Healthy, Equitable Transportation Policy

RECOMMENDATIONS AND RESEARCH

PolicyLink
Prevention Institute
Convergence Partnership
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PolicyLink is a national research and action institute advancing economic and social equity by Lifting Up What Works.

Prevention Institute
Putting prevention and equitable health outcomes at the center of community well-being.

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Healthy, Equitable Transportation Policy Recommendations and Research

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Discussions of public health and wellness often are limited to the health and medical fields. It is my hope that soon, the transportation sector will be part of the discussion and play a role in providing solutions to improving the nation’s overall health, well-being, and quality of life.

One of my goals as Chairman of the Committee on Transportation and Infrastructure is to create a new model for surface transportation, one that invests in alternative modes and promotes active, healthy lifestyles. Public health and transportation policy choices are inextricably linked. The transportation sector is responsible for one-third of the greenhouse gas emissions in the United States. Our infrastructure and land use choices often dictate our daily travel, and whether or not we have access to clean, healthy transportation options. And in any given year, approximately 40,000 Americans are killed on our roadways. The policy decisions we make regarding transportation have repercussions on public health throughout our society.

For too long now, our transportation decision making has failed to address the impacts that our infrastructure network has on public health and equity. The asphalt poured and lane miles constructed enhanced our mobility and strengthened our economic growth; but too often, this auto-centric mindset took hold and crowded out opportunities to invest in a truly sustainable intermodal transportation system, in particular a system that meets the needs of underserved communities.

The failure to link transportation and land use decision making, and to consider the public health effects of these choices, has led to a tilted playing field that has made driving the easiest—and often the only—option available in many parts of the country. Our transportation policies and investments must do more to provide access for all through various modes. Transit, walking, and bicycling all have a significant role to play in lowering our dependence on foreign oil, reducing our greenhouse gas emissions and air pollutants, and helping Americans incorporate exercise and fresh air into their daily travel routines. We must also continue our pursuit to reduce the number—and rate—of traffic fatalities and injuries that occur each year.

Our most recent surface transportation legislation, enacted in 2005, took important steps toward building a healthier infrastructure by investing billions of dollars in safety, public transit, walking, and bicycling. This legislation is helping to construct safer infrastructure, enable workforce development, build new transit lines, repair existing systems, and establish non-motorized transportation networks. We also enacted the Safe Routes to School program, which allows states to invest in safety improvements and education campaigns to get kids walking and biking to school again. This program has shown great early success and has the ability to change the habits of an entire generation.

Environmental sustainability, access, and our collective well-being must combine with mobility and safety as the cornerstones of our transportation investments. The following report represents an important contribution to our emerging understanding of the connections between transportation and public health and is an invaluable resource for policymakers and all those interested in building healthy communities. With a greater recognition of the strong linkage between public health and transportation, I believe we can build a network that supports our mobility and creates access and economic strength while promoting equity, sustaining our good health and quality of life.

Congressman James Oberstar
Chairman of the House Transportation and Infrastructure Committee
Transportation policy has enormous potential to catalyze the development of healthy communities of opportunity. The upcoming authorization of the federal surface transportation bill represents the single biggest federal opportunity to influence how our communities, cities, and regions are shaped.

Transportation impacts health directly; it affects air quality, injury risk, physical activity levels, and access to necessities such as grocery stores. Transportation is also one of the largest drivers of land use patterns; it thus determines whether communities have sidewalks and areas to play and be physically active as well as whether communities are connected to or isolated from economic and social opportunities.

Research shows that low-income communities and communities of color often do not have access to the benefits our transportation system can provide, yet they bear the burdens of that system. For example, many low-income neighborhoods have little or no efficient, reliable public transportation to get them to jobs and essential goods and services. But these communities are often situated near bus depots, highways, and truck routes, where pollution levels are high—and not coincidentally, asthma rates are high as well. In addition, many of these same communities live without safe, complete sidewalks or bike paths, making walking and biking difficult and often dangerous. As a result, these neighborhoods have low levels of physical activity and high rates of chronic diseases. Creating a more equitable transportation system must lie at the core of any analysis of transportation or health, and it must guide all reform.

The Convergence Partnership, the collaborative of funders that commissioned this project, embraces the imperative that health and equity be central to transportation policy debates. Further, the Convergence Partnership recognizes how transportation policy is connected to the Partnership’s broader efforts to support environmental and policy changes that will create healthy people and healthy places. The Partnership’s steering committee includes: The California Endowment, Kaiser Permanente, the Kresge Foundation, Nemours, the Robert Wood Johnson Foundation, and the W. K. Kellogg Foundation. The Centers for Disease Control and Prevention serves as technical advisor.

In this project, leading academic researchers and advocates working at the intersection of transportation policy, equity, and public health identify opportunities for creating transportation systems that promote health and equity. This report synthesizes their insights and offers concrete recommendations for change.

Reform is long overdue. Climate change, shameful health disparities, growing rates of chronic diseases—transportation policy has contributed to these problems, and now it must
address them. Increasing rates of poverty and a severe economic downturn add to the urgency for reform.

This report intentionally uses the term authorization and not the more common word, reauthorization, in reference to the surface transportation bill. We want to make clear that new thinking and innovative approaches are necessary to meet the needs of a changing and diverse America.

Many advocates are already working hard to push for fundamental reform. This report was written for community leaders, policymakers, funders, practitioners, and advocates interested in an overarching strategy to promote active living and to build healthy communities of opportunity. PolicyLink, Prevention Institute, and the Convergence Partnership believe that building healthy communities requires a collaboration of stakeholders from diverse fields and sectors. Together, we can identify and support shared solutions.

The project recognizes that effective strategies to improve health, particularly in vulnerable communities, often fall outside the conventional domain of health policy, yet deserve equal attention. Federal transportation policy is a critical opportunity at our fingertips. Leveraging the strength of collaboration and networking can yield powerful results. Let’s seize the moment.

Angela Glover Blackwell
Founder and CEO
PolicyLink
The Transportation Prescription: A Summary of Findings and a Framework for Action

JUDITH BELL, M.P.A.
President, PolicyLink

LARRY COHEN, M.S.W.
Founder and Executive Director, Prevention Institute
In St. Louis, MO, major cuts in bus service this spring left workers, students, disabled people, and elderly residents stranded and feeling bereft. Stuart and Dianne Falk, who are both in wheelchairs, told CNN they no longer would be able to get to the gym or the downtown theater company where they volunteer. “To be saddled, to be imprisoned, that is what it is going to feeling like,” Stuart Falk said.

In West Oakland, CA, families have no escape from the diesel exhaust belching from trucks at the nearby port: The air inside some homes is five times more toxic than in other parts of the city. “I’m constantly doing this dance about cleaning diesel soot from my blinds and window sills,” 57-year-old Margaret Gordon told the San Francisco Chronicle.

In Seattle, WA, Maggieh Rathbun, a 55-year-old diabetic who has no car, takes an hour-long bus ride to buy fresh fruits and vegetables. She cannot haul more than a few small bags at a time so she shops frequently—if she feels well enough. “It depends on what kind of day I’m having with my diabetes to decide whether I’m going to make do with a bowl of cereal or try to go get something better,” she told the Seattle Post-Intelligencer.

Our transportation system has an enormous impact on our way of life, on the air we breathe, and on the vitality of our communities. Transportation choices influence personal decisions about where to live, shop, attend school, work, and enjoy leisure. They affect stress levels, family budgets, and the time we spend with our children. Although most people don’t think of it as a determinant of health, our transportation system has far-reaching implications for our risk of disease and injury. Transportation policies and accompanying land use patterns contribute to the glaring health disparities between the affluent and the poor and between white people and people of color.

This report demonstrates that transportation policy is, in effect, health policy—and environmental policy, food policy, employment policy, and metropolitan development policy, each of which bears on health independently and in concert with the others. Longstanding transportation and land use policies are at odds with serious health, environmental, and economic needs of the country, and they have harmed low-income communities and communities of color especially. Forward-thinking transportation policies must promote healthy, green, safe, accessible, and affordable ways of getting where we need to go. They also must go hand in hand with equitable, sustainable land use planning and community economic development.

Streets and roads are the largest chunks of property owned by most cities and states. We have choices to make about how to use, and share, that real estate. Who decides? Who benefits? Who pays? Transportation policy at all levels of government can be a vehicle to promote public health, sustainability, equitable opportunity, and the economic strength of neighborhoods, cities, and regions. But that will happen only if advocates, experts, and organizers steeped in all these issues bring their knowledge and passion to critical transportation decisions. The upcoming authorization of the most important transportation legislation in the United States, the federal surface transportation bill, makes this a pivotal moment to bring a broad vision for health and equity to transportation policy.

