Final Report
May 2008

HIGHWAY 50 ECONOMIC & SAFETY IMPACTS STUDY

Related to Future Improvements to I-70 and I-44 in Missouri

Prepared for:

Highway 50 Partnership

By:

TranSystems

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May 30, 2008

Randy Allen
President/CEO
Jefferson City Area Chamber of Commerce
213 Adams Street
Jefferson City, MO 65102

RE: Highway 50 Economic and Safety Impacts Study Related to Future Improvements to I-70 and I-44 in Missouri

Dear Mr. Allen,

In response to your request and authorization, TranSystems Corporation has completed the Highway 50 Economic and Safety Impacts Study. The purpose of this study is to quantify the safety and economic effects on Highway 50 if it were to be upgraded to four lanes statewide in the context of rebuilding Interstate 70 and Interstate 44. The study measures the effects of this change in infrastructure on a statewide as well as a regional basis.

Included in this study is a discussion of the economic and safety impacts both during the I-70 and I-44 reconstruction efforts and post-reconstruction for the long term impacts of an upgraded Highway 50. In addition, there is a brief summary of the current status of these transportation facilities, an opinion of probable cost and a general implementation plan with tools to facilitate the success of Highway 50 as an alternate route during the forthcoming interstate rebuilds. The executive summary is formatted to serve as an educational handout, setting the stage for the Highway 50 upgrade, sharing the benefits of such an investment and communicating the need to be proactive.

We trust that the enclosed information proves beneficial to the Highway 50 Partnership. We appreciate the opportunity to be of service to you and we will be available to review this study with you at your convenience.

Sincerely,

TranSystems

By: _____

Kyle R. Kittrell, P.E.
Project Manager

KRK: BGF: P104070058

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SECTION 1 INTRODUCTION

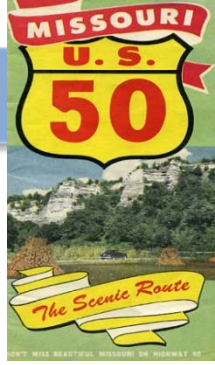
The quantification of economic and safety effects of upgrading Highway 50 to four lanes across the state of Missouri has greater significance in the context of rebuilding Interstate 70 and Interstate 44. The compelling case developed for this corridor can raise the level of awareness and importance of this corridor statewide. The Highway 50 upgrade will be imperative to the successful facilitation of the reconstruction efforts required for the rebuild of I-70 and I-44. Upon the completion of those interstate highway improvements, having Highway 50 as a four-lane facility will result in new business opportunities and economic growth along the corridor as well. The cities, counties and Jefferson City Area Chamber's desire to improve the transportation infrastructure along this corridor is an important first step in providing for this future growth and development in those adjacent regions of the state of interest to the Highway 50 Partnership stakeholders.

Investigating the economic, safety and security benefits of four-laning Highway 50 builds a foundation for a strategic plan to proactively prepare for the impending reconstruction of I-70 and I-44 and justify the investment in the Highway 50 corridor. Section 2 provides general background information regarding the current status of Highway 50 and Interstates 70 and 44. Section 3 sets the stage for upgrading Highway 50 in terms of preparing the corridor to serve as a detour route during the interstate reconstruction efforts. Section 4 follows to describe the long term benefits realized from the upgraded facility. Subsequently, Section 5 presents an opinion of the probable cost to upgrade Highway 50 to a completed four-lane facility. Section 6 wraps up the study with a discussion of the next steps necessary to forward the Highway 50 projects and facilitate its role as a successful detour.

Executive Summary

The following two-page product provides an executive summary of the study findings. As a two-sided handout it presents a concise message of the compelling case to upgrade Highway 50 including quantified benefits and estimated cost. This serves as the primary tool to execute the goal of raising the level of awareness and significance of the Highway 50 corridor, statewide. It is essential to present this information not only to the legislature, but also to key Transportation Stakeholders. Communication is the first step toward fulfilling a Highway 50 upgrade.

Setting the Stage: Upgrade Highway 50



The safety and economic effects of upgrading Highway 50 to four lanes across the state of Missouri take on greater significance in the context of the future rebuild of Interstate 70 and Interstate 44. This is a rare opportunity to get ahead of the curve. An upgraded Highway 50 will provide optimal performance of the roadway system during reconstruction phases of Interstate 70 and Interstate 44 as well as long-term benefits to be realized by the adjacent communities and the entire state of Missouri.

History as a Detour Due to flooding of Routes 63 and 54 near Jefferson City in 1993, a detour route to Jefferson City included Highway 50. During the repairs on the I-70 Bridge at Rocheport, alternate route signs on I-70 directed traffic around the bridge south on Route 65 to Route 50 to avoid excessive delays at the bridge. No one anticipated the magnitude of the traffic impacts that recent construction along I-44 near Rolla would create. When these situations arose, Highway 50 provided needed relief to those travelling within the I-44 corridor. Successfully reacting to the needs of the motoring public during past construction was the catalyst for proactively creating a comprehensive Incident Management Plan for I-44 (MoDOT, District 9). Highway 50 is included as part of its network of potential detours.

Be Proactive. Highway 50 WILL be a necessary detour during multiple phases of I-70 and I-44 reconstruction.

DETOUR AHEAD SERVING I-70 & I-44 REBUILD

Traffic Diversion During I-70 and I-44 construction, it is projected that up to 10% of all traffic will divert to other routes. That is more than 5,000 vehicles per day (vpd).

Costs Due to Congestion Reduced speeds in work zones, narrow lanes and construction-related congestion during the I-70 reconstruction will cause an increase in vehicle-hours traveled. The resulting congestion cost to passenger and commercial vehicles will be more than $174 million over 10 years.

Likewise, the construction scenarios modeled for the I-44 corridor result in $80 million of congestion costs over 10 years. That's a cost of more than $263 million from congestion throughout the life of the I-70 and I-44 rebuild efforts.

An upgraded Highway 50 is projected to play a significant role in reducing these congestion costs.

HIGHWAY 50 INTO THE FUTURE

Economy On average each year, investment in four lanes on Highway 50 will create 1,550 new jobs paying an average wage of $29,319 which will generate a net economic benefit of $7 billion over the next 20 years.

As a result of upgrading Highway 50, an additional $3.0 million in net general revenues, $110.3 million in Gross State Product and $180.2 million in economic activity will be generated annually in Missouri.

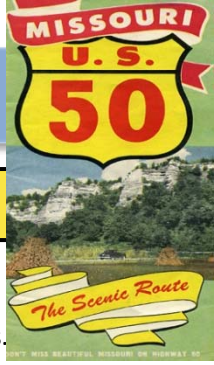
Corridor Capacity Today, the two-lane segment between Sedalia and California carries over 6,500 vpd. Traffic volumes will continue to grow through the year 2030 to more than 10,000 vpd. Current volumes already surpass the desired level of service for a two-lane Highway 50. This equates to drivers having little freedom to maneuver with less comfort and convenience of travel; volume increases will cause substantial drops in speeds.

Radiating from Jefferson City, current traffic volumes approach 8,700 vpd and will likely exceed 13,700 vpd in the year 2030. Heading west from Union, the 5,800 vpd will reach nearly 8,600 vpd by the year 2030. Within the next six years, these segments will also surpass the desired levels of service and will begin to experience similar decreases in functionality.

Four-laning Highway 50 will provide the capacity needed for today and the growth of tomorrow.

Questions related to this initiative may be directed to the HIGHWAY 50 PARTNERSHIP via Randy Allen, Jefferson City Chamber President at (573) 634-3616

Benefits & Costs: Upgrade Highway 50



DETOUR PREPAREDNESS

Traffic Diversion Modeling indicates that traffic diversion to Highway 50 will increase if it is proactively upgraded to four lanes. With the additional two travel lanes in place, Highway 50 will be ready to accommodate this increase in traffic. In fact, traffic model runs for I-70 and I-44 construction scenarios show virtually no effect on Highway 50 travel speeds.

Proactive efforts to divert traffic to other routes with sufficient capacity, like an upgraded Highway 50, will decrease the travel delays along I-70 and I-44 during construction. This will effectively reduce the potential for wasted fuel and cut the overall costs to the public that could have otherwise been incurred from congestion.

Work Zone Safety In 2006, I-70 and I-44 work zones experienced a combined total of 766 crashes including six fatalities. The upgraded Highway 50 detour will reduce the risk of work-zone exposure to the motoring public by enhancing safety for motorists as well as construction workers during the I-70 and I-44 rebuilding efforts. Diverting 10% of the traffic will lower the number of potential work zone incidents accordingly.

This reduction in incidents could save more than $53 million throughout the life of the I-70 and I-44 rebuild efforts.

POST-DETOUR

Safety Severity crash rates are 60% lower on rural four-lane expressways when compared to rural two-lane facilities.

The upgrade will also rectify horizontal and vertical roadway alignments, shoulder widths and sight distances at several locations which do not meet today's standards. These deficiencies currently cause lower operating speeds, inadequate passing opportunities and increased accidents.

Security Highway 50 is the only major east-west National Highway System (NHS) Route between St. Louis and Kansas City that does not cross the Missouri River. Such a corridor is advantageous for homeland security, evacuation and emergency response.

The combination of I-44 and Highway 50 provides a continuous four-lane facility connecting three major defense complexes across Missouri – Whiteman AFB, Ike Skelton Training Site and Fort Leonard Wood.

Highway 50 serves I-70 and I-44 which are both part of the Strategic Highway Network (STRAHNET) providing defense access, continuity and emergency capabilities in times of peace and war.

Economy Four-laning Highway 50 sparks $4.29 of new economic activities for every $1 invested.

The reconstruction of I-70 and I-44 is looming as a necessary tool to provide economic stability to the State. This construction is expected to increase costs to the public due to congestion, fuel expenditure and potential work zone incidents. Traffic on Highway 50 continues to grow resulting in more congestion costs. Upgraded Highway 50 is projected to increase benefits to the State including annual general revenues and economic activity. This economic benefit as well as Highway 50's role in reducing wasteful spending on congestion makes a compelling case for upgrading Highway 50 now. Beyond facilitating the interstate reconstruction efforts, upgraded Highway 50 will provide a facility benefiting Missouri functionally and economically well into the future.

COST PER SEGMENT

- Sedalia Bypass **$128-143 M**
- Sedalia to California **$204-224 M**
- Rte 50/179 Interchange **$7.5-8.5 M**
- Rte 179 Extension **$70-78 M**
- Linn Bypass **$60-64 M**
- Linn to Union **$239-256 M**
- Union to I-44 **$22-24 M**

Total Probable Cost $731-798 Million*

*All estimates are in 2008 dollars.

SECTION 2 SETTING THE STAGE: SIGNIFICANCE DURING I-70 & I-44 REBUILD

Map 1: Statewide Perspective

Nationally, Highway 50 is a major east-west route of the U.S. Highway system, stretching just over 3000 miles from West Sacramento, California east to Ocean City, Maryland on the Atlantic Ocean. The route mostly remains separate from Interstates, and generally serves a corridor south of Interstates 70 and 80 and north of Interstate 64. As shown in Map 1, the location of Highway 50 across the state of Missouri has the potential to serve statewide travel beyond its current regional and even more predominantly local use. The purpose of this study is to evaluate upgrading Highway 50 to four lanes across the entire state. Highway 50 can provide a safe east-west alternate for commerce across Missouri. This ultimate goal has an elevated sense of urgency in the wake of the inevitable rebuild of Interstates 70 and/or 44. If upgraded, Highway 50 has the opportunity to perform as a viable alternative during interstate reconstruction and offer continued economic and safety benefits long after the rebuilds are complete.

Status of Highway 50

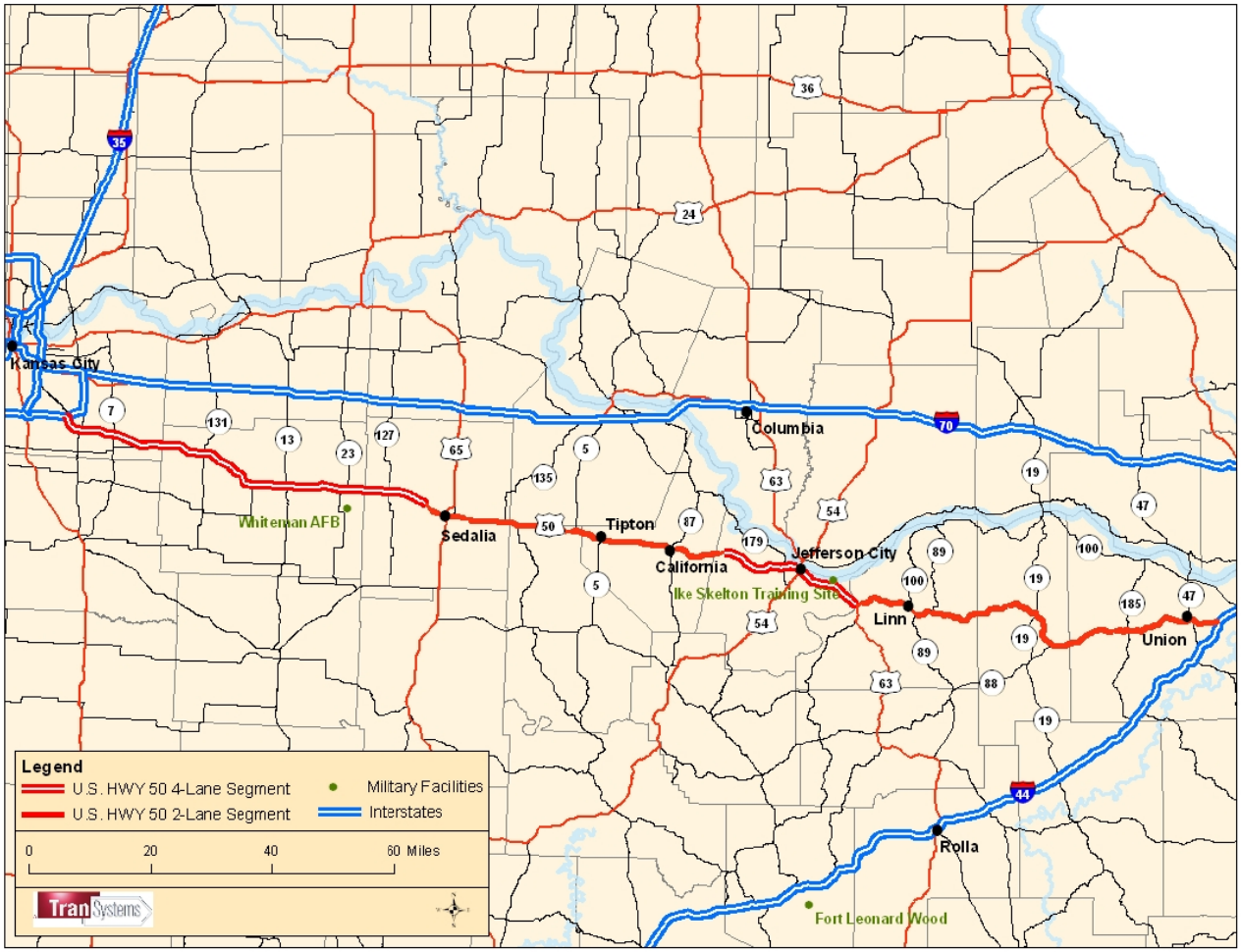
There is a Highway 50 Environmental Impact Study (EIS) through Jefferson City that is currently underway. The EIS will identify friction points along the Rex Whitton Expressway in downtown Jefferson City and determine access to the prison redevelopment site. The Lafayette Street interchange is the preferred route for access to the prison redevelopment area.[1]

Currently, construction is underway to four-lane a section of Highway 50 extending from St. Martins to east of California. In addition, the segment east of Jefferson City from the Route 63 interchange to Linn was approved by the Commission to be programmed in the 2009-2013 Statewide Transportation Improvement Program. However, no

[1]Missouri Department of Transportation. Official Minutes of the Missouri Highways and Transportation Commission. Meeting of April 9, 2008.

improvements are programmed for the remainder of two-lane roadway extending from California to west of Sedalia. Map 2 highlights the two-lane segments of Highway 50 yet to be upgraded to four lanes.

