Chapter 4 – Goals and Performance Measures

Goals

The Goals outlined here have been developed through a regional process of public input and review. As the foundation of this Plan, these goals guide the policies and recommendations contained within. From the project prioritization process to performance measures, these Goals shape the future this plan puts forth. These goals were developed from the public input received during the planning process. The Long Range Transportation Plan Subcommittee met, discussed the input, and agreed upon these goals. Care was also taken to ensure they align with the SAFETEA-LU planning factors and the Livability Principles.

Economic Development

Encourage economic growth and vitality for the region by providing transportation infrastructure and facilities that ensure opportunities for future economic development and promote desired growth.

Multi-Modal, Interconnected System

The OTO should work within the region to develop, implement, and maintain a multi-modal transportation system that supports jobs, housing, education, accessibility, recreation, clean air, water conservation and sustainability.

Quality of Life and Livability

The OTO should work to improve quality of life and livability by enhancing the effectiveness and aesthetics of the collective transportation system, improving the connectivity and accessibility of the street, pedestrian, and bicycle networks, promoting urban density and efficient development patterns, and increasing the efficiency and convenience of the existing public transit system.

Operations and Maintenance

The OTO should support the maintenance of streets, sidewalks, trails, transit, and the airport, using the most effective strategies to maximize the efficient operation of the existing systems, keeping in mind safety, accessibility, sustainability, and collaboration.

Safety and Security

The OTO should work within the region to ensure the safety and security of all users focusing on reductions in crash rates through engineering, education, enforcement and emergency response, as well as security improvements through incident management and partnerships with local and regional enforcement agencies and the public transit agency.

Transportation Advocacy and Needs Assessment

The transportation network should be monitored periodically, providing feedback for the support of the most comprehensive solution for transportation demand, safety, quality of life, economic development, availability of applicable funding, and the maximizing of beneficial returns on transportation investments.

Performance Measures

One of OTO's Major Goals in Journey 2035 is Transportation Advocacy and Needs Assessment. To meet this goal, OTO has identified eleven performance measures which can help to monitor the performance of the recommendations contained within the plan. The performance measures were developed through the LRTP Subcommittee. Key measures that had data available were selected based on their relevance to the Plan Goals. Accompanying each performance measure is a description, the associated Major Goal(s), and the current status of the measure. The recommendations found in this plan will help OTO meet these performance measures, as well as the broader goals which have been set for the region.

Table 9 - Summary of Performance Measures and Targets

Performance Measure	Target
Vehicle Miles Traveled per Capita	That VMT per Capita will grow no more than 5 percent from its peak in 2004, at a value of 19, by 2035. Growth should be captured in other modes
Modal Balance	Decrease "Drove Alone" to 75 percent for the region by 2035
Bicycle/Pedestrian Network Completion	If, on average, 4 miles of sidewalk are added each year within the OTO area, but no new roadways, by 2035, the total percent of roadways with sidewalks would be 33.5
Total Disabling Injury and Fatal Crashes per Million Vehicle Miles Traveled	That disabling injury and fatal crashes/MVMT will continue a downward trend as shown in the above graphic
On-Time Performance of Transit System	The CU service standard is 90 percent. The system will be considered to have acceptable on-time performance at this 90 percent level
Percent of Housing Units within ¼-mile of a Bus Route	That the percent of housing units within the CU Transit service area and the OTO area within ¼-mile of a bus route is on the upward trend between now and 2035
Average Commute Time	Keep the average commute time less than 25 minutes by 2035
Peak Travel Time	That less than 20 percent of the OTO area roadways will be severely delayed
Percent of Roadways in Good Condition	That 85 percent or more of the Major Roads in the OTO region are in Good condition
Bridge Condition	That the percent of bridges in fair or better condition will stay above 90 percent
Ozone Levels	That the region will be able to demonstrate transportation conformity for its plans, programs, and projects

1. Vehicle Miles Traveled per Capita

A lower value is better.

Description

Vehicle Miles Traveled (VMT) is the total number of miles driven by all vehicles within a given time period and geographic area. By comparing VMT to the number of persons in the region, OTO can gauge just how much VMT is changing in relation to the potential number of people driving. VMT is influenced both by the number of vehicles using the roadway system and the trip length of those vehicles, which increases with the geographic area that is urbanized.