Transportation in America: A New Vision

Underlying this report is a vision of transportation as more than a means to move people and goods, but also as a way to build healthy, opportunity-rich communities. Health is often viewed from an individual perspective. Yet, each resident in a region is both an individual and part of a larger community. Therefore, our vision for healthy, equitable communities is one that extends beyond
individual outcomes and creates conditions that allow all to reach their full potential. It does not force us to balance one individual against another. It provides the opportunity for everyone to participate in their community, be healthy, and prosper.

Transportation systems are essential to the competitiveness of the nation and the viability of regions. Building America’s Future, a bipartisan coalition of elected officials, views increased transportation investment as a key to the economic growth and job creation needed to strengthen cities and rural communities. The American Recovery and Reinvestment Act (ARRA), the nearly $1 trillion stimulus package passed by Congress and signed by President Obama in early 2009, emphasizes transportation investments to revive the ailing economy and rebuild regions. The act galvanized advocates to push government agencies to spend the money in ways that promote health, protect the environment, and benefit everyone. Now momentum is building to bring a focus on health and equity to the next version of the federal surface transportation bill.

Over the past half-century, federal transportation policy has changed the American landscape, physically, socially, and culturally. Beginning with the Federal-Aid Highway Act of 1956 authorizing the Interstate Highway System, the leading transportation priority by far has been what planners call mobility and which became synonymous with the movement of more and more cars and goods farther and faster. Mobility advanced the nation’s growth and prosperity, and it formed our sense of identity as well as our image abroad. The car was more than a machine to get us around; it stood as a symbol of American freedom, ingenuity, and manufacturing prowess.

While some have few or no transportation choices due to limited transportation infrastructure and resources in their communities, many Americans do have the opportunity to make choices about how to travel and where to go. For these people, the car provides the means to flee the city, buy a quarter-acre patch of suburbia, and drive to their hearts’ content without giving much thought to the disinvested neighborhoods left behind, or the farmland lost to development, or the fossil fuels and other natural resources their lifestyles consumed. Community environments, however, affect the choices individuals make, and public policy molds those environments. As the nation confronts severe economic, environmental, and health challenges as well as the widening gulf between rich and poor, it is becoming clear that we must make different choices as individuals and as a society.

A new framework for transportation policy and planning is emerging. Rather than focus almost exclusively on mobility (and its corollaries, speed and distance), this framework also emphasizes transportation accessibility. In other words, instead of designing transportation systems primarily to move cars and goods, the new approach calls for systems designed to serve people—all people—efficiently, affordably, and safely. This approach prioritizes investments in: (1) public transportation, walking, and bicycling—transportation modes that can promote health, opportunity, environmental quality, and indeed mobility for people who do not have access to cars; and (2) communities with the greatest need for affordable, safe, reliable transportation linkages to jobs, and essential goods and services—chiefly, low-income communities and communities of color.

The goal is to improve transportation for everyone while delivering other important payoffs, including better respiratory and cardiovascular health; improved physical fitness; less emotional stress; cleaner air; quieter streets; fewer traffic injuries and deaths; and greater access to jobs, nutritious foods, pharmacies, clinics, and other essentials for healthy, productive living.
The Transportation Prescription

This new vision is at the core of a burgeoning movement to shape transportation policy to support work in a number of critical areas, such as climate change, sustainable agriculture, the prevention of chronic diseases, workforce development, and neighborhood revitalization. Advocates and experts in public health, environmental justice, labor, community economic development, food policy, and other fields and disciplines have important roles to play in transportation debates. A broad range of interests working in partnership, can craft innovative, environmentally sound solutions that benefit everyone, rather than plans that reflect the motor vehicle orientation of road engineers and builders. Government transportation agencies and developers—the architects of our transportation systems for decades—must be held accountable for how their investments affect the economic prospects of regions, the health of communities, and the well-being of residents.

This shift in thinking about what transportation policy must achieve and who should drive it stems from a long list of factors. Among them: near-crippling congestion in many metropolitan areas; renewed interest in city living and a hunger for shorter commutes; demographic changes (including the increasing number of people over 65 and immigrants, two groups less likely to drive or own cars); the rise in obesity; the enduring poverty in inner-city and rural communities; the growing understanding of the connections among health, the built environment, and transportation plans; and the increasing frustration among residents and advocates about the limited accountability and inequitable transportation decision-making processes at the state and regional levels which over represent suburban and white male interests.

But the push to reform transportation (along with its cousin, land use planning) has gained urgency in the face of three massive challenges that are upending the status quo of every field and that go to the heart of our love affair with the car: (1) Climate change, with its threat of global ecological upheaval. (2) U.S. dependence on foreign oil, which carries grave risks for our economy and security. (3) A healthcare system crumbling under the demands of skyrocketing rates of diabetes and other chronic diseases associated with sedentary lifestyles, and astronomical costs. Transporting goods, services, and people accounts for about one-third of greenhouse gas emissions and two-thirds of petroleum consumption in the United States.7 As the National Surface Transportation Policy and Revenue Study Commission noted in its landmark report, Transportation for Tomorrow, the environmental gains we achieve through incremental fixes such as higher fuel-efficiency standards, though important, will be trumped by increases in driving and traffic if we continue on our current policy course.

The good news is that change can happen, and inspiring examples abound. In the rural San Joaquin Valley in California, where public transportation has been virtually nonexistent, a new system of publicly managed vanpools is connecting farm worker families to jobs, schools, and medical services.8

In Chicago’s West Garfield Park, an alliance of residents, activists, and faith-based organizations not only successfully fought the closure of the rail line that linked the neighborhood to downtown; they also transformed a transit stop into an anchor of development of shops, community services, and moderately priced housing.9

In port cities around the country, many groups are working to reduce pollution from ships, locomotives, and trucks, some of the worst emitters of soot and greenhouse gases. In the Los Angeles region—one of a number of regions where the movement of goods represents a significant part of transportation investment and economic activity, and where ports and freeways abut low-income neighborhoods—the Coalition for Clean and Safe Ports has formed an effective alliance of residents, truck drivers, public health experts, environmentalists, environmental justice
activists, unions, immigrant groups, and public officials to push for clean air solutions.¹⁰

The authorization of the next federal surface transportation bill presents an immense opportunity to broaden such engagement and to forge an equitable policy response to the unprecedented challenges facing the country. The bill authorizes federal funding for highways, highway safety, public transportation, and bicycling and pedestrian infrastructure for approximately six years.¹¹ It transfers hundreds of billions of dollars from the federal government to states and localities. It also triggers hundreds of billions more in matching state and local spending. The bill marks the largest transportation expenditure in the United States. But the legislation does more than provide money. It also communicates national policy priorities. Will we build roads on the farthest edges of regions or fix aging roads and bridges in cities and inner-ring suburbs? Will we invest in healthy, green transportation—bicycle lanes, safe sidewalks for walking, clean buses, ridesharing, light rails? Will we ensure that all voices are equitably represented in transportation decision-making processes? And will we include incentives and requirements for affordable housing near public transportation to ensure broad access to the job opportunities and services that transit oriented development stimulates? Or will we spend most of the money as we have for decades: on new and bigger highways with little public accountability? The bill establishes funding categories and requirements and in some cases gives communities and metropolitan regions flexibility to shape strategies to local needs. The new law is a chance to design communities for health, sustainability, and opportunity—and to give all Americans physically active, clean, affordable, convenient, reliable, and safe options to get where they need to go.

What Does Healthy, Equitable Transportation Policy Look Like?

Our current transportation system has many direct health consequences: pollution-related asthma, steep declines in physical activity, and the associated rise in obesity and chronic illnesses are just a few examples. Transportation affects health indirectly by connecting people—or by failing to provide connections—to jobs, medical care, healthy food outlets, and other necessities. For more details on the connections between transportation and health see Chapter 2, Health Effects of Transportation Policy.

The National Surface Transportation Policy and Revenue Study Commission—created by Congress in 2005 to examine the condition and future needs of our network of highways, ports, freight and passenger railroads, and public transportation systems—reached a sobering conclusion: “The nation’s surface transportation network regrettably exacts a terrible toll in lost lives and damaged health.”¹² Nowhere is the toll higher than among low-income people and people of color.

Research shows that when properly designed, transportation systems can provide exercise opportunities, improve safety, lower emotional stress, link poor people to opportunity, connect isolated older adults and people with disabilities to crucial services and social supports, and stimulate economic development. Healthy, equitable transportation policy draws on that research to create transportation systems that benefit everyone.

Specifically, healthy, equitable transportation policy:

- Supports the development of accessible, efficient, affordable, and safe alternatives to car travel, and especially to driving solo. These alternatives enable everyone to walk more, travel by bicycle, and use public
transportation more—in other words, to get around in ways that improve health, expand access to opportunity, and reduce toxic pollutants and greenhouse gas emissions.

