

UTAH FOUNDATION
RESEARCH • ANALYZE • INFORM

Research Report

Report Number 727 January 2015

The Roads Less Traveled

Survey Analysis and Research Regarding Utah's Local Roads



Bryson Garbett, Chairman
Brent Jensen, Vice Chairman
Douglas Matsumori, Treasurer
Stephen J. Hershey Kroes, President
Shawn Teigen, Research Director

10 West Broadway, Suite 307, Salt Lake City, UT 84101
801.355.1400 • utahfoundation.org

The mission of Utah Foundation is to promote a thriving economy, a well-prepared workforce, and a high quality of life for Utahns by performing thorough, well-supported research that helps policymakers, business and community leaders, and citizens better understand complex issues and providing practical, well-reasoned recommendations for policy change.

The Roads Less Traveled

Survey Analysis and Research Regarding Utah's Local Roads

Over 75% of Utah roads are under city or county jurisdiction, and nearly 25% of vehicle miles traveled are on these local roads, which connect Utahns to their communities, the region, and the interstate highway system. Local connections provide a framework on which cities and counties grow – with roadways being one of the longest lasting pieces of infrastructure that a community will build.

Utah Foundation conducted a survey of Utah's cities and counties to gain a better understanding of local roads, as well as what these entities would like to see in their transportation network in the future. Respondents ranged from engineers and managers to mayors and council or commission members. Many survey respondents expressed a desire to increase funding to achieve better maintenance, as well as to build additional features for active transportation. Of the survey's findings, some common threads emerged regarding local roads and their contribution to quality of life in both cities and counties. Sufficient road capacity to handle traffic demands in urban counties and suburban cities was cited as a key component of economic development, while better maintenance was a top reason for cost savings among all survey respondents. Copies of the survey and all survey responses can be found in Appendix A.

While a wealth of research focused on local roads does not exist, a large body of research regarding attributes of local networks does. This report uses existing research focused on active transportation, economic impacts of transportation investment, and connectivity to suggest ways local entities might benefit from a different focus on their transportation systems. Investment in transportation can create positive results, but these benefits are highly dependent on the context in which they are employed.

KEY FINDINGS

- **82% of city and 95% of county respondents believe current transportation funding is insufficient.**
- **Proactive pavement maintenance can save cities and counties hundreds of thousands of dollars per lane-mile over the life of a roadway.**
- **The Class B and C Road Fund covers roughly only one-third of local transportation costs.**
- **Nationally, access to schools, friends and family, and health care at a neighborhood level were all top priorities for homebuyers in 2014.**
- **Research in thirteen large metropolitan areas across the U.S. showed that benefits of “above-average walkability” could get property owners a sale price premium of an additional \$4,000 to \$34,000 over homes with average levels of walkability.**

Most Beneficial Elements of Transportation Network to Responding Communities

	Most Beneficial
Cities	
Rural	Better maintained roads
Urban	Sidewalks and safe pedestrian crossings
Suburban	Better maintained roads
Counties	
Rural	Better maintained roads
Urban	Better maintained roads

Source: Utah Foundation survey.

This research report was written by Utah Foundation Research Analyst Mallory Bateman. Additional assistance was provided by Research Director Shawn Teigen. Ms. Bateman can be reached for comment at (801) 355-1400, or by email at mallory@utahfoundation.org.

Wasatch Front Regional Council, Mountainland Association of Governments, Dixie Metropolitan Planning Organization, Cache Metropolitan Planning Organization, Utah Association of Counties, Utah League of Cities and Towns, Utah Transit Authority, Utah Department of Transportation, and the Salt Lake Chamber provided financial support and technical review for this project. Cover photo sources: Salt Lake City Division of Transportation, Ogden City, and UTA.

INTRODUCTION

In “The Image of the City,” Kevin Lynch argues that streets, transit corridors, and other types of paths help to define city identities. Streets are the basis for how cities grow, much more so than buildings, street trees, and other human additions, which have comparatively limited life-cycles. Local roads play an essential role in not only conveying people and goods from point A to point B, but in creating the places themselves and contributing to their viability.

Brenda Scheer, a professor at the University of Utah College of Architecture and Planning, has written that “streets and public ways are very persistent; in cities like Florence and Cologne, two-thousand-year-old Roman street plans peek out from behind a curtain of accumulated medieval and Renaissance buildings.”¹ Although Utah has no 2,000-year-old roads in use, it is filled with examples from the mid-19th century.

The “Plat of the City of Zion” (Figure 1) was the blueprint for Latter-Day Saint settlements across the state.² While land uses have changed over time, the grid system of local roads created in the 1830’s is still used by Utahns today. Wide streets and long blocks have created unique transportation hurdles and opportunities for Utah communities, which continue to evolve with heightened awareness around expanded transportation modes and technologies.

In 2013, Utahns drove 26% of vehicle miles traveled (VMT) on city- or county-owned roads.³

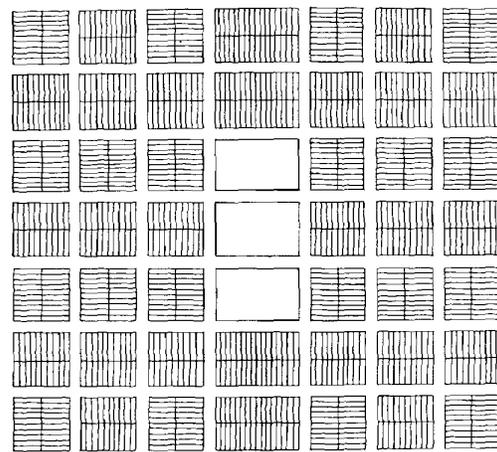
These roads make up over 75% of Utah’s transportation network. Local roads play an important role in connecting residents with goods and services, as well as the part they play in the broader transportation network. Although the body of literature on benefits and impacts of investment in local roads is limited, there are large bodies of work examining impacts of various aspects of the built environment, rural roads, and walkable communities. This report extracts the most pertinent information from existing research to create a framework for evaluating the benefits of local road investment.

This report also includes analysis of a survey conducted for this research effort. Responses were received from over 40% of Utah’s cities and over two-thirds of its counties. Utah Foundation performed the survey with cooperation from the Utah League of Cities and Towns and Utah Association of Counties. Cities’ responses were analyzed by a self-identified rural, suburban, or urban classification. A similar breakdown for Utah’s counties would have resulted in groups too small for good statistical sampling, so their relationships with metropolitan planning organizations (MPOs) was used.⁴ Within the text, counties without areas included in MPOs are called rural, and counties with areas inside MPOs are called urban.

CURRENT ROAD NETWORK AND USE

Utah’s public roads extend more than 45,000 miles, over 35,000 of which are local roads (see Figure 2). Local entities such as cities and counties are primarily responsible for the maintenance and construction of these roads. Approximately 80-85% of roads within municipalities are locally owned and maintained.⁵

Figure 1: Plat of Zion



Source: Cornell University, Urban Planning Department.

Figure 2: Utah’s Public Road Network, Center-Lane Miles of Roads, 2012

Type	Mileage
State	5,866
County	24,180
City	11,042
Federal/Other	
Forest Service	2,313
National Park Service	726
Native American	366
Other Federal Agencies	1,387
Total Federal/Other	4,792
Total Public Road Mileage	45,881

Source: Utah Department of Transportation.

roads in fair condition. Respondents from urban counties indicated that 39% of their roads were in good condition, which was statistically higher than rural counties. Overall, survey responses indicate that rural cities/towns and rural counties seem to have local networks that are in more advanced states of disrepair.