Plan Goals Related to VMT per Capita

Economic Development

- The VMT trend is often an indicator of economic activity, however, once it has reached an optimal point, additional VMT can decrease economic activity. Those facilities, which were classified as congested in the most recent Congestion Management Process, are those arterial roadways with the most economic activity in the region. Strategies to reduce VMT often increase travel choice, which also means that these locations can benefit from reduced VMT with increased accessibility by other modes. Reduced VMT/capita results in reduced maintenance and operations expenses, which allows governmental entities to focus their resources on other ventures which can improve economic development activities.

Quality of Life and Livability

- VMT reductions can lead to decreased congestion and improved travel times for roadway users. Strategies to reduce VMT often increase travel choice. The ability to safely travel and avoid congestion, thereby decreasing travel time, increases the benefit available to residents and users of the system. Reduced VMT/capita can also mean less of the household budget is spent on transportation, allowing expenditures to go toward other needs or wants. Decreased congestion provides for decreased emissions from motor vehicles. Improved air quality has a positive impact on quality of life and livability. The goal to decrease VMT/capita is consistent with the livability principles put forth by the Environmental Protection Agency, the Department of Housing and Urban Development, and the Department of Transportation.

Operations and Maintenance

- Reductions in VMT/capita have a direct relationship to both operations and maintenance costs. Operations and maintenance costs can be lessened and additional improvements to the system may be delayed if VMT/capita is reduced.

Current Value/Trends

Table 10 - OTO Vehicle Miles Traveled per Capita
Source: Missouri Department of Transportation

Year	VMT	Population	VMT per Capita
2010	5,010,884	310,283	16.14
2009	4,969,336	*303,720	16.36
2008	5,063,022	*298,910	16.94
2007	5,185,837	*293,385	17.68
2006	5,115,547	*287,216	17.81
2005	4,904,027	*280,622	17.48
2004	4,946,098	*275,796	17.93
2003	4,630,231	*271,251	17.07
2002	4,540,996	*266,874	17.02
***Census Estimate**			

Target

That VMT per Capita will grow no more than 5 percent, to a value of 19 from its peak in 2004, by 2035. Travel growth should be captured in other modes.

2. Modal Balance

A lower value is better for "Drive Alone," while a higher value is better other modes.

Description

Modal balance describes the varying proportions of mode choice at a given time. Modes can include walking, cycling, public transport, carpooling, and private motor vehicle, as well as taxicab, motorcycle, and no travel mode – as in working from home. As an indicator, modal balance provides information on how many types of users there are within the system. As a performance measure, modal balance shows the success of alternative forms of transportation. For this performance measure, OTO has decided to focus only on a certain subset of modes –

- Car, Truck, or Van – Drove Alone
- Car, Truck, or Van – Carpooled
- Public Transportation – All

- Bicycle
- Walked
- Worked at Home

This data is derived from the American Community Survey, which asks, "How did this person usually get to work last week?" Respondents are asked to mark the method they used most often if they used more than one mode of transportation during the trip. The American Community Survey collects data on a yearly basis, but on a smaller scale. To maintain reliability in the data in areas with smaller populations, yearly samples are aggregated over multiple years. This also limits the geography for which American Community Survey Data is available. For the OTO region, this data is offered at the County and Place level. In this analysis, the data for all of Christian and Greene Counties have been used, as the information was not available at just an MPO level.

Plan Goals Related to Modal Balance

Economic Development

- Modal choice can provide multiple economic benefits to the region. Alternative modes of transportation can result in job creation, time savings, emissions reductions, and increased labor force participation. All of these factors lead to increased investment within the region, allowing households to spend their money on something other than transportation. One study in Atlanta showed investments in transit allowed more money to stay in the local economy, where as automobile-related spending had greater "leakage" out of the area. Modal choice can have a direct impact on VMT in the region, also allowing for the earlier-listed benefits.

Multi-Modal, Interconnected System

- Modal balance demonstrates the success of a multi-modal interconnected system. Alternative modes of transportation often rely on each of the other modes for a complete trip within the system. The more connected each mode is to the other, the easier and more likely it is that an alternative mode will be used.

Quality of Life and Livability

- Travel choice is often included as one measure of quality of life and livability. Reduced congestion, emissions, and potential crashes, as well as improved aesthetics and function of local land use, will enhance the experience of both residents and visitors to the community. Bicycling, walking, and transit can provide safe ways for children to access school, especially when the infrastructure supports those modes. The U.S. Department of Transportation promotes bicycling and walking as family-friendly forms of transportation.