- Works hand in hand with sustainable land use planning. Together, they encourage and support high-density, mixed-use, mixed-income metropolitan development and affordable housing with good access to transportation options. Together, they focus, particularly, on underserved and economically isolated communities.

- Recognizes that income is important to health, and that good transportation has an impact on family income. Healthy, equitable transportation policy support systems that connect all people, especially low-income and underserved communities, to employment and other opportunities. It also encourages hiring low-income residents of color for well-paying jobs in transportation construction, maintenance, and service.

- Understands the importance of ensuring equal representation. All community members, regardless of race, gender or geographical location should be equitably represented and involved in making decisions which impact their communities, their infrastructure and their options for travel.

- Recognizes that access to healthy foods is integral to good health and that transportation systems are integral to food production and distribution. Healthy, equitable transportation policy explicitly addresses food access issues, including transportation to grocery stores and food transport practices.

This summary draws on the six thematic chapters in this book authored by academics and advocates working at the intersection of transportation, health, and equity. Each chapter describes innovative transportation and land use policies, strategies, and programs built on a foundation of equity and sustainability. Three chapters in this collection address transportation options:

- Todd Litman, M.E.S., founder and executive director of the Victoria Transport Policy Institute in British Columbia, identifies numerous economic, social, and environmental benefits that can result from public transportation improvements. Among them: reduced traffic crashes, improved physical fitness and health, energy conservation, reduced pollution emissions, increased community livability, increased affordability, consumer savings, economic development, and expanded opportunity. Litman contends that improving public transportation is one of the most cost-effective ways to improve public health, and better health is one of the most significant potential benefits of public transportation improvements. He identifies policy and planning reforms to create a more diverse and efficient transportation system. He recommends developing a strategic vision of high-quality public transportation services, with supportive land use policies to provide basic mobility to people who are socially isolated, economically disadvantaged, or physically disabled, as well as to attract “discretionary” travelers, or people who would otherwise drive for a particular trip.

- Susan Handy, Ph.D., director of the Sustainable Development Center at the University of California at Davis, argues that increasing walking and bicycling while assuring safety, particularly for low-income families, children, and older adults, is an important goal for federal transportation policy. Walking and bicycling, or “active travel,” are low-cost, physically active, and environmentally clean alternatives to driving, yet they represent fewer than 10 percent of all trips in the United States. In addition to expanding specialized programs for active travel, the federal government should assist, enable, encourage, and, in some instances,
require state, regional, and local governments to address pedestrian and bicycling needs.

- Catherine L. Ross, Ph.D., the Harry West Chair and director of the Center for Quality Growth and Regional Development at Georgia Institute of Technology, argues that roadways are more than transport routes; they are also our primary spaces for civic, social, and commercial enterprise. Roadways—highways in particular—receive the largest share of federal transportation dollars by far. Federal policy has historically emphasized highways designed to move large numbers of cars and freight vehicles at high speeds. Ross argues for greater investments in roadways that integrate physical activity, enrich social interaction, increase safety, and provide transportation linkages in underserved communities. She urges policymakers and others to consider expanded assessments of the effects of roadways on health, through the use of methodologies similar to health impact assessment (HIA).¹³

The remaining papers offer transportation policy perspectives in key areas that have a significant impact on public health and equity:

- Todd Swanstrom, Ph.D., the E. Desmond Lee Professor of Community Collaboration and Public Policy Administration at the University of Missouri, St. Louis, makes the case that federal transportation policy can and should address economic development, particularly in communities left behind by decades of transportation planning that favored car travel and encouraged sprawl. Targeted transportation investment can promote economic opportunity and reduce health disparities by (1) improving transportation linkages between housing and employment hubs and between residential neighborhoods and clinics, pharmacies, and grocery stores; and (2) encouraging affordable, high-density, mixed-use transit oriented development; and (3) creating workforce strategies to ensure that jobs in the large, growing transportation sector are open to all, including minority and women workers and contractors. Swanstrom also asserts that while the goals of equity and environmental sustainability are not mutually exclusive, policymakers and advocates must address the short-term needs of low-income families who live in places where driving is essential.

- Kami Pothukuchi, Ph.D., associate professor of urban planning at Wayne State University, and Richard Wallace, M.S., senior project manager at the Center for Automotive Research, argue that federal transportation policy should seek to increase access to healthy foods. Today’s transportation networks make large quantities of foods from around the nation and the globe readily available for many Americans, but industrialized agriculture and the concentrated structure of food retail have negative health and environmental consequences for low-income communities, especially people of color, inner-city and rural residents, and immigrant farm workers. For example, urban and rural communities often have fewer and smaller supermarkets than suburban communities (if they have any at all) as well as more limited selections of healthy foods. As a result, residents eat fewer fruits and vegetables and have higher rates of diet-related illnesses. In addition, long-distance food hauling has a disproportionate impact on the air quality and noise levels in poor and minority communities along freight routes. Although food access falls outside the traditional realm of transportation policy, improved public transportation, transit oriented development, and cleaner methods to move freight can increase access to healthy foods in underserved communities, reduce air and noise pollution, and foster local, sustainable agri-food systems.
Larry Cohen, M.S.W., Leslie Mikkelsen, R.D., M.P.H, and Janani Srikantharajah, B.A., of Prevention Institute argue that traffic crashes are preventable and that federal transportation policy must make safety for all travelers a priority. Traffic crashes rank as the leading cause of death for people ages one to 34 and contribute to unnecessary human, social, and economic costs. Resources should be directed to communities with the least infrastructure to support safe walking, bicycling, and public transportation use and continue to support effective vehicle safety and occupant protection strategies. Traffic safety is an important strategy not only to reduce injuries and death but also to encourage physical activity, improve air quality, and increase transportation accessibility.

The Federal Transportation Legacy and Challenges Ahead

Transportation in America is a federal system, not a centralized, national system. Federal policy plays a critical role, not by dictating practices but by enabling and encouraging innovation by states, regional transportation organizations, transit operators, and other agencies. This happens in several ways.

First, the federal government sends billions of dollars for transportation to states and localities. For example, the American Recovery and Reinvestment Act provides nearly $50 billion to build and repair roads, bridges, railways, and ports. The current surface transportation bill, SAFETEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users), set to expire in September 2009, guaranteed $244.1 billion over six years. These dollars, in turn, leverage direct infrastructure investments by state governments, local governments, and private investors.

Second, the policies and requirements embedded in federal transportation programs influence state and local land use decisions and transportation priorities. Many observers contend that transportation stands as one of the biggest policy successes in United States history. The Federal-Aid Highway Act of 1956 and its progeny promoted mobility, which contributed mightily to American growth and prosperity. However, many advocates take a more nuanced view of the federal legacy. They point to the health, equity, and environmental consequences of an ethic that held the faster, the farther, the better, as well as the consequences of policies focused almost wholly on car and truck travel, with little accountability to goals beyond mobility.

Either way, the current transport system is no longer sustainable or fixable by incremental changes such as pilot projects, encouragements, and small incentives. As the National Surface Transportation Policy and Revenue Study Commission, created by SAFETEA-LU, wrote in its final report to Congress: “The strong and dynamic American surface transportation system is becoming a thing of the past.”

At 300 million people, the nation’s population has doubled since the creation of the Interstate Highway System. We will number 420 million by 2050. “Congestion was once just a nuisance. Today gridlock is a way of life,” the commission’s report said. Growing transportation demand threatens to dwarf regulatory and legislative efforts to mitigate its health and environmental consequences. Increases in total vehicular mileage have all but wiped out the gains achieved through hard-won regulations on fuel efficiency and emissions control. Expansion of freeways cannot get us out of these problems; it will only make them worse. The more we have expanded highways, the more traffic we have created. The United States needs multi-modal systems with public...
transportation that efficiently serves a large segment of the population, using existing streets and highways.

The Intermodal Transportation Efficiency Act (ISTEA), the 1991 version of the federal surface transportation bill, was supposed to lead us there. The act incorporated significant policy change. Since then, the stated goal of federal transportation policy has been to expand access and improve efficiency through an interconnected multi-modal system that supports highways, public transportation, walking, and biking. This goal has yet to be achieved. Funding mechanisms and formulas have continued to favor highway construction and car travel. For example, the allocation formula for the Surface Transportation Program (STP), the largest program within the federal bill, rewards states that consume more gas, have more miles of highway, and have residents who drive a lot. Alternatives to driving remain underinvested. Approximately 80 percent of the surface transportation bill is allocated for distribution through the Federal Highway Administration for mostly highway programs, while less than 20 percent goes to the Federal Transit Agency for public transportation. Other modes of travel constitute a minute amount of spending in comparison to highways and public transportation.

Case in point: walking is the only travel mode that has not had significant declines in casualties in 40 years. Yet only a tiny share of transportation funding goes to infrastructure initiatives that would make walking and biking safer. Walking and bicycling accounted for 8.6 percent of all trips in 2001 but 12 percent of traffic deaths.

