The Impact of I-70 Congestion on Colorado – Denver to Grand Junction

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While lower levels of traffic congestion have the potential to benefit local communities, traffic volume along I-70 has reached levels of excess congestion which pose a danger to motorists, an inconvenience to residents, and an economic drain for local communities. Because of excess congestion levels along I-70, motorists are no longer willing to stop at local towns for fear of losing their spot, or they may not travel on I-70 at all. Motorists are at a higher risk for dangerous accidents, but emergency crews will have difficulty reaching the scene. Vehicle operating costs increase along with traffic volume, and residents may have to sacrifice personal time or productivity at work because of their commuting schedules.

Traffic volume is expected to increase significantly between 2006 and 2025, expanding peak travel times. The Colorado Department of Transportation is hoping to alleviate congestion using one or a combination of several proposed alternatives. The Programmatic Environmental Impact Statement is still in draft stages, with a final draft expected by the end of 2007. The process has taken almost three years thus far, and groundbreaking is projected to optimistically occur within ten years. This is subject to change based on funding and the selected alternative. Every year that construction is postponed burdens taxpayers with higher project costs, and places additional congestion-related constrains on local residents, businesses, and governments.

The intent of this study is not to select a preferred I-70 expansion alternative. Rather, the intent is to examine the impacts of the no-action alternative on Colorado. Specifically, the study focuses on the impacts in three geographic areas including:

- **Metro Denver:** including Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties.
- **Mountain Resort Region:** including Clear Creek, Gilpin, Grand, Summit, Eagle, and Pitkin counties.
- **Western Slope:** including Garfield and Mesa counties.

I-70 congestion has widespread impacts on the Colorado tourism industry, and residents, businesses and local governments in these areas. Still, it must be acknowledged that some parts of the Colorado economy may actually benefit from I-70 congestion, such as travelers choosing to visit parts of the state accessible via roadways other than I-70 or increased air travel as visitors skip the road and fly directly to their destination. However, the costs of congestion likely overshadow these benefits.

Tourism Impacts: Tourism is one of the largest industries in Colorado. Longwoods International estimates that 25.9 million overnight visitors spent $8.2 billion in Colorado in 2005. Of this amount, about $2.5 billion was spent in the Mountain Resort Region. These dollars are in jeopardy if congestion along I-70 worsens. Indeed, **a 1% decline in tourism spending in the Mountain Resort Region means an annual loss of $25 million in business revenue.**

It is impossible to estimate the decline in tourism that may occur due to I-70 congestion. As word spreads of the difficulty of accessing Colorado's Rocky Mountains, visitors may choose other vacation options. Utah, New Mexico, Wyoming, and other parts of Colorado offer ski resorts that rival those found along I-70 with shorter lines and less traffic. Surrounding states welcome campers and hunters with pristine wilderness areas and less traffic. While marketing may help to overcome these challenges, the threat to Colorado's position as one of the top tourism destinations in the country is very real.

Resident Impacts: I-70 congestion affects Metro Denver, Mountain Resort Region, and Western Slope residents by increasing their commute time, decreasing their personal time, increasing their vehicle and travel costs, and harming their health. **Valuing only the personal time lost due to congestion, the cost of congestion is $85 million.** This value is likely to increase over time as more vehicles on the road cause longer periods of congestion and increased travel delays.

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Business Impacts: The lure of Colorado's quality of life enhances business recruitment and retention efforts; I-70 congestion may make economic development efforts more difficult. Congestion may decrease worker productivity and make business operations more costly and less efficient. **If productivity and business efficiency diminishes by just 0.5% due to congestion, this translates into a decrease in Colorado GDP of $728 million annually.**

Government Impacts: Increased traffic congestion along I-70 will increase governmental service costs due to the cost of emergency services, increasing housing costs which may make it challenging for local governments to retain and recruit employees. Further, **if tourism activity in the Mountain Resort Region falls by even 1% due to traffic congestion, state, county, and city sales tax revenue will decrease by $1.2 million.**

Construction Impacts: For every year alternative selection and construction is postponed, the cost burden on taxpayers will increase. Even if construction were to begin by 2010, the costs of the various alternatives will have increased by $54 million to $358 million per year, depending upon the alternative selected.

Final Analysis

It is unlikely that any of the construction alternatives on I-70 will completely alleviate all congestion. Some congested periods during the peak winter and summer months are likely to remain, although significant reductions in congestion are expected with roadway improvements.

Based on the assumptions of this analysis, the impact of I-70 congestion on Colorado totals $839 million per year in 2005 dollars. This cost will increase annually due to generally rising price levels, increasing population, and lengthening periods of congestion.

Summary of the Impact of I-70 Congestion

Sector Impacted	Key Assumptions	Annual Estimated Cost ($millions, 2005)
Tourism	1% decrease in tourism spending in the Mountain Resort Region	$25
Residents	Value of time lost due to congestion based on impacted travelers in Metro Denver, Mountain Resort Region, and the Western Slope	$85
Business	0.5% loss in productivity and business efficiency in Metro Denver, Mountain Resort Region, and the Western Slope	$728
Government	Loss of state, county, and city retail sales tax revenue associated with 1% decrease in tourism spending in the Mountain Resort Region	$1
Total Impacts		**$839**

INTRODUCTION

Interstate-70 Corridor

Traffic congestion can be beneficial to local communities. Motorists stuck in traffic may stop at local towns to wait for the congestion to ease and make retail, food, and lodging purchases. These extra expenditures can represent thousands of dollars in revenue for a community.

However, traffic volume along Interstate-70 (I-70) through the Mountain Resort Region, stretching from the Jefferson-Clear Creek County line to the Eagle-Garfield County line, has now reached a point of *Excess Congestion*, a level of congestion that exceeds available capacity. This type of congestion hurts the local economy, decreases fiscal revenue and jobs, and diminishes productivity.[1] Because of the excess congestion levels along I-70, motorists are no longer willing to stop at local towns for fear of losing their spot on the road, or may refuse to travel through the Mountain Resort Region at all. Other motorists are finding new means of transportation, such as flying into regional airports, to completely avoid traffic. Even more are leaving for and from their destinations early, potentially robbing communities along I-70 of additional tourism revenue. Traffic congestion is a danger to motorists, an inconvenience to residents, and an economic drain for local communities.

Overall traffic volume tends to be higher in the summer months than the notorious winter months. However, peak traveling times exist in the winter with much higher congestion levels than regular traffic flow in the summer. In total, more than 10 million cars have passed through the EJMT every year since 2000.[2]

Background

The Colorado Department of Transportation (CDOT) has completed the first draft of their Programmatic Environmental Impact Statement (PEIS) that compares 18 distinct alternatives to alleviate current and future congestion problems along the I-70 Mountain Corridor,[3] including a "no-action" alternative. The no-action alternative includes only regular road maintenance and operation costs as well as the cost of current and pre-funded projects along the corridor.

The preliminary draft of the PEIS was first released in December 2004, followed by a 165-day comment period that was open to the public. The public comment period ended in late May 2005. After reviewing and responding to each individual comment, CDOT is currently in the process of preparing the final PEIS which includes revisions based on the comments. The final report is slated to be released in late 2007, followed by a 30-day review period. After the preferred alternative is

[1] Partnership for New York City, "Growth or Gridlock," 2006.

[2] Colorado Department of Transportation, "Roadway Statistics," 2006.

[3] The Colorado Department of Transportation defines the I-70 Mountain Corridor as the area from the junction of C-470 and I-70 in Jefferson County to Glenwood Springs. The Corridor includes Jefferson, Clear Creek, Gilpin, Grand, Summit, Park, Eagle, Pitkin, and Garfield counties.

named in the final PEIS, the selection will be subject to additional reports by engineering companies that will weigh costs and feasibility. A means of funding the project must be decided upon as well.

Optimistically, groundbreaking is projected to occur on the selected alternative within ten years, although that is subject to change based on funding. The projected timeline is already long, and every additional year that construction is postponed burdens taxpayers with higher project costs and places additional congested-related constraints on local residents, businesses, and governments.

Purpose of the Impact Study

The intent of this study is not to select a preferred I-70 expansion alternative. Rather, the intent is to examine the impacts of the no-action alternative on Colorado. The no-action alternative will result in growing delays and increased congestion along I-70. Specifically, the study focuses on the impacts in three geographic areas including:

- **Metro Denver:** including Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, and Jefferson counties.
- **Mountain Resort Region:** including Clear Creek, Gilpin, Grand, Summit, Eagle, and Pitkin counties.
- **Western Slope:** including Garfield and Mesa counties.

This study includes both qualitative and quantitative costs and impacts. Qualitative costs include diminished quality of life and the negative perception of potential visitors to Colorado caused by congestion. Quantitative costs, considered in 2005 dollars, include such items as updating infrastructure, declines in productivity, wasted wages, opportunity costs, and lost revenue.

