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WHY THE DOT'S ROLE IN FUNDING AND REGULATING TRANSPORTATION SHOULD BE REDUCED

by Tracy C. Miller and Brian M. Deignan

MERCATUS CENTER
George Mason University

About the Authors

Tracy C. Miller
Associate Professor of Economics
Grove City College
100 Campus Drive #3018
Grove City, PA 16127
724-458-2013
tcmiller@gcc.edu

Brian M. Deignan
MA Fellow
Mercatus Center at George Mason University
bdeignan@gmu.edu

Abstract

We analyze the role of the US Department of Transportation (DOT) in regulating transportation safety and funding surface transportation infrastructure. These two aspects of DOT policy are important in light of recent trends and problems with our transportation system. Government officials and transportation experts have expressed growing concern about deteriorating surface transportation infrastructure. Transportation safety regulation, which continues to increase, disproportionately burdens low-income Americans and small businesses. This paper synthesizes and updates the literature from past debates about the costs and incentive effects of safety regulation. A counterfactual analysis using historical evidence and economic research on safety regulation indicates that without regulation, the private sector would provide many safety features in response to market incentives. Economic research also shows that when the DOT mandates safety features, people must then spend less on other things they value more. Similarly, we demonstrate, based on economic theory and evidence, that existing policies for funding transportation infrastructure contribute to investment decisions that do not accurately reflect the traveling public's preferences. Evidence from other studies suggests that these policies also create excess demand for highway space in many cities and excess supply of mass transit service. To promote a more efficient and equitable transportation system, the role of the DOT in funding surface transportation should be reduced and the role of state and local governments and private firms should be increased. The DOT should also reduce its role in regulating transportation safety so that travelers and shippers have more freedom to choose the level of safety they desire.

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Why the DOT's Role in Funding and Regulating Transportation Should Be Reduced

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I. Introduction

Many Americans take it for granted that the federal government should regulate the transportation sector in the United States and continue to provide funding for transportation infrastructure, particularly highways and urban mass transit. Yet an economic and historical analysis raises questions about how much government safety regulation is necessary and whether private firms or state and local governments could provide infrastructure more efficiently.

The Federal Government's Role in Transportation

Until the 1950s, the federal government played a relatively minor role in funding transportation. Its regulatory role was larger, but it focused primarily on regulating common carriers, including railroads, airlines, and interstate trucking companies. Before the 1950s, state and local governments funded most roads, highways, and airports, while the private sector funded infrastructure for other modes of transportation. The federal role in transportation has changed in several ways since the 1950s, when it began funding the interstate highway system. Its role changed further following the creation of the US Department of Transportation (DOT) in the 1960s. The DOT now administers most federal government funding and regulation of transportation.

The DOT's mission statement says that its goal is to ensure a "fast, safe, efficient, accessible and convenient transportation system that meets our vital national interests and enhances the quality of life of the American people, today and into the future" (US DOT 2012b). Besides regulating automobiles, highway safety, airline safety, and other dimensions of the US

transportation system, the DOT subsidizes highways, public transit, passenger rail, and some airline service. How it distributes funds to the different states and among highways, public transit, and other priorities, though governed by acts of Congress, is an important part of its regulatory role. Since it was established in the 1960s, the DOT has assumed several roles that other federal government agencies once performed. During the same period, the DOT has played a role in terminating government economic regulation of common carriers' prices and routes. It has also expanded its role to regulating private vehicle safety and directing federal money to fund public transportation and passenger railroads.

This article focuses mainly on transportation safety and the regulation and funding of surface transportation. Although some research supports the contention that DOT safety regulations have benefited the public by reducing accidents and saving lives, a number of theoretical and empirical studies by economists have demonstrated that many of those regulations have had unintended harmful consequences and involve costs that may exceed their benefits. In addition, deterioration of the interstate highway system, worsening congestion in many cities, and costly public transit systems that require enormous subsides to serve a small proportion of trips in urban areas have raised serious questions about the efficacy of DOT policy.

While the US transportation system still facilitates Americans' mobility to a high degree and has seen declining fatality and injury rates for almost every mode of transportation, the federal government does not fund transportation efficiently and creates unnecessary costs through regulation. Apart from a very limited role in facilitating interstate commerce by harmonizing policy and regulation between the states and working to limit the harmful impact of other federal regulatory agencies, most DOT activities should be relegated to the private sector or to state and local governments.

Problems with DOT Funding and Regulation of Transportation

In funding and regulating transportation, the government has the potential to do more harm than good. Safety regulations can be costly and should be balanced with other considerations such as price, competition, and a greater choice set. For example, the safety standards for automobiles keep growing. While some consumer advocates may laud this effort, it can also be seen as a case of regulatory tunnel vision. Regulatory tunnel vision occurs when agencies pursue a single goal above all other considerations, and it rules out the delicate balancing of consumer benefits. The DOT must not only ask itself how mandating more safety affects a good's or a service's price, but it must also ask how the mandate affects the wider choice set consumers face and the competition in an industry.

One argument used to justify vehicle safety standards when they were first introduced was that the "big three" US automobile manufacturers were an oligopoly, and thus more reluctant than firms in a competitive market to offer consumers what they really wanted (Nader 1970). The automobile market has more competitors today than in the 1970s, thanks to foreign manufacturers and a less-protectionist trade policy. Yet the code of vehicle safety standards that began in the late 1960s has continued to regulate automotive design throughout a period of increased competition and market developments.

An understanding of the theoretical foundations for safety regulation is crucial to the overall discussion so that the DOT and the public may better judge when regulatory action is warranted and when it is not. A justified, net-beneficial safety regulation is akin to a $100 bill lying on the sidewalk—why not pick it up? However, because of unforeseen or hidden costs, a seemingly net-beneficial yet unjustified regulation may only *appear* to be a "free" $100. The mere facts that products sometimes fail and humans cause traffic accidents are not by themselves

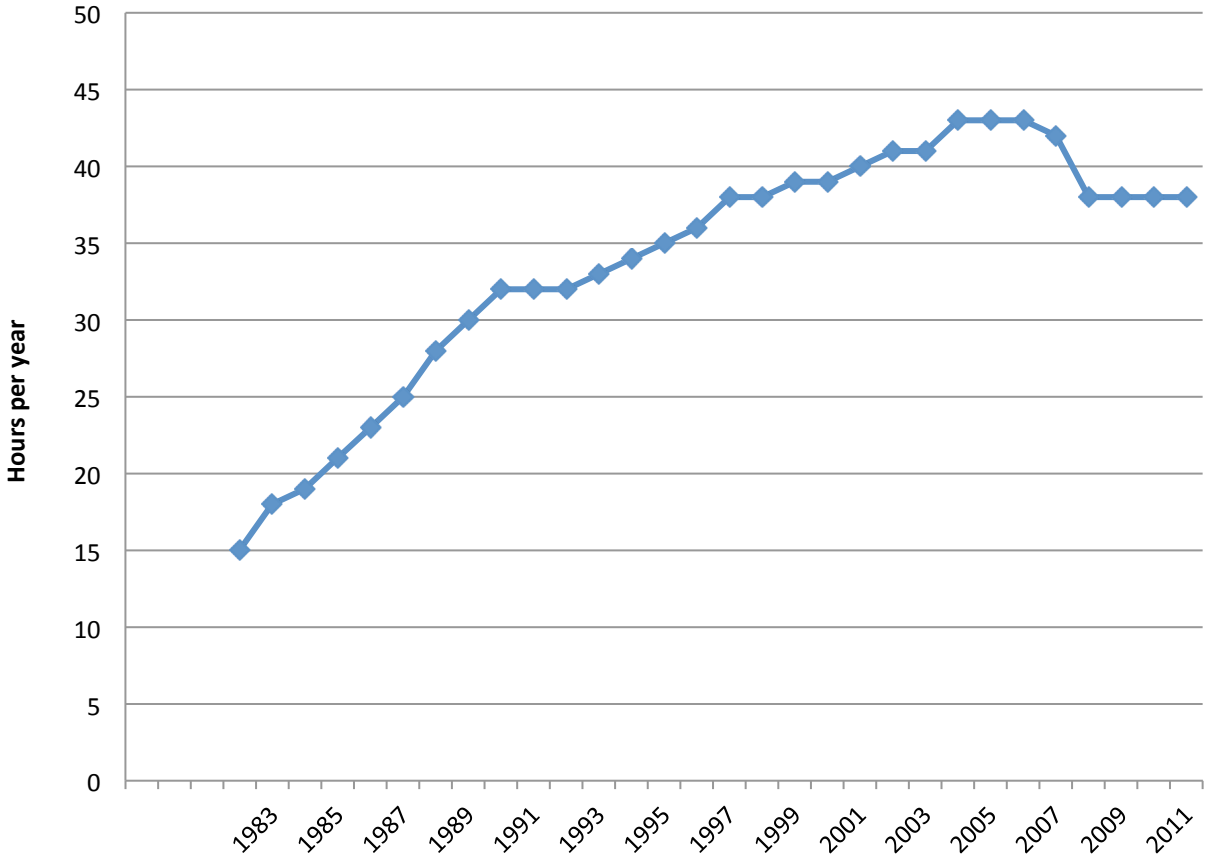
arguments for government intervention. To justify intervention, the failures must be systematic and doomed to continue without intervention. Such market failure does not seem to be as resilient in reality as it is on the blackboard.

Regulators also use concerns about market failure to justify government funding of transportation infrastructure. Whether or not the market would fail in providing infrastructure, government failure may be worse. The government often does not use tax revenue efficiently in funding transportation infrastructure. We can trace part of the problem to spending priorities. The federal government has spent enormous sums on low-priority projects or projects that were far too expensive to be cost-effective, such as Boston's Central Artery/Tunnel Project. It was initially estimated to cost $3.3 billion, but ended up costing more than $14.6 billion (Roth 2005). The government has also spent billions on earmarks that are not subject to normal project-selection criteria, but that politicians use to please key political constituencies. A famous example of wasteful spending on earmarks is the "Bridge to Nowhere" in Alaska, a project that was eventually canceled when it attracted unfavorable attention from the voting public (Murray 2005).

Even when governments choose the most urgently needed highway projects, expansion of highway capacity does not usually lead to anticipated reductions in congestion. Expansion of capacity reduces the cost of traveling during peak periods so that peak demand increases almost as much as supply. The result is that highway lanes, though underused at other times, continue to be gridlocked during rush hour. During peak periods, each motorist pays much less than the marginal cost of driving on a congested freeway, so the quantity of space demanded exceeds the quantity supplied. Below-market prices for highway services have the same effect as any other price ceiling: they lead to shortages. Figure 1 shows the long-term trend of increasing congestion in US metropolitan areas. Although aggregate congestion has not increased much since 2003,

rising fuel prices and the recession that began in 2008 can explain what may turn out to be just a temporary interruption in the long-term trend of rising congestion.

Figure 1. Annual Hours of Delay per Urban Commuter, 498 US Metro Areas



Source: David Schrank, Bill Eisle, and Tim Lomax, *2012 Urban Mobility Report*. College Station, TX: Texas A&M Transportation Institute, December 2012, table 9: Congestion Trends—Wasted Hours (Yearly Delay per Auto Commuter, 1982 to 2011).

These problems with transportation policy may be partly attributed to the DOT. More fundamentally, though, it is the role that governments, whether federal or state, have played in the regulation and funding of transportation that has caused many transportation problems. Some of these problems predate the DOT, and a full understanding of its role requires a consideration of the federal government's role in transportation when the DOT was created.

II. Background

When the DOT was created, the federal government was already regulating transportation, with many years of experience regulating commercial transportation carriers. Before the 1950s, state and local governments were responsible for most regulation and funding of highways and automobile travel. The federal government began assuming a larger role in the 1950s, with the initiation of the interstate highway system.

