

Denver Regional Council of Governments



2010 Annual Report on Traffic Congestion in the Denver Region

May 2011

This annual report and other documents are available at the DRCOG website www.drcog.org

Visit our partner agency websites for more information:

Colorado Department of Transportation: www.dot.state.co.us

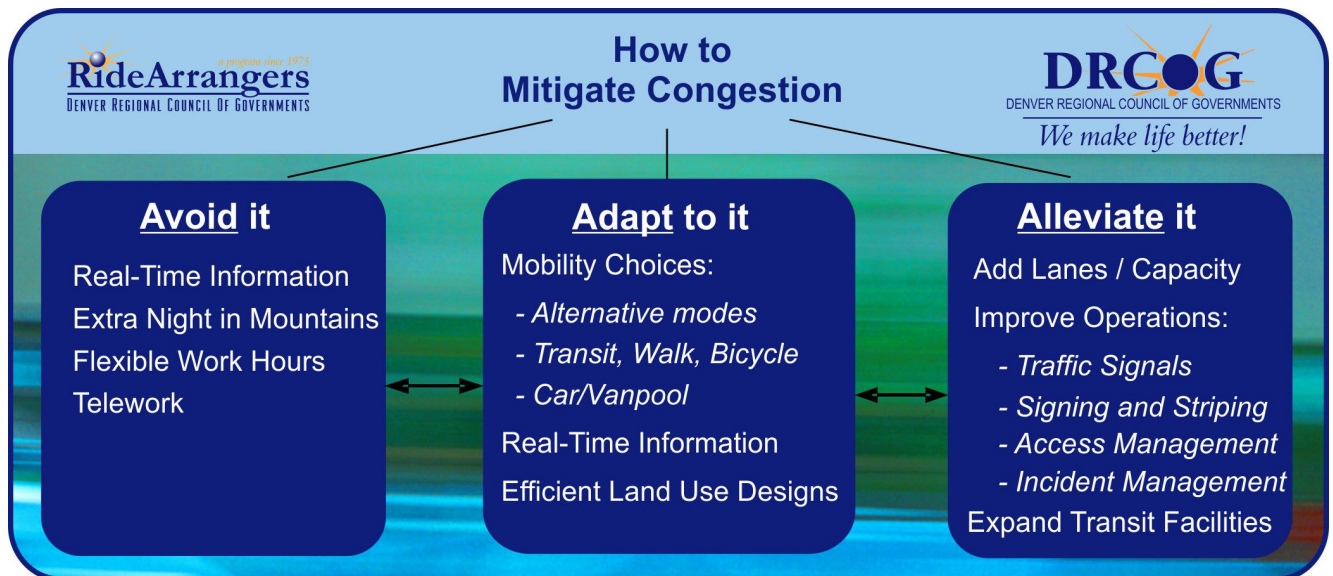
Regional Air Quality Council: www.raqc.org

Traveler Information: www.cotrip.org

For ways to avoid congestion or to calculate how much your commute costs, please visit RideArrangers: <http://www.drcog.org/index.cfm?page=RideArrangers>.

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Contact Sarah Karjala at skarjala@drcog.org for additional information regarding DRCOG's Congestion Mitigation Program.



2010 Annual Report on Traffic Congestion in the Denver Region

(DRCOG Congestion Mitigation Program)

Introduction

The Denver Regional Council of Governments (DRCOG) reports annually on traffic congestion in the Denver region. The Annual Report provides information on vehicle travel trends, analyzes existing congestion-related delay, forecasts future congestion, and identifies key congested locations within the region.

This year's report includes two additional topics:

- The DRCOG 2035 sustainability goals for the Denver region and regional resources to aid in meeting these goals
- Data on traffic crashes in the Denver region and the relationship to traffic congestion

Trends in Vehicle Miles Traveled

Vehicle travel in the Denver region has experienced little growth in the last five years. The vehicle miles traveled (VMT) per day increased substantially between 2000 and 2006, but only increased by about one million between 2006 and 2010. This stagnation in vehicle travel is mainly attributed to the economic recession which began in late 2007 and the slow economic recovery. Vehicle travel is expected to increase at a higher rate in the future as the region's population and employment increase and the economy strengthens. However, it is hoped that VMT growth is tempered by more trips being made by transit, walking, bicycling, carpooling and other travel modes. The chart below shows various growth scenarios, including the growth trajectory required to meet DRCOG's VMT goal, which is to reduce VMT per capita by 10 percent by 2035.