Study Specifics

The study first examines the base traffic conditions along I-70, including traffic counts, and peak travel periods. The study then describes the effects of the no-action alternative on the three study regions based on five broad categories of impacts:

- **Tourism:** The effects of congestion on winter recreational activities and summer recreational activities are examined separately as the number of substitutions and specific activities vary significantly between the two seasons. Colorado also offers several year-round recreational activities such as hunting, fishing, and gaming. The analysis considers visitor demographics, recreation statistics, lodging occupancy rates, and a specific focus on the importance of tourism to the three study regions.
- **Residential Market:** This section of the study analyzes the effects of congestion on residents' commuting patterns for business and pleasure, property values, and other variables affecting local residents. The effects on local employees will also be considered in this category.
- **Business Community:** Congestion impacts business costs ranging from worker availability to increased production costs.
- **Government:** Congestion-related government costs range from increased emergency services to increased infrastructure expenditures.
- **Construction:** Regular maintenance and operations costs along I-70 will be examined to determine the costs associated with delaying this project. The costs of each alternative, including the no-action alternative, will also be projected for every year of delay. The longer significant improvements to I-70 are put off, the higher construction costs are likely to become.

BASE TRAFFIC CONDITIONS

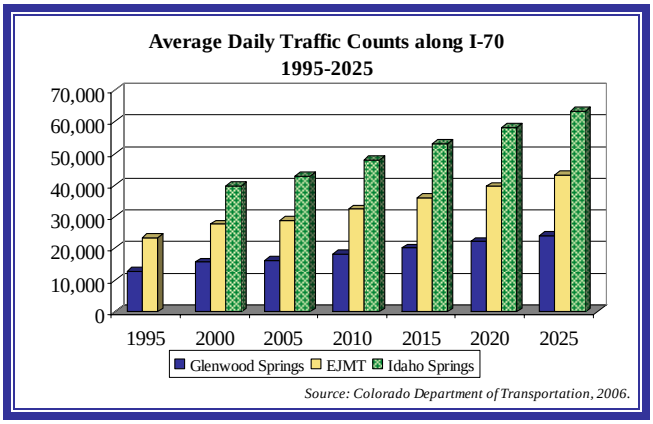
Nearly 30,000 vehicles passed through the Eisenhower-Johnson Memorial Tunnel each day in 2006. This figure is expected to grow to over 43,000 vehicles each day by 2025.

I-70, the first interstate constructed in the United States, is the only east-west interstate crossing Colorado and the only continuous east-west thoroughfare between Metro Denver and the Western Slope. Additionally, I-70 provides access to numerous mountain communities via smaller highways that branch off of the interstate.

I-70 runs through the Rocky Mountains over several mountain passes including the highest point of the U.S. Interstate System just east of the Eisenhower-Johnson Memorial Tunnel (EJMT). Because of its location, I-70 in the Mountain Resort Region is prone to avalanches, rockslides, and can often be closed due to adverse weather conditions and traffic accidents. Due to these factors, and to the highway's significance in connecting eastern and western Colorado, this stretch of I-70 is plagued by congestion and requires continuous road maintenance.

Increasing Congestion

The Mountain Resort Region is a major destination for Colorado residents as well as for out-of-state and international visitors. Traffic volume along I-70 will continue to grow due to the increasing population throughout Colorado. Although overall vehicle flow is higher in the summer, peak travel times in the winter result in the most congestion throughout the year. These higher winter congestion levels are attributed to increased visitors traveling to the Mountain Resort Region for daily skiing trips during the same period of time and weather-related factors.



The current capacity of I-70 throughout the Mountain Resort Region is variable based on weather conditions, time of day or year, and the condition of the road. As traffic volume nears maximum capacity on the interstate, congestion will worsen significantly and costs for regular road maintenance will increase. From 1990 to 2002, increases in Colorado highway capacity lagged increases in vehicular travel by 8%.[4] Traffic is expected to increase 71.3% at an average annual rate of 2.9% in Grand Junction from 2006 to 2025. Traffic is expected to increase 45.4% in Glenwood Springs, 46.3% in the EJMT, and 44.5% in Idaho Springs, for average growth rates of about 2.0% per year.

As capacity continues to lag demand, I-70 traffic volume in the Mountain Resort Region will reach higher levels of excess congestion. This level of congestion aversely affects the local economy and residents as well as visitors to the area. I-70 motorists will be less willing to stop at local towns while in traffic, or may avoid the region altogether. The Colorado Department of Transportation estimates that by 2025, up to 27% of winter season motorists who would normally travel I-70 in the

[4] Colorado Department of Transportation, "2006 Fact Book."

BASE TRAFFIC CONDITIONS

Mountain Corridor will choose not to, depending on the day, location, and direction of travel.[5] I-70 traffic demand will decline by up to 10% in the summer.

Peak Travel Periods

Congestion on I-70 is continuous throughout the year, but peak travel periods occur daily, weekly, and seasonally. For travel between Metro Denver and the Mountain Resort Region, daily and weekly peak periods occur Friday evenings, Saturday mornings, and Saturday evenings westbound, and Sunday afternoons eastbound. These periods are most congested during winter months. Seasonally, summer peak travel occurs between June and August, especially over holiday weekends such as July 4th. Winter peak travel occurs between January and March, although traffic volume starts increasing around late November and into December.

Travel flows between the Western Slope and the Mountain Resort Region display similar patterns, but with the periods of westbound and eastbound traffic congestion reversed. That is, Saturday mornings eastbound and Sunday afternoons westbound are the most congested during the winter months. In general, traffic congestion from the Western Slope to the Mountain Resort Region is not as severe as that currently experienced in Metro Denver to the Mountain Resort Region, although traffic is expected to increase at faster rates.

If current traffic patterns continue, peak travel periods will become more congested. Recreational travelers may choose to postpone or take their trip early to avoid rush hour traffic. While this will temporarily relieve some rush hour traffic, it will simply expand the peak travel times in the long run. According to CDOT's Draft PEIS, by 2025 Thursday westbound summer traffic is expected to double, and is expected to meet or exceed projected weekend traffic volume from 2005 to 2025.

Commuter traffic, though more constrained by working hours, may begin to spread out of the peak travel times as well. Workers may opt to use flex schedules or change routes to avoid maximum traffic flows if possible.

[5] Colorado Department of Transportation, "Programmatic Environmental Impact Statement," 2004.

TOURISM IMPACTS

About 25.9 million overnight visitors spent $8.2 billion in Colorado in 2005. Of this amount, about $2.5 billion was spent in the Mountain Resort Region. These dollars are in jeopardy if congestion along I-70 worsens. Indeed, a 1% decline in tourism spending in the Mountain Resort Region means an annual loss of $25 million.

Tourism is one of the largest industries in Colorado. Longwoods International estimates that 25.9 million overnight visitors spent $8.2 billion in Colorado in 2005.

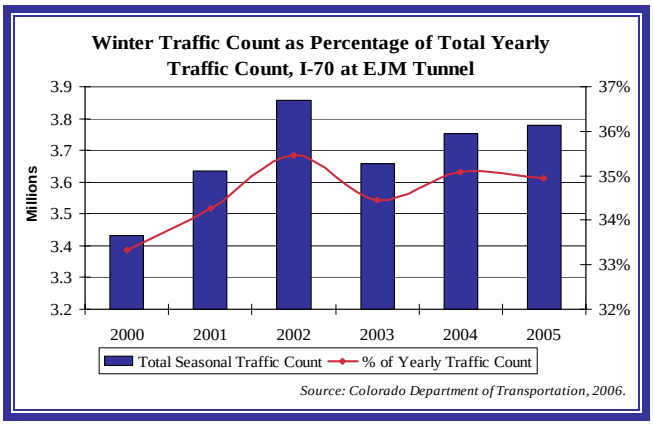
Recreational Activities

More than 94% of Metro Denver residents participate in outdoor recreational activities throughout the year.[6] Colorado is the number one destination for skiing in the country with 18.5% of the market share. Additionally, Colorado is a major destination for general touring trips, outdoor trips, and casino-gaming trips.

Recreational visitors traveling to or through the Mountain Resort Region create a significant amount of traffic congestion year-round. The congestion caused by recreational visitors is most clearly seen on weekends in the winter when ski and snowboarder traffic causes major traffic delays due to concentrated travel times with travelers destined for a limited number of locations. While overall traffic volume is higher in the summer, travel times are more spread out and travelers are generally destined for more diverse locations.

Winter (December–March)

Winter visitors to Colorado have a multitude of recreational opportunities from which to choose. Winter visitors to the Mountain Resort Region can ski or snowboard at 17 major resorts, snowshoe and Nordic ski along hundreds of backcountry trails, go ice fishing, or attend a cultural event in many of the mountain towns.



