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**I-70 Supplemental Environmental Impact Statement  
Verification of Purpose and Need  
Technical Memorandum 1**

**August, 2008**

The Missouri Department of Transportation (MoDOT) and the Federal Highway Administration (FHWA) propose improving the Interstate 70 Corridor in Missouri, between the metropolitan areas of Kansas City and St. Louis. The intent of the improvements is to meet the current and future transportation needs of this critical transportation corridor of statewide and national significance. To facilitate this action, MoDOT completed First and Second Tier Environmental Studies of the corridor. Those studies are the foundation and basis for this Supplemental Environmental Impact Statement (SEIS) that considers a potential new strategy to provide dedicated truck-only lanes and environmental clearance of funding options for improving I-70.

This Purpose and Need Technical Memorandum provides a description of the overall purpose and need for the project, the proposed action for improving I-70 and the transportation-related issues addressed by the proposed action.

## **A. Project Overview**

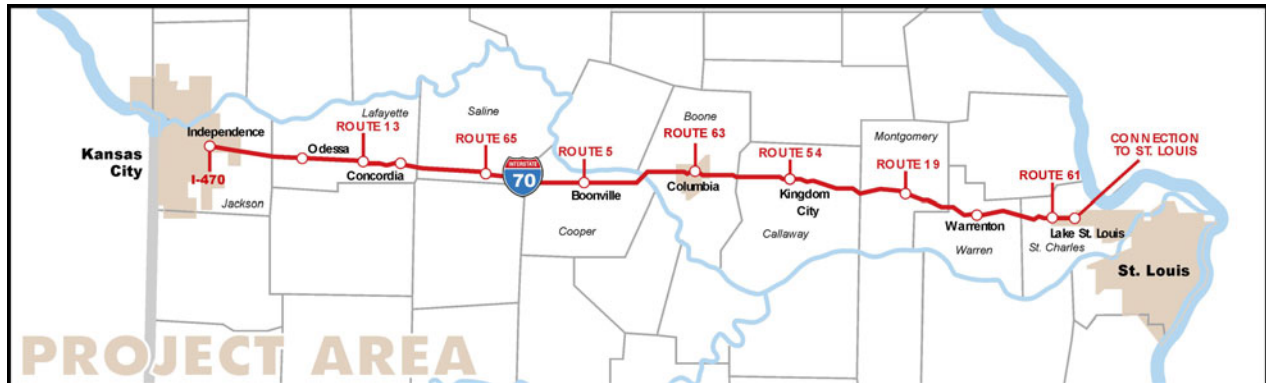
### **1. I-70 BACKGROUND**

The FHWA, in partnership with MoDOT, completed First and Second Tier Environmental Studies for the I-70 Corridor. The First Tier Environmental Impact Statement, completed in 2001, looked broadly at a range of statewide solutions for I-70 and recommended a general improvement strategy to widen existing I-70. The Second Tier studies, known collectively as Improve I-70, looked more specifically at the recommended strategy from the First Tier and the local impacts associated with applying that strategy. To focus on the evaluation of local impacts, the Second Tier Improve I-70 program divided the interstate into seven different geographic sections, each with their own environmental study. The last of the Second Tier Environmental Studies concluded in 2006.

### **2. PROJECT DESCRIPTION**

Interstate 70 is an east-west roadway of national importance with an eastern terminus in Baltimore, Maryland and a western terminus at I-15 in south central Utah. In Missouri, I-70 functions as the primary east-west interstate through the central part of the state, making it Missouri's "Main Street" supporting Missouri's economy and motorists and connecting the state's major metropolitan areas of Kansas City, Columbia and St. Louis. The corridor for the I-70 improvements stretches from the I-470 interchange in Kansas City to the vicinity of the Lake St. Louis interchange, Exit 214 in St. Louis. For most of this length, I-70 is a four-lane divided fully access-controlled interstate facility. The project length is approximately 199 miles (320.3 km). **Figure 1** displays the I-70 Study Corridor.

**Figure 1: I-70 Study Corridor**



### **3. PROPOSED ACTION**

Missouri's portion of I-70 lies in the heartland of the country and connects with major national north-south interstates in both Kansas City and St. Louis. Due to its central location, truck traffic on I-70 will continue to grow rapidly - projections anticipate traffic doubling by 2030. At the same time, the idea of separating trucks from other vehicles on interstates and highways is gaining national attention. Several other states are studying the need for providing separate truck-only lanes and the potential these lanes offer for enhanced safety and improved overall traffic flow.

MoDOT is now preparing the I-70 SEIS to evaluate and compare a Truck-Only Lanes Strategy to the First and Second Tier studies Preferred Strategy to widen existing I-70. The SEIS will help MoDOT and FHWA evaluate a variety of alternatives for implementing truck-only lanes to determine if it is the best solution to meet the needs of Missouri.