Another case in point: operating costs for public transportation systems present a huge challenge for many communities. Yet federal transportation investment is focused on capital projects. For example, cities with 200,000 people or more may not use grants from the U.S. Department of Transportation’s main public transportation programs for transit operating costs. In the face of budget shortfalls, local and regional transportation agencies throughout the country have cut service, hiked fares, and deferred maintenance—arguably at a time when people need affordable, reliable links to jobs more than ever.

While federal policy plays a significant role in shaping transportation systems, states and metropolitan regions are also critical agents of change. The new surface transportation bill offers an opportunity to increase support, encouragement, and pressure for integrating land use and transportation planning to promote balanced regional growth, equitable economic opportunity, and healthy communities for all.

**A Foundation for 21st-Century Transportation Policy**

Healthy, equitable transportation policy is grounded in four principles. These may also serve as benchmarks to assess the impacts of transportation plans on public health, equity, and environmental quality:

1. Develop transportation policies and plans that support health, equity, and environmental quality. Federal, state, and local transportation policies should be aligned with the top health and environmental goals of federal departments and agencies. For example, transportation policies should be aligned with the Department of Health and Human Services’ strategic goals to promote health equity and foster the economic and social well-being of individuals, families, and communities. Transportation policies should also support the CDC’s commitment to eliminate health disparities and to promote its “healthy people in healthy places” goals.
2. Prioritize transportation investments in distressed regions, low-income neighborhoods, and communities of color. Federal, state, and local transportation agencies should emphasize projects that will revitalize the economy of struggling communities, lower health disparities, and will connect vulnerable populations to jobs, business opportunities, healthy food outlets, medical services, and other necessities. Government agencies must ensure that these projects are financially sustainable by providing adequate funding for maintenance and operations. The jobs associated with transportation construction, maintenance, and service should be available to low-income people and communities of color.

3. Emphasize accessibility, instead of simply mobility, in transportation policies and programs at all levels of government as well as across sectors and policy silos. Transportation systems should give communities wider access to all the things that are necessary for a good life, not to move people faster and farther. The definition of access must also include affordability. If transportation is physically accessible, yet unaffordable, it is not truly accessible.

4. Ensure transparency, accountability, and meaningful participation by residents, advocates with diverse interests, and experts from different fields. State and regional transportation officials and private developers must engage new partners in decision making and provide the data, training, and resources to allow full, informed participation by the people affected most by decisions and investments. Voices and expertise from local communities, public health, environmental justice, community development, and other arenas can help ensure that transportation plans respond to local needs and deliver health, environmental, and economic benefits broadly.

Policy and Program Priorities to Improve Health and Equity

Government at all levels must consider the health and equity impacts of transportation investments at the beginning of decision-making processes. Public and private transportation investments must be designed to promote health rather than to erode it. The following recommendations can help policymakers and planners achieve these ends:

1. Prioritize investments in public transportation, including regional systems that connect housing and jobs as well as local services that improve access to healthy foods, medical care, and other basic services. Investments should include capital costs as well as costs for maintenance and operations. Because older diesel buses have high emission rates and since bus depots and other facilities are often concentrated in low-income and minority neighborhoods, policies must be in place to ensure that expanded public transportation does not lead to increased exposure to pollutants in these same communities.

2. Prioritize investments in bicycle and pedestrian infrastructure to make walking and biking safer and more convenient. Strategies include complete streets designed with all users in mind, not just drivers; traffic-calming measures; and safe routes to transit and Safe Routes to Schools programs, which create infrastructure and programming to support safe walking and bicycling to bus stops, rail stations, and schools. Targeted infrastructure investments should also support walking and bicycling in rural communities by, for example, improving road shoulders and building trails to town centers.
3. **Encourage equitable transit oriented development by creating incentives for integrated land use and transportation planning.** Transit oriented development must emphasize affordability and accessibility. It also must incorporate affordable housing and commercial properties that provide jobs, services, and essential goods near people’s homes. Because people of all income levels desire walkable neighborhoods and shorter commutes, displacement of longtime neighborhood residents can be an unintended consequence of transit oriented development. Policymakers must ensure that the local residents guide planning and development and that equity is a goal from day one.

4. **Create incentives and accountability measures to ensure that transportation plans account for their impacts on health, safety, and equity.** New projects must be held accountable for better results. Government investment should support the creation of tools that more sensitively and accurately measure walking and bicycling practices and improved outcomes. Health impact assessment is an emerging methodology to evaluate the effects of policies, programs, and plans on the health of a population and should be considered an important tool. People should also have the right to sue under Title VI of the *Civil Rights Act of 1964* if they suffer disparate impacts from federal transportation investments, and the U.S. Department of Transportation should have the power to withhold dollars if investments are not made equitably.\(^\text{18}\)

5. **Give state, regional, and local government agencies and organizations more flexibility to move dollars among funding categories and to target spending to meet local needs.** Greater flexibility would give communities more leeway to fund walking, bicycling, and public transportation programs. It would also enable communities to invest in fixing, maintaining, and operating local bus and rail systems. Flexibility should be strongly tied to new standards for accountability, transparency, and inclusion which ensure all people impacted by transportation decisions are equitably represented in the decision-making process.

6. **Prioritize transportation investments in communities with high unemployment and poverty rates to stimulate economic growth and provide access to jobs.** The American Recovery and Reinvestment Act (ARRA) has language to direct resources to struggling and disinvested communities. The new version of the surface transportation bill should include similar language and expand on this commitment by creating strong accountability and enforcement measures tied to achieving equitable economic benefits.

7. **Make sure that jobs and contracts created by federal transportation investments reach low-income people and communities of color.** A Sense of Congress amendment to *SAFETEA-LU*, passed in 2005, encourages local hiring provisions for highway construction projects. Some projects aim for 30 percent of workforce hours to be filled by employees who live in the community. Local hiring should be made a requirement, not just encouraged. It should also be expanded beyond highway projects to include public and mass transit development. Capital investments should also fund workforce development programs to train local residents for jobs in the transportation sector.\(^\text{19}\)

8. **Support the development of cleaner bus and truck fleets and invest in freight rail infrastructure to reduce greenhouse gas emissions, improve local air quality, promote health, and foster energy independence.**
9. **Advance safety for all travelers**, with particular emphasis on those at the highest risk of car injuries and death. Investments should continue advancing known vehicle safety and occupant-protection strategies as well as roadway and community design modifications to protect the safety of pedestrians, bicyclists, drivers, and passengers.

10. **Support policies and programs that increase access to healthy foods.** Promote public-private van and bus systems to shuttle customers to grocery stores. Expand weekend bus service to connect low-income neighborhoods to supermarkets and other food outlets. Invest in safe and affordable transportation for farm and food production workers. Promote sustainable modes of transporting foods from farms to stores as well as policies to increase the viability of local and regional farming.

11. **Give low-income rural communities greater access to public transportation funds from the surface transportation bill providing the opportunity to access employment and education opportunities.** Low-density and long travel distances make developing and operating conventional bus and rail systems financially challenging. Federal public transportation dollars should support economically efficient innovations, such as vanpools and voucher programs.

**Conclusion**

The authorization of the next federal surface transportation bill can be a starting point for creating many changes Americans say they want: better health, cleaner air, more time with our families, opportunities to connect with our neighbors. The new legislation can also mark an important step toward building a society in which everyone can participate and prosper, and no community is left behind.

Change will not come easily. The car culture has deep roots in America. The interest groups supporting highway investment are powerful and well-funded. But advocates and grass-roots activists around the country have demonstrated that change can happen. They have successfully fought for cleaner buses and for public transportation in communities that never had it. They have transformed train stations into centers of vibrant community development in disinvested neighborhoods. They have pressured local officials and supermarket operators to provide free bus rides so families can shop for food.

Now is the time to tap into that kind of energy and lift successes like these to the level of federal policy. Leaders, experts, and advocates from many spheres—public health, environmental justice, food policy, agriculture, labor, equity, community economic development, business, and government—must join in partnership to push for broad reform. Collectively, we can gain power and build political support for creating transportation systems that address the big challenges we face and that nourish healthy communities throughout our nation.
Global agri-food and transportation systems have dramatically expanded food production and distribution worldwide. This integration, however, also adversely affects human health. The negative effects arise from unequal access to healthy food, unequal access to transportation for agri-food workers, increasing geospatial and economic concentration in the agri-food industry, and an emerging competition between food and fuel. Because the health of individuals is inextricably tied to the health of communities, regions, and ecological systems, health and transportation professionals need to act to both mitigate current disparities and enhance the future viability and sustainability of these systems. This paper offers numerous, specific recommendations for improving health through transportation policy and programs as they relate to agri-food systems.
Sustainable Food Systems

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Agri-Food Systems, Health, and Transportation: An Overview

Agri-food systems include the production, processing, distribution, and consumption of food; the disposal of wastes; and the resources, actors, rules, and processes involved in the design, implementation, promotion, and regulation of these activities. These systems interact with communities to affect human health, both directly and indirectly. This paper explores these interactions to inform transportation policies that improve health, strengthen communities, and protect the environment.