The federal government conceived the idea of an interstate highway system and supplied most of the construction funding in order to provide a safe and efficient interregional transportation network. Roth (2005) calls it "the greatest public works achievement since the fall of the Roman Empire." To fund this enormous system of superhighways, the Federal-Aid Highway Act of 1956 created the federal Highway Trust Fund, which relied on revenue from taxes on gasoline and diesel fuel. Using trust fund revenue, the Federal Highway Administration (FHWA) provides state governments with matching funds for road construction and maintenance. States use most matching funds for interstate highways and other "federal-aid highways," leaving very little for local roads and streets (FHWA 2012a). To be considered a federal-aid highway, a road must be classified as an interstate, other freeway or expressway, major or minor arterial, major collector, or urban minor collector (FHWA 2011). The federal government reimburses states for 80 percent of capital and upkeep expenses on federal-aid highways, up to the amount of federal highway funds allocated to that state. In most years since 1961, federal highway aid has represented 20–25 percent of total road and highway expenditures (Transportation Research Board 2006, 28). The rest of the funding comes from the state where the road is located or from the local government.

Other changes in the federal government's role in transportation came about after the DOT's creation, but a trend toward greater federal involvement was already evident before the department existed.

How the DOT Has Changed the Federal Government's Role in Funding and Regulating Transportation

The DOT was created partly to overcome perceived inefficiencies and inequities in how disparate federal agencies promoted transportation. Promotion of transportation was already a major federal goal, but each mode of transportation had a different agency promoting its development. As a result, coordinated, intermodal planning of the transportation system was largely absent. The DOT's enabling legislation specified that it was to pursue "the general welfare, economic growth, and stability of the nation and its security" by developing cost-effective "policies and programs conducive to the provision of safe, efficient, and convenient transportation" that are consistent with other objectives including "the efficient utilization and conservation of natural resources" (Department of Transportation Act 1966).

When the DOT was created, the prevailing view was "that economic regulation and promotion of transportation were incompatible and should be administered by separate government agencies" (Hazard 1986). For this reason, regulatory commissions such as the Interstate Commerce Commission (ICC), the Civil Aeronautics Board (CAB), and the Federal Maritime Commission (FMC) retained their independence. Evidence of regulation's harmful consequences led to airline deregulation beginning in the mid-1970s and to railroad and trucking deregulation during the late 1970s. The DOT played an important role in these efforts, eventually taking over the remaining roles of the ICC and the CAB. The FMC continues to operate as an independent regulatory agency.

Before the DOT's creation, the federal government worked with state government organizations to pursue "economic growth through bigger and better infrastructures and improved carrier services." Conflicts over policy were primarily conflicts among "various modes attempting to augment their own positions" relative to the competition (Hazard 1986). Following the DOT's creation, additional interest groups, such as environmental groups and safety-focused consumer advocates, mobilized to influence transportation policy. Safety, a growing public concern, was included in the DOTs responsibilities, and environmental degradation was also added to its Declaration of Purpose (Hazard 1986). Conflicts between groups representing competing transportation modes as well as conflicts with interest groups concerned about safety, the environment, and labor-union interests have long played an important role in DOT policy.

In response to political conflicts that arose from constructing urban expressways, the DOT made important changes in highway policy that reflected the concerns of other interest groups besides those in favor of highways. Initially, engineers designed urban expressways to link suburbs to city centers as directly as possible. The construction of these expressways destroyed countless homes, businesses, schools, and churches and ruined or split apart many neighborhoods, parks, and historic districts. While they made it easier for suburban residents to drive to and through city centers, urban expressways often made it harder for residents of city centers, where fewer people had cars, to get around (Mohl 2008).

Although 90 percent of interstate highway funding came from the FHWA, the construction and location of urban interstates was largely the responsibility of state highway departments. Engineers who focused on getting highways built with little regard for community or environmental consequences dominated these departments. By the early 1960s,

community groups were opposing urban expressways, and their concerns had an important impact on the Federal-Aid Highway Act of 1962. This law required state highway departments to "work with local governments" to develop "a cooperative, comprehensive, and continuing urban transportation planning process" (Mohl 2008). It also directed state highway departments to assist families and businesses with relocation costs if they had been displaced by expressways.

The DOT played an important role in resolving some of the controversy created by the planning and construction of urban expressways. The first transportation secretary, Alan S. Boyd, who served from 1967 through 1968, allied himself with citizen groups that were fighting urban freeway projects. His successor, John Volpe, did not support the highway lobbyists' agenda as many expected, but recognized that building "a balanced, intermodal transportation system" was an important part of the DOT's purpose (Mohl 2008). One way that he pursued balance was by supporting the use of Highway Trust Fund money for mass transit. Partly due to Volpe's intervention, several planned urban expressways were never built and others were rerouted.

The original plan was to complete the interstate highway system by 1972, so the powers under the Federal-Aid Highway Act of 1956 were set to expire at that time. Instead, the interstate highway system was expanded, and federal government authority to finance highways was renewed and changed several times after 1972 (Roth 2005). Contrary to the original plan, the FHWA continues to collect federal fuel taxes and to divide the revenue between highways and mass transit and among the states.

It is not clear whether the existence of the DOT influenced congressional decisions to continue to fund highways with federal fuel-tax revenue, but DOT officials played an

important role in advocating the use of Highway Trust Fund money for public transportation. Shortly after being created, the DOT was given control of the Urban Mass Transportation Administration (UMTA), which had been part of the Department of Housing and Urban Development. Congress established the UMTA in 1964 to provide subsidies for transit capital investment so that public transportation systems could continue to cover their costs. Declining demand for public transportation in response to growing automobile use was threatening the economic viability of urban transit systems. This declining economic viability gave rise to political pressure to assist transit agencies. Political support for government funding of mass transit has also been sustained by recognition of the role that bus and rail transit can play in reducing highway congestion.

The Federal-Aid Highway Act of 1973 permitted the use of Highway Trust Fund money for mass transit (Mohl 2008). Beginning with that legislation, federal surface transportation acts, which Congress passes periodically, have been dividing funds between highways and public transit. Since the year 2000, federal grants have constituted 17–20 percent of public transportation spending (Federal Transit Administration 2011). Most federal transit funding comes from revenue generated by federal fuel taxes and is used for capital expenditures (Transportation Research Board 2006). Capital projects may be funded up to 80 percent by federal grants. Federal grants also pay up to 50 percent of transit operating deficits (Churchman 2012). Grants are allocated by formulas that vary with the urbanized area's characteristics, including population and population density. For larger urban areas, the amount granted also depends on other factors, including the percentage of local travel by public transportation.

In recent years, the mass transit account has spent 16–19 percent of Highway Trust Fund outlays (FHWA 2012b). The actual percentage spent on mass transit has been larger, since states have the option of spending a portion of their highway funding on mass transit. Thus, in each fiscal year from 2004 through 2009, total spending for mass transit constituted 20–22 percent of Highway Trust Fund money, counting flexible funding that was used for transit (American Public Transportation Association 2012b). In addition to trust fund money, the federal government uses general revenue to fund mass transit.

Historically, most Highway Trust Fund spending has come from taxes related to vehicle ownership and use, including excise taxes on gasoline and diesel fuel, heavy vehicle registration fees, and taxes on truck tires. Following the 2008 recession, however, almost $27 billion was transferred from the general fund to the trust fund in fiscal years 2009 and 2010 as part of the American Recovery and Reinvestment Act of 2009 (Federal Highway Administration 2012b). As table 1 shows, this stimulus money made it possible to spend considerably more for highways and mass transit than was raised in excise taxes during fiscal years 2009–2012.

Table 1. Highway Trust Fund: Outlays and Revenue from User Taxes (millions of dollars)

Year	2009	2010	2011	2012
Highway account outlays	37,571	32,006	37,325	41,149
Transit account outlays	7,280	7,362	7,315	8,210
Total outlays	44,851	39,368	44,640	49,359
Net excise taxes received	34,935	35,105	36,883	40,146

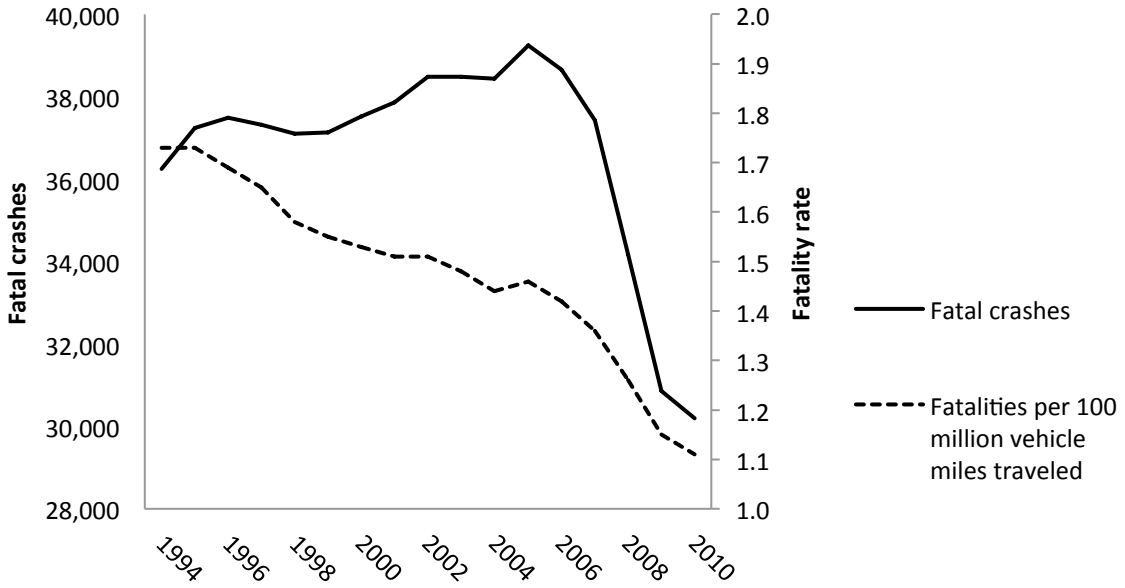
Source: Federal Highway Administration, Status of the Highway Trust Fund, 2012.

Transportation Safety: Trends and the DOT's Role

Before the DOT's creation, the federal government regulated the safety of commercial transportation carriers but had almost no role in private vehicle safety regulation. The DOT now regulates safety across all modes of transportation, including automobiles. To understand its role, we begin with a consideration of trends in transportation safety.

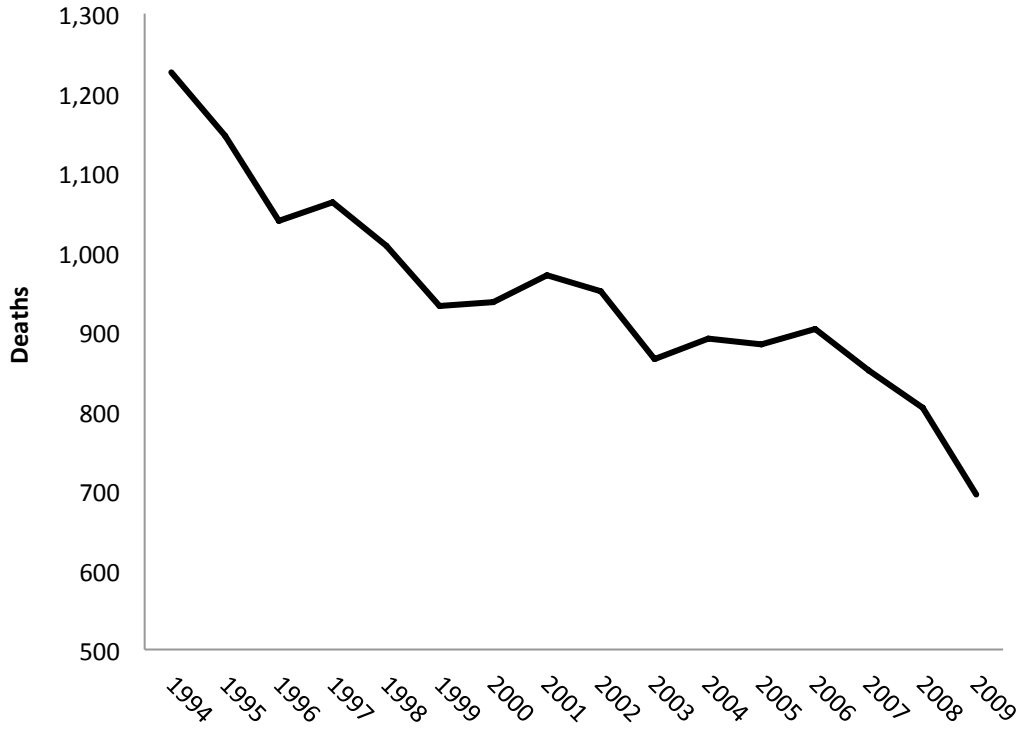
Transportation safety has been improving across all modes of transportation for at least the past 30 years. Figures 2 and 3 show trends in motor-vehicle and railroad safety. Savage (1999) finds that in the prior 20 years, crash risk in all modes of commercial transportation had fallen by at least half. The trend toward more safety has continued into the 21st century.