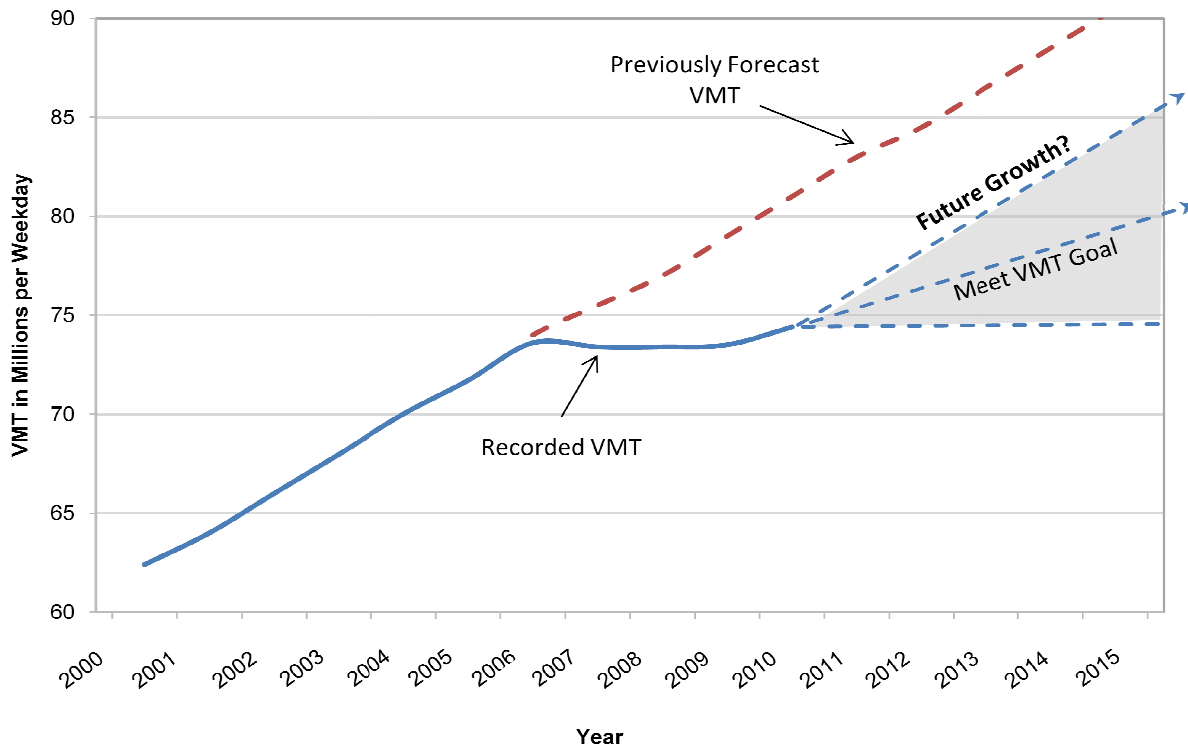


Table 1 shows that, similar to the nation as a whole, Denver region VMT decreased in 2008, but increased slightly through 2010 (based on a compilation of sources). Denver region VMT per capita remains lower than the peak of 2006.

Table 1. Recent Data on Vehicle Miles Traveled				
Year	United States VMT millions/day	Denver Region VMT millions/day	Denver Region Population	Denver Region VMT / Capita
2000	8,127	62.4	2,438,400	25.6
2002	8,448	66.1	2,540,300	26.0
2004	8,770	69.8	2,642,100	26.4
2006	8,918	73.6	2,758,300	26.7
2008	8,797	73.4	2,820,000	26.0
2010	8,875	74.4	2,851,000	26.1

Sources: United States VMT obtained from FHWA Traffic Volume Trend reports; converted from annual to daily VMT using a factor of 338. Denver region VMT estimated from DRCOG Congestion Database, CDOT, and local traffic counts.

