



A RUPRI RURAL POLICY BRIEF

Rethinking Federal Investments in Rural Transportation: Rural Considerations Regarding Reauthorization of the Surface Transportation Act

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Introduction

The Rural Policy Research Institute (RUPRI) offers this Rural Policy Brief as a contribution to the current dialogue regarding the ongoing nature and scope of transportation investment in the United States, specifically the implications of these decisions for our nation’s rural communities and regions. The policy recommendations outlined below reflect a detailed, evidence-based analysis, but also incorporate the accumulated policy and program insights gained in over two decades of RUPRI assessment of the rural differential impacts of public policy.

RUPRI’s rural transportation policy principles, therefore, are fully consistent with our emphasis upon a new paradigm for public and private investment in rural America: “Rural Regional Innovation.” This framework, equally applicable in all public sectors¹, is premised upon several overarching principles for policy and program practice:

- Recognizing and valuing the interdependence of rural and urban economies and regions, and the vital contributions that rural people and places make to national prosperity and well-being, particularly through the stewardship of the nation’s natural and cultural resources.
- Encouraging systems-based and collaborative approaches to the design and delivery of public services in rural areas, across jurisdictions and sectors, as a direct, pragmatic response to the challenges of long distances, low densities, limited institutional capacity, and declining fiscal resources.
- Identifying, valuing, and stewarding economic, social and environmental assets of rural regions to create new economic opportunity for all rural people, particularly those in regions of persistent poverty and disinvestment.
- Focusing on innovation and entrepreneurship as the key to rural economic development, to ensure that rural regions and communities are not only maximizing their economic competitiveness, but also their resilience in the face of natural and economic challenges and/or disasters.
- Providing the complement to metropolitan economic clusters that thrive on proximity and the strength of interactions, through supporting and growing economic activities that need and value space, and can thrive on community and virtual networks.

¹ In this instance and elsewhere in this policy brief, references to “rural regional innovation” and “regional planning organizations” are inclusive of tribal planning organizations and recognize the importance of sovereignty in determining the nature of consultation, engagement and collaboration in respect to transportation and related investments.

Executive Summary

The upcoming reauthorization of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) provides an opportunity to modernize, strengthen, and integrate the transportation system that connects rural people and places to each other and to the wider world, and to improve transportation, economic development and quality of life outcomes for rural America.

The importance of rural transportation in creating conditions that improve safety, travel, the environment, economic opportunity, and responses to demographic change has long been recognized by the federal government, and has been reinforced by the increasing recognition of principles to enhance the quality of life for all American communities.

The complexity and diversity of rural America, and the associated variety of needs and expectations for transportation, call for flexible and integrated responses at the local, regional, state, and federal levels.

The quality and quantity of the transportation systems that serve rural America have been steadily eroding for many decades. Economic and demographic shifts, deregulation, and underinvestment, have all had detrimental impacts on the economic opportunities in rural America and the quality of life of rural residents.

And, as is the case in other public sectors, rural transportation decision-making has suffered from the more limited resources and technical capacities which rural county and municipal jurisdictions have at their disposal, compared to their urban counterparts. Consequently, rural interests are less able to participate in transportation planning and priority setting.

Transportation is an essential component of rural economic development and quality of life considerations. However, in the past federal transportation priorities and investments have not always been adequately aligned with local and regional needs and priorities because of structural impediments to collaboration. This has resulted in economic development, cost of living, accessibility, safety, health, and overall quality of life outcomes that have not achieved their full potential.

As Congress begins consideration of this omnibus reauthorization, five policy goals should serve as principles against which to assess whether the diverse components of this new legislation are actually positing policy innovations which can yield more positive, substantial, and long-term outcomes for rural America, and thus for the nation as a whole. Will this approach:

- Build capacity to support local engagement in planning, decision-making and resource allocation?
- Encourage innovation and integration to enhance the efficacy and efficiency of these investments?
- Shift resources, where appropriate, to address the most pressing rural needs and opportunities?
- Encourage integrated regional planning and implementation? and
- Lead to improved quality of life in rural communities?

1. The Policy Context for Rural Transportation

The multi-year legislation that funds the nation's transportation programs – the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) expired on September 30, 2009. Although a draft reauthorizing surface transportation legislation was introduced in the House Transportation and Infrastructure Committee in June 2009, Congress has yet to act. As a result, federal highway and transit programs have been operating on a series of short-term extensions. The twin concerns about the slow pace of economic recovery and the size of the federal deficit have coincided with growing demands for a more coherent, comprehensive, and accountable national transportation strategy. These provide a very challenging context for the reauthorization efforts in the 112th Congress, where there are widely varying perspectives on both the nature of this omnibus title and its ultimate funding level.