Figure 2. Traffic Safety, 1994–2010



Source: NHTSA Motor Vehicle Traffic Crash Data, Fatality Analysis Reporting System, http://www-fars.nhtsa.dot.gov/Main/index.aspx.

Figure 3. Railroad Fatalities, 1994–2009



Source: Federal Railroad Administration Office of Safety Analysis, *Railroad Safety Statistics 2005 Annual Report*, December 18, 2006; Federal Railroad Administration Office of Safety Analysis, *Railroad Safety Statistics 2009 Annual Report*, April 1, 2011.

Among all modes of transportation, motor vehicle crashes account for a majority of fatalities; in fact, a large share of rail fatalities occurs at highway-rail crossings (Federal Railroad Administration 2011). Highway safety has improved, despite its relatively high fatality rate, and its improvement has accelerated in recent years. This safety improvement comes from advances in automotive technology, improved occupant protection, and changing social attitudes toward using seat belts and toward drinking and driving (Savage 1999).

According to the National Highway Traffic Safety Administration (NHTSA), from 1975 to 2009, the occupant fatality rate in motor vehicle crashes fell. Furthermore, from 1992 to 2009, the fatality rate fell faster than in the period from 1975 to 1992. The same trend is true of the occupant injury rate. And vehicle occupants are not the only ones experiencing greater safety.

The NHTSA reports that the non-occupant fatality rate decreased by 60.2 percent from 1975 to 2009 (NHTSA 2011).

Safety improvements in commercial trucking have contributed to safer roads as well. Savage (1999) finds that in the 20 years before 1999, fatal truck crashes per vehicle mile declined by more than half. The safety trend has continued. From 1975 through 2010, the number of large trucks and buses roughly doubled, yet the absolute number of fatalities in large truck and bus crashes has steadily declined. From 2000 to 2010, fatal accidents, injury accidents, and accidents involving property damage all declined by at least 30 percent (Federal Motor Carrier Safety Administration 2012).

Commercial aviation is a safer mode of transportation per mile than travel by bus, railroad, or automobile. From 1960 to 1995, the risk of flying on a large airline fell by more than 90 percent (Savage 1999). Advances in technology and an increase in average trip length improved safety. Savage explains that economic deregulation increased journey length. Before deregulation, airlines cross-subsidized shorter trips with the higher prices of longer trips. After deregulation, the price of longer flights decreased more than that of shorter flights. Because larger carriers withdrew from the market for shorter trips after deregulation, commuter airlines began to serve this market segment. As the commuter airline industry grew rapidly, it adopted turboprop aircraft instead of aircraft with piston engines, and this shift increased air-travel safety (Savage 1999). The trend toward greater aviation safety has continued. As a result, fatal crashes involving commercial aircraft have become a rare occurrence. The year 2012 was the safest for airline travel worldwide since 1945, and the United States has not experienced a fatal domestic airline crash since 2009 (Martín 2013; Pasztor 2012).

Like other modes of transportation, railroads in the United States have become safer. Savage (1999) tracks fatal railroad accident rates across three major categories: employees, highway-rail crossings, and trespassers. He finds that by 1995, the casualty risk at crossings was one-fifth of what it was in 1960. The other two categories also experienced improvements, but they were not as notable as the progress made at highway-rail crossings (Savage 1999). More recently, the Federal Railroad Administration (2011) has reported that from 1998 to 2009, railroad accidents declined by about 32 percent and railroad deaths fell by 31 percent. Savage points out that less railcar switching contributed to increased safety. Also, in 1973, the federal government began a program to install flashing lights and gates at crossings, which contributed to the large reduction in the fatality rate (Savage 1999).

How and why the federal government regulates transportation safety. While transportation safety has improved, the causes of this improvement have been debated. The impact of federal regulations on safety is evident in some cases, but unclear in others. For example, federal authorities initiated the installation of warning devices at railroad crossings, and no one disputes that this effort has benefited drivers. On the other hand, safety requirements, such as those for seatbelts, can alter consumer behavior to offset some of the benefits of the safety device (Peltzman 1975). To help illuminate which situations may warrant government intervention, economists have identified potential shortcomings of the private sector in the provision of safety, also known as "market failures."

The three major concerns when it comes to safety in the marketplace are imperfect information, carrier myopia, and externalities (Savage 1999). Imperfect information is a potential market failure when it comes to the safety of all goods and services, not just transportation. In

the 1970s, economist Walter Oi looked into a National Commission on Product Safety report that called for increasing product safety and eliminating "unreasonably hazardous" products. He claimed that producers face proper incentives to offer safe products when the customer is fully informed (Oi 1973). To be fully informed, a customer would have to accurately appreciate the benefits of greater protection. In the case of travel safety, fully understanding the benefits of greater protection requires knowledge about the probability of being in an accident and about the expected damage. Obtaining this information can be a tall task, especially since research shows that individuals are insensitive to low-probability events (Arnould and Grabowski 1981).

Carrier myopia occurs when firms disregard the longer-term consequences of their behavior to pursue short-term gains and rely on the consumer's failure to be fully informed. For example, new entrants or existing firms may decide to deceive consumers about product safety (Savage 1999). These firms can pretend to offer a high level of safety and not actually provide it. For new entrants, this could happen because of inexperience; for existing firms, financial stress could cause a carrier to allocate fewer resources toward safety.

An externality occurs when carriers or drivers fail to internalize the benefits or harms experienced by third parties. Transportation scholars are mainly concerned with negative externalities. For example, vehicle crashes have negative externalities when they impose losses on other drivers, pedestrians, or occupants who are not compensated by payments from the at-fault driver's insurance or personal wealth (Traynor 1994). Safety may be underprovided when a driver or carrier fails to use safety equipment that could have reduced the costs imposed on others.

Given these potential market failures, the federal government regulates safety in three main ways. The first and most prominent approach is direct regulation. The government has been involved in this type of regulation for more than a century, applying it to railroads in 1893, air

traffic in 1926, commercial trucking in 1940, and automobiles in the 1960s (FAA 2010; Savage 1999). Direct regulation responds to the market failures of imperfect information and carrier myopia and consists of labor requirements, design and performance requirements, and random inspections to help enforce regulations.

The second area of federal regulation focuses solely on imperfect information. The government requires carriers in all modes of transportation to report serious crashes (Savage 1999). Government officials use the data from these reports to target regulation and also to disseminate information to consumers and carriers, who can use it to inform marketplace transactions.

The third major area of government involvement in transportation safety deals with insurance. Myopic carriers could underprovide safety and avoid paying damages through the shelter provided by bankruptcy. Therefore, the government stipulates that carriers in most modes of transportation have insurance in order to cover tort liability. Savage claims that incurring insurance premiums in the present helps new entrants to consider the long-term consequences of not providing adequate safety (Savage 1999). Most federal initiatives regarding transportation safety fall into these three categories and address at least one of the main sources of market failure. Automobiles, air traffic, railroads, and road freight are all susceptible to various failures.

Traffic fatalities are arguably the most visible aspect of transportation safety, and federal agencies attempt to reduce them. The DOT has been involved in guiding automobile design since the 1960s, while the NHTSA, established in 1970, implements and enforces safety standards for motor vehicles and provides grants to local highway-safety programs (NHTSA n.d.). The Federal Motor Vehicle Safety Standards set design standards for vehicles sold in the United States. These standards are a form of direct regulation and guarantee car buyers a minimum level of safety features on vehicles they might purchase. The NHTSA also provides information through research

and testing. Crash-injury research looks at how various types of collisions cause injuries, and crashworthiness looks at how technology and other safety countermeasures can mitigate fatalities and serious injuries sustained by vehicle occupants. The NHTSA's involvement is mainly justified by the argument that consumers have imperfect information about occupant protection, which may increase fatalities and injuries sustained in automobile crashes.

For air safety, the Federal Aviation Administration (FAA) looks for issues regarding myopic carriers and the coordination of aircraft while in flight and during takeoff and landing. It regulates through aircraft and crew certification, air-safety research, and air-traffic control. The federal government had a major role in implementing the air-traffic control system (Savage 1999), which helps aircraft avoid mid-air collisions. Also, the FAA certifies aircraft in order to guarantee a minimum level of safety. Once certified, aircraft usually receive only minor airworthiness directives, which are warnings of design deficiencies or new testing procedures. However, the FAA can punish safety offenders through warnings, fines, and withdrawal of certification, and it can ground all aircraft of a specific model or all flights of an airline (Chalk 1987).

When it comes to railroads, the DOT is involved in both railroad-employee safety and highway-rail crossing safety. The primary concern of railroad-safety failure is with bilateral crashes, which occur with trespassers and automobiles at crossings. There is a potential for confusion over how much caution each party must exercise in order to avoid these incidents (Savage 1999). Trespasser fatalities are more difficult to ameliorate because the typical victim is an intoxicated male; one study found that 78 percent of trespassers killed were intoxicated (Pelletier 1997). As already mentioned, the government initiated the installation of safety devices at railroad crossings, which has substantially reduced bilateral-crash fatalities.

The examples described here are just some of the federal initiatives that are in place. Each year, the department seeks to raise the safety bar, conducting more research and proposing more regulations. A growing number of regulations address a limited number of market failures, and where the federal government does not reach, local governments may step in. For example, the federal carrier insurance requirement does not apply to private automobiles. The decision whether to require insurance on private automobiles is up to the states, and most require some sort of coverage (Savage 1999). However, government regulation is just one way to overcome problems such as carrier myopia and imperfect information; there are ways, which we will discuss later, that the market itself can overcome its "failures."

The relationship between federal and state government safety regulation. State departments of transportation are a relatively new addition to state governments. State DOTs began as departments of highways, and highways are still their main focus (Goetz et al. 2007). Despite most of their budgets going toward roadway construction and maintenance, state DOTs have made a marked shift toward traffic-safety goals this past decade.

State departments of transportation also assist local transportation agencies. A 2009 survey by the Institute for Transportation at Iowa State University shows that state DOTs give funding and training and assist with data analysis at the local level. This arrangement makes sense because in many states at least half of all serious automobile crashes occur on locally administered roads (McDonald 2009).

In effect, state departments are smaller versions of the federal DOT. The main differences between the two come from the nature of the transportation market. Freight shippers, interstate airlines, nationwide railroads, and national automotive manufacturers are all under federal

jurisdiction. Also, at the federal level, there is more expertise for research and data analysis. State transportation funding relies on federal assistance (Herr 2011), but the states oversee local road conditions and local safety initiatives. For example, many states have information-safety campaigns, such as public-service announcements warning of the dangers of drinking and driving.

III. Evaluating the Role of the DOT and Federal Government

This section evaluates the DOT's role, beginning with the question of the rationale for government regulation in transportation markets. The argument for regulation reflects a desire to promote economic efficiency. What constitutes economic efficiency, however, depends partly on whose interests count in the political process.

Issues to Consider

Government regulation is premised on the idea that the transportation market is subject to market failures. The market failures include monopoly, high exclusion costs, negative externalities from congestion and pollution, indirect consumption benefits, and imperfect information (Winston 1999). Because of these various market failures, many economists and politicians believe the government should regulate safety, monitor and regulate transportation's environmental impact, and subsidize the construction and maintenance of roads, highways, urban transit, passenger rail, and other transportation infrastructure.

The DOT's role in funding transportation infrastructure gives it greater power to regulate construction and maintenance of that infrastructure in order to attain external benefits and limit external costs. Community residents perceive benefits, which are often reflected in higher property values, if their community is accessible via high-quality transportation facilities. To the extent that

the federal or state government finances the transportation infrastructure, these are external benefits to community residents. Some segments of the domestic transportation system, particularly highways and airports, have also produced excessive social costs for adjacent communities.

