluated for *user pays* and *ability to pay* equity considerations. The evaluation reflects relative differences along a continuum, rather than absolute differences. *User pays* equity evaluation improves the more aligned it is with the costs users impose and the benefits they receive. *Ability to pay* equity evaluation reflects performance prior to implementation of any compensatory or needs-based measures. *Ability to pay* evaluation could be improved through rebates to low-income users and by allowing revenues to be spent on public transportation and other compensatory and needs-based investments.

This table is presented as a summary of the report's discussion rather than a comprehensive equity analysis of funding options. As such, it should be interpreted with caution. The actual performance of any tax or fee is dependent on the specific details of the tax structure applied.

INTRODUCTION

Across the nation, the surface transportation network on which Americans depend is deteriorating. Existing sources of revenue used by federal, state, and local governments for upkeep no longer keep pace with ever-increasing transportation needs. At the federal level, Congress has already transferred nearly \$35 billion from the General Fund to the Highway Trust Fund to cover transportation commitments that normally would have been funded with gas tax revenues. Some estimates suggest that there will be a \$2.3 trillion cumulative gap between gas tax revenues and needed expenditures through 2035.¹ Almost every state and locality faces shortfalls as well. This lack of sufficient revenue has posed a stumbling block for Congress, which needs to reauthorize the multibillion-dollar federal transportation law that expired in fall 2009. At the moment, crucial investment in the nation's roads, sidewalks, cycling facilities, community transportation services, and public transit systems is in limbo.

Many proposals call on government to fund the nation's transportation network in new ways that meet other important societal goals. These goals include economic efficiency, environmental protection, and reduction of the nation's dependency on foreign oil. Another important societal goal is equity: Are funding sources *fair*?

This report examines whether current or proposed transportation funding sources at all three levels of government are in some way inequitable for low-income people, rural residents, people with disabilities, or older adults. These questions arise because the equity of various funding sources can depend on the characteristics of the travelers themselves (such as their income or disability) as well as on how, when, where, and how often they use various transportation facilities and services. There is evidence that, overall, older and retired travelers make different demands on the transportation network than the average system user. But even if some transportation funding sources are equitable when paid, the way those funds are *spent* may not be. Older and retired travelers have, on average, very different needs than other travelers. Transportation expenditures, regardless of funding source, are inequitable if they do not take those needs into account.

Equity can and often does conflict with other important societal goals. It is difficult to envision a tax, fee, or charge that meets all the goals society has for the transportation system—raising sufficient revenue, meeting energy and environmental and congestion reduction goals, and being fair and equitable for all those who pay for and use the system. In short, there is no one right financing mechanism. But an evaluation of the equity of potential revenue sources for specific groups in society is an important part of a comprehensive assessment of alternative revenue mechanisms. It can suggest, for example, ways to remediate the negative consequences of otherwise valuable financing methods.

Given the national debate over alternatives to the gas tax, and the wide variety of new or expanded financing mechanisms being adopted at the state and local levels of government, this is an opportune time to examine the equity of various transportation taxes, fees, and charges.

¹ National Surface Transportation Infrastructure and Financing Commission, *Paying Our Way: A New Framework for Transportation Finance*, Final Report, http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Mar09FNL.pdf.

WHAT IS EQUITY?

Determining equity ultimately comes down to the question, what do we think people *should* pay in various circumstances? Should people who rarely use the transportation system pay as much as frequent users? Should low-income people pay the same amount to use the transportation system as those whose income is higher? Low-income people are not expected to pay the same percentage of their income in income taxes as do higher-income people. But most communities expect low- and high-income travelers to pay the same amount in fuel taxes to use the highway system or in fares to board a bus. Should people living in rural areas have to pay more to receive services because such services are often more expensive to provide in low-density areas? Should people pay for the congestion, environmental damage, and national security costs they impose upon society? All of these questions highlight four major ways to conceive of and to measure equity:

Payment related:

- *user pays*
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Expenditure related:

- *compensatory*
- *needs-based*

The first two concepts deal largely with the equity of the ways revenues are *raised*. The last two have more to do with how, when, and where the revenues are *spent*.

The major source of federal and state level transportation revenue—fuel excise taxes—has long been justified on one equity concept: *user pays*. Taxes or fees are equitable if people pay in proportion to their use of the transportation system and the costs that they impose on that system. Historically, fuel excise taxes were a sufficient measure of system use; the more one drove, the more fuel bought and the more excise taxes paid. But at current rates, fuel taxes are insufficient to fund the nation’s transportation need.

The *ability to pay* concept suggests that financing mechanisms are equitable when poorer people pay a smaller share of their income in taxes or fees than do wealthier persons. If low-income persons pay a greater share of income in taxes than higher-income persons, such fees or taxes are said to be regressive.

The conflict between these two definitions of equity is clear. Under the *user pays* concept, the income of travelers is irrelevant. It is their travel behavior that determines the equitable level of payment. Conversely, under the *ability to pay* principle, traveler behavior is either irrelevant or less important than how paying a tax or fee affects the income of those travelers.

Compensatory equity refers to the process of compensating those who suffered inequities in paying a tax or fee. Compensation can be accomplished by providing offsetting payments or offering in-kind services. Some travelers can be directly “made whole” through reduced fees or taxes or by receiving tax rebates. Payment inequities can be addressed indirectly through the ways the revenues are spent. The most common form of compensatory equity in transportation is to increase the kind or level of alternative transportation services.

Needs-based equity refers to the concept that the transportation system should also respond to travelers with special needs. This response can include adapting aspects of the highway system to address the needs of older drivers or providing additional public transportation services, furnishing services geared to the travel patterns of older or retired people, or offering additional special demand-responsive services for those unable to use regular services but ineligible for paratransit services mandated by the Americans with Disabilities Act (ADA).

It is important to remember that equity evaluations are *relative*. No current or potential funding source can be evaluated in a vacuum or compared to some “perfect” funding source with no negative equity implications. Most transportation taxes, for example, are regressive, but some are more regressive than others. Most taxes used to fund transportation have some link to system use, but some are far less linked to system use than others.

THE SOCIO-DEMOGRAPHIC AND TRAVEL PATTERNS OF OLDER AMERICANS

The equity of any given financing mechanism depends in large part on the socio-demographic characteristics of the users and the details of their travel patterns. This section briefly summarizes and extends a large body of research showing that older and retired people have, *on average*, different travel patterns and different needs than do younger travelers.

Table 1 displays socio-demographic data about older people that bear on their travel patterns and needs. In 2009, people over 65 constituted 13 percent of the U.S. population;

Table 1
2009 Socio-Demographic and Related Characteristics

	Age 16–64	Age 65+	Age 75+
POPULATION*			
Number	201,434,000	39,507,000	18,681,000
% of total population	66%	13%	6%
% of pop. 16+	84%	16%	8%
POPULATION THAT DRIVES**			
Percentage of All Drivers	85%	15%	6%
RESIDENTIAL LOCATION*			
Principle City	34%	29%	31%
Suburb	50%	51%	49%
Outside Metropolitan Statistical Area	16%	20%	20%
% UNDER POVERTY LEVEL ***			
Principle City	17%	12%	13%
Suburb	10%	8%	9%
Outside Metropolitan Statistical Area	16%	11%	13%
Total	13%	10%	11%

Sources:

* AARP Public Policy Institute analysis of US Census Bureau, 2009 American Community Survey 1-Year Estimates, Table B01001. SEX BY AGE - Universe: TOTAL POPULATION

** AARP Public Policy Institute analysis of 2009 National Household Travel Survey.

*** AARP Public Policy Institute analysis of 2009 American Community Survey 1-Year Estimates, Table B17001. Poverty Status in the Past 12 Months by Sex and Age - Universe: Population for whom Poverty Status is Determined.

those over 75 were 6 percent of the population. However, people over 65 constituted 16 percent of the driving-eligible population, and those over 75 constituted 8 percent of the driving-eligible population. But the National Household Travel Survey shows that older people are somewhat less likely to be drivers than their numbers alone would indicate.

Table 1 also shows that older people are more likely to be living in rural areas than younger people. And when they live in a metropolitan area, they are less likely to be living in the principal city and more likely to live in the suburbs than are younger people (a gap that is growing).² Eighty percent of all older people live in metropolitan areas; of those living in metro areas, almost two-thirds live in the suburbs. In short, seven out of ten older people live in low-density places, where, for example, regular fixed-route public transit use may not be a practical option.³

Table 1 also illustrates relative poverty rates among different age groups. While those over age 65 as a group are less likely to be poor than younger adults and children, more than 3.5 million older people (or 10 percent of all people age 65+) are living in poverty—and thus unlikely to have the resources to meet their own mobility needs.

Table 2 focuses on differences in travel patterns that bear on equity issues. The table shows that older people make substantially fewer trips than younger people and

Table 2
Travel Behavior by Age

	Age		
	16 to 64	65+	75+
Vehicle Miles Traveled			
As a Percentage of Total Miles Driven by Those 16+	90.1%	9.9%	3.0%
Mean Daily Person Trips	4.0	3.2	2.7
Mean Daily Person Miles	38.1	23.8	17.7
Time of Travel			
Percentage of Total Trips			
Morning Peak (6–9 a.m.)	14.9%	10.7%	9.5%
Mid-Day Peak (11 a.m.–1 p.m.)	13.7%	19.6%	21.0%
Evening Peak (4–7 p.m.)	23.0%	17.0%	15.6%
Average Age of Vehicle (years)	7.8	8.8	9.6
Percentage of Trips on Interstate Highways	37.2%	24.0%	17.7%

Source: AARP Public Policy Institute analysis of 2009 National Household Travel Survey, Version 2.1. VMT and percentage of trips on interstate highways was calculated for private occupancy vehicle modes, defined as car, van, sport utility vehicle, pickup truck, other truck, recreational vehicle, motorcycle, and light electric vehicle (golf cart). Mean daily person trips and person miles calculated for all modes except air travel.

