FY2009

Problem Identification

Adams Alamosa Arapahoe Archuleta Baca Bent Boulder Broomfield Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Hinsdale Huerfano Jackson Jefferson Kiowa Kit Carson La Plata Lake Larimer Las Animas Lincoln Logan Mesa Mineral Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers Pueblo Rio Blanco Rio Grande Routt Saguache San Juan San Miguel Sedgwick Summit Teller Washington Weld Yuma

In this report:

- **Identification of high-risk drivers**
- **Neighborhood effects**
- **In-depth analysis of high-risk counties**
- **Recommended analytical focus for FY2010**

Colorado Department of Transportation
Office of Transportation Safety

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This report may be viewed on the Internet at:
http://www.dot.state.co.us/Traffic_Manuals_Guidelines/Problem_ID_and_Annual_Report.asp

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The Colorado Department of Transportation, Office of Transportation Safety (OTS) contracted with the University of Colorado to prepare the FY2009 Problem Identification report. Dr. Jeffrey Zax was the Principle Investigator and was assisted by subcontractors Jennifer Garner of Garner Insight LLC and Glissen Rhode of Glissen, LLC.

Purpose and Objective

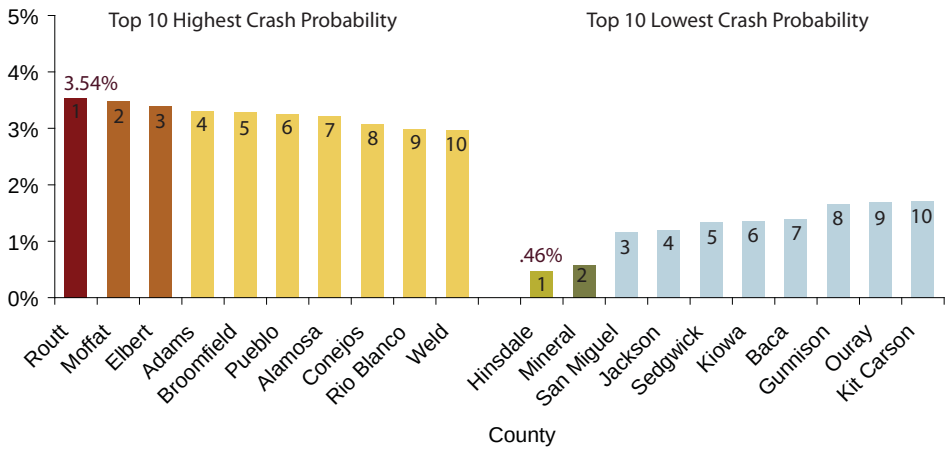
The OTS Safety and Educational Programs team is tasked with developing behavioral and enforcement-based programs that will improve traffic safety in Colorado by reducing the number and severity of traffic crashes. The OTS's programs target specific high-risk driving behaviors, such as impaired driving or drivers who do not use occupant protection, and high-risk populations, such as teenagers and motorcycle riders. In order to direct limited resources to the areas of greatest need, the OTS relies on the analysis of crash and other traffic data. For the FY2009 Problem Identification, the Colorado Department of Revenue, Motor Vehicles Division's complete (adjudicated) citation database and several other modules (e.g., the DUI file in which officer's report data, any request for a hearing, and BAC test results) were merged with the 2005 crash database (the most recent year available) and data from the 2000 Census of Housing and Population.

Because the OTS will use the analytical results to develop location-based programs, most of the analyses focus on the zip code or county of residence of high-risk drivers.

Analytical Approach

Past Problem ID projects have attempted to understand the crash experiences of Colorado drivers by constructing multiple cross-tabulations. These cross-tabulations are convenient for presentational purposes. However, they are unavoidably reductionist. Each focuses on a small number of crash and driver characteristics.