Additional Roadway Features

Complete streets is terminology used for streets that are designed to provide safe access to all users.⁷ Features of these streets include assets that increase safety, comfort, and accessibility. Implementation of features vary by the needs of each road. When multiple modes of travel are considered in roadway design, opportunities for benefits in addition to those created with a well-maintained roadway are more likely to occur. Assets included in a complete street may include:

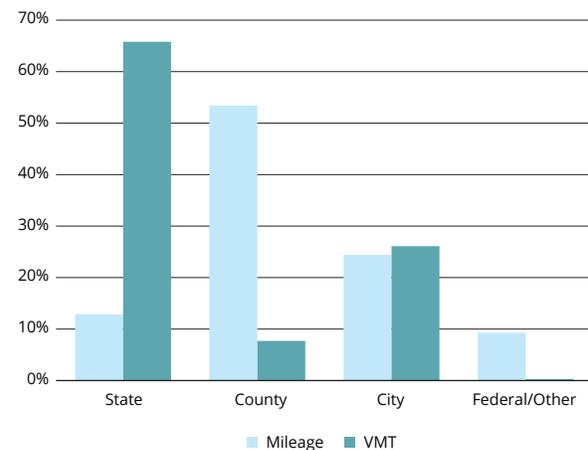
- sidewalks
- bike lanes (or wide paved shoulders)
- street lights
- special bus lanes
- comfortable and accessible public transportation stops
- frequent and safe crossing opportunities
- median islands
- accessible pedestrian signals
- landscaping
- curb extensions
- narrower travel lanes
- trails
- roundabouts⁸

Survey respondents were asked about features found in complete streets in their local networks. County respondents indicated that some features of complete streets were present in about one-third of their local

In 2012, nearly 35% of the vehicle miles traveled in Utah were on city or county roads (see Figure 3), and despite the fact that state-owned roads make up only about 13% of mileage in the state, they see the most vehicle miles traveled.⁶

Responses from Utah Foundation’s survey show a nearly 50/50 split between roads classified as excellent or good compared to those rated fair or poor. Responses are highlighted in Figure 4. Respondents from urban cities indicated that 28% of their roads were in excellent condition, statistically higher than rural and suburban cities and towns. These respondents also indicated that they had the fewest

Figure 3: 2012 Utah Road Mileage to Vehicle Miles Traveled (VMT)



Source: Utah Department of Transportation.

Figure 4: Local Governments’ Road Conditions

	Cities			Counties	
	Rural	Urban	Suburban	Rural	Urban
Excellent	22%	28%*	19%	21%	16%
Good	26%	32%	34%	28%	39%*
Fair	33%	26%*	30%	32%	34%
Poor	26%	21%	20%	23%	18%

*Statistically significant difference between urban and non-urban cities (95%) and rural and urban counties (95%).
Source: Utah Foundation.

roads. According to survey responses, transportation networks in rural counties included more of these features than urban counties, particularly with regard to pedestrian crossings.⁹ For cities, respondents indicated that between 40 and 56% of their local roads had complete street features. Urban and suburban city roads were more likely to have sidewalks and curbs, while suburban city roads were more likely to have street lights; interestingly, rural communities reported that about 6% more of their local networks had designated bike lanes than did urban and suburban communities.¹⁰

In addition to questions about existing road infrastructure, respondents were asked what features an ideal transportation network would have. Figure 5 highlights the differences in existing versus ideal conditions. All city respondents desired increased sidewalks, pedestrian crossings and curbs, and streetlights in their ideal scenarios (the desired percentage of the transportation network with these features was typically above 50%, reaching as high as 90% in urban and suburban communities). According to the responses, only urban cities indicated that they wanted more designated bike lanes and wide shoulders. While urban counties wanted additional sidewalks, streetlights, designated bike lanes, wide shoulders, pedestrian crossings, and curbs, the rural counties wanted decreases in all of these. Both county groups wanted decreases in landscaping. The rural counties wanted an increase in trails while urban counties did not.

Figure 5: Difference between Local Governments' Current Transportation Features and Ideal Features

	Cities			Counties	
	Rural	Urban	Suburban	Rural	Urban
Sidewalks	15%	17%	20%	-2%	8%
Streetlights	22%	21%	16%	-6%	5%
Designated Bike Lanes	-3%	7%	-2%	-1%	7%
Wide Shoulders	-2%	3%	-5%	-3%	9%
Pedestrian Crossings	8%	18%	26%	-7%	17%
Landscaping	0%	9%	7%	-5%	-4%
Curb	15%	16%	25%	-4%	18%
Trails	-1%	4%	1%	5%	0%

Source: Utah Foundation.

LOCAL ROAD USE

Municipalities do not exist in isolation. Residents tend to live their lives on a more regional scale, which impacts trips to work, school, extra-curricular activities, and errands. Utah is home to a diverse array of communities, from rural to urban, residential bedroom communities to tourist destinations. In discussions of local road travel, this section focuses on two classifications: developed areas (urban and suburban) and rural areas.

Urban and Suburban Areas

In 2012, the Utah Travel Study was conducted to examine travel patterns statewide. One consistent finding across all regions was that single-person auto trips make up the majority of trips. The bulk of these trips were home-based, non-work related trips. This type of trip had a much smaller average trip length, ranging from a difference of two-miles to eight-miles.¹¹ Shorter trips are more likely to be conducted on local roads, though all home-based journeys use local roads at some point. Trips in urbanized areas were typically shorter than those in rural areas. Figure 6 shows these differences in mode shares across three MPOs and the UDOT planning region (communities with less than 50,000 people).

Figure 6: Mode Share and Average Trip Length by Region, 2012

	Wasatch			
	Front	Cache	Dixie	UDOT
Mode Share				
Drive Alone	78.50%	74.50%	80.90%	76.70%
Shared Ride (2 people)	7.50%	7.50%	9.70%	9.60%
Shared Ride (3 or more people)	4.20%	7.10%	6.10%	7.50%
Transit	4.50%	2.10%	0.10%	1.10%
Walk	3.10%	3.80%	0.50%	2.60%
Bike	1.90%	4.30%	2.40%	1.80%
Other	0.30%	0.60%	0.20%	0.80%
Average Trip Length				
Home Based Work Trip (Miles)	17.7	9.9	12.5	18.4
Home Based Non-Work Trip (Miles)	9.2	7.3	8.8	11.4
Total Average Trip Length (Miles)	10.8	7.4	9	12.8

Source: Utah Travel Study.

A report by the Victoria Transport Policy Institute finds that in areas with good walking conditions, 10-20% of local trips are made through active transportation.¹² Active transportation refers to human-powered transportation, including walking and cycling.¹³ These trips are typically shorter in length and are more frequent among populations that might not have access to a personal vehicle. Further analysis of the Utah Travel Study by WFRC showed that 50% of all trips in the Wasatch Front are 3 miles or less.¹⁴ These shorter trips have the potential to be made by multiple modes. As Utah's urban population continues to diversify and age, the need to accommodate these residents could result in more interest in safe streets that accommodate multiple modes of transportation including pedestrians, bicyclists, and transit.

In order for transit systems to reach a significant shift in mode from auto to transit, a certain threshold of population density must be reached, with the greatest shifts beginning with densities of between 2,000 and 4,000 people per mile. Although few Utah cities currently have this level of population density (Salt Lake City, Provo, and Ogden), the trend towards more persons per square mile will continue in urban areas into the future.¹⁵ As population density increases, the likelihood of increased demand for modal shift will also increase.