As a result of linkages between the agri-foods industry and growing transportation networks, most U.S. households have ready access to large quantities of foods from all over the country and abroad; communities in crisis can quickly receive food aid transported from faraway countries; and exporters can efficiently reach grocery store shelves and markets around the world, positioning U.S. corporations at the helm of an international retail food enterprise pegged at four trillion dollars annually.

But the integrated system for food production and distribution has left behind millions of Americans in low-income communities in the inner cities and sprawling rural areas. Women, people of color, and immigrants have been left particularly vulnerable. To reduce disparities and attendant costs; to distribute benefits more equitably; and to build more sustainable transportation, food, and community systems, transportation policy must focus on health concerns resulting from:

- Lack of access to grocery stores offering affordable, healthy foods. This imbalance is associated with higher rates of obesity, disease, food insecurity, and related stress;
- Lack of efficient, affordable transportation access for agri-food workers, such as farm workers and food service staff, whose wages are among the lowest in a region;
- A global agri-food industry that is fueled by cheap energy and transportation subsidies but, paradoxically, poses serious health risks to the community and exacerbates climate change; and
- Competitive market pressures to use crops for fuel, raising the price of food.

Transportation policy has not traditionally considered these issues, but it should, given the increasing rates of obesity and related health costs; climate change; threats to global food security; and inefficient, unsustainable food systems that rely on cheap energy to distribute food to faraway places.
Disparities in Urban and Rural Communities’ Access to Healthy Foods

Communities do not enjoy the same access to healthy foods, with inner-city neighborhoods and remote, rural areas faring the worst. This disparity occurs for several reasons, including a lack of grocery stores in low-income neighborhoods, a lack of affordable mass transportation, and lower rates of automobile ownership in low-income areas.

Lack of Grocery Stores In and Near Low-income Neighborhoods

Over the past five decades, the food retail industry has transformed itself in many ways, resulting in fewer corporate chains capturing a larger share of the retail market, more big-box stores opened in suburban locations and fewer in urban and rural ones, and supermarket chains with consolidated food supply and distribution systems. These shifts, and increasing suburbanization, mean that fewer people now live within walking distance—or a short bus or subway ride—to the grocery store. This spatial dislocation has been made possible, in large part, by federal transportation policy that financed highway development, supported increased truck transportation of goods, and encouraged personal automobile use through subsidies that expanded roadways and parking. For example, one study puts the total “tax subsidy” to motor vehicle users in the range of $19–$64 billion per year.

Today, inner-city and rural neighborhoods have fewer and smaller grocery supermarkets, with poorer selections of healthy foods and higher prices than their suburban counterparts. Urban neighborhoods, conversely, have an abundance of smaller convenience stores and fast-food outlets, which offer disproportionately higher amounts of foods of poor nutritional quality. A decline in wholesale and retail farmers’ markets also paralleled the decline of grocery supermarkets in urban and rural locations, although farmers’ markets have recently seen a dramatic rise. Nonetheless, farmland in metropolitan areas, where a majority of fruits and vegetables are grown, continues to be consumed by urban sprawl.

For low-income and urban residents, for people of color, and for immigrants—all of whom tend to own fewer cars than affluent and middle-class whites, the paucity of nearby supermarkets leads to higher rates of diet-related morbidity and mortality, and even greater stress related to grocery shopping. Conversely, relatively easy access to supermarkets is associated with higher household consumption of fruits and other positive dietary behaviors. Disparities in the number and size of supermarkets have been documented by race even after controlling for income, with African American neighborhoods most adversely affected. Higher costs,
poorer selections, and lower quality of foods in low-income neighborhoods mean that taxpayer-funded nutrition programs such as the food stamp program (more recently known as SNAP, or the Supplemental Nutrition Assistance Program) don’t go as far as in better-off neighborhoods. Lack of affordable, neighborhood-based food outlets also forces low-income households to rely more on emergency food programs such as food pantries that—dependent on private donations and government surpluses—stock little in the way of healthy foods. What’s more, poor diets conspire with poor air quality, fewer parks and fitness facilities, poor quality housing, high levels of crime, noise, and other social and environmental stressors in low-income neighborhoods.

**Increased Dependence on Use of an Automobile for Grocery Shopping**

Grocery shoppers tend to prefer to travel to supermarkets by car, in part because of the one-stop design of supermarkets and their proximity to large-scale shopping districts with abundant, available parking, all of which discourage walking or biking. Vehicles save time and can help shoppers reach more stores, combine trips, and transport heavy packages easily, including in inclement weather.\(^\text{19}\) One Austin, TX, study found that few people substitute walking for driving to the grocery store, even if pedestrian or cycling access is good.\(^\text{20}\) Even the poor who do not own cars often borrow them, ask for rides from friends, or take taxis to do grocery shopping;\(^\text{21}\) however, transportation and walking remain critical in providing the mobility needed to access grocery outlets for these families.\(^\text{22}\)

Public bus routes and schedules, even in well-serviced communities, are typically planned in ways that disadvantage food-shopping trips needed during weekends and evenings. A typical bus system is also planned around a central hub, a design that often lengthens travel time to more peripherally located supermarkets. And high levels of required parking for supermarkets may make them less of a priority in transportation system planning. Perversely, such land use policies may exacerbate the peripheral location of supermarkets. Research from the United Kingdom suggests that when land use policies discourage new supermarket development on the urban fringe, stores invest more in expanding and refurbishing the older stores based closer to the urban core.\(^\text{23}\)

People who live in low-income households are underserved by both the food\(^\text{24}\) and transportation\(^\text{25}\) systems. In 2007, food insecurity rates in the United States rose even before the sharp economic declines of 2007–08. Overall, 36.2 million persons—or 12.2 percent of Americans, mostly women, minorities, and children—struggled with hunger. In May 2008, more than 28 million persons participated in the food stamp program, a 32 percent increase in five years; yet the program reaches only two out of three eligible households.\(^\text{26}\) Access to food stamp offices for these populations often is undermined by the distances needed to travel, lack of evening hours of operation, and limited public transportation within communities.\(^\text{27}\) Food stamp recipients are also vulnerable to losing benefits due to lack of transportation to recertification appointments.\(^\text{28}\) For a variety of reasons, farm worker households face a higher risk of food insecurity.\(^\text{29}\) At the same time, the poorest Americans who have cars spend disproportionately more of their household budget than the national average on the purchase, operation, and maintenance of automobiles;\(^\text{30}\) are subject to higher interest rates when attempting to purchase a car; spend disproportionately more on commuting to work;\(^\text{31}\) and are more likely to miss work due to car problems.\(^\text{32}\)

Low-income populations are comprised disproportionately of women, who also tend to make more trips related to childcare and household servicing—including 75 percent more grocery shopping than men do.\(^\text{33}\) Shoppers tend to mix and match stores for food shopping based on criteria related to product mix, price, quality, and quantities desired and also the
relative proximity of suitable outlets to their homes and workplaces. Rural residents shop for groceries at more stores than do urban residents and travel farther to reach the stores. Nonetheless, the scarcity of large supermarkets in poor neighborhoods and the economic pressures that force low-income residents to shop in smaller stores in their neighborhoods remain significant factors in why poor people pay more for food. Federal nutrition programs such as food stamps and WIC (Women, Infants, and Children) do not pay for transportation costs incurred by households to procure food. The Summer Food Service Program, which is under-enrolled in large part because of transportation barriers, provides small multiyear, competitive grants for innovative approaches to overcome such barriers.

Although transportation costs represent only a modest share of the cost of food consumed at home—an estimated six to 12 percent—energy disruptions can cause significant hikes in the price of food, as was experienced in the first half of 2008. This is because both the food and transportation systems are highly energy intensive. Also, declining diesel oil prices through the 1990s tended to restrain food transportation cost increases; this trend is unlikely to continue for long. Rising energy costs hit low-income households especially hard as they struggle with maintaining an automobile, higher utility costs, and buying enough food for their families.

Disparities in Affordable Transportation Alternatives for Agri-food System Workers

Low-income rural households also experience problems with access to affordable transportation. Agri-food workers’ burdens in this regard are especially heavy, and the least paid among them also tend to be predominantly members of groups that are also vulnerable within communities: disproportionately younger (or older), female, immigrant (including those without legal residency status), and people of color. Most farm laborers and food service workers earn close to the minimum wage and get few additional benefits or perks. According to the U.S. Department of Labor, the national median wage in 2007 for waiters and waitresses was $7.62 per hour, and that for farm workers and laborers was $9.78 per hour. By comparison, the median for all occupations was $15.10 per hour. Dependence on public transportation reduces employment access far more than any other factor; when people who work at or near the minimum wage must make longer journeys to work, their income does not rise.