### **4. EXISTING AND PLANNED IMPROVEMENTS**

There are several active or proposed projects at the national and state level with the potential to affect the I-70 Corridor. These projects are not limited to those included in the Missouri State Transportation Improvement Program. Rather, they reflect reasonably anticipated long-range improvements to various statewide corridors that parallel I-70 and may have an effect on the project. Additionally, these improvements include projects under consideration at the national level that could implement multi-state improvements to the I-70 Corridor that could affect I-70 in Missouri. Inclusion of these projects does not imply a commitment by MoDOT or FHWA that construction of these projects will occur prior to 2030. Instead, this list is based on needs identified and solutions proposed in either ongoing or completed studies of these projects.

At the national level, improvements include the U.S. Department of Transportation's Corridors of the Future Program. In 2006, the Missouri, Illinois, Indiana, and Ohio Departments of Transportation came together to discuss and understand the shared transportation issues and needs, and to develop a multi-state vision for the I-70 Corridor. The shared goal developed was to reduce traffic congestion and improve safety on the corridor and, thereby, improve commerce and expand economic growth to the region. The vision was to accomplish this by developing a

dedicated truck-only lane corridor along the approximate 800 miles of I-70 that crosses the four states. The study corridor extends from I-435 on the eastern part of Kansas City, Missouri to the Ohio/West Virginia border near Bridgeport, Ohio/Wheeling, West Virginia. The new I-70 Corridor would serve as a “Corridor of the Future” for vehicle and goods movement.

In 2007, the U.S. Department of Transportation named I-70 as one of six multi-state “Corridors of the Future” to help relieve national traffic congestion. The U.S. Department of Transportation and the states are currently working to finalize formal agreements that will detail the commitments of the federal, state, and local governments involved. These agreements will outline how the partners will handle the financing, planning, design, construction, and maintenance of the corridor. While the I-70 SEIS is coordinating with this national initiative for I-70, the SEIS is still evaluating whether a Truck-Only Lanes Strategy is the best solution for the I-70 Corridor in Missouri. Other states that have studied or are studying dedicated truck lanes include Georgia, Texas, Virginia, California, and Iowa. The FHWA considers the I-70 Corridor between Kansas City and St. Louis to have independent utility and have logical termini as a standalone project.

The considered statewide improvements include:

- **U.S. 36** – Widening and improving the U.S. 36 Corridor to a four-lane expressway for its entire length between I-29 and the Mississippi River. Since the completion of the First and Second Tier environmental studies, the improvements to U.S. 36 have nearly been completed, with the final section from Macon to U.S. 24 near Hannibal designed and currently under construction. Proponents requested designating U.S. 36 as I-72, but no action has been taken in this regard and some sections of the roadway continue to operate as a four-lane expressway. Upgrading U.S. 36 to I-72 would include limiting all at-grade intersections, allowing access only at interchanges.
- **U.S. 50** – Widening and improving the corridor to a four-lane highway to provide an expressway facility from I-435 in Kansas City to I-44 located southwest of St. Louis. The first phase of the project is under construction, which includes a 17-mile section from California to Jefferson City. The second phase should be let for construction in 2008. The last phase from Sedalia to California is not currently scheduled for construction.
- **I-70 Improvement Study First Tier Environmental Impact Statement (FTEIS) in Jackson County** – MoDOT is currently identifying and evaluating the social, economic, and environmental effects of alternative transportation improvements such as improving I-70 in Jackson County, Missouri. The study area for the FTEIS includes I-70 from the last ramp termini east of the Missouri-Kansas state line to Exit 15 at the I-470 interchange.
- **U.S. 61/U.S. 40** – In 2009, the ongoing work to improve the U.S. 61/U.S. 40 interchange with I-70 and roadway corridor to the east within the St. Louis metropolitan area will be complete. These portions of U.S. 61/U.S. 40 will then be upgraded to interstate standards and redesignated as I-64.

- **Kansas City Origin-Destination Study** – Concurrent with the SEIS process in 2008, an origin-destination study was completed for the Kansas City metropolitan area. The origin-destination study consisted of surveying truckers at weigh stations along interstate routes and major highways throughout the metropolitan area to get a better understanding of where trucks are coming from and going to as they travel through and within the metropolitan area. A copy of the study is included as Technical Memorandum 5 and is contained in the CD attached to the back cover of the SEIS document.
- **St. Louis Truck Lane Corridor Study** – In coordination with the SEIS, a planning level study of how truck-only lanes could travel through the St. Louis metropolitan area was conducted. This study was completed in order to provide early information on potential truck-only lane routing through St. Louis to the federal I-70 Corridors of the Future project. A copy of the study is included as Technical Memorandum 6 and is contained in the CD attached to the back cover of the SEIS document.