1. Counties Whose Licensed Drivers Have the *Highest* and *Lowest* Probability of Crashing
Source: 2005 CDOT Crash and Citation Model



2. Young Drivers' Odds of Crashing, by Zip Code of Residence
Source: 2005 CDOT Crash and Citation Model

Rank	City	Zip	Odds of Crash
Top 10 *Worst Zip Codes*			
1	**Pueblo**	**81006**	**5.70%**
2	Thornton	80229	5.50%
3	Pueblo	81005	5.50%
4	Commerce City	80022	5.50%
5	Northglenn/Thornton	80233	5.40%
6	Craig	81625	5.40%
7	Denver	80219	5.20%
8	Federal Heights/ Thornton/Westminster	80221	5.20%
9	Arvada	80005	5.20%
10	Brighton	80601	5.20%
11	Pueblo	81007	5.20%
12	Pueblo	81004	5.20%
13	Lakewood	80232	5.20%
14	Arvada/Westminster	80003	5.10%
15	Northglenn/ Thornton/Westminster	80241	5.10%
16	Pueblo	81001	5.10%
17	Federal Heights/ Thornton/Westminster/ Northglenn	80260	5.10%
18	Alamosa	81101	5.10%
19	Arvada	80004	5.00%
20	Westminster	80031	5.00%
Top 10 *Best Zip Codes*			
1	**Boulder**	**80302**	**2.80%**
2	Fort Collins	80521	3.10%
3	Delta	81416	3.20%
4	Sterling	80751	3.20%
5	Durango	81301	3.30%
6	Cortez	81321	3.50%
7	Grand Junction	81501	3.50%
8	Boulder	80304	3.50%
9	Boulder	80303	3.50%
10	Fruita	81521	3.60%
11	Denver	80231	3.60%
12	Fort Collins	80525	3.60%
13	Fort Collins	80526	3.60%
14	Colorado Springs	80921	3.70%
15	Boulder	80301	3.70%
16	Louisville/Superior	80027	3.70%
17	Centennial/Cherry Hills/ Greenwood Village	80111	3.70%
18	Clifton	81520	3.80%
19	Denver	80210	3.80%
20	Denver	80220	3.80%

The exclusion of other characteristics that may also be important could lead to false inferences from any or all of such cross-tabulations.

The 2009 Problem ID project expands on a new way of interpreting the annual crash experiences of Colorado drivers, first introduced in the 2008 Problem ID report. This project takes a more comprehensive approach to the analysis of crash experiences. It characterizes each Colorado resident with a Colorado drivers license based on all available information about that driver as of December 31, 2004. It then imputes the probability that each driver will be involved in a crash during the year. These imputed probabilities can then be aggregated to identify demographic groups or geographic areas which contain high concentrations of at-risk drivers.

Selected Results

In Colorado in 2005, 606 people died in traffic crashes. Exhibit 1 on the previous page presents the probability that a driver will be in a crash, based on the driver's county of residence. (This data is derived from the ordered probit model.) Drivers from Routt County had the highest probability of crash involvement.

Young Drivers

In an analysis of the odds that a young driver (under age 21) would be involved in a crash by zip code of residence, the majority of the most dangerous zip codes were in Pueblo, Adams and Jefferson counties (Exhibit 2).

The zip codes where young drivers had the lowest odds of crashing were spread across the state and included two of the state's largest college towns: Boulder and Fort Collins.

Impaired Drivers

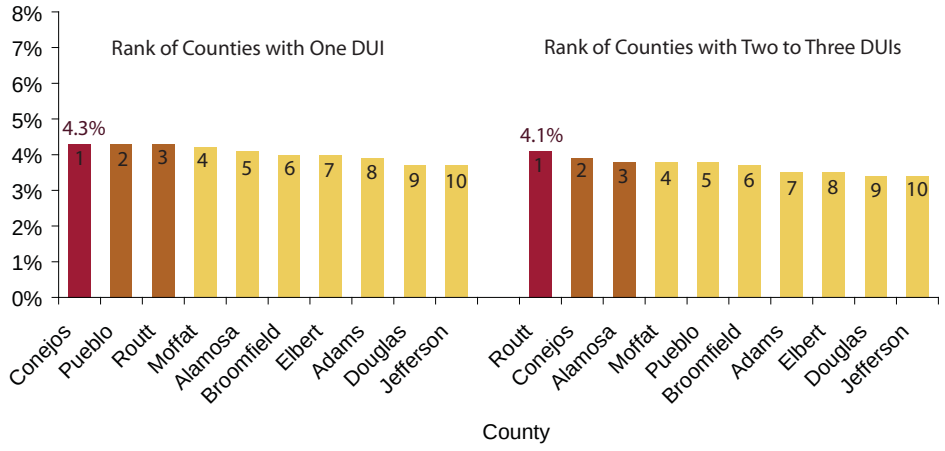
After controlling for all other factors, the combination of county of residence and prior DUI records increases the likelihood that a driver is involved in a crash. Exhibit 3 shows the ten worst counties, measured by the increase in odds of a crash when drivers have one or two-to-three DUIs on their citation record. Drivers living in Conejos County with one DUI on their record are 4.3% more likely to be involved in a crash.