² Brookings Institution Metropolitan Policy Program, *State of Metropolitan America: On The Front Lines of Demographic Transformation* (Washington, DC: Brookings Institution Metropolitan Policy Program, 2010).

³ Kevin DeGood, *Aging in Place, Stuck Without Options: Fixing the Mobility Crisis Threatening the Baby Boom Generation* (Washington, DC: Transportation for America, 2011).

travel substantially fewer miles. In fact, people over age 75 travel 26 percent fewer miles than those age 65 and older and 54 percent fewer miles than those age 16 to 64.

The table also indicates that older travelers are less likely to travel during either the morning or afternoon peak period than those who are younger; those over 75 are the least likely to do so. People over 65 made only 28 percent of all their trips in either the a.m. or p.m. peak, compared to 38 percent of the trips of all those age 16 to 64. Those over 75 made only 25 percent of all trips in peak periods. Older people, conversely, were more likely to make their trips in the midday than younger people. Furthermore, they are less likely to travel on interstate highways.

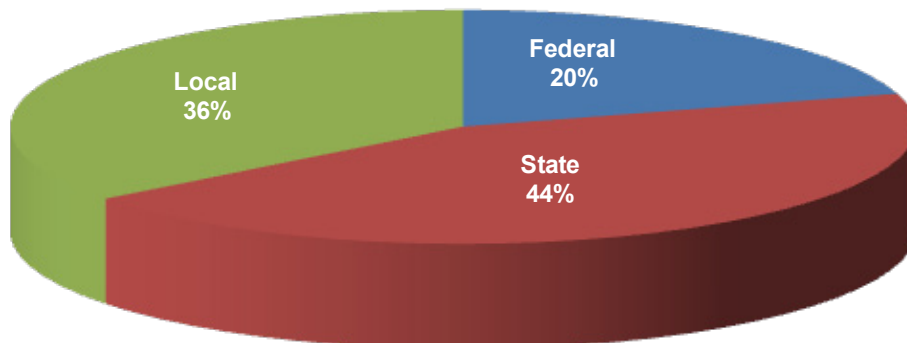
Overall, these tables show that older people are more likely to live in low-density places where alternatives to the private car are scarce, they make fewer trips and travel fewer miles than those who are younger, they are less likely to travel in peak periods, and they account for far less of all vehicle miles traveled (VMT). Moreover, a nontrivial percentage of older travelers are poor and many live on fixed incomes, which makes them particularly vulnerable to rapidly changing fees and taxes.

CURRENT FINANCING MECHANISMS AND THEIR PAYMENT-RELATED EQUITY IMPLICATIONS

The nation's surface transportation system is funded from a *combination* of federal, state, and local revenues. As figure 1 shows, the majority of transportation expenditures for *all* modes are financed using revenues raised by the state and local governments. While current national debates about the future of the gas tax may obscure this fact, the federal government finances only 20 percent of the nation's transportation facilities and services—and that share has been declining steadily since the 1980s.⁴ The following section briefly evaluates the *payment*-related equity of revenue sources at the federal, state, and local government levels.

Figure 1
Share of Surface Transportation Funding

All levels of government share responsibility for raising revenue to support surface transportation infrastructure and services.



Source: Calculated from National Surface Transportation Policy and Revenue Commission (2008), Tables 5-2 and 5-8.

⁴ U.S. Government Accounting Office, *Surface Transportation: Principles Can Guide Efforts to Restructure and Fund Federal Programs*, GAO-08-744T. Testimony before U.S. Senate Committee on Finance, July 10, 2008.

Federal Revenue Sources

Fuel Excise and Heavy Vehicle Taxes

Today the major source of federal and state funding for the nation’s surface transportation system is the fuel excise tax. Fuel excise taxes are levied on the *amount* of gasoline and diesel fuel sold, not on the *price*. Thus, to some extent they reflect how extensively the buyer uses the highway network. The current fuel tax is 18.4 cents per gallon for gasoline, 24.2 cents for diesel. The federal government also charges a variety of heavy vehicle taxes (such as taxes on truck tires or sales taxes on trailers), which to some extent reflect the disproportionate damage that heavy vehicles do to the nation’s highways.

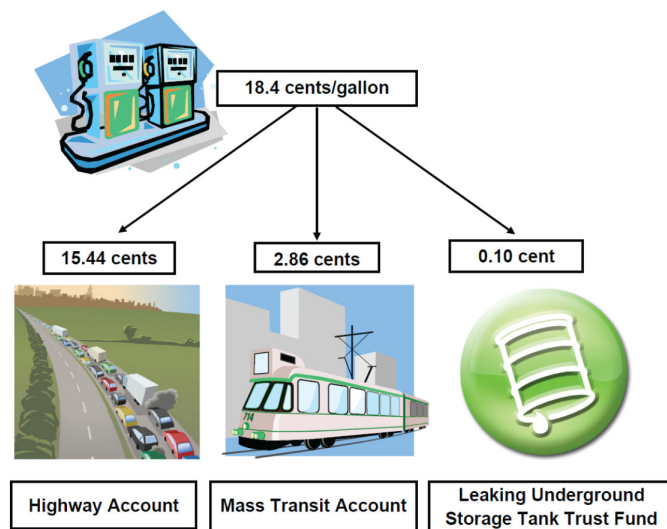
These revenue streams are set aside in what is called the national Highway Trust Fund (HTF), established by Congress in 1956. Although the federal government has taxed fuels since 1933, before 1956 those revenues went into the General Fund, comingling with all other sources of federal revenue. In 2006, total HTF revenues paid for roughly 88 percent of all *federal* expenditures for transportation. The remaining 12 percent of federal transportation expenditures came from general revenues (largely from personal income taxes), almost all of which were spent on public transportation.⁵

The federal government began supporting local public transit systems in 1964 using general revenues, and in 1974 Congress allowed states to use some of their HTF allocations for public transit improvements in certain cases. In 1983, Congress established a Mass Transit Account within the overall Highway Trust Fund funded by 1 cent of the tax on fuels. Today the Mass Transit Account receives 2.8 cents from every gallon of fuel sold, as figure 2 shows.

The Equity of Federal Revenue Sources

The creation of the HTF linked revenues raised from system users to expenditures made on that system, establishing the *user pays* principle as the foundation of federal transportation funding. However, many factors are lessening the link between system use and fuel, tire, and truck purchases (National Surface Transportation Policy and Revenue Study Commission, 2007; Transportation Research

Figure 2
Federal Motor Fuel Excise Tax
(1997–present)



⁵ Computed from U.S. Federal Highway Administration, Highway Statistics, Section IV. Highway Finance. Table LGF-3B, Receipts of Local Toll Facilities, 200, <http://www.fhwa.dot.gov/policyinformation/statistics/2008/lgf3b.cfm> Table LGF-1. Revenues Used by Local Governments for Highways. <http://www.fhwa.dot.gov/policyinformation/statistics/2008/lgf1.cfm>.

Board, 2006).⁶ *Use* in today's debates does not simply mean traveling along a highway. It also refers to how and when one travels and the social and environmental costs imposed on others.

Many analysts think it is only fair for travelers to pay a fee that takes into account the negative impacts their travel has on the highway itself (through the weight of their vehicle, for example) and the time and health costs they impose on other travelers (when they travel in the peak period or drive polluting vehicles).⁷ Without this link, drivers partially escape the financial, pollution, and health costs they impose on others and create excess demand for new highway capacity. Drivers who act to conserve gas end up subsidizing those who do not. For example, off-peak users subsidize peak-period users. Some highway advocates note that paying for public transportation (and underground storage tanks) from the HTF breaks the link between those who pay and those who benefit.⁸ The transit advocates' response to this argument is that payments into the Mass Transit Account help offset drivers' pollution and congestion costs. The U.S. Congressional Budget Office reports that the weight of a truck is not directly related to the damage it does to the road.⁹ The U.S. Department of Transportation estimated that trucks over 100,000 pounds pay only 40 percent of their cost impacts on the highway.¹⁰

Another major factor undermining the historic *user pays* principle of equity is that the federal government has found it politically difficult to raise these taxes even as system costs have grown. Thus, the federal gas tax has suffered a 33 percent cumulative loss in purchasing power since 1993, the last time the federal fuel tax was raised (National Surface Transportation Infrastructure Financing Commission, 2009). Furthermore, increasing vehicle fuel efficiency has resulted in travelers paying less in fuel taxes for the same amount of driving.¹¹

Do current federal revenue sources meet the *ability to pay* concept? Historically this concept of equity was not a significant concern in transportation finance discussions. In the 1920s and 1930s, when fuel excise taxes were first imposed, only the wealthy drove cars. Thus, gas taxes were seen as automatically meeting *ability to pay* goals. Today, the overwhelming majority of people in the United States drive regardless of income (although car ownership is still lower among poorer people).