Agri-food workers also experience greater transportation challenges because of the dispersal of jobs across the metropolitan and rural landscape. As a subset, farm workers have special difficulties accessing transportation. In one study of farm workers in Mendocino County, CA, two out of five workers depended on rides from family members and other acquaintances; those who incurred transportation costs (i.e., were not living on farms) reported a mean cost of $40 per week—or roughly 16 percent of the average weekly wage—with a median of $30 per week. As other papers in this collection show, strong evidence exists of a correlation between lack of access to adequate mobility and lack of access to opportunities, social networks, and health-supporting services such as clinics and pharmacies. At the same time, anecdotal evidence suggests that farm workers with transportation issues are at higher risk for injury as a result of their greater reliance on older “junker” cars, traveling in the early hours of the morning, lower safety requirements (such as seatbelts) for farm-worker transport vehicles, and lax enforcement of safety regulations for such vehicles.
### Table 1. Energy Consumption and Emissions by Different Freight Modes

<table>
<thead>
<tr>
<th></th>
<th>Rail</th>
<th>Water</th>
<th>Truck</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuel</strong> (kilojoules per ton-kilometer)</td>
<td>677</td>
<td>423</td>
<td>2,890</td>
<td>15,839</td>
</tr>
<tr>
<td><strong>Emissions</strong> (grams per ton-kilometer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>41</td>
<td>30</td>
<td>207</td>
<td>1,260</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>0.06</td>
<td>0.04</td>
<td>0.3</td>
<td>2.0</td>
</tr>
<tr>
<td>Volatile Organic Compounds</td>
<td>0.08</td>
<td>0.1</td>
<td>1.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Nitrogen Oxide</td>
<td>0.2</td>
<td>0.4</td>
<td>3.6</td>
<td>5.5</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>0.05</td>
<td>0.12</td>
<td>2.4</td>
<td>1.4</td>
</tr>
</tbody>
</table>

*Information for this chart is based on the weighted average source distance—a single distance figure that combines information on distances from production source to consumption or purchase endpoint. For more information on method, refer to Pirog and Van Pelt, 2002 (endnote 55).*

### Table 2. Average Distance by Truck to Chicago Terminal Market, 1998

<table>
<thead>
<tr>
<th>Average distance by truck to Chicago Terminal Market (continental U.S. only)*</th>
<th># States supplying this item</th>
<th>% Total from Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grapes 2,143 miles</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Broccoli 2,095 miles</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Asparagus 1,671 miles</td>
<td>5</td>
<td>37</td>
</tr>
<tr>
<td>Apples 1,555 miles</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Sweet Corn 813 miles</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td>Squash 781 miles</td>
<td>12</td>
<td>43</td>
</tr>
<tr>
<td>Pumpkins 233 miles</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

*Information for this chart is based on the weighted average source distance—a single distance figure that combines information on distances from production source to consumption or purchase endpoint. For more information on method, refer to Pirog and Van Pelt, 2002 (endnote 55).*
Sustainable Food Systems

Table 3. Estimated Fuel Consumption, CO$_2$ Emissions, and Distance Traveled for Conventional, Iowa-based Regional and Iowa-based Local Food Systems for Produce

<table>
<thead>
<tr>
<th>Food system type/type of truck</th>
<th>Fuel consumption (gal/year)</th>
<th>$ value of fuel (2001 prices)</th>
<th>CO$_2$ emissions (lb/year)</th>
<th>Distance traveled (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional/semitrailer</td>
<td>368,102</td>
<td>581,601</td>
<td>8,392,727</td>
<td>2,245,423</td>
</tr>
<tr>
<td>Iowa regional/semitrailer</td>
<td>22,005</td>
<td>35,208</td>
<td>501,714</td>
<td>134,230</td>
</tr>
<tr>
<td>Iowa regional/midsize truck</td>
<td>43,564</td>
<td>69,702</td>
<td>993,243</td>
<td>370,289</td>
</tr>
<tr>
<td>Iowa local–CSA farmers’ market/ small truck (gas)</td>
<td>49,359</td>
<td>78,974</td>
<td>967,436</td>
<td>848,981</td>
</tr>
<tr>
<td>Iowa local–institutional/ small truck (gas)</td>
<td>88,265</td>
<td>141,224</td>
<td>1,729,994</td>
<td>1,518,155</td>
</tr>
</tbody>
</table>

Transportation, Agri-food System Sustainability, and Disparate Community and Regional Impacts

In global commerce, the agri-food sector presents special opportunities and challenges when it comes to transportation. Food, especially produce, is different from other commodities in that it is perishable and requires timely delivery and careful handling—including temperature control and cooling—to prevent spoilage. Globalized transportation of food enables surpluses from one region to efficiently make up for shortfalls in other regions, and one hemisphere to continue to supply familiar foods to the other following the latter’s growing season; it also makes available new markets for local agriculture.

Because both modern agriculture and transportation today are more energy intensive than in the past, when energy costs go up, food costs rise dramatically, making the global food system especially susceptible to inflationary pressures and communities vulnerable to rising energy prices. Additionally, the greater reliance on faraway sources for food has resulted in a loss of access to markets for many local and smaller-scale farmers, which, when combined with the loss of metropolitan farmland to urban sprawl, only exacerbates the vulnerability of food systems in many parts of the country.

Increased truck-miles and air-miles in food transportation worsen air pollution and climate change; increased roadway congestion causes more accidents; the loss of nearby slaughter and packing facilities increases travel times and stress for animals. Together, these factors accumulate social, economic, and environmental costs that are greater than what food source communities get in return for their products.

Increased Road- and Air-miles in Food Transportation

Environmentalists are increasingly concerned about the distance food travels from field to plate—typically 1,500 road-miles—which creates unsustainable demands on transportation, air quality, climate, and energy systems. One study revealed that the average distance for fruits transported to the Jessup, MD, terminal market was 2,146 miles, while
Transportation accounts for about 11 percent of the energy use in the food system. About 93 percent of fresh produce transported between cities in this country was carried by trucks, according to a 1996 USDA study. In addition to general emissions that affect our climate, truck emissions create disparate air quality-related health impacts on low-income and minority neighborhoods because of their greater proximity to highways and truck terminals. Causing even more concern is the rapidly growing air transport of food, which creates the highest CO₂ emissions per ton.

Table 1 shows the energy consumption and tailpipe emissions for different modes of transportation. Of course, the actual mode of transportation and the distance traveled varies by specific food product and its origin. Distances traveled by different products shipped from within the continental United States are given in table 2 (which also shows how much averages derived from travel within the continental United States may understate actual distances if a larger share of a product comes from Mexico). Energy consumption and emissions for different kinds of truck transportation participating in distinct local, regional, and the conventional national food system considered by Pirog et al. (2001) are given in table 3. This last table underscores the point that the sustainability of local food systems is mediated by the specific mode and fuel used in transporting foods.

Finally, the transportation sector is responsible for more than one-quarter of all emissions causing climate change. Many agri-food advocates are increasingly concerned about the implications of climate change for future agricultural productivity and food security in poorer regions of the world, given the greater likelihood of drought, soil erosion, extreme weather events, and higher pest prevalence. More sustainable transportation, together with an agri-food system that reduces energy and transportation demand, would help reduce burdens on future agriculture globally.

### Increased Consolidation of the Food Industry and Disparate Social and Spatial Impacts

Industrial agri-food’s specialization in certain crops has concentrated food production in regions and uses large quantities of fossil fuels to ship food around the country and the world. For example, 95 percent of the nation’s processed tomatoes and just under one-third of the fresh tomato crops come from California. In 2007, nearly $152 billion of agricultural products crossed U.S. borders as imports and exports, representing more than half the value of agricultural products sold by U.S. farms that year. This specialization, however, has reduced many “receiving” regions’ previous diversity of production and made them more vulnerable to shocks in the system. For example, agricultural modernization has favored large farm size, crop monocultures, mechanization, and increased chemical inputs. Moreover, research points to rising food insecurity among low-income farmers in some countries as subsistence production has been replaced by export-oriented mono-cropping. These challenges, of course, affect rural communities and predominantly smaller-scale and low-income farmers whose market reach is hurt by the loss of localized infrastructure and support for logistics (management of the movement of goods). Cheap energy and transportation subsidies have therefore enabled the consolidation and globalization of the agri-food sector.