Occupant Protection

Exhibit 4 presents county-level seat belt use rates. Eagle County had the highest observed seat belt use and Kit Carson, Lincoln and Logan had the lowest. The counties with the lowest observed seat belt use rates are generally rural. However, three counties with the highest seat belt use rates are far from urbanized – Clear Creek, Summit and Eagle counties. Mesa and Pueblo counties are the most populous counties with below average seat belt use rates.

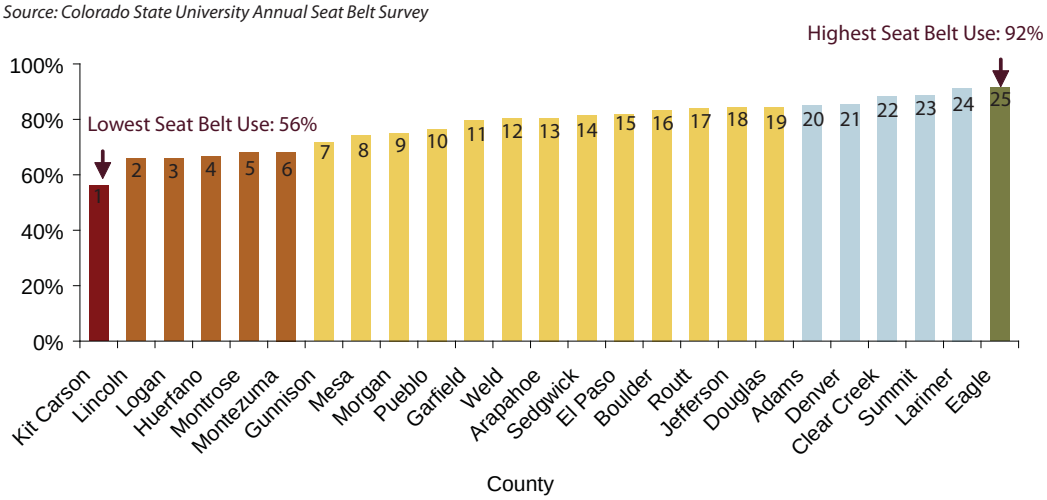
3. **10 Worst Counties: Odds of Crash by DUI Records**

Source: 2005 CDOT Crash and Citation Model



4. **Observed Seat Belt Use - 25 County Ranking**

Source: Colorado State University Annual Seat Belt Survey



Recommendations

Primary Counties to Focus On

Based on the results of the 2005 Crash and Citation ordered probit model and the 2008 Annual Seat Belt Survey, the study team recommends that the Office of Transportation Safety Educational Programs team consider developing, supporting or expanding traffic safety programs in the following communities:

- Adams County
- Pueblo County
- Yuma County

Adams County. As in the 2004 analysis, Adams County has persistent traffic safety problems across all areas of OTS focus but particularly drivers under age 21 (young drivers) and impaired drivers. In every examination of crashes by county, Adams County is among the ten most dangerous.

Pueblo County. Like Adams County, Pueblo County has persistent, long-term challenges. Young drivers living in Pueblo County have the highest predicted probability of crash involvement. Something is going on in Pueblo and it is not limited to drivers under the age of 21. Pueblo consistently ranks high in predicted crash odds among drivers with DUI records. Compared to other counties, Pueblo County consistently has low overall seat belt use rates, low juvenile seat belt use and low car seat/booster seat use rates. The OTS should continue to support traffic safety programs in Pueblo that engage both high-risk drivers but also the Pueblo community at large.

Yuma County. Among the counties surveyed in 2008, Yuma County had the lowest observed use of car seats/booster seats. While county-level data is not available with respect to adult seat belt use, it would not be surprising if Yuma County was found to have lower than average seat belt use rates, given the County's rural environment. With respect to Yuma County, the OTS should initially focus its efforts on car seat/booster seat programs.

Secondary Counties to Focus On

Several counties included in the in-depth analysis of high-risk counties (Appendix B) may be considered emerging problem areas (e.g., Routt County). In the 2005 analysis, Routt County was the most dangerous county in several analyses, but in the 2004 model, Routt County was never in the top ten. Other counties may be considered persistent problem areas which have consistently or often been in the top ten most dangerous, but rarely in the top three (e.g., Weld, Broomfield, Jefferson, Moffat). Depending on available resources, these counties should be considered for enhanced enforcement and community-based traffic safety programs.

