

Executive Summary

Introduction

The public road system in the U.S. is the world's busiest, sustaining more than 3 trillion vehicle-miles of travel each year on a network of more than 4 million miles of roads and highways. It has had enormous positive impacts on U.S. society, driving economic growth and innovation, providing mobility and opportunity to its users, and helping the U.S. maintain its global economic competitiveness.

This system was built with a focus on motor vehicles; only recently has substantial funding and attention been given to transit, walking, and bicycling. There is still a huge disparity in how we travel: between 1990 and 2009 the yearly vehicle-miles traveled for passenger cars and light-duty trucks increased by 39 percent; yearly motor fuel consumption rose 27 percent, to 168 billion gallons. And for those unable or unwilling to purchase and use a private automobile for transportation, there can be disparate access to economic opportunity, services, and social interaction.

Enhancing multimodal surface transportation will provide more options for travel and at the same time advance important public health goals. Doing so will expand beyond immediate goals such as investing in infrastructure, developing more sustainable transportation systems, and supporting economic recovery. Doing so will enable more distal, but equally worthy outcomes including: improving people's health and well-being and reducing health care costs; increasing physical activity; and improving air quality and reducing consumption of fossil fuels and unwanted emissions, including those that contribute to climate change.

Both the general public and the government have a strong interest in improving health, bringing down health care costs, and reducing energy use and traffic congestion. The report is divided into three chapters to focus on the following policy areas: policies that improve the environment and environmental health (Chapter 1); policies that enhance community design and promote active transportation (Chapter 2); and policies that reduce motor vehicle-related injuries and fatalities (Chapter 3).

Policies That Improve the Environment and Environmental Public Health (Chapter 1)

Chapter 1 presents policies that would reduce the transportation system's impacts on the environment and environmental public health, chiefly through reducing the ill effects of

transportation-related emissions. This can be done through two approaches: reducing the amount of emissions that are generated, and reducing exposure to these emissions when they do occur.

Tailpipe emissions, which are the by-products of fuel combustion, and emissions from electricity-generating sources (in the case of electric-powered vehicles) have a direct impact on the environment and human health. Their health effects are well-documented—higher incidences of: respiratory disease (such as asthma and chronic obstructive pulmonary disease), cardiovascular disease, and adverse pregnancy outcomes. Pregnant women, children, and the elderly are the most vulnerable. Yearly costs of treating related diseases and those incurred by premature deaths associated with exposure to these emissions are high, as are the costs of the associated losses in productivity. On the larger-scale level of environmental health, one of the largest impacts from transportation-related emissions is the generation of greenhouse gases—carbon dioxide, primarily—which are associated with climate change.

Reduce Human Exposure to Transportation-Related Emissions

Tighter emissions and fuel efficiency standards have reduced vehicle emissions, but their impact has been lessened by the rise in the number of vehicle-miles traveled (VMT).

Improving air quality monitoring systems to give individuals and communities the information they need to make healthier choices; separating high-polluting facilities from vulnerable populations; and further reductions in tailpipe emissions and improvements in fuel efficiency will all go far in reducing human exposure to transportation-related emissions.

Reduce the Transportation System's Contribution to Climate Change

Transportation is responsible for one-third of the country's carbon dioxide emissions, of which 64 percent is generated by passenger cars and light-duty trucks.

Changing the makeup of our vehicle fleet so that it relies less on high-carbon power and has a greater share of vehicles that are physically smaller will decrease transportation's contribution to climate change.

Promote a Reduction in Vehicle-Miles Traveled Through Pricing Measures

The overwhelming number of vehicle miles traveled (VMT) in the U.S are made in motor vehicles—some 3 trillion miles in 2007. In 2009, 83 percent of all trips made by the American public were in private vehicles.

Providing incentives to encourage changes in travel behavior, including adopting new behavior such as walking and bicycling, will help replace some motor vehicle trips with transit, walking, or bicycling, or by combining trips or changing the time when they are made. Any of these actions will help reduce VMT.

Policies That Enhance Community Design and Promote Active Transportation (Chapter 2)

Chapter 2 explores policies that can enhance community design in order to promote safe and active transportation. As outlined below, these policies can lead to changes in the shape and nature of our communities, so that active transportation can become a more attractive and viable option for all Americans.

Provide Better Connectivity for Pedestrians and Bicyclists

Land use and development patterns have created community environments in which many Americans never walk to destinations and have come to depend on motor vehicle travel. More than one-third of Americans reported having taken no walking trips in the previous week, in part because destinations are so spread out, or routes are not safe or welcoming.