An important aspect of government policy is the question of whose interests count. The DOT has given a voice to interest groups that might not otherwise be heard in debates over transportation policy. As noted earlier, inner-city residents, environmentalists, and historical preservationists impacted highway policy in ways that they might not otherwise have impacted it if the DOT did not exist. Groups concerned about energy conservation and highway beautification have also had a major influence on DOT policy. At times, the DOT seems to have given regulation to achieve social goals priority over promoting transportation, but at other times the DOT has viewed social goals as "constraints that transportation had to recognize and operate within" (Hazard 1988, 144–45). The DOT's attempts to balance competing goals and pursue economic efficiency have sometimes been thwarted by the courts and Congress in the face of pressure from groups concerned about social causes. For example, legislation requiring environmental impact statements has increased the cost of transportation projects. This requirement causes costly delays in building highways without necessarily improving the environment.

Many of the arguments for a government role in transportation are implicit in the DOT's mission statement. Its mission statement thus gives us a basis for evaluating what it does. How well does the DOT accomplish its stated objectives? Could those objectives be accomplished if the DOT did not exist? More specifically, we will try to answer questions about what the DOT should start doing or continue to do and what it should do less or stop doing.

On its website, the DOT assesses how well it achieves various objectives related to what it regulates or funds. It has goals related to safety, highway congestion, global connectivity,

readiness and security, environmental stewardship, flight delays, and the percentage of contracts awarded to women-owned businesses. According to its performance plan, the DOT accomplished many but not all of its stated objectives in 2011 (US DOT 2012a). Such an assessment is problematic in several ways. In some cases the DOT measures desired outcomes, while in other cases it measures inputs that are, at best, indirectly related to outcomes that the public would agree are desirable. Where the department measures outcomes, it offers little or no evidence for a causal relationship between its policy and the outcome. Thus, in many cases, the achievement of an objective does not mean the DOT has played a significant role, only that various factors, which may or may not include DOT policy, have created the desired outcomes.

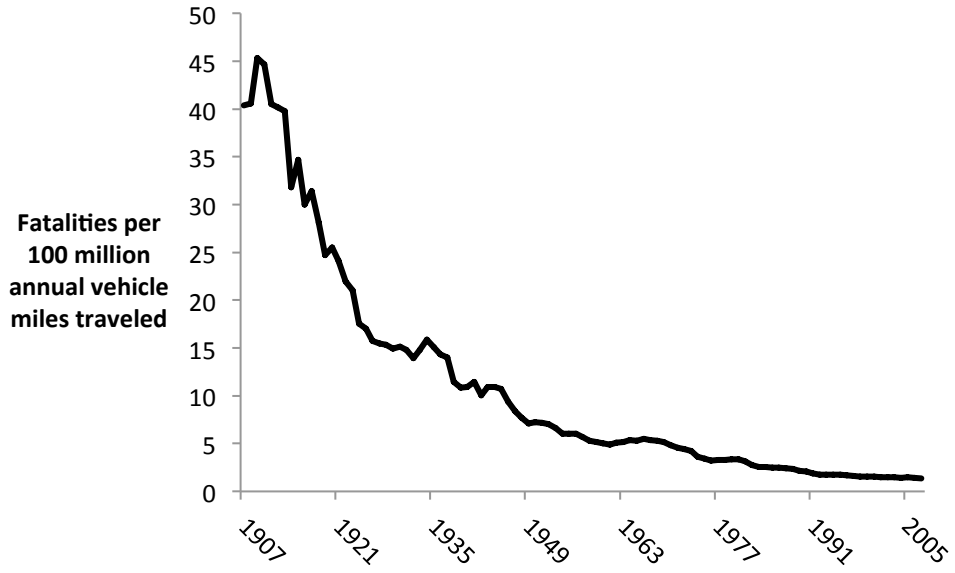
Rather than trying to assess how well the DOT achieves its stated objectives, then, we consider a counterfactual question—what would our transportation system be like without DOT regulation and funding? We then consider safety regulation, highway funding, and public-transportation funding, with a brief discussion of other initiatives, such as high-speed rail.

DOT Safety Regulation

The market-failure justifications for regulation are necessary but not sufficient conditions for intervention. The DOT should analyze what is really going on in transportation markets and revise its approach to regulation accordingly. Conventional market-failure arguments provide inadequate justification for regulation because the concept of market failure is drawn from the model of perfect competition. In reality, markets rarely if ever demonstrate perfect competition. Instead, a better threshold for justifying safety regulation would be the following: unless safety is deteriorating and a given transport market is prone to substantial market failure that is not being corrected by market developments, the market-failure rationale is insufficient to justify intervention.

In fact, in many cases, safety has developed independently of regulation. In order to consider the provision of transportation safety independent of the DOT's influence, we must consider the nature of safety itself. Safety has the characteristics of a normal good, which means that consumers demand more of it as their incomes increase. Income is only one factor in determining an individual's appetite for safe products, but variation in income is an important reason why individuals demand different levels of safety. Wealthier households can afford the high cost of mitigating some low-probability risks, but regulators and consumer advocates often ignore this point (Thomas 2012). Over time, as incomes have risen, road fatality rates have fallen in industrialized countries (Kopits and Cropper 2005). The decline is also present in the United States, beginning well before the DOT was established (see figure 4). This trend shows that safety is not only a function of government intervention, but is also a function of changes in social attitudes, changes in income, changes in the age distribution of drivers, and other factors.

Figure 4. A Century of Increasing Traffic Safety



Source: Federal Highway Administration, "Motor Vehicle Traffic Fatalities, 1900–2007," January 2009, http://www.fhwa.dot.gov/policyinformation/statistics/2007/pdf/fi200.pdf.

The market provision of safety is a process that evolves through consumer experience and through spontaneous institutions that overcome information asymmetries and punish producers for not giving consumers what they want. Some examples of these institutions are producer reputations or brand names and product guarantees (Chalk 1987). In transportation markets, three points stand out: (1) consumers are capable of demanding safety and producers are willing to provide it, (2) repeat purchases and economic deregulation keep freight shipping relatively safe, and (3) financial markets play a role in punishing myopic airlines.

The role of consumer demand in motivating producers to provide safety features is evident in the automobile market, where what at first seemed to be a result of federal intervention was actually partly a market response. While airbags eventually became part of federal motor vehicle safety standards for model-year 1998 vehicles (Code of Federal Regulations 2011), airbag installation in new cars grew dramatically before the government required automakers to install them (Mannering and Winston 1995). Airbags added a considerable marginal cost to vehicles, and therefore consumers must have been increasingly willing to pay for them as their adoption became more widespread. Despite the claim that pending regulations drove the adoption of airbags, Mannering and Winston (1995) find evidence that consumers were willing to incur the extra cost of airbags, and their willingness increased as they gathered better knowledge about air bags' performance and safety benefits. The authors conclude that once consumers began to demand airbags, not offering airbags would have hurt the entire automotive industry, and if only one manufacturer independently decided not to offer airbags, then its profits would suffer. Although the NHTSA had been attempting to mandate airbags since the 1970s, when they became technologically feasible, legislation requiring them did not take effect until after many automakers had installed them in response to consumer

demand (Duma, Rudd, and Crandall 1998). For consumers, it made more sense to adopt airbags gradually than to adopt them as soon as they became technologically feasible.

Car manufacturers continue to provide consumers with new safety features, regardless of whether the government mandates them. In April 2012, the NHTSA proposed a regulation that would require brake throttle override systems in new vehicles (NHTSA 2012). Manufacturers use this technology to abate unintended acceleration that can occur when the gas pedal gets stuck in the accelerating position, sometimes because of shifting floor mats. At the time of the administration's proposal, it noted that almost all model-year 2012 light vehicles were already equipped with brake-throttle override technology. In fact, the market's adoption is what caused the proposed regulation to pass the benefit-cost test, because compliance costs were so low. The media widely covered unintended acceleration after it caused some fatal accidents. Therefore, it is likely that consumer demand and manufacturers' desire to protect their reputations led to widespread adoption of the new technology without regulation.

The freight-shipping market offers another example of market provision of safety. Freight shippers "are typically repeat purchasers who deal with carriers on a daily basis to settle claims for minor loss and damage to their products" (Savage 2001). Furthermore, the freight market penalizes carriers not only for material losses but also for human loss. Thus carriers will attract more customers and earn higher profits if they operate safely so as to limit product or human losses. The threats in freight shipping are primarily mechanical, and this means that carriers can assess risks rather accurately and take steps to avoid them.

Economic deregulation in the freight market during the late 1970s and early 1980s led to improvements with regard to both human loss and material loss. Following deregulation, railroads experienced a boost to their financial health; this boost coincided with a large drop in

collisions and derailments. From 1978 to 1990, the collision and derailment rate fell by 75 percent (Savage 2004). During this period, federal safety regulation was in place, but the abandonment of unprofitable lines was likely also a key contributor to increased safety.

Rail is not the only industry that has provided safety improvements. Savage (2004) notes that fatal crashes have declined faster for large trucks than for the average vehicle on the road. This safety improvement followed the Motor Carrier Act of 1980, which ended economic regulation of the trucking industry. Ending economic regulation allowed each trucking company more freedom in determining how to use its resources, including how to invest in safety. Increased financial responsibility coincides with greater attention to detail and increased safety, which can be seen across transport markets.

In the air-travel industry, financial performance and consumer sovereignty have kept the potential for myopic behavior in check. The public has exhibited concern over air-travel safety, and the industry has responded by allocating resources toward it. Fatal passenger aircraft crashes are rare, but the media typically cover them widely. Since safety is one of the most important qualities of air travel, crashes can hurt demand. Therefore, airlines seek to improve safety in order to improve their bottom lines. The public's concern and airlines' profit-seeking contribute to safety independently of the federal government's power to certify aircraft and carriers.

Various empirical studies have looked at the market mechanism that promotes safety in the airline industry. One major finding is that tort and regulatory mechanisms cannot account for all an airline's losses due to crashes (Chalk 1987). Since crashes hurt airlines' future profitability, their stock-market performance suffers. The low stock returns may be due to forecasts of increased insurance costs. However, there is evidence that fear of reduced consumer

demand drives the poor stock-market performance, which points to the importance of brand reputation. When airlines were suspected to be at fault for crashes, they experienced adverse stock performance. But when they were not suspected to have acted irresponsibly, stock performance did not change (Mitchell and Maloney 1989). The same study found that for at-fault carriers, insurance costs only made up 38 percent of the stock-price decline. Concern over brand reputation was responsible for a majority of the poor performance.

Once an aircraft or airline is certified, market forces incentivize safety. Government certification is *ex ante*, whereas market punishment is *ex post*. In this case, the market's punishment is not redundant. Instead, it enhances safety because the government can lack the necessary knowledge and thus make a mistake in granting certification or in following up on an air safety inspection. Therefore, the market's reaction to negligence means that airlines can anticipate financial repercussions, which acts as a disincentive for carrier myopia.

The fact is that safety is in the bundle of goods transportation consumers purchase, but safety is just one product feature. When consumers are choosing among products, preferences for both safety features and other features compete against each other, and sometimes people will choose to purchase non-safety features over safety ones. There is not one "optimal" level of safety for each person; safety preferences vary among consumers. When consumer-safety advocates ignore the other goods that are bundled with safety, they are not actually advocating for consumers to experience the highest possible amount of welfare. DOT policy has taken safety, which is relatively easy to quantify, and put it above other benefits consumers seek, such as competition and choice. Thus, when the federal government decides on the amount of safety provided, different consumer preferences are not accurately represented.

Consequences of federal safety regulation. Little harm may result if a centralized agency looks into transportation safety across all modes. Conducting and funding research, such as crash testing, is a reasonable undertaking. More importantly, it is wise policy to make research results more widely known, as the federal government is currently trying to do via websites that bring information from all agencies together. But research only makes up a portion of the federal government's safety policy. It is what safety regulators do with the research that can have drawbacks. In acting on research and creating policy goals, the DOT may set the safety level too high, leading to wasted resources.

Federal transportation policy can be reactionary and contradictory. Reactionary regulations are some of the most expensive since they can be unnecessary extensions of DOT influence. The example of the brake-throttle override technology represents federal regulators needlessly adding to the set of vehicle safety standards. Another questionable addition is rearview cameras on automobiles.