Map 2: Highway 50 2-Lane versus 4-Lane Segments



Status of I-70 and I-44

Today, the Missouri Department of Transportation (MoDOT) is overseeing study efforts at different phases for both I-70 and I-44 to prepare for their necessary rebuild. According to MoDOT, currently there is no funding allocated for the design or construction of any major I-70 or I-44 improvements. However, the lack of funding does not eliminate the need for sound planning. Completion of the I-70 and I-44 studies will ensure that decisions about the corridors are made in an open, collaborative way while balancing environmental issues and community concerns. Study results also will help MoDOT, local communities, and potentially affected businesses and property owners prepare for the

future. The required environmental documentation takes years to complete. The following describes the status of the studies currently underway for I-70 and I-44.

I-70

In early April 2008, the Missouri Department of Transportation is hosting a series of public meetings to share information about the I-70 Supplemental Environmental Impact Statement. The SEIS will evaluate the impacts of an additional strategy for building I-70 truck-only lanes as shown in the rendering below. MoDOT is studying truck-only lanes because as truck traffic continues to increase, Missourians have asked MoDOT to consider separating cars and trucks on the interstate. New and emerging technologies are available which make separation more feasible. This study is also being undertaken because of Missouri's key role in the nationally designated "Corridors of the Future" program. By conducting the I-70 SEIS now, MoDOT will be positioned to move quickly to address I-70's challenges – either by adding more general-use lanes or by building truck-only lanes – when design and construction funding become available. [2] An excerpt from MoDOTs executive summary describing the I-70 Study History prior to the SEIS may be found in Appendix A.

Source: Missouri Department of Transportation, Improve I-70

Rendering of Truck-Only Toll Lanes on I-70

[2]Brendel, Robert. March 28, 2008 Media Release "MoDOT Hosting Public Meetings for Input on I-70 Truck Lane Concept." Retrieved as of 30 May 2008. <www.ImproveI70.com>.

I-44

MoDOT has initiated the I-44 Purpose and Need Study as one of the first steps to gather detailed information on I-44. The area being examined is the stretch of I-44 from the Oklahoma state line on the western end to Route 100 on the eastern end. The goal of the study is to conduct a thorough analysis of the I-44 corridor to prepare for subsequent National Environmental Policy Act (NEPA) requirements.

This study will not propose solutions; however, at the conclusion of the study, an analysis will be performed on the information gathered to create a Purpose and Need Statement. The Purpose and Need Statement will be written to summarize the findings and identify deficiencies in transportation, commerce, recreational access, tourism, agriculture and similar uses associated with the I-44 corridor.[3]

Necessity of I-70 and I-44

As stated in the status section, both corridors are undergoing massive studies on how to best reconstruct these interstates in a way that makes sense for Missouri and the nation. These studies are the first step in the process of completing the design and construction phases of the project. While funding is not currently available for either route at this time, there is a national emphasis being placed on the efficient movement of freight to keep the U.S. competitive in the global economy.

The "Corridors of the Future" program was established to recognize these critical routes and includes Missouri, Illinois, Indiana, and Ohio sections along I-70. Missouri is several years closer to obtaining the funding for their planned improvements than these other states because of the initial work which is being completed now. As soon as the Supplemental EIS is completed on I-70, the Federal Highway Administration (FHWA) will issue a Record of Decision. This Record of Decision, expected to be obtained by the end of 2008, announces the selected alternative and provides the approval needed to proceed to the next phases of project development – design, right of way acquisition and construction. This means that as soon as a funding source is identified design and subsequent construction can begin immediately, possibly as soon as 2009. I-44 is following suit as MoDOT has initiated this process for that corridor as well.

While it may seem as if the construction slated for these routes is a long way off due to funding concerns, these corridors are vital to the freight industry. Truck traffic is increasing on these routes each year, causing more congestion than ever before, and with it the potential for more incidents. These studies are necessary to complete in order to get construction moving when funding is available. With the importance of I-70 and I-44 to the stability of the U.S. economy, the growing national focus on freight movement, and the needs that have already demonstrated themselves to Missourians, it is only a matter of time until these routes are reconstructed.

[3] "What is the I-44 P&N Study?" Missouri Department of Transportation Plans and Projects. Retrieved as of 30 May 2008. <www.modot.org/i44planningforprogress/index.htm>.

SECTION 3 PROACTIVE APPROACH: DETOUR PREPAREDNESS SERVING I-70 & I-44

Traffic congestion and delay will be a major concern for motorists during the I-70 and I-44 reconstruction process. Not only are these inconveniences to the motoring public but there are costs associated with them. This increased cost will be recognized not only by the average motorist, but possibly even more importantly by the freight industry which rely on deliveries being made on time and with low transportation costs.

Highway 50 WILL be a necessary detour during these multiple stages of interstate construction and can provide relief from congestion and significant backups. Recently, no one anticipated the magnitude of the traffic impacts that construction along I-44 near Rolla would create. When these situations arose, Highway 50 provided needed relief to those travelling within the I-44 corridor. Successfully reacting to the needs of the motoring public was the catalyst for proactively creating an Incident Management Plan for I-44 (MoDOT, District 9). Highway 50 is included as a part of its network of potential detours.

Highway 50 has a history of successfully functioning as an alternate route for I-70 as well. Due to flooding of Routes 63 and 54 near Jefferson City in 1993, a detour route to Jefferson City directed I-70 traffic south on Route 65 to Sedalia, then east on Highway 50 to Jefferson City. In 1994 as a result of the Rocheport Bridge repairs on I-70, alternate route signs on I-70 directed traffic around the bridge south on Route 65 to Highway 50 to avoid excessive delays. These detours resulted in heavy traffic volumes on Highway 50.

When these unforeseen situations have arisen, Highway 50 has shown its importance to Missourians as an alternate route which can serve their needs. Upgrading Highway 50 to four lanes now gives us a chance to be proactive and plan for events which are sure to arise during construction. It will also provide both economic and safety benefits during this construction period as described in this section.

Economic Benefits

Four-laning Highway 50 provides an economic benefit to the State and the regions within the corridor while it plays a role as a detour during reconstruction phases of I-70 and I-44. The economic impacts on passenger and freight movement during major construction of an interstate route can be demonstrated by the amount of traffic diversion and measured by the cost of congestion.

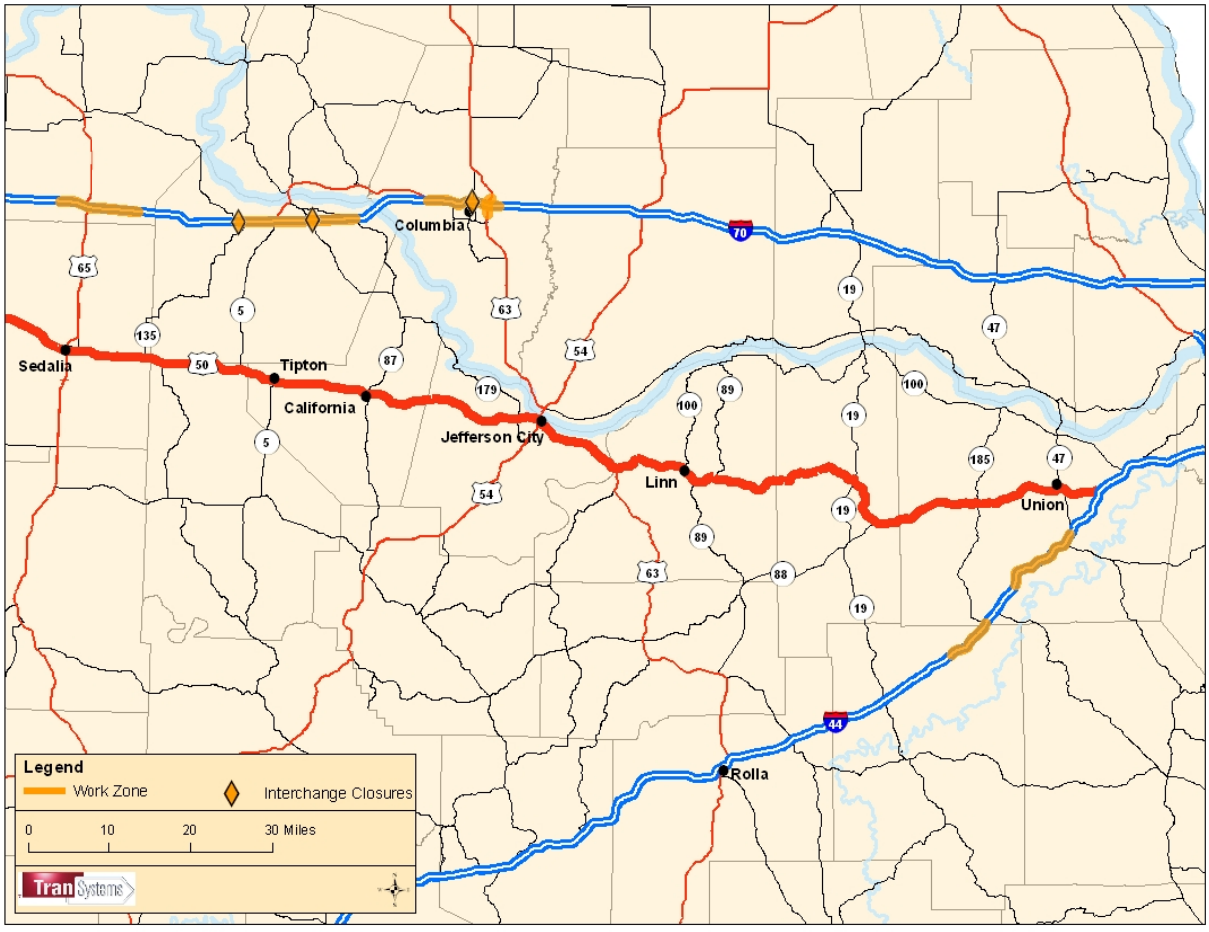
The primary tool used for capturing diversionary traffic was a travel demand model. Travel demand models are computerized networks and trip tables. These models are useful in traffic diversion testing because they provide an objective statement on how traffic changes when the roadway network is altered. The 2002 Wilbur Smith Associates I-70 Missouri Daily Traffic Model[4] was used for the diversion analysis. To capture the impacts of construction on I-70

[4] Wilbur Smith Associates Inc., Michigan. Technical Memorandum: Methodology for Traffic Diversion Estimation. May 2008. *See Appendix B.*

and I-44, the model network was edited to reflect work zone speeds, interchange closures and in limited cases, lane closures along the interstate routes as shown on Map 3. These construction scenarios reflect conditions that will be realized during construction on the major interstates in Missouri that will clearly cause some traffic to detour to secondary, parallel routes like Highway 50. The work zone sampling includes:

- I-70 10-mile work zone from Exit 74 (Rte YY) to Exit 84 (Rte J)
- I-70 13-mile work zone from Exit 98 (Rte 135) to Exit 111 (Rte 179/98)
- Interchange at Exit 98 (Rte 135) closed to traffic
- Interchange at Exit 106 (Rte 87) closed to traffic
- I-70 10-mile work zone from Exit 121 to Exit 131 through the Columbia Urban Area
- Interchange at Exit 127 (Rte 763) closed to traffic
- Route 63 and Route 740 are one lane in each direction for 1-mile north and south of I-70.
- I-44 10-mile work zone from Exit 230 (Rte JJ) to Exit 240 (in St. Clair)
- I-44 7-mile work zone from Exit 218 (Rte C) to Exit 225 (Rte 185)

Map 3: Work Zone Locations for Traffic Modeling



The travel demand model construction scenarios result in congestion on I-70 and I-44 that simulates conditions during actual construction. Construction on I-70 and I-44 is projected to last 10 years with various segments of the these interstates restricted by construction activities. These restrictions will include reduced speeds in work zones, narrow lanes and construction-related chokepoints that result in an increase in congestion for passenger and commercial vehicles.

Congestion is a very real issue for travelers in terms of cost of time, wasted fuel and commercial vehicle operating costs. To measure the congestion caused by construction, any model segment with an increase in vehicle-hours traveled (VHT) from pre-construction to construction scenarios were analyzed using methodology presented in the 2007 Urban Mobility Report[5]. The congestion cost calculations incorporated the average cost of person time, truck travel time and fuel costs inflated to 2019 (assumed mid-point of construction) finally spreading these costs over the 10 years of construction. Table 3.1 illustrates the congestion cost calculations.

Table 3.1 Congestion Costs During Interstate Construction
(Millions of Dollars)

Interstate Corridor	Additional VHT per Day During Construction		Annual Passenger Vehicle Delay Cost	Annual Passenger Vehicle Fuel Cost	Annual Commercial Vehicle Congestion Cost	Total Congestion Cost (over 10 years)
	Passenger Vehicles	Commercial Vehicles				
Interstate 70	165	353	$1.6	$0.8	$15.0	$174
Interstate 44	-	209	-	-	$8.8	$89
Total Congestion Cost Over Life of I-70 and I-44 Rebuilds						$263

Source: 2002 Model, TranSystems. See Appendix B for detailed calculations.
Note: No increase in VHT was reported by the model for passenger traffic on I-44.

The model results show that the increase in vehicle-hours traveled on I-70 and I-44 are mainly attributed to the commercial vehicles or trucks that are traveling to, from and through Missouri. In Missouri, the trucking industry depends on reliable, predictable travel times to support economic drivers such as the manufacturing and retail industries in the state. A major factor for a strong economy is keeping costs down, including the cost of transporting goods. Total logistics costs have declined over the last 30 years due, in part, to the public sector investments made in our interstate highway system during the 1980s and 1990s.

[5] Shrank, David and Tim Lomax. The 2007 Urban Mobility Report: Appendix A Methodology for 2007 Annual Report. Texas Transportation Institute. September 2007.