The case of retail supermarkets and resulting disparities in healthy food access was presented in the first section of this paper. The increase in food miles traveled results from: (a) restructuring of logistical systems due to stricter requirements from retailers’ management of inventories; (b) realignment of supply chains so that more of the product from farm to supermarket is owned by a single firm or a strategic partnership of firms (which has happened to reduce costs and risks and also increase responsiveness to consumers); (c) shifts in production and distribution scheduling
decisions, with negotiated coordination replacing market coordination; and (d) changes in management of transport resources such as increasing the use of air instead of road transport for food.63

The consolidation of processing, wholesaling, and distribution operations results in fewer, larger, and more efficient facilities and the closure of more local and regional processing plants, warehouses, and related facilities. As a result, the plant closures cause greater economic insecurity and health risks for nearby communities.

The transportation sector also has experienced consolidation, with somewhat similar results. Railroad consolidations, for example, have increased the number of captive customers and, while the monopolization helps railroads financially, it also tends to distort the location of economic activity, creating or exacerbating regional disparities64—and therefore vulnerabilities—in the food system.

Food Versus Fuel and Related Health Impacts

The production of the most popular forms of biofuels—corn ethanol and palm oil—threatens to cause a major increase in greenhouse gas emissions.65 In the United States, corn ethanol poses special concern because of its net negative energy balance (that is, more energy is required to produce a gallon of corn ethanol than can be gained from it) and because its production and use contribute to air, water, and soil pollution.66 Some food security advocates worry that the continued expansion of biofuels is raising food prices in this country67 and elsewhere and causing malnutrition in many developing countries.68 Still others suggest that corn ethanol has a worse impact on the environment and human health than do conventional fuels such as gasoline and diesel.69 There are direct transportation impacts as well: as corn use shifts from exports and animal-feed use to ethanol production, grain transportation is affected because of changes in quantities transported to diverse destinations and modes of freight used for raw and finished products.70

To summarize the paper’s analysis, transportation policies and subsidies—when combined with cheap energy over the past six decades—have thus created patterns of spatial dispersion of people and food outlets over the metropolitan landscape in ways that pose special hardships for low-income food shoppers as well as agri-food workers in urban and rural communities. Transportation has also enabled structural change in the agri-food sector so that decisions made in the name of economic efficiency have generated many negative environmental, social, health, economic, and spatial consequences, along with increased costs and risks to society as a whole. These consequences call for a review of the basic goals and purposes of transportation policy so that environmental, social, and health needs and goals take priority over private gain.
Elements of a Sustainable Agri-food System

A primary contribution of the agri-food system is to deliver adequate nutrition to support the health of human communities now and into the future. However, contemporary industrial agri-food practices also create direct health problems (such as through the effects of pesticides on farm workers or widespread obesity among youth and adults) and indirect health problems (through diminished quality of air and ground water and the pervasive use of antibiotics in meat production, for example). These practices also endanger the very base upon which the food system depends, thereby threatening future food security and health. That is, they are unsustainable.

A sustainable food system promotes the health of individuals, communities, and the ecosystem. As this paper shows, transportation is implicated in many of the pathways linking the agri-food system and health. Sustainable food systems are typically organized around the following principles, on which consensus more or less exists:

- produce and distribute food so that all persons have adequate access to nutritious foods within neighborhoods;
- respect and operate within the biological limits of natural resources such as soil, water, and species;
- minimize energy inputs, recycle resources, and use renewable energy and other resources;
- support vital and diverse urban and rural economies;
- enable viable livelihoods and fair trade among producers, processors, distributors, retailers, and consumers;
- provide safe, fair, and satisfying working conditions for workers;
- treat animals humanely;
- sustain the amount and quality of land needed for food production; and
- promote democratic processes in decision making related to food and nutrition.71

Transportation Goals

The following goals are proposed for transportation policy and programs to help build sustainable food systems that promote human, community, and environmental health in the United States and globally.

1. Healthy food access for all, with special focus on the needs of low-income communities and communities of color, through appropriate land use policies and affordable transportation alternatives.
2. Affordable and reliable transportation alternatives for low-income agri-food workers so that they may have access to employment, food sources, and other basic needs.
3. Transportation policies and programs that prioritize regional linkages over national and global ones as they relate to food systems so that local producers are connected with local eaters; regional economic development is promoted through localized networks and infrastructure; small-scale farms are supported; air pollution and climate change impacts are reduced; and risks associated with agri-food concentration, dependence on distant sources, and energy price hikes are mitigated.
# Sustainable Food Systems

## Table 4. Desired Policies and Programs to Address Transportation-Related Agri-food Problems: Opportunities for Success

<table>
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<tr>
<th>Goals</th>
<th>Desired Policies and Programs</th>
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</table>
| Reduce disparities in access to healthy foods | Support local and metropolitan land use policies and planning for increasing neighborhood-based access to food retail sites such as stores, farm stands, and urban agriculture sites:  
  - Promote smart growth development that supports multiple transport modes and contains grocery stores, urban agriculture sites, and farm stands.  
  - Encourage transit oriented neighborhood design to include grocery outlets.  
  - Retrofit older neighborhoods for pedestrian, bike, and transportation access to food outlets and urban agriculture sites.  
  - Reduce required parking for grocery stores in exchange for public bus connectivity during peak grocery shopping times (weekends, especially).  

Support policies and programs that promote transportation access for low-income residents to grocery outlets and other healthy food sites:  
  - Promote paratransit or public-private partnerships for shuttle programs sponsored by supermarkets, congregate (subsidized) housing facilities and community-based nonprofits to provide affordable rides for grocery shopping.  
  - Develop and promote “grocery bus” routes with weekend service to connect low-income neighborhoods to full-service supermarkets, food pantries, and urban agriculture sites.  
  - Support community-based programs to create mobile markets or grocery van-delivery in urban and rural communities.  

Require transportation support in federal nutrition programs:  
  - Include transportation support for WIC, food stamp (SNAP), Summer Food Service, and farmers’ market-related nutrition programs to access healthy foods.  
  - Provide transportation support for small-scale farmers to sell at farmers’ markets in or near low-income urban or rural areas.  |
<table>
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<th>Goals</th>
<th>Desired Policies and Programs</th>
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| Promote safe and affordable transit for agri-food workers | • Increase funding for job access and reverse commutes for low-income employees, including agri-food workers.  
• Encourage metropolitan transportation system design to increase access for low-income agri-food workers in processing, wholesale, and retail jobs in metropolitan areas.  
• Encourage paratransit options (vanpools) for farm workers.  
• Review rules related to vehicle conversion for farm-worker transportation and safety equipment/use to increase transportation safety and minimize accidents. |
| Promote agri-food sustainability | • Support within transportation law small-scale farmers’ and processors’ transportation of product to farmers’ markets and other local outlets.  
• Encourage and support cleaner and more efficient vehicles, especially smaller trucks used for local food transportation.  
• Review and adjust tax structure as it relates to overall transportation subsidy so that social and environmental costs associated with emissions in agri-food transportation are reflected in prices, especially in the case of air transportation of foods.  
• Promote use of more sustainable modes of freight for long-distance food transportation, such as rail and water.  
• Increase competitive access to rail for food transport (via separation of ownership of rail infrastructure from that of rolling stock, e.g. rail cars), increase subsidy for rail relative to road and air, and break up geographic concentration of control over railway infrastructure (e.g. tracks) to increase competition.  
• Prioritize local and regional food transportation networks and infrastructure over long-distance ones.  
• Support the development of mobile kitchens and processing facilities in urban and rural communities.  
• Promote metropolitan planning to prevent sprawl, preserve farmland, and promote urban agriculture in transportation-related rights of way.  
• Minimize competition in agricultural production between food and fuel (since most biofuel is used for transportation) by giving food a clear priority.  
• Support the development and promotion of genuinely sustainable biofuels.  
• Support the widespread conversion of waste cooking oil into biodiesel.  
• Internalize social and environmental costs of corn-ethanol production and end subsidies for biofuels that are sourced from food grains. |
Sustainable Food Systems

<table>
<thead>
<tr>
<th>Goals</th>
<th>Desired Policies and Programs</th>
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<tbody>
<tr>
<td>General recommendations</td>
<td>• Promote greater coordination between transportation and agri-food policies and programs.</td>
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<td></td>
<td>• Provide greater support for intra-regional (versus inter-regional) transportation.</td>
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<td></td>
<td>• Encourage tighter links among transportation planning, policy, and programs and anti-sprawl</td>
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<td></td>
<td>and pro-urban planning.</td>
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<td></td>
<td>• Facilitate improved regional coordination to support multiple transportation modes and</td>
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<td>programs and diverse trip purposes and needs.</td>
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<td></td>
<td>• Develop transportation systems at the regional level to create positive economic impact,</td>
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<td></td>
<td>including through regional food systems.</td>
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<td></td>
<td>• Consider USDA’s Community Food Projects Competitive Grants Program as a model to promote</td>
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<td>community- and region-based collaborative approaches to improve food access, market access</td>
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<tr>
<td></td>
<td>to small-scale farmers, and affordable agri-food system transportation.79</td>
</tr>
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</table>

4. The agri-food system reconfigured as a resource to reduce energy and transportation demands and related problems through the development of more local food systems and truly renewable fuels.