The 26 Colorado ski resorts hosted over 12.5 million skier visits in the 2005-2006 winter season.[7] Seventeen of the 26 major ski resorts in Colorado are immediately accessible by I-70. Mountain Resort Region and Western Slope ski resorts hosted 11.2 million of these visitors during the 2005-2006 winter season, or about 89.1% of total ski visitors.[8]

The 2005 Colorado Visitor Profile, conducted by Longwoods International, found that, despite being first in market share for skiing across the U.S., Colorado's share of skier visits has declined from about 19.7% in 2000 to 18.5% in 2005. Utah currently ranks fourth, increasing from a 6.7% market share in 2000 to a 6.9% market share in 2005. Utah skier visits increased 23.9% between the 2000 and 2005 seasons, with record setting visitations for the last three seasons.[9]

[6] Colorado State Parks, "Statewide Comprehensive Outdoor Recreation Plan," 2003.

[7] Colorado Ski Country USA, skier visits, 1994-2006. One skier visit represents one person participating in skiing or snowboarding for any part of one day.

[8] The Mountain Resort Region and Western Slope ski resorts are: Aspen Highlands, Aspen Mountain, Arapahoe Basin, Beaver Creek, Breckenridge, Buttermilk, Copper Mountain, Echo Mountain, Keystone, Loveland, Powderhorn, Ski Cooper, Snowmass, SolVista, Sunlight, Vail, and Winter Park/Mary Jane.

[9] Ski Utah, Skier Visits, 2006.

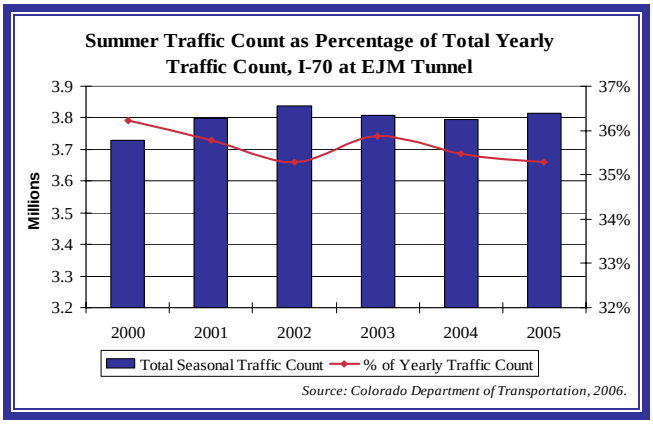
TOURISM IMPACTS

About 1.6 million out-of-state skiers came to Colorado in 2005 to enjoy multiple days at the unique resorts and challenging terrain of the Colorado Rockies. While ski visitors represent only 6% of all visitors to the state, skiers contribute a relatively high proportion of total visitor spending (14%). In 2005, long term (one night or longer) visitors spent $427 million on ski-related expenditures.[10] In addition, skiers spend large amounts of money on lodging, transportation, food, and retail. Longwoods estimates that skiers spend $153 per person per day, more than any other visitor category in Colorado. City visitors spend $112 and Special Event visitors spend $105 per person.

The Colorado ski industry employs about 31,000 workers, or about 14% of total tourism jobs in the state. Housing the majority of the ski resorts in Colorado, the Mountain Resort Region and the Western Slope would be devastated if the ski industry slumped due to consumers' unwillingness to travel to the resorts.

Summer (May-August)

Colorado is a top destination for summer recreational visitors. In 2005, 60% of visitor trips to Colorado occurred during the summer.[11] Colorado ranks seventh in the nation for national park acreage (360,000 acres), and welcomed almost 11,400 park visitors in 2004.[12] The White River Forest and Arapaho-Roosevelt National Parks, located along I-70, are the most visited national parks in the U.S.[13] The state is also home to 54 mountain peaks over 14,000 feet, or "fourteeners," which are popular destinations for tourists and residents. Twelve of these peaks are located in the Mountain Resort Region. Other recreational opportunities in Colorado include fishing, biking, kayaking, rafting, rock-climbing, and camping.



In 2005, Colorado's rafting industry brought in about $135 million, the highest grossing summer tourism industry in the state.[14] Several of the top river sections in Colorado, including Clear Creek and the Colorado River, are located in the Mountain Resort Region and the Western Slope. In 2005, the Colorado River through Glenwood Canyon saw 51,790 user days and Clear Creek saw 32,357 user days, the third and fifth highest in the state, respectively.

When I-70 was completed through Glenwood Canyon in 1992, road engineers built a paved bike path along the interstate for the entire stretch of the Canyon, and placed ramps at integrals for easy boater access into the Colorado River. The efforts to maintain the environmental integrity and recreational opportunities along I-70 make it a prime destination for outdoor enthusiasts.

[10] Longwoods International, "2005 Colorado Visitor Profile," 2006.
[11] Longwoods International, "2005 Colorado Visitor Profile," 2006.
[12] U.S. Census Bureau, "Statistical Abstract of the United States," 2007.
[13] Colorado Department of Transportation, "Programmatic Environmental Impact Statement," 2004.

[14] Colorado River Outfitters Association, "Commercial River Use in Colorado," 2005.

TOURISM IMPACTS

Bikers take a ride on the bike path that runs alongside I-70 through Glenwood Canyon.

Year-Round

While Colorado is well-known for its seasonal activities, several year-round entertainment and recreational options also exist for residents and visitors. These activities range from hunting and fishing to climbing (ice or rock) to casino gaming to an abundance of cultural options.

Gaming: According to the 2005 Colorado Visitor Profile by Longwoods, the number of visitors to Colorado whose primary purpose of trip was gaming reached 710,000 in 2005, replacing city trips as the sixth most popular type of marketable trip to Colorado. While the gaming industry saw an 11% decline nationwide during 2005, the gaming industry is growing in Colorado. The gaming sector increased 194% from 1994 to 2005. Gaming accounted for 10%, or $114 million, of total visitor recreational expenditures in 2005.[15]

Central City and Black Hawk are two of Colorado's major gambling destinations and are located along I-70 west of Metro Denver. In 2004, the Central City Parkway was completed as a branch off I-70 in Clear Creek County. Since the construction of this high-way, Central City is more accessible and traffic has increased. A proposed tunnel to the Black Hawk casinos will further increase traffic flow and congestion along I-70.

The gaming industry is a large contributor to state revenue. In 2005, Mountain Resort Region casinos contributed over $87.8 million in gaming taxes.[16]

Cultural Activities: In addition to outdoor activities, Metro Denver and communities throughout the state offer an abundance of cultural activities. Key venues in Metro Denver include the Denver Center for Performing Arts (the largest performing arts complex in the country), the Denver Art Museum which recently underwent a $91 million expansion, and the recently opened $92 million Ellie Caulkins Opera House. In 2005, cultural activities in Metro Denver generated $1.43 billion in economic activity, hosting 14 million people at various cultural events.

Visitor Spending

According to the Longwoods Colorado Visitor Profile, 25.9 million overnight visitors to Colorado in 2005 spent $8.2 billion of which $6.9 billion was from out-of-state.[17] In 2004, summer and winter visitors accounted for 42% of outside drivers across Eagle, Grand, Pitkin, and Summit counties, making outside visitors the largest combined economic driver in that region.[18]

Assuming that spending patterns were similar for all tourists across all parts of the state, about 30% of the visitors and spending occurred in the Mountain Resort Region. This $2.5 billion in tourism activity represents about 54% of all retail activity in the Mountain Resort Region.[19]

Changes in visitor activity along I-70 are likely to vary throughout the three study regions as congestion worsens. In Metro Denver, visitor spending is likely to increase because visitors and

[15] According to the 2005 Colorado Visitor Profile by Longwoods International, recreational expenditures in Colorado totaled $1.14 billion in 2005, or about 13.4% of total visitor expenditures.

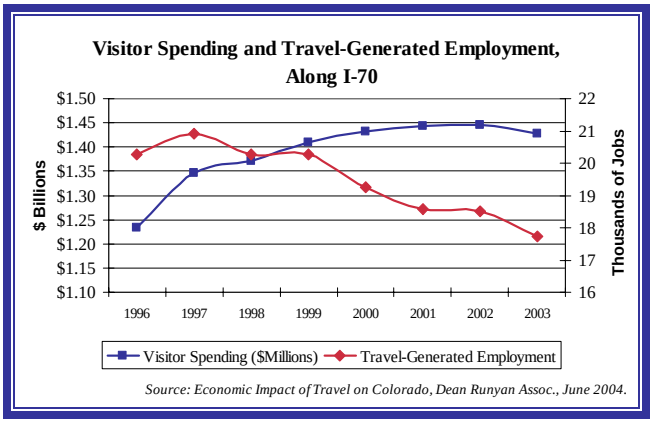
[16] Colorado Department of Revenue, 2006.