Quality of Crash Data

This analysis depends on the accuracy of the underlying data. In the case of the 2005 crash data, this accuracy is suspect. The original file contained 323,874 driver records. Of these, 116,270 had no drivers license number. Of those that remained, 10,805 had drivers license numbers which contained alphabetic characters, not actually present in Colorado drivers license numbers. Another 911 records had drivers license numbers equal to zero or greater than 1,000,000,000. This latter value is impossible in Colorado, because the drivers license number has only nine digits. Of the records with apparently valid drivers license numbers, 26,340 did not record any value for the severity of any crash. Lastly, 1,542 records contained duplicate license numbers and serial numbers, meaning that there were multiple records for the same

driver in the same crash. Consequently, the crash data contained only 168,011 usable driver records. This is only 51.9% of the original file. The fact that 48.1% of the original records were demonstrably flawed suggests that the remaining records may also contain inaccuracies. Therefore, the analysis for which they form the foundation must be interpreted with appropriate caution.

Data Needed

Expanded Occupant Protection Data. Analyses of occupant protection are limited by the accuracy of available data. The Annual Seat Belt Survey conducted by Colorado State University represents the best and most reliable point-in-time data on seat belt use statewide. The study team would recommend that, if dollars are available, the survey include a supplemental component featuring observations in more than 25 counties, particularly rural counties. Any supplemental surveys should also include the child and juvenile survey components. The seat belt survey data are the best available to guide programming decisions.

Original Citation File. The ordered probit model estimated the probability of crashing using a wide array of data from the Motor Vehicle Division. Chief among these databases is the adjudicated citation file. If possible to obtain, the original citation file in addition to adjudicated citations would provide a rich dataset and would allow the study team to vastly expand its analyses.

Current Crash Data. Obviously, more current and accurate crash data is needed for the analyses to have improved relevance for program development and selection.

Recommended Analytical Focus for FY2010

The study team recommends that future Problem Identification reports continue to emphasize place-based analyses and expand those analyses whenever possible. The addition of neighborhood-level data in this report expanded the analysis to include socio-demographic factors. We suggest that efforts be made to incorporate prior crash experiences, to the extent that they are available, among predictors of current crash propensities. In addition, we recommend that greater efforts be made to understand the process by which the crash data are collected, in order to help assess their reliability.

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The 2009 Problem ID project expands on a new way of interpreting the annual crash experiences of Colorado drivers, first introduced in the 2008 Problem ID report. This project takes a more comprehensive approach to the analysis of crash experiences. It characterizes each Colorado resident with a Colorado drivers license based on all available information about that driver as of December 31, 2004. It then imputes the probability that each driver will be involved in a property-damage-only, possible injury, non-incapacitating injury, incapacitating injury or fatal crash during the year.

These imputed probabilities can then be aggregated to identify demographic groups or geographic areas which contain high concentrations of at-risk drivers.

This report includes results of an ordered probit model (for details, see the Technical Appendix A). The ordered probit model allows individual factors that may increase the probability of crash involvement, such as age, citation history, etc. to be examined while controlling for all other factors. The 2009 model also includes neighborhood effects, which augment the individual characteristics obtained from the driver license file. These effects include household income, the percentage of minority residents in a zip code, vacancy rates and other socio-demographic characteristics. This report also includes results from the 2008 Statewide Seat Belt Survey, the 2008 Child/Juvenile Restraint Survey and the 2008 Neighborhood Seat Belt Survey. These observational surveys of occupant protection use were conducted by the Institute of Transportation Management at Colorado State University.