Amid this uncertainty and debate, there has also been an unfortunate framing of transportation priorities by some advocates, so as to place rural and urban interests in direct opposition. For example, a July 2009 *New York Times* article² bemoaned “a pattern of spending disproportionately on rural areas” that was apparently evident in transportation projects approved under the federal stimulus package (American Recovery and Reinvestment Act). The article cited Robert Puentes of the Brookings Institution's Metropolitan Policy Program, “...states take this peanut-butter approach, taking the dollars and spreading them around very thinly, rather than taking the dollars and concentrating them where the most complex transportation problems are” referring to the 100 largest metropolitan areas. Such comments stir advocates to one's position, but fail to appreciate the immense challenges which policymakers face in crafting approaches to actually address the diverse needs of all Americans. They also ignore the fact that many rural counties and small towns did not receive any transportation funding at all under the American Recovery and Reinvestment Act (ARRA).

Rural transportation advocates argue that the current system for planning, building, and maintaining transportation infrastructure in rural areas falls short of meeting the need for access to jobs, shops, services, education, and healthcare within small cities, towns, and their surrounding regions. A position paper from the National Rural Assembly (2010) saw the reauthorization of the Transportation Act as an opportunity to modernize, strengthen and integrate the transportation systems that connect rural people and places to each other and urban commercial centers, while protecting landscapes, habitats and livelihoods of rural communities” (p.1). The paper laid particular stress on the need to incorporate diverse rural voices, including Native American tribes in the conversation. “If transportation planning and construction is to support the needs of rural residents, regional economic development, interstate and national commerce then *all* voices must be part of the next federal transportation bill” (p.1).

The National Association of Development Organizations (NADO) has proposed a series of policy goals that envision the development of a modern, sustainable and seamless surface transportation network that fully integrates and connects the nation's small urban and rural regions with global, metropolitan and neighboring markets. In particular, NADO is asking for enhanced leadership and decision-making roles in statewide and regional transportation planning, program, and project investment prioritization processes to be given to the existing system of metropolitan planning organizations and the emerging network of rural planning organizations. They envision that this devolution of responsibilities would be accompanied by changes in legislation and regulations to provide dedicated funding, higher levels of

² Michael Cooper and Griff Palmer, “Cities Lose Out on Road Funds From Federal Stimulus,” *New York Times* July 9, 2009.

integration of statewide and regional transportation planning with economic development, housing and land use, and increased investments in public transportation (NADO, 2010).

The last formal policy statement from the U.S. Department of Transportation about this topic was when the Rural Transportation Initiative was launched in May 1999. The initiative had the aim of increasing the capacity of rural America to play a more integral role in the planning and decision-making that shape transportation systems. It also provided an array of technical assistance and grant programs to enable communities to plan, develop, and improve air, surface and water transportation infrastructure (Federal Highway Administration, 2001). The Initiative had five objectives:

- Improve transportation safety in rural areas to reduce the incidence and severity of accidents and their associated costs.
- Allow residents of rural areas and small communities access to the destinations and goods to attain their desired quality of life.
- Provide the transportation service that will afford rural areas and small communities the opportunity to reach their economic growth and trade potential.
- Enhance the social strength and cohesiveness of small communities and protect the natural environment of rural areas.
- Maintain the national security and border integrity necessary for the well-being of all Americans.

The hoped-for outcomes are shown in the box at the right.

At the same time, the U.S. Department of Agriculture and the U.S. Department of Transportation signed a memorandum of understanding in which they agreed to work together to address long-term agricultural transportation, rural passenger and freight mobility challenges. One outcome of this agreement was the creation of the Rural Transport Tool Box intended to help public and private stakeholders in planning, developing and improving rural areas and small communities through transportation projects. This website maintained by the National Transportation Library³ describes the array of programs available through the USDA Rural Development, Rural Business Cooperative Service, Rural Housing Service, USDA Forest Service, the USDOT's Rural Transportation Initiative, and a range of USDOT programs for surface transportation, highways, transit, aviation, rail, community enhancement, and safety.