## **B. Summary of Purpose and Need**

The First and Second Tier environmental studies established the goals for I-70 improvements between Kansas City and St. Louis. The goal established by the studies was to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to the needs of the study corridor in addition to the expectations of a nationally important interstate. This goal remains valid for the SEIS.

The specific purpose and need for the SEIS is the same as that established during the First and Second Tier environmental studies and includes:

- **Roadway Capacity** – Increase roadway system capacity in accordance with the projected travel demands to improve the general operating conditions of I-70;
- **Traffic Safety** – Reduce the number and severity of traffic-related crashes occurring along I-70 between Kansas City and St. Louis;
- **Roadway Design Features** – Upgrade current roadway design features along I-70, including interchanges, roadway alignment and roadway cross sections;
- **System Preservation** – Preserve the existing I-70 facility as needed to carry existing and future loads;
- **Goods Movement** – Improve the efficiency of freight movement using I-70;
- **Access to Recreational Facilities** – Facilitate the usage by motorists of nearby regional recreational facilities through improved accessibility; and
- **National Security and Disaster Preparedness** – Improve this key corridor for moving personnel and equipment for deployment and emergency response.

The following section describes specific purpose and need elements the study team reviewed to ensure data trends and projections have remained valid since the conclusion of the previous studies. There have been no changes to the information presented previously related to Access to Recreation Facilities and National Security and Disaster Preparedness.

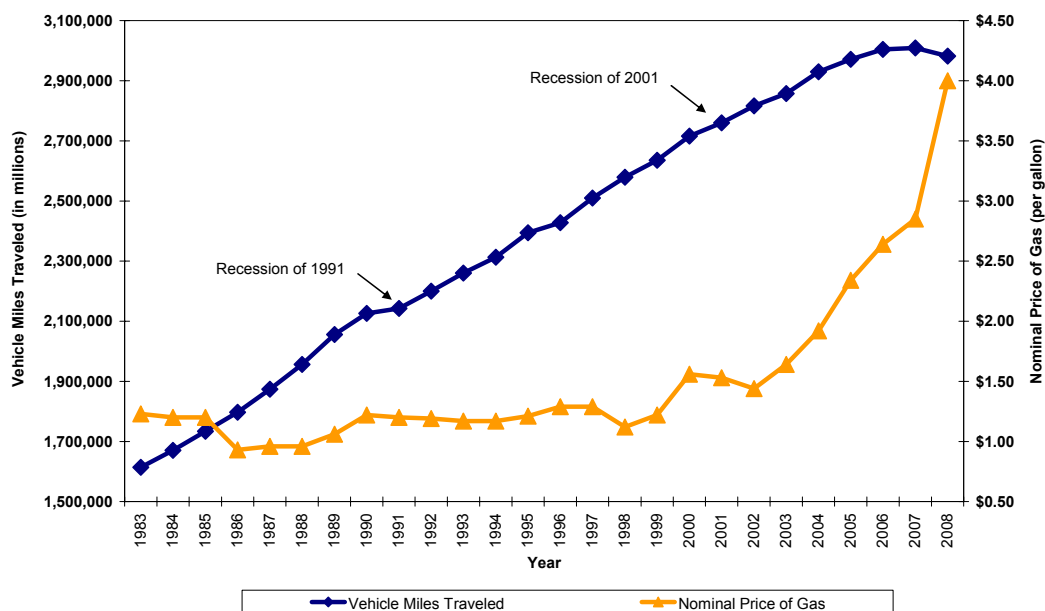
# 1. ROADWAY CAPACITY

## a. Traffic Trends on I-70

Traffic on I-70 has been continually increasing over time. At the conclusion of the Second Tier Environmental Studies, average daily traffic volumes along the I-70 Corridor ranged from 30,000 vehicles per day in the rural areas to 70,000 vehicles per day in the urban areas. By the design year 2030, travel demand modeling projections anticipate increases in traffic volumes, resulting in a need to increase roadway capacity on I-70. For rural areas along the corridor, the projections indicate traffic volumes will more than double to an average of 75,000 vehicles per day. Projections for urban areas of the corridor indicate traffic volumes will nearly double, with an average of 110,000 vehicles per day. The urban areas of Kansas City, St. Louis and Columbia project to experience a spreading out of the urban traffic congestion over longer sections of highway and timeframes. The anticipated result is greater traffic congestion and travel times through these areas by 2030.