Many new automobiles now come with rearview cameras in order to make driving in reverse easier and safer. But even if a majority of new cars implement these devices, it is not clear why they should ever become mandatory. Yet rearview cameras have been on the DOT's regulatory agenda since Congress passed the Cameron Gulbransen Kids Transportation Safety Act of 2007. The legislation's wording does not specifically require the use of cameras, but after running tests it is clear that the DOT favors them over other technologies (NHTSA 2006). Back-over crashes kill around 228 people per year, according to the DOT's proposed rule (NHTSA 2010b). This number may be "unreasonably" high, which is why many consumers have already consciously chosen to purchase cars with this equipment. But this situation is similar to the airbag episode documented by Mannering and Winston (1995). Back-over crashes could be

considered a market failure if manufacturers refused to offer rearview technologies despite their cost-effectiveness. However, current market developments have made rearview technologies available. While some consumers have decided that this technology is efficacious and have included it on their vehicles, should all vehicle owners be required to do the same?

Car buyers have the right to be skeptical of purchasing this technology since the DOT notes that cameras must be properly used in order to be effective. Weather conditions, along with human actions such as travel speed, driver attentiveness, and reaction time, are all factors that determine rearview cameras' effectiveness (NHTSA 2006). Furthermore, a preliminary regulatory impact analysis from the NHTSA shows that the rearview camera system fails the benefit-cost test, amounting to a cost per life saved of around $24 million (NHTSA 2010a; Thomas 2012).

This proposed regulation is not necessary since rearview cameras are already available to those who want to purchase them. It would raise the sticker price of new automobiles, and it cannot ensure that consumers will use the device properly to avoid the problem that it was intended to solve. Therefore, leaving the decision to the market is the best way to promote the use of rearview technologies to enhance safety up to a point that is cost-effective.

Another problem with federal safety regulation is that reactionary regulation often leads to regulation that is not cost-effective. In response to the March 1989 Exxon Valdez oil-tanker spill, the government required all ocean vessels to be double hulled by 2015. A benefit-cost analysis showed that under the most probable scenario, benefits amounted to only one-fifth of the costs (Brown and Savage 1996).

Whether the matter at hand is driving in reverse or a low-probability, high-consequence event such as an oil-tanker spill, the DOT's pursuit of safety sometimes goes beyond addressing

market failures. As noted, some instances of DOT overreach are due to poorly written legislation, which can be blamed on Congress.

The federal government has pursued regulatory objectives individually, and thus the transportation safety policies that have accumulated can be contradictory. The history of the automobile provides an example of contradictory regulation (Lave 1984). The federal government tried to shape the automobile at first to be safer and later to be more fuel efficient. However, to achieve greater fuel efficiency, manufacturers made automobiles lighter and thus less safe. The ideal approach to regulating the automobile lies in simultaneously reconciling all the regulatory goals and achieving an optimal and feasible level for each category. But this approach is too idealistic because it does not fit the reality of the political economy surrounding regulation. Lave (1984) states that "neither Congress nor regulatory agencies act like philosopher kings, pursuing social optima in a frictionless world of full information." Instead, agencies have to deal with imperfect information and a lengthy regulatory process.

The conditions for setting standards through regulation are particularly troublesome and are subject to four major problems: information gathering, enforcement, competition, and judicial review (Breyer 1979). The industry to be regulated often has the most up-to-date information that the agency needs. The agency can either hire former industry insiders or open up negotiations with the industry itself in order to get information. But this process is just an attempt to find out what the industry already knows. Furthermore, there is a conflict of interest in getting information from those in the industry that the agency is trying to regulate, and this can lead to regulatory capture.

With regard to enforcement, standards must be easy to enforce since agencies operate with finite resources. Enforceability creates a bias favoring design standards over performance

standards. Regarding competition, standards make it more expensive to compete in a market, and potential competitors do not usually have a seat at the negotiation table. Because there is no input from potential competitors and information is difficult to gather, the DOT's decisions are prone to being influenced to favor existing competitors, which leads to restricted choices for consumers. Lastly, standards must be able to stand up to judicial review. As a result, agencies often favor standards that can be documented and ones that existing evidence supports, "even if the regulators lack confidence in the studies" (Breyer 1979).

Politics also plays a role in setting unreasonable goals for regulation. Lowering risk is expensive, especially when the bar for risk tolerance is set too low. In the past, when the FAA wanted to update its air-traffic control system, it tried to reduce risk so much that it delayed the updating of systems around the country. This decision actually increased risk (Viscusi 1996). This example invites the question of why the DOT would pursue such an unrealistic goal. Part of the answer is that it is politically popular to pursue goals of dramatically lowering risk since government officials are not responsible for paying for safety increases and, thus, there is little cost to politicians in pursuing policies to lower risk.

Federal regulators sometimes pursue regulations based on sensational public reactions to news (Viscusi 1990). When the market is charged with supplying safety, consumers who overreact to sensational news about safety must face a higher price in order to meet their newly heightened aversion to risk. But when government officials are in charge of setting safety levels, they must heed public outcries, at least superficially. The result is often safety standards that raise the safety bar for everybody, not just the most risk-averse few. Not only can regulations that result from sensational news stories be costly, they work as a hidden tax, discouraging consumption of the regulated good.

Costs of federal safety regulation. Transportation safety advocates view the DOT's safety standards as necessary and immensely beneficial. They point to the often small per-unit cost of the standards and the number of lives they save. Some even claim that the mere existence of agencies that look into safety issues deters manufacturers from offering less-safe products (Claybrook and Bollier 1985). Many of these benefits, such as reduced pain and prevented "family disruption," cannot be quantified. However, the existence of benefits alone is not sufficient to justify setting safety standards. Building safer cars is not a matter of "simply spending money." Instead, there are real opportunity costs to safety regulation that limits consumers' ability to pursue other useful activities, including other life-saving programs (Asch 1986).

Individual valuations of safety and health risks vary among the population. When regulation imposes a safety standard on consumers, it forces everyone who buys a good or service to purchase the same amount of safety. If not for the standards, some buyers would choose a lower level of safety and use the leftover income to satisfy some other need or desire. In other words, some consumers would be better off without the safety standards, which result in more safety than they are willing to pay for.

Furthermore, rather than paying the higher price resulting from regulation, some consumers may respond to regulation by not purchasing the affected good or service. For example, mandated safety improvements may cause people to hang on to older, less-safe vehicles for longer instead of buying new, more expensive vehicles (Kazman 1991). So while a government mandate for safety may seem inexpensive, it actually tends to increase the cost of a product or service and acts as a hidden tax on consumers (Weidenbaum 1979). Since safety is a normal good and mandating a minimum level of it acts as a hidden tax, the tax will tend to be

regressive. This finding runs counter to safety advocates' notion that federal rules are a "free lunch" for the poor who would not be able to afford safety if the private sector only provided it voluntarily. Thomas (2012) points out that to the extent that safety regulations reflect the risk preferences of high-income households, they redistribute wealth from the poor to the rich.

Government safety regulation has other costs that are difficult to quantify. Regulated companies devote a portion of research and development to figuring out ways to comply with regulations. As regulations increase, fewer resources go toward innovative research, especially when federal agencies must approve new products. The burden of regulations also unintentionally benefits larger companies, since smaller ones have less expertise and fewer resources to deal with regulatory compliance. Thus, there is a trade-off between guarding against myopic carriers, which is the reason for many safety regulations, and industry concentration. Industry concentration increases the risk of regulatory capture and decreases competition so that consumers end up with a smaller choice set. Lastly, government regulation erodes the entrepreneurial nature of the free market (Weidenbaum 1979). As management dedicates more of its scarce attention to meeting federal requirements, it has fewer resources to figure out what consumers want and how to get it to them as cheaply as possible.

Safety regulation is also subject to unintended consequences. For example, increasing occupant protection in automobiles results in a rebound effect. Namely, mandatory safety devices have been found to cause people to drive more aggressively (Peltzman 1975). The rebound effect is also known as risk compensation, or the Peltzman effect, and it is simply a result of weighing costs and benefits. When the cost of speeding and driving aggressively decreases, these activities will tend to increase. An expansive literature has tested for rebound effects, and they have been detected across datasets (Peterson, Hoffer, and Millner 1995; Sobel

and Nesbit 2007; Pope and Tollison 2010). Although the rebound effect does not likely erase all the safety benefits of automobile design standards, it does put pedestrians in more danger because of the increase in aggressive driving (Zlatoper 1984).

In light of the costs and consequences of safety requirements, it is no surprise that people often opt to pursue their own level of safety rather than adhere to a government-mandated one. People pursue other goals besides safety in all DOT-regulated activities, yet the typical regulatory analysis does not capture these goals. Even a benefit-cost analysis may not truly reflect the economic hardship imposed by direct regulation. Ideally, a benefit-cost analysis requires government regulation only up to the point where the incremental costs of regulating equal the incremental benefits. However, Weidenbaum (1979) and Hoehn and Randall (1989) are concerned that this method justifies too much regulation. Hoehn and Randall reason that "the productive capacity of an economy imposes a bound on the valid measure of net benefits," but the conventional analysis shows no bound. The authors express a point that safety discussions often miss: increasing safety uses up valuable resources whether this shows up in a regulatory analysis or not.

It is not hard to find someone who would enjoy experiencing more safety. However, when confronted with the bill for safety, people may choose less of it. If budgets constrain consumers in everyday life, why would consumers suddenly not have to pay for more safety just because the government rather than the market is manipulating its provision? In response to the view that all a regulation's benefits cannot be neatly tallied, it is reasonable to suggest that the opportunity costs of safety regulation are equally hard to quantify.

Furthermore, some consequences of safety regulation lower other consumer benefits. Competition through price and quality variation gives consumers greater choice and lower

prices. But these benefits are damaged to the extent that regulation causes higher prices and prohibits product variation. Realizing that safety standards use up the economy's scarce resources and restrict consumer choice is the first step toward considering alternative policies.

Alternative approaches to safety regulation. Over the years, some policy developments regarding automobile safety have been more successful than others. For example, the NHTSA's research and information provision provides a consistent safety standard by which to compare automobiles. Crash test results are a salient feature for car buyers, and it seems that for now safety testing is a viable role for the government to play. But it is not clear that the government should have a large role in even the dissemination of its own safety information because the private sector already furnishes such data. Kelly Blue Book, for example, provides a website where car buyers can compare different makes and models; the NHTSA's safety ratings are included among the comparable attributes. Along with private mechanics, diagnostic tools like CarMD help car owners keep their vehicles in safe and working condition. These private initiatives help erase information asymmetries. In a world of easily accessible information on product safety, it may be time for the DOT to reconsider its role in setting standards.

Direct regulation, such as safety standards, is not just meant to protect uninformed consumers. It is also used to protect consumers from shortsighted carriers that are inexperienced or trying to cheat. Instead of cumbersome direct regulation, an alternative way to guard against this problem is to rely on tort liability combined with private insurance. Because government regulation is so extensive in commercial transportation, there is not a large need for insurance companies to investigate their policyholders' safety practices (Savage 1999). If, however, the government spent fewer resources inspecting and enforcing regulations,

insurance companies would be more involved and would provide carriers with market-based incentives to not be myopic. As Savage points out, insurance companies already play a large role in automobile safety by charging different premiums based on the make and model of car their policyholders drive.

Given the variation in risk preferences, it may be better if manufacturers and carriers offer different levels of safety, which vary by price, rather than the government mandating a uniformly high level of safety (Savage 1999). But is there any way of knowing whether the mandated level of safety is "high"? Legal liability is useful in deterring myopic carriers and eliminating externalities; it allows injured parties and property owners to seek compensation from negligent carriers. Safety standards often act as the minimum acceptable level of precaution. Therefore, when tort liability is present, firms will take a greater level of precaution than the minimal safety standard because courts do not see compliance with a regulatory agency's standard as a complete defense against a complaint of negligence (Kolstad, Ulen, and Johnson 1990). Given this result, Kolstad, Ulen, and Johnson claim that if tort liability is present, then setting safety regulation at the socially optimal level will result in overprotection. Thus, safety standards should be set at a suboptimal level when combined with tort protection.

As regulations pass the benefit-cost test and close in on a socially optimal level, the presence of tort liability sets the level of safety too high. Also, looking at the list of federal motor vehicle safety standards, the words "suboptimal" or "low" certainly do not describe the manufacturing requirements for today's vehicles. Rather, standards usually closely follow the state of technology in the automotive industry. Vehicle safety standards are high and do not allow for much flexibility in offering different levels of safety even though car buyers may prefer greater flexibility.