³ See <http://ntl.bts.gov/ruraltransport/toolbox>

Rural Transportation Initiative Outcomes

- **Safety** – highway deaths and injuries decrease; rail-highway crossings are upgraded; roads are upgraded to reduce run-off-the-road incidents; medical response time is shortened.
- **Travel** – non-auto alternatives for those who cannot or choose not to drive increase; solutions are found to increase and support rural tourism.
- **Environment** – rural air and water as well as culture, historic, scenic and natural resources are protected; transportation does not have an adverse effect on land use in rural areas and small communities.
- **Economic Activity** – efficient transport of passengers and freight through rural areas and small communities allows these communities to compete on an equal footing for the business created by the provision of new and different transportation services.
- **Responses to Demographic Changes** – older residents' transportation needs are met and mobility choices to access jobs are assured.

More recent opportunities for inter-agency collaboration focused on regional rural strategies may be found in the Regional Innovation Initiative, proposed by the U.S. Department of Agriculture, and the Sustainable Communities Initiative, which brings together the U.S. Department of Housing and Urban Development, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency a set of principles for livable communities. Here, recognition is given to the close inter-relationship between transportation and other factors important to quality of life such as housing, economic development, community development, health and safety (see box below).

Partnership for Livable Communities' Principles

Provide more transportation choices. Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.

Promote equitable, affordable housing. Expand location- and energy-efficient housing choices for people of all ages, incomes, races, and ethnicities to increase mobility and lower the combined cost of housing and transportation.

Enhance economic competitiveness. Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers, as well as expanded business access to markets.

Support existing communities. Target federal funding toward existing communities—through strategies like transit oriented, mixed-use development, and land recycling—to increase community revitalization and the efficiency of public works investments and safeguard rural landscapes.

Coordinate and leverage federal policies and investment. Align federal policies and funding to remove barriers to collaboration, leverage funding, and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy

Value communities and neighborhoods. Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.

Source: www.epa.gov/smartgrowth/partnership

It is unfortunate that “livability” has become such a divisive term within this policy dialogue. Many rural transportation advocates and policymakers have expressed strong reservations about their perception of the ultimate endgame for this “agenda,” fearing additional unfunded federal mandates, and/or a waste of resources more badly needed elsewhere. These are very real concerns. Rural communities must deal continually with new regulations, i.e., new reflectivity mandates, environmental permitting, and other mandates which are very costly for local governments, consume much staff time, and are seldom federally funded. There is also no doubt that rural areas would benefit from more streamlined permitting, and greater regional and local planning control, with incentives for smart design.

However, rural regions must also be assured the same level of choice in pursuing multiple transportation goals and options that their urban counterparts receive. While some will argue that not all these principles are applicable in a rural context, or less conversant with rural priorities, we must guard against semantics getting in the way of wiser rural system design. This is about rural competitiveness, quality of life—locally-defined, and “place-making” considerations, all recognized as very important in attracting and retaining young people. All these outcomes are just as important to rural families as to those living in cities.

2. Transportation Issues in Rural America

The issues facing rural transportation are many and complex. Some can be classified as *demand-oriented* issues that concern the needs and expectations of the users of these systems; many others are *supply-oriented* issues that relate to the availability, performance and capacity of transportation systems. Together these provide a picture of the adequacy of the system, and some indications of where payoffs from investments are likely to be the greatest. The main sources for these issues are the Federal Highway Administration (2001), Stommes & Brown (2002), and Twaddell & Emerine (2007). A later section will explore indicators for quantifying these issues together with outcome measures that try to capture the economic, social, and environmental consequences of action or inaction in making changes to the systems.

Demand-oriented issues

Expectations of the nation’s public transportation system are high, and certainly no less so in rural America. These are reflected in the Federal Highway Administration’s own vision:

The quality of life and economy in rural America depends on an efficient, effective, comprehensive, and coordinated multimodal transportation system that provides choices for the movement of people and goods and allows quick transfers between modes when and where they are needed. The need to maintain transportation linkages between rural and urban area is very important to the economy, public health and safety, and the social structure of rural America. (FHWA, 2001)

In practice, demands and expectations differ according to the social, economic, and geographic circumstances of the user. People with low-incomes, the elderly, and those living with disabilities in rural communities need transport options that allow them to access job and educational opportunities, medical facilities, and normal day-to-day interaction with friends and family. Yet Federal statistics show that more than 1.6 million rural households do not have access to a car, and that households in the lowest 20 percentile income bracket spent 42 percent of income on transportation. Moreover, 38 percent of rural residents live in areas with no public transport.