Congestion Measures

Table 2 shows current and future measures of traffic congestion on the 1,835 mile designated Regional Roadway System (note: the data in Table 2 does not represent all roadways). The measures are calculated based on average daily traffic volumes and the hourly capacity of freeways and major roads in the Denver region. Roadway segment capacity was determined by such factors as the number of lanes, number of traffic signals or driveways, steepness of grade, and the amount of truck traffic.

Table 2 shows that, on average, each vehicle experiences 38 hours of extra travel time per year due to congestion. This delay is expected to nearly triple by 2035. Currently, 19 percent of the lane miles on freeways and major roads are congested for three or more hours per day. In 2035 it is projected that nearly half of the lane miles will be congested three or more hours per day.

Of note, new modeling data and changes in analysis methods have changed the magnitude of some congestion measures. The congestion measures shown in Table 2 should not be compared directly to those reported in previous annual reports.

Accessibility Measures

Another travel trait related to traffic congestion is accessibility. In 2011 DRCOG staff will develop accessibility measures to gauge how existing and future transportation systems will provide multimodal accessibility to such locations as employment centers, transit facilities, medical centers, or event centers. Measures can relate to the physical aspect of accessibility to places (i.e., safety, comfort, convenience, and barriers) as well as the travel time aspect (e.g., number of jobs within a 30-minute drive or a 30-minute transit trip, bicycle ride, or walk). Many measures will be considered, but only selected ones will be chosen to monitor and report.

Table 2. Current and Future Congestion Measures on Denver Freeways and Major Roads (Regional Roadway System)*

	2009		2035		Percent Change Between 2009 and 2035
	"Average" Weekday	Annual Total Estimate ¹	"Average" Weekday	Annual Total Estimate ¹	
Vehicle Measures:					
Vehicle Miles of Travel	54,567,000	18,443,646,000	89,744,000	30,333,472,000	64%
Vehicle Hours of Travel	1,151,000	389,038,000	2,343,000	791,934,000	104%
Average Travel Speed (mph)	47		38		
Vehicle Hours of Delay	174,000	58,812,000	754,000	254,852,000	333%
Travel Delay per Driven Registered Motor Vehicle ² (minutes)	6.8	2,300 (38 hours)	19.0	6,400 (107 hours)	179%
Travel Delay per Household (minutes)	9.2	3,100 (52 hours)	25.7	8,700 (145 hours)	179%
Person Measures:					
Person Miles of Travel	73,665,000	24,898,770,000	121,154,000	40,950,052,000	64%
Person Hours of Travel	1,554,000	525,252,000	3,163,000	1,069,094,000	104%
Person Hours of Delay	235,000	79,430,000	1,018,000	344,084,000	333%
Travel Delay per Resident (minutes)	5.0	1,700 (28 hours)	14.0	4,700 (79 hours)	183%
Other:					
Percent of Travel Time in Delayed Conditions	15%	n.a.	32%	n.a.	
Travel Time Variation (peak vs. off-peak)	1.20	n.a.	1.49	n.a.	
Lane Miles of Roads Congested for 3+ hours (percent of total lane miles)	1,256 19%	n.a. n.a.	3,517 47%	n.a. n.a.	180%
Traffic Crashes on Regional Roadways (2005)	136	46,000	n.a.	n.a.	
Economic Costs:					
Total Cost of Delay (\$27.50 per vehicle hour) ³	\$4,790,000	\$1,619,020,000	\$20,700,000	\$6,996,600,000	332%
Transit & Non-Motorized Measures:					
Total RTD Transit Boardings	331,100	99,392,000	791,200	237,508,000	139%
Rail Transit Boardings	64,100	19,242,000	332,900	99,932,000	419%
RTD Park-n-Ride Parking Space Utilization (out of 26,653 spaces)	64% (17,180)	n.a.	n.a.	n.a.	n.a.
Modeled Bicycle and Walking Trips	918,000	n.a.	1,560,600	n.a.	70%

Sources: DRCOG CMP Database, RTD January 2010 Facts & Figures, RTD Ridership Statistics Archive, 2035 MVRTP. The congestion measures in this table are not to be compared to those reported in previous annual reports, due to updated formulas and methodologies.