⁶ National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow*. Vol. I, Vol. II, http://transportationfortomorrow.com/final_report/; Transportation Research Board, *The Fuel Tax and Alternatives for Transportation Funding*, TRB Special Report 285 (Washington, DC: Transportation Research Board, 2006), <http://onlinepubs.trb.org/Onlinepubs/sr/sr285.pdf>.

⁷ Congestion costs the United States more than \$87 billion annually in wasted fuel and lost productivity—more than \$750 for every traveler in the nation (D. Schrank and T. Lomax, *Urban Mobility Report* (College Station, TX: University Transportation Center for Mobility, Texas Transportation Institute, 2009).

⁸ R. O'Toole, *Gridlock: Why We're Stuck in Traffic and What to Do About It* (Washington, DC: CATO Institute, 2009).

⁹ U.S. Congressional Budget Office, *Issues and Options in Infrastructure Investment*, CBO Paper (Washington, DC: U.S. Congressional Budget Office, 2008).

¹⁰ U.S. Government Accounting Office, *Surface Transportation*.

¹¹ National Surface Transportation Infrastructure Financing Committee, *Paying Our Way*; M. Wachs, After the motor fuel tax; Reshaping transportation financing. *Issues in Science and Technology* 25 (4) (2009): 85–88.

Today, most experts think that the fuel excise tax is regressive,¹² even after accounting for a lifetime of income and consumption.¹³ And to the extent that poorer people buy or retain older vehicles, which may not be fuel efficient, they may end up paying an even higher proportion of their income in fuel taxes.

Equity for Older and Retired People

To what extent are older travelers and retired people affected by current federal financing sources? Paying federal fuel excise taxes may violate the *user pays* standard of equity for older people, particularly retired people, because they have different trip patterns. As a group, older people drive fewer miles per year than younger people, and they are not as likely to travel during peak hours.¹⁴ To the extent that low-mileage and off-peak travelers subsidize high-mileage and peak travelers, older people may be overrepresented among those paying an unfair share of system costs. Many older people try to avoid driving on interstate highways, which are funded largely by federal fuel taxes—but they still pay federal fuel taxes every time they buy a gallon of gas. Instead, older people often try to limit their driving to local streets, which receive little federal and state funding.¹⁵ Conversely, older travelers who do not drive may use public transit services, alternative community transportation systems, and pedestrian facilities that are funded in part by federal fuel taxes that they did not pay.¹⁶

Do older people have different *ability to pay* than other travelers in paying federal fuel excise taxes? To the extent that older travelers are low income, they will be burdened by regressive taxes.

State Revenue Sources

State Fuel Taxes

The major source of funding at the state level is also the fuel excise tax. In 1918, Oregon was the first state to levy a fuel tax, establishing a trust fund to keep the user-paid taxes for transportation expenditures separate from other state funds. Almost all states followed suit within 10 years, driven to do so because highway costs were threatening to swamp state budgets.

In 2009, almost three-quarters of states (plus the District of Columbia and Puerto Rico) charged a higher tax rate per gallon of gasoline than the federal government. The average state tax per gallon of gasoline was 26.6 cents, but ranged from 8.0 cents in Alaska to 47.7 cents in California).¹⁷ The states raise, on average, 55 percent of their transportation

¹² U.S. Congressional Budget Office, *Federal Taxation of Tobacco, Alcoholic Beverages, and Motor Fuel Taxes; A CBO Study* (Washington, DC: U.S. Congressional Budget Office, 1990).

¹³ H. Cherick, and A. Reschovsky, Who Pays the Gasoline Tax? *National Tax Journal* 50 (2) (June 1997): 233–59.

¹⁴ National Household Travel Survey, Version 2.1, 2009.

¹⁵ S. Herbel, S., S. Rosenbloom, and J. C. Stutts, *The Impact of an Aging Population on Systems Planning and Investment Policies*, National Cooperative Research Program (Washington, DC: The National Academy Press, 2006).

¹⁶ Given that shippers pass on to consumers as much of their transportation expenses, including gas taxes, as they are able by raising the price of the goods shipped, even the housebound indirectly pay some gas taxes.

¹⁷ Tax Foundation, State Gasoline Tax Rates as of January 1, 2011 (Cents Per Gallon), www.taxfoundation.org (accessed July 19, 2011).

revenues from fuel excise taxes.¹⁸ In contrast to the federal government, 26 states explicitly restrict use of state fuel tax revenues exclusively to highway and road purposes.¹⁹

Other State Transportation Revenue Sources

The states raise the rest of state-generated transportation revenue from a variety of sources. While there is substantial variation among the states, major sources include vehicle registration fees, driver license fees, sales taxes on vehicles, sales taxes on fuel (based on price, not quantity), and general sales taxes on a variety of goods and services. In addition, 30 states levy road and bridge tolls. Most of these states have only a few tolled roads or bridges. In contrast, Texas and Florida receive billions of dollars each year from tolled roads.

States have begun to diversify their funding sources away from user fees. Road and bridge tolls, vehicle registration fees, driver license fees, and sales taxes on vehicles accounted for 88 percent of all state highway investment in 1965, but only 69 percent in 2006. Sales tax on fuel and general sales taxes have become increasingly common at the state level.

The Equity of State Revenue Sources

The equity implications of state fuel *excise* taxes mirror those of the federal fuel excise taxes. They are less and less linked to system use as vehicles become more fuel efficient and as long as users are not charged appreciably more for traveling during peak hours or in polluting vehicles.

The state financing sources with the most direct link to system use are road and bridge tolls. But if the tolls do not vary by time of day, distance, or vehicle characteristics, they are only slightly more linked to system use than fuel taxes.

The other common sources of state funding for transportation have even less of a link to system use. State sales taxes on fuel are clearly less linked to highway use than excise taxes because the cost of fuel is not as good an indicator of highway use as is the quantity bought. With a sales tax on fuel, the tax is levied on the price of fuel. Therefore, the price of gas may fall, and with it tax revenue, without any reduction in system use. But any kind of fuel tax is more directly related to system use than a sales tax on vehicles, because highway use does vary with fuel consumed but not with the *price* of the vehicle driven. There may be some correlation between price and weight; thus a vehicle sales tax might be slightly more linked to the damage done to the highway.

State vehicle registration fees and driver license fees have little meaningful link to the use drivers make of the road—how much they drive, how heavy their vehicle, or whether they drive during peak periods. A few states do base vehicle registration fees on vehicle *weight*, in which case there is a link to the damage done to the highway system. The majority of states, however, base their registration fees on vehicle *value*, which declines with age—even as aging vehicles may be less energy efficient and more polluting. A few states do grant lower vehicle registration fees to vehicles using alternative fuels.

¹⁸ U.S. Federal Highway Administration, Highway Statistics. Section IV. Highway Finance. Table LGF-3B.

¹⁹ Jaime Rall et al., *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation* (National Conference of State Legislatures with cooperation from AASHTO Center for Excellence in Transportation Finance, 2011).

The state financing source that most violates the *user pays* equity standard is a general sales tax. Although sometimes dedicated to transportation, such a tax does not vary at all with system use. It hits people who never use the highway, except indirectly through paying transportation costs associated with the shipment of goods they purchase.²⁰ Where dedicated to public transportation expenditures, its *user pays* equity effects depend on whether and how much a taxpayer uses those facilities.

Do state revenue sources violate the *ability to pay* principle? Like federal taxes, fuel excise taxes and fuel sales taxes are likely to be regressive. And since state fuel excise taxes are generally much higher than comparable federal taxes, and most states also charge a sales tax on the price of fuels, the impact of state revenue sources on lower-income people is more severe. Although vehicle registration fees based on the price of a car are not linked to measures of system use, they may be less onerous to lower-income persons than a fee based on weight, because higher earners generally buy more expensive cars. The same may be true of vehicle sales taxes. In contrast, although some of the fees involved may be small, such as the cost of obtaining a driver's license, others, such as sale taxes on vehicles, are more substantial and could affect lower-income drivers.

By far the most regressive state source is the general sales tax, a tax on a variety of goods and occasionally services. Lower-income individuals might avoid paying excise and fuel taxes if they do not drive, but it is harder to avoid buying other taxed goods. Despite the equity drawbacks of the general sales tax, states have substantially increased the use of dedicated sales taxes to pay for transportation infrastructure.²¹

Equity for Older and Retired People

Do state financing mechanisms have equity impacts on older and retired people? Significant equity impacts for this group arise when the *user pays* equity concept is undermined. These travelers are disadvantaged by any financing mechanism, such as vehicle registration and driver license fees, that is not based on distance traveled or linked to any use of the transportation system. Older people drive fewer miles than younger people, even those who are poor. Thus they pay far more in any flat fee for each mile they travel than other system users. Furthermore, anecdotal evidence suggests that older adults may hold onto their cars and licenses even after they have stopped driving.

The majority of other state revenue sources fail the *ability to pay* standard as well but may be more burdensome to older people who are poor because they are less able to climb out of poverty than are working-age adults. Older people often live on fixed incomes and have less ability to adjust to rapidly rising costs such as a sales tax on the price of fuel. The most inequitable state revenue source for older people is a general sales tax, which is very regressive, has no relationship to system use, and taxes people who never drive or use public transportation. Older people often try to limit their driving to local streets, which receive little state funding²²—but they still pay a state fuel tax when they purchase gas.

²⁰ L. Schweitzer and B. D. Taylor, Just pricing; the distributional effects of congestion pricing and sales taxes, *Transportation* 35 (3) (2008): 797–812.