As Missouri is challenged with another round of investments in the statewide Interstate highway system, a plan needs to be in place to keep transportation costs down. Keeping trucking costs low will, in part, allow our economy to stay strong through this necessary round of infrastructure investments.

To gauge the response of the trucking industry to potential delays during interstate construction, phone interviews with a limited number of trucking company representatives were completed. The intent of these interviews was to gain a better understanding of the impacts construction has on their operations and their willingness to use alternate routes. All of the companies interviewed stated that they would prefer to travel on the interstate route rather than detour to an alternate route, like Highway 50. Their main reason for this is that the additional cost for the detour mileage cannot be passed on to their customers. One company reported that their costs would increase by $10,000 per week if required to detour on Highway 50.

These interviews validated the results of the modeling efforts which showed that truck VHT increased significantly because trucks remained on the interstate routes (see Table 3.2). The trucking companies interviewed did state that if delays due to interstate construction exceeded two hours in duration they would be forced to consider alternate detour routes. If these detour routes were faster they would be able meet their critical entry times into distribution and manufacturing centers. Highway 50 as a detour route would only satisfy the requirements of trucking companies if capacity were increased to provide four lanes. This upgrade increases the probability that travel time would be less than traveling through the interstate work zones.

The trucking companies stated that they mainly operate at night and over weekends and felt that construction would not impact them during those off-peak periods. However, it is likely that construction zones will remain in place during these times due to the massive reconstruction required on the interstates and night construction is probable. With the distinct possibility of restricted travel conditions 24-hours per day the interviewed companies stated that congestion would clear more quickly with less passenger vehicle traffic on the interstates. This continues to reinforce the case that alternate routes, like Highway 50, will be economically beneficial to commercial traffic during reconstruction efforts.

Safety Benefits

In 2006, 20 people were killed in work zones in Missouri as well as an additional 1,197 people injured. [6] Of that statewide total, I-70 and I-44 work zones experienced a combined total of 766 crashes including six fatalities.[7] Work zone accident statistics improved in 2007. Even though there were many more work zones, there were less than half the accidents. This trend is the result of MoDOTs increased emphasis on work zone safety. “The desired end-result

[6] “Drive Smart Drive Alive.” Missouri Department of Transportation Safety. Retrieved as of 30 May 2008. <www.modot.gov/workzones/WorkZoneStats.htm>.

[7] Missouri Department of Transportation, Work Zone Crashes by Severity for I-70 and I-44, 2003-2007.

of MoDOT's efforts is to reduce work zone incidents and travel time while providing safer work zones with minimal impact on the traveling public."[8]

Echoing MoDOTs focus on work zone safety, this study analyzed the impacts of providing an upgraded Highway 50 as a potential detour route during the reconstruction of I-70 and I-44. As mentioned in the economic benefits discussion, the travel demand model was used to determine that up to 10% of all traffic will divert to other routes. By increasing the capacity available on Highway 50, it offers an option for more traffic to efficiently use the detour. This reduces the risk of work zone exposure to the motoring public and thus enhances the safety for the motorists as well as the workers.

Diverting 10% of the traffic has the potential to lower the number of work zone incidents accordingly. That could mean approximately 77 less crashes on these interstates based on current trends in work zone crash data. In addition, to a decrease in the number of work zone related incidents, safety benefits can be quantified by the reduction in the cost due to these accidents that is incurred by the State.

MoDOT maintains data regarding the work zone related incidents on their system including the severity of the accidents documented by law enforcement. Accident data from 2003-2007 was reviewed to determine average number occurrences and trends. These numbers were also compared to the relative number of work zones active during those given years to identify comparable construction seasons to those which were analyzed in the travel demand model for this study. The assumptions for Missouri's cost due to accidents were available in 2005 dollars. To be consistent with the travel demand model parameters, these costs were inflated to the midrange of the projected 10 year construction timeframe for the interstate rebuilding efforts. The 10% diversion in traffic per the travel demand model would result in a reduction in work zone related incidents:

This reduction could save more than $53 million throughout the life of the I-70 and I-44 rebuild efforts.

[8] Missouri Department of Transportation. Advanced Work Zone Training Manual. Revised 3/12/2008.

SECTION 4 POST DETOUR: HIGHWAY 50 INTO THE FUTURE

In the preceding text the Highway 50 upgrade is merited solely in the context of its service to the motoring public as a detour. What about after the interstate construction is completed? Is upgrading Highway 50 a sound investment beyond that near term need? – Yes. As stated in Section 2, Highway 50 is a major east-west route of the U.S. Highway system, stretching coast to coast. It offers statewide, regional and local access to passenger vehicles and truck traffic within Missouri. Highway 50 is instrumental in the movement of goods by truck through the region. It is one of the main arteries for Missouri's tourism and recreational traffic. It is used throughout the year for access to the Lake of the Ozarks, Harry S. Truman Reservoir as well as the Missouri State Fairgrounds.

Recognizing its significance in Missouri, MoDOT has identified the need to four-lane Highway 50 via two EISs. This section goes the next step to further investigate the long term economic impacts of this upgrade. These economic benefits and post-detour safety and security impacts work together with Section 3 to justify the investment of limited transportation funds within this corridor. Though Highway 50 will be vital to the multiple reconstruction phases of I-70 and I-44, the following elaborates on the long term economic and safety benefits to be realized for Missouri if the investment is made to upgrade it to a continuous four-lane facility.

Economic Benefits

A good transportation system is a key factor to the long-term economic prosperity of a region. Once the upgrade of Highway 50 is complete and construction on I-70 and I-44 is over, a four-lane Highway 50 will have lasting economic benefits for the State of Missouri and more specifically the residents and businesses along the corridor. To quantify the economic benefits of a four-lane Highway 50, the Missouri Economic Research and Information Center (MERIC), a unit within the Missouri Department of Economic Development, provided an Economic Impact Analysis[9] conducted with REMI economic impact modeling software.

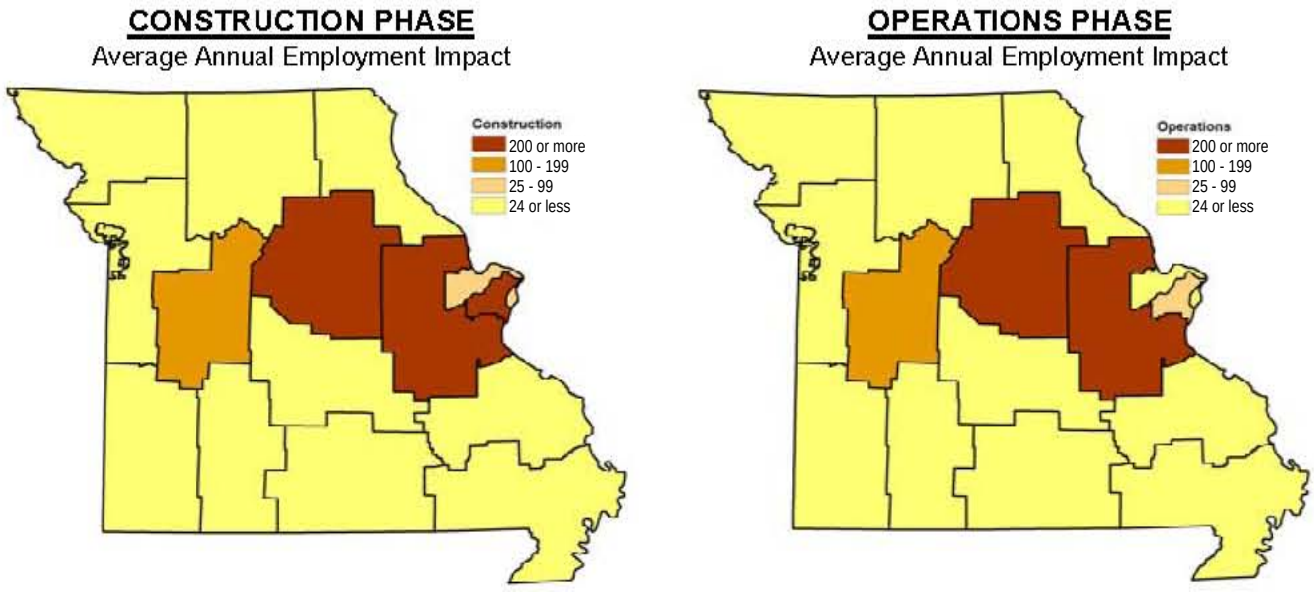
The Economic Impact Analysis for the expansion of Highway 50 measured the effects of the project investment on Missouri's economy. Using the current probable cost estimate of $840 million (mid-point of the $805 to $878 million range) and a five year construction period, the analysis reported positive gains in personal income, Gross State Product and employment. More specifically, the cumulative impacts over the next 20 years from the expansion of Highway 50 return a net economic benefit of over $7 billion:

- New net general revenues to that State of Missouri totaling $60.8 million
- New personal income to Missourians totaling $1.2 billion
- New value-added (Gross State Product) to Missouri's economy totaling $2.2 billion
- New economic activity to Missouri's economy totaling $3.6 billion

[9] Missouri Department of Transportation and Missouri Economic Research and Information Center. Economic Impact Analysis: Highway 50 Expansion. April 2008.

The employment benefits are predominantly of regional significance. The average annual employment impact will be realized in three regions of the state – West Central, Central and Greater St. Louis. Employment during the construction phase will increase by more than 200 jobs in each of these regions. Once construction is complete, these regions will see a sustained increase in employment. During the operations phase, each region will have an average annual employment impact of more than 200 jobs. Figure 4.1 illustrates the employment impact that four-lanes on Highway 50 will have in the central part of the State.

Figure 4.1 Average Annual Employment Impact of Upgrading Highway 50 to Four Lanes



Source: Missouri Department of Transportation.

On average each year, the four-laning of Highway 50 creates 1,550 new jobs paying an average wage of $29,319 per job. This positive economic activity depends on the strengthened transportation system a four-lane Highway 50 will provide. However, a route with a poor level of service (LOS) will likely inhibit growth along the corridor requiring the capacity of Highway 50 to be reviewed. Poor LOS equates to the driver having little freedom to maneuver with less comfort and convenience of travel; increases in volume cause substantial drops in speed. Depending on peak hour traffic, LOS C for a rural, two-lane highway with rolling terrain sees between 6,000 and 7,000 vehicles per day. Table 4.1 lists the traffic volumes along major segments of Highway 50 for years 2006, 2014 and 2030.

Table 4.1 Traffic Volumes on Highway 50 (Vehicles per Day)			
Highway 50 Segment	Year 2006	Year 2014	Year 2030
East Sedalia to Tipton	6,600	7,700	10,400
Tipton to California	6,700	7,900	10,700
Osage River to Linn	8,700	10,200	13,700
Linn to Gasconade/ Franklin County Line	4,300	5,000	6,700
Gasconade/Franklin County Line to Union	5,800	6,700	8,600
Source: 2002 Model, TranSystems.			

As Table 4.1 shows, today, many two-lane segments of Highway 50 exceed Highway Capacity Manual Thresholds for LOS C, the desired level of service for rural two-lane highways. As volumes grow over time more segments will exceed the desired LOS. These existing capacity constraints and the fact that the constraints will worsen over time, suggest that Highway 50 will need to be upgraded to four lanes to maintain desired levels of service and continued economic benefits into the future. The cost of providing these improvements will continue to grow with inflation and the rising costs of materials over time. As these improvements to Highway 50 will be necessary due to future traffic, it makes economic sense to implement them at a lower cost now and deliver the additional benefits that can be realized during the construction of I-70 and I-44.

Safety Benefits

Two environmental documents, heavily focused on the safety needs within the Highway 50 corridor, have been completed – the East-Central and West-Central EISs. The Route 50 East-Central Corridor Major Transportation Investment Study (MTIA)/Final EIS evaluated the improvement of Highway 50 in Osage, Gasconade and Franklin counties in east-central Missouri from the Route 63 interchange east of Jefferson City to the junction of Highway 50 and I-44 east of Union. The Route 50 West-Central EIS area began west of Sedalia and extended 65 miles to just east of St. Martins.

The LOS concerns described in the discussion of the economic benefits were also significant in the analysis of the transportation impacts in the East-Central Highway 50 document. Traffic volumes on some segments already exceed MoDOTs 7,500 (ADT) criterion for consideration of widening to four lanes. The MTIA/FEIS traffic forecasts for 2025 indicated that ADT for the five-lane section in Union will exceed 50,000 vehicles per day, far above the roadway's capacity. Analysis of traffic LOS indicated that long segments of Highway 50 did not provide LOS C, the minimum desired standard for rural highways. LOS D and E prevail on

Highway 50 throughout Franklin County and in the segment recently programmed in the STIP from US 63 to Linn.

The East-Central document also responded to other existing transportation problems such as sharp curves, lack of sufficient shoulders and high accident rates. Three-fourths of the highway's horizontal and vertical alignments are not sufficient for modern vehicles and speeds. Adequate passing opportunities are found on only 11 % of the alignment and over three-quarters of the alignment has inadequate shoulder widths. These features, in combination with steadily rising traffic volumes, suggest that accident rates will rise if no improvements are made. The East-Central MTIA/FEIS goes as far as quantifying the safety benefits of an upgraded system including accident cost savings. It reported that the improved roadway geometry and increased capacity afforded by all alignments lead to considerable reductions in accident costs. The average annual savings estimated ranged in value from about $1.35 million to about $1.62 million in Osage County alone. Actual cost savings were not estimated for Gasconade and Franklin Counties but both were noted to yield large reductions in accident costs as well.[10]

Like the East-Central document, the West-Central Highway 50 document also reports substandard horizontal and vertical roadway alignments, shoulder widths and sight distances at several locations in this western portion of Highway 50. These deficiencies result in low operating speeds and inadequate passing opportunities. In addition, areas of the existing highway which pass through urban areas would have unacceptable levels of service for future projected traffic volumes. Accident rates at the time of the EIS in the Sedalia, California and Tipton areas were documented to be as much as one and one-half to three times higher than the state average for similar type roadways. Some of these accidents were attributed to the differing travel speeds in the rural parts of the study area as well as the majority of the corridor being marked as a no passing zone. With the difference in travel speed among drivers, in conjunction with the short number of passing opportunities, platoons of vehicles tend to form on Highway 50 presenting a hazard to approaching vehicles. Roadway geometry was also noted as playing a role in the areas with higher accident rates. The EIS recommended a combination of four-lane divided highway and four-lane divided expressway for the corridor.[11]

The upgrade of Highway 50 across Missouri will rectify substandard horizontal and vertical roadway alignments, shoulder widths and sight distances. Even in the small, isolated pieces where traffic volumes were low enough to satisfy LOS C operations with a two-lane highway, the MTIA/FEIS communicated the necessity to rebuild the existing two-lane facility with right of way purchases for the additional two lanes to maintain system continuity. The Highway 50 corridor must be rebuilt to provide a safe facility and accommodate the continuing needs of not only the motoring

[10] Missouri Department of Transportation. Route 50 East-Central Corridor Study Final Major Transportation Investment Analysis Environmental Impact Statement. December 2002.