[17] Longwoods International, "2005 Colorado Visitor Profile," 2006.

[18] Venturoni, Linda, "The Social and Economic Effects of Second Homes," Northwest Colorado Council of Government, 2004.

[19] Longwoods International, "2005 Colorado Visitor Profile," 2006 and Colorado Department of Revenue, Total Retail Sales.

residents may opt to stay in Metro Denver rather than travel to the Mountain Resort Region due to traffic congestion. The same holds true for the Western Slope, whose residents may also be less likely to travel to the Mountain Resort Region.



Visitor spending will be further split across the Mountain Resort Region. Towns and resorts east of the EJMT tend to be smaller, catering to Metro Denver and local residents versus national and international visitors. These resorts will see a drop in visitor spending if congestion keeps these local visitors away. Towns and resorts west of the EJMT tend to be larger and internationally known.[20] Three airports are located in the western half of the Mountain Resort Region giving visitors options to get to the area without sitting in traffic. If congestion increases along I-70, these resorts are unlikely to experience a large decrease in visitor spending.

Regional Airports

In 1998, 63% of out-of-state visitors to Colorado flew into the state and then either rented a car or were picked up by a friend.[21] If congestion worsens along I-70, more visitors may choose to fly to regional airports located in the Mountain Resort Region rather than drive from Metro Denver or the Western Slope. While this may relieve some congestion, it may harm small towns along I-70 as much of their revenue comes from visitors and commuters making stops along the way.

On the one hand, Denver International Airport (DIA) is a major employer and source of revenue for Metro Denver. If enplanements and deplanements decline, the region will lose out on several sources of revenue including food, lodging, and rental cars or taxi services.

However, this may create more jobs in the areas surrounding the regional airports. In Colorado, the average wage for Airfield Operations Specialists is $45,110 and $120,490 for Airline Pilots, Copilots, and Flight Engineers. These highly-paid employees spend money on lodging, food, and recreation while they are in the community.

Four commercial service airports and five general aviation airports are located along I-70 in the three study regions. Commercial service airports provide scheduled air carrier and/or commuter service, and many also offer services for recreational and corporate travel. General aviation airports provide services to the recreational and corporate traveler, and may offer training facilities as well.

DIA was the fifth busiest airport in the country in 2006 by passenger volume according to the Bureau of Transportation Statistics, with 47.3 million passengers. The Eagle County regional airport (EGE) and Walker Field (GJT) in Grand Junction experienced a 15.5% and a 24.8% increase in enplanements from 2000 to 2005, respectively. Enplanements declined at Sardy Field (ASE) in Pitkin County by 2.0% over the same period. Combined, the four commercial service airports located along I-70 created almost $18 billion in economic activity in 2003.[22]

Five general aviation airports are located in the I-70 Mountain Corridor, employing 673 workers and

[20] Western resorts include Keystone, Breckenridge, Copper Mountain, Vail, Beaver Creek, and Aspen.
[21] Colorado Association of Ski Towns Alternative Transportation Project, 1998.

[22] Colorado Department of Transportation, Aeronautics Division, "2003 Economic Impact Study."

Economic Impact Of Regional Airports Along I-70

Airport	Total Employees	Total Wages (000s)	Wages/ Employee	Economic Activity (000s)
Commercial Service Airports				
Aspen-Pitkin County (ASE)	9,025	$237,406	$26,305	$595,865
Eagle County Regional (EGE)	4,573	$124,927	$27,318	$316,342
Walker Field (GJT)	3,667	$108,527	$29,596	$276,910
Denver International (DIA)	193,229	$6,928,301	$35,855	$16,784,212
General Aviation Airports				
Garfield County Regional	444	$12,072	$27,189	$30,862
Glenwood Springs Municipal	118	$3,047	$25,822	$7,835
Granby-Grand County	39	$984	$25,231	$2,417
Mack Mesa	5	$65	$13,000	$172
McElroy Field (Kremmling)	67	$1,196	$17,851	$2,947

Source: Colorado Division of Aeronautics, "Economic Impact of All Public Use Airports," 2003.

creating more than $44.2 million in economic activity in 2003.[23]

Airport patrons also make purchases at the airports and nearby businesses, increasing the retail demand and employment in the area.

Lodging Occupancy

Colorado has experienced a record-breaking number of visitors in recent years. The 2006 Colorado Visitor Profile found that 22.5 million domestic visitors came to Colorado on overnight trips, a 1% increase from 2004.[24] The higher value marketable segments (those visitors on touring, outdoor, or ski trips) grew 6% versus 2% nationally. Additionally, 66% of all spending in Colorado was by visitors who stayed in commercial lodging in 2005. These visitors help keep occupancy rates high. Although occupancy rates in the town of Vail saw a decline from 2002 to 2003, rates have been increasing since. Metro Denver occupancy rates have been increasing in a similar fashion.

The projected impact on lodging occupancy from increased congestion on I-70 is uncertain. On the one hand, fewer people may travel to the Mountain Resort Region for recreational purposes. The decline in visitors will decrease the demand for lodging.

On the other hand, lodging occupancy might increase along I-70 as visitors may be more likely to stay longer in the Mountain Resort Region to make up time in traffic. Therefore, the impact of I-70 congestion on the lodging industry is indeterminate.

[23] Colorado Department of Transportation, Aeronautics Division, "2003 Economic Impact Study."
[24] Longwoods International, "2005 Colorado Visitor Profile," 2006.

RESIDENT IMPACTS

I-70 Congestion affects Metro Denver, Mountain Resort Region, and Western Slope residents by increasing commute time, decreasing personal time, increasing vehicle and travel costs, and harming health. Valuing only the personal time lost due to congestion, the cost of congestion is currently $84.7 million.

Three segments of the residential population currently are affected by increased congestion along I-70. First are residents who reside within the boundaries of Metro Denver or the Western Slope. These residents may travel to or through the I-70 Mountain Resort Region for business, recreational, or other purposes. Some of these residents may also own a second home along the corridor. While many of these residents may make extended stays (two days or more) in the Mountain Resort Region, it is assumed that many also take one day commuter trips. These commuter visitors to the region are greatly affected by congestion along I-70, especially at peak winter travel times.

The second group includes those residents who reside within the Mountain Resort Region. These residents may commute to Metro Denver or the Western Slope for cultural activities, shopping, or employment, but are more likely to be employed by Mountain Resort Region businesses. The congestion along I-70 affects these residents through longer commute times and higher pollution levels.

The third residential group is in-state visitors or those that reside in Colorado but outside the study regions. Many of these residents travel to the Mountain Resort Region or through I-70 for the various recreational and businesses opportunities available in the study areas. Various travel substitutes are available to these residents including car, train, or air travel.

Growing Population

Colorado is currently home to about 4.7 million people. About 56% of these people, or 2.6 million, live in Metro Denver.

Colorado's population increased 43% between 1990 and 2005, and is expected to increase another 44% by 2025. The Mountain Resort Region population increased 84% from 1990 to 2005 and the Western Slope population increased 162% over the same 15-year period.

Population Forecasts, 2005-2025

	2005	2025	Avg Ann Change
Metro Denver	2,627,314	3,543,553	1.5%
Mountain Resort Region	121,687	297,169	2.4%
Western Slope	181,075	318,031	2.9%
Colorado	4,722,460	6,787,307	1.8%

Source: Colorado State Demographer's Office, 2006.

The population in Metro Denver is expected to increase 35% from 2005 to 2025 at a rate of about 1.5% annually. This increase in population will put more cars on I-70 each year, increasing congestion and costs to both mountain residents and commuters.

The Mountain Resort Region and the Western Slope are both forecasted to experience even stronger population growth over the next 20 years. The Mountain Resort Region population is expected to increase 62% from 2005 to 2025 at an average annual rate of 2.4%, and the Western Slope population is expected to increase 76% at an average annual rate of 2.9% over the same period.

Vehicle Operating Costs

Travel on I-70 through the Mountain Resort Region is wearing on an automobile's life. Congestion increases vehicular maintenance costs by decreasing the life of tires, causing strain to the transmission, and decreasing fuel efficiency. AAA's *Your Driving Costs, 2006* estimates that for a sedan being driven

10,000 miles per year, the cost per mile including gas, maintenance, and tire wear, is $0.62. This number will increase due to decreased fuel efficiency in the mountains and in congestion.