Rural

The transportation network in Utah's less developed areas is disproportionately affected by agriculture, energy development, and tourism. For those living in agricultural areas, a United States Department of Agriculture (USDA) report found that "an effective transportation system supports rural economies, reducing the prices farmers pay for inputs such as seeds and fertilizers, raising the value of their crops and greatly increasing market access."¹⁶ The pressure on the local transportation network created by drivers on rural roads creates a slightly different lens with which to examine their needs.

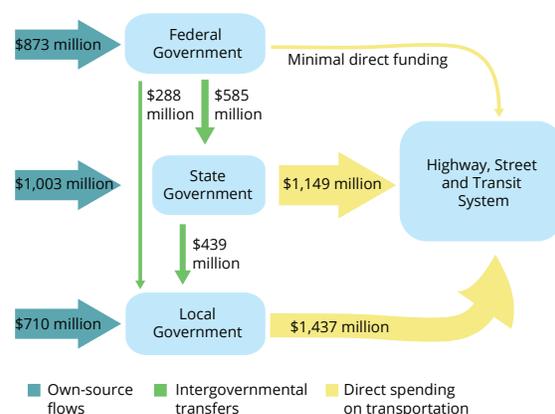
The Utah Travel Study showed that residents in rural areas had longer average trips per household (12.6 miles) and per person (9.0 miles) than in more urbanized areas. Demographic trends such as household size and age create impacts on driving patterns. Larger households generally produce more trips and older drivers prefer fewer trips.¹⁷ These differences in trip length help illustrate the fact that rural Utahns have slightly different travel needs, and perhaps definitions of their "local" network. Figure 6 compares the UDOT planning area (areas with population under 50,000) with more urban regions of the state.

The American Association of State Highway and Transportation Officials (AASHTO) has stressed the necessity of considering both the demands of large-scale commercial operations and the needs of residents. Although more focused on state highways than local networks, AASHTO suggests that rural areas need more arterial roads, as well as roadway improvements to help ease issues for freight traffic.¹⁸

FUNDING STRUCTURE FOR LOCAL ROADS

Funding for the state transportation system comes from all levels of government. Figure 7 shows

Figure 7: Federal, State, and Local Funding Relationship, 2012



Note: In 2012, approximately \$1 billion in funding was directly provided to all states by the federal government. The federal government does not provide a state-by-state breakdown. Source: U.S. Census Bureau, Pew Charitable Trust.

the paths that funding takes between and across the Federal, State, and Local government. Utah's transportation system receives the most direct-source funding from the state government. Transit funding for the state travels primarily from the federal government to local government. In 2012, \$288 million followed this pathway in Utah through various grants administered by the Federal Transit Administration.

Figure 8 shows transportation expenditures at the federal, state, and local levels of government. Nationally, around 6% of state, county, and municipal direct government expenditures go toward highway and street construction and maintenance. According to data from the U.S. Census Bureau, expenditures for highway and capital outlay for transportation projects in Utah are around 10% of total direct expenditures. These percentages do not include transit, which is more often paid for through special government districts. The Utah state budget for fiscal year 2015 allocated 7% of spending for transportation, not including any capital outlay because transportation was not explicitly identified.¹⁹

Figure 8: Transportation Expenditures as a Percentage of Direct Expenditures, 2012

	State	County	Municipal*	Special District
Nation				
Highways and streets	6.5%	6.0%	6.3%	1.3%
Highways and streets, capital outlay	4.5%	2.0%	2.5%	0.5%
Transit	0.9%	1.0%	3.0%	13.8%
Utah				
Highways and streets	10.3%	10.4%	10.3%	0.0%
Highways and streets, capital outlay	8.5%	2.3%	4.6%	0.0%
Transit	0.0%	0.0%	0.4%	27.1%

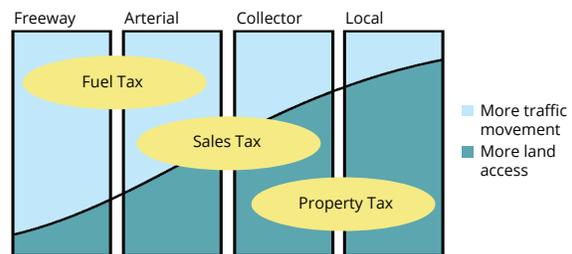
*For U.S. includes Townships.
Source: 2012 Census of Governments.

Utah's transportation funding picture has received increasing levels of interest recently. In 2013, Utah Foundation published an in-depth report regarding the current funding structure and potential resources for future revenue streams. The Unified Transportation Plan has identified a shortfall of roughly \$11.3 billion for projects needed between now and 2040.²⁰ While this creates a significant impact on implementation of transportation projects in general, the Unified Plan's findings only deal with local projects to a small extent.

The bulk of state funding for Utah's transportation network comes from user fees. These include fees such as fuel taxes, registration fees, and permits. This pool of revenues is directed to local entities through the Class B & C Road Fund - Class B and C referring to the types of road (county and city). Information collected by the Office of the Utah State Auditor through the statewide survey of local government finances shows that on average in fiscal year 2011, the Class B & C Road Fund covers approximately 36% of city and 25% of county transportation budgets.²¹ Survey respondents painted a different picture. This could be due in part to the diversity of local officials and employees responding. According to survey respondents, the B&C Road Fund made up the largest portion of funding for transportation budgets. Created in 1937 through state legislative action, UDOT allocates this fund to cities and counties based on city population and road mileage.²² This pool of funding is used for construction, maintenance, safety enhancements, equipment purchases, and staffing costs among other expenses.²³ In fiscal year 2014, the Class B & C allocation was about \$124 million.²⁴

Local funding for transportation projects can come from general funds or capital project funds. For most Utah cities, property taxes play a large part as a revenue source. In 2013, cities and towns received 14% of collected property tax revenue. Counties received 18%.²⁵ The differences in funding pools

Figure 9: Comparison of Funding by Road Type



Source: MAG Transportation Funding memo 4 Sept 2014, edited by Utah Foundation.

Figure 10: Funding Sources for Cities and Counties, Survey Respondents

	Urban Cities	Suburban Cities	Rural Cities	Rural Counties	Urban Counties
B&C Road Fund	61%	53%*	67%*	57%	56%
Federal and/or additional State funds	6%	5%	4%	19%	10%
General Fund	37%	34%	24%*	8%	33%*
Grants	5%	5%	7%	10%*	0%
Other Transportation Funds	8%	8%	8%	10%	9%

* Statistically significantly different response percentages (90% for counties, 95% for cities).

Notes: 1. Due to averaging done in analysis, these columns may not equal 100%. 2. Office of the Utah State Auditor found Class B and C Funds comprise 36% of city and 25% of county transportation funding in fiscal year 2011. 3. Actual numbers for individual respondents can be requested from Utah Foundation.

Source: Utah Foundation.

respondents indicated that the B&C Road fund provided the majority of funding for all types of cities and counties, percentages varied. Responses also varied greatly from information gathered by the Office of the Utah State Auditor - 36% average for cities and 25% for counties statewide in fiscal year 2011. Figure 10 details the findings of the survey. Suburban communities used fewer B&C funds while rural communities used the most. Rural communities used fewer general funds. Urban counties were more likely to respond that they used general funds, while rural counties were more likely to respond that they used grants.