[11] Missouri Department of Transportation. Route 50 West-Central Corridor Location Study Draft Environmental Impact Statement. January 1998.

public but also the growing freight movement in Missouri. It is more cost effective to complete the four lane facility during this necessary reconstruction of Highway 50 rather than leaving some discontinuous less congested two-lane segments. Most imperative to this discussion is the fact that severity crash rates are 60% lower on rural four-lane expressways when compared to rural two-lane facilities. The completed federally required EIS documents comprehensively outline the safety issues for Highway 50, laying the groundwork for the compelling case for upgrading the remaining two-lane segments of the facility. Couple this documentation on the necessity of an upgrade with the opportunity to proactively serve the impending need for an alternate route during the reconstruction of I-70 and I-44 and upgrading Highway 50 is indisputable. Four-laning will provide lasting safety benefits for the local, regional and statewide motorists currently using Highway 50 and the demand projected for the future.

Security Benefits

Since 9/11, security has been a major component of consideration related to transportation projects. Transportation is identified as one of the critical infrastructures under Homeland Security Presidential Directive (HSPD) 7. It is essential for mobility and commerce, and plays a critical role in times of crisis. Highways are essential for evacuation, and in the response and recovery effort. Bridges and tunnels can be considered as being critical structures and/or on essential corridors. A damaged bridge or tunnel has an enormous impact on a city, a region, and possibly the Nation.[12]

Even before that tragedy, evacuation plans had been developed by Missouri for defense and emergency response to events such as an earthquake along the New Madrid fault. The Highway 50 corridor is a logical alternative to I-70 and the evacuation of St. Louis or Kansas City. More significant than its obvious proximity to these two cities is the fact that Highway 50 is the only major east-west highway between St. Louis and Kansas City that does not cross the Missouri River. The lack of a 'critical structure' on this 'essential corridor' for evacuation elevates Highway 50's role in providing security benefits to Missourians.

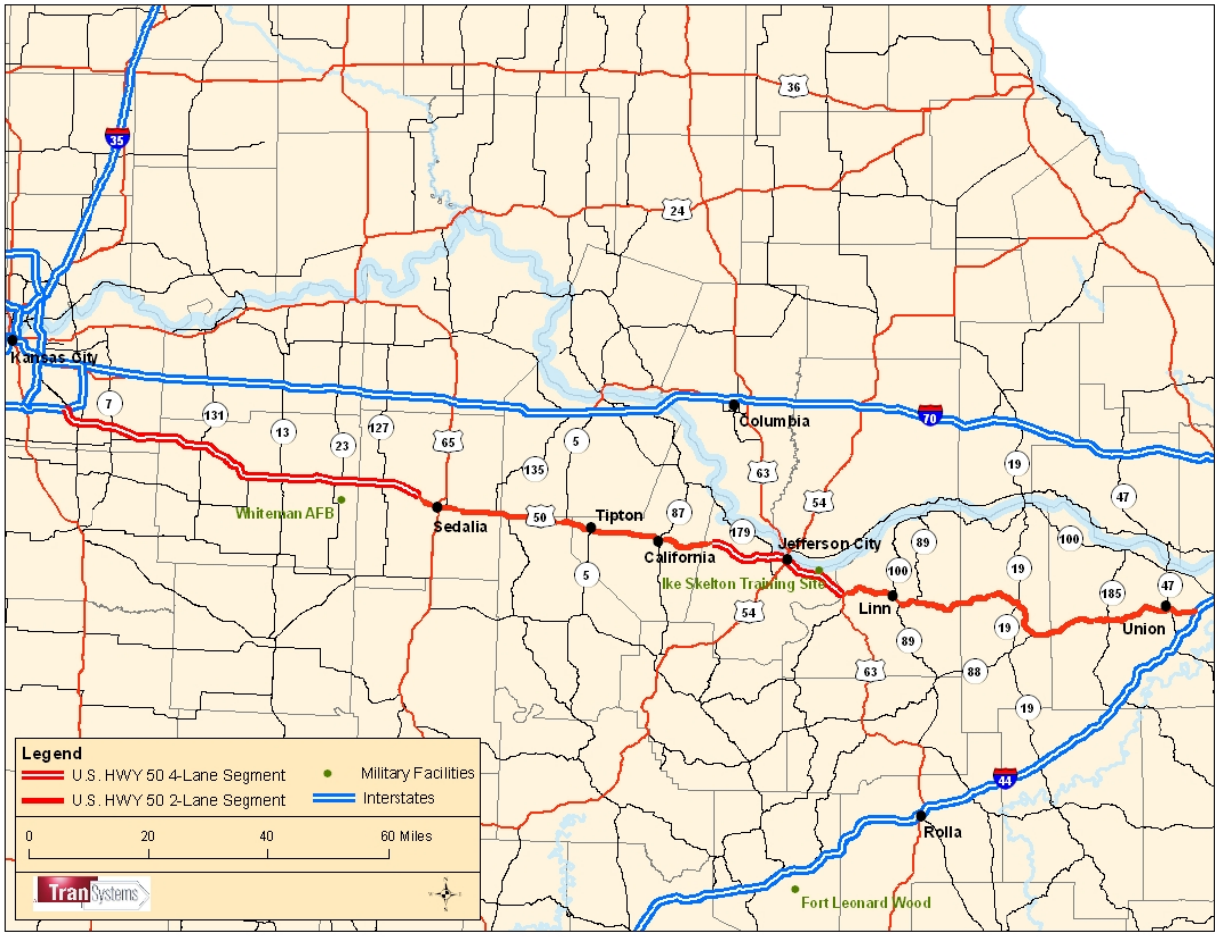
> The FHWA is committed to improving the nation's national defense mobility by improving the capacity and operation of the highway system. Highways are critical links for mobilizing and deploying military forces from U.S. bases to railheads, seaports, and airports. In fact, the Department of Defense (DOD) relies on commercial providers to meet over 90 percent of its passenger and freight needs during peacetime and times of war. In time of war, military personnel must assemble rapidly. Military units, equipment, and supplies must move over roads and highways to get to air bases and seaports for deployment overseas. Operation Desert Storm and the conflict in Kosovo demonstrated that the ability to move troops and equipment via highways is essential to national defense. FHWA, in partnership with DOD, has identified highways and connectors that together create a Strategic Highway Corridor Network (STRAHNET).

[12] Homeland Security "Interstate Highway Security Systems." Retrieved as of 30 May 2008. <www.globalsecurity.org/security/systems/highways.htm>

STRAHNET provides defense access, continuity, and emergency capabilities in both times of peace and war.[13]

I-70 and I-44 are part of STRAHNET and Highway 50 also provides a direct link between two of the three major military complexes in the region as shown in Map 4.

Map 4: Military Facilities



[13] "Connecting America 1999 Report to the Nation" Publication No. FHWA-HCM-00-002. U.S. Department of Transportation Federal Highway Administration. Retrieved as of 30 May 2008. < www.fhwa.dot.gov/reports/1999annual/security.htm>. page12 of 16.

SECTION 5 OPINION OF PROBABLE COST

The purpose of this section is to prepare and present the probable costs of improving Highway 50 to a consistent four-lane divided facility.

Methodology

The cost estimate is divided into two basic sections with Jefferson City being in the center; a west corridor and an east corridor. Each corridor is further subdivided into segments, many of which are consistent with the prior MoDOT summaries. The west corridor is divided into three segments and the east corridor into five segments. These segment limits are consistent with the previously described traffic and benefit analyses, although the actual "project limits" for construction may be different. Table 5.1 lists the entire Highway 50 from Kansas City to St. Louis and highlights the corridor segments.

Table 5.1 Highway 50 Corridor

Highway 50 Segment From	Highway 50 Segment To
Lee's Summit (Kansas City) I-470 Loop	West of Sedalia
West of Sedalia	East of Sedalia
East of Sedalia	West of Tipton
West of Tipton	West of California
West of California	West of Jefferson City
West of Jefferson City	East of Osage River at Route 63
East of Osage River at Route 63	West of Linn
West of Linn	East of Linn
East of Linn	Osage/Gasconade County Lines
Osage/Gasconade County Lines	Gasconade/Franklin County Lines
Gasconade/Franklin County Lines	West of Union
West of Union	East of Union (Route 47 South)
East of Union (Route 47 South)	Progress Parkway
Progress Parkway	I-44

Source: TranSystems.

Previous studies were conducted by MoDOT to determine the location and extent of improvements. This material was reviewed and included the DRAFT Environmental Impact Statement for the Route 50 West-Central Corridor Location Study of March 1998 (Project J5P0691) and the FINAL Major Transportation Investment Analysis Environmental Impact Statement of December 2002 (Project J5P0692). These documents provide information on the location of the preferred corridor, as well as data supporting the preparation of construction and right of way cost estimates. Additional data reviewed includes the 2007 cost estimate for Route 50/63 junction to west of Linn (Project J5P0951), as well as MoDOT's West-Central and East-Central summaries. It should be noted that these EIS's and other MoDOT project cost estimates were prepared several years ago and it is necessary for this information to be updated.

A "ground-up" approach to estimating probable costs was utilized. This means that quantities were estimated for various line items and a unit price established for that line item. This allows for distinguishing between adding two new lanes and adding four new lanes. In certain areas, the EIS data is limited (such as on bridge lengths or areas for new right of way acquisition), yet this ground-up approach is preferred over a seemingly simple yet complicated determination to establish an inflation factor. Cost estimate information is shown in three categories; construction, utilities and r/w, and services. Because of limited information on utilities and right of way, assumptions have been made to account for the line item as a percentage range. Right of way cost percentages vary depending upon whether the proposed facility is in an urban or rural environment. MoDOT has also developed a cost estimating methodology as presented in Figure 1-02.2 in their Design Manual. This methodology distinguishes between grading and drainage as well as base and surface. It is also itemized for medium duty and heavy duty PCCP. For purposes of this estimate the two elements are combined and only heavy duty PCCP is proposed. Grading adjustment factors are noted, yet are not applied unless justified by district information and proper documentation. This figure in the Design Manual was last revised in March 2004 more than four years ago. A yearly inflation rate for highway construction costs based upon the Producer Price Index (source: U.S. Bureau of Labor Statistics) between 2004 and 2008 would be 12%.

Cost Estimate

A summary of both the west corridor (Sedalia to California) and the east corridor (Osage River to East of Union) is shown in Table 5.2. The total project cost in 2008 dollars is estimated between $731 million and $798 million. This translates to approximately $7.2 to $7.9 million per mile. Review of the cost-per-mile information indicates that the west corridor has a higher cost than the east corridor. All costs are shown in 2008 dollars. At this time, no adjustment for inflation has been applied. Nonetheless, it is strongly recommended that when a programming schedule is determined that the probable costs be adjusted based upon agreeable inflation rates.

Table 5.2 Probable Cost to Four-Lane Highway 50 (2008 Dollars in Millions)			
Highway 50 Segment	Length (miles)	Total Cost – Low	Total Cost - High
Sedalia Bypass	9.5	$128	$143
Sedalia to California	30.6	$204	$224
Rte 50/179 Interchange	0.8	$7.5	$8.5
Rte 179 Extension	7.5	$70	$78
Linn Bypass	6.0	$60	$64
Linn to Union	43.8	$239	$256
Union to I-44	2.9	$22	$24
Totals	101.1	$731	$798

Source: TranSystems.

Projects that are currently under construction or have funds committed in the 2009-2013 Statewide Transportation Improvement Program (STIP) were not included in the analysis for the opinion of probable cost. Therefore, the estimates in Table 5.2 do not include the Lafayette interchange or the 6.6 miles between the Osage River and Linn.

SECTION 6 IMPLEMENTATION PLAN

This study has compiled economic, safety and security benefits paired with an opinion of probable cost to present the compelling case to upgrade Highway 50 statewide. The purpose of the study is to consider upgrading the remaining two-lane segments to four lanes in the context of rebuilding Interstate 70 and Interstate 44. However, the benefit discussions also considered the long term impacts of this improvement beyond the I-70 and I-44 completion. Quantifying the Highway 50 upgrade as a sound investment solidifies the message to elevate the priority of this corridor. Communication is the next step toward securing funding for design and right of way and then ultimately construction.

The environmental documentation required for a roadway project has been completed. This enables the project(s) to be considered for the STIP to program the next steps of design and begin the purchasing of right of way. Transportation funding is limited and funding is not available for the Highway 50 upgrade. Therefore, key legislators, state officials, MoDOT officials, regional planning organizations and other stakeholders must become aware of the significance of Highway 50 as presented in this study. The Executive Summary was developed as a graphic piece to distribute the key messages regarding Highway 50s role and the benefits and costs associated with this investment. This awareness will be paramount to forwarding this need as a project.

Once the project(s) is programmed additional efforts need to be implemented to ensure that Highway 50 indeed successfully serves the I-70 and I-44 rebuilding efforts. Again, communication will be the key component of that effort. This was evident in MoDOTs success with the I-64 activities in metropolitan St. Louis area. Public information is the best mitigation strategy that may lead to significant traffic reductions. As stated in Section 2, there is a national emphasis being placed on the efficient movement of freight to keep the U.S. competitive in the global economy. Disruptions to I-70 and I-44 truck traffic will be costly. As most recently exemplified by the I-64 project, MoDOT has a proven record for effectively communicating to the motoring public and that will need to be amplified for the trucking industry in the case of I-70 and I-44. Unlike the I-64 example where portions of the roadway have been completely closed to traffic, MoDOT is committed to keep four lanes of traffic moving on I-70. Maintaining a focus on safety, mobility and reliability, the trucking industry will have to receive timely information about work zones throughout the all phases of construction of these two vital corridors for commerce in addition to the regional needs for Missourians.

Because truck drivers are often travelling through an area from outside the state, normal channels of communication as used for passenger vehicles. Other DOTs have had success using communication methods the trucking industry already uses on a regular basis such as industry and association print and online publications (even daily project updates), truck/rest stops and CB/satellite/commercial radio. There are means to continuously broadcast a message over CB radio to alert approaching drivers of a work zone ahead. Today, drivers are becoming more and more likely to use satellite radio rather than CB and some satellite radio broadcasting companies have even dedicated channels to trucking. Rest areas, truck stops and welcome centers seem to be the best means of communicating to the independent drivers that wouldn't otherwise get information through corporate channels. When work zones more directly impact local businesses, some states coordinate with local manufacturers to provide information to their suppliers so they may adjust their routes accordingly. With nationally significant routes like I-70 and I-44, detours and

other work zone related information may be placed in these locations well in advance of the construction activity, especially in the case of using a detour like Highway 50. The message of this entire study has been about being proactive. I-70 and I-44 ARE going to be rebuilt – it is just a matter of when. In addition to the successful public outreach methods of communicating a major transportation project, attending trade shows and gathering industry focus groups will also lead to the effective use of Highway 50 as an alternative route to potentially serve the trucking industry in addition to shifting passenger traffic off the mainline.