Research commissioned by the Transportation Research Board (Twaddell & Emerine, 2007), which involved focus groups, surveys, and case studies, confirmed that accessibility to jobs, shops, services, education, and healthcare was the number one issue for rural communities. However, there were geographical differences depending on the proximity to or remoteness from large urban centers. Communities in exurban areas are primarily concerned with access to jobs in adjacent cities; tourist destination communities focus on welcoming visitors and opening up access to tourist attractions;

communities engaged in agriculture, mining or forestry tend to be more interested in access to markets, and in attracting new economic activity to diversify their economies.

The same research also highlighted that in areas of growth, demands for improved access were tempered by some of the possible consequences, such as encroachment on agricultural land, scenic views and cultural or historic resources, as well as pollution, sprawl, changing community character and values, loss of sense of place, and competition for traditional, small businesses from large chain stores.

Supply-oriented issues

As noted by Stommes & Brown (2002), “In the last 25 years, transportation in rural America has been transformed by deregulation, devolution of Federal responsibilities to state and local governments, and traffic growth created by the booming economy of the 1990s. All forms of rural transportation – highways, passenger service (transit, intercity bus, and passenger rail service), trucking, inland waterways, rail freight service, and passenger air service – have been affected”(p.2).

In the last 25 years, transportation in rural America has been transformed by deregulation, devolution of Federal responsibilities to state and local governments, and traffic growth created by the booming economy of the 1990s

Stommes & Brown (2002)

- Deregulation of intercity bus services, while leading to greatly improved long-haul service, no longer required cross-subsidization of low revenue routes from the profits of high-earnings routes, with the result that only 5,000 locations are now being served compared with 11,000 in the 1980s.
- Deregulation of the trucking industry led to significant growth in smaller trucking companies – there are some 500,000 – that provide more frequent and faster services in response to just-in-time manufacturing demands and online commerce, but such increased traffic has also resulted in increasing road accident fatalities and increased maintenance costs for local governments.
- Deregulation of railroads led to a reduction in the network by one third from a century ago as aggressive streamlining led to consolidation and the abandonment of unprofitable rural track.

Some of the impact on freight haulage in rural areas has been offset by the rise of short-line operators, but the creation of Amtrak in 1971 led to a halving of passenger routes leaving rural towns without any service. Amtrak now focuses on a network linking major metropolitan areas with fewer than 200 non-metropolitan communities on its routes and few connections to local transit systems.

- Deregulation of the passenger air services in the 1970s allowed air carriers to enter or leave markets at will. Airports in some 100 rural communities are thus dependent on subsidies from the Essential Air Service program to remain in operation, and these commitments will always be in peril, as budgetary considerations challenge the efficacy of every rural federal allocation.

Although these decisions taken in the 1970s and 1980s were made in what was deemed to be in the

national interest, they have left rural America with a greatly diminished transportation system. Other Federal decisions, such as the North America Trade Agreement, have led to major increases in heavy truck traffic and concerns about road failure and repair costs on the rural road network.

According to the Federal Highway Administration (2001), there are 3.1 million miles of rural roads, accounting for 80 percent of the national road network. They carry about 40 percent of vehicle miles traveled. About 50 percent are paved and 90 percent are two-lane or less. City and county governments are responsible for 95 percent of unpaved and 55 percent of paved roads. This extensive rural road network represents a legacy from a rural America that was once more highly populated than it is today. With population declines in many rural regions, the loss of tax revenues has left county and city governments without the financial means to maintain and preserve this network. As a result, some 40 percent of county roads are not adequately maintained and there is a major backlog of work needed. Also funds to serve new economic development projects for tourism, agriculture, or manufacturing are hard to find. In areas of growth, on the urban fringes and in high amenity areas, local governments are finding it hard to respond to increases in traffic, especially on roads that are outside the Federal-aid system.

There are many consequences of this continuing underinvestment, the most obvious being that of safety. According to the National Highway Traffic Safety Administration⁴, rural areas accounted for 56 percent of fatal road crashes and 57 percent of fatalities nationwide. These are attributed to excessive speed, alcohol use, and accident response times and/or time to receive medical treatment.

Public transit, comprising mainly buses and demand response services, are particularly important for elderly and people with disabilities, but also necessary for those who do not have access to private cars. There are about 1,200 systems operating in half of rural counties nationwide, but they tend to be local in nature, and generally not connected to regional and national passenger systems. Thirty-eight percent of rural residents live in areas with no public transit. There are also 3,700 systems specifically for the elderly and people with disabilities, and others operated by human services agencies.