Average Vehicle Operating Costs

	Avg. Sedan	4WD SUV	Minivan
Cost Per Mile			
Gas	$0.095	$0.137	$0.114
Maintenance	$0.049	$0.056	$0.050
Tires	$0.007	$0.008	$0.006
Total	$0.151	$0.201	$0.170
Operating Cost Based on Annual Miles Driven[25]			
10,000			
Total cost per year	$6,196	$7,900	$7,128
Total cost per mile	$0.620	$0.790	$0.713
15,000			
Total cost per year	$7,834	$9,805	$8,878
Total cost per mile	$0.522	$0.654	$0.592
20,000			
Total cost per year	$9,531	$11,785	$10,703
Total cost per mile	$0.477	$0.589	$0.535

Source: AAA, Your Driving Costs, 2006.

In 2003, the average American wasted 27 gallons of fuel due to reduced fuel efficiency in congestion.[26] In January 2007, the average price for regular unleaded gasoline was $2.022, while the average price for premium gasoline was $2.259. At these prices, the average American will spend between $55 and $61 on wasted fuel annually. Fuel efficiency is already lowered from driving at altitude, on steep passes, and in sport utility vehicles popular amongst local residents and regular visitors to the Mountain Resort Region. Congestion can decrease fuel efficiency significantly and will increase costs for residents and regular commuters.

Opportunity & Sunk Costs

Motorists that are stuck in traffic lose the opportunity to spend that time doing other things whether that be working, sleeping, studying, or spending time with family and friends. These lost opportunities are the opportunity costs of congestion.

Mountain Resort Region residents and travelers can spend hours in congested traffic to and from their destination at all times of the year. Drivers may have to arrive late or leave early from their destination to avoid traffic congestion. This decreases the overall enjoyment visitors have during their recreational activity. Additionally, the stress and fatigue caused by congestion can negate the positive impacts of recreational activities. Additional direct costs associated with spending less time at the destination include sunk activity fees: a visitor who pays $80 for a ski-lift ticket and spends a full day skiing (four to eight hours) will spend $10-$20 per hour at their activity. The less time the visitor spends at a recreation with a flat fee, the higher the cost per hour for that activity.

Metro Denver

Travel Time Costs

One of Metro Denver's major attractions is its vicinity to the Rocky Mountains and the abundance of activities available therein. When I-70 is congested, it increases travel time for Metro Denver residents to their destination. The resident may spend added time away from work, family, and other commitments to compensate for the additional time needed to travel. Increased travel times may also cut into time spent at the destination, decreasing fulfillment if the destination is recreational and productivity if the destination is business-related.

With no congestion, the route from the City and County of Denver to Copper Mountain takes roughly one hour and 14 minutes. With congestion on I-70,

[25] In addition to fuel, maintenance, and tire costs, these estimates include insurance, fees (license, registration, and taxes), depreciation, and finance costs based on a five-year loan at 6% interest with a 10% down payment.
[26] Texas Transit Institute, "2005 Urban Mobility Study."

travel time increases to two hours and ten minutes.[27] This translates into an additional 56 minutes of travel for each one-way trip due to traffic congestion. As Metro Denver residents shift schedules to avoid peak travel times, the peak times may become less intense but will be more widespread, re-circulating the problem.

Metro Denver Congestion Costs

(1) Congestion Hours (56 minutes for one trip)	0.93 Hours
(2) Congested Days (assumes a period of congestion on Friday, Saturday and Sunday for the 35 weeks including December-March and May-August)	104 Days
(3) Average Daily Traffic (ADT during the peak weekends at Idaho Springs Twin Tunnels)	45,122
(4) Number of Vehicles Impacted by Congestion During One Year (number of vehicles traveling during peak winter and summer periods, with peak travel periods varying by day and by time)	1,493,022
(5) Persons Impacted by Congestion During One Year (calculated as (4) * 2.6 people per vehicle, CDOT average persons per vehicle for a recreational trip)	3,881,857
(6) Opportunity Cost per Hour (2005 average wage for all employees in Metro Denver)	$22.34
(7) Total Cost of Congestion (calculated as (1) * (5) * (6))	**$80.9 million**

Note: Numbers may not add due to rounding.
Source: Development Research Partners.

Using the 2005 average hourly wage of $22.34 for all Metro Denver employees as the average opportunity cost per hour of increased travel time, this translates into a cost of $20.85 for every one-way trip from Denver to Copper Mountain. Expanding this calculation to include all individuals impacted by congestion over the course of one year, it is estimated that I-70 congestion currently costs Metro Denver residents $80.9 million.

The large increase in travel time due to traffic congestion is reflected across the Front Range. The route from Fort Collins to Copper Mountain, 135 miles, takes about one hour and 59 minutes with no congestion. With congestion, this increases to two hours and 51 minutes. Similarly, the route from Colorado Springs to Copper Mountain, 144 miles, takes two hours and 11 minutes with no congestion. With congestion, this increases to three hours and four minutes.

Vehicle Operating Costs

Increased congestion may lead to increased wear and tear on vehicles. As it stands, the average sedan costs over $7,800 per year in operating costs for up to 15,000 miles annually. Based on the average hourly wage for Metro Denver employees of $22.34, it takes the average Metro Denver resident 349 hours, or almost nine work weeks, to pay off regular vehicle maintenance costs. Likewise, the average SUV driver, popular in Metro Denver because of its capabilities in the mountains, costs over $9,800 in annual operating costs. It takes the average Metro Denver resident 439 hours, or almost 11 work weeks, to pay off SUV annual operative costs. If congestion significantly increases the wear and tear on vehicles, these average yearly operating costs are likely to be higher, diverting a larger share of the Metro Denver resident's income to vehicle costs.

Lodging Costs

Metro Denver residents may choose to increase their stay in the Mountain Resort Region to make up for decreased time at the destination due to increased travel times. While this creates revenue for Mountain Resort Region businesses, it is a cost to Metro Denver residents.

[27] Colorado Department of Transportation, "I-70 Programmatic Environmental Impact Statement," 2000.

The cost of lodging in many Mountain Resort Region communities tends to be higher on average, with premiums attached to winter rates. The average nightly lodging rates at Vail and Winter Park, two major ski resorts along the I-70 corridor, were $245 and $122 respectively in 2006.[28] Aspen nightly lodging rates are $330 on average, and were almost $500 in December 2006. The average room rate for all 26 Colorado ski resorts, 17 of which are accessible via I-70, was $211 in 2006.

Health Impacts

Metro Denver residents who travel I-70 regularly may be at a higher risk for health problems. A study by the International Center for Technology Assessment found that the air inside cars typically contains many harmful pollutants. Many studies show that re-circulating air inside vehicles often contains higher levels of carbon monoxide, benzene, toluene, nitrogen oxides, and fine particulate matter than outside air. Prolonged time spent in a car can also put the motorist at a higher risk for urinary tract infections, blood clots, stiff necks, and mental wearing. Drugs and medical facilities may not be easily accessed due to congestion.[29]

Several studies have linked traffic exhaust with asthma, cancer, and other health risks. Metro Denver residents who live close to I-70 where it enters the mountains may be more likely to have traffic-related health problems due to the I-70 congestion.[30]

Mountain Resort Region

Second Homes

Second homes are the largest economic driver in many areas along I-70 in the Mountain Resort Region. Across Eagle, Grand, Pitkin, and Summit counties, 34% of outside dollars are derived from second homes.[31]

On the one hand, some visitors may decide to build or purchase a home in the Mountain Resort Region to avoid congestion. This will increase the economic activity created by second homeowners. On the other hand, the noise and pollution created from increased congestion may detract from the appeal of the region and disturb existing residents. As a result, potential home buyers may be less likely to purchase a home in this area. The net effect is uncertain.

While in some counties there has been a slight decrease in second home ownership in recent years, it remains a major source of revenue for Mountain Resort Region communities. For example, 49% of housing units were second homes in Eagle County in 2006, and 67% of housing units were second homes in Summit County.[32] Second homes tend to be larger than local homeowner properties and more expensive, bringing in a substantial amount of tax revenue to the communities.

In Eagle County, a majority of second homeowners are between 45 and 74 years of age, the largest portion between 55 and 64 years of age.[33] The percentage of the population between the ages of 55 and 64 years is expected to increase 5.9% annually in Colorado, compared to 3.9% nationally. Most of these residents have incomes of over $100,000 per year, thereby increasing the tax revenue and general spending in the region. Second home ownership is expected to grow as the population of baby boomers moves closer to retirement. Local communities have already compensated for this influx, advertising

[28] Ehrhardt Keefe Steiner & Hottman, "Rocky Mountain Lodging Report," December, 2006.
[29] Reuss, Alejandro, "Car Trouble," Dollars & Sense, Issue 246, 2003.
[30] Reuss, Alejandro, "Car Trouble," Dollars & Sense, Issue 246, 2003.
[31] Venturoni, Linda, "The Social and Economic Effects of Second Homes," Northwest Colorado Council of Governments, 2004.
[32] Venturoni, Linda, "The Social and Economic Effects of Second Homes," Northwest Colorado Council of Governments, 2004.
[33] Westenskow, Doug, "The Second Home Influx to Eagle County," Northwest Colorado Council of Governments, 2006.

retiree-social networks and grooming a larger percentage of ski resort trails to attract boomers.