In viewing alternative policies, it is clear that forces outside federal authority are already in place that work toward increasing safety. While federal authorities attempt to ensure a national minimum level of safety across all modes of transportation, it is not clear that safety would deteriorate in the absence of these efforts. Insurance companies, state and local governments, and consumers themselves already pay attention to safety. To reference F. A. Hayek's essay "The Meaning of Competition," the DOT should not worry whether transportation markets are perfect and offer optimal levels of safety, but whether firms compete with each other to offer safer products (Hayek 1948). Vast improvements in safety over time indicate that markets are coming up with ways to make transportation safer and would do so even without federally imposed safety regulations. Without regulations, the improvements may not occur as fast as some experts may think necessary, but individuals would be in charge of managing their own levels of safety and thus scarce resources would be put to more efficient uses.

Highway Funding

The DOT's continuing role in funding highways constitutes a much larger share of the DOT budget than safety regulation. As noted earlier, the original plan was for the federal gas tax and the federal highway program to be eliminated when the interstate highway system was completed. Since interstate highways belong to the states, the states, not the federal government, were expected to pay for their continued maintenance.

The case for federal funding of highways rests on the notion that doing so will promote interstate commerce. Each state, however, has an incentive to provide good-quality roads for both residents and nonresidents, if doing so enhances residents' welfare. To the extent that

nonresidents use a state's roads and highways without paying taxes for them, states might not have enough incentive to supply adequate capacity on their own.

At present, states use much of their federal highway aid to pay for roads that serve predominantly state and local residents. Furthermore, while federal highway aid reduces states' highway construction and maintenance costs, it does not lower the incremental cost of additional highway spending. Once states spend more than a threshold amount, they no longer qualify for additional federal aid (Gamkhar 2003). All states typically spend more than the amount required to qualify for the maximum amount of federal aid. If federal aid were more flexible, with the size of the matching grants dependent on the share of out-of-state residents using the particular highways on which each state spends, states would have incentives to spend more on roads and highways that are important nationally but less important locally.

Since states use federal Highway Trust Fund money primarily for highways that serve in-state drivers, it would make sense to reduce or eliminate federal gas taxes and allow states to adjust their fuel tax rates to replace the revenue they now receive from the federal government. Such a change would reduce highway costs, since federal-aid highways must adhere to federal rules, including the Davis-Bacon Act's requirement to pay prevailing wages. Most of the literature suggests that prevailing wage laws increase costs (Clark 2005); Roth (2005) cites estimates suggesting that federal regulations increase highway-project costs by 20 to 30 percent.

Attempts to end the federal highway program have not received much support in Congress. Opposition comes not only from states that get a bigger share back than their residents pay in fuel taxes but also from states that lose under the current program. Congressional delegations from most states, including the donor states, use federal funding for political advantage by earmarking. Nevertheless, the formula for allocating trust fund revenue is

inequitable, favoring rural states and high-income states in the Northeast (Utt 2007). Many states that pay more than they get back have lower incomes than the national average.

Any critique of the federal role in highway funding should also consider problems with the current approach of funding highways largely from gas-tax revenue. Until 2009, the Federal Highway Administration got almost all its revenue from fuel taxes (Federal Highway Administration 2012b). Much of state highway funding also comes from fuel taxes. Taxes on gasoline and diesel fuel have the advantage that the amount a driver owes is proportional to the number of miles he or she drives, after allowing for some variability due to driving habits and fuel efficiency. Also, in comparison to collecting tolls for road use, fuel taxes disrupt travelers less and cost less to administer.

One major problem with fuel taxes is that they do not account for the fact that the cost of using a road varies considerably depending on time of day, road characteristics, and vehicle weight. Heavy trucks pay much less than the cost of the wear and tear they impose on highways (Winston 1991). In addition to wear and tear, congestion is a cost of using roads, but it varies over time and is much more important in urban areas than in rural areas. Because each driver on a freeway during rush hour pays much less than the marginal cost of an additional vehicle, traffic congestion is a serious problem, resulting in many hours each year of wasted time and wasted fuel for commuters. The Congressional Budget Office (2011) estimates that congestion costs from each passenger vehicle average about eight cents per mile in urban areas, with peak-period costs much higher. The marginal cost to drivers from fuel taxes, by contrast, is only about two cents per mile for an average car.

Another problem with fuel taxes is that the same tax rate generates less and less revenue as vehicles become more fuel efficient. Further, owners of vehicles powered by alternative

energy sources, such as electricity, pay much less than owners of traditionally fueled vehicles that use the same roads. These problems imply that the DOT should consider alternatives to relying on federal fuel taxes for funding highways.

Mass Transit Funding

Since a considerable amount of Highway Trust Fund revenue is used to subsidize mass transit, eliminating or reducing the federal fuel tax would lead to a substantial reduction in those subsidies, unless state or local governments made up the difference. This reduction, in turn, could create problems for those who do not own cars, particularly low-income urban residents. The percentage of low-income workers who own cars and drive to work has increased over time, as it has for the general population. Nevertheless, according to Vuchic (1999), approximately 25 percent of the population does not drive and has effectively become second-class citizens in cities that lack good transit systems.

In most US cities before 1960, demand for public transportation via buses or rail systems was high enough that private companies could supply it for a relatively low price because of economies of scale. As cities have become more decentralized and automobile ownership has increased, the demand for public transportation has decreased. Private transit companies, if they could survive without subsidies, found it necessary to reduce service in many urban areas.

One argument for public-transportation subsidies is to ensure mobility so that low-income people without access to automobiles can participate fully in society. The growing decentralization of urban areas makes it difficult for workers who do not drive to have access to jobs, particularly jobs that workers with limited skills can do. Public transportation provides

low-income workers with greater access to jobs, but in many areas it might not attract enough riders to be sustainable without subsidies.

Even if we accept the argument that public transportation needs to be subsidized, it is not clear why the subsidies should continue to come from the federal government instead of from state and local governments. The creation of the Urban Mass Transportation Administration in 1964 opened the door for federal transit subsidies. It made sense at that time for the federal government to begin subsidizing public transit in order to assist inner-city residents, many of whom did not drive and gained little from the new expressways, which destroyed or split many inner-city neighborhoods. Since the expressways, which primarily benefited suburban residents, were built with federal money, subsidizing mass transit for urban residents seemed like an equitable approach. In the 1960s and 1970s, federal subsidies for transit could also be viewed as compensation for the losses urban residents experienced due to interstate highway construction.

As more and more urban residents have acquired automobiles, their use of expressways has increased and transit use has declined. Proponents of maintaining the current level of federal transit subsidies now emphasize the external benefits of transit use to residents throughout metropolitan areas. The biggest external benefit from transit subsidies comes from the reduction in congestion on highways if enough people use transit. Thus, the case for the federal government continuing to subsidize public transit rests largely on the underpricing of travel on congested highways (Lewis and Williams 1999; Parry and Small 2009).

As Winston and Shirley (1998) demonstrate, instead of subsidizing transit, a better way to relieve congestion would be to impose congestion fees on highways. This system, in turn, would increase the demand for public transportation, making more routes financially sustainable without subsidies. In most US cities, optimal transit subsidies are much lower than actual

subsidies because marginal costs of congestion are relatively low and cross-elasticity of demand between transit prices and driving is also low (Gómez-Ibáñez 1999). Even without congestion tolls, it is hard to dispute the assertion that governments are investing too much in transit, since public transit fares cover much less than half of transit operating and capital costs while fuel and vehicle tax revenue covers more than 95 percent of highway construction and maintenance costs (Parry and Small 2009; Deen 2003).

Another argument for subsidizing public transportation is to encourage dense urban development. Proponents of high-density development argue that it has external benefits, including reduced pollution from automobiles, more land remaining in agriculture or forests, reduced congestion, better health and fitness, and more community interaction. If fast and inexpensive public transportation were available, more people would use it rather than driving, and more would be willing to live in dense neighborhoods close to transit stops. Some transit advocates, such as Litman (2012), argue that the indirect impact on congestion resulting from expanding transit, particularly rail transit, could be much larger than the direct impact because people will live closer to their jobs and live in denser neighborhoods.

Countering transit advocates' view is the argument that people choose the neighborhood they live in based on their preferences. By establishing transit routes in response to development trends, rather than extending rail transit with the expectation that transit-oriented development will occur in response, transit agencies might be able to avoid the large forecasting errors that have enabled them to justify rail-transit systems that do not attract enough riders to cover their costs. Most people who prefer to live in dense neighborhoods and rely on public transportation already do. Thus, subsidizing denser, transit-oriented development will do little to reduce auto use, since most of those who rarely use public

transportation have chosen their neighborhood and transportation mode according to their preferences. Research on transportation and land use shows that the construction of expressways and the growth in auto ownership contributed to a large decline in urban density. Studies based on recent evidence, however, suggest that future changes in transportation are likely to have limited effects on density and that increasing residential density also would have a limited effect on automobile use (Pickrell 1999).

Transit subsidies could be reduced in two ways: by raising fares and by reducing costs. Empirical studies have found the elasticity of demand for public transportation to be around −0.4 (Gómez-Ibáñez 1999). This finding implies that increasing fares would result in greater revenues and thus move transit agencies toward profitability. Concern about affordability for low-income users does not justify setting fares below cost for everyone, since a majority of riders earn enough income to pay a fare at least as high as marginal cost. About 57 percent of transit users earn incomes greater than $25,000 per year, and only 26 percent earn less than $15,000 per year (US Census Bureau 2009). Public transit fares vary by length of trip and mode of travel. In many cases, with more efficient management, only small fare increases would be necessary to cover marginal costs.

Instead of subsidizing everyone's use of the transit system, transit agencies could provide discounted fare cards to low-income transit users. Although some arguments for government transportation subsidies seem compelling, the way government transit subsidies are actually distributed and used is inefficient. Not only do transit agencies set fares far below the cost of service, but public bus and rail companies do less than private companies would to keep costs down (Lave 1985). Instead of being passed on to passengers as lower fares, subsidies make it possible to pay transit workers more and use resources less productively (Gómez-Ibáñez 1999).

Transit workers in many major cities are able to bargain for above-market wages as members of public-sector unions. Parry and Small (1991) acknowledge that their claim that the existing level of subsidies is less than the optimal level depends on the assumption that transit agencies minimize costs, when in fact most agencies pass subsidies on to workers in the form of above-market wages and as rents to input suppliers.

In many areas, operating costs per passenger mile are higher for transit than for private automobiles even though rail and bus operating costs per seat mile are lower than auto operating costs. The problem is that load factors for transit are low, with both buses and trains filling an average of less than 20 percent of their seats in 1995 (Winston and Shirley 1998, 26). Transit companies could reduce excess capacity by adjusting frequency and vehicle size to better conform to demand. Private bus and airline companies use a variety of vehicle sizes and flexible scheduling to adjust capacity to demand, but many public transit agencies, lacking a similar incentive to control costs, make little use of minibuses or flexible scheduling based on demand. That most federal subsidies go toward capital expenditures contributes to the overuse of large vehicles and lack of flexibility.

Another source of inefficiency is the large amount invested in fixed-route rail systems compared to bus systems. Some transportation planners have "an almost ideological commitment to fixed route rail systems" in spite of their high costs (Staley and Moore 2009). Of 208 projects funded through the Federal Transit Administration's New Starts program through fiscal year 2004, only 15 were for bus rapid transit (Hecker 2003). During that time, the federal government spent almost 20 times as much on rail projects as on bus projects.

In a 1965 study, Meyer, Kain, and Wohl found that express buses operating on exclusive busways had lower costs per passenger trip than heavy rail systems in all but the most densely

populated cities. Most metro areas that have completed heavy rail systems since World War II have relatively low densities so that heavy rail is more expensive than express busways (Kain 1999, 368–69). Those studies that show lower costs for rail transit consider only operating costs. In addition, new rail-transit systems often attract riders from buses and thus increase total transit ridership by much less than the number who use rail transit. When considering the overall effect of rail transit on costs per passenger mile, a whole-system approach suggests that exclusive busways or express buses are usually much more cost- effective than building new rail systems (Richmond 2001).