Matters are made worse by both geographic challenges and the complex system of responsibilities and funding. “Long distances between population centers, steep grades, mountain passes, more dramatic weather events and effects on road conditions, and a dispersed system with high unit costs for service delivery, operations, and maintenance” (FHWA, 2001) provide the operating context for rural transportation. But responsibilities are spread across multiple layers of government, private corporations, and nonprofit agencies in ways that make coordinated and comprehensive transportation planning and implementation very challenging. Roads are funded and maintained by different levels of government – cities, counties, states, and federal. State and federal governments provide much of the capital funding for rural public transit leaving operations to local governments and nonprofit agencies. Rail rights-of-way are privately owned and maintained, and airports are owned by public or quasi-public organizations with carriers owning the facilities.

Finally, there are the related issues of technical capacity and local engagement in transportation planning and priority setting. The remoter the rural area, the less likely will be the availability of professional staff resources and technical capacity to work on these complex transportation issues, and the more likely that decisions that have a direct impact on rural communities will be taken at the state level, often without adequate local consultations. Hence the concerns expressed by organizations such

⁴ National Highway Traffic Safety Administration, Traffic Safety Facts 2007 Rural/Urban Comparison

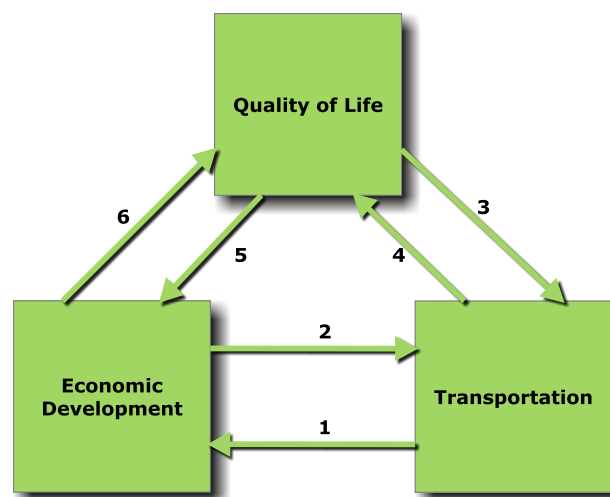
as the National Association of Development Organizations, the Rural Assembly, and Transportation for America, referred to in the previous section.

3. Transportation, Economic Development, and Quality of Life in Rural America

The policy context and the complexity of the issues associated with rural transportation as described earlier, provided the Rural Policy Research Institute (RUPRI) with the background to conduct a major review of the empirical evidence on the relationships between transportation, economic development, and quality of life in rural America. This review (Johnson et al, 2011) was intended to provide a sound basis for policymakers to make decisions on the allocation of resources for rural transportation. The results are summarized below.

As shown in Figure 1 below, there are six sets of relationships between transportation, economic development, and quality of life.

Figure 1: Relationships between transportation, economic development, and quality of life



1. Role of transportation in economic development

In general terms, well-functioning transportation can be expected to increase the productivity of private capital, reduce the costs of production, increase the size of labor markets, increase property values, and increase the overall global competitiveness of regions. Research on the relationship between transportation and economic development provides the following findings:

- Transportation investment is a necessary but not sufficient condition for economic development. If an economy is basically sound and growing, then it will continue to grow; if it is basically depressed it will remain depressed. However, many other factors are important, such as levels of education and skill, and the availability of water and sewers.

- Improvements to the highway network may lead to economic development at or near access points and may improve incomes in those counties, but it may also lead to lower rates of economic development in adjoining counties without such access.
- The economic base of some regions near larger centers may be undermined by improved transportation, as consumers spend their money in these centers rather than locally.

2. Effect of economic development on the demand for transportation infrastructure

Growing economies place demands on infrastructure, creating congestion and increasing the rates of depreciation. While growing economies increase costs of infrastructure investment, through higher right-of-way costs and higher legal and planning costs, they also provide the rationale and the financial means to invest in additional transportation capacity. One interesting research finding:

- A ten percent increase in personal income leads to a three percent increase in miles traveled and a 1.7 percent increase in the number of trips.

3. Role of transportation in improving quality of life

A well-functioning transportation system will increase safety and convenience, reduce environmental impacts, and improve access to public and private services (education, health, entertainment, retail, government). It can also contribute to healthy lifestyles by encouraging walking, biking, and other outdoor activities. Research points to findings in a number of facets of quality of life:

Accessibility

- Accessibility is a function of transportation infrastructure, land use, individual needs and preferences, and time.
- Rural public transit is important to youth, elderly, low income and disabled with few alternatives.
- Communications technology can provide an alternative means of achieving accessibility through telemedicine and distance learning.
- Improved transportation increases accessibility for rural residents to urban employment and amenities, while at the same time making rural areas attractive to urbanites. This in turn increases population and traffic with the possibility that an area's basic attractiveness is undermined.