Cities and counties both spent the largest portion of their transportation budgets between 2012 and 2014 on maintenance. Survey respondents were asked if they believed that current spending is sufficient to meet their local transportation needs; 18% of cities and 5% of counties believe that current funding is sufficient. Cities and counties who responded that current funding was not sufficient were asked what percentage increase per year would be needed to maintain transportation infrastructure in a desirable state of repair.

Suburban cities forecast the largest increased need - 46% - between 2015 and 2017. Rural communities desired a 43% increase on average, followed by urban cities (28%). All three types of cities placed the largest emphasis on an increase in spending for maintenance. The second priority differed between urban

are also reflected in the type of roadway they pay for. Figure 9 highlights these current differences between funding sources for local roads versus state highways. Since federal funding and user fees in Utah generally go to more regional projects, roads focused on quicker conveyance of people such as freeways and arterials are the recipients of the bulk of those funds. Revenues from property taxes predominantly fund local roads, which connect people to their community.

The Utah Foundation survey asked respondents about funding and budgets. Funding sources included the B&C Road Fund, federal and state funding outside of B&C funding, general funds, grants, and other transportation funds. While

Figure 11: Transportation Spending and Increased Need for Cities/Towns with Insufficient Funding

	Rural		Urban		Suburban	
	Average Spent (2012-2014)	Increased Need per Year (2015-2017)	Average Spent (2012-2014)	Increased Need per Year (2015-2017)	Average Spent (2012-2014)	Increased Need per Year (2015-2017)
Maintenance	66%	53%	48%	40%	48%	67%
Increasing capacity	9%	46%	15%	19%	16%	47%
Administration	11%	14%	21%	10%	15%	12%
Pedestrian services	6%	34%	12%	27%	8%	47%
Safety	3%	19%	3%	12%	2%	14%
Intelligent transportation systems	0%	0%	3%	13%	2%	21%
Total	96%	43%	101%	28%	92%	46%

Notes:

1. 26% of rural cities/towns, 13% of urban cities, and 8% of suburban cities responded that current funding is sufficient.

2. Total averages spent do not equal 100% because each category is a median value of all responses.

Source: Utah Foundation.

Figure 12: Transportation Spending and Increased Need for Counties with Insufficient Funding

	Rural		Urban	
	Average Spent (2012-2014)	Increased Need Per Year (2015-2017)	Average Spent (2012-2014)	Increased Need per Year (2015-2017)
Maintenance	74%	30%	53%	28%
Increasing Capacity	15%	24%	11%	21%
Administration	9%	14%	15%	9%
Pedestrian Services	0%	21%	8%	19%
Safety	3%	15%	5%	9%
ITS	7%	2%	1%	6%
Total	107%	28%	93%	20%

Notes:

1. 10% of rural counties and no urban counties responded that current funding is sufficient.
 2. Total amounts spent do not equal 100% because each category is a median value of all responses.
- Source: Utah Foundation.

communities and suburban and rural. Urban cities saw a need for more spending on pedestrian services while both rural and suburban cities saw a need for increased capacity. (See Figure 11 for a detailed breakdown.)

For counties, the increased need for future transportation spending was spread a bit more evenly than in cities. Both rural and urban counties said there was an increased need for funding, but of 28% and 20% respectively. Maintenance was once again the top priority, followed by increased capacity.

Survey respondents were asked to rank in order of importance seven different benefits that could be created by increased investment in the local transportation system. Better-maintained roads was

identified as the most beneficial of the transportation elements posed to survey respondents. For cities, freeing up funds for other services and improving flow of goods and services also ranked high. Urban cities ranked increased safety as less important than rural and suburban cities. Rural cities ranked improved intelligent transportation systems (ITS) lower than urban and suburban cities. For counties, additional active transportation features and increased business investment were somewhat more important than the other features, though flow of goods and services was close behind. (See Figure 13.)

Figure 13: Importance of the Benefits of Increased Investment in Local Transportation System, Rank of "1" is Most Important and "7" is Least Important

	Rural City	Urban City	Suburban City	Rural Counties	Urban Counties
Better maintenance of current infrastructure (roads, bridges, trails)	1.4	1.5	1.3	1.8	1.1
Additional active transportation features such as trails, sidewalks, bike lanes	4	4.5	4	3.5	3.2
Increased business investment	4.5	4.8	5.1	3.2*	4.4
Improved flow of freight, goods & services	3.6	3.6	3.9	3.6	4.1
Increased safety from funding for safety related projects	4.1	5*	4.1	4.6	3.6*
Free up more money for other city or county services like parks, police, administration**	3.8	3.5	3.6	4.5*	5.8
Improved Intelligent Transportation Systems (ITS)	6.3*	5.22	5.7	6.9	6.0*

* Statistically significantly higher ranking (90% for counties, 95% for cities).

** Survey text also included the text "Assumes more investment in transportation means additional revenue is generated specifically for transportation."

Source: Utah Foundation..

COSTS

True Costs of Roads

Local transportation funding is a mix of federal, state, and local funds. However, local spending is primarily used on operations and maintenance, not on capital investments for new construction.²⁶ As seen in Utah's Unified Transportation Plan, Utah is expecting to see significant shortfalls in need versus funding between now and 2040.²⁷

An additional hurdle created for local entities charged with road maintenance is long-term costs. In new developments in Utah, developers help to construct roads in their projects, whether through impact fees or construction. While this helps with initial investment, impact fees cannot be utilized for maintenance of existing facilities or for employee salaries.²⁸ This leaves cities with new roads that need to be maintained using general funds or shorter-term capital facilities funds.

Roadway

Respondents to the Utah Foundation Survey believed the percentage of budget spent on transportation was much higher than previous research has shown. Cities responded that over a third of their budget is spent on transportation. On average, counties responded that transportation spending is 29% of their budgets.

Statewide, the majority of need in transportation budgets is in preservation and maintenance of the existing system. The cost implications of proper timing of pavement maintenance can be significant. Generally, expected pavement service life without maintenance is 20 years.²⁹ The Federal Highway Administration (FHWA) compares the “traditional alternative” of road costs with a pavement preservation model. The “traditional alternative” approach involves initial construction at a cost of around \$508,000 per mile, then a significant upgrade at the end of the first remaining service life (around 25 years). By incorporating preservation projects (the preservation model) throughout the life of a road, FHWA suggests a savings of \$340,000 per lane-mile over a 25-year period.³⁰ Figure 14 compares the cost of these two approaches to roadway maintenance.

Figure 14: Major Construction Versus Preservation Alternatives: Project Life Cycle Costs

Activity	Remaining Service Life (Years)	Cost per Lane-Mile
Traditional Alternative Total	25	\$490,000
First Preservation	22	\$15,000
Second Preservation	25	\$39,500
Third Preservation	22	\$15,000
Fourth Preservation	21	\$55,500
Fifth Preservation	18	\$15,000
Preservation Total		\$140,000

Source: FHWA Principles of Pavement Preservation.

Respondents to the Utah Foundation survey reported that the majority of cities and counties are currently using an asphalt management program. On average, 82% of cities and 90% of counties that responded are utilizing these systems to extend the service life and reduce maintenance costs of their existing roadways. Responses showed an increased use of asphalt management programs in more developed areas than in rural areas. All urban counties responded that they employ asphalt management compared to only 83% of rural counties. Urban cities were the most likely of their comparative groups to use asphalt management (97%), and rural cities and towns were least likely (76%).