Operations and Maintenance

- Each non-driver trip reduces the size and weight footprint of the automobile on the roadway per person traveling, thereby freeing space for additional persons and lessening the operations and maintenance costs/person of those roadways. Reduced congestion allows for

more efficient operation of traffic in the region. The impacts of incidents or other forms of non-recurring delay, such as work zones, are mitigated by fewer vehicles on the roadway. Increasing infrastructure for additional modes, can create additional maintenance costs.

Safety and Security

- An increased presence by bicyclists and pedestrians within the transportation system can create a safer environment by those same users through their increased visibility. As users diversify within the system, additional planning, engineering, construction, education, and enforcement efforts should be put toward supporting those users.

Current Value/Trends

Data from 2005-2009 represents aggregated information provided by the US Census Bureau through the American Community Survey. Data is aggregated over multiple years to achieve a statistically significant sample.

Table 11 - 2005-2009 OTO Mode Share

Source: 2005-2009 American Community Survey, Table B08301

	Car, Truck, or Van				% Public Transportation		% Bicycle		% Walked		% Worked at Home	
	% Drove Alone		% Carpooled									
	2000	2005-2009	2000	2005-2009	2000	2005-2009	2000	2005-2009	2000	2005-2009	2000	2005-2009
TOTAL	81.90	81.67	10.56	9.64	0.81	0.82	0.37	0.48	2.48	2.83	3.13	3.61

	Blue cells show improvement
	Red cells show decline
	White cells show no change

Target

Decrease “Drove Alone” to 75 percent for the region by 2035.

3. Bicycle/Pedestrian Network Completion

A higher value is better.

Description

Using aerial photography and data from individual jurisdictions, OTO tracks where sidewalks exist within the OTO study area. This plan recommends sidewalks be located in residential, as well as commercial areas. This performance measure will compare the miles of roadway with sidewalk to the miles of roadway without and will not include roadways with a classification of Expressway or higher. The measure will not

distinguish between those roads with sidewalks on one side of the street versus both sides of the street. Sidewalks are usually added to existing roadways at a rate of just a few miles per year. Sidewalks should be included with construction of new roadways.

OTO has also identified the future trail network for the region. This performance measure will be assessed by the miles of completed trails. Only those trails used for transportation will be counted. The Frisco Highline Trail will only be counted to the Greene County northern boundary. Currently, 225 miles of trail are planned for the region.

Plan Goals Related to the Completion of the Bicycle/Pedestrian Network

Economic Development

- Sidewalks and trails are an amenity to the community. Not only do they enhance aesthetics and provide recreational opportunities, but they also provide accessible and efficient connections between neighborhoods, schools, public transportation, and commercial/office destinations. Sidewalks and trails promote travel choice and increase the opportunity for access to employment. Both sidewalks and trails can promote the use of public transportation by making it safer to reach bus stops. Areas that receive the attention and investment sidewalks, trails, and trail connections provide, will see an increase in economic activity and often, property values.

Multi-Modal, Interconnected System

- Streets, which incorporate sidewalks and are supplemented with a trail system, provide for a more complete and inter-connected transportation system. By providing connections within the community and to other forms of transportation, sidewalks and trails allow for use of the transportation system by a variety of users.

Quality of Life and Livability

- The same elements that enhance economic development add to the quality of life and livability of the region. Through improved safety, reduced congestion and emissions, and the ability to be active, sidewalks and trails can have a significant positive impact on the quality of life within an area. Sidewalks and trails provide a connection between geographic areas of a community, while fostering social connections and awareness.

Operations and Maintenance

- Sidewalks and trails add to the available travel choices to the public. This allows the public to avoid congestion, while increasing the capacity, thereby improving operations, of the transportation network. Walking and cycling can move many more people at a lower cost than driving.

Safety and Security

- Sidewalks and trails can provide a safe way for pedestrians and cyclists to travel. Children, seniors, and those who cannot afford to own a car must use walking, cycling, and transit to move about the community. Without appropriate accommodation along streets designed mainly for motor vehicles, walking and cycling can be a dangerous way to travel.

Current Value/Trends

Miles of Roadway* with Sidewalks – 762.96
Miles of Roadway* without Sidewalks – 1750.07
Total Miles of Roadway* – 2513.03
Total Percent of Roadways* with Sidewalks – 30.36
Miles of Existing Greenway Network – 52.03
**excluding Freeways, Freeway Ramps, and Expressways (per the OTO Major Thoroughfare Plan)*

Target

If, on average, 4 miles of sidewalk are added each year within the OTO area, but no new roadways, by 2035, the total percent of roadways with sidewalks would be 33.5.