Safety

- Driving in rural areas is more dangerous than elsewhere – a function of speed, lower seat belt use, older cars, heavier vehicles, and poor road design and conditions.
- Improvements to design and enforcement, and the creation of travel options can have a big impact on rural quality of life.

Health and medical care

- Rural residents travel greater distances to access medical care.
- Spatial inequalities in rural health care are in part a function of transportation challenges and limited options for rural residents. The availability of public transport is critical for the elderly, people with disabilities, and those on low incomes.
- Lack of options for travel on foot or bike in dispersed settlements contributes to obesity in rural youth; conversely more transport options may reduce health care costs.

Cost of living

- Costs of transportation are higher for rural residents, a function of longer distances traveled to work and other activities, and the use of less fuel efficient vehicles. A lack of options means that higher fuel costs adversely impact family budgets. The poorer the family and county, the higher the proportion of income spent on transportation.
- Rural poor will disproportionately bear the costs of carbon taxes, fuel standards and other measures to reduce greenhouse emissions.

4. Effect of changing quality of life on transportation

It can be expected that as quality of life improves, there will be increasing demands for more sophisticated transportation systems and better access to education and recreation.

- There may be merit in pursuing the notion of “sustainable transportation” in which people, goods and information are moved in ways that reduce impact on the environment, economy, and society. This might include improving transport options (public transport, cycling, walking), using cleaner fuels and technologies, and making full use of telecommunications.
- Restrictions on transportation to achieve some level of sustainability may increase further the accessibility challenges for rural residents and businesses, although measures to make transportation more efficient and cost less (or to reduce the need for travel) should disproportionately yield benefits for rural residents.

5. Role of economic development in improving quality of life

It is reasonable to assume that if economic development leads to increasing incomes, and more and better jobs, it will also enable the provision of better services and facilities. One research finding suggests that:

- Improvements in regional economic performance, coupled with local environmental enhancements, will raise quality of life and provide additional reasons for rural residents to stay in rural areas.

6. Role of quality of life in economic development

Less appreciated is that regions with increasing quality of life will be more attractive to business investment and skilled workers:

- Current thinking on economic development supports the idea that “jobs follow people” into those rural areas that offer a combination of natural and built amenities, quality public services, and adequate infrastructure. These areas are more likely to have growing population, jobs, and income.

Research findings clearly show the critical importance of transportation investment and its ability to create both positive and negative outcomes in terms of economic development and quality of life for rural regions and communities. A positive cycle can be achieved by pursuing transportation investments that produce significant and positive quality of life outcomes for accessibility, safety, health and cost of living. These will improve prospects for economic development, which in turn will generate the resources for more investments in transportation. Conversely, transportation investment that does not give sufficient regard to quality of life outcomes are more likely to diminish the attractiveness of rural areas for economic development and may lead to unintended negative consequences for rural residents, including a reduced ability to pay for transportation improvements and services.

This implies a positive result from policies and regulations which encourage a shift from a reliance on centrally-determined engineering standards to one that allows local and regional citizens, and their jurisdictions, greater capacity and opportunity to identify the outcomes that are most important to them, and then to tailor transportation investments that are most likely to achieve those outcomes.

4. Policy Implications

A combination of the articulation of current rural transportation issues, and the results of empirical research on the relationships between transportation and economic development and quality of life, particularly in a rural context, points to a set of policy goals that should frame a “rural regional innovation” approach to transportation planning and resource allocation across rural America. These policy goals are grouped into five main themes.

Building capacity to support local engagement in planning, decision-making and resource allocation

- Decisions about transportation priorities and approaches should be made as locally as possible, although there should be consistency with regional and national priorities.
- Regional intermediaries, such as regional and tribal planning organizations, should be given the standing and resources to act in an effort to achieve this outcome, especially for low-capacity rural and tribal areas, between local communities and state departments of transportation and the U.S. Department of Transportation. Regulations should require consultation and engagement with diverse interests at the local level.
- High growth exurban areas should be encouraged to pursue integrated planning to better balance conflicts between new infrastructure development and environmental/community protection.