²¹ T. Goldman and M. Wachs, A quiet revolution in transportation finance; the rise of local option transportation taxes, *Transportation Quarterly* 57 (1) (2003): 19–32.

²² S. Herbel, S. Rosenbloom, and J. C. Stutts, *The Impact of an Aging Population on Systems Planning and Investment Policies*, National Cooperative Research Program (Washington, DC: The National Academy Press, 2006).

Local Revenue Sources

Local governments provide 36 percent of all U.S. transportation funding, as figure 1 shows. They pay a greater share of public transportation costs than of highways, although they vary widely in how they do so.²³ Among the most common local revenue sources are—

- property taxes;
- developer exactions, impact and development fees;
- benefit districts;
- road and bridge tolls; and
- business and tourist taxes.

Other sources include excise taxes on fuel (based on quantity), general sales taxes on fuel (based on price), and general sales taxes on goods (and services) with proceeds dedicated to transportation.

Fuel excise taxes have not been a significant source of *local* transportation revenue. In general, local governments need state permission to impose such taxes, and many states that permit their use require voter approval. But local governments are increasingly using additional sales taxes of one kind or another to fund highways and public transportation.²⁴ By 2003, 15 states had authorized localities to impose one or more of the so-called local option sales taxes listed above, with revenues limited to transportation expenditures. Thirty-four states had authorized sales taxes on a wide variety of retail sales, but not all of these sales taxes were dedicated to transportation.²⁵

Most local governments also share in state-generated excise taxes on fuels, as well as other state transportation fees and taxes. In 2005, 46 states transferred \$13.5 billion in state-generated fuel taxes and vehicle registration fees to local governments. Some states allowed those shared revenues to be used for public transportation. Others limited expenditures to highway improvements and maintenance.²⁶

The Equity of Local Revenue Sources

Local revenue sources dedicated to or used for transportation fall along a spectrum from those most directly linked to user benefits to those that bear no relationship system use. Similar to taxes imposed at the state level, the local revenue sources most directly linked to user benefits are road and bridge tolls. Next on the spectrum are taxes, fees, or charges on land or on the developers of land. These land-based fees are, in fact, *explicitly* linked to the *user pays* standard. Developer exactions, impact fees, and benefit districts all involve what have been called *beneficiary-based* taxes or fees. They are a rapidly growing way for cities and counties to finance infrastructure in new areas as well as in older, established parts of the community. These fees, charges, and taxes, by law, must be directly related to the costs of the local transportation improvements and/or the local benefits conferred. Individual fees

²³ Transit Cooperative Research Program, *Local and Regional Funding Mechanisms for Public Transportation*, TCRP Report 129 (Washington, DC: Transportation Research Board, 2009).

²⁴ Goldman and Wachs, A quiet revolution in transportation finance; Schweitzer and Taylor, Just pricing.

²⁵ Goldman and Wachs, A quiet revolution in transportation finance.

²⁶ U.S. Federal Highway Administration, Highway Statistics. Section IV. Highway Finance. Table LGF-3B.

or assessments can vary widely based on the differential benefits received or costs imposed, even within one neighborhood or one benefit district.²⁷

Today, many local governments have a variety of assessment district mechanisms of different sizes and functions. In some cases, the local government pays a part of total costs to encourage neighborhoods to improve their own transportation infrastructure. Benefit assessments districts can be used by a neighborhood to cooperatively pay for immediate improvements—such as streets, traffic control devices, sidewalks, and roadway improvements. Larger assessment districts are also in use. The 16th Street Transit Mall in Denver was funded through an assessment district involving adjacent businesses. Those directly on the mall are assessed higher fees than those one block away, in an attempt to make assessments respond to spatial differences in benefits received. In all these assessment mechanisms, the charges imposed roughly approximate the transportation benefits that adjacent landowners receive.

The single largest source of local government revenue has traditionally been the *ad valorem* or property tax based on land and property value. Because transportation improvements generally raise the value of adjacent land, levying a property tax on homes and landowners based on the value of that land is an indirect measure or proxy for the benefits received from nearby transportation facilities or improvements in those facilities. (If those facilities have negative impacts—noise, pollution, runoff—the value of the land falls and so do property taxes.)

On the other end of the spectrum are sales taxes on fuel sold (over and above the federal and state excise taxes) and general sales tax. As discussed above, a sales tax on gas is indirectly linked to system use, but since it is based on price, not quantity, the link is very weak. A general sales tax is not linked at all to system use.

Local revenue sources are generally more responsive to the *user pays* equity standard than if the same tax or fee were imposed by the state, because the benefits of transportation improvements may be much closer to the taxpayer. The improvements funded by a retail sales tax, for example, while failing to link payment to transportation system use, may provide real and obvious benefits to even those who infrequently travel by car or public transportation. Living in a community with uncongested roads, a good public transportation system, or a safe cycling network may have intrinsic value. These amenities may make the community safer or more pleasant, or attract new businesses that in turn improve the economic base of the city. It may be for these reasons that voters have approved the use of general sales tax in recent referendums.²⁸

It is generally agreed that almost all local revenue sources used for transportation are regressive, some more than others. Almost every local fee or charge, except for property and sales taxes, is in essence a flat fee that does not vary with the price or value of the property against which the tax or fee is levied. The impact fee or assessment for a \$1 million home is generally the same as that for a \$150,000 home. In some jurisdictions, impact fees can be more than \$25,000 per house for transportation as well as other services. Such fees or equivalent assessments can significantly increase the price of

²⁷ Arthur C. Nelson, James C. Nicholas, and Julian C. Juergensmeyer, *Impact Fees: Principles and Practice of Proportionate-Share Development Fees* (Chicago: American Planning Association, 2009).

²⁸ Center for Transportation Excellence, Election Resources and Issues, <http://www.cfte.org/success/elections.asp> (accessed July 11, 2011).

housing at the lower end of the scale, reducing the number of people able to buy a home. In short, many of these fees and assessments affect housing affordability in ways that can create significant burdens for poorer families.²⁹

Most analysts find property taxes to be mildly regressive. An AARP study found that in 2005, property taxes in all 50 states and the District of Columbia were regressive, although the magnitude of that burden varied by region, being highest in the Northeast and Mid-Atlantic regions. The AARP study also found that the burden was heavier on people older than 65 than those younger.³⁰ But many states have various forms of tax relief designed to offset regressivity, although how well they work is open to substantial debate. Older people tend to be given more tax exemptions than younger people.³¹ Since many exemptions given to those over 65 are *not* income-tested, they shift the burden of additional taxes needed to offset lost taxes to other taxpayers, intensifying the regressivity for low-income younger residents.

Sales taxes, however, are a different story. They are extremely regressive in initial impact, and there is little way to avoid them. While individuals might avoid gas taxes by not driving or moderating their driving; it is hard to avoid purchasing all the items on which general sales taxes are imposed in most cities (e.g., food eaten out, over-the-counter medicines, clothing).

The real problem with most of the local revenue sources used for transportation is that they exemplify the conflict between the two most traditional equity concepts—what is fair in terms of benefits received may not be fair in terms of income impacts.

Equity for Older and Retired People

All local taxes and fees are likely to be regressive, in which case they would disproportionately affect older people who are poor. Any local taxes and fees not linked in some way to system use are generally inequitable for older people because older people make less use of the transportation system and are less likely to benefit from the improvements thus funded. Without property tax relief programs, older homeowners may face problems paying property taxes because these taxes are imposed on the *current* value of a home; in other words, these taxes are paid on *unrealized* gains.³² Older people may have lived in a home for some time and their income may not have increased as rapidly as the value of their home.

²⁹ The situation is complicated by the fact that the ultimate incidence of the fees (and of developer exactions) depends on how much the developer can shift the burden forward to home buyers (in higher home prices) or backward to the original owners of undeveloped land (in lower land purchase prices). In many cases the local governments imposing the fees do not care because their main goal is to raise revenue. A \$10,000–\$15,000 fee is a much more significant cost to someone buying a \$150,000 house than a \$1 million house; consequently the developer may not be able to shift the entire cost of the impact fee or exaction on lower-priced homes (which may over time convince developers to build more high-end properties instead). See Nelson et al., *Impact Fees*.

³⁰ David Baer, *State and Local Property Tax Burdens in 2005*, #2007-09 (Washington, DC: AARP Public Policy Institute, May 2007).

³¹ R. A. Musgrave, *Public Finance in a Democratic Society* (New York: York University Press, 2000).

³² Baer, *State and Local Property Tax Burdens in 2005*.

NEW AND EVOLVING REVENUE SOURCES

There is a pressing need to identify sustainable revenue sources at all levels of government, and at the same time to promote the efficient and equitable use of the transportation system. With authorization of a federal surface transportation law on the horizon, numerous commissions, think tanks, academics, and interest groups have already begun to propose and evaluate alternatives to the federal fuel excise tax. At current rates, the fuel excise tax can no longer sustain the surface transportation system, as evidenced by the series of transfers from general revenues in 2008–2010.

Figure 3 provides a fairly comprehensive list of potential alternatives to the federal fuel excise tax. These alternatives fall roughly along a spectrum, ranging from those that are almost completely based on user benefits and/or costs to those that have almost no relationship to system use. But of the five categories, only targeted tolling and comprehensive road pricing options and new motor fuel-related taxes represent genuinely new or untried alternatives for the federal government. The other three categories contain mechanisms that are either expansions of current federal revenue sources or have already been widely adopted at the state and local levels. The following section explores these five categories, describing how individual financing mechanisms operate and evaluating payment-related equity implications.