1) That 35 percent of roadways have sidewalks, excluding those with Expressway classification or above.
2) That 80 miles of the trail network be completed by 2035.

4. Total Disabling Injury and Fatal Crashes per Million Vehicle Miles Traveled

A lower value is better.

Description

Crash rates are defined by crashes per Million Vehicle Miles Traveled (MVMT). This can be an effective way to gauge roadway safety trends. This does not account for how many disabling injuries or fatalities occurred with a single crash, rather, it considers if any disabling injury or fatality was associated with a crash, and then compares that to the vehicle miles traveled. By indexing the number of crashes to vehicle miles traveled, one can take into account the risk involved given the number of miles driven. The more miles one travels, the higher their risk for a crash. This exposure factor is more accurate in determining roadway safety.

Plan Goals Related to Crashes per Million Vehicle Miles Traveled

Operations and Maintenance

- Incidents are a leading contributor to non-recurring delay in the transportation network. By improving the safety of the roadway, incidents can be minimized, reducing delay and congestion. Strategies, such as guard cable in the median, can further reduce fatalities by preventing cross-over collisions. These large-scale crashes can dramatically slow traffic, especially during peak travel times.

Safety and Security

- Reducing the fatal crash rate has a direct impact on the safety of the system. Reducing incidents along the roadway can also improve the safety of those responders who work crashes, often next to moving traffic.

Current Value/Trends

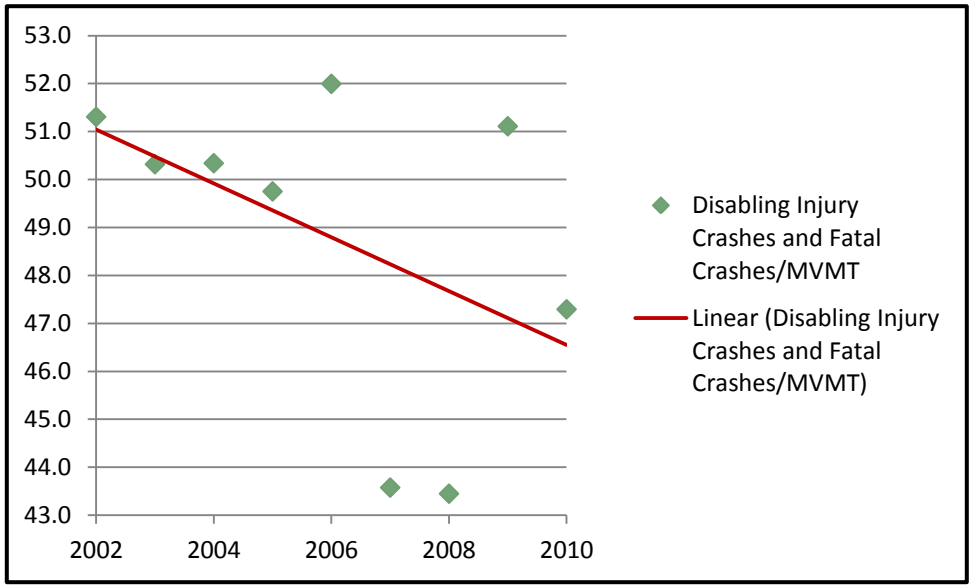
Table 12 - OTO Total Disabling and Fatal Crashes per Million Vehicle Miles Traveled

Source: Missouri Department of Transportation

Year	VMT	Disabling Injury Crashes and Fatal Crashes	Disabling Injury Crashes and Fatal Crashes/MVMT
2010	5,010,884	237	47.3
2009	4,969,336	254	51.1
2008	5,063,022	220	43.5
2007	5,185,837	226	43.6
2006	5,115,547	266	52.0
2005	4,904,027	244	49.8
2004	4,946,098	249	50.3
2003	4,630,231	233	50.3
2002	4,540,996	233	51.3

Figure 19 - OTO Disabling Injury and Fatal Crashes per MVMT

Source: Missouri Department of Transportation



Target

That disabling injury and fatal crashes/MVMT will continue a downward trend as shown in the above graphic.

5. On-Time Performance of Transit System

A higher value is better.

Description

The timeliness of each bus route is determined through spot checks by a supervisor. Such checks are performed randomly. Timeliness can help determine if a route needs adjusting, if there are issues at stops along a route, or if there is a broader roadway efficiency issue. Timeliness also demonstrates the reliability of the system. System reliability can be more important to a user than frequency of service.