Additional Roadway Amenities

Recently, federal regulations have recognized the importance of considering at multiple modes in roadway projects. The Moving Ahead for Progress in the 21st Century Act (MAP-21) has built on past federal transportation funding bills with a heightened emphasis on multimodal, financially

Figure 15: Sample of Costs of Active Transportation Features

Description	Median Cost	Cost Unit
Bicycle rack	\$540	Each
Bicycle route w/ signs	\$27,240	Mile
Curb extension/choker/bulb-out	\$10,150	Each
Raised crosswalk	\$7,110	Each
Bollard	\$650	Each
Wheelchair ramp on curb	\$12	Square foot
Streetlight	\$3,600	Each
Pre-fab steel bridge	\$191,400	Each
Street trees	\$460	Each
Street bench	\$1,660	Each
Street trash/recycling receptacle	\$1,330	Each
Striped crosswalk	\$340	Each
Concrete sidewalk	\$27	Linear foot
Multi-use trail - unpaved	\$83,870	Mile
Pedestrian HAWK* signal	\$51,460	Each
Countdown timer module at signals	\$600	Each
Curb and Gutter	\$20	Linear foot

* High Intensity Activated Crosswalk
Source: UNC Highway Safety Research Center.

sustainable projects including not only roadway, but bicycle and pedestrian infrastructure.³¹ MAP-21 has direct impact on the funding of the Unified Transportation Plan. Although the Unified Plan is targeted at statewide and regional roadways, the principles included could be used as tools for smaller, local roads.

Work prepared for the FHWA regarding creation of Complete Streets shows a detailed breakdown of costs for various pedestrian and bicyclist infrastructure improvements. Features can range from \$20 per linear foot to hundreds of thousands of dollars for a structure. A sample of the information provided can be found in Figure 15.

Although the data does come with a caveat that these figures are based on smaller samples, and prices can vary by location, the figures can provide a ballpark price for cities or counties investigating bicycle and pedestrian features. A research project regarding costs, benefits, and recommended investments in active transportation in Utah will be undertaken by state agencies, local municipalities, and advocacy organizations in 2015.

BENEFITS

When survey respondents were asked to prioritize benefits of transportation elements, better maintained roads were ranked as the most beneficial of the nine transportation elements across all types of cities and counties, except urban cities. However, urban counties ranked the remaining eight elements as more beneficial than rural counties. The second most beneficial element for both groups of counties was having a complete road network with sufficient capacity. The least beneficial element for both groups of counties was public transportation, followed by ITS infrastructure. The needs of different types of cities (urban, suburban, rural) were reflected in their ranking of what elements are most beneficial. Urban cities identified sidewalks and safe pedestrian crossings as the most beneficial, followed by safe transportation features. Rural communities placed sufficient capacity at #2, while suburban cities ranked sufficient capacity and sidewalks and safe pedestrian crossings the same (both statistically significant differences than urban and rural cities). Results are shown in Figure 16. A more detailed discussion of ways to achieve these benefits can be found in the following section.

Figure 16: Average Benefit of Certain Transportation Elements, Scale of 1 (not at all beneficial) to 7 (very beneficial)

	Rural City	Urban City	Suburban City	Rural Counties	Urban Counties
Better Maintained Roads	6.6	5.9	6.8	6.2	6.8
A complete road network with sufficient capacity	5.7	6.1	6.5	4.8	6.5
Public Transportation, if applicable	3.1	4.8	5.1	1.5	3.7
Sidewalks and safe pedestrian crossings	5.1	6.5	6.5	3.9	4.9
Trails	4.2	5.0	5.2	3.7	5.3
Bicycle features such as bike lanes and widening shoulders	3.8	4.6	5.0	4.5	5.4
Safe transportation features	4.7	6.5	6.3	4.7	5.9
ADA features	4.9	6.1	6.0	3.3	5.3
Intelligent Transportation Systems (ITS) infrastructure	3.3	5.1	4.6	2.6	3.8

Source: Utah Foundation.

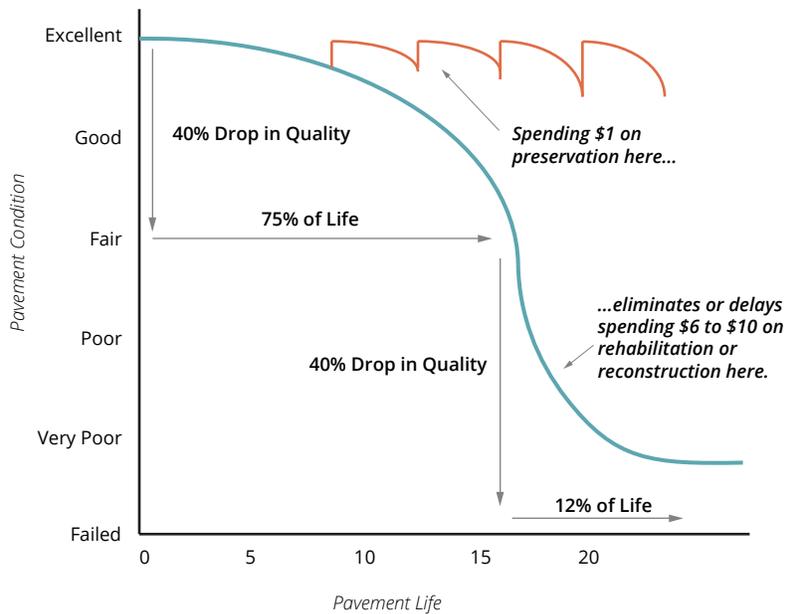
Auto-Oriented Benefits

Direct benefits of local road investment are typically experienced by auto drivers. Better pavement condition, improved level of service, reduced travel time, and lowered maintenance costs are all examples of these types of implicit benefits.

Research conducted by FHWA shows a hypothetical situation where spending \$1 on preservation maintenance while the roadway quality is still good can eliminate or delay spending \$6 to \$10 when the pavement quality deteriorates to a poor rating. Figure 17 illustrates cost savings over time.

Analysis by Utah's Local Transportation Assistance Program (LTAP) shows that in Utah, reconstruction costs three- to five-times more than rehabilitation strategies. The analysis also shows that the average cost of upgrade for a well maintained roadway in Utah is \$8,000 to \$10,000 per lane mile, which is lower than the FHWA estimated cost. If maintenance projects are delayed, the cost increases.³²

Figure 17: Pavement Option Curve



Source: FHWA Pavement Preservation Principles.

People-Oriented Benefits

Benefits of local road investment not related to driving are typically due to multiple pieces coming together. Benefits of complete street design have been researched frequently and are myriad – from improved air quality to health impacts to traffic reductions. However, the degree to which these benefits succeed is dependent on several things that city officials cannot control. Positive impacts come through implementation of multiple features for different types of users, having an area that is a desired location, and the behavior and actions of residents and users of the transportation network. While these benefits are worth mentioning, it is also worth noting that the impacts created cannot be achieved in a vacuum and are generally closely connected. This section will review the following road attributes: connectivity and accessibility, safety, economic development, health, environment, and placemaking.

Survey responses showed that different types of cities and counties identified different attributes that would improve quality of life. As a whole, city respondents ranked the importance of these attributes higher than county respondents. While there is variation in the responses, non-motorized features were prominent responses across the board.

Respondents were then asked to rank the most beneficial attributes by how important they were to three benefits: economic development, cost savings, and quality of life. The rankings for these attributes showed that respondents felt they affected quality of life most. Figure 18 shows the findings for counties and Figure 19 for cities. These benefits have more direct impacts on residents and the community rather than on the road surface. Better maintenance was selected the most frequently by both cities and counties in regards to financial or cost

savings benefits. Sufficient capacity was the leading element in regards to an economic development benefit. However, quality of life benefits received the most responses for nearly every network element.