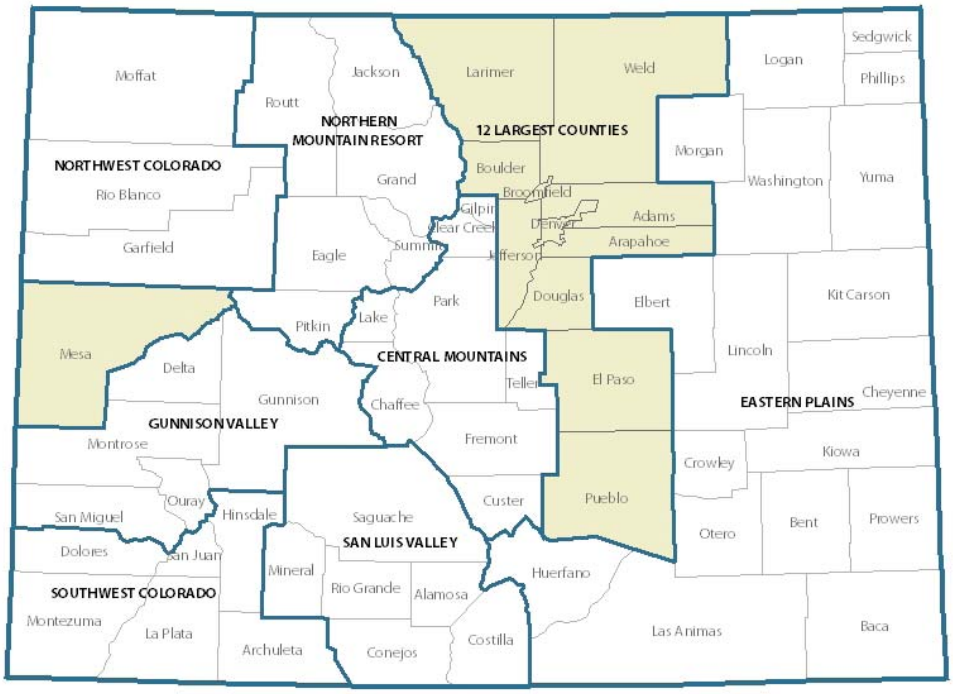
Colorado Counties and Regions

Exhibit 1 maps Colorado's 64 counties and regions of interest.

Acknowledgements

The study team would like to acknowledge the leadership of John Muscatell, Carol Gould and Glenn Davis and the assistance of Ilana Erez, Bryan Allery, Rahim Marandi, and Robert Weltzer in developing this report.

1. | **Colorado Counties and Regions**
Source: Colorado Department of Transportation



In Colorado in 2005, 606 people died in 554 fatal traffic crashes.

CDOT's Office of Transportation Safety (OTS) Safety and Educational Programs team educates and works to reduce the number and severity of traffic crashes through a combination of engineering, law enforcement, education and emergency services programs across the state. The OTS also works with the CDOT engineering staff to develop solutions to highway safety problems. Learning more about those drivers who are more likely to be involved as a driver in a crash helps the OTS staff develop more effective programs. This section provides an overview of the driver characteristics associated with increased risk of crash involvement.

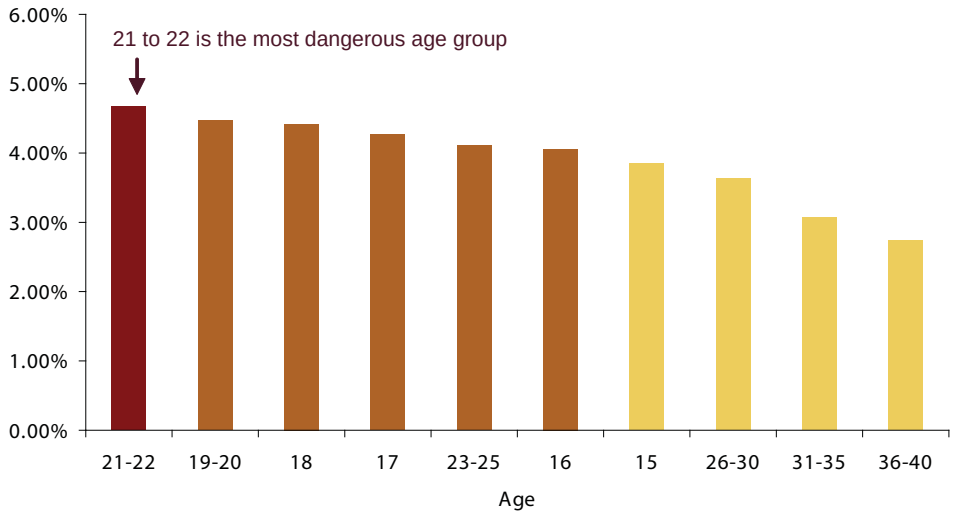
Driver Age and Gender

Age of Driver. Historically, younger drivers, especially teen drivers have been disproportionately involved in crashes. The results of the ordered probit model demonstrate that younger drivers have a higher probability of being involved in a crash than older drivers.