Technical Notes: 1 Annual Total Estimate is "Average Weekday" total * 338. 2 Assumed 1,536,000 driven registered vehicles in 2009 and 2,383,000 in 2035. 3 Cost incorporates \$23/hour per adult in car and \$71/hour per commercial vehicle, in current dollars.

*The designated Regional Roadway System is depicted in Figure 1 on pages 6 and 7.

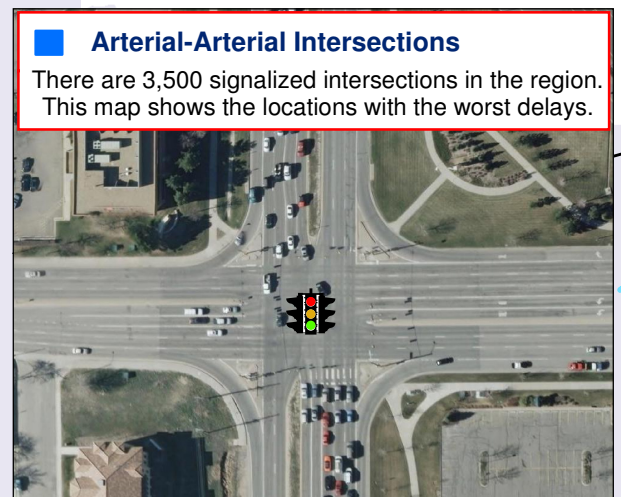
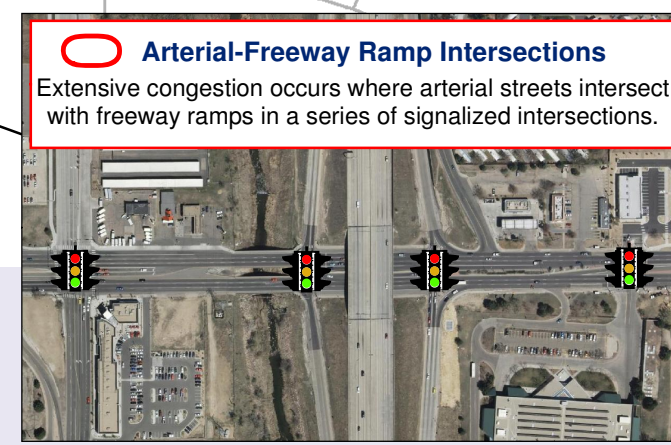
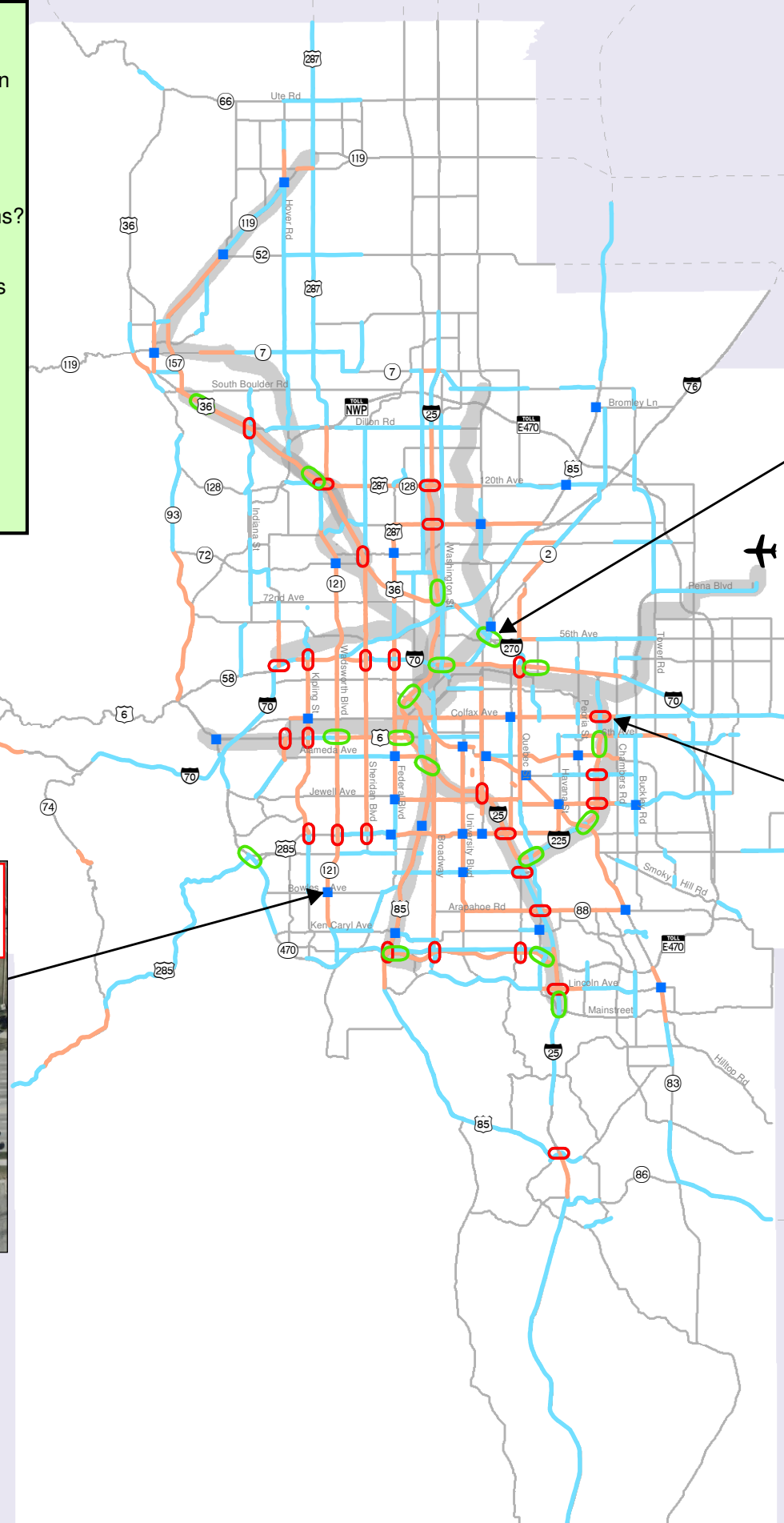
Key Congested Locations