APPENDIX A I-70 STUDY HISTORY

I-70 Study History

Interstate 70 in Missouri was largely designed and constructed during the Eisenhower administration of the 1950s, with a planned design life of approximately 20 years. In the decades since, through ongoing care and maintenance, the Missouri Department of Transportation has been able to extend the effective life of this highway. However, it remains apparent that a long-term solution is needed to ensure that Missouri's "Main Street" continues to support Missouri's economy and motorists.

In 1999, the Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) conducted a state-wide feasibility study on how best to improve I-70. That study documented the condition of I-70, evaluated its capacity, safety and ease of travel, and outlined how I-70 might operate in the future.

Based on the outcomes of the 1999 feasibility study, MoDOT and FHWA decided to move forward with more detailed evaluations of options for I-70. Because of the size, cost and complexity of the corridor, possible improvements and their impacts were studied in two phases, or tiers. The First Tier Environmental Impact Statement (EIS), completed in 2001, looked broadly at a range of state-wide solutions for I-70 and recommended a general improvement strategy. The Second Tier studies, known collectively as Improve I-70, looked more specifically at the recommended strategies and their local impacts. In order to ensure an appropriate level of detail, the Second Tier Improve I 70 program divided the interstate into seven different geographic segments, each with their own environmental study. The Second Tier Environmental Studies wrapped up in 2006.

First Tier Executive Summary can be found at www.improveI70.org under "Corridor Documents"
Second Tier Studies can be found at www.improveI70.org under "Local Focus"

APPENDIX B METHODOLOGY FOR TRAFFIC DIVERSION ESTIMATION

Memorandum

TO: Kyle R. Kittrell, P.E., TranSystems
Sara J. Clark, P.E, TranSystems

FROM: Mary R. Lupa, Wilbur Smith Associates
Paul Hershkowitz, Wilbur Smith Associates

DATE: May 6, 2008

SUBJECT: Technical Memorandum
Methodology for Traffic Diversion Estimation

PROJECT: **U.S. Highway 50 Partnership**

This methodology will address:

1. Background Information on Traffic Models
2. Data Sources, including the 2002 I-70 Missouri Traffic Model
3. U.S. Highway 50 Study Segments
4. Trip Table Estimation
5. Traffic Model Scenarios and Application
6. Summary

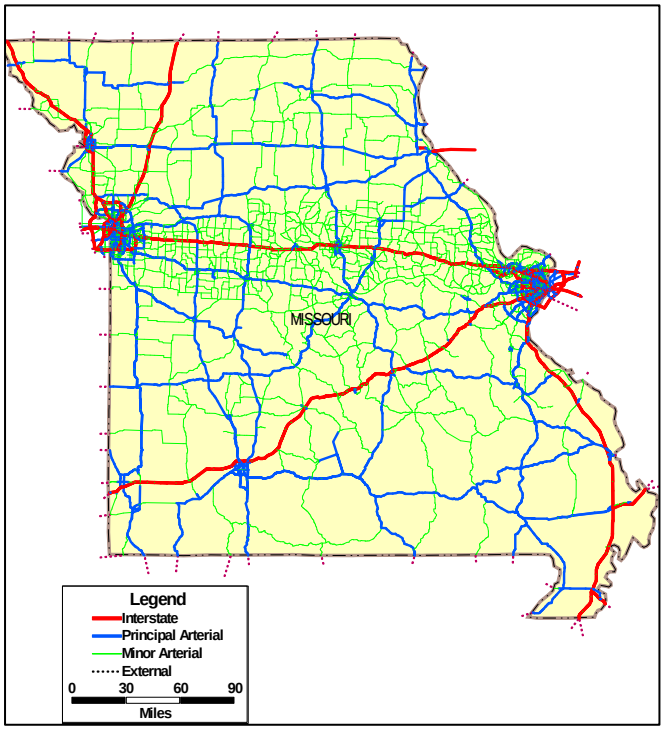
1. Background

The primary tool for capturing diversionary traffic related to the U.S. Highway 50 corridor was a travel demand model. Travel models are computerized network and trip matrix constructs that allow planners and engineers to establish a validated base year of traffic and then test future scenarios that are developed from the validated base. The consultant team identified the 2002 Wilbur Smith Associates I-70 Missouri Traffic Model as the travel model suitable in scale and reach to apply to the U.S. Highway 50 traffic study.

Travel models are useful in traffic diversion testing because they provide an objective statement on how traffic changes when the network, or grid of routes available to complete a trip, is altered. The key input to a travel model is the travel time on the highway segment of interest. Travel time is calculated using the assumed speed on the segment which in turn is derived from posted speeds or functional class. As an example, when I-70 has an assumed speed of 70 miles per hour across the state of Missouri, a known number of vehicles will use the route. If the assumed speed is changed – either raised or lowered – some of the vehicles will be attracted to or will divert from I-70. The sole criterion for their diversions in this case is the change in speed on the highway segment. In an equilibrium setting, traffic assignments also utilize highway capacity which translates to travelers avoiding congested segments of roadway to find their shortest path on uncongested routes. Using traffic models allows for an objective calculation of diversionary traffic, since the base and scenario input auto and truck traffic remain exactly the same.

2. Data Sources

Figure 1: I-70 Missouri Model Network



2a: I-70 Missouri Traffic Model – The chief input to the U.S. Highway 50 study was the I-70 Missouri Traffic Model. This model was built in 2002 to study truck and auto traffic on I-70 in Missouri. Each highway segment in this model contains information on functional classification, posted speed, daily capacity and related network information. This travel model supported traffic estimates on a set of 'Segments of Independent Utility' (SIUs) along the I-70 corridor. Some additional work and model development was conducted in Columbia, Missouri where a set of bypass configurations were studied. The I-70 Missouri model contained 1,426 'Traffic Analysis Zones' (TAZs) within Missouri and twenty-six external portals at the state border. The model estimated both truck and auto traffic and was validated to 2000 observed data for both trucks and cars. The future year for the I-70 Missouri model was 2030. This model provided a starting point for the U.S. Highway 50 traffic study.

Figure 1 above shows the network for the I-70 Missouri Traffic Model. This network is very detailed in the I-70 corridor but also contains sufficient detail in the U.S. Highway 50 corridor to provide the capability for analysis on the interaction of I-70 or I-44 construction on U.S. Highway 50. The TAZ system related to the network has a similar scale.

2b: Observed Traffic for 2006 – In 2002, the I-70 Missouri model was validated to a base year of 2000. Inventory and review of the 2000 observed data and an understanding of the U.S. Highway 50 project needs led to a concern with using this historical base. It was decided to replace the existing 2000 base year with a 2006 base year. The data sources for the development of a 2006 base with truck and auto traffic were:

- Traffic Volume Maps from Missouri Dot located at http://www.modot.mo.gov/safety/trafficvolumemaps.htm
- Vehicle Miles Traveled (VMT) estimates by county from Missouri DOT.

The 2006 observed traffic was used to pivot the 2000 truck and auto assignment results to a 2006 level. Once a validated 2006 traffic estimate was in place, the 2014 and 2030 scenarios could be prepared and assigned. To get the 2014 base traffic, trend analysis was performed using observed data for 2002, 2004, 2005 and 2006. Local knowledge was sought out to establish and confirm the means of estimating 2014 truck and AADT from 2006 traffic. The decision rules for this estimation were:

- Finding the long term growth rate by segment so as to avoid relying on short term peaks and valleys;
- Conserving the continuous traffic flows along each major highway;
- Conserving the known truck percentage along each major highway.

The results of this estimation were consistent with the Missouri DOT's Vehicle Miles Traveled estimate by county.

3. U.S. Highway 50 Study Segments

Prior to the establishment of the traffic and trends, it was important to set up a format of segments of interest to organize the traffic diversion reporting scheme. The U.S. Highway 50 traffic segments were established by the study needs on U.S. Highway 50 with start and end points located logically on the periphery of cities and congruent with the location of U.S. Highways, State Highways and water features in Missouri. They are shown in **Table 1** below.

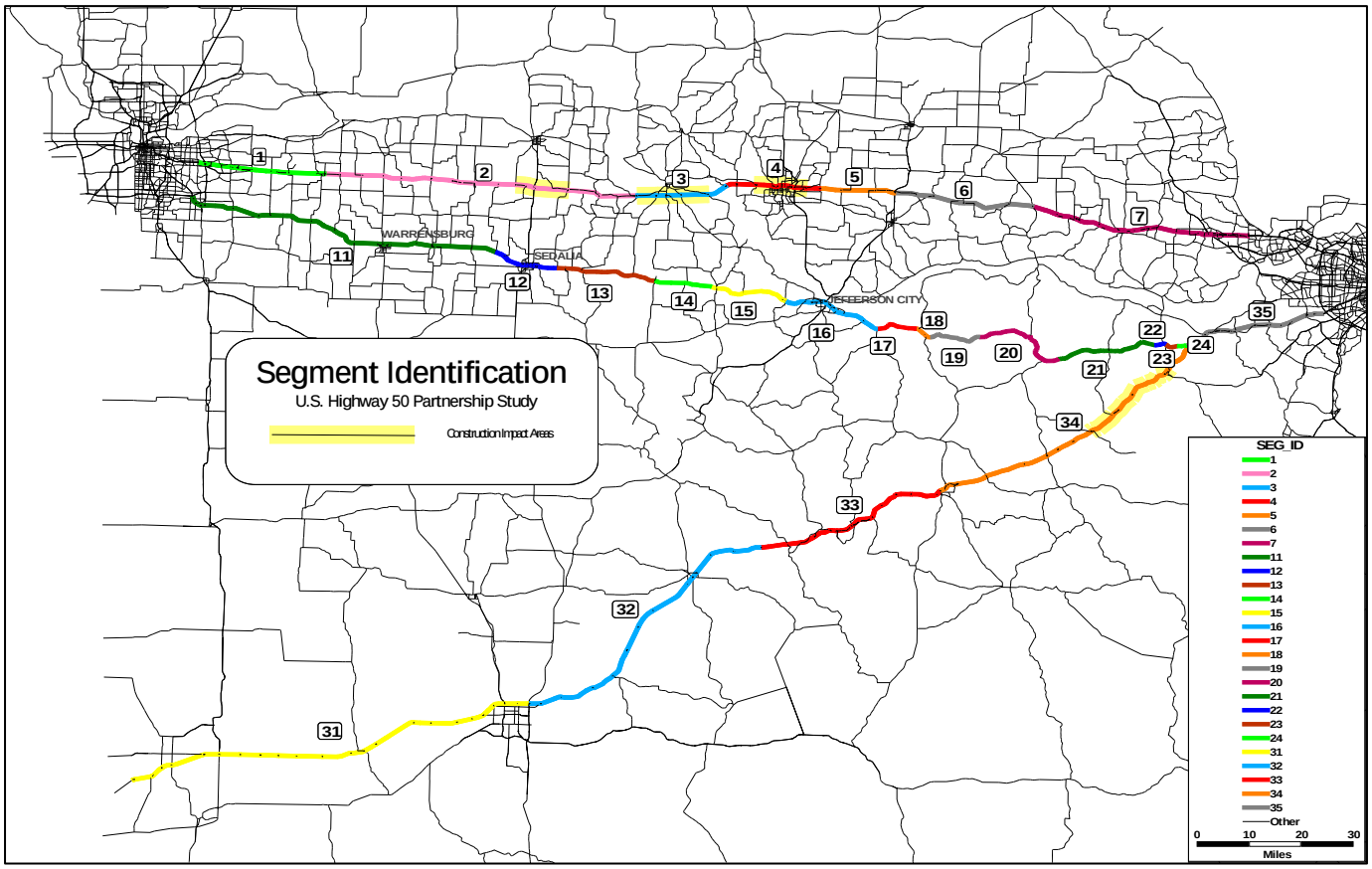
Table 1: U.S. Highway 50 Study Segments

Segment Location		SEG_ID	MILES
from	*to*		
Lee's Summit I-470	West of Sedalia (Rte T)	11	66
West of Sedalia (Rte T)	East of Sedalia (Rte O)	12	10
East of Sedalia (Rte O)	West of Tipton (Rte 5 North)	13	20
West of Tipton (Rte 5 North)	West of California ((Rte 87)	14	12
West of California ((Rte 87)	West of Jefferson City (Rte T)	15	17
West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	16	20
East of Osage River (Rte 63 S)	West of Linn (Rte W)	17	6
West of Linn (Rte W)	East of Linn (Rte CC)	18	7
East of Linn (Rte CC)	Osage/Gasconade County Line	19	8
Osage/Gasconade County Line	Gasconade/Franklin County Line	20	20
Gasconade/Franklin County Line	West of Union (Rte UU)	21	33
West of Union (Rte UU)	East of Union (Rte 47 S)	22	2
East of Union (Rte 47 S)	Progress Parkway	23	2
Progress Parkway	I-44	24	2
Total			**225**

There are fourteen segments of interest for U.S. Highway 50; each segment is assigned a segment identification number, (SEG_ID), ranging from 11 to 24. The sum of the fourteen segments is equal to 225 miles, the length of U.S. Highway 50 from its western point near Kansas City to the point where it joins I-44 just west of St. Louis. To expedite analysis, I-70 and I-44 were also divided into study segments. The criterion for the segment definition for the interstate highways was the presence of potential construction projects or closures. **Figure 2** below shows the segment identification scheme for U.S. Highway 50, I-70 and I-44. Color coded segments are provided for each of the three roadways of interest:

- Seven study segments to cover I-70 (1-7);
- Fourteen study segments to cover U.S. Highway 50 (11-24);
- Five study segments to cover I-44 (31-35).

Figure 2: Segments Identification Scheme for U.S. Highway 50 Study



4. Trip Table Estimation

As mentioned above, the trip matrices for truck and auto travel were established for the I-70 Missouri model for 2000 and 2030. Interim year trip estimation, for 2014, was required for the conduct of the U.S. Highway 50 Study. Using a straight line interpolation of the 2000 and 2030 trips for truck and auto, 2014 trips were estimated. These trips were used for all of the scenarios for U.S. Highway 50 requiring this intermediate year. The 2030 trip matrices were used directly. **Table 2** below shows the total number of trips in each trip matrix. The interpolated year, 2014, is highlighted.

Table 2: Trip Matrix Totals

Trips	2000	2014	2030
Passenger Vehicle (Auto)	9,674,470	10,849,918	12,302,340
Commercial Vehicle (Truck)	596,645	692,108	809,455

5. Traffic Model Scenarios & Application

5a: Scenario Scheme

In the sections above, the reporting template for the U.S. Highway 50 traffic assignment results was presented. **Figure 3** below shows the scenarios that were established to capture the presence or absence of construction impacts on I-70 and I-44 with U.S. Highway 50 under improved or unimproved conditions. Six scenarios were needed for each study year. In each case, the scenario with construction impacts was compared to the related scenario without construction. For example, Scenario B2014 with U.S. Highway 50 improved but **no** construction was compared to Scenario D2014 which featured U.S. Highway 50 improved but construction on I-70. The key improvement on U.S. Highway 50 assumed two lanes in each direction across the state.