Commute Time Costs

Residents of the Mountain Resort Region may rely upon I-70 as a main access to their place of work. As congestion increases on I-70, it may take workers longer to reach their job site, especially during peak weekend travel times. Even an additional 10 minutes per trip during summer and winter weekends adds up quickly.

Using the 2005 average hourly wage of $16.46 for all Mountain Resort Region employees as the average opportunity cost per hour of increased travel time, these additional 10 minutes of commute time cost $2.74.[34] Expanding this calculation to include all individuals impacted by congestion over the course of one year, it is estimated that I-70 congestion currently costs Mountain Resort Region residents $2.1 million.

Vehicle Operating Costs

Increased congestion may lead to increased wear and tear on vehicles. As it stands, the average sedan driver pays over $7,800 per year in operating costs for up to 15,000 miles annually. Based on the 2005 average annual wage of $16.46 for Mountain Resort Region employees, it takes the average Mountain Resort Region resident 474 hours, or about 12 work weeks, to pay off regular vehicle maintenance costs. Likewise, the average SUV driver, popular in the Mountain Resort Region because of its capabilities in the mountains, costs over $9,800 in annual operating costs, and requires 595 hours or almost 15 work weeks. If congestion significantly increases the wear and tear on vehicles, these average yearly operating costs are likely to be higher, diverting a larger share of the Mountain Resort Region resident's income to vehicle costs.

Mountain Resort Region Congestion Costs

(1) Congestion Hours (10 minutes for one trip)	0.17 Hours
(2) Congested Days (assumes a period of congestion on Friday, Saturday and Sunday for the 35 weeks including December-March and May-August)	104 Days
(3) Average Daily Traffic (ADT during the peak months at Copper Mountain SH 91 Interchange)	20,039
(4) Number of Vehicles Impacted by Congestion During One Year (number of vehicles traveling between 2pm-7pm (westbound) and 10am-3pm (eastbound) during peak weekends)	780,671
(5) Persons Impacted by Congestion During One Year (calculated as (4)* 1 person per vehicle)	780,671
(6) Opportunity Cost per Hour (2005 average wage for all employees in the Mountain Resort Region)	$16.46
(7) Total Cost of Congestion (calculated as (1) * (5) * (6))	**$2.1 million**

Note: Numbers may not add due to rounding.
Source: Development Research Partners.

Health Impacts

The traffic congestion along I-70 poses several health risks for Mountain Resort Region residents. Several recent reports examined the health risks of living near congested or high volume traffic areas and found that those residents had a significantly higher risk for cancer, asthma, and other major health conditions. High traffic volume increases the amount of fine particulate matter, carbon monoxide, and other harmful pollutants in the air. Reports have linked the air quality near major freeways with

[34] U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2005.

childhood asthma, lung cancer, shorter life spans, higher rates of infant mortality, and leukemia.[35]

In addition to particulate health impacts, recent studies have detailed the health effects of noise pollution. One study found that children exposed to even low-level traffic noise are prone to high blood pressure, irregular heart rates, and higher stress. Another study found noise pollution may also affect attention spans and learning abilities of children.[36]

Local Environmental Impacts

The congestion along I-70 increases the amount of pollutants in the air including particulate matter, carbon monoxide, and other hazardous gases. A car emits about 20 pounds of carbon monoxide per gallon of gasoline used.[37] The average car will release 13,000 pounds of carbon monoxide over the course of a year, and that amount increases with the SUVs and trucks often driven along I-70.

Some of the alternatives currently being reviewed by CDOT may decrease congestion, including mass transit or widening the highway, although any large construction project will cause negative environmental impacts. Regardless of which alternative is recommended, harmful impacts to the environment will accumulate. However, while a construction project will be harmful to the environment, the end result may be a cleaner, less polluting solution. For every year of delay, and if no action is taken, the current effects will multiply and accumulate.

Western Slope

Commute Time Costs

As the energy industry has grown in Garfield and Mesa counties, property costs in the area have increased dramatically. The high cost of living in the Western Slope forces many local employees to work in less expensive neighboring towns and commute. Residents face higher opportunity costs the farther they work from home, especially if I-70 congestion adds to their commute time. Even an additional 10 minutes per trip during summer and winter weekends adds up quickly.

Using the 2005 average hourly wage of $15.70 for all Western Slope employees as the average opportunity cost per hour of increased travel time, these additional 10 minutes of commute time cost $2.62.[38] Expanding this calculation to include all individuals impacted by congestion over the course of one year, it is estimated that I-70 congestion currently costs Western Slope residents $1.6 million.

Vehicle Operating Costs

Increased congestion may lead to increased wear and tear on vehicles. As it stands, the average sedan driver pays over $7,800 per year in operating costs for up to 15,000 miles annually. Based on the average hourly wage for all Western Slope employees in 2005 of $15.70, it takes the average Western Slope resident 497 hours, or over 12 work weeks, to pay off regular vehicle maintenance costs. Likewise, the average SUV driver, popular in the Western Slope because of its capabilities in the mountains, costs over $9,800 in annual operating costs, and requires 624 hours or almost 16 work weeks. If congestion significantly increases the wear and tear on vehicles, these average yearly operating costs are likely to be higher, diverting a larger share of the Western Slope resident's income to vehicle costs.

[35] Reuss, Alejandro, "Car Trouble," Dollars & Sense, Issue 246, 2003.
[36] Reuss, Alejandro, "Car Trouble," Dollars & Sense, Issue 246, 2003.
[37] Probst, Katherine N., "Combating Global Warming One Car at a Time," Resources for the Future, 2006.
[38] U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2005.

RESIDENT IMPACTS

Western Slope Congestion Costs

(1) Congestion Hours (10 minutes for one trip)	0.17 Hours
(2) Congested Days (assumes a period of congestion on Friday, Saturday and Sunday for the 35 weeks including December-March and May-August)	104 Days
(3) Average Daily Traffic (ADT during the peak months at Glenwood Springs Interchange)	16,594
(4) Number of Vehicles Impacted by Congestion During One Year (number of vehicles traveling at Glenwood Springs Interchange between 12pm-3pm (westbound) and 11am-2pm (eastbound) during peak weekends)	401,513
(5) Persons Impacted by Congestion During One Year (calculated as (4)* 1.5 person per vehicle)	602,270
(6) Opportunity Cost per Hour (2005 average wage for all employees in the Western Slope)	$15.70
(7) Total Cost of Congestion (calculated as (1) * (5) * (6))	**$1.6 million**

Source: Development Research Partners.

Health Impacts

Traffic congestion along I-70 poses several health risks to Western Slope residents. While I-70 congestion is concentrated in the Mountain Resort Region, the Western Slope is becoming more congested due to the expansion of the energy industry and an increasing population. As congestion increases, Western Slope residents and visitors may become more at risk for congestion-related health problems. As in the Mountain Resort Region and Metro Denver, these health problems may include a higher risk for cancer, asthma, increased rates of infant mortality, leukemia, blood clots, urinary tract infections, and stiff joints.

BUSINESS IMPACTS

The lure of Colorado's quality of life enhances business recruitment and retention efforts; I-70 congestion may make economic development efforts more difficult. Congestion may decrease worker productivity and make business operations more costly and less efficient. If productivity and business efficiency diminishes by just 0.5% due to congestion, this translates into a decrease in Colorado GDP of $728 million annually.

A large part of Colorado's appeal is its mountains and the wide range of activities they offer. The lure of Colorado's quality of life enhances business recruitment and retention efforts. In turn, businesses may find it easier to attract and retain quality employees.

As congestion increases, commuting to the Mountains Resort Region becomes more difficult. The mountains become less accessible, and businesses may not be able to utilize the mountains as a recruitment tool. Economic development efforts become more challenging. As recruitment becomes more difficult, Colorado businesses may need to increase salaries or offer other incentives in order to recruit and retain employees.

Value of Business Operations

Businesses may be impacted by congestion in a variety of ways. Higher distribution costs due to congestion factors may increase the cost of goods and services. Commuting challenges may make it more difficult for businesses to recruit and retain workers, causing rising wages. Worker productivity may decrease if workers are fatigued or stressed after sitting in congestion. Working hours may be cut short as employees arrive late or leave early due to congestion issues. Depending upon how these added business costs are recouped, consumer prices may increase or business profits may decrease.