Plan Goals Related to the On-Time Performance of the Transit System

Multi-Modal, Interconnected System

- A reliable transit service can promote additional use of the system. Public transit is the "long-haul" provider of alternative transportation, often completing the connection across town between bicycling and walking.

Quality of Life and Livability

- A robust transit system, that is able to move freely through the region, provides another element toward quality of life and livability. As a tool of accessibility to employment and retail destinations, public transit adds value to the community. For visitors to the region, public transit can provide a way to visit more of the community.

Operations and Maintenance

- Timeliness of the transit system can be an indicator of how well the overall transportation system operates. Also, more people will use a reliable system, reducing the overall traffic demands upon the network.

Current Trends/Values

Table 13 - City Utilities Transit On-Time Performance

Source: City Utilities Transit

Year	Percent on Time
2007	89.21
2008	91.47
2009	91.32
2010	93.54

Target

The CU service standard is 90 percent. The system will be considered to have acceptable on-time performance at this 90 percent level.

6. Percent of Housing Units within ¼-mile of a Bus Route

A higher value is better.

Description

The percent of housing units within a ¼-mile of a bus route is an indicator of how many potential people are available to use the transit system. This measure examines the City Utilities Transit service area at the proximity of housing units to CU bus service.

Plan Goals Related to the Percent of Housing Units within ¼-mile of a Bus Route

Multi-Modal, Interconnected System

- Proximity to housing is a strong measure for possible transit use. If people are connected to the transit system, then they are connected to the remainder of the community.

Quality of Life and Livability

- More housing near transit provides travel choice for that community. Encouraging that additional housing promotes density, which is often followed by additional services. This is accompanied by other transportation options, including a more complete sidewalk network, and increased accessibility. Travel options tend to reduce the amount of the household budget spent on transportation. Housing near transit can be referred to as transportation-efficient housing. Freeing resources and time for those who live near transit increases livability and the quality of life in that neighborhood.

Current Trends/Values

For 2010:
Housing units in OTO area – 138,620
Housing units in CU Transit Service Area – 111,653
Housing units within ¼-mile of a bus route – 57,048
Percent housing units in OTO area within ¼-mile of a bus route – 41%
Percent housing units in CU Transit service area within ¼-mile of a bus route – 51%

Target

That the percent of housing units within the CU Transit service area and the OTO area within ¼-mile of a bus route is on the upward trend between now and 2035.

7. Average Commute Time

A lower value is better.

Description

Average commute time is the amount of time taken to travel to work as reported by workers over the age of 16 on the American Community Survey and the decennial Census. This data is not available at the OTO level, so it will include all of Christian and Greene Counties. This measure is an indicator of both the distance commuters are traveling and the potential congestion drivers face during their commute.

Plan Goals Related to Average Commute Time

Economic Development

- Transportation system improvements, which reduce average commute time, can have multiple economic benefits. Average commute time is an indicator of mobility throughout the system. A reduced average commute time can benefit business by allowing goods to be transported faster or at a lower cost. This also expands the labor market for employers. Individuals can benefit with reductions in travel time and fuel consumption, resulting in increased labor force participation.

Quality of Life and Livability

- With Quality of Life, the work/life balance often comes into the discussion. Shorter commute times allow for employees to dedicate more time to the life side of the equation. Reduced commute times are an indicator of reduced congestion. This lessens the stress of the commute, and the mental and physical impacts that stress has.

Operations and Maintenance

- Projects that positively impact the operations of the roadway, or direct commuters to other forms of travel, will also reduce the average commute time. Average commute time is an indicator of how well the roadway operates, its efficiency, reliability, and options for travelers.

Current Value/Trends

Table 14 - 2005-2009 Travel Time to Work in the OTO Region

Source: US Census Bureau – 2005-2009 American Community Survey, Table B08303

	1980	1990	2000	2005-2009	Percent Change b/t 2000 and 2005-2009
Christian	24.0	27.4	25.1	24.1	-3.98
Greene	17.2	17.6	19.2	19.5	1.56
Battlefield	22.1	22.6	23.1	22.7	-1.73
Fremont Hills	N/A	17.0	19.8	19.7	-0.51
Nixa	20.8	19.1	23.8	21.9	-7.98
Ozark	21.0	19.2	21.6	22.0	1.85
Republic	20.5	21.6	25.1	23.4	-6.77
Springfield	15.4	15.7	17.0	17.6	3.53
Strafford	19.2	20.4	22.4	23.0	2.68
Willard	20.6	23.2	23.0	23.8	3.48
Average of Greene/Christian	**20.6**	**22.5**	**22.2**	**21.8**	**-1.80**

	Blue cells show improvement
	Red cells show decline
	White cells show no change

Target

Keep the average commute time less than 25 minutes by 2035.