Figure 3: Scenario Scheme for U.S. Highway 50 Traffic

Scenario Management 2014	
A2014	No Construction U.S. 50 Unimproved
B2014	No Construction U.S. 50 Improved
C2014	I-70 Construction U.S. 50 Unimproved
D2014	I-70 Construction U.S. 50 Improved
E2014	I-44 Construction U.S. 50 Unimproved
F2014	I-44 Construction U.S. 50 Improved

Scenario Management 2030	
A2030	No Construction U.S. 50 Unimproved
B2030	No Construction U.S. 50 Improved
C2030	I-70 Construction U.S. 50 Unimproved
D2030	I-70 Construction U.S. 50 Improved
E2030	I-44 Construction U.S. 50 Unimproved
F2030	I-44 Construction U.S. 50 Improved

5b: Network Development

While the overall I-70 Missouri network was not altered for the U.S. Highway 50 work, it was necessary to construct computer network alternatives to capture the results of construction on I-70 and I-44. This network editing was based on the construction scenarios as follows:

- **I-70 Scenario** – The following elements were combined for the I-70 Construction Scenario:
  - ✓ Assume a 10-mile work zone from Exit 74 (Rte YY) to Exit 84 (Rte J) with 2-lanes in each direction on I-70, concrete barrier on the right/outside shoulder, and the existing grass median separating opposing traffic. The work zone speed limit is posted speed minus 10 mph = 60mph.
  - ✓ Assume a 13-mile work zone from Exit 98 (Rte 135) to Exit 111 (Rte 179/98) with 2-lanes in each direction on I-70, concrete barrier on the right/outside shoulder, and the existing grass median separating opposing traffic. The work zone speed limit is posted speed minus 10 mph = 60mph.
  - ✓ Assume that the Interchange at Exit 98 (Rte 135) is closed to traffic and the Interchange at Exit 106 (Rte 87) is also closed to traffic.
  - ✓ Assume a 10-mile work zone from Exit 121 to Exit 131 through the Columbia Urban Area with 2-lanes in each direction on I-70 and concrete barrier on both sides. The work zone speed limit is posted speed minus 15 mph = 55 mph. Interchange at Exit 127 (Rte 763) closed to traffic. Route 63 and Route 740 are assumed to be one lane in each direction for 1-mile north and south of I-70.

- **I-44 Scenario –** The following elements were combined for the I-44 Construction Scenario:
  - ✓ Assume a 10-mile work zone from Exit 230 (Rte JJ) to Exit 240 (in St. Clair) with 1-lane in each direction on I-44 and flexible delineator separating opposing traffic. The work zone speed limit is posted speed minus 15 mph = 55 mph.
  - ✓ Assume a 7-mile work zone from Exit 218 (Rte C) to Exit 225 (Rte 185) with 2 lanes westbound and 1 lane eastbound. For eastbound, a concrete barrier on the right/outside shoulder and the existing grass median separating opposing traffic. The work zone speed limit is posted speed minus 10 mph = 60mph.

Networks were constructed in travel demand software to replicate the conditions set forth in each of these scenarios. The attributes that were edited were speed and, in the case of segments removed from the network, capacity. The speed changes in the construction scenario descriptions were translated into computer network edits and put into the relevant network scenario. The result is, as an example, an I-70 highway network with a well-defined set of “pinch points” that will clearly cause some traffic to detour from the I-70 main line. In the case of interchanges closed for construction or phasing, traffic destined to the area near the closed interchanges will find a new path to their destination. It is anticipated that U.S. Highway 50 traffic will change as the quick straight paths offered by I-70 change under the construction scenarios.

5c: Application

The travel model application was conducted using the native software used to build and run the parent model, the I-70 Missouri Traffic Model. This software is Caliper Corporation’s TransCAD travel demand program. The following steps were followed:

1. Networks and Trip Tables (Truck and Auto) were assembled by scenario year and construction alternative.
2. Truck All-or-Nothing Assignment was performed.
3. Passenger Vehicle (auto) assignment was performed on the network with truck traffic as a pre-loaded condition on each highway segment.
4. Assignment results, including truck and auto traffic, speeds, and volume to capacity ratios were saved for each study segment.

5. Assignment results were exported to a spreadsheet format where the U.S. Highway 50 study segments were isolated and viewed in a tabulated form.
6. Final metrics of Vehicle Miles Traveled (VMT) and Vehicle Hours Traveled (VHT) were calculated on the segments of interest once the spreadsheet was populated.

A sketch approach was used to develop the average traffic for each of the twenty-six study segments. The mean of all the individual links for both directions was tabulated and used to report on the segment of interest. In this way, overall reporting for diversions could be done directly. The all-or-nothing approach for truck assignment was established to reflect the fact that trucks are less likely than passenger vehicles to alter their routes due to construction. While the network of rural roads bordering I-70 provide alternative paths for any vehicle seeking diversionary routing, it is understood that national truck movements will avoid leaving I-70 or I-44 for state or county roadways. For automobiles, an equilibrium assignment was utilized with time and daily capacity as the inputs. The attribute identifier for U.S. Highway 50 segment of interest, "SEG_ID" was coded on the TransCAD highway network link so as to be available for internal review and analysis or as an export identifier. A sample output sheet is shown in **Figure 4** below.

6. Summary

The I-70 Missouri Traffic Model, developed in 2002, provided a reasonable starting point from which to launch an investigation of diversionary traffic under construction conditions. The work was aided by the establishment of custom study segments to link the computer network and the spreadsheet reporting, scenario management, the estimating of a 2006 base year and growth assumptions to 2014, and an assignment protocol to streamline the process of assigning trucks and passenger vehicles to the network. The resulting tabulations were used to compare traffic under a variety of construction and improvement conditions in 2014 and 2030.

Figure 4: Sample Report of 2030 I-70 Construction with U.S. Highway 50 Improved

2030 Diverted Traffic — Revised 4/24/2008

I-70 Under Construction / US 50 Improved

I-70	Segment Location from	Segment Location to	City	SEG_ID	MILES	One Way Trucks per Segment: 2030 Traffic	One Way Trucks per Segment: 2030 Traffic with I-70 Construction	One Way Trucks per Segment: Difference	One Way Autos per Segment: 2030 Traffic	One Way Autos per Segment: 2030 Traffic with I-70 Construction	One Way Autos per Segment: Difference
	east of Exit 15	Exit 38		1	24	14,310	14,047	(263)	32,300	31,313	(987)
Construction	Exit 38	Exit 101		2	63	14,830	14,432	(398)	19,500	18,252	(1,248)
Construction	Exit 101	Exit 115		3	14	12,400	11,714	(686)	18,500	16,396	(2,104)
Construction	Exit 115	Exit 133	Columbia	4	19	19,400	18,096	(1,304)	35,000	30,458	(4,542)
	Exit 133	exit 148		5	14	9,520	9,322	(198)	17,060	16,153	(907)
	Exit 148	Exit 175		6	27	9,050	9,035	(15)	21,230	20,795	(435)
	Exit 175	Exit 217		7	42	11,140	11,123	(17)	31,370	30,992	(378)
					203	**12,950**	**12,538**		**24,994**	**23,480**	

US 50	Segment Location from	Segment Location to	City	SEG_ID	MILES	2030 Traffic	2030 Traffic with I-70 Construction	Difference	2030 Traffic	2030 Traffic with I-70 Construction	Difference
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	1,060	1,164	104	11,220	11,621	401
	West of Sedalia (Route T)	East of Sedalia (Route 0)	Sedalia	12	10	1,810	1,954	144	18,460	19,012	552
	East of Sedalia (Route 0)	West of Tipton (Rte 5 North)		13	20	460	535	75	4,740	5,629	889
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	270	331	61	5,080	6,488	1,408
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	660	751	91	6,740	7,619	879
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	2,500	2,614	114	20,910	21,595	685
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	670	670	-	6,190	6,196	6
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	410	410	-	2,950	2,953	3
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	280	281	1	1,610	1,615	5
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	450	450	0	3,010	3,019	9
	Gasconade/Franklin County Line	West of Union (Rte UU)		21	33	600	600	-	3,720	3,726	6
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	1,630	1,630	-	10,060	10,068	8
	East of Union (Rte 47 S)	Progress Parkway		23	2	2,970	2,970	-	22,050	22,070	20
	Progress Parkway	I-44		24	2	2,570	2,570	-	14,700	14,713	13
					225	**1,167**	**1,209**		**9,389**	**9,737**	

I-44	Segment Location from	Segment Location to	City	SEG_ID	MILES	2030 Traffic	2030 Traffic with I-70 Construction	Difference	2030 Traffic	2030 Traffic with I-70 Construction	Difference
	Olahoma State Line	US 65	Springfield	31	82	12,080	12,080	-	15,990	15,985	(5)
	US 65	SH 133		32	63	11,930	11,931	1	14,800	14,810	10
	SH 133	US 63		33	40	6,390	6,390	0	12,340	12,338	(2)
	US 63	US 50		34	61	7,650	7,650	-	13,450	13,449	(1)
	US 50	I-270		35	28	9,070	9,070	0	25,340	25,341	1
					274	**9,424**	**9,424**		**16,384**	**16,384**	

Data Source for Traffic Trends: MoDOT Traffic 'http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

APPENDIX C TECHNICAL CALCULATIONS

C

The travel demand model described in Appendix A provided the values used to analyze future traffic volumes, traffic volume diversion, and vehicle hours traveled. All values used in the calculations are shown in the tables included at the back of Appendix B.

To calculate congestion costs the 2007 Urban Mobility Report (*Mobility*) released by the Texas Transportation Institute was referenced. *Mobility* provides calculations of Annual Person Delay Cost, Wasted Fuel and Commercial Vehicle Operating Cost that are summed to provide an overall value of Congestion Cost. *Mobility* uses national congestion constants based on 2005 dollars. Since the Highway 50 study looks into the future these 2005 costs were inflated to the projected mid-point of construction on the Interstate highway system in Missouri. Construction was assumed to occur from 2014 to 2-023 resulting in a midpoint of 2019. Inflation was assumed at 3% per year.

Table B.1 Inflated National Congestion Constants

	2005	2019
Average Cost of Person-Time	$14.60	$22.08
Commercial Vehicle Operating Cost	$77.10	$116.62

Source: 2007 Urban Mobility Report, TranSystems.

Gasoline cost was also inflated using the standard 3% per year rate. Current fuel price data (as of April 29, 2008) was taken from the AAA Daily Fuel Gauge Report.

Table B.2 Inflated Fuel Costs

	2008	2019
Gasoline Cost per gallon	$3.607	$4.99

Source: AAA, TranSystems.

Delay was measured by an increase in vehicle-hours traveled from no construction to construction on the interstate. These values are shown in Table B.3.

Table B.3 Total Delay During Construction			
Segment of Interest	VHT		Speed
	Truck	Auto	mph
I-70 Segment 3	106	46	60.6
I-70 Segment 4	247	119	57.6
I-44 Segment 34	209	0	62.4
Source: 2002 Wilbur Smith Associates I-70 Missouri Daily Traffic Model.			

Equations:

Commercial Vehicle Cost of Congestion = VHT * Commercial Vehicle Operating Cost * days[1]

Annual Passenger Vehicle Delay Cost = VHT * Average Cost of Person-Time * Vehicle Occupancy[2] * days

Annual Fuel Cost = VHT * (Average peak period congested speed[3]/Average fuel economy) * Fuel Cost * days

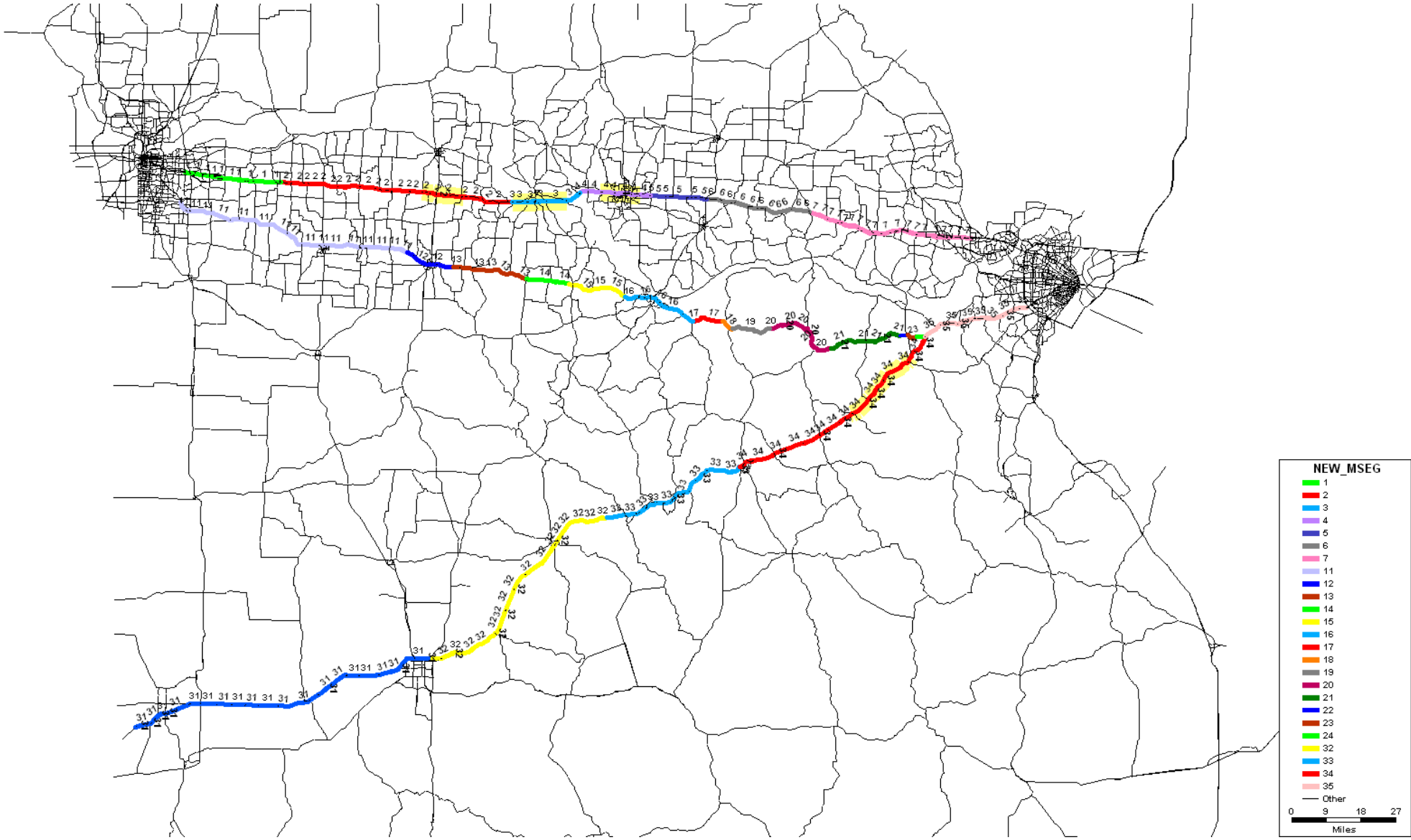
Average fuel economy = 8.8 + 0.25 * Average peak periods congested speed

Table B.4 Congestion Cost Results					
Segment of Interest	Commercial Vehicle Cost	Annual Passenger Vehicle Delay Cost	Annual Fuel Cost	Total Congestion Cost	10-year Cost of Congestion
I-70 Segments 3 &4	$15,025,904	$1,622,6210	$760,404	$17,408,518	$174 M
I-44 Segment 34	$8,896,357	$0	$0	$8,896,357	$89 M
Source: TranSystems.					