For the I-70 SEIS, the study team reviewed the latest available existing traffic volumes from MoDOT for the year 2005 to determine if anticipated growth projections had changed since the analysis conducted during the Second Tier Environmental Studies. While more current data for 2008 is not yet available from MoDOT, it is recognized that fluctuating fuel costs have had a recent impact on the vehicle miles traveled in Missouri. Gas prices have reached a historic high of \$4.00 per gallon, and then dropped back to under \$2.00 per gallon. This has had an impact on travel patterns. What is unclear is whether the drop in travel will continue or be permanent. Historically, fuel cost increases temporarily reduce miles driven, but over time people adapt and travel resumes and continues to grow, as shown on **Figure 2**. Even with this current period of travel uncertainty, the traffic on I-70 is still projected to experience increases through 2030 and there is still a need for significant investment in I-70.

**Figure 2: Historic U.S. Average Nominal Gas Price Compared to Vehicle Miles Traveled**



**Table 1** provides a summary of the 2005 traffic counts for select locations along the I-70 Corridor in comparison to the Second Tier counts. Please note that some sections of the corridor experienced construction during this period as part of MoDOT’s Smooth Roads Initiative and may have created some anomalies in the traffic data. The Kansas City sections between I-470 and Oak Grove show the greatest potential for traffic anomalies.

**Table 1: Two-Way Average Daily Traffic Comparison: Second Tier to SEIS**

Description	Second Tier 2000 ADT	SEIS 2005 ADT	Annual Growth (2000 -2005)	2030 Projected ADT	Projected Annual Growth (2000-2030)
West of I-470	104,236	134,735	5.3%	134,770	1.0%
I-470 to Route 7	90,224	118,160	5.5%	124,090	1.2%
Route 7 to Oak Grove	68,635	53,590	-4.8%	101,480	0.9%
Oak Grove to Route 13	43,637	41,490	-1.0%	78,900	2.3%
Route 13 to Route 23	28,616	32,340	2.6%	68,040	3.0%
Route 23 to U.S.65	24,715	27,770	2.5%	64,760	3.1%
U.S.65 to Route 87	29,820	29,370	-0.3%	73,360	2.9%
Route 87 to Midway	34,678	30,990	-2.2%	83,000	2.7%
Midway to U.S.63	59,714	72,860	4.1%	120,210	2.2%
U.S.63 to U.S.54	50,192	50,190	0.0%	74,140	2.9%
U.S.54 to Route 19	29,893	34,480	2.9%	69,010	3.0%
Route 19 to Route A/B	33,623	32,200	-0.9%	73,790	2.8%
Route A/B to Route 47	28,600	31,100	1.7%	75,140	2.8%
Route 47 to U.S.61	64,018	78,990	4.3%	110,310	2.3%
East of U.S.61	59,467	73,000	4.2%	100,360	1.8%

Source: MoDOT Transportation Management System, 2000 and 2005 traffic count data.

The most recent traffic counts indicate that the urban areas of the corridor, including Kansas City, Columbia and St. Louis, are generally experiencing higher growth levels than projected in the travel demand modeling conducted within the Second Tier Studies. The Kansas City metropolitan area experienced over five percent annual growth during the period from 2000 to 2005, compared to past growth projections for that timeframe within a range of 1.0 to 1.4 percent per year. Similar to the Kansas City area of the corridor, the St. Louis area sections east of Route 47 exceeded projected annual growth rates. Growth rates were around four percent per year in comparison to the projected range of an average of two percent per year.

For Columbia, some specific sections experienced annual growth rates that were slightly higher than the projected model growth rates at four percent per year. However, the majority of sections were generally on track with the anticipated growth trends of 2.4 percent per year. Taken with the Kansas City and St. Louis growth in traffic, these volume increases indicate that total traffic for the urban areas of the project are growing faster than anticipated in the previous studies and that traffic congestion issues and increased travel times may occur faster than projected along the corridor, reinforcing the need for capacity improvements on I-70.

The outlying rural areas of the corridor largely experienced flat to moderate growth over the same timeframe, with some specific sections experiencing a decrease in traffic volumes. In the Second Tier Studies, the study team anticipated annual growth for rural areas of approximately

three percent per year. Year 2005 traffic data is closer to one percent average annual growth for the corridor as a whole. The results of the data review indicate that overall rural areas along the corridor are growing slower than anticipated in the Second Tier travel demand modeling.

Rural areas east of Kansas City experienced flat to negative growth, with the highest annual growth rates concentrated around the U.S. 65 (Marshall) and U.S. 23 (Concordia) sections of the corridor, which were more in line with projected growth rates. A growth pattern was more difficult to establish just west and east of Columbia, with sections fluctuating between moderate to negative growth. Sections near U.S. 54 (Kingdom City) generally showed growth in line with projections at around three percent annual growth. However, sections east of Kingdom City between Route 19 and Route 47 experienced negative growth.