Transportation Policies: Opportunities and Barriers

Many of the problems outlined in the first part of this paper are rapidly turning into emergencies—if they are not already emergencies. Their simultaneous occurrence presents something of a perfect storm for health and sustainability concerns. The upcoming authorization of the federal transportation bill offers a significant opportunity to make headway in addressing—and correcting—these problems. The crises related to rising incidence of obesity and diet-related diseases, climate change, and national energy and food security provide impetus to increase access to healthy foods as part of a preventive approach to improve health, build localized food systems, reduce the energy intensity of the agri-food system, and help the agri-food system contribute to the creation of sustainable transportation systems.

Specific recommendations that link policies and programs to emerging problems are presented in table 4.

Notwithstanding the policy and programmatic opportunities outlined in table 4, those seeking to meet health goals within transportation legislation face many barriers to success. These are outlined below.

The most obvious barrier lies in the structure of transportation funding, legislation, and governance—especially at the federal level. The majority of transportation funds are allocated by formulas tied to modes and trip purposes; this makes it hard to achieve the goals outlined here within the existing structure of transportation policy and policymaking. The
problem is that, at the national level, we fund and manage transportation programs primarily by mode, rather than by urgent societal needs or compelling national goals. We also allocate funding by state, making achievement of national goals even more difficult. This is further complicated by competition between donor and donee states (that is, states that send more gas taxes to the federal transportation budget than they receive in transportation funding, or vice versa), a situation made worse in the current recession because many of the donee states are in the hard-hit, former manufacturing belt of the Midwest. Moreover, we fund transportation through a myriad of other (non-Department of Transportation) agencies, including the departments of Agriculture (USDA) and Health and Human Services (HHS), leading to further fragmentation by sector. Such fragmentation of the program is the cause of many transportation-related problems experienced by communities and within metropolitan regions.

The problems posed by programmatic fragmentation suggest that addressing food- and health-related transportation problems, as recommended in this paper, could increase overall transportation inefficiency, if they are not coordinated well, that is, more silos are not the solution. Instead, the programs and policies recommended here must be tied to land use policies that reduce transportation demand, improve access and regional connectivity (regardless of trip mode or purpose), and improve coordination between transportation providers and the system as a whole. In addition, policy must prioritize regional food system transportation connectivity over national or international ones, support more energy-efficient and less polluting modes and vehicles, and more effectively use spare capacity in existing programs to support food access for low-income consumers and regional market access for small-scale farmers. This will require coordination across federal agencies such as Department of Transportation (DOT), USDA, and the Environmental Protection Agency (EPA).

Lack of precedence within transportation legislation for key asks: To date, there is little precedence for transportation legislation incorporating many of the policies recommended in this paper. Some policymakers may view the recommendation to increase transportation assistance to low-income households participating in federal nutrition programs as more appropriately falling within the agriculture law. USDA already funds transportation for rural providers of the Summer Food Service Program, which feeds low-income children. The recommendation to prioritize agriculture for food over fuel may be viewed as falling under agriculture or energy, rather than transportation, even if most of the corn ethanol is destined for transportation-related uses.

Highways and roads (rather than access) as the primary orientation of transportation policy: Despite the progressive changes ushered in by ISTEA and its successors, transportation policy continues to be driven by a dominant orientation toward roads and highways, rather than toward multi-modality that provides access to goods, services, employment, healthy food, etc., thereby meeting community and regional needs and goals. Local land use decisions often follow, rather than drive, regional transportation planning by metropolitan planning organizations. Because land use decisions are local, more support is also needed than is available within the transportation legislation for transportation planning that effectively integrates land use and transportation to promote smart growth, that is, increase mixed-use, transit oriented development and neighborhood-based access to basic needs. Similarly, many advocates believe that transportation programs and funding tend to be designed to serve the interests of powerful groups—highway builders, auto manufacturers, and petroleum corporations—and that relationships of power and patronage, rather than systematically derived community needs, drive transportation policy.
Impending revenue shortfalls from gas taxes: The expected shortfalls in the Highway Trust Fund present a challenge to funding new programs in the transportation legislation. Policymakers will need to find additional sources of funding that are adequate, sustainable, and fair. To this end, policies that improve health can result in savings in other areas, such as healthcare cost savings and can present new funding alternatives to fuel taxes. Such solutions go beyond the oft-suggested road and congestion pricing, both of which may further disadvantage the communities already at risk from current policies. More research is needed related to the net benefits and costs of transportation programs, including those suggested in this paper.

Convergence Opportunities
Efforts to build sustainable food systems are inherently boundary spanning and require work across disciplines, sectors, professions, and geographic scales. The federal transportation law authorization process provides unique opportunities to build partnerships among interests in sustainable agri-food systems, smart growth, public health, community economic development, anti-poverty and social justice, labor, energy security, and climate change mitigation.

Coalitions that have emerged to advocate for transportation policy reform, such as the Transportation Equity Network, Transportation for America, Surface Transportation Policy Project, Complete Street Coalition, and Smart Growth America, are calling for proposals with broadly similar goals as those suggested herein, even if they are largely silent on agri-food issues addressed in this paper. Among the coalitions advocating for more sustainable agri-food systems or elements thereof are the Community Food Security Coalition, National Sustainable Agriculture Coalition, Food Research and Action Center, National Family Farm Coalition, and American Farmland Trust. Past efforts by these groups to bring attention to sustainable agri-food issues within the transportation law have borne little, if any, fruit. We hope that the broad health rubric under which these papers are assembled will help coalesce the many groups mentioned above and attract new groups into the fold to add power to related transportation advocacy.

Additionally, the specific proposals made by this paper call for greater collaboration and coordination among various departments at the federal and state levels. For example, the proposals in this paper could benefit from partnerships among:

- DOT and USDA (and Department of Health and Human Services or the Department of Education when applicable) to provide transportation assistance to nutrition program participants in order to procure food, to improve neighborhood-based access to healthy foods through the use of transportation resources, and to support small-scale farmers’ efforts to bring products to local markets in underserved areas. This would increase participation in nutrition programs such as SNAP, WIC, Summer Food Service, and Farmers’ Market Nutrition; it would also increase the benefits of participation, improve health, and reduce healthcare costs.
• DOT, USDA, and the Department of Labor to provide affordable transportation for urban and rural agri-food workers to access jobs, food, healthcare, and other vital services.

• DOT, USDA, the Department of Energy, and the EPA to support the development of more truly renewable energy sources in environmentally sensitive ways, including through the use of switchgrass and waste cooking oil; to support the development of fuel-efficient vehicle and transportation systems; and to discourage the use of food grains for producing fuel. Such cooperation is sorely needed to eliminate the competition between food and fuel.

• USDA, DOT, and the EPA to mitigate the problems caused by long-distance transportation of food in international trade.

Conclusion

This paper presents four clear problems impacting the interaction between agri-food and transportation systems and suggests possible actions that could solve them. Some solutions can be addressed through transportation legislation, but clearly efforts need to extend to legislation that addresses energy, agriculture, child nutrition, labor, and health and human services.

Whatever the final mix of policies, successful efforts will result in affirmative responses to the following questions:

• Do neighborhoods provide convenient access for all residents to healthy foods and other basic goods and services? Do they allow food shopping without the need for a car?

• Beyond basic accessibility, do transportation policies and programs enhance local and regional quality of life through improved multi-modal access for all residents to the region’s resources and destinations and through reduced congestion?

• Does the regional transportation infrastructure support local food producers and processors to efficiently market to local consumers, in addition to national distribution channels?

• Do transportation policies support modes of freight, fuel choices, and vehicle designs such that air and water pollution, greenhouse gas emissions, and energy use are minimized?

• Are the currently externalized social, health, and environmental costs and increased risks posed by the global, industrial food system internalized in the price of food and transportation? Are associated costs and benefits fairly distributed across diverse income and racial groups in urban and rural areas?

• Does the agri-food system support transportation policies with renewable and efficient options for energy that reduce environmental impacts on air, water, and climate; minimize competition with food production; and reduce dependence on foreign sources for energy?

The transportation authorization process presents opportunities to break bad habits, extend positive developments from the past, and launch bold new initiatives that set us on a better course. Promising directions that build on positive aspects of SAFETEA-LU include, for example, correcting inequities in funding across states; providing dedicated funding to states to meet air quality requirements; and creating pilot programs to test alternative transportation funding schemes (which should be extended beyond tolling and road pricing schemes that may hurt the transportation-disadvantaged).

Clearly, other strategies are needed to eliminate disparities and problems caused by the current agri-food–transportation system linkage: extending transportation programs to increase access to healthy food and agri-food employment, reducing railroad concentration, ending competition between food and fuel, and more.