Expanding Existing Highway Trust Fund Sources

The revenue shortfall at the federal level could be addressed by increasing the rates of four current federal funding sources: the fuel excise tax, truck and trailer sales taxes, truck tire taxes, and the heavy vehicle use tax. Several prominent policy commissions and interest groups have called for an increase in federal fuel excise taxes as a short-term solution until a new or modified user fee system

Figure 3
New and Evolving Transportation Revenue Sources for the Surface Transportation System

Expanded Highway Trust Fund Sources

- Increase motor fuel excise tax
- Index motor fuel excise tax

Targeted Tolling and Comprehensive Road Pricing Option

- Lane and facility pricing
- Cordon pricing
- Mileage-based user fee (VMT fee)

New Motor Fuel-Related Taxes

- Carbon taxes
- National sales tax on fuel

Vehicle-Related Sources

- Driver license surcharge
- Vehicle sales tax
- Auto-related sales tax
- Vehicle registration fees

Broad-Based Taxes and General Fund Revenue

- Dedicated national sales tax
- Dedicated income tax
- General fund allocations

of transportation finance can be put in place.³³ The purchasing power of the tax has seriously eroded since it was last raised in 1993. Had the gas tax been indexed to inflation beginning in 1993, it would be approximately 28 cents per gallon today and would raise an additional \$20 billion annually. This would narrow, but not close, the \$400 billion shortfall expected over the next five years).³⁴

Even with a substantial increase in fuel tax rates, many policy analysts question the long-term sustainability of the fuel excise tax. Revenues are contingent on fuel consumption—a relationship inherently counterproductive to meeting the nation’s environmental and energy independence goals. The pressure to address global climate change and dependency on petroleum-based fuel sources, coupled with technological advances, could lead to a radical increase in the use of more fuel-efficient and alternative fuel vehicles. Furthermore, after several decades of rapid increases, the steady growth in private travel can no longer be assumed. Since 2000, total VMT has been leveling off, and in 2008, when gas prices peaked above four dollars a gallon, actually showed a nearly unprecedented decline of 3.6 percent compared to the previous year.³⁵ Additional evidence from the 2009 National Household Travel Survey shows that per capita VMT declined 11 percent between 2001 and 2009.³⁶

Equity Implications

Higher fuel excise taxes would make users pay a greater share of the costs of the transportation system but would not stop off-peak users from subsidizing peak-period users, something that would further disadvantage most older or retired people. As user fees, they would be regressive. Higher rates of fuel excise taxes may encourage some travelers to carpool, walk, cycle, or use public transportation instead of driving. To the degree they do so, their direct financial burden would be lowered. But not all people can switch to other modes in the short term, and some cannot do so even if they were willing to move home or change job, doctors, and so on. Combined state and federal fuel excise taxes as high as 81.1 cents per gallon could impose a burden on older travelers with low or fixed incomes and those who live in rural areas without alternatives to the car.³⁷

Raising taxes on heavy vehicles might bring their costs more in line with the damage they do to the highway network. But the *ability to pay* implications worsen as commercial

³³ American Association of State Highway and Transportation Officials, *Transportation Invest in Our Future: Revenue Sources to Fund Transportation Needs* (Washington, DC: American Association of State Highway and Transportation Officials, 2007); Cambridge Systematics, Mercator Advisors, LLC, and Alan E. Pisarski, *Future Highway and Public Transportation Finance, Phase I: Current Outlook and Short-Term Solutions* (Washington, DC: National Chamber Foundation, 2005); National Commission on Fiscal Responsibility and Reform, *The Moment of Truth* (Washington, DC: National Commission on Fiscal Responsibility and Reform, 2010); National Surface Transportation Infrastructure Financing Commission, *Paying Our Way*; National Surface Transportation Policy and Revenue Study Commission, *Transportation for Tomorrow*.

³⁴ National Surface Transportation Infrastructure Financing Commission, *Paying Our Way*.

³⁵ U.S. Federal Highway Administration, *Traffic Volume Trends Report*, <http://www.fhwa.dot.gov/ohim/tvtw/08dectvt/index.cfm>.

³⁶ Jana Lynott and Carlos Figueiredo, *How the Travel Patterns of Older Adults Are Changing: Highlights from the 2009 National Household Travel Survey* (Washington, DC: AARP Public Policy Institute, 2011).

³⁷ Calculated by adding 15 cents to the current federal gas tax of 18.4 cents/gallon (as recommended by the National Commission on Fiscal Responsibility and Reform) and the highest state gas tax of 47.7 cents/gallon.

trucking interests could try to pass on the added cost to the ultimate consumers of the products they carry.

In summary, expansion of the primary Highway Trust Fund revenue source, namely motor fuel excise taxes, raises *ability to pay* equity concerns. Because it is an indirect user fee, users do not pay the full costs they impose on the system, resulting in increased peak-hour demand for expensive road facilities. It also runs counter to national environmental and energy goals as revenue generation is dependent on fuel consumption. Over the long run, its ability to generate revenue is expected to decline as Americans drive more alternative and fuel-efficient vehicles. For these reasons, transportation economists have turned to more direct user fees to pay for system improvements.

Targeted Tolling and Comprehensive Road Pricing Options

There have been substantial discussions of expanding financing options that directly charge travelers for their use of the transportation system. Technological innovations enable government authorities to charge users for the time at which they are traveling, the route that they have chosen, the distance they travel, and for a wide variety of personal, vehicle, or traffic conditions. The National Surface Transportation Infrastructure Finance Commission has suggested that the three most promising approaches to what is called *road pricing* are (a) tolling specific lanes on a freeway or tolling an entire route, (b) tolling travelers who cross into a specific area or congested zone (often called cordon pricing), and (c) implementing a national mileage or VMT charge.

Lane and Facility Pricing

The federal government neither imposes road charges nor builds or operates toll roads. Rather, state and local authorities use these financing alternatives to supplement their own resources, although states may apply for federal permission to add tolls to older segments of the interstate system. In the last few decades, many new highway extensions and facilities have been built as toll roads. Newer tolled facilities can incorporate sophisticated technology, which allows charging differential rates by time of day and trip length, as well as by the extent of congestion on the tolled facility or in adjoining free lanes. This is known as congestion pricing. High occupancy toll lanes (HOT lanes) give drivers the choice of using variably priced lanes or parallel free lanes. Examples include State Route 91 in Orange County, California, and segments of I-15 in California and Utah.

Cordon Pricing

Zone pricing is often called cordon pricing because travelers must pay to cross a line or cordon into a congested area. The best-known examples are in Singapore and London. New York City tried to implement a federally supported demonstration of a cordon scheme to price entry into Manhattan. New York state legislators refused to pass enabling legislation because they were “strongly influenced by concerns that the plan would be regressive and because they believed that the primary impact would fall on working class residents outside Manhattan.”³⁸ However, this concept remains on the radar of many pricing proponents.

³⁸ National Surface Transportation Infrastructure Financing Committee, *Paying Our Way*, p. 130.

Mileage Fees

Imposing a charge for every mile traveled addresses some of the efficiency problems in both existing fuel taxes and conventional pricing schemes. There are a number of ways to structure such fees, varying with specific goals. Even a simple flat fee per vehicle mile would raise significant revenue and more align the price of travel with the benefits received or the costs imposed on the highway, other users, or society at large. A more comprehensive approach would vary charges according to the weight of the vehicle or the emissions produced, the characteristics of the facility (e.g., an interstate versus a local road), the time of day or level of congestion, and any other vehicle or driver characteristic considered salient. In short, travelers could be more accurately assessed for their use of the entire highway network, from the largest freeways to the smallest country lane. It would even be possible to return the revenue proceeds to the jurisdiction that owns the road traveled on when the fee was assessed (e.g., the federal HTF for interstate highways or the state or locality for state and local roads, respectively). A national VMT charge would require congressional action.

There is some debate, however, as to whether the technology exists to implement such fees on a national level, how long it would take to build a comprehensive monitoring or measurement system, and at what cost. A recent National Cooperative Highway Research Program study (2009) concluded that three pricing technologies could be operational by 2015: a global positioning system device, a cellular device connected to the vehicle, and a method of metering mileage based on fuel consumption. Yet each of these approaches requires that charges be based on a number of assumptions and averages that may strain if not defeat the *user pays* link.

Equity Implications

Controversy over the potential adoption of these road pricing options has revolved around equity implications, particularly, the *ability to pay* standard. In fact, debates about the equity of such financing mechanism openly pit *ability to pay* concerns against *user pays* concerns. These alternatives meet the *user pays* standard to a greater or lesser extent; the more the toll or charge reflects a wide variety of driver, vehicle, and trip characteristics, the more it will meet this standard of equity. But these alternatives conflict significantly with the *ability to pay* concept of equity. Little empirical evidence exists on the equity implications of various pricing mechanisms, but a substantial academic literature based on simulation models suggests that paying user charges is regressive.³⁹

Detractors have nicknamed HOT lanes “Lexus Lanes” to illustrate the fear that tolled lanes and facilities will provide convenience and speed for those than can afford them but congestion and delays for those who cannot. To make matters worse, drivers will need some kind of in-vehicle device or transponder and a credit card or credit account from which charges can be electronically drawn. A U.S. Federal Highway Administration report⁴⁰ cited a 2005 study that found 10 to 20 percent of the population is unable to

³⁹ J. P. Franklin, Decomposing the Distributional Effects of Roadway Tolls, Paper #07-2991, Transportation Research Board Annual Meeting, 2007; L. Zhang, *Green vehicle mileage fees; Concept, evaluation methodology, revenue impact and user response*, paper given at the 2010 Annual Meeting of the Transportation Research Board, Washington, DC, available on conference CD.