Urban counties deemed public transportation, sidewalks and pedestrian crossings, trails, bicycle features, and ADA features as more beneficial from a quality of life standpoint than did rural counties. They also cited public transportation and ITS infrastructure as more of a cost savings. It is interesting to note that rural counties cited trails and bicycle features significantly higher in terms of economic development than urban counties.

Figure 18: County Benefit of Transportation Elements

	Economic Development		Financial Benefits (Cost Savings)		Quality of Life	
	Rural	Urban	Rural	Urban	Rural	Urban
Better Maintenance	58%	50%	75%	90%	75%	60%
Sufficient Capacity	67%	80%	33%	5%	58%	70%
Public Transportation	8%	40%*	0%	30%*	17%	50%*
Pedestrian features	25%	10%	8%	20%	50%	90%*
Trails	50%	20%	17%*	10%	50%	100%*
Bicycle features	85%	30%	0%	10%*	58%	100%*
Safe transportation features	42%	40%	25%	30%	58%	80%
ADA features	8%	10%	0%	0%	42%	100%*
ITS infrastructure	16%*	10%	8%	40%*	25%	30%

*Statistically higher response (95% likely).
 Note: Survey question read "For any elements receiving a 4 or above, why do you feel that element is beneficial to your community?"
 Percentages reflect frequency of selection by respondents.
 Source: Utah Foundation.

Figure 19: City/Town Benefit of Transportation Elements

	Economic Development			Financial Benefits (Cost Savings)			Quality of Life		
	Rural	Urban	Suburban	Rural	Urban	Suburban	Rural	Urban	Suburban
Better Maintenance	51%	50%	70%*	56%*	80%*	70%	81%	67%*	93%*
Sufficient Capacity	51%*	70%	78%*	24%	37%	44%*	65%*	73%	89%*
Public Transportation	28%	33%	67%*	12%	20%	26%*	38%*	63%*	67%*
Pedestrian features	19%	27%	30%	10%	17%	22%	69%*	70%*	96%*
Trails	24%	13%	26%	4%*	10%	11%	60%*	83%*	93%*
Bicycle features	19%	20%	22%	10%	10%	15%	54%*	77%	93%*
Safe transportation features	25%*	43%	48%*	21%*	33%	33%	56%*	80%*	81%*
ADA features	24%	17%	26%	15%	17%	15%	65%*	93%*	89%*
ITS infrastructure	21%	40%*	30%	22%*	53%*	44%*	28%*	43%	52%*

* Statistically different response from other city/town categories (95% likely).
 Note: Survey question read "For any elements receiving a 4 or above, why do you feel that element is beneficial to your community?"
 Percentages reflect frequency of selection by respondents.
 Source: Utah Foundation.

Safety

According to 2013 statistics, approximately 31% of traffic fatalities in Utah occurred on non-state owned roads.³⁴ Although educational programs such as Zero Fatalities seem to have been successful in reducing fatalities through educational outreach, local entities still need to maintain their roadways at an acceptable level to keep drivers safe.

Between 2003 and 2007, over 20,000 Utah bicyclists were hurt or killed due to crashes with motor vehicles – the majority of these were children between ages 5 and 11.³⁵ With increasing awareness about cycling occurring in many areas, it is important for cities to have transportation features that create a safe environment for all roadway users. Demand for the development of better roadways, bicycle, and pedestrian features is advocated for by an increasing amount of diverse groups. The AARP has become an advocate for the Complete Streets model, due to the emphasis on increasing safety for all users of the system. The Safe

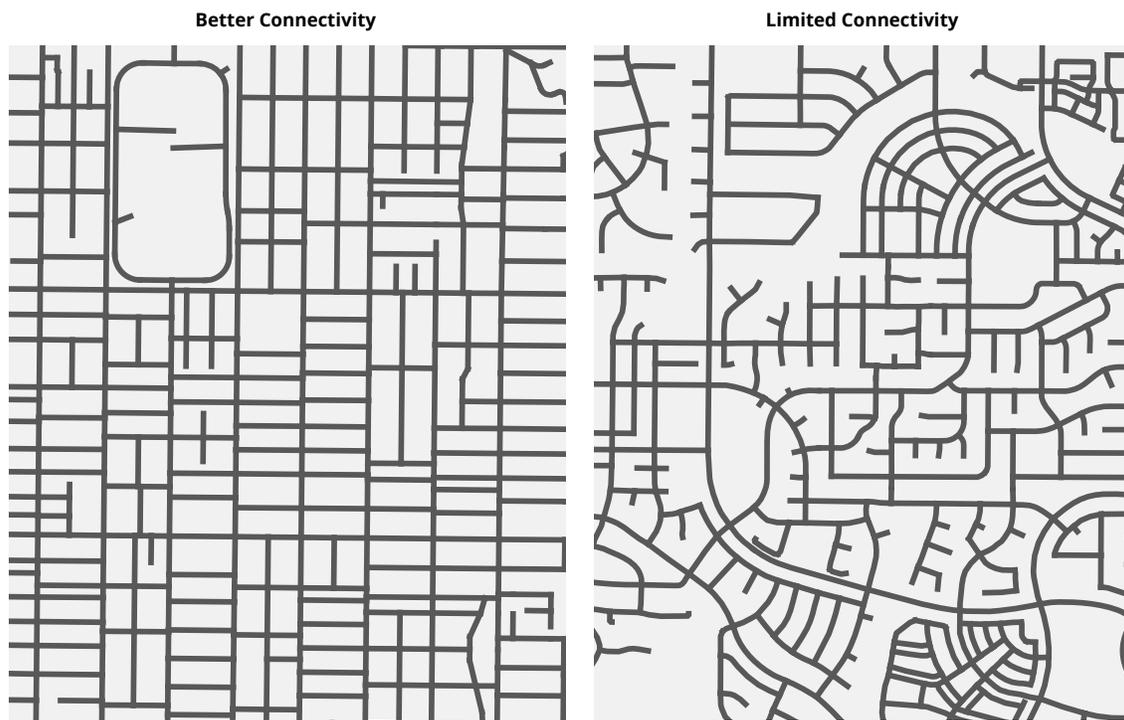
Routes to School program was established to help provide parents, communities, and children with resources to plan or create safe routes for everyone to get to school.³⁶ Vulnerable users such as elderly residents or small children need safe methods outside of auto travel to get from point A to point B.

Connectivity and Accessibility

Although connectivity is generally something that needs to be established early on in a city's existence, investment in methods to increase connectivity to the local network can be beneficial. Figure 20 shows two different Utah neighborhoods, at the same scale. In the system with a higher level of connectivity, the distance for an auto, bicycle, or pedestrian trip is shorter than that in the community on the right. This creates convenience for non-work trips, especially for seniors and children.³³

The idea of a well-connected network comes into play with almost all of the following benefits: more natural surveillance created by the opportunity of more eyes on the street adds a benefit of safety; easier access and multiple routes to a location create more opportunities for economic development and accessibility to transit routes and provide the opportunity for residents to partake in active transportation with ease, which leads to health and environmental benefits.

Figure 20: Street Network Connectivity, Examples from Utah



Source: Utah Foundation analysis of AGRC data.

Economic Development and Property Values

The Economic Development Research Group has shown that the statewide Unified Transportation Plan would create nearly 183,000 new jobs by 2040. This work suggests jobs in construction, jobs created through increased access and new businesses, and jobs created by private savings.³⁷ Although this work is done on

a scale that is generally larger than what a municipality would undertake, there are economic development benefits to investing in local roads.