8. Peak Travel Time

A lower value is better.

Description

Travel time along the roadway system is determined through travel time runs which utilize Global Positioning System (GPS) units. These units collect data to determine the average time it takes to travel a corridor. When the speed of travel drops more than 20 mph below the posted speed limit, a roadway is determined to have significant delay.

Plan Goals Related to Peak Travel Time

Economic Development

- Transportation facilities, which reduce travel times and fuel consumption, increase reliability and safety. Roadways with reduced congestion levels have decreased travel times. Improved functionality of the roadway improves access and mobility, allowing for greater employment opportunities and ease of access to businesses, increasing the opportunities for economic activity. Goods can also move more easily within a system that has less congestion.

Quality of Life and Livability

- Travel time is a measure of congestion. Reduced congestion means less stress for the commuter and less time they spend to commute. Reduced delay can mean that travelers have more options for moving around the system.

Operations and Maintenance

- Travel speed is an indicator of the operational efficiency of the system. Significant delay can be an indicator that more options are needed for the traveling public, either other modes or alternative routes. Signal timing can be affected by the changes in travel speed caused by a congested roadway.

Safety and Security

- Though incidents may occur at a lower speed on a roadway at or near capacity, the chances of having an incident increases. Congested roadways can increase aggressive driving habits, which can lead to more crashes. Improving travel time on a roadway can decrease injury crashes, but create a larger increase in property damage only crashes.

Current Value/Trends

Table 15 - AM Peak Travel Time, Significant Delay
Source: Ozarks Transportation Organization

	AM Peak							
	Eastbound		Westbound		Northbound		Southbound	
	2005	2008	2005	2008	2005	2008	2005	2008
Significantly Delayed Mileage	1.80	10.22	2.74	6.56	2.60	7.12	2.17	7.42
Total Travel Time Mileage	71.27	90.97	71.34	90.96	48.83	70.99	48.80	71.18
Percent Significantly Delayed	2.53	11.23	3.84	7.21	5.32	10.03	4.45	10.42

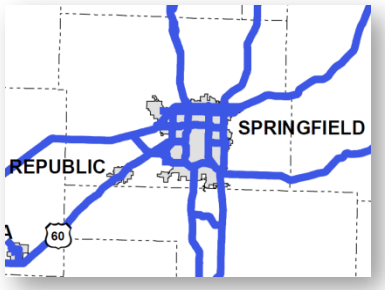
Table 16 - PM Peak Travel Time, Significant Delay
Source: Ozarks Transportation Organization

	PM Peak							
	Eastbound		Westbound		Northbound		Southbound	
	2005	2008	2005	2008	2005	2008	2005	2008
Significantly Delayed Mileage	4.43	12.09	4.32	9.59	3.64	11.26	4.81	10.68
Total Travel Time Mileage	71.30	90.97	69.57	87.76	48.83	70.99	48.83	71.18
Percent Significantly Delayed	6.21	13.29	6.21	10.93	7.45	15.86	9.85	15.00

Target

That less than 20 percent of the OTO area roadways will be significantly delayed.

Figure 20 - Major Roads in the OTO Region
Source: Missouri Department of Transportation



9. Percent of Roadways in Good Condition

A higher value is better.

Description

The Missouri definition of good condition uses factors such as smoothness and physical distress to determine quality. The goal for the Missouri Department of Transportation is to have 85 percent of all Major Roads in Good Condition. The current OTO values for 2010 are higher than for the entire State of Missouri. Overall, in Missouri, the Major Roads were more than 85 percent good, while in the OTO, 93

percent are considered good. Major Roads are principal arterials, including interstates, freeways and expressways. This map highlights the major roads in the OTO region.

Plan Goals Related to Roadway Condition

- *Economic Development*
  Road condition has an impact on economic development by demonstrating investment in the infrastructure which surrounds business. Deteriorating road conditions can discourage new business from coming to an area, as well as discourage existing businesses from expanding. Improved road condition reduces maintenance costs on vehicles, allowing households to put more money into other aspects of the economy.
- *Quality of Life and Livability*
  Road condition is directly felt by road users. As one component of road condition is the smoothness of that road, drivers can immediately relate to the condition of the roadway. Poor road condition can greatly increase vehicle maintenance costs. Poor road condition can also affect other modes of travel, such as bicycling, removing options from travelers.
- *Operations and Maintenance*
  A road in good condition is easier to maintain than one that is not. It costs more to bring a road into good condition, than to just keep it that way. As a roadway deteriorates, the elements can have a greater impact on its future condition. Operations can also be affected by changes in driving habits along a route in poor condition.
- *Safety and Security*
  Safety is greatly impacted by road condition. A roadway in poor condition can create hazards for drivers. Drivers and vehicles can react unpredictably to changes in road surface. Changes in the roadway surface can also reduce friction, decreasing the ability of a vehicle to stop or maneuver.