⁴⁰ U.S. Federal Highway Administration, *Income-Based Equity Impacts of Congestion Pricing; A Primer*, Report FHWA-HO-08-040, Office of Innovative Program Delivery (Washington, DC: U.S. Federal Highway Administration, 2008).

overcome barriers to purchasing an in-car transponder. A larger problem may be the lack of a credit card and the inability to create the needed electronic account.

Patterson and Levinson⁴¹ found that higher-income people were more likely to use HOT lanes. Others have suggested that since many tolled facilities are suburban in character, many low-income travelers will never be burdened by paying tolls.⁴² Even if low-income travelers use priced facilities less than those with higher incomes, they may pay a greater share of their income when they do use them, or pay an extra time cost if they shift modes or routes. Furthermore, with the decentralization of jobs and households from the central city to the suburbs over the past several decades, it has become harder for commuters of all income levels to avoid suburban commute corridors. And those unable to afford the tolls may be shut out of the employment opportunities that arise from new highways funded by tolls.

Other researchers point out that while HOT lanes may be regressive to low-income drivers as individuals, the distributional effects on low-income residents as a group are much worse with a general sales tax.⁴³ They also point out that using sales tax revenue in place of tolling shifts the cost burden from users of the facility to the community at large, including individuals who rarely or never use it.

Some analysts cite public opinion polls as evidence that HOT lanes are less onerous to lower-income individuals than standard distributional analysis would indicate. A National Cooperative Highway Research Program study of more than 100 public opinion polls, surveys, and focus groups on road pricing found that low-income groups generally supported toll roads and pricing proposals and concluded that a likely reason for this is that “they appreciate having the choice of paying to use uncongested lanes or roadways.”⁴⁴ This is not entirely surprising given that lower-income workers often have less flexibility in their schedules. Occasionally paying a toll to ensure on-time arrival at work or forgo late pickup fees at daycare is a rational economic choice.

For older people who are not poor, many of these strategies could be more equitable than current finance mechanisms. These older travelers who do not drive during congested times or to congested areas or on specific highways will not subsidize those who do, as they do by most fuel and sales taxes. Older people who drive less will not subsidize those who drive more, as they do by driver license and vehicle registration fees. Still, if tolls are imposed in addition to fuel and sales taxes, older people on fixed incomes who must travel to congested areas, along certain routes, or at certain times may find their transportation expenses increasing dramatically. Moreover, older people who drive older, heavier vehicles may be charged proportionately more for each trip if road tolls vary with these factors.

⁴¹ T. M. Patterson and D. Levinson, *Lexus Lanes or Corolla Lanes? Spatial Use and Equity Patterns*, Working Papers 000051 (University of Minnesota, Nexus Research Group, 2008).

⁴² D. H. Ungemah, This land is your land, this land is my land; Addressing equity and fairness in tolling and pricing, *Transportation Research Record* 2013 (2007): 13–20.

⁴³ Schweitzer and Taylor, Just pricing.

⁴⁴ National Cooperative Highway Research Program, *Compilation of Public Opinion Data on Tolls and Road Pricing*, NCHRP Synthesis 377 (Washington, DC: Transportation Research Board, 2008), 2.

New Motor Fuel-Related Taxes

Two major types of taxes are advocated to both raise revenue and increase the efficiency of the transportation system: (a) carbon taxes and (b) a national sales tax on fuel. Both raise the price of fuel at the pump, although they may have slightly different objectives in doing so.

Carbon taxes are often called environmental taxes because their major rationale is to make people understand and pay for the environmental impacts of their travel choices. A carbon tax is paid on carbon dioxide (CO₂) emissions produced when vehicles burn fuel. Most U.S. proposals would tax these harmful emissions when the fuel is produced or imported into the country. Producers or importers would likely pass on as much of the tax as they could to consumers, raising the cost of fuel at the pump.

Most advocates of carbon taxes see them as revenue neutral. That is, they are not designed to raise *additional* revenues to support the surface transportation system. Instead, they replace current financing mechanisms that do not charge users for environmental damage. Carbon taxes are thus unlikely to meet the first objective sought for alternative revenue sources—to create additional system revenue.

A national sales tax on motor fuels would impose a tax on the *price* and not the *amount* of fuel consumed. While the federal government currently does not impose a sales tax on fuel, this suggestion is simply to adopt the sales taxes on fuels that are currently used by most state and some local governments.

Equity Implications

Superficially, these charges are designed to support the *user pays* equity standard and are likely to fail the *ability to pay* equity standard. These taxes, like all environmental taxes, have the potential to become a “license to pollute.” That is, some users, generally high-income individuals, will simply pay the tax and continue to drive, while some poorer travelers, lacking meaningful alternatives, might continue to drive, paying a disproportionate share of their income for such taxes.

Even the Carbon Tax Center, an advocacy group for the carbon tax, admits,

A carbon tax, like any flat tax, is regressive—by itself. However, the regressivity of a carbon tax can be minimized, and perhaps eliminated altogether, by keeping the tax revenue-neutral in a way that protects the less affluent. (www.carbontax.org)

How well these alternatives meet the *user pays* equity standard depends on how well taxes are linked to a *variety* of costs and what is done with the taxes raised. Rather than getting users to pay for the system, these taxes are actually designed to get people to reduce their travel. In addition, none of these taxes directly charges users for peak-period travel or other costs that they impose on the system. While driving heavy vehicles or driving during the peak period may use more fuel, drivers are unlikely to pay as much in taxes as they should to offset the costs that they are imposing. We could end up with zero-emissions cars that still drive during rush hour, cause crashes, and damage the roadway—but are not charged in any way for that behavior.

Do these taxes have a differential impact on older or retired people? Both taxes will raise the price of fuel, which will make driving more expensive. The poor will be particularly hard hit, but so will those with no alternative to the private car. Anything that raises the cost of gas and other fuels penalizes those living in rural areas. A sales tax on

fuel would accentuate common fuel price fluctuations. People on fixed incomes might be harder hit by wide and perhaps unpredictable changes in price at the pump.

Vehicle-Related Sources

Some discussion revolves around adopting at the federal level a variety of other financing mechanisms already used at the state and sometimes local level. The federal government could impose a national vehicle registration fee or a national driver license fee. Or it could impose a national sales tax on cars, tires, and batteries. The equity considerations for applying these taxes and fees at the federal level would mirror those of taxes at the state level (see earlier discussion).

Broad-Based Taxes and General Fund Revenues

The fifth category includes three types of financing mechanisms:

1. Imposing a national general sales tax with revenues dedicated to transportation
2. Dedicating part of federal income tax revenues to transportation
3. Simply spending more money on transportation from all the sources of federal revenue (which largely means federal income taxes)

Imposing a national sales tax has been debated for years. It is clear from state and local elections that people widely believe that a general sales tax with proceeds dedicated to transportation is fairer than other revenue sources.⁴⁵ People hold this view despite the view of many experts that general sales taxes are inequitable because they are both regressive and unlinked to use of the transportation system. At the same time, the success of such measures at the polls is thought to depend on the fact that voters were told exactly which transportation services or facilities would be built or improved and that their input was required, a caveat that may not be possible to implement at the federal level.

The federal income tax is generally conceded to be the most progressive of all taxes, but it has no more link to transportation system use than does a general sales tax. Nonetheless, between September 2008 and March 2010 (as shown in table 3), Congress has chosen to offset

Table 3
Recent General Fund Supplements to the Highway Trust Fund
(in millions of dollars)

Year & Law	2008 (PL 110-318)	2009 (PL 111-46)	2010 (PL 111-147)
Highway Account	\$8,017	\$7,000	\$14,700
Transit Account			\$4,800
Total			\$34,517

\$34.5 billion in Highway Trust Fund shortfalls with transfers from the General Fund, which means that transportation expenditures are being funded in part by the federal income tax.⁴⁶

⁴⁵ Center for Transportation Excellence: Election Resources and Issues, <http://www.cfte.org/success/elections.asp> (accessed July 11, 2011).

⁴⁶ Some lawmakers argue that these transfers are not an absolute divorce from the *user pays* tradition of funding transportation. While not so stated in the statute, the 2008 transfer is generally considered to be the reversal of a transfer from the Highway Account to the General Fund required by Section 9004(a) of the Transportation Equity Act for the 21st Century. The amount transferred by Public Law 111-147 in 2010 is characterized as the amount of interest forgone by the HTF since it ceased earning interest on its invested balance in 1998.

In 2010, Congress provided an additional \$35.9 billion in general revenues to fund American Recovery and Reinvestment Act of 2009 (ARRA) transportation investments,⁴⁷ and is set to provide an additional \$1.1 billion for Transportation Investment Generating Economic Recovery (TIGER II and III) grants the following two years.

SUMMARY OF PAYMENT-RELATED EQUITY CONSIDERATIONS

Existing and proposed transportation funding sources raise serious equity concerns. While user fees offer at least indirect links to system use, they are regressive. Sales taxes have little if any link to system use, and paying them takes a greater share of the income of poor people. Using income tax revenue for transportation addresses *ability to pay* concerns but will not lead to more efficient use of the transportation system.