The aspect of the change in scale from statewide or regional capacity projects to local projects is important to note. While a new freeway might increase connectivity or access to new businesses, repaving a local road will not. The change in user experience might impact travel patterns, but the opportunity for the largest impact to economic development is in areas where transportation was previously a constraint on economic activity.³⁸

Research investigating the relationship between transportation networks and property values consistently shows that increased connectivity of the local network through improved roadway, transit, bicycle, and pedestrian amenities can potentially impact property values.

Research in thirteen large metropolitan areas across the US showed that benefits of “above-average walkability” could get property owners a sales price premium of an additional \$4,000 to \$34,000 over homes with average levels of walkability.³⁹ This study controlled for cost of housing, neighborhood income level, and housing characteristics. Additionally, research by the National Association of Realtors shows that the adage “location, location, location” is still alive and well. Access to facilities such as schools, friends and family, and health care at a neighborhood level were all top priorities for various types of homebuyers in 2014.⁴⁰

Health

The majority of research conducted regarding health benefits and transportation focuses on getting people out of their cars. That said, health benefits induced by local road investment are primarily found through development of active transportation networks.

Between 2005 and 2013, the Nonmotorized Transportation Pilot Program (NTPP) facilitated the implementation of active transportation features in four communities of different sizes and types across the country. Over the course of the program, the four counties saw a cumulative increase in walking trips by 22.8% and an increase in bike trips by 48.3%. Although this program came at a large one-time cost of \$88.5 million in NTPP funds, the reduced cost of mortality in bike trips was estimated by the CDC to be approximately \$46.3 million in 2013 alone.⁴¹

The impacts of a mode shift from autos to active transportation lead to a myriad of health benefits. When a 15% mode shift was modeled in the Bay Area in California, suggested reductions in heart disease were 14%, dementia and depression 6-7%, and breast and colon cancer 5%.⁴² These outcomes are highly dependent on location and the population impacted. Utah has a relatively healthy population. While 51.4% of U.S. adults participate in moderate-to-vigorous physical activity, 55.0% of Utah adults do.⁴³

Linked to the health issues already mentioned, changing travel mode can impact obesity. Although only 57.8% of Utah adults are overweight or obese compared to the national average of 63.4%, being overweight or obese lends itself to greater health problems such as heart disease. In a study conducted in Atlanta, each additional hour spent in a car per day was associated with a 6% increase in the odds of being obese. Conversely, each additional kilometer walked per day was associated with a reduction of 4.8% in the odds of being obese.⁴⁴ While Atlanta’s population is very different from that of Utah, increased time of physical activity generally lends to better health.

The implications of an aging population are being seen in Utah and across the U.S. This raised awareness creates a unique situation for those looking to invest in local transportation systems. With older adults potentially

seeing a reduction in driving as they age, the need for alternative forms of transportation in areas with aging populations is more acute. The Utah Department of Aging and Adult Services aims to offer programming that will help aging Utahns maintain their independence, and a transportation network with complete streets attributes helps to achieve this. Research conducted by the AARP not only cites safety as a benefit of the implementation of complete streets, but also the inclusion of elderly citizens.⁴⁵

Locally, research has been conducted to compare different types of neighborhoods and their impacts on physical activity levels of children. The study compared children in three Utah communities: Daybreak, a Daybreak-adjacent development whose children attended school in Daybreak, and an outside community. Daybreak is a planned, new-urbanist development that is also a LEED Neighborhood Design pilot community – which equates to a highly walkable community focused on reduced environmental impacts. The research showed that the children in Daybreak and the adjacent community participated in four-and-a-half to five-and-a-half more minutes of physical activity prior to school. This increase in physical activity of children in areas with high connectivity is reflective of other studies conducted around the world.⁴⁶

Environment

Research has repeatedly shown that “[m]ixed land uses, higher density, and greater street connectivity are associated with significantly lower per capita emissions of NO_x and VOC when controlling for income, age, vehicle ownership, and household size.”⁴⁷ While Utah is compliant with the threshold set by the EPA for these pollutants, diversifying modes and increasing accessibility can help get people out of cars and immediately reduce air pollution from auto trips.

Air pollution becomes a top priority in Utah during the winter. Winter inversions make air quality problems impossible to ignore. Data from the Utah Department of Air Quality shows that mobile (on road) sources, or automobiles, create the bulk of the contributions to microscopic particulate matter (PM_{2.5}) in the state.⁴⁸ Ridership of Utah Transit Authority public transportation currently eliminates 2,000 tons of emissions annually.⁴⁹ If service was expanded and ridership increased 90%, annual emissions could be reduced by 3,600 tons.⁵⁰

Placemaking

One benefit that requires the confluence of many different pieces is the creation of a “great place.” Although this type of benefit is the result of many different types of investment and effort, it is an important one with reciprocal impacts of economic development, improved safety, and health.

The Project for Public Spaces, an organization dedicated to the idea of placemaking, has a list of 10 qualities of a “great street.” The list includes the following:

- Attractions and destinations
- Identity and image
- Active edge uses
- Amenities
- Management
- Seasonal strategies
- Diverse user groups
- Traffic, transit, and the pedestrian
- Blending of uses and modes
- Neighborhood preservation

The American Planning Association has recognized two streets in Utah due to the result of combinations of the attributes listed above. The two recipients of Great Streets in Utah are:

- South Temple, Salt Lake City (2007) – honored for a mix of modes, neighborhood preservation, diversity of land uses (active edge uses)⁵¹
- 25th Street, Ogden (2014) – active planning efforts, historic preservation, walkability, emphasis on design, active edge uses⁵²

Figure 21: South Temple, Salt Lake City, UT



Source: Utah Foundation.

Figure 22: 25th Street, Ogden, UT



Source: Ogden City.

CONCLUSION

The potential for benefits from investment in local roads is highly dependent on the context in which it is employed. Survey respondents showed a desire to increase their funding in order to achieve better maintenance, as well as to build additional features for active transportation. Better maintenance can result in reduced costs of pavement preservation over time. If cities and counties have the opportunity to broaden amenities for active transportation, impacts to quality of life, environment, health, and safety could potentially occur.

Funding is a crucial piece for a city or county to achieve their goals for their desired network. Although the information provided for future funding desires received through the survey are percentages, they can provide a loose framework to help inform decisions for local infrastructure development in the future. Benefits that received the highest ranking were typically perceived as contributing the most to quality of life in both cities and counties. Urban counties and suburban cities saw sufficient capacity to be a top contributor of economic development, while better maintenance was a top reason for financial benefits across the board.