Adopting where possible smaller block sizes, encouraging the appropriate location of key community destinations, and employing land use patterns that make cities more connected for bicyclists and pedestrians will make active transportation more practical and attractive.

Increase Investments in Infrastructure that Supports Active Transportation

The built environment has a demonstrated effect on whether people choose to walk or take transit or bicycle rather than drive. Only in recent years has federal transportation policy made a concerted investment in infrastructure that makes non-motorized, active transportation easier. This includes: sidewalks, multi-use trails, bicycle lanes and paths, bicycle boulevards, medians, crosswalks, signs, and street designs that narrow roadways and reduce traffic speed.

Existing programs such as Safe Routes to Schools and policy concepts such as Complete Streets support active transportation along with new approaches such as bicycle boulevards, pedestrian- and bicycle-oriented wayfinding, and facility design.

Consider the Needs of All Road Users in Planning and Design Standards

Transportation policy has historically placed the highest priority on achieving efficiencies for motor vehicles. This emphasis has had negative effects on pedestrian and bicycle safety and, by extension, the amount of active travel that the transportation system can support.

By developing standards for incorporating the needs of pedestrians and bicyclists in all transportation projects, pedestrians and bicyclists will be afforded greater safety. This means adopting new approaches to levels of service, incorporating pedestrian and bicycle experience of the transportation system as a measure of success, and encouraging pedestrian- and bicycle-friendly vehicle designs.

Make Public Transit Easier to Use for Pedestrians and Bicyclists

Public transit enables personal mobility for all people. There is enormous potential in the role that public transit can play in amplifying the practicality of walking and bicycling trips. Conversely, adequate connections between transit and pedestrian and bicycle facilities can go far in solving the “first/last mile” problem that hinders transit’s usefulness.

Opportunities to achieve this goal include making transit stops and stations more accessible by foot and bicycle, making ample room for bicycles on trains and buses, providing route maps and schedule information, and policies to encourage development in and around transit stops and stations—transit-oriented development.

Policies That Reduce Motor Vehicle-Related Injuries and Fatalities (Chapter 3)

Chapter 3 explores ways to make motor vehicle operation safer. Over the past few decades, the rate of traffic fatalities and injuries has dropped significantly. The successes in increasing seat belt use and reducing driving under the influence (DUI) are among the most significant achievements in U.S. public health history.

Nevertheless, the potential exists for even more substantial reductions in traffic deaths, injuries, and associated costs. Policy issues with particular promise are reducing DUI, distracted driving, driving beyond skill or experience levels, speeding, and enhancing seat belt and child passenger protection use.

Reduce the Incidence of Driving under the Influence (DUI)

Major enforcement and education efforts resulted in a significant drop in DUI crashes starting in the 1980s and continuing through the 1990s. After leveling off for a few years, the percentage dropped in 2005, reaching a new low. However, in 2009, DUI deaths still numbered approximately 11,000.

DUI enforcement is a public health success story that can be built upon by extending the use of ignition interlocks to prevent DUI repeat offenses, increasing the use of and training in sobriety checkpoints, maintaining the national minimum drinking age at 21, and strengthening zero-tolerance laws for young drivers.

Decrease Distracted Driving

The rise in the use of cell phones and other electronic devices while driving has created a new form of distracted driving. With the proliferation of vehicle-based electronic distractions, the problem promises to become larger.

Countermeasures for reducing these distractions are in the early stages of development. However, based on successful policies in preventing DUI and increasing seat belt use, providing incentives for states to pass cell phone and electronic device laws and providing funds for enforcement and education may help reduce distracted driving crashes.

Reduce the Incidence of Younger Drivers Driving Beyond Their Skills

Motor vehicle crashes are the leading cause of death for adolescents in the U.S. The crash rate per mile driven for 16- to 19-year-olds is four times that of older drivers. Strong graduated driver licensing (GDL) programs for new drivers are highly effective in reducing their crash risk. While all states have GDL programs in place, increased benefits can be achieved by ensuring compliance and testing.

Reduce the Incidence of Older Drivers Driving Beyond Their Cognitive and Physical Abilities

The number of older (age 65 and over) licensed drivers increased 23 percent between 1999 and 2009. Drivers age 70 and older have elevated risk of being at fault for fatal crashes. In addition, older adults have an increased susceptibility to injury and medical complications when involved in a crash. For older drivers, the use of license evaluation for identifying perceptual or cognitive deficits reduces crashes.