Using Gross Domestic Product (GDP) in Colorado per employee as a proxy for the value of business operations, it becomes apparent that even a slight drop in worker productivity and efficient business operations has a significant impact on the state economy. For example, the average hourly contribution to Colorado GDP of an employee was $47.55 in 2005. A 0.5% decline in worker productivity and business operations due to congestion-related factors would decrease Colorado GDP by $495 per worker annually. Based on current employment of 1.5 million throughout Metro Denver, the Mountain Resort Region, and the Western Slope, this 0.5% decrease in activity translates into a loss in Colorado GDP of about $728 million annually.[39] This figure may also be thought of as a diminished rate of growth in state GDP. That is, while GDP has increased an average of $8.9 billion each year between 2000 and 2005, GDP growth may become more constrained due to congestion impacts.

Metro Denver

Money from Tourism

As congestion increases, some visitors to the Mountain Resort Region, particularly Colorado residents, may choose to spend their leisure time in Metro Denver instead of in the Mountain Resort Region. Thus, Metro Denver businesses are likely to experience an increase in sales.

In 2005, 30% or $2.4 billion of total visitor dollars in Colorado were spent in Metro Denver.[40] This may increase if visitors remain in Metro Denver rather than traveling to the Mountain Resort Region. On the other hand, this revenue is at risk of decreasing if these visitors choose to fly into regional airports west of Metro Denver to avoid I-70 congestion.

Metro Denver businesses may also experience a decrease in retail sales of sporting equipment if some

[39] Hourly State GDP per worker was calculated by dividing Colorado's GDP (from the Bureau of Economic Analysis) by the total number of workers (from the Colorado Department of Labor's Quarterly Census of Employment and Wages) based on 2,080 worker hours per year.

[40] Longwoods International, "2005 Colorado Visitor Profile," 2006.

Metro Denver residents choose not to participate in recreational activities because of congestion. Therefore, it is unclear whether tourism dollars will increase or decrease in Metro Denver due to I-70 congestion.

Mountain Resort Region

Money from Tourism

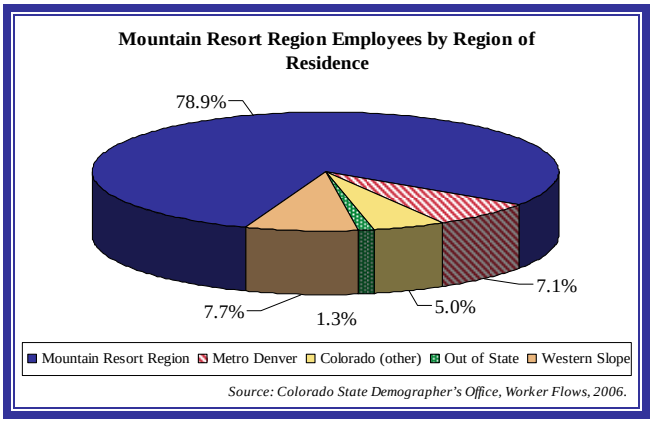
At levels of regular congestion, motorists stuck in traffic may stop at local communities in the hopes of waiting for traffic to loosen. Once there, they will spend money on food, shopping, and possibly lodging.

Congestion along I-70 has reached excess levels. Instead of leaving the clogged interstate to wait out a traffic jam, motorists are increasingly unwilling to lose their space in the line of cars. As congestion gets worse, motorists will become increasingly averse to stopping at Mountain Resort Region communities. Local businesses will experience decreased revenues as a result.

CDOT estimates that Mountain Resort Region businesses conduct an average of $800,000 in tourism-related transactions each workday hour. If I-70 congestion disrupts regular visitor flow into the region, total tourism-related revenue will decline accordingly.[41] The value of tourism expenditures was discussed in the Tourism Impacts section and is not included here to avoid double-counting.

Employee Costs

Mountain Resort Region businesses, especially those with a high proportion of commuter employees, may have to indirectly cover their employees' traffic-congestion-related expenses. About 79% of Mountain Resort Region employees also live in the Mountain Resort Region. The remaining 21% of workers commute into the region. Even those workers that live and work in the Mountain Resort Region may have to commute long distances.[42]



Because of the shortage of affordable housing in and around resort communities, many employers are forced to either increase salaries to cover commuting costs or to work with local officials to provide housing options for their employees. Vail Resorts and Aspen Skiing Company, two of the largest employers in the Mountain Resort Region, are currently expanding their employee housing options. By 2020, Colorado Region XII (Eagle, Grand, Jackson, Pitkin, and Summit counties) is estimated to have a shortage of almost 65,700 workers and the number of commuters is expected to double from 1997 to 2020.[43] If congestion continues to worsen, employers will need to either add more housing or increase salaries to avoid employee shortages.

Western Slope

Employee Costs

Property costs in the Western Slope have increased dramatically in the last ten years, largely due to the increase in activity in the Energy industry. In the Western Slope, Natural Resources and Mining

[41] Colorado Department of Transportation, Public Relations Office, 2006.

[42] Colorado State Demographer's Office, Worker Flows, 2006.

[43] Venturoni, Linda, "Labor Shortages and High-Housing Costs: The Price of Majesty," Northwest Colorado Council of Governments, 2002.

employment (including oil & gas drilling) has increased 332% from 2000 to 2005.[44]

The increase in employment and local population has overwhelmed the local housing supply, increasing property values. Many employees relocate farther from their work and commute. In Garfield County, central to the western Colorado energy industry, about 10.8% of employees reside in a different county than where they work.[45] Only 2.3% of Mesa County employees live in a different county than where they work. Local labor demand is expected to increasingly exceed local supply.

Mesa and Garfield counties do not currently have a developed employee-housing program. However, like their neighboring Mountain Resort Region communities, local businesses will have to increase salaries or provide affordable housing to their employees in order to keep up with their labor demand.

[44] Colorado Department of Labor & Employment, Labor Market Information, 2006.
[45] Colorado State Demographer's Office, Worker Flows, 2006.

GOVERNMENT IMPACTS

Increased traffic congestion along I-70 will increase governmental service costs due to the cost of emergency services, increasing housing costs which may make it challenging for local governments to retain and recruit employees. Further, if tourism activity in the Mountain Resort Region falls by even 1% due to traffic congestion, state, county, and city sales tax revenue will decrease by $1.2 million.

Local governments in the three study areas are likely to experience changes in service costs and tax revenue as a result of I-70 congestion.

Metro Denver

Infrastructure Costs

Some Metro Denver residents may remain at home versus traveling to the Mountain Resort Region because of I-70 congestion. Local Metro Denver governments may benefit from an increase in tax revenue as residents spend their entertainment dollars locally.

This effect, though positive in the short-term, may have long-term costs. If Metro Denver residents replace their recreational activities in the mountains with recreational activities closer to home, Metro Denver governments may need to improve or redesign local infrastructure to accommodate increased demand.

Mountain Resort Region

Employee Costs

The cost of living is high in many of the Mountain Resort Region towns. Median home prices tend to be high along I-70, ranging from $187,600 in Gilpin County to $497,000 in Pitkin County in 2000, compared to the Colorado median of $160,000.[46] Employees may be forced to move to more affordable areas and commute to work. As congestion increases, employees must change their commuting patterns or work schedules to be the most effective. This makes it difficult to recruit and retain employees as they cannot afford to live in the same area where they are employed.

As a result, many local government and businesses have had to provide some kind of employee housing at their cost. For example, the town of Vail created a housing division in 1996, and now offers 464 deed-restricted rental and for-sale employee housing units. The Aspen/Pitkin County Housing Authority offers similar housing options to county employees. While this will increase the productivity of employees, it places a burden on the town and its taxpayers. As congestion worsens along I-70, fewer employees may be willing to commute long distances to work, making it especially challenging to secure entry-level workers.

Tax Revenue

Mountain Resort Region governments are likely to experience a drop in revenue due to I-70 congestion. Until recently, congestion levels were such that motorists were willing to stop in towns along I-70 until traffic eased. This is no longer the case in many communities along I-70. While traffic congestion used to wane at a reasonable hour, peak period travelers can now expect slow moving traffic for longer periods, and are unwilling to leave the highway and lose their place on the road. This causes decreased revenues across the Mountain Resort Region.