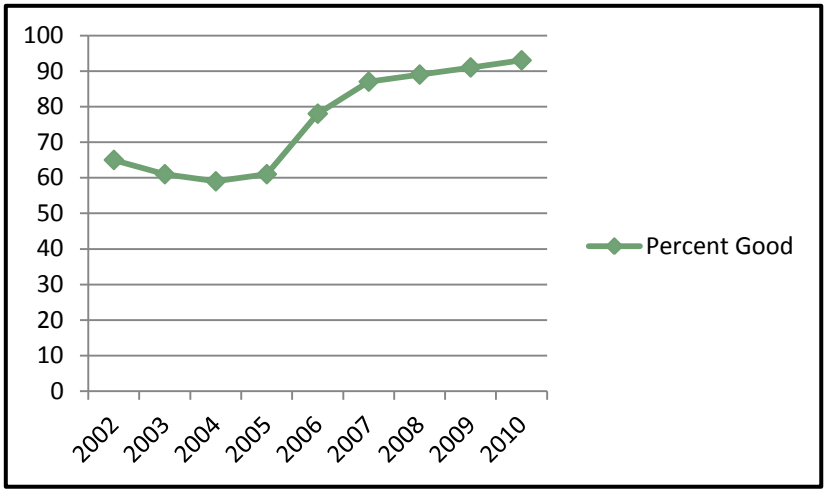
Current Value/Trends

Table 17 - Percent OTO Major Roads in Good Condition
Source: Missouri Department of Transportation

Year	Major % Good
2002	65
2003	61
2004	59
2005	61
2006	78
2007	87
2008	89
2009	91
2010	93

For MoDOT owned roads only.
Based on MoDOT Tracker Data.

Figure 21 - Percent OTO Major Roads in Good Condition
Source: Missouri Department of Transportation



The results of the Smooth Roads Initiative, which started in 2006, are evident.

Target

That 85 percent or more of the Major Roads in the OTO region are in Good Condition.

10. Bridge Condition

A higher value is better.

Description

Bridge condition ratings are calculated by taking the lowest sub-rating of the super-structure, sub-structure, and deck. Ratings range from 3 to 9. At a bridge rating of 3, bridges are closed to the public. A bridge rating of 5 is considered Fair, with all primary structural elements as sound, though they may have minor section loss, cracking, spalling, or scour. A bridge rating of 9 is Excellent. The Missouri Department of Transportation does not have a set goal for this measure. This measure shows those bridges which are rated 5 or higher, in Fair or better condition.

Table 18 - Bridge Condition Scale
Source: Missouri Department of Transportation

Rating	Description
9	Excellent
8	Very Good
7	Good
6	Satisfactory
5	Fair
4	Poor
3	Serious
2	Critical
1	Imminent Failure
0	Failed

Plan Goals Related to Bridge Condition

Operations and Maintenance

- A bridge in poor condition can have reduced weight limits, lane closures, or be closed entirely, reducing travel options for roadway users. Maintenance needs may increase so that a bridge can remain open to the public.

Safety and Security

- Bridges separate traffic from other hazards, whether that be other traffic, waterways, or trains. The ability of the bridge to maintain that separation is important to the safety of the roadway user. Bridge surface conditions can impact user safety through pavement condition or surface friction. A bridge with weight limits or fewer lanes than the surrounding roadway can also create operational hazards.