**b. Commercial Vehicle Traffic Trends**

In the Second Tier Studies, projections indicated a doubling of commercial vehicle traffic by 2030 from an average of 9,000 vehicles per day to 22,000 vehicles per day and that the overall percentage of average daily truck traffic will increase. This equates to 25 to 30 percent of the average daily traffic consisting of commercial vehicles and an average annual growth rate of around three percent. In addition, it was determined that 70 percent of traffic along I-70 is through traffic, and this is true for the commercial vehicle traffic as well. This indicates that a significant amount of commercial vehicle traffic passes through Missouri without ever stopping along the corridor for local deliveries.

As indicated in **Table 2**, truck traffic has averaged two to seven percent growth each year from 1994 to 2005. Counts represent total trucks during the years 1994, 1998, 2000 and 2005, to give an idea of historic trends.

**Table 2: I-70 Truck Traffic (1994, 1998, 2000 and 2005)**

	Location				
	East of Route 13	East of U.S. 40	West of U.S. 54	West of Route 19	East of Route 47
1994 <sup>1</sup>	7,840	7,450	5,940	6,080	7,650
1998 <sup>1</sup>	8,720	8,290	9,320	8,220	8,870
2000 <sup>2</sup>	7,980	10,200	8,500	7,700	9,660
2005 <sup>3</sup>	9,350	22,000	11,000	10,500	15,900
Annual Percent Increase (1994 to 2005)	1.6%	10.3%	5.8%	5.1%	6.9%
Annual Percent Increase (2000 to 2005)	3.2%	16.6%	5.3%	6.4%	10.5%
Percent Trucks - 1998	21%	25%	32%	24%	22%
Percent Trucks - 2000	28%	20%	27%	26%	21%
Percent Trucks - 2005	29%	30%	22%	30%	20%

Sources:

1. Missouri Commercial Vehicle Map – 1994, 1998
2. I-70 Second Tier Environmental Studies - 2000
3. MoDOT I-70 Traffic Count Data – 2005

For the corridor as a whole, truck traffic has averaged approximately six percent growth per year from 2000 to 2005. If this high degree of truck traffic growth continues, over time trucks will represent a higher percentage of total travel in the corridor than originally projected. Additionally, as the amount of truck traffic continues to grow in the rural areas of the corridor, the operations of the I-70 roadway will continue to degrade at an increasing rate. This degradation includes safety factors, such as number and severity of crashes, pavement and bridge condition, and congestion due to speed differentials.

The SEIS is finding that truck traffic is continuing to increase on I-70, as anticipated in the previous studies. The highest truck growth rates are in the St. Louis sections, ranging from eight to 11 percent annual growth, and in the Columbia sections at 16 percent annual growth. In Columbia and between Route 19 and Route 47, truck traffic is significantly higher than the projections in the previous studies, within a range of 30 to 36 percent trucks. This is in comparison to the previous study projections of 22 to 26 percent trucks in these areas.

Rural sections typically experienced three to four percent annual growth for commercial vehicles, more in line with model assumptions. The urban Kansas City sections saw the largest growth trend reduction for trucks, where truck percentages were found to be within a range of ten percent trucks compared to the previous studies estimate of 22 percent trucks.

The study team also re-evaluated the truck travel time analysis contained in the Second Tier Studies purpose and need statement. The updated analysis showed that, based on 2006 FHWA data, the average travel time for trucks on I-70 has risen to 219 minutes to complete the approximately 199 miles under study, for an average speed of 54.5 miles per hour<sup>1</sup>. Therefore, today's 2006 truck speeds and thus freight movements are already slower than the forecast average speed from the original purpose and need of 55 miles per hour for all vehicles by the future design year 2030 without improvements. This shows a decrease in truck speeds and highlights the need for capacity improvements on I-70.

## **2. TRAFFIC SAFETY**

### **a. Safety Trends on I-70**

For the I-70 SEIS, the study team compared the average annual total crash data and annual fatal crash data for the following analysis periods:

- Base Analysis Period (First and Second Tier Studies) – 1995-2000 (six years)
- Intermediate Analysis Period – 2001-2003 (three years)
- Current Analysis Period – 2003-2007 (five years)

Since the Second Tier Environmental Studies completed in 2006, MoDOT has added guard cable to the median of I-70 to help reduce the number and severity of crossover crashes. Additionally, MoDOT has implemented other safety improvements such as larger signage, rumble stripes and improved striping. The installation of the median guard cable has been 94 percent effective at eliminating crossover fatalities along the corridor. The improved striping and rumble stripes have also been beneficial and the corridor has seen a 29 percent reduction in run-off-the-road crashes.