Mountain Resort Region communities concede that a majority of their revenue comes from visitor sources, ranging from retail sales tax revenue to second home property taxes. In 2005, all industry retail sales totaled more than $4.6 billion in 2005, netting almost $86 million in state sales tax revenue and $135 million in city and county sales tax revenue.[47] Of this amount, the $2.5 billion in tourism dollars spent in the Mountain Resort Region

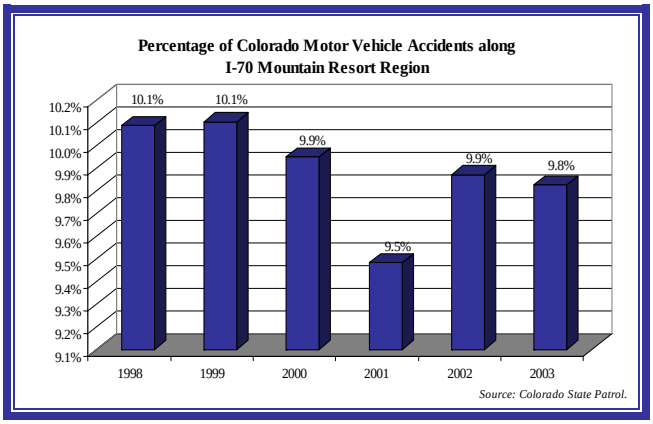
[46] U.S. Census Bureau, Decennial Census, Median Value for All Owner-Occupied Housing Units, 2000.

[47] Colorado Department of Revenue, Colorado Retail Sales and Sales Tax Summaries by County, 2006.

generated about $48 million in state sales tax revenue and $74 million in city and county sales tax revenue.[48] If tourism activity decreases, this revenue is at risk. Even a 1% decrease in tourism expenditures in the Mountain Resort Region will lead to a $1.2 million decrease in state, county, and city sales tax revenue. This potential decrease in local government revenue could adversely affect the local governments' ability to provide services to residents and visitors.

Traffic Incidents

Congestion is a cause of highway accidents and fatalities. Besides generally reducing the distance between cars, drivers are often less alert and may be prone to aggressive driving and road rage, putting other drivers at risk. If progress to mitigate congestion on I-70 is further delayed, the number of accidents is likely to increase.



In 2003, 9.8% of Colorado State Patrol's (CSP) investigated accidents occurred along I-70 in the Mountain Resort Region.[49] According to the U.S. Department of Transportation's National Highway Traffic Safety Administration, taxpayers paid for almost 75% of every traffic accident in 2000. The cost of an accident resulting in a fatality is estimated at $977,000. The cost of traffic accidents involving critically injured crash survivors is estimated at $1.1 million. According to these estimates, costs for CSP investigated fatal accidents along I-70 in the Mountain Resort Region totaled $20.5 million in 2003. Including the costs incurred by local police forces, fatal accidents alone along I-70 in the Mountain Resort Region cost $68.4 million in 2003. Many of these accidents occur within the jurisdiction of small Mountain Resort Region communities, placing a strain on available financial resources.

Emergency Services

In congested traffic, drivers may succumb to road rage, or may become distracted from their driving. This may increase the number of traffic accidents, increasing the need for emergency services. These services may include police officers reporting to the scene of the accident or monitoring drivers, and ambulances or fire trucks to respond in case of injury. These extra costs will be placed on the local governments.

Sheriff Department expenditures totaled over $9 million in Eagle County according to the 2006 budget. The 2006 budget reveals that the Clear Creek County Sheriff Department had expenditures of over $1.6 million. In Grand County, 2006 budget expenditures for Emergency Medical Services were over $2.8 million. As congestion increases, expenditures on these departments will likely need to increase.

Congestion causes non-monetary issues along I-70 for emergency services as well. Along much of the interstate, shoulders are small or non-existent. The only path for an emergency vehicle to take to a location is through the traffic. In congestion, it can be difficult for motorists to see and hear an emergency vehicle behind them, and they may have a difficult time getting out of the way. This delay to accidents or other emergency scenes can cost

[48] Calculations based on average sales tax rates throughout the Mountain Resort Region and assume that about two-thirds of tourism spending is taxable.

[49] Colorado State Patrol investigates about 30% of traffic incidents across Colorado. The remainder of traffic incidents are investigated by local police forces. The data presented here consists only of the incidents investigated by CSP.

valuable minutes in the emergency team's response time.

Western Slope

Employee Costs

The energy industry is one of the fastest growing industries in the Western Slope, employing nearly 2,800 workers, or 3.5% of the jobs in Mesa and Garfield counties. Property costs have increased dramatically along the Western Slope due to the expansion of this region. As a result, communities that once were affordable for local employees now have prohibitively high priced housing. While congestion is not as large an issue in this region as in others, increasing commuter flow will worsen traffic.

If employees are forced to commute, businesses in the Western Slope may need to increase salaries or bonuses in order to retain and recruit employees. Another alternative is to build employee housing. This is already a successful remediation for some Mountain Resort Region towns. However, building or purchasing employee housing can be expensive, and towns must also pay for the upkeep and services.

CONSTRUCTION COST IMPACTS

For every year alternative selection and construction is postponed, the cost burden on taxpayers will increase. Even if construction were to begin by 2010, the costs of the various alternatives will have increased by $54 million to $358 million per year, depending upon the alternative selected.

Construction activity introduces new costs on the local communities, ranging from increased noise to increased congestion due to lane closures. These costs may be offset by the benefits of construction such as increased construction payroll leading to increased retail sales and sales tax revenue. This analysis makes no attempt to quantify these costs and benefits of construction as the impacts will vary according to the alternative selected and the duration of the project.

This analysis considers only the impact of inflation on construction costs. Construction costs and wages increased significantly at the beginning of the decade due to an increase in home building and improvements, the expanding Chinese economy, and increased fuel prices. While the rate of increase has declined, costs will continue to rise. For every year alternative selection and construction is postponed, the cost burden on taxpayers will increase.

Inflation

From 1990 to 2005, consumer prices increased 58% in Denver at an average annual rate of 3.1%.[50] Construction costs will increase every year that selection and initiation of an alternative is postponed. According to CDOT's Draft PEIS, the capital cost of potential alternatives ranged from the minimal action alternative of $1.3 billion to $8.64 billion for the six-lane highway with AGS alternative in 2004 dollars. Based on forecasted construction cost index values, the costs of the various alternatives are estimated to range from $1.6 billion to $10.8 billion if construction begins in 2010, a 25% increase over 2004 costs. If construction does not begin until 2015, alternative costs are estimated to range from $2.0 billion to $13.3 billion, a 53% increase.

Inflation-Adjusted Construction Costs, 2005 - 2025

Year	Alternative Construction Costs (Billions)	Percentage Increase from 2004 Base	Average Annual Increase
2005	$1.3 - $8.8	2.1%	2.1%
2010	$1.6 - $10.8	24.9%	3.8%
2015	$2.0 - $13.3	53.4%	4.0%
2020	$2.4 - $15.8	82.3%	3.8%
2025	$2.7 - $18.2	111.2%	3.6%

Sources: Colorado Department of Transportation and Development Research Partners.

Road Maintenance Costs

Besides the cost of each alternative, the regular upkeep of I-70 places many costs on CDOT and the funding of alternative construction. The costs of road maintenance and operations include weather-related activities, re-paving, and basic upgrades and upkeep. Based on current road maintenance budgets, CDOT estimates that average yearly maintenance along the I-70 Mountain Corridor not including tunnels currently costs about $12,000 per lane mile.[51] Inside of tunnels, this increases to an average annual cost of about $340,000 per lane mile. Under the no-action alternative, CDOT estimates that annual road operation and maintenance (O&M) costs along the corridor would equal approximately $17 million per year.[52] For the other possible alternatives, annual O&M costs are estimated to cost between $20 million and $25 million. Under the projected rates of inflation, the annual road O&M costs for all action-based alternatives would increase to $42 million to $53 million by 2025, depending on the alternative.

[50] U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index.

[51] One lane mile equals one lane in one direction for one mile.

[52] Includes lane miles from C-470 to Glenwood Springs.

FINAL ANALYSIS

It is unlikely that any of the construction alternatives on I-70 will completely alleviate all congestion. Some congested periods during the peak winter and summer months are likely to remain, although significant reductions in congestion are expected with roadway improvements. Further, many of the impacts of congestion are qualitative as opposed to quantitative, making a bottom line analysis difficult. As this analysis hinges on consumer behavior, which is often prone to fickle changes, the analysis is conducted within a large degree of uncertainty.

Based on the assumptions of this analysis, the impact of I-70 congestion on Colorado totals $839 million per year in 2005 dollars. This cost will increase annually due to generally rising price levels, increasing population, and lengthening periods of congestion.

Summary of the Impact of I-70 Congestion

Sector Impacted	Key Assumptions	Annual Estimated Cost ($millions, 2005)
Tourism	1% decrease in tourism spending in the Mountain Resort Region	$25
Residents	Value of time lost due to congestion based on impacted travelers in Metro Denver, Mountain Resort Region, and the Western Slope	$85
Business	0.5% loss in productivity and business efficiency in Metro Denver, Mountain Resort Region, and the Western Slope	$728
Government	Loss of state, county, and city retail sales tax revenue associated with 1% decrease in tourism spending in the Mountain Resort Region	$1
Total Impacts		**$839**

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