Older and retired people are negatively affected by most existing federal, state, and local revenue sources when they are poor, live on fixed incomes, do not travel much, or travel in off-peak periods. Because of their different travel patterns, it appears that some sources, such as road pricing and tolling, might be more equitable to older people who are not poor, despite easy assumptions to the contrary.

Clearly there is no “perfect” tax that is equitable to all and that meets other societal goals. Current and potential taxes and fees must be evaluated against one another and against the equity of doing nothing. Table 4 summarizes the *relative* performance of various funding options evaluated for *user pays* and *ability to pay equity* considerations.

EQUITY ISSUES IN EXPENDITURE PATTERNS

Traditional equity standards, particularly *ability to pay*, focus on how *paying* a tax or fee affects individuals. An equally important question is the nature and distribution of services and facilities paid for with these revenues. This issue is not entirely divorced from the *user pays* concept of equity. But the latter does not fully cover the idea that crucial differences in the ways transportation services are planned, structured, organized, and maintained have different and substantial equity implications, particularly for older and retired people.

Two additional definitions of equity are related to how transportation revenues are *spent*: *compensatory* and *needs-based*. These concepts of equity are harder to define and overlap to a significant degree. They have not been major discussion points in highway and public transportation funding discussions.

Compensatory Equity

Much of the literature on the equity of financing mechanisms suggests that inequities in *user pays* and *ability to pay* can be offset through a variety of compensatory

⁴⁷ R. Puentes, *Moving Past Gridlock: A Proposal for a Two-Year Transportation Law* (Washington, DC: The Brookings Institution, 2010).

Table 4
Relative Equity Performance of Various Funding Options

	User Pays Equity Considerations	Ability to Pay Equity Considerations	Ability to Pay Explanations
Motor Fuel Excise Tax (cents/gallon sold)			
Sales Tax on Fuel (percent/fuel price per gallon)			Performs slightly worse than motor fuel excise tax because it fluctuates with the price of a gallon of fuel. Lower-income individuals more sensitive to price fluctuations.
Carbon Tax			Price fluctuations also likely.
Traditional Tolling			
Variable Price Tolling			Performs slightly better than traditional tolling, assuming option to travel in free general-purpose lanes is available.
Mileage Fee			Would perform less well for rural drivers who have longer distances to travel and fewer transportation options.
Income Tax (dedicated share of Federal General Fund)			Federal income taxes are considered progressive. State income taxes vary but are generally more neutral.
Vehicle Registration Fees (based on vehicle weight)			
Vehicle Registration Fees (based on vehicle value)			Performs better than fees based on weight, because higher-income earners tend to purchase higher-value vehicles.
Driver License Surcharge			Fee typically does not vary by income level, but absolute value paid would be small.
Vehicle Sales Tax			Sales taxes are generally regressive. While lower-income individuals generally purchase cheaper vehicles, the high cost of any vehicle makes this tax more burdensome than the other vehicle-related taxes above.
General Sales Tax			Considered more regressive than more limited forms of sales tax (fuel or vehicle), as lower-income individuals are less likely to be able to avoid general purchases.
Benefit Assessment District			Generally applied to commercial property, where cost would be passed down to consumers.
Impact and Development Fees			Impact fee for a \$1 million home typically the same as that for a \$150K home (e.g., \$25,000). This significantly increases the cost and decreases the affordability of homes at the lower end of the scale.
Developer Exactions			Similar to above.
Property Taxes (w/out relief based on age and income)			Varies with value of property, thus somewhat less regressive than local fees based on use.

Scored along a continuum from: (Does not perform well) to (Performs well).

Table 4 shows the relative performance of various funding options evaluated for user pays and ability to pay equity considerations. The evaluation reflects relative differences along a continuum, rather than absolute differences. User pays equity evaluation improves the more aligned it is with the costs users impose and the benefits they receive. Ability to pay equity evaluation reflects performance prior to implementation of any compensatory or needs-based measures. Ability to pay evaluation could be improved through rebates to low-income users and by allowing revenues to be spent on public transportation and other compensatory and needs-based investments.

This table is presented as a summary of the report's discussion rather than a comprehensive equity analysis of funding options. As such it should be interpreted with caution. The actual performance of any tax or fee is dependent on the specific details of the tax structure applied.

mechanisms.⁴⁸ The most direct compensatory response would be to provide discounted rates to poor (or older) individuals. Property tax relief is a common example. In the case of tolls, the tolling authority could reduce or forgive tolls, taxes, and fees entirely while providing onboard devices needed to use tolled roads.⁴⁹ A national mileage fee system could have a “lifeline” program, as do many public utilities.⁵⁰ Low-income users would be charged a small price for a minimum level of service and higher prices per unit (miles in this case) only if they exceed the threshold.

Another way to view compensation is to balance the impact of revenue collection with the impact of the expenditures made with those funds. Some analysts suggest that we should calculate *net* costs or benefits to households, assuming that while taxes/fees are direct reductions in household income, most government benefits act like indirect additions to household income (for those actually receiving the benefits). The most common method suggested to compensate disadvantaged travelers for the disproportionate burden they bear from *any* transportation financing mechanism is to pay for new or expanded public transportation services. This is a primary argument for using existing federal and state fuel tax revenues for public transportation investments. Similarly, the U.S. Federal Highway Administration and other researchers have argued that new or expanded public transportation service can compensate for *ability to pay* inequities in road pricing.⁵¹

Needs-based Equity

To equitably provide transportation services, whether or not the revenue sources were equitable, the government must ensure that those services are structured and delivered in ways that specifically meet people’s special needs. This becomes even more important if users were also burdened by unfair taxes and fees. This view of equity recognizes that different people, such as older travelers, low-income workers, or people with disabilities, require different services and different service attributes than the general public. Often these needs are not based on how much money they have. Certainly people with more money can meet some of their additional or special needs without government assistance. However, many needs cannot be met by individuals no matter how well-off they are. Most people do not have enough money to build sidewalks in their neighborhood or improve paratransit services in their community.

Providing additional public transportation services addresses the regressivity in highway financing only if those services are geared to, and used by, those who are unfairly burdened.

⁴⁸ R. T. Baker, D. H. Ungemah, G. D. Goodin, and T. C. Geiselbrecht, Moving beyond Lexus lanes; equity considerations for managed lanes, paper given at the 87th Annual Meetings of the Transportation Research Board, available on conference CD; P. Bonsall and C. Kelly, Road user charging and social exclusion; the impact of congestion charges on at-risk users, *Transport Policy* 12 (5) (2005): 406–18; J. Eliasson and L-G. Mattsson, Equity effects of congestion pricing; quantitative methodology and a case for Stockholm, *Transportation Research A: Part A* 40 (7) (2006): 602–20; Schweitzer and Taylor, Just pricing; U.S. Federal Highway Administration, *Income-Based Equity Impacts of Congestion Pricing: A Primer*, Report FHWA-HO-08-040, Office of Innovative Program Delivery (Washington, DC: U.S. Federal Highway Administration, 2008).

⁴⁹ Baker et al., Moving beyond Lexus lanes; U.S. Federal Highway Administration, *Income-Based Equity Impacts of Congestion Pricing*.

⁵⁰ Schweitzer and Taylor, Just pricing.

⁵¹ Eliasson and Mattsson, Equity effects of congestion pricing; U.S. Federal Highway Administration, *Income-Based Equity Impacts of Congestion Pricing*.

Sen⁵² and several international studies have concluded that recent investments in public transportation, particularly rail systems, did not serve disadvantaged populations well.⁵³

How well providing public transit actually meets older and retired peoples' needs is open to debate. The use of public transportation by older or retired people, while traditionally higher than that of younger persons, fell dramatically between 1995 and 2001.⁵⁴ While this decline appears to have reversed by 2009, today only 1.4 percent of all trips taken by people over 65 are on intracity fixed-route public transportation. Their use of public transportation is now lower than that of younger people. Older nondrivers, while they rely on public transportation at greater rates than drivers, still use intracity fixed-route public transportation for only 2.6 percent of their trips.⁵⁵ This suggests that should older drivers be unfairly burdened by new taxes and fees, they may not be able to switch to traditional public transit.

Older adults' transportation needs may be better met through specialized public transportation services. These services include not only ADA paratransit but also senior shuttle services to community centers, grocery stores, and other establishments of particular interest to older adults. Older nondrivers make 5.3 percent of their trips on these types of specialized services. Fifty-nine percent of their intracity public transportation use can be classified as specialized transportation.⁵⁶

Transportation service delivery needs to be improved and augmented to meet the needs of older travelers. To compensate for the unfair burden many may face in paying certain taxes and fees, government policy at all levels must seek to expand, improve, and enhance a wide range of transportation infrastructure, facilities, and services, with a clear and specific focus on the needs of older and retired people. These compensations include—

■ **Public transportation options**

A wide variety of improvements beneficial to older riders have long been suggested for public transportation.⁵⁷ Most studies stress improving conventional

⁵² S. Sen, Environmental justice in transportation planning and policy; a view from practitioners and other stakeholders in the Baltimore-Washington, DC metropolitan region, *Journal of Urban Technology* 15 (1) (2008): 117–38.

⁵³ AARB Group, Public transport trends; efficiency and equity considerations, *Road and Transport Research; Journal of Australian and New Zealand Research* 16 (3) (2007): 41–55; Q. I. Ahmed, H. Lu, and S. Ye, Urban transportation and equity; A case study of Beijing and Karachi. *Transportation Research Part A* 42 (1) (2008): 125–39; A. Mahendra, Vehicle restrictions in four Latin American cities; is congestion pricing possible? *Transport Reviews* 28 (1) (2008): 105–133.