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<sup>1</sup> FHWA, *Freight Performance Measurement: Travel Time in Freight-Significant Corridors*; December 2006; pg. 27

The average annual total crashes along I-70 declined from 1995 to 2007 due to these and other short-term improvements to the I-70 Corridor. The data show that there has been a 2.8 percent reduction in total number of crashes across the corridor from the time the First and Second Tier Studies concluded to the beginning of the SEIS. The average annual total crashes declined from 2,266 crashes per year in the base analysis period, to 2,248 crashes per year in the intermediate analysis period, to 2,203 crashes per year in the current analysis period. While this is not a significant reduction in the number of crashes per year, the trend shows that the total number of crashes per year declined steadily since 1995.

On an individual section basis, Kansas City and St. Louis sections have seen the greatest improvement, with a net decrease in total crashes. All other sections, including Columbia and the rural areas along the corridor, still experience an increase in the total number of crashes over the previous study findings. The worst section was from Odessa to Boonville, where crashes increased by 42 percent from the base period to the current analysis period.

Corridor-wide, during the same timeframe, the number of fatal crashes per year declined from 36 average fatal crashes per year in the base period to 23 average fatal crashes per year in the current analysis period. This represents a 36 percent reduction in fatal crashes from 1995 to 2007. Through rural sections of the project and in the Columbia area, the data indicates an increase in the number of fatal crashes per year. The section between Odessa and Boonville experienced a high number of fatal crashes at 9.2 average annual fatal crashes over the five-year period. The majority of these crashes consisted of out of control, rear end and head on crash types. Sixty-five percent of these crashes occurred during evening hours.

The current data (2003 to 2007) shows that out of control crashes, rear end, and passing are the most common crash types along I-70. The out of control type crashes represent 37 percent of the total crashes along I-70, for a total number of 5,194 crashes. Of this total, 93 percent resulted in property damage only and/or minor injuries, while seven percent resulted in disabling injuries and/or fatal crashes.

Rear end crashes represent the second type of crash with the most frequency during the current analysis period. The total number of rear end crashes was 3,885. This represents 27 percent of the total number of crashes. Of this total, 97 percent resulted in property damage only and/or minor injuries, while three percent resulted in disabling injuries and/or fatal crashes.

Passing by changing lanes was the third type of crash with the most frequency during the current analysis period. The total number of passing crashes was 1,473, which represents ten percent of the total number of crashes. Of this total, 99 percent resulted in property damage only and/or minor injuries, while less than one percent resulted in disabling injuries and/or fatal crashes.

The study team also reviewed the data on median cross over crashes. At the time of the First Tier EIS (1994 to 1998), there were 377 median cross over crashes, comprised of the following:

- 233 property damage only crashes;
- 107 injury crashes; and
- 37 fatal crashes.

These types of crashes represent less than one percent of total crashes during the current analysis

period. In total, there were 49 median cross over crashes. Of this total, 71 percent resulted in minor injuries and/or property damage only crashes and 29 percent resulted in disabling and/or fatal crashes. The decrease in median cross over crashes from 377 to 49 indicates a noteworthy improvement since the time of the First Tier EIS.

As shown in **Table 3**, 2004 and 2005 were the years of higher crashes in the current analysis period. During these two years, the crash rates were higher than the statewide rates for interstates and freeways. The data shows an improvement in the crash rate in 2006. This was a reduction below both the statewide rate for interstates and the statewide rate for freeways.


The review of I-70 Corridor crash data indicates that short-term safety improvements, such as the addition of median guard cable, and improved striping, signing and rumble stripes have helped to improve corridor safety. However, aside from the urban sections of Kansas City and St. Louis, overall crashes continue to increase along the corridor between the analysis period of the First and Second Tier Studies and today. Therefore, improving traffic safety continues to be an important purpose and need element for the SEIS.

**Table 3: Crash Rates for Current Analysis Period (2003 – 2007)**

Total Crashes	2003	2004	2005	2006	2007
Eastbound	1,422	1,585	1,530	1,303	1,393
Westbound	1,280	1,484	1,373	1,303	1,459
Total	2,702	3,069	2,903	2,606	2,852

Eastbound	2003	2004	2005	2006	2007
Crash Rate	111.58	122.07	116.5	98.48	Data not available
State Rate-Interstate	114.12	110.2	109.28	107.82	
State Rate-Freeway	113.41	111.43	109.04	106.3	

Westbound	2003	2004	2005	2006	2007
Crash Rate	97.19	110.07	100.67	94.16	Data not available
State Rate-Interstate	114.12	110.2	109.28	107.82	
State Rate-Freeway	113.41	111.43	109.04	106.3	

 Exceeds statewide crash rate for similar facilities.

**b. Truck Safety Trends**

**National Trends**

Reducing potential conflicts and crashes between trucks and cars is a key reason for considering truck-only lanes as part of the I-70 SEIS. The Federal Motor Carrier Safety Administration's *Large Truck Crash Facts 2003* notes that of the crashes involving large trucks and passenger vehicles, 84 percent of the fatalities were passengers in passenger vehicles. The sheer size and mass of large trucks may attribute to this inequality, placing passenger vehicles at a disadvantage in crash incidents with large trucks.