Encouraging innovation and integration for effective rural transportation outcomes

- Resources and incentives should be available for innovative solutions to transportation challenges at the community and regional level.
- Telecommunications and smart technologies may have particular payoff in terms of road safety, health, education, transit integration.
- Priority should be given to finding ways of overcoming inferior access to emergency medical care.
- Emphasis should be on the potential for multi-modal infrastructure – creating integrated freight and passenger systems wherever possible across highways, transit, rail, air, and water.
- The concept of “sustainable transportation” should be given greater consideration, as a potential vehicle for intentionally integrating economic, social and environmental objectives.

Shifting resources, where appropriate, to address the most pressing rural needs and opportunities

- Resource allocation should be related to the specific needs and characteristics of rural communities – not on a “one size fits all” basis – precise rural definitions are less important than recognizing the spectrum of rural needs and possibilities.
- Transportation funding and planning should be measured against outcomes rather than uniform standards.
- Emphasis should be less on large-scale projects (unless justified by clear regional or national priorities) and more on local upgrades and repair tied to coordinated plans for land use and economic development, and consistent with triple-bottom-line objectives. (Small federal transportation investments in rural regions can make a huge relative difference.)
- Heavy truck routes through rural areas should be defined and improved, with additional resources available to counties for repair and maintenance on these routes.

Creating integrated regional planning and implementation

- Rural transportation should be part of rural regional innovation efforts integrating issues of economic development, education, health, housing, telecommunications, environment, and energy. This should be an integral component of ongoing federal efforts to achieve higher levels of inter-agency collaboration within federal government, and between levels of government and the private and nonprofit sectors.

Supporting greater attention to rural “placemaking,” through quality of life investments

- Safety on rural roads should be a major priority, exploring traffic calming, improved road design, maintenance and signage, speed restrictions and enforcement.
- Livability and walkability concepts are not just for the big cities; they apply also to small towns, where the absence of sidewalks, heavy through traffic, and poor lighting and road design make walking and cycling difficult and dangerous.
- Effective transit should be recognized as a critical component of rural quality of life, particularly for people with disabilities, elderly, young people, poor households, and people without access to a car. Innovation should be encouraged to achieve reasonable cost solutions to mobility in low-density areas.

5. An Emerging Framework for Improving Rural Transportation Investment Choices

This policy brief summarizes the work of a team of RUPRI scholars and analysts working over the past half year. The research literature regarding transportation is voluminous, but the rural component of this sector's portfolio needs much greater attention and research. Significant space limitations have challenged our narrative here, but RUPRI work in this regard will be ongoing.

The evidence-based review summarized in Section 3 provided a rich source of findings about transportation, economic development, and quality of life, and the relationships between them. It also suggested the need for a new typology for rural transportation that would provide a means for better understanding the different transportation needs that diverse population groups in different places have, as well as whether the current transportation infrastructure is adequate to meet those needs.

This section describes that ongoing RUPRI work on that rural transportation typology and on the development of indicators for measuring performance and outcomes of rural transportation investments. The eventual results of this work could be developed as a peer-reviewed journal article and a companion technical manual to advance the research design in this area.

Moreover, the policy recommendations in Section 4 will only be relevant if translated into specific legislative intent, and ultimately into regulatory statute. It is our hope that this rural transportation typology may be of assistance in these efforts, as well as in the development of more precise measurements to assess the impact and effectiveness of transportation investments in rural America.

Figure 2: Representation of the transportation policymaking system

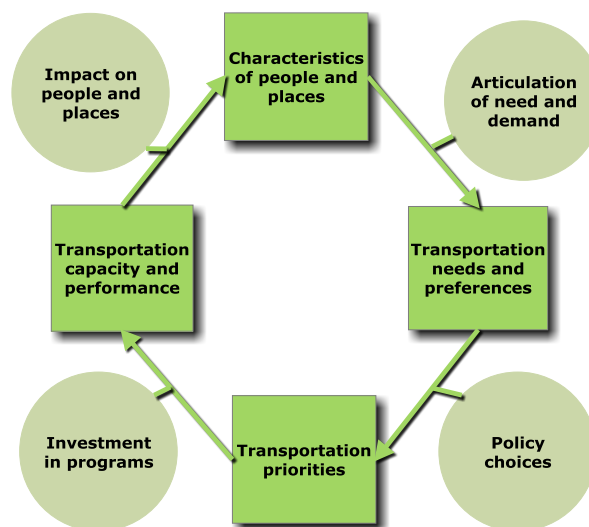


Figure 2 is a representation of the system for transportation policymaking. In an ideal world, transportation needs and preferences are determined by the characteristics of the current and future populations in a given region. These needs influence priorities, which in turn influence the configuration, capacity, efficiency, and effectiveness of the transportation infrastructure.