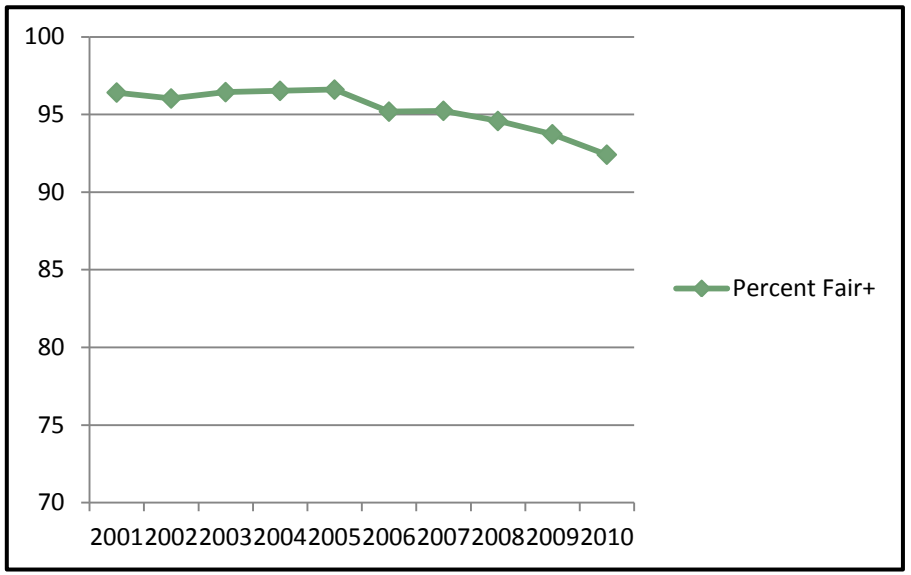
Current Value/Trends

Table 19 - Bridge Condition in the OTO Region
Source: Missouri Department of Transportation

	Total Bridges	Total Fair+	Percent Fair+
2001	251	242	96.41
2002	252	242	96.03
2003	253	244	96.44
2004	259	250	96.53
2005	265	256	96.60
2006	270	257	95.19
2007	273	260	95.24
2008	277	262	94.58
2009	287	269	93.73
2010	290	268	92.41

Includes state and non-state bridges

Figure 22 - Percent of OTO Bridges in Fair or Greater Condition
Source: Missouri Department of Transportation



Target

That the percent of bridges in fair or better condition will stay above 90 percent.

11. Ozone Levels

A lower value is better.

Description

Ozone is a regulated pollutant under the Clean Air Act and the allowable amount is set by the National Ambient Air Quality Standards. Ozone is measured on a three-year design value. This is based on the 4th highest ozone value during each of those three years. The standard in place is set at 75 ppb. The standard is reviewed at least once every five years and either stays in place or is adjusted downward. The next review is scheduled for 2013. As a metropolitan transportation organization, the OTO is responsible for ensuring that the region complies with

transportation conformity requirements. This essentially states that the transportation projects within the non-attainment area are consistent with air quality goals.

Plan Goals Related to Ozone Levels

Economic Development

- If an area is non-attainment for ozone, there can be impacts on new business, especially manufacturing, in an area. Industrial sources and businesses with fuel-burning generators may face restrictions on how they operate. In order to control ozone, jurisdictions may change zoning and development requirements. At the same time, if the area is to stay in attainment, or have a need for few controls on ozone, it should be able to better compete for economic development.

Multi-Modal, Interconnected System

- The need to control ozone levels encourages a multi-modal interconnected system. If vehicle emissions can be reduced, ozone levels can also be reduced. Emissions from motor vehicles can account for 35 to 45 percent of ozone-related emissions.

Quality of Life and Livability

- The Clean Air Act and future amendments were enacted to protect human and plant/ecosystem health. Long-term exposure to ozone can inflame and damage the lining of the lungs. Children and adults with asthma or other respiratory conditions can expect increased aggravation and limited activity on high ozone days. Ground-level ozone can interfere with the ability of plants to produce and store food, increasing their vulnerability. This can lead to negative appearances in urban vegetation, as well as vegetation in national parks and recreation areas. Additional impacts can be seen on forest growth and crop yields. Programs to reduce ozone can require behavioral changes from the general population, but can also provide opportunities for other forms of travel, placing emphasis on transit, bicycling, and walking.

Operations and Maintenance

- Certain road projects can be limited by the need to meet transportation conformity, especially those which increase capacity. Projects that focus on improving operations, however, would receive priority. This includes ITS, incident management, and signal timing.

Safety and Security

- When meeting transportation conformity, safety projects are exempt from transportation conformity requirements. Other measures, which would aim to reduce congestion along the roadway, would also improve safety for the region. On a broader health perspective, reduced ozone levels, would improve air quality and reduce the affects of such.

Current Value/Trends

Table 20 - OTO Ozone Design Values
Source: Missouri Department of Natural Resources

Years	Value
2002-2004	70
2003-2005	71
2004-2006	71
2005-2007	77
2006-2008	73
2007-2009	69
2008-2010	67

Target

That the region will be able to demonstrate transportation conformity for its plans, programs, and projects.