Figure 1 shows the key congested locations in the Denver region and highlights forecasted and existing congested corridors. Congested corridors were determined based on mobility grade, which factors in such variables as the duration and extent of the congestion, as well as the crash frequency on the corridor.

**Figure 1
Key Congested Locations in
2009 and 2035**

Congested Corridors - Mobility Grade
Grade of "A" through "F" was assigned based on a combination of scores for the following measures:

- Duration** - How long does the congestion last? (number of hours per day congested)
- Severity** - How much of driving time is in delayed conditions? (percent of travel time in delay in peak hour)
- Magnitude** - What is the total amount of delay for all travelers at that location? (total daily delay time per mile)
- Variation** - What is the variation in travel time between off-peak and rush hour?
- Reliability** - How often do crashes or incidents occur? (crashes per mile per year)



Congested Corridors in 2009 and 2035
(Congestion Mobility Grade of D or F)

- Corridor Congested in 2009
- Corridor Congested by 2035
- FasTracks Rapid Transit System

Congested Points In 2009

- Arterial / Arterial Intersections
- Arterial / Freeway Ramp Intersections
- Freeway Bottleneck Points

0 10 20
Miles

This map and the data it depicts are intended for informational purposes only. DRCOG provides this information on an "as is" basis and makes no representation or warranty that the data will be error free. DRCOG is not responsible to any user for any costs or damages arising from inconsistencies in its data.
Source: DRCOG
Projection: Colorado State Plane, NAD 83
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DRCOG's 2035 MVRTP Sustainability Goals

The DRCOG Metro Vision Regional Transportation Plan (MVRTP) was recently updated to incorporate sustainability goals for the region. The 2035 transportation-related goals are to:

1. Reduce the share of drive-alone commuters from 74 percent to 65 percent
2. Reduce the vehicle miles traveled per capita per day by 10 percent (from 26.3 to 23.7 miles per day per person)
3. Reduce transportation greenhouse gas (GHG) emissions per capita by 60 percent (from 9,900 to 4,000 pounds per year per person)

The purpose of these goals is to create a sustainable transportation system, thereby protecting regional air quality and reducing fuel and energy consumption. Attainment of the goals will rely heavily upon future land use patterns and use of alternative modes of transportation. For example, an increase in mixed-use, high-density, and transit-oriented developments will help increase the share of transit, bicycle, and pedestrian trips. Travel patterns will be greatly impacted by the price and availability of fuel. Fuel price increases caused an initial overall reduction in VMT in 2008 (see Table 1) and, when combined with the poor economy, the region has even seen a decrease in VMT per capita. Time will tell if the weak economy was the primary cause or if a societal shift to driving less has actually occurred. A reduction in GHG emissions will also rely heavily upon the fuel economy of the 2035 motor vehicle fleet, including the incorporation of more electric vehicles.

The DRCOG *Congestion Mitigation Toolkit* (2008) identifies several strategies to reduce traffic congestion, thereby improving air quality and reducing fuel/energy consumption. The Toolkit can be accessed on the DRCOG website (www.drco.org). Other regional resources, such as the Colorado Department of Transportation Traveler Information site (www.cotrip.org) and the DRCOG RideArrangers program (www.drco.org/ridearrangers) will be instrumental in meeting the 2035 transportation goals.

CDOT Travel-Time Data Report

The Colorado Department of Transportation (CDOT) completed a study in 2010 that analyzed three years of travel time data for major corridors in the state of Colorado. The purpose of the study was to measure the travel times between 2007 and 2009, determine if there was a noticeable change, and to create a baseline from which to monitor future corridor performance.

Between 2007 and 2009, about one-third of the corridors within the Denver region showed a noticeable increase in travel time during peak periods. Half of the corridors showed no noticeable change and about 15 percent had a decrease in travel time. The overall percent change in travel time was small (on average, a 3 percent increase), indicating that the level of congestion did not change significantly between 2007 and 2009.



Congestion and Crashes

On average, there are about 220 reported traffic crashes in the Denver region each day, resulting in 70 persons injured. In addition, two traffic fatalities occur every three days. These crashes incur large costs in terms of property damage, medical costs, lost productivity, and the pain and suffering associated with an injury or fatal crash.

The relationship between congestion and crashes or incidents is often overlooked.

Approximately 45 percent of congestion in the region is estimated to be due to traffic incidents such as crashes and breakdowns (DRCOG Congestion Database). Crashes on freeways and major roads during peak hours have a major impact on traffic congestion. For this reason, emergency response time and removal of an incident from the traffic stream is very important. Figure 2 shows reported traffic crashes on a typical weekday in the Denver region. On the sample day (October 18th, 2005) there were an estimated 88,000 extra vehicle hours of delay due to crash related congestion.

Severe congestion due to crashes can often cause further crashes through driver inattentiveness (rubbernecking) and sudden changes in travel speed when approaching backed-up traffic.

Major Decrease in Traffic Fatalities

Traffic fatalities in Colorado have experienced a significant downward trend over the last decade. In the Denver region fatalities decreased from 281 to 166 per year between 2000 and 2010. The reduction in traffic fatalities is mainly attributed to improvements in vehicle safety design (e.g., increased prevalence of front and side airbags).

In 2007 DRCOG established a goal to reduce the fatal crash rate from 1.13 to 1.00 per 100 million VMT by 2035. That goal was far surpassed by 2010, reaching 0.68. To follow on this positive trend, a new goal of 0.60 fatal crashes per 100 million VMT has been established.