Reduce the Incidence of Speeding

Speeding contributes to nearly one-third of fatal crashes, and speeding is very common. Under extreme weather-related road conditions, such as snow, slush, and ice, speeding is even more dangerous. Pedestrians and bicyclists are at particular risk in speed-related crashes because they do not enjoy the protection of a vehicle.

The use of automated speed enforcement cameras in concert with proven traditional methods and engineering changes can reduce the incidence of speeding and speed-related crashes. Changing road designs to slow traffic reduces the danger faced by pedestrians and bicyclists.

Increase Seat Belt Use

Seat belt use is proven to save lives, and seat belt use has risen in the U.S. However, year-to-year increases in seat belt use are small, with some regions reporting 25 percent of vehicle occupants unbelted.

Proven policies to increase seat belt use include primary seat belt laws and federal support for enhanced enforcement programs, which have been developed by a number of states.

Increase Use of Age- and Size-Appropriate Child Safety Seats and Booster Seats

When used correctly, child safety seats are remarkably effective at preventing death and injuries. However, their use is still inconsistent, with confusing guidelines and a variety of designs and options.

The National Highway Traffic Safety Administration (NHTSA) has developed age-based standards for use of child restraints. Incentives to states to adopt them, along with incentives for standards in child restraint designs would, along with increased funding for education and enforcement, help reduce deaths and injuries among child passengers.

Intended Audiences

Information in this report has been compiled to understand the currently available information on the health effects of transportation policies, and to assist policy makers in identifying appropriate policy solutions. It will also inform other stakeholders, including the general public.

Multiple Levels of Transportation Decision-Making in the U.S.

The U.S. Congress has a major impact through the surface transportation bill, which funds programs through the U.S. Department of Transportation (U.S. DOT), and also through legislation governing the Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (CDC).

Federal mechanisms for influencing the transportation system include direct requirements tied to funding and various formulas for distributing Highway Trust Fund dollars, incentive grants to influence laws and regulations at the state and regional level, and regulations that set national standards.

State agencies include state departments of transportation, law enforcement agencies, and departments of motor vehicles (DMVs). Regional agencies include metropolitan planning organizations (MPOs) and enforcement agencies. City and county governments play a role in local decision-making. Finally, there are large numbers of advocacy organizations and groups that work to influence decisions related to their issues or constituencies.

Study Methodology

This report is based on a review of existing literature, generally from within the last 10 years, and drawn from a universe of sources that fall within these bounds: government agency reports and statistical sources, peer-reviewed academic journals accessed through searches of the two authoritative online bibliographic databases relevant to this study—Medline/PubMed and

the Transport Research International Documentation (TRID) database of the Transportation Research Board of the National Academies of Science.

Emerging Research Opportunities

The body of current research has yielded conclusions about impacts of transportation on health, and the policies and practices to mitigate such impacts. Our review has also revealed areas for additional research that could add to the body of knowledge to aid future policy decision-making.

Increase Scope and Improve Quality of Evaluation of Policy and Practices

Evaluations of policies can be complex because they involve costs and benefits distributed across multiple parties. The effectiveness of policies and practices could be better understood with systematic studies and improved data, greater rigor, and broader scope. This more precise consideration of return on investment, while complex, could advance the understanding of policy and effectiveness of practice.

Improve Data Systems and Data Gathering Methods

Research on transportation and health would benefit from improved data collection and data systems for emissions and air quality, climate change, traffic injury and fatality records, modes of travel, bicyclist and pedestrian counts, sidewalk/bicycle infrastructure inventories (such as location, mileage, and condition), and transit system inventories (such as type, location, mileage, ridership, fleet size, and number of stops). Timeliness, quality, and ease of access are issues for many data systems. Linkage would further augment the usefulness and accessibility of data (e.g. linking medical costs to disease and injury outcomes associated with transportation systems).

Identify Best Practices for Increasing Transportation Health Equity

People may lack personal mobility for a variety of reasons including disability, young or old age, low income, unwillingness to drive a car, or remoteness of residence. A lack of personal mobility may put access to jobs, services, and even social support out of reach, and may have deleterious effects on a person's health. Additionally, some communities face environmental issues related to transportation such as poor air and water quality, noise, and issues of displacement when major highways are built or expanded. Work is needed to identify evidence-based best practices for engaging impacted communities in transportation decision-making, and ensuring equal access to the benefits of transportation and freedom from the negative effects.