Despite the advantages of bus rapid transit, numerous cities have constructed new rail-transit systems in recent years. Why the emphasis on rail transit? As noted above, some rail-transit supporters believe that denser transit-oriented development will be more likely to occur if cities develop fixed-route rail systems. If construction of rail-transit systems led to denser development in the long run, the eventual increase in ridership could justify the cost. Another reason why new rail systems have received funding is that middle-class voters prefer rail transit, which they are more likely to use than buses. However, government subsidies to rail transit, rather than promoting denser development, may have the opposite effect in at least some cases. Because subsidized rail transit lowers the cost of commuting from suburbs to central cities, it may make it easier for some people to live in suburbs rather than close to the central business district.

Government decisions about alternative transit investments depend heavily on forecasts of future ridership and costs. Transit agencies have made many recent decisions favoring rail transit based on narrow margins of differences in projected costs and ridership. Planners often

seriously overestimate future ridership, while underestimating the operating and capital costs of federally funded rail systems (Pickrell 1992).

Another problem with mass transit development is large cost overruns, which should not be surprising for projects designed and selected by local officials and paid for largely by the federal government. Many recent rail-transit investments have been the largest investments in public works ever undertaken in a given metropolitan area. The federal government paid between half and more than 80 percent of the capital costs of rail-transit projects in Buffalo, Portland, Baltimore, Washington, Atlanta, Sacramento, Pittsburgh, and Miami that began service during the 1970s and 1980s (Pickrell 1992). Cost overruns are hard to avoid in complicated capital projects that take many years to complete. Some of the cost overruns could be blamed on wishful thinking, but considerable evidence suggests that the underestimation of the costs of transit-system investments may reflect forecasters' incentives. Planners, engineers, and economists expect to be rewarded for generating estimates that satisfy their superiors, whose power and prestige depend on getting projects started (Flyvbjerg, Holm, and Buhl 2002). This problem is likely exacerbated when the federal government bears most of a project's cost and local agencies and their constituents get most of the benefits.

Subsidies to maintain or expand transit service are increasing partly because of trends that favor decentralized urban development. Historically, most public transit has facilitated commuting into the downtown areas of central cities. Compared to the past, the share of employment downtown has fallen, now constituting 10–20 percent of employment in most metropolitan areas (Cox 2011). Many of the best jobs for low-income urban residents are now located in suburbs far from where most of them live. In response, governments have tried a variety of programs to make jobs more accessible, including programs to improve public

transportation from low-income neighborhoods to employment centers. Transportation programs for reverse commuters have had limited success partly because when low-income people get jobs, many of them stop using transit and buy cars (O'Regan and Quigley 1999). As noted in table 2, the share of low-income commuters who use public transportation is not much higher than the share of the overall population who use it.

Table 2. Relation between Income and the Share of Commuters Who Use Public Transportation vs. Share Who Use Automobiles

Income	Drove alone	Carpooled	Used public transportation
< $10,000	66.0%	16.7%	8.2%
$10,000 to $14,999	68.0%	14.9%	8.8%
$15,000 to $24,999	71.8%	14.9%	6.6%
All workers	79.5%	10.5%	5.2%

Source: US Census Bureau, "Means of Transportation to Work by Selected Characteristics: 2009," American Community Survey, 2009.

Although transit, including rail transit, plays an important role in older metropolitan areas, where cities are densely developed and highways are hard to locate and very expensive to build, recent investments in rail transit have had little impact on the trend toward greater use of private automobiles because most investments have been in newer cities that are less densely populated. The percentage of commuters who use public transit for commuting to work is less than 5 percent in most metropolitan areas (see table 3). Transit use is greater in the largest Northeast, Midwest, and West Coast cities (McKenzie and Rapino 2011).

Table 3. Share of Commuters Who Use Public Transit in Each of the 25 Largest Metro Areas

Size rank	Metro area	Percent 2008	Percent 2009
1	New York---Northern New Jersey---Long Island, NY---NJ---PA	30.4	30.5
2	Los Angeles---Long Beach---Santa Ana, CA	6.4	6.2
3	Chicago---Naperville---Joliet, IL---IN---WI	11.3	11.5
4	Dallas---Fort Worth---Arlington, TX	1.6	1.5
5	Houston---Sugar Land---Baytown, TX	2.6	2.2
6	Philadelphia---Camden---Wilmington, PA---NJ---DE---MD	9.3	9.3
7	Washington, DC---VA---MD---WV	13.4	14.1
8	Miami---Fort Lauderdale---Pompano Beach, FL	3.7	3.5
9	Atlanta, GA	3.6	3.7
10	Boston---Cambridge---Quincy, MA---NH	11.6	12.2
11	San Francisco---Oakland---Fremont, CA	14.4	14.6
12	Riverside---San Bernardino---Ontario, CA	1.8	1.8
13	Detroit, MI	1.7	1.6
14	Phoenix---Mesa---Scottsdale, AZ	2.6	2.3
15	Seattle---Tacoma---Bellevue, WA	8.0	8.7
16	Minneapolis---St. Paul---Bloomington, MN---WI	4.8	4.7
17	San Diego---Carlsbad---San Marcos, CA	3.4	3.1
18	Tampa---St. Petersburg---Clearwater, FL	1.3	1.4
19	St. Louis, MO---IL	2.8	2.7
20	Baltimore---Towson, MD	6.5	6.2
21	Denver---Aurora---Broomfield, CO	4.9	4.6
22	Pittsburgh, PA	5.8	5.8
23	Portland---Vancouver---Beaverton, OR---WA	6.3	6.1
24	San Antonio---New Braunfels, TX	2.5	2.3
25	Sacramento---Arden---Arcade---Roseville, CA	2.8	2.7

Source: US Census Bureau, Population Division, April 2012, Population Estimates and Estimated Components of Change for Metropolitan and Micropolitan Statistical Areas and Their Geographic Components: April 1, 2010, to July 1, 2011.

Even though many low-income workers continue to rely on public transportation, markets could provide an affordable, unsubsidized alternative. Such private alternatives have arisen to serve some neighborhoods and routes where public transportation is unavailable. However, laws such as entry restrictions on taxis often make alternative modes of urban transportation more expensive. Private alternatives also have trouble surviving due to low, subsidized public-transit prices.

Transportation for those who cannot drive themselves costs less if people travel in groups over fixed routes, but regulations make it hard for private entrepreneurs to compete with public agencies in supplying mass transit services. Many of these laws were passed early in the 20th century to protect public-transportation agencies from competition (Eckert and Hilton 1972). These regulations include laws against shared-ride services and laws that prohibit unscheduled, privately owned vehicles, such as jitneys, from picking people up along a fixed route. Although some regulation is necessary to prevent conflict and to maintain incentives for transit suppliers to provide passenger facilities that complement transit services, Klein, Moore, and Binyam (1997) suggest that with appropriate property rights and minimal rules, private entrepreneurs could compete to provide safe and efficient transit services along fixed routes in urban areas.

In recent years, innovations have made low-cost transportation available to commuters who are unable or unwilling to drive. Among these are commuter vans and vanpools. According to the Congressional Budget Office (1988), commuter vans cost about one-third as much as public express buses. Modern communication technology is also making it easier to arrange shared rides on short notice.

By subsidizing the capital costs of inefficient public transportation systems, the DOT reduces cities' incentives to eliminate regulations that discourage the development of low-cost

private alternatives. Instead of spending billions on public transportation, the DOT could seek to promote changes in rules that will allow entrepreneurs to use modern technology to provide cost-effective urban transportation.

Besides the harmful economic consequences of urban-transit policies, federal subsidies for urban transit violate the division of responsibilities envisioned in the Commerce Clause of the Constitution (Hazard 1986). According to that clause, the federal government is responsible for regulating interstate commerce, but by implication, it is to leave the regulation of local commerce to state and local governments.[1] Although Congress makes decisions about how much federal government revenue to spend on public transit, how the funds are distributed depends on the DOT, which has regulated urban transit systems by "insisting upon comprehensive plans, specifying . . . labor conditions, and promoting . . . rail based technologies and public ownership and operation" (Hazard 1986).

If the federal government stopped subsidizing public transportation, one likely result would be that the most cost-effective public transportation systems and those in densely populated older cities would continue to operate, while less-efficient systems that survive only with heavy subsidies would reduce or eliminate much of their service. Although the federal government allocates a greater share of transit-account funds to states with older, high-density cities than those states' residents pay in fuel taxes, transit demand is high enough in those cities to charge fares that would cover the costs of efficiently managed systems (US GAO 2008). Charging fares high enough to cover costs might not be possible in smaller and less-dense cities where demand for transit is low and per capita subsidies are high (Taylor 2010).

[1] The Commerce Clause could also be used to argue against subsidies to urban expressways, except to the extent that those expressways are used to transport people and goods across state lines.

Many urban residents favor public-transit subsidies for one or more of the reasons noted previously, such as the attractiveness of denser communities that result from transit-oriented development. If local governments provided the subsidies, they would likely manage them in a more efficient way than federal or state governments. Then the connection would be more evident between other local policies, such as zoning laws and the regulation of private shared-ride services, and the costs of public transportation, including the subsidies required to provide adequate mobility for the population. If transit subsidies were financed locally, those who benefit from the subsidies, whether directly or indirectly, would pay most of the costs. Smith and Gihring argue that since property values are higher in areas served by public transportation, local governments could capture this value by taxing increments to land value in the affected areas (Smith and Gihring 2006). If they paid for subsides, local governments would also have a greater incentive to find a more cost-effective way to provide transit services, which might include subsidizing low-income users of private transit services.

Finding more efficient ways to finance surface transportation is becoming increasingly urgent in light of recent trends. Federal transportation expenditures have declined as a share of total federal expenditures, and this decline may have contributed to a deterioration of the nation's transportation infrastructure. The growing share of the federal budget going to entitlement expenditures combined with strong public opposition to increasing fuel taxes makes it likely that federal transportation spending will decline in the future. Thus, policymakers should explore alternative ways to finance transportation infrastructure that would rely more heavily on user charges collected and managed by state and local governments and private firms.

A Critical Assessment of Other DOT Initiatives

In addition to safety, other kinds of social regulation have become important parts of the DOT's responsibilities. These regulations pertain to highway beautification, assessing the environmental impact of DOT activities, energy conservation, emissions controls, social welfare, civil rights, and handicapped access (Hazard 1986). These other responsibilities, particularly environmental impact assessment, have contributed to delays and to higher costs in federally funded transportation projects.

In the absence of federal efforts at highway beautification, state governments have an incentive to build attractive highways in order to attract more tourists. Likewise, state governments could probably do a better job than the federal government in regulating the aesthetic impact of highways on neighboring communities. Even if the DOT did not exist, other federal agencies, such as the EPA, would require highways to limit their harmful impacts on the environment. The DOT, as an advocate for transportation, can play a useful role in challenging EPA mandates that raise costs or delay highway construction with few offsetting benefits. Even with a reduction in other DOT responsibilities, the department could continue to play an important role in promoting transportation projects to counteract the effect of government agencies and interest groups that would like to block or delay those projects.

High-speed rail. Besides social regulation, the DOT is pursuing several initiatives intended to improve the transportation system. Among them are plans to subsidize high-speed rail networks. In its April 2009 *Vision for High Speed Rail in America*, the DOT makes the case for promoting high-speed rail as an alternative to auto and air travel over distances of 100–600 miles.

Beginning with an $8 billion investment as part of the American Recovery and Reinvestment Act of 2009, the DOT proposes to invest in developing express high-speed corridor services and emerging and regional high-speed corridor services. It also proposes to upgrade the reliability of conventional intercity rail services (Federal Railroad Administration 2009). Express high-speed rail service will have top speeds of at least 150 miles per hour, while regional and emerging high-speed rail will have top speeds of 90–150 miles per hour. In addition to the initial $8 billion investment of federal funds, President Obama proposed spending $1 billion per year on high-speed rail beginning in fiscal year 2010 (US DOT 2009).

The DOT argues that modest investment in existing rights-of-way for high-speed and intercity passenger-rail service can make those modes of transportation competitive with auto and air travel (Federal Railroad Administration 2009). Noting that passenger rail represented less than 3 percent of federal government investment in intercity transportation and that its share was declining until 2009, the DOT seems to imply that the minor role of rail travel is largely the result of public-investment decisions rather than lack of demand. Travel by rail is safer than auto travel and uses less energy per passenger mile than air or auto travel if trains operate at close to capacity. Most of the traveling public, however, does not seem to value these two advantages of rail travel enough to use it.