ENDNOTES

1. B. Scheer, "The Anatomy of Sprawl," *Places: A Forum of Environmental Design* 14: 2. 26-37 Fall.
2. J. Smith, "An Explanation of the Plat of the City of Zion," Provided by Prof. Emeritus J. Reys, the Department of Urban Planning, Cornell University. <http://urbanplanning.library.cornell.edu/DOCS/smith.htm>
3. Utah Department of Transportation, 2013 Vehicle Miles of Travel by County by Ownership, July 10, 2014, <http://www.udot.utah.gov/main/uconowner.gf?n=15059124033524290>
4. MPO counties are Box Elder, Cache, Davis, Morgan, Salt Lake, Summit, Tooele, Utah, Wasatch, Washington, Weber; UDOT planning area counties are Beaver, Carbon, Daggett, Duchesne, Emery, Garfield, Grand, Iron, Juab, Kane, Millard, Piute, Rich, San Juan, Sanpete, Sevier, Uintah, and Wayne.
5. Discussion with Nick Jones, LTAP, 3 Nov 2014
6. Utah Department of Transportation, 2013 Annual Statistical Summary
7. Smart Growth America, "National Complete Streets Coalition," 2015, <http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/complete-streets-fa>
8. Ibid
9. Rural, non-MPO counties indicated that pedestrian crossings were on 39% of local roads, while MPO counties indicated they were on 23% of local roads, a statistically significant difference (98%).
10. Each difference was statistically significant at 95% or more.
11. Resource System Group, "Utah Travel Study," January 2013
12. Victoria Transport Policy Institute, "Evaluating Active Transport Benefits and Costs," 11 June 2014
13. Public Health Agency of Canada, "What is Active Transportation?," 4 November 2014, <http://www.phac-aspc.gc.ca/hpps/hl-mvs/pa-ap/at-ta-eng.php>
14. WFRC slides from Ned
15. Economic Development Corporation of Utah, Utah Business and Economic Profile: Demographics 31 January 2014, http://www.edcutah.org/documents/Section3_Demographics_001.pdf
16. The Council of State Governments, "Rural Transportation Needs," Capitol Research, January, 2011
17. Resource System Group, "Utah Travel Study," January 2013
18. The Council of State Governments, "Rural Transportation Needs," Capitol Research, January, 2011
19. Office of the Legislative Fiscal Analyst, "2013-2014 Appropriations Report," Utah State Legislature 2013 General Session
20. "Fueling our Future, 2013-2040" Utah Foundation Report Number 713, March 2013
21. Data from Utah League of Cities and Towns, UT-2 Survey of Local Government Finances: Transportation related data
22. Utah Department of Transportation, Regulations: Governing Class B & Class C Road Funds, Office of Program Development, 31 August 2013
23. Ibid.
24. Utah Department of Transportation, Class B and C Road Distribution Fiscal Year 2014
25. Property Tax Division, "2013 Annual Statistical Report," Utah State Tax Commission, 1 August 2014
26. The Pew Charitable Trusts, "Intergovernmental Challenges in Surface Transportation," *Fiscal Federalism in Action: 1* (2014)
27. "Utah's Unified Transportation Plan 2011-2040" Wasatch Front Regional Council, Cache Valley Planning Organization, Dixie Metropolitan Planning Organization, Utah Transit Authority, Mountainland Metropolitan Planning Organization, Utah Department of Transportation.
28. Office of the Property Rights Ombudsman, "Impact Fees," Utah Department of Commerce, <http://propertyrights.utah.gov/impact-fees/>
29. Strong Towns, "The Cost of Development, Local Roads Editions," 11 January 2010 <http://www.strongtowns.org/journal/2010/1/11/the-cost-of-development-local-roads-edition.html>
30. Federal Highway Administration, "Pavement Preservation Compendium II," U.S. Department of Transportation
31. Office of Policy and Governmental Affairs, "Moving Ahead for Progress in the 21st Century Act: A Summary of Highway Provisions," 17 July 2012
32. Discussion with Nick Jones, LTAP, 3 Nov 2014
33. AARP Public Policy Institute, "Planning Complete Streets for an Aging America," http://assets.aarp.org/rgcenter/il/2009_02_streets.pdf and National Center for Safe Routes to School, About Us, <http://www.saferoutesinfo.org/about-us>
34. Zero Fatalities, Utah Crash Database
35. Violence and Injury Prevention Program, "Bicycle Helmet Use in Utah, 2008," Utah Department of Health
36. National Center for Safe Routes to School, About Us, <http://www.saferoutesinfo.org/about-us>
37. Economic Development Research Group, "Economic Benefits and Impacts of Utah's Unified Plan," Prepared for the Utah Transportation Coalition, 4 January 2012
38. Victoria Transport Policy Institute, "Transportation Cost and Benefit Analysis II: Chapter 7 – Evaluating Transportation Benefits," 22 February 2012
39. Joe Cortright, Impresa, Inc. "Walking the Walk: How Walkability Raises Home Values in U.S. Cities," CEOs for Cities

ENDNOTES

40. National Association of Realtors, "2014 Profile of Home Buyers and Sellers," 7 November 2014
41. Volpe, Nonmotorized Transportation Pilot Program Yields Striking Results, The National Transportation Systems Center, 16 December 2014, <http://www.volpe.dot.gov/transportation-policy-planning/transportation-planning/nonmotorized-transportation-pilot-program>
42. California's Strategic Growth Council, "Health and Environmental Benefits of Active Transportation and Complete Streets," Sustainable Community Planning and Incentive Grant Applicant Resources, http://sgc.ca.gov/docs/funding/Health_and_Environmental_Benefits_of_Active_Transportation_and_Complete_Streets_12.23.pdf
43. Kaiser Family Foundation, State Health Facts: Utah, <http://kff.org/statedata/?state=UT>
44. L. Frank et al, "Many Pathways from Land Use to Health," *Journal of the American Planning Association* 72 no. 1 (2006).
45. AARP Public Policy Institute, "Planning Complete Streets for an Aging America," http://assets.aarp.org/rgcenter/il/2009_02_streets.pdf
46. Stevens, and Brown *International Journal of Behavioral Nutrition and Physical Activity* 2011, 8:139
47. L. Frank et al, "Many Pathways from Land Use to Health," *Journal of the American Planning Association* 72 no. 1 (2006).
48. "The Air We Breathe," Utah Foundation Report Number 719, January 2014
49. Utah Clean Air Action Team, "Clean Air Action Team Recommends Immediate Action to Clear the Air," 13 February 2014, Press Release via Envision Utah.
50. Ibid.
51. American Planning Association, "South Temple Street, Salt Lake City, UT," *Great Places in America: Streets*, 2007 <https://www.planning.org/greatplaces/streets/2007/southtemplestreet.htm>
52. American Planning Association, "25th Street, Ogden, Utah," *Great Places in America: Streets*, 2014 <https://www.planning.org/greatplaces/streets/2014/25thstreet.htm>

Major Supporters of Utah Foundation

Platinum Supporters

Boeing	Rio Tinto
George S. and Dolores Doré Eccles Foundation	Rocky Mountain Power
Intermountain Power Agency	Sorenson Legacy Foundation
Love Communications	Union Pacific
Questar	Zions Bank

Gold Supporters

The Church of Jesus Christ of Latter-Day Saints Foundation	Salt Lake City
Intermountain Healthcare	Salt Lake Community College
Overstock.com	Salt Lake County
	Utah Transit Authority

Silver Supporters

Ally Bank	IASIS Healthcare	Utah Community Credit Union
CBRE	Management & Training Corp	Washakie Renewable Energy
Chevron	Molina Healthcare	Wells Fargo
CIT Bank	Mountainstar Healthcare	Wheeler Machinery
Energy Solutions	Regence BlueCross BlueShield	Workers Compensation Fund
Fidelity Investments	University of Utah Healthcare	

Bronze Supporters

Central Utah Clinic	Magnum Development	Utah System of Higher Education
Centurylink	Parsons Behle & Latimer	Utah Valley University
Deloitte	Potash Ridge Corporation	Wasatch Front Regional Council
Deseret Management Corp.	Ray Quinney & Nebeker	Webb Publishing
Dixie State University	Riverton City	Weber State University
Enterprise Holdings	Sandy City	
Ernst & Young	Staker & Parson Companies	
Garbett Homes	Thanksgiving Point Institute	
HDR Engineering	University of Utah	
Holland & Hart	Utah State University	