[1] Days were assumed to be 365 as commercial vehicles and passenger vehicles travel everyday and construction zones are assumed to be in place year-round.

[2] Vehicle Occupancy is 1.25 persons from *Mobility*.

[3] Average Peak Period Congested Speed was taken from the 2002 Model results for segment speed.


NEW_MSEG
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35
Other
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18
27
Miles

2006, 2014 and 2030 Estimated Traffic Revised 4/22/2008

						One Way Trucks per Segment					One Way Autos per Segment				
I-70	Segment Location		City	SEG_ID	MILES	2006	Annual % Growth*	2014	Annual % Growth**	2030	2006	Annual % Growth*	2014	Annual % Growth**	2030
	from	*to*					*2006-2014*		*2014-2030*			*2006-2014*		*2014-2030*	
	east of Exit 15	Exit 38		1	24	5,582	4%	7,640	4%	14,310	15,888	3%	20,130	3%	32,300
	Exit 38	Exit 101		2	63	5,784	4%	7,920	4%	14,830	9,588	3%	12,150	3%	19,500
	Exit 101	Exit 115		3	14	5,094	4%	6,850	4%	12,400	9,102	3%	11,530	3%	18,500
	Exit 115	Exit 133	Columbia	4	19	7,571	4%	10,360	4%	19,400	17,217	3%	21,810	3%	35,000
	Exit 133	exit 148		5	14	5,759	2%	6,810	2%	9,520	10,609	2%	12,430	2%	17,060
	Exit 148	Exit 175		6	27	5,623	2%	6,590	2%	9,050	10,442	3%	13,230	3%	21,230
	Exit 175	Exit 217		7	42	8,090	1%	9,000	1%	11,140	15,430	3%	19,550	3%	31,370
					203	**6,214**		**7,881**		**12,950**	**12,611**		**15,833**		**24,994**
US 50	Segment Location		City	SEG_ID	MILES	2006	Annual % Growth*	2014	Annual % Growth**	2030	2006	Annual % Growth*	2014	Annual % Growth**	2030
	from	*to*					*2006-2014*		*2014-2030*			*2006-2014*		*2014-2030*	
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	835	1%	900	1%	1,060	6,969	2%	8,170	2%	11,220
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	1,418	1%	1,540	1%	1,810	11,476	2%	13,450	2%	18,460
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	364	1%	390	1%	460	2,942	2%	3,450	2%	4,740
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	213	1%	230	1%	270	3,154	2%	3,700	2%	5,080
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	518	1%	560	1%	660	4,191	2%	4,910	2%	6,740
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	1,970	1%	2,130	1%	2,500	13,593	2%	15,690	2%	20,910
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	525	1%	570	1%	670	3,848	2%	4,510	2%	6,190
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	323	1%	350	1%	410	1,831	2%	2,150	2%	2,950
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	219	1%	240	1%	280	1,000	2%	1,170	2%	1,610
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	354	1%	380	1%	450	1,868	2%	2,190	2%	3,010
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	467	1%	510	1%	600	2,452	2%	2,820	2%	3,720
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	1,013	2%	1,190	2%	1,630	4,946	3%	6,270	3%	10,060
	East of Union (Rte 47 S)	Progress Parkway		23	2	1,846	2%	2,160	2%	2,970	8,873	4%	12,020	4%	22,050
	Progress Parkway	I-44		24	2	1,600	2%	1,870	2%	2,570	5,738	4%	7,850	4%	14,700
					225	**833**		**930**		**1,167**	**5,206**		**6,311**		**9,389**
I-44	Segment Location			SEG_ID	MILES	2006	Annual % Growth*	2014	Annual % Growth**	2030	2006	Annual % Growth*	2014	Annual % Growth**	2030
	from	*to*	City				*2006-2014*		*2014-2030*			*2006-2014*		*2014-2030*	
	Olahoma State Line	US 65	Springfield	31	82	4,715	4%	6,450	4%	12,080	9,942	2%	11,650	2%	15,990
	US 65	SH 133		32	63	4,651	4%	6,370	4%	11,930	10,352	1%	11,660	1%	14,800
	SH 133	US 63		33	40	4,332	2%	4,930	2%	6,390	9,907	1%	10,660	1%	12,340
	US 63	US 50		34	61	4,758	2%	5,570	2%	7,650	10,590	1%	11,470	1%	13,450
	US 50	I-270		35	28	7,009	1%	7,640	1%	9,070	20,016	1%	21,650	1%	25,340
					274	**5,093**		**6,192**		**9,424**	**12,161**		**13,418**		**16,384**

* Uses Compound Annual Growth Method based on 2002-2006 Traffic for Commercial Vehicle and All Traffic

Data Source: MoDOT Traffic Volume Maps: http://www.modot.mo.gov/safety/trafficvolumemaps.htm

** Adjusted using observed district level traffic,review of count location and continuity, functional class comparison: telephone conversation 4/22/2008 Transystems/WSA

2014 Diverted Traffic 4/27/2008

I-70 Under Construction / US 50 Unimproved

						One Way Trucks per Segment			One Way Autos per Segment		
I-70	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-70 Construction	Difference	2014 Traffic	2014 Traffic with I-70 Construction	Difference
	from	*to*									
	east of Exit 15	Exit 38		1	24	7,640	7,520	(120)	20,130	19,605	(525)
Construction	Exit 38	Exit 101		2	63	7,920	7,735	(185)	12,150	11,475	(675)
Construction	Exit 101	Exit 115		3	14	6,850	6,529	(321)	11,530	10,421	(1,109)
Construction	Exit 115	Exit 133	Columbia	4	19	10,360	9,739	(621)	21,810	19,285	(2,525)
	Exit 133	exit 148		5	14	6,810	6,688	(122)	12,430	11,859	(571)
	Exit 148	Exit 175		6	27	6,590	6,580	(10)	13,230	12,994	(236)
	Exit 175	Exit 217		7	42	9,000	8,988	(12)	19,550	19,342	(208)
					203	**7,881**	**7,683**		**15,833**	**14,997**	
US 50	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-70 Construction	Difference	2014 Traffic	2014 Traffic with I-70 Construction	Difference
	from	*to*									
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	900	974	74	8,170	8,415	245
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	1,540	1,628	88	13,450	13,739	289
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	390	437	47	3,450	3,928	478
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	230	268	38	3,700	4,445	745
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	560	617	57	4,910	5,383	473
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	2,130	2,202	72	15,690	16,073	383
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	570	570	-	4,510	4,514	4
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	350	350	-	2,150	2,152	2
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	240	240	0	1,170	1,173	3
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	380	380	0	2,190	2,196	6
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	510	510	-	2,820	2,824	4
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	1,190	1,190	-	6,270	6,275	5
	East of Union (Rte 47 S)	Progress Parkway		23	2	2,160	2,160	-	12,020	12,030	10
	Progress Parkway	I-44		24	2	1,870	1,870	-	7,850	7,857	7
					225	**930**	**957**		**6,311**	**6,500**	
I-44	Segment Location			SEG_ID	MILES	2014 Traffic	2014 Traffic with I-70 Construction	Difference	2014 Traffic	2014 Traffic with I-70 Construction	Difference
	from	*to*	City								
	Oklahoma State Line	US 65	Springfield	31	82	6,450	6,450	-	11,650	11,646	(4)
	US 65	SH 133		32	63	6,370	6,370	0	11,660	11,667	7
	SH 133	US 63		33	40	4,930	4,930	0	10,660	10,659	(1)
	US 63	US 50		34	61	5,570	5,570	-	11,470	11,469	(1)
	US 50	I-270		35	28	7,640	7,640	0	21,650	21,651	1
					274	**6,192**	**6,192**		**13,418**	**13,418**	

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

2014 VHT Difference

4/27/2008

I-70 Under Construction / US 50 Unimproved

						Truck VHT			Auto VHT			Speed	
I-70	Segment Location		City	SEG_ID	MILES	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction
	from	*to*											
	east of Exit 15	Exit 38		1	24	2,794	2,735	(59)	7,361	7,129	(232)	65.6	66.0
Construction	Exit 38	Exit 101		2	63	7,223	7,220	(3)	11,081	10,710	(371)	69.1	67.5
Construction	Exit 101	Exit 115		3	14	1,403	1,508	106	2,361	2,407	46	68.4	60.6
Construction	Exit 115	Exit 133	Columbia	4	19	2,965	3,212	247	6,242	6,362	119	66.4	57.6
	Exit 133	exit 148		5	14	1,389	1,356	(33)	2,536	2,405	(131)	68.6	69.0
	Exit 148	Exit 175		6	27	2,579	2,571	(8)	5,178	5,076	(102)	69.0	69.1
	Exit 175	Exit 217		7	42	5,660	5,640	(19)	12,294	12,139	(155)	66.8	66.9
SUM					**203**	**24,013**	**24,243**	**230**	**47,053**	**46,228**	**(825)**		
US 50	Segment Location		City	SEG_ID	MILES	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction
	from	*to*											
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	916	992	75	8,319	8,570	252	64.8	64.8
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	373	393	21	3,254	3,318	64	41.3	41.4
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	130	146	16	1,148	1,307	159	60.1	60.1
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	49	57	8	788	945	157	56.4	56.5
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	163	179	17	1,427	1,566	138	58.5	58.5
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	706	729	24	5,199	5,323	125	60.4	60.4
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	56	56	-	442	442	0	61.2	61.2
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	46	46	0	280	280	0	53.7	53.7
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	31	31	0	153	153	0	61.2	61.3
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	129	129	0	744	745	1	58.9	58.9
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	307	307	-	1,696	1,698	3	54.9	54.9
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	49	49	(0)	258	258	(0)	48.5	48.6
	East of Union (Rte 47 S)	Progress Parkway		23	2	77	77	-	431	431	0	55.8	55.8
	Progress Parkway	I-44		24	2	67	67	(0)	280	280	(0)	56.1	56.1
SUM					**225**	**3,098**	**3,258**	**160**	**24,418**	**25,319**	**901**		
I-44	Segment Location			SEG_ID	MILES	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction
	from	*to*	City										
	Oklahoma State Line	US 65	Springfield	31	82	7,612	7,612	0	13,749	13,745	(4)	69.5	69.5
	US 65	SH 133		32	63	5,764	5,765	0	10,552	10,558	6	69.6	69.6
	SH 133	US 63		33	40	2,829	2,829	0	6,117	6,116	(1)	69.7	69.7
	US 63	US 50		34	61	4,902	4,910	8	10,093	10,110	16	69.3	69.2
	US 50	I-270		35	28	3,191	3,193	2	9,042	9,048	6	67.0	67.0
SUM					**274**	**24,298**	**24,309**		**49,553**	**49,577**	**24**		

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

Speeds on Interstates are modeled at the posted speed of 70 mph.

2014 Diverted Traffic Revised 4/22/2008

I-70 Under Construction / US 50 Improved

						One Way Trucks per Segment			One Way Autos per Segment		
I-70	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-70 Construction	Difference	2014 Traffic	2014 Traffic with I-70 Construction	Difference
	from	*to*									
	east of Exit 15	Exit 38		1	24	7,640	7,512	(128)	20,130	19,571	(559)
	Exit 38	Exit 101		2	63	7,920	7,735	(185)	12,150	11,474	(676)
	Exit 101	Exit 115		3	14	6,850	6,526	(324)	11,530	10,409	(1,121)
	Exit 115	Exit 133	Columbia	4	19	10,360	9,738	(622)	21,810	19,283	(2,527)
	Exit 133	exit 148		5	14	6,810	6,682	(128)	12,430	11,829	(601)
	Exit 148	Exit 175		6	27	6,590	6,580	(10)	13,230	12,984	(246)
	Exit 175	Exit 217		7	42	9,000	8,987	(13)	19,550	19,336	(214)
					203	**7,881**	**7,680**		**15,833**	**14,984**	
US 50	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-70 Construction	Difference	2014 Traffic	2014 Traffic with I-70 Construction	Difference
	from	*to*									
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	900	984	84	8,170	8,448	278
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	1,540	1,654	114	13,450	13,826	376
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	390	446	56	3,450	4,013	563
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	230	275	45	3,700	4,576	876
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	560	627	67	4,910	5,467	557
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	2,130	2,218	88	15,690	16,157	467
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	570	570	-	4,510	4,514	4
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	350	350	-	2,150	2,152	2
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	240	240	0	1,170	1,173	3
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	380	380	0	2,190	2,197	7
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	510	510	-	2,820	2,824	4
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	1,190	1,190	-	6,270	6,275	5
	East of Union (Rte 47 S)	Progress Parkway		23	2	2,160	2,160	-	12,020	12,031	11
	Progress Parkway	I-44		24	2	1,870	1,870	-	7,850	7,857	7
					225	**930**	**962**		**6,311**	**6,536**	
I-44	Segment Location			SEG_ID	MILES	2014 Traffic	2014 Traffic with I-70 Construction	Difference	2014 Traffic	2014 Traffic with I-70 Construction	Difference
	from	*to*	City								
	Olahoma State Line	US 65	Springfield	31	82	6,450	6,450	-	11,650	11,646	(4)
	US 65	SH 133		32	63	6,370	6,370	0	11,660	11,667	7
	SH 133	US 63		33	40	4,930	4,930	0	10,660	10,658	(2)
	US 63	US 50		34	61	5,570	5,570	-	11,470	11,469	(1)
	US 50	I-270		35	28	7,640	7,640	0	21,650	21,651	1
					274	**6,192**	**6,192**		**13,418**	**13,418**	

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

2014 VHT Difference 4/24/2008

I-70 Under Construction / US 50 Improved

						Truck VHT			Auto VHT			Speed	
I-70	Segment Location		City	SEG_ID	MILES	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction
	from	*to*											
	east of Exit 15	Exit 38		1	24	2,794	2,735	(59)	7,361	7,124	(237)	65.6	65.9
Construction	Exit 38	Exit 101		2	63	7,223	7,231	8	11,081	10,726	(354)	69.1	67.4
Construction	Exit 101	Exit 115		3	14	1,403	1,507	105	2,361	2,405	44	68.4	60.6
Construction	Exit 115	Exit 133	Columbia	4	19	2,965	3,215	250	6,242	6,367	125	66.4	57.5
	Exit 133	exit 148		5	14	1,389	1,359	(30)	2,536	2,406	(130)	68.6	68.8
	Exit 148	Exit 175		6	27	2,579	2,573	(6)	5,178	5,078	(100)	69.0	69.0
	Exit 175	Exit 217		7	42	5,660	5,646	(14)	12,294	12,147	(147)	66.8	66.9
SUM					**203**	**24,013**	**24,267**	**254**	**47,053**	**46,253**	**(800)**		
US 50	Segment Location		City	SEG_ID	MILES	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction
	from	*to*											
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	916	1,002	86	8,319	8,604	286	64.8	64.8
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	373	400	27	3,254	3,342	89	41.3	41.4
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	130	148	18	1,148	1,336	187	60.1	60.1
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	49	58	10	788	975	187	56.4	56.3
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	163	182	20	1,427	1,590	163	58.5	58.5
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	706	735	30	5,199	5,356	158	60.4	60.3
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	56	56	-	442	442	0	61.2	61.2
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	46	46	0	280	280	0	53.7	53.7
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	31	31	0	153	153	0	61.2	61.2
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	129	129	0	744	746	2	58.9	58.9
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	307	307	-	1,696	1,699	3	54.9	54.9
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	49	49	0	258	259	0	48.5	48.5
	East of Union (Rte 47 S)	Progress Parkway		23	2	77	77	-	431	431	0	55.8	55.8
	Progress Parkway	I-44		24	2	67	67	-	280	280	0	56.1	56.1
SUM					**225**	**3,098**	**3,288**	**190**	**24,418**	**25,494**	**1,076**		
I-44	Segment Location			SEG_ID	MILES	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction	Difference	2014	2014 with I-70 Construction
	from	*to*	City										
	Olahoma State Line	US 65	Springfield	31	82	7,612	7,612	0	13,749	13,745	(4)	69.5	69.5
	US 65	SH 133		32	63	5,764	5,765	0	10,552	10,558	7	69.6	69.6
	SH 133	US 63		33	40	2,829	2,829	0	6,117	6,116	(1)	69.7	69.7
	US 63	US 50		34	61	4,902	4,902	0	10,093	10,092	(1)	69.3	69.3
	US 50	I-270		35	28	3,191	3,191	0	9,042	9,043	1	67.0	67.0
SUM					**274**	**24,298**	**24,299**		**49,553**	**49,554**	**1**		

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

Speeds on Interstates are modeled at the posted speed of 70 mph.