Although the amount the federal government has already allocated for high-speed rail projects is substantial, it dwarfs the total investment required to complete these projects, which are unlikely to earn a reasonable rate of return. California's planned high-speed rail project alone is expected to cost more than $40 billion (Hanak 2009). Because of its high cost, serious questions exist about whether it could possibly be competitive given the population density, freight traffic on the existing rail system, and cost of alternative transportation modes in the United States.

If the existing rail network were upgraded to permit higher speeds, the estimated cost would be around $7 million per mile (Peterman, Frittelli, and Mallett 2009). However, such an upgrade would result in at most moderate improvements in speed, which is limited by characteristics of the existing rail network. Without new rail lines, it would be difficult to increase the speed or frequency of passenger service without interfering with freight trains using the same rails. To make speeds of 150 miles per hour or more possible, new rail lines would need to be built at an estimated cost of $35 million per mile. To earn a reasonable rate of return on such a large investment, ridership would have to be between 6 million and 9 million per year. By comparison, the Acela Express high-speed trains, which operate in the most densely populated corridor in the United States (from Boston in the north to Washington, DC, in the south), carried 3.4 million passengers in 2008 (Peterman, Frittelli, and Mallett 2009).

The case against high-speed rail subsidies is similar to the case against federal subsidies for urban transit. Since people prefer to travel by auto, air, or bus, why subsidize intercity rail travel? If it were likely to be profitable, private firms would invest. High-speed rail's proponents respond by saying that since the government invests considerable funds in highway and airport infrastructure, it should invest in high-speed rail to level the playing field (American Public Transportation Association 2012a). A better approach would be to eliminate government subsidies to air travelers and drivers. User taxes assessed on gasoline cover about 95 percent of highway construction and maintenance costs while user taxes on airline travel cover 85 percent of airport infrastructure costs (Deen 2003). These figures suggest that even if the federal government did not play an important role in highway financing, highways users would be willing to pay the construction and maintenance costs for most highways. But it is unlikely that users would even come close to paying for the required infrastructure for an expanded high-speed rail network.

Intelligent transportation. Another DOT responsibility is promoting innovation. Although the department has a relatively small budget, its Research and Innovative Technology Administration plays an important role by promoting the use of Intelligent Transportation Systems (ITS). State and local governments use ITS technologies for monitoring traffic, controlling traffic flow, and informing people about travel conditions (US GAO 2012). The FHWA permits states to use their federal aid highway funds on ITS.

Some large cities use ITS to better manage road capacity. They employ technologies that use "real-time information" to "dynamically manage freeway capacity" (US GAO 2012). Approaches to managing freeway capacity include using ramp meters to control vehicle flow, assessing tolls that vary with congestion and time of day, employing reversible flow lanes, and allowing variable speed limits. ITS technologies also control arterial traffic by adjusting traffic-signal timing.

Managing and limiting congestion is one of the most beneficial roles of ITS technology. The largest cause of congestion is bottlenecks, which are the result of demand exceeding road capacity. Although information can discourage people from using congested highways and ramp metering can limit demand, the best way to manage congestion is through tolls that vary in response to traffic conditions. Some cities and states use ITS extensively. Others are less willing to sacrifice construction and maintenance spending to invest in ITS, but would find that it pays for itself if used to implement tolls that vary with demand.

Winston (1999) argues that government's obsolete thinking about roads hinders the development of fruitful technologies such as driverless cars. If not hindered by government regulations, we could expect private road companies to experiment with technologies that could

reduce lane size, separate different kinds of vehicles, reduce distance between vehicles, and otherwise move traffic more efficiently (Adams and Brewer 2002).

Like its other funding decisions, DOT research priorities are not likely to be consistent with expected benefits compared to costs. While private research firms sometimes waste money researching technologies that do not pay off, market forces tend to favor companies that succeed in producing profitable new technologies over those that consistently do not.

IV. Recommended Changes in the DOT's Role

An important reason for creating the DOT and giving it jurisdiction over all modes of transportation was to promote incremental investment decisions based on economic efficiency. For the DOT to pursue economic efficiency, it would need to have accurate information on the costs and benefits of alternatives and incentives to maximize net benefits in light of that information. Although it can get information about the costs and benefits of the goods and services it purchases or sells in the market, market incentives do not guide bureaucratic agencies as they do private firms competing in the marketplace.

Besides not having as much information as a private firm would have about costs and benefits, a government agency, lacking a profit motive, does not have the incentive that private firms do to utilize resources efficiently by comparing marginal benefits with marginal costs. For example, the mix of subsidies and user fees makes it difficult to determine whether highway investment is too large or too small compared to public transit investment. As noted earlier, political considerations may lead the DOT to favor one mode of transportation over another, such as rail transit over bus transit, even when strong evidence exists that investing in bus transit would be more cost-effective than investing in rail transit.

One argument for government funding and regulation is that the DOT could seek to maximize net benefits for users of the transportation system and transportation providers, rather than letting private firms maximize profits. Users' and providers' net benefits would be maximized if the government funded all projects for which the value consumers are willing to pay for the resulting transportation services exceeded the cost of the resources invested in each project, with cost defined as the value of those resources in their next best alternative use. If the DOT tried to maximize net benefits by investing only in projects where marginal benefits are no less than marginal costs, it would have to find a way to calculate and aggregate each project's benefits and the costs of the resources used. Whatever method it used to estimate benefits and costs would involve political calculations of whose interests count.

The problem with bureaucratic decision-making is that the officials in charge lack the detailed information on resource availability and alternatives that is necessary to account for all of the benefits and opportunity costs that determine economic efficiency. That information on resource availability and alternatives is constantly changing and is best known to resource owners and users. Buyers and sellers in the marketplace take full account of the knowledge of each resource owner, consumer, and investor, each of whom has an incentive to bid based on his or her priorities, access to technology, and alternatives.

A government agency could best contribute to an efficient allocation by enforcing rules and property rights that would require market participants to account for all benefits and costs when making resource-allocation decisions. If the DOT and other government agencies eliminated barriers to market competition, profit-maximizing private firms could produce a transportation system that is not very different from one that would enable participants to

maximize net benefits. The advantages of the marketplace apply to safety as much as to other goods and services, which leads to our first recommendation concerning the DOT's role.

1. The DOT should reduce its role in direct safety regulation while it continues to conduct research and provide safety information to the public. Given the favorable safety trends across all modes of transportation and the independent forces that promote safety, we may not need further direct safety regulation. Direct regulation has attempted to mitigate the shortfalls of human behavior, but in the process, it has been increasingly responsible for allocating scarce resources. Going forward, there are two paths the DOT could take. It could continue to allocate consumers' resources toward safety for them, or it could allow consumers greater control over their own safety decisions. Advocates of continued government intervention should at the very least take into account the fact that safety is a normal good, and therefore the DOT's role should diminish over time as safety becomes a larger concern for consumers in the transport markets.

The desire for more safety is unlimited, but the resources it requires are not. That is why it is easy for Congress to pass safety bills reallocating millions or even billions of dollars of resources while individuals hardly have the time to thoroughly check their brakes and tire pressure before each trip they take. Both Congress and individuals are resource constrained, but those constraints directly affect only individual travelers.

With resource constraints in mind, it would be better if the DOT continued its information role, but performed less direct regulation. There may be a need for the DOT to perform research and investigate safety problems. But insurance companies can also gather accurate information that sometimes is more relevant than the DOT's (Hoffer, Pruitt, and Reilly 1992). The federal DOT can at least use its expertise to assist state and local transportation

authorities with data analysis and other research so they can tackle their own safety issues. Local agencies are likely to be more nimble and to respond to problems relevant to their communities. Chapman and Hariharan (1994) succinctly describe the problem with safety standards. "That safety regulations save lives should be obvious," they write. "It is less obvious, but still true, that compliance with expensive regulations reduces income and, therefore, expenditures on health and safety for those affected." Letting people choose how much of their incomes to allocate to safety is more efficient than having the government choose for them.

Lastly, the DOT should closely follow market developments and revise its regulations accordingly. Market-failure arguments alone are not enough to justify intervention. Instead, the DOT should document how market failure has made a particular mode of transportation less safe. From there, the usual rulemaking process could proceed, including the benefit-cost analysis. It is not unreasonable to think that if this process were retroactively applied to regulations, there would be fewer of them and transportation consumers would be better off.

2. Eliminate the federal fuel tax and federal subsidies for other modes of transportation, and increase the role of state and local governments and private firms in funding surface transportation infrastructure. Since most federal fuel-tax revenue is used for roads that serve predominantly residents of the state where each road is located, state governments have as much incentive as the federal government to maintain those roads and add capacity. Similarly, since the benefits of mass transit subsidies accrue primarily to local property owners, local and state governments should play a greater role in financing public transportation. State and local governments should also consider privatizing highways and public transportation so that market prices and profits play a greater role in transportation investment and management decisions.

Whether states increase fuel taxes or find an alternative funding mechanism to replace the federal government's share of highway and transit funding, competition between states gives them an incentive to allocate the revenue more efficiently than the federal government. With no federal government role, each state could choose its own mix of highway and transit funding. Those states where mass transit is important and relatively efficient could continue to subsidize it, while other states could choose not to offset the reduction in federal transit subsidies. Eliminating subsidies to transit agencies or providing subsidies directly to low-income transit users would open the door to competition and private provision of transit services, which would lead to higher productivity and lower costs.

Local governments would also have an incentive to invest efficiently if they funded highways and public transportation by taxing increments to land value that result from residents' increased access to jobs. Improved access to jobs is one of the most valued benefits of better highways and more public transportation.

3. Promote innovative technologies and institutional arrangements that will facilitate more-efficient funding and management of transportation infrastructure. The DOT could play an important role in facilitating a transition to a new approach for funding and managing transportation infrastructure that would give a greater role to state and local governments and private firms. It could also encourage cities to reduce regulations that keep entrepreneurs from providing cost-effective public transportation in innovative ways. Furthermore, it could promote concepts, such as curb rights, that would allow private transit providers to purchase or qualify for rights to stop at specified locations if they satisfy minimal safety and insurance requirements established by local governments (Klein, Moore, and Binyam 1997). As noted earlier, property

rights and minimal rules would promote investment in scheduled service and passenger facilities while limiting conflicts between competing transit providers.

New technologies offer promising alternatives for funding and managing highways, such as charging drivers based on the miles they travel. The DOT could explore and promote best practices for the use of new technologies to charge people for using highways.

V. Summary and Conclusions

The Federal Highway Administration, which was incorporated into the DOT, played an important role in designing and funding the interstate highway system. In its early years, the DOT helped citizen groups in cities gain a voice in highway policy that they might not have had if expressways were state funded. By using Highway Trust Fund money to subsidize mass transit, the DOT created incentives for some people to drive less, which reduced congestion of the newly built freeways and enhanced the mobility of low-income city residents who didn't have automobiles.

Although safety regulation was also an important part of the DOT's role over the years, it may not provide as many benefits to consumers as originally thought. Safety regulations have costs and consequences that benefit-cost tests do not easily capture. Furthermore, in some cases, theoretical arguments about market failures seem to have overridden actual market developments that counteract market shortcomings. In the end, the benefits of safety need to be balanced with the benefits of competition and a wider choice set. At the margin, consumers handle these trade-offs better than the DOT does.

Fuel taxes worked reasonably well for funding highways during most of the 20th century. But growing traffic congestion, along with declining real revenues as vehicles have become more

fuel efficient, has revealed the inadequacies of fuel taxes as a way to charge drivers for highway usage. Competition among interest groups to influence the allocation of trust fund money results in priorities that are not consistent with the public's values.

With the interstate highway system complete, there is much less reason for continued federal funding and regulation of highways and mass transit. Although the DOT may be able to play a central role in implementing a transition to a new system for regulating and funding transportation that relies on state and local governments and private firms, once that system is in place, its role in could be drastically reduced or eliminated. Reducing the DOT's role in regulating and funding transportation could facilitate a more efficient transportation system while permitting everyone greater freedom to choose the mix of safety and other benefits they wish to enjoy.

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