⁵⁴ S. Rosenbloom, The Mobility Needs of Older Americans, in *Taking the High Road: A Transportation Agenda of Strengthening Metropolitan Areas*, ed. Bruce Katz and Robert Puentes (Washington, DC: Brookings Press, 2005), 227–54.

⁵⁵ AARP Public Policy Institute analysis of 2009 National Household Travel Survey.

⁵⁶ AARP Public Policy Institute analysis of the 2009 National Household Travel Survey. Calculated for nondrivers age 65+. Calculated for trips on the following modes: specialized transit for persons with disabilities, shuttle bus, and school bus where the trip purpose was not school.

⁵⁷ Transit Cooperative Research Program, *Low-Floor Transit Buses; A Synthesis of Practice*, TCRP Synthesis 2 (Washington, DC: Transportation Research Board, 1994); *Guidebook for Attracting Paratransit Patrons to Fixed-Route Services* TCRP Report 24 (1997); *Strategies to Assist Local Transportation Agencies in Becoming Mobility Managers*, TCRP Report 21 (1997); *New Designs and Operating Experience with Low-Floor Buses*, TCRP Report 41 (1998); *Transit Markets of the Future: The Challenge of Change*, TCRP Report 28 (1998); *The Role of Transit Amenities and Vehicle Characteristics in Building Transit Ridership*, TCRP Report 46 (1999); *Passenger Information Services; A Guidebook for Transit Systems*,

service, increasing safety and security in all parts of the system, providing better information both before and during travel, expanding the hours of service on existing routes, providing additional routes, making service more reliable, enhancing driver training, and operating more low-floor buses.

■ **Paratransit services provided by public transit systems**

Today, many older adults are not eligible for the federally mandated curb-to-curb services provided by the public transit operator in their community, even if they do not wish to drive or can no longer do so.⁵⁸ Due to serious financial constraints, many public transportation systems are applying very restrictive eligibility criteria⁵⁹ and reducing their service areas to those required by law.⁶⁰ Federal programs must provide substantially more resources to allow transit operators to significantly expand such services.

■ **Community-based transportation options**

More affordable than ADA paratransit services are myriad community-based transportation options. Many community organizations deliver an array of services to people with a variety of transportation needs, providing an important lifeline for those they serve. But these services reach only a small proportion of all those who currently need them, including people who are not older or retired. Such community transportation providers need funding to substantially improve and expand services. In addition, many volunteer driver programs could serve more people if provided assistance to buy and maintain vehicles, train drivers, and improve dispatching through technology investments.⁶¹

■ **Pedestrian access and facility improvements**

Many older people are aging in place in neighborhoods without sidewalks and appropriate signalization or where sidewalks are in poor repair, blocked by

TCRP Report 45 (1999); *Improving Public Transit Options for Older Persons*, TCRP Report 82, Vol. 2 (2002); *The Use of Small Buses in Transit Service; A Synthesis of Practice*, TCRP Synthesis 41 (2002); D. Koffman et al., *Funding the Public Transportation Needs of an Aging Population* (Washington, DC: American Public Transportation Association, 2010); S. Rosenbloom, The Mobility Needs of Older Americans, in *Taking the High Road: A Transportation Agenda of Strengthening Metropolitan Areas*, ed. Bruce Katz and Robert Puentes (Washington, DC: Brookings Press, 2005), 227–54.

⁵⁸ National Council on Disability, *Livable Communities for Adults with Disabilities* (Washington, DC: National Council on Disability, 2004).

⁵⁹ James Griffin and David A. Priddy, Assessing paratransit eligibility under the Americans with Disabilities Act in the rehabilitation setting, *Archives of Physical Medicine and Rehabilitation*, 86 (6) (2005): 1267–69; National Council on Disability, *Livable Communities for Adults with Disabilities*; A. Scott Tyson, “MetroAccess Paratransit Service to be Scaled Back Because of Rising Demand, Cost,” *The Washington Post*, May 25, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/05/24/AR2010052403749.html>; C. Thole and F. Harvey, *Update Methodology for ADA Demand Estimates: Lessons Learned*, conducted for the Florida Department of Transportation (Tampa, FL: National Center for Transit Research, 2005).

⁶⁰ Scott Tyson, “MetroAccess Paratransit Service.”

⁶¹ National Council on Disability, *Livable Communities for Adults with Disabilities*; S. Rosenbloom, *The Transportation Patterns and Needs of People with Disabilities*, in *The Future of Disability in America*, ed. M. J. Field and A. M. Jette (Washington, DC: The National Academies Press, 2007); Transit Cooperative Research Program, *Economic Benefits of Coordinating Human Service Transportation and Transit Services*, TCRP Report 91 (Washington, DC: Transportation Research Board, 2003); *Strategies to Increase Coordination of Transportation Services for the Transportation Disadvantaged*, TCRP Report 105 (2004); *Toolkit for Rural Community Coordinated Transportation Services*, TCRP Report 101 (2004).

illegally parked cars, or made unsafe by snow, ice, or wet leaves.⁶² Adequate funding for federal, state, and local livable communities initiatives can enable communities to provide, maintain, and enforce the accessibility of the community's pedestrian infrastructure. "Safe Routes for Seniors" programs, such as one under implementation in New York City, could make walking safe and attractive for older adults in their own neighborhoods.

■ **Driver assessment and training**

More accurate testing protocols must be developed for use by driver licensing agencies. In addition, older drivers themselves need ways to safely assess their own driving skills and to learn about the kind of vehicle alterations that might address their problems and the training they will need to overcome specific skill deficits. It is well accepted that the "gold standard" is in-car assessment and training by qualified personnel. Federal and state transportation dollars could fund driver assessment and (re)training programs.

■ **Highway modifications and improvements**

The Federal Highway Administration has found that older drivers would benefit from a range of highway and roadway modifications that would make driving safer and easier; communities should be assisted to implement many of these changes.⁶³ These include measures such as retroreflective signs and pavement marking.

■ **Urban design and land use policies and regulations related to travel/transportation**

The planning literature is replete with suggestions on how to enhance neighborhoods in ways that make them more conducive for walking or public transit use for older and younger residents, facilitating their ability to age in place.⁶⁴

SUMMARY AND CONCLUSIONS

As the nation grapples with how to develop long-term sustainable funding sources for its transportation system, it is important for policy makers to consider equity along with other societal goals such as raising sufficient revenue and meeting energy, environmental, and congestion reduction goals. There is no one right financing mechanism to accomplish these important but often competing aspirations.

⁶² U.S. Federal Highway Administration, *Highway Design Handbook for Older Drivers and Pedestrians* (Washington, DC: U.S. Federal Highway Administration, 2001); H. F. Huang and M. J. Cynecki, Effects of traffic calming measures on pedestrian and motorist behavior, *Transportation Research Record*, 1705 (2000): 16–31; A. Kochera and K. Bright, Livable communities for older people, *Generations*, 29 (4) (Winter 2005–2006): 32–6; J. Lynott et al., *Planning Complete Streets for an Aging America* (Washington, DC: AARP Public Policy Institute, 2009); National Council on Disability, *Livable Communities for Adults with Disabilities*; 2004; S. Rosenbloom, Meeting Transportation Needs in an Aging-Friendly Community, *Generations* 33 (2) (2010): 33–43.

⁶³ National Cooperative Highway Research Program, *Improving the Safety of Older Road Users*, NCHRP Synthesis 348 (Washington, DC: Transportation Research Board, 2005).

⁶⁴ J. Lynott, W. J. McCauley, and M. McCutcheon, Getting Out and About: The Relationship Between Urban Form and Senior Travel Patterns, *Journal of Housing for the Elderly* 23: 390–402; National Council on Disability, *Livable Communities for Adults with Disabilities*; Rosenbloom, Meeting Transportation Needs in an Aging-Friendly Community.

Most current financing mechanisms at the federal, state, and local levels fail both the *user pays* and the *ability to pay* principles of equity. Many create a situation in which older people are, in effect, subsidizing younger, more mobile drivers. Older people on average make fewer trips, travel fewer miles, travel less on interstate highways, and travel less in the peak period than younger people. Any taxes and fees that do not account for these differences in travel patterns may be inequitable. The fuel excise tax is regressive and results in older travelers paying a disproportionate share of highway expenses. General sales taxes, a growing state and local finance mechanism, are both regressive and bear no relationship to system use. Many local transportation revenue sources, from property taxes to development fees, are regressive and only moderately linked to system use.

In contrast, some proposed financing mechanisms, such as increased road tolling and mileage charges (VMT), may prove to be more equitable for older travelers than current revenue sources. Surcharges can be avoided, the mechanisms are much more directly related to system use, and provisions can be made to compensate low-income users who are disproportionately burdened by paying these charges.

However, *how* transportation funds are spent is an equally important equity concern. Inequities in payment can be offset or compensated by providing disadvantaged travelers with additional services or facilities. At the same time, even if the taxes and fees are not unfair, if the services and facilities provided with those revenues are not responsive to the special needs of older travelers, they may be inequitable. Given the transportation challenges facing older travelers in almost all aspects of the surface transportation network, it is crucial that investments in highways, driver assessment and training, public and community-based transportation, and pedestrian accommodation be responsive to these special needs.

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