MoDOT statewide crash data for I-70 indicates that the majority of truck-car crashes occur from rear end crashes (e.g. following to close), being out of control or passing/changing lanes. Studies on other interstate corridors looked at safety relative to dedicated truck lanes. These included a

recent study in Iowa on I-80<sup>2</sup> and the I-70 Corridor of the Future Application<sup>3</sup>. These studies indicated that the same three conditions, specifically as they relate to speed differentials and differences in operating performance of trucks and cars, contributed to the majority of truck-car crashes.

There are numerous reasons why trucks and cars come into conflicts, resulting in crashes:

- Trucks speed-up and slow down at different rates than cars;
- Trucks require more space to change lanes, to accelerate or slow down on entrance and exit ramps;
- Cars driving in truck “blind spots” may be hit as the truck attempts to change lanes;
- Cars following too closely and having reduced visibility behind a truck can result in a rear-end crash;
- Cars in front of a truck that brake suddenly can cause rear end crashes from a truck, unable to slow as quickly as a car;
- In some cases, even if a truck provides adequate headway space between them and other vehicles, cars may change lanes and fill the open space, not realizing that if they stop suddenly the truck may not be able to brake as quickly.

As stated in the I-70 Corridor of the Future Application, in 2004 the four state I-70 project area had more than 10,000 crashes. Truck involved crashes accounted for 18 percent of total crashes, but 36 percent of fatalities. The majority of these fatalities involved passenger car drivers and occupants.

To segregate the two traffic streams would result in less conflict between cars and trucks and consequently result in fewer crashes that expose car occupants to the dangers associated with truck/car crashes. Separating trucks from cars could substantially improve the safety of passenger vehicle travel because approximately 12 percent of all fatalities involving passenger vehicle occupants occur in crashes with heavy trucks.<sup>4</sup> Segregated traffic streams could also result in a perceived safety improvement for truck operators. Truck drivers have a certain degree of anxiety when driving near passenger cars, much like the automobile drivers’ concern with trucks.

### **Statewide I-70 Trends**

The study team reviewed and updated the truck crash analysis contained in the Purpose and Need documentation for the I-70 First and Second Tier Environmental Studies. The truck crash data from the original Tier 1 Purpose and Need covered the period 1994 to 1998; the study team

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<sup>2</sup> Neil A. Burke, Tom H. Maze, Michael R. Crum, David J. Plazak, and Omar G. Smadi; *Dedicated Truck Facilities as Solution to Capacity and Safety Issues on Rural Interstate Highway Corridors*; Transportation Research Record; Journal of the Transportation Research Board, No. 2008. pg. 84 - 99. 2007.

<sup>3</sup> *I-70 Dedicated Truck Lanes Corridor of the Future Phase 2 Application*, submitted to U.S.DOT, May 2007 by Indiana DOT for Missouri, Illinois, Indiana, and Ohio DOTs.

<sup>4</sup> Wilbur Smith Associates generated analysis as part of the I-70 Corridors of the Future Application using 2004 HPMS data and available crash data provided by the states involved. This figure represents is a high level analysis of I-70 crash rates covering the states of Missouri, Illinois, Indiana, and Ohio.

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looked at updated data from 2002 to 2005. **Table 4** shows the basic truck crash data. The truck crash analysis shows two evident trends:

- a relatively steady increase in property damage only crashes and total crashes involving trucks; and
- a consistent number of injury and fatal type crashes involving trucks.

**Table 4: Truck Crashes by Accident Severity on I-70 (I-470 to Lake St. Louis)**

Year	PDO	Injury	Fatal	Total
2002	138	123	13	274
2003	167	99	14	280
2004	184	120	10	314
2005	204	128	11	343
<b>Totals</b>	<b>693</b>	<b>470</b>	<b>48</b>	<b>1,211</b>

Note: PDO = Property Damage Only, Source: MoDOT Traffic Division

Trucks were involved in 13 percent of the total crashes from 2002 to 2005 and 40 percent of the fatal crashes for the same time. This represents a lower percentage of total crashes but a higher percentage of fatal crashes than the original Tier 1 Purpose and Need. This may be because truck involved fatal crashes have remained unchanged over that period, while overall fatal crashes along the corridor have declined. This results in truck involved fatal crashes accounting for a high percentage of all fatal crashes. **Table 5** identifies the types of truck crashes occurring on I-70.