Table 3. Crashes, Injuries, and Fatalities in the Denver Region (2005)

	Average Weekday	Annually
Total Crashes	223	73,570
Injuries	70	23,065
Fatalities	<1	248

Source: Colorado Department of Transportation Database

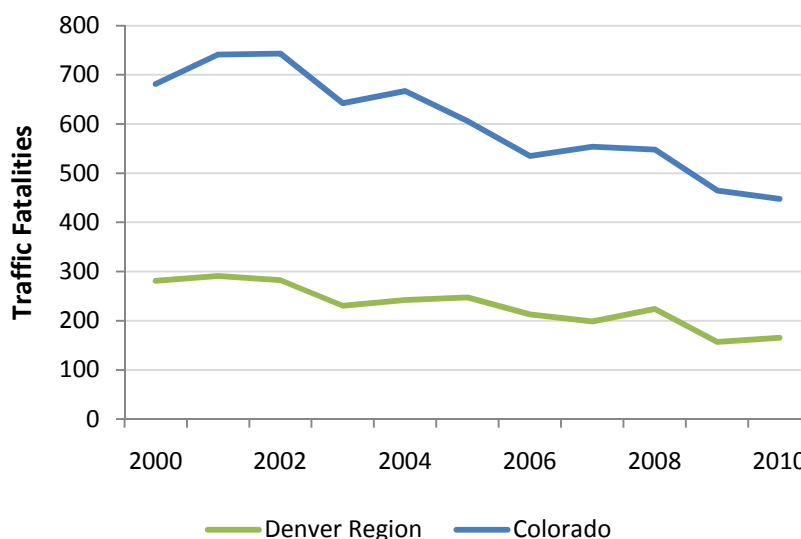
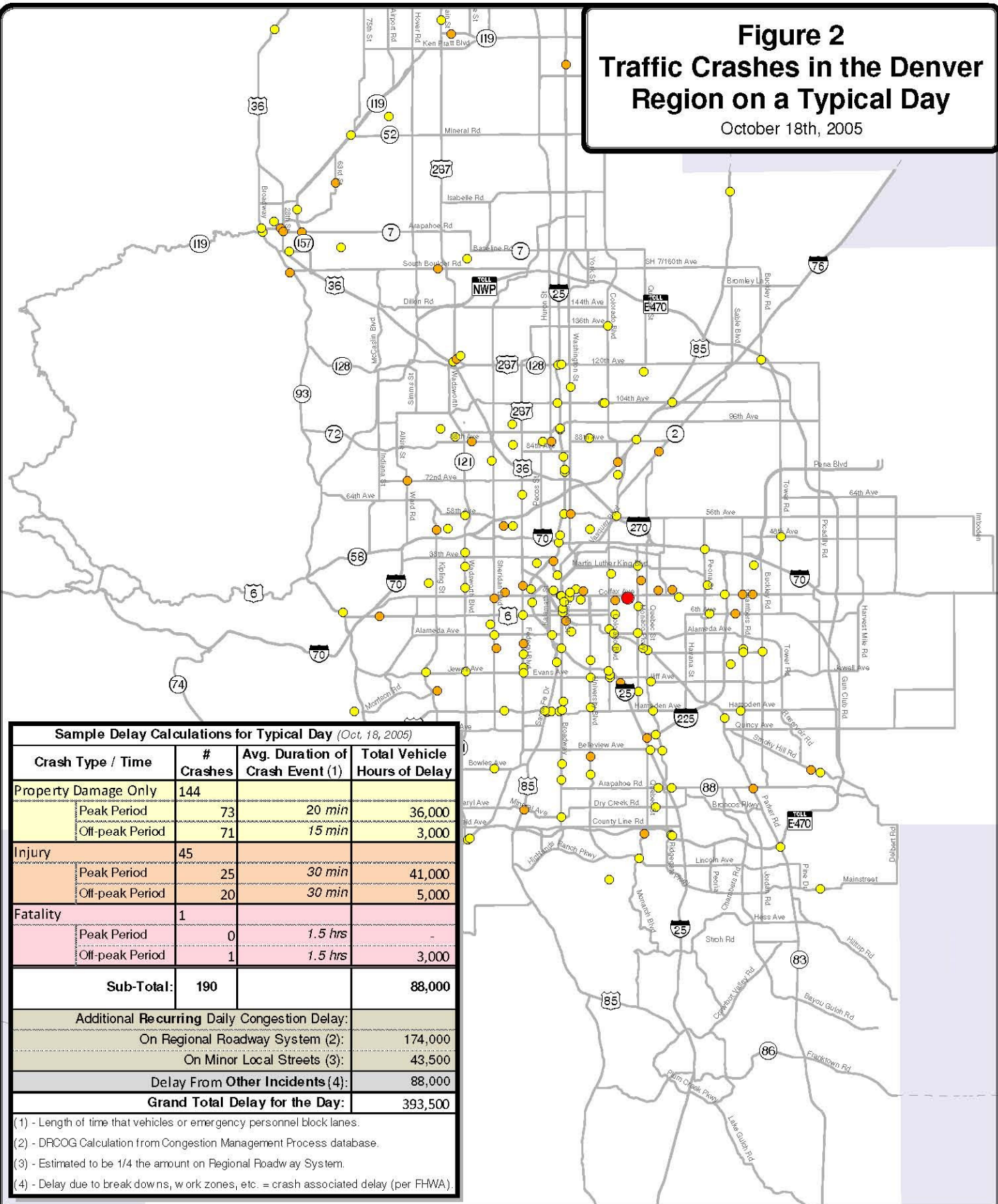