The resulting capacity and performance of the system shape the physical environment, influence the economic competitiveness of the region, determine the sustainability of communities, and hence the quality of life for residents. Thus the transportation system's capacity and performance impacts the attractiveness of places and the rates of growth in income, population, and other indicators of sustainability.

However, these are far from perfect processes. The articulation of need and demand is a noisy process with residents often having conflicting needs in their roles as consumers, property owners, taxpayers, employees, and business owners. The translation of these needs is complicated by the numerous layers of government – federal, state, regional, metropolitan, county, and municipal governments, as well as special transportation, airport, and transit districts. In addition, there are many private interests, such as automobile manufacturers, airlines, trucking and shipping firms, and construction companies, which have stakes in the process. Thus priority setting is fraught with issues of asymmetric information, special interests, political trade-offs, and jurisdictional overlap and ambiguity.

Transportation policies and priorities are converted into investments through a complex process of program and project financing. Funding comes from a variety of public and private sources, each with different priorities, and institutional and fiscal constraints. Thus the location, modal mix, quality and quantity of transportation infrastructure are an imperfect reflection of needs and preferences, and priorities. Ultimately, the infrastructure affects the economies, environments, social cohesion and quality of life for people and places, and the cycle begins over again.

Johnson et al identified appropriate indicators from the literature to reflect this policy making process and used them to create demand types and indicators of capacity and performance (supply) and of outcomes. The chart below lists the 11 county demand types.

County Demand Types	Transportation Demand Characteristics
Growing population	Rising incomes, higher auto ownership, rising aggregate levels of travel
Agriculture dependence	Movement of heavy machinery, high levels of truck traffic from farm to processors/aggregators and markets
High levels of freight production	Movement of heavy raw materials and products associated with mining, forestry, and manufacturing. Also distribution/logistics hubs
Tourism dependence	Seasonal demands for auto access
High rates of poverty (or low income)	Longer commuting distances, less fuel-efficient vehicles, high proportion of income spent on transportation
High percentage of rural residents	Dispersed population means higher auto usage for all employment, health, shopping, personal needs. Few options for transit
High rates of retirement	Increasing demand for transit to access health and personal needs
High percentage of rural youth (aged below 18)	Travel to school, recreation constrained by limited transport options
High rates of residents without automobiles	Associated with low incomes leading to isolation and limited economic opportunities without transit options
High rates of poor health	Demands for access to primary and specialized health care facilities
High rates of physical disabilities	Access to employment and degrees of independence limited by transportation options. Demands for access to primary and specialized health care facilities

County-level data for each of these demand types can be collected enabling rural counties to be

compared to those of the nation as a whole and to urban counties. This will highlight the spatial differences in the distribution of demand types and characteristics. In turn, these data can be used to compare with the supply of transportation infrastructure and services using indicators of capacity and performance, as shown in the following chart.

County Capacity & Performance Indicators	Transportation Supply Characteristics
Lane miles of road and highway per square mile	Physical characteristics of the road networks – density, location, quality – are all determinants of accessibility, safety, and quality of life
Rural road miles as percentage of total road miles	
Percentage of road miles in substandard condition	
Public transit or paratransit service	Availability of public transportation is a critical determinant of economic opportunity, accessibility, and quality of life for everyone and especially for non-car owners, youth, elderly, low income, and disabled people
Distance to commercial air service	Accessibility to a range of transportation options for the movement of people and goods is a critical component of economic development
Distance to rail freight system	
Distance to riverport or seaport	
Distance to nearest long-term, short-term or critical access hospital	Accessibility to healthcare options is an essential component of quality of life, as well as reduction in road fatalities

The third dimension of the rural transportation typology is the matching of demand types to indicators of outcome – the ultimate impact of transportation system. Johnson et al (2011) identified over 200 indicators that have been used or proposed in 46 studies of transportation, economic development, and quality of life. Seven outcome indicators were selected and are shown in the chart below.

County Outcome Indicator Groups	Examples of Indicators
Economic Development	Five-year average GDP growth rate; business growth rate
Cost of Living	Transportation costs as percentage of income
Accessibility	Average distance to nearest hospital; Interstate access within county; distance to commercial airport; availability of public transit service
Safety	Road fatalities; cost of traffic accidents per capita
Health	Percent of overweight and obese children; percentage of trips not made by automobile
Sustainability	CO ₂ emissions from transport; percentage of land area in transport use; energy consumption per capita
Walkability	Miles of trails per capita; percentage of population within one mile of services

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