The top three crash types identified in the MoDOT truck crash data are out of control, rear end, and passing, which are consistent with overall crashes. In 2005, these three crash types accounted for over 81 percent of the truck crashes on I-70. Studies on other interstate corridors, including a recent study in Iowa on I-80 and the I-70 Corridor of the Future Application, looked at safety relative to dedicated truck lanes. The truck crash data on I-70 in Missouri indicates there are strong potential benefits to greater separation of trucks and cars provided by truck-only lanes, particularly when the higher percentage of fatal crashes involving trucks is considered.

**Table 5: Severity by Crash Type for Truck Crashes 2002 - 2005**

Crash Type	PDO	Injury	Fatal	Total
Out of Control	232	128	15	375
Rear End	164	178	12	354
Passing	120	57	0	177
Changing Lanes	29	23	1	53
Parking/Park Vehicle	30	21	1	52
Avoiding	24	7	1	32
Head On	4	10	8	22
Cross Median	2	10	3	15
Deer	11	2	0	13
<b>Total</b>	<b>693</b>	<b>470</b>	<b>48</b>	<b>1,211</b>

Source: MoDOT Traffic Division

### **3. SYSTEM PRESERVATION**

Built in the 1950s, the designers of I-70 intended the highway to last 20 years. In the decades since, through ongoing care and maintenance, MoDOT has been able to extend the effective life of this highway. Since the Second Tier Environmental Studies completed in 2005, MoDOT has resurfaced the I-70 Corridor as part of the state's Smooth Roads Initiative. MoDOT has also made other minor safety and preservation improvements to the corridor including adding guard cable to the median of I-70, rumble stripes, improved striping, and larger signage.

### **4. GOODS MOVEMENT**

Interstate 70 experiences higher truck volumes than any other interstate in Missouri. This is due to its central location in the nation and the high concentration of manufacturing, retail, wholesale trade, transportation and communications activity along I-70. To support goods movement and commerce, the conditions and performance of I-70 needs to improve with respect to the mobility and safety of truck traffic. For the I-70 SEIS, the study team reviewed and updated the goods movement information contained in the Purpose and Need documentation for the First Tier EIS.

The I-70 Corridor continues to be a major east-west route that accommodates a significant volume of daily truck traffic (25 to 30 percent average trucks per day). Commodities continue to move into, out of, and through the state of Missouri at a growing rate, with trucks and passenger vehicles competing for the available roadway capacity. In addition, I-70 generates \$4.3 billion in net general revenue and \$89.9 billion in gross state product.<sup>5</sup>

Updated national 2002 Freight Analysis Framework data shows that trucks carry 57 percent of outbound goods from Missouri and 53 percent of goods into Missouri by weight. Both of these values are higher than the data shown in the prior Purpose and Need documentation. According to MoDOT's Tracker, trucks transported more than 880 million tons within, from, or to Missouri in 2006. Tracker projects this to increase to 1.1 billion tons by 2035. This data underlines the continued importance of truck traffic in the movement of freight.

The analysis confirmed that the major truck freight movements along I-70 within Missouri remain the same as the previous studies. The two highest volume freight movements have origins and destinations between St. Louis and Columbia, and between St. Louis and Kansas City. Providing improved goods movement along the I-70 Corridor will also encourage commerce and economic growth throughout the Midwest and the nation.

The First Tier EIS estimated the amount of goods movement that could shift to other freight modes, such as rail or waterways, to relieve truck traffic on I-70. At that time, when projecting modal shifts, the study estimated a reduction of approximately 125 trucks daily. This small estimate was due in part to the varying types of commodities shipped via each freight mode, the amount of freight movement transported only between Kansas City and St. Louis (200 miles or less), and the need for just in time delivery for certain goods. The assumptions for modal shifts and the relief I-70 could experience from such a shift remains the same for this SEIS. While these other modes are an important link for goods movement in Missouri, there would still be a need to address significant goods movement along I-70 via trucks.

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<sup>5</sup> MERIC, *Six-Mile Corridor Economic Impact Study Interstate 44 and Interstate 70 Corridor Summary*

## **C. Conclusions**

Interstate 70 is a critical corridor for preservation and improvement, serving as both Missouri's "Main Street" and as a federally designated Corridor of the Future. The proposed project is a needed improvement to provide a safe, efficient, environmentally sound and cost-effective transportation facility that responds to the needs of the study corridor in addition to the expectations of a nationally important interstate. The proposed project's purpose is to improve roadway capacity, traffic safety, and roadway design features, preserve the I-70 system to carry existing and future loads, provide efficient goods movement, improve access to recreational facilities, and address the national security and disaster preparedness of the corridor. This SEIS document builds upon the previous work efforts conducted within the First and Second Tier Environmental Studies for the I-70 Corridor and determines if a new strategy of constructing dedicated truck-only lanes is the best solution for improving I-70. The following sections of the SEIS provide the data and analysis of this new strategy and its subsequent alternatives. The SEIS evaluates the social and environmental impacts and determines the preferred alternative for the proposed action.