2014 Diverted Traffic

4/27/2008

I-44 Under Construction / US 50 Unimproved

						One Way Trucks per Segment			One Way Autos per Segment		
I-70	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-44 Construction	Difference	2014 Traffic	2014 Traffic with I-44 Construction	Difference
	from	*to*									
	east of Exit 15	Exit 38		1	24	7,640	7,643	3	20,130	20,094	(36)
	Exit 38	Exit 101		2	63	7,920	7,921	1	12,150	12,138	(12)
	Exit 101	Exit 115		3	14	6,850	6,854	4	11,530	11,501	(29)
	Exit 115	Exit 133	Columbia	4	19	10,360	10,348	(12)	21,810	21,809	(1)
	Exit 133	exit 148		5	14	6,810	6,810	-	12,430	12,417	(13)
	Exit 148	Exit 175		6	27	6,590	6,590	-	13,230	13,226	(4)
	Exit 175	Exit 217		7	42	9,000	9,000	0	19,550	19,543	(7)
					203	**7,881**	**7,881**		**15,833**	**15,818**	
US 50	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-44 Construction	Difference	2014 Traffic	2014 Traffic with I-44 Construction	Difference
	from	*to*									
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	900	903	3	8,170	8,175	5
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	1,540	1,539	(1)	13,450	13,438	(12)
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	390	390	0	3,450	3,455	5
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	230	229	(1)	3,700	3,701	1
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	560	559	(1)	4,910	4,903	(7)
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	2,130	2,124	(6)	15,690	15,685	(5)
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	570	569	(1)	4,510	4,510	-
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	350	349	(1)	2,150	2,150	0
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	240	241	1	1,170	1,170	0
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	380	383	3	2,190	2,200	10
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	510	618	108	2,820	3,306	486
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	1,190	1,387	197	6,270	7,089	819
	East of Union (Rte 47 S)	Progress Parkway		23	2	2,160	2,163	3	12,020	12,030	10
	Progress Parkway	I-44		24	2	1,870	1,872	2	7,850	7,857	7
					225	**930**	**952**		**6,311**	**6,405**	
I-44	Segment Location			SEG_ID	MILES	2014 Traffic	2014 Traffic with I-44 Construction	Difference	2014 Traffic	2014 Traffic with I-44 Construction	Difference
	from	*to*	City								
	Oklahoma State Line	US 65	Springfield	31	82	6,450	6,450	-	11,650	11,652	2
	US 65	SH 133		32	63	6,370	6,370	-	11,660	11,663	3
	SH 133	US 63		33	40	4,930	4,930	-	10,660	10,656	(4)
Construction	US 63	US 50		34	61	5,570	5,227	(343)	11,470	10,174	(1,296)
	US 50	I-270		35	28	7,640	7,639	(1)	21,650	21,639	(11)
					274	**6,192**	**6,123**		**13,418**	**13,157**	

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

2014 VHT Difference 4/27/2008

I-44 Under Construction / US 50 Unimproved

						Truck VHT			Auto VHT			Speed	
I-70	Segment Location		City	SEG_ID	MILES	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction
	from	*to*											
	east of Exit 15	Exit 38		1	24	2,794	2,797	3	7,361	7,354	(8)	65.6	65.6
	Exit 38	Exit 101		2	63	7,223	7,242	19	11,081	11,097	16	69.1	68.9
	Exit 101	Exit 115		3	14	1,403	1,411	8	2,361	2,367	6	68.4	68.0
	Exit 115	Exit 133	Columbia	4	19	2,965	2,971	6	6,242	6,261	19	66.4	66.2
	Exit 133	exit 148		5	14	1,389	1,390	1	2,536	2,535	(1)	68.6	68.6
	Exit 148	Exit 175		6	27	2,579	2,581	2	5,178	5,179	1	69.0	68.9
	Exit 175	Exit 217		7	42	5,660	5,666	7	12,294	12,304	10	66.8	66.7
SUM					**203**	**24,013**	**24,058**	**45**	**47,053**	**47,097**	**44**		
US 50	Segment Location		City	SEG_ID	MILES	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction
	from	*to*											
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	916	919	3	8,319	8,322	3	64.8	64.8
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	373	373	0	3,254	3,256	2	41.3	41.3
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	130	130	0	1,148	1,150	2	60.1	60.1
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	49	49	(0)	788	788	0	56.4	56.4
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	163	163	0	1,427	1,428	1	58.5	58.4
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	706	705	(1)	5,199	5,205	7	60.4	60.3
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	56	56	-	442	442	-	61.2	61.2
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	46	46	(0)	280	280	0	53.7	53.7
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	31	32	0	153	153	0	61.2	61.2
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	129	130	1	744	748	4	58.9	58.8
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	307	371	65	1,696	1,987	291	54.9	54.9
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	49	57	8	258	294	35	48.5	48.3
	East of Union (Rte 47 S)	Progress Parkway		23	2	77	77	0	431	431	0	55.8	55.8
	Progress Parkway	I-44		24	2	67	67	0	280	280	0	56.1	56.1
SUM					**225**	**3,098**	**3,175**	**77**	**24,418**	**24,764**	**345**		
I-44	Segment Location			SEG_ID	MILES	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction
	from	*to*	City										
	Olahoma State Line	US 65	Springfield	31	82	7,612	7,613	1	13,749	13,753	4	69.5	69.5
	US 65	SH 133		32	63	5,764	5,765	1	10,552	10,555	3	69.6	69.6
	SH 133	US 63		33	40	2,829	2,829	0	6,117	6,115	(2)	69.7	69.7
Construction	US 63	US 50		34	61	4,902	5,110	209	10,093	9,947	(146)	69.3	62.4
	US 50	I-270		35	28	3,191	3,191	1	9,042	9,041	(1)	67.0	67.0
SUM					**274**	**24,298**	**24,509**	**211**	**49,553**	**49,412**	**(142)**		

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

Speeds on Interstates are modeled at the posted speed of 70 mph.

2014 Diverted Traffic Revised 4/22/2008

I-44 Under Construction / US 50 Improved

						One Way Trucks per Segment			One Way Autos per Segment		
I-70	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-44 Construction	Difference	2014 Traffic	2014 Traffic with I-44 Construction	Difference
	from	*to*									
	east of Exit 15	Exit 38		1	24	7,640	7,644	4	20,130	20,090	(40)
	Exit 38	Exit 101		2	63	7,920	7,922	2	12,150	12,137	(13)
	Exit 101	Exit 115		3	14	6,850	6,854	4	11,530	11,497	(33)
	Exit 115	Exit 133	Columbia	4	19	10,360	10,346	(14)	21,810	21,809	(1)
	Exit 133	exit 148		5	14	6,810	6,810	-	12,430	12,416	(14)
	Exit 148	Exit 175		6	27	6,590	6,590	-	13,230	13,225	(5)
	Exit 175	Exit 217		7	42	9,000	9,000	0	19,550	19,542	(8)
					203	**7,881**	**7,881**		**15,833**	**15,817**	
US 50	Segment Location		City	SEG_ID	MILES	2014 Traffic	2014 Traffic with I-44 Construction	Difference	2014 Traffic	2014 Traffic with I-44 Construction	Difference
	from	*to*									
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	900	903	3	8,170	8,176	6
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	1,540	1,538	(2)	13,450	13,443	(7)
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	390	390	0	3,450	3,456	6
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	230	229	(1)	3,700	3,701	1
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	560	559	(1)	4,910	4,903	(7)
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	2,130	2,123	(7)	15,690	15,695	5
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	570	569	(1)	4,510	4,510	-
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	350	349	(1)	2,150	2,150	0
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	240	241	1	1,170	1,170	0
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	380	383	3	2,190	2,201	11
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	510	621	111	2,820	3,337	517
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	1,190	1,392	202	6,270	7,141	871
	East of Union (Rte 47 S)	Progress Parkway		23	2	2,160	2,163	3	12,020	12,031	11
	Progress Parkway	I-44		24	2	1,870	1,873	3	7,850	7,857	7
					225	**930**	**952**		**6,311**	**6,412**	
I-44	Segment Location			SEG_ID	MILES	2014 Traffic	2014 Traffic with I-44 Construction	Difference	2014 Traffic	2014 Traffic with I-44 Construction	Difference
	from	*to*	City								
	Olahoma State Line	US 65	Springfield	31	82	6,450	6,450	-	11,650	11,653	3
	US 65	SH 133		32	63	6,370	6,370	-	11,660	11,663	3
	SH 133	US 63		33	40	4,930	4,930	-	10,660	10,655	(5)
	US 63	US 50		34	61	5,570	5,219	(351)	11,470	10,145	(1,325)
	US 50	I-270		35	28	7,640	7,638	(2)	21,650	21,638	(12)
					274	**6,192**	**6,122**		**13,418**	**13,151**	

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

2014 VHT Difference 4/24/2008

I-44 Under Construction / US 50 Improved

						Truck VHT			Auto VHT			Speed	
I-70	Segment Location		City	SEG_ID	MILES	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction
	from	*to*											
	east of Exit 15	Exit 38		1	24	2,794	2,797	3	7,361	7,352	(9)	65.6	65.6
	Exit 38	Exit 101		2	63	7,223	7,232	9	11,081	11,080	(1)	69.1	69.0
	Exit 101	Exit 115		3	14	1,403	1,411	8	2,361	2,367	6	68.4	68.0
	Exit 115	Exit 133	Columbia	4	19	2,965	2,966	1	6,242	6,251	9	66.4	66.3
	Exit 133	exit 148		5	14	1,389	1,390	1	2,536	2,534	(1)	68.6	68.6
	Exit 148	Exit 175		6	27	2,579	2,581	2	5,178	5,179	1	69.0	68.9
	Exit 175	Exit 217		7	42	5,660	5,666	7	12,294	12,304	10	66.8	66.7
SUM					**203**	**24,013**	**24,043**	**30**	**47,053**	**47,067**	**14**		
US 50	Segment Location		City	SEG_ID	MILES	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction
	from	*to*											
	Lee's Summit I-470	West of Sedalia (Route T)		11	66	916	920	3	8,319	8,323	4	64.8	64.8
	West of Sedalia (Route T)	East of Sedalia (Route O)	Sedalia	12	10	373	373	0	3,254	3,257	3	41.3	41.3
	East of Sedalia (Route O)	West of Tipton (Rte 5 North)		13	20	130	130	0	1,148	1,150	2	60.1	60.1
	West of Tipton (Rte 5 North)	West of California ((Rte 87)		14	12	49	49	(0)	788	788	0	56.4	56.4
	West of California ((Rte 87)	West of Jefferson City (Rte T)	California	15	17	163	162	(0)	1,427	1,425	(2)	58.5	58.5
	West of Jefferson City (Rte T)	East of Osage River (Rte 63 S)	Jefferson City	16	20	706	704	(2)	5,199	5,200	2	60.4	60.4
	East of Osage River (Rte 63 S)	West of Linn (Rte W)		17	6	56	56	-	442	442	-	61.2	61.2
	West of Linn (Rte W)	East of Linn (Rte CC)		18	7	46	46	(0)	280	280	0	53.7	53.7
	East of Linn (Rte CC)	Osage/Gasconade County Line		19	8	31	32	0	153	153	0	61.2	61.2
	Osage/Gasconade County Line	Gasconade/Franklin County Line		20	20	129	130	1	744	748	4	58.9	58.8
	Gasconade/Franklin County Lin	West of Union (Rte UU)		21	33	307	373	66	1,696	2,005	310	54.9	54.9
	West of Union (Rte UU)	East of Union (Rte 47 S)	Union	22	2	49	58	9	258	296	37	48.5	48.3
	East of Union (Rte 47 S)	Progress Parkway		23	2	77	77	0	431	431	0	55.8	55.8
	Progress Parkway	I-44		24	2	67	67	0	280	280	0	56.1	56.1
SUM					**225**	**3,098**	**3,175**	**77**	**24,418**	**24,779**	**361**		
I-44	Segment Location			SEG_ID	MILES	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction	Difference	2014	2014 with I-44 Construction
	from	*to*	City										
	Olahoma State Line	US 65	Springfield	31	82	7,612	7,613	1	13,749	13,753	4	69.5	69.5
	US 65	SH 133		32	63	5,764	5,765	1	10,552	10,555	4	69.6	69.6
	SH 133	US 63		33	40	2,829	2,829	0	6,117	6,115	(2)	69.7	69.7
Construction	US 63	US 50		34	61	4,902	5,098	196	10,093	9,909	(185)	69.3	62.5
	US 50	I-270		35	28	3,191	3,191	1	9,042	9,041	(1)	67.0	67.0
SUM					**274**	**24,298**	**24,496**	**198**	**49,553**	**49,373**	**(180)**		

Data Source for Traffic Trends: MoDOT Traffic http://www.modot.mo.gov/safety/trafficvolumemaps.htm

Diversion of Traffic Estimated with WSA I-70 Missouri Traffic Model (2002).

Speeds on Interstates are modeled at the posted speed of 70 mph.