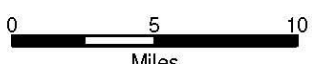
Figure 2
Traffic Crashes in the Denver
Region on a Typical Day
 October 18th, 2005



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 Source: DRCOG
 Projection: Colorado State Plane, NAD 83
 SK 03/2011

- Fatal Crash
- Injury Crash
- Property Damage Only Crash

- Regional Roadway System
- - - Roads Outside Region
- Area Outside Region



Congestion Management Accomplishments and Activities (2010/2011)

Several major congestion relieving projects are underway or due to break ground in 2011; these projects are listed in the table below. While the roadway and interchange projects relieve some congestion, the FasTracks projects are key in allowing commuters to avoid traffic congestion.

In addition to the projects listed below, projects from the regional Travel Demand Management (TDM), Intelligent Transportation Systems (ITS) and traffic signal program pools are implemented annually. Finally, continued planning efforts, such as environmental impact studies for major roadway projects, ensure that projects are ready to go when funds become available.

Major Roadway/Interchange Projects	Status	Estimated Completion
120 th Ave. connection from Wadsworth Blvd. to Allison St.	Completed	2010
New interchange at Parker Rd. and Arapahoe Rd.	Underway	2011
Widening of I-225 from Mississippi Ave. to 2 nd Ave. and restriping of I-225 from 2 nd Ave. to Colfax Ave.	Underway	2011
New interchange at I-70 and Central Park Blvd.	Underway	2011
Pecos St. Grade Separation at Union Pacific Railroad	Underway	2012
Interchange reconstruction at I-25 and Alameda Ave.	Underway	2012
C-470/Santa Fe Dr. southbound to eastbound flyover ramp	Underway	2012
Interchange reconstruction at I-225 and Colfax Ave. / 17 th Pl. (Phases 3 and 4)	Underway	2013
Widening of Federal Blvd. from Alameda Ave. to 6 th Ave.	Start in 2011	2013
Interchange Improvements at I-25 and Santa Fe Dr.	Start in 2011	2014

FasTracks Projects	Status	Estimated Completion
Denver Union Station intermodal renovations	Underway	2013
West Corridor commuter rail	Underway	2013
East Corridor (to DIA) commuter rail	Underway	2016
Gold Line Corridor commuter rail	Start in 2011	2016
Northwest Corridor (to Westminster) commuter rail	Start in 2011	2016

Bicycle/Pedestrian Projects

Several projects were completed throughout the region in 2010. One major project was the construction of dedicated bike lanes on 74th Avenue from Kipling Street to Carr Street in Arvada.

Construction of several multi-use paths is expected in 2011 (e.g., construction of multi-use paths along Arapahoe Avenue in Boulder, Bella Rose Parkway in Frederick, and Wadsworth Boulevard in Wheat Ridge).

DRCOG annually sponsors Bike to Work Day to encourage new bicycle commuters. A total of 22,000 bicyclists participated in 2010; the 2011 Bike to Work Day will be held on June 22.



DENVER REGIONAL COUNCIL OF GOVERNMENTS

We make life better!

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