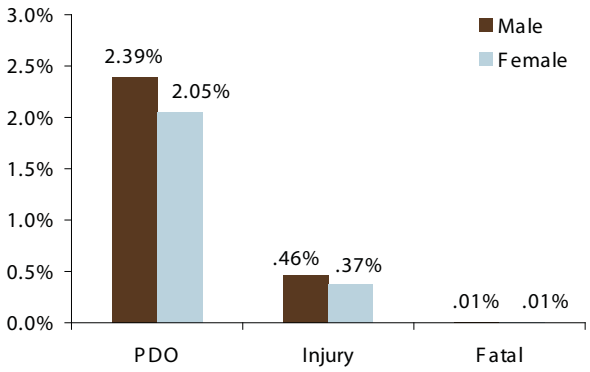
Although high school age teens are among the ten most dangerous age groups, drivers in their early 20s have the greatest odds of crash involvemet of any age cohort. As shown in Exhibit 1, the odds of crash involvement increase by nearly 5% for drivers ages 21 and 22, controlling for all other factors.

Gender of Driver. Men are slightly more likely than women to be involved in property damage-only (PDO) crashes and injury crashes than women (Exhibit 2). With respect to the probability of fatal crash involvement, there is not an appreciable difference between genders.

1. The Ten Most Dangerous Ages
Source: 2005 Crash and Citation Model



2. **Probability of Crashing: Role of Gender**
Source: 2005 Crash and Citation Model



3. **Probability of Crashing: Role of Prior Number of DUI Records**
Source: 2005 Crash and Citation Model

Number of DUI Records	Odds of PDO Crash	Odds of Injury Crash	Odds of Fatal Crash
Zero	2.20%	0.41%	0.01%
1	2.73%	0.54%	0.01%
2	**2.59%**	**0.50%**	**0.01%**
3	2.38%	0.44%	0.01%
4	2.10%	0.38%	0.00%
5	1.86%	0.32%	0.00%
6	1.62%	0.27%	0.00%
7	1.33%	0.21%	0.00%
8	1.12%	0.17%	0.00%
9	0.91%	0.13%	0.00%
10	0.87%	0.12%	0.00%

4. **Probability of Crashing: Role of Maximum Recorded BAC Level on the Driver's Record**
Source: 2005 Crash and Citation Model

Maximum Recorded BAC	Odds of a Crash		
	PDO	Injury	Fatal
No Test	2.21%	0.41%	0.01%
0.0 to 0.10	2.63%	0.52%	0.01%
0.10 to 0.20	**2.67%**	**0.50%**	**0.01%**
0.20 to 0.30	**2.06%**	**0.36%**	**0.00%**
0.30 to 0.40	1.71%	0.28%	0.00%
0.40 to 0.50	1.46%	0.23%	0.00%
0.50 to 0.60	0.85%	0.10%	0.00%

Impaired Drivers

Exhibit 3 shows the probability of crashing, by crash severity, for drivers based on their prior DUI record.

Drivers with one, two or three prior DUI records are more likely than drivers with no DUIs to be involved in a crash. In both the 2004 and 2005 models, we see the odds of future crash involvement decrease as the number of prior DUIs on record increases to four or more DUIs. One possible explanation for this eventual decrease is that the severity of penalties incurred for each additional DUI has a deterrent effect.

Exhibit 4 examines the likelihood of crash involvement based on the maximum blood-alcohol content (BAC) on a driver's record. In the analysis of 2004 data, the odds of crash involvement increased as the maximum BAC increased. As shown in Exhibit 4, the analysis of 2005 data shows the opposite effect. When the maximum BAC recorded is in the 0.10-.20 or 0.20-0.30 range, the odds of crashing are higher than those for someone with no BAC tests on their record. However, when the maximum BAC exceeds 0.30, the odds of crashing are lower then those of someone with no BAC tests.

This difference between the 2004 and 2005 analysis may reflect changes in driver behavior. However, the uncertain quality of the 2005 data suggests that it may instead reflect differences in the reliability of the information upon which these estimates are based. It seems somewhat unlikely that behavior would change so markedly between the two years.

Occupant Protection

Exhibits 5 through 8 present the results of the Statewide Seat Belt Survey and the Child/Juvenile Restraint Survey. In 2008, Colorado's observed seat belt use rate was 81.7%. Seat belt use continues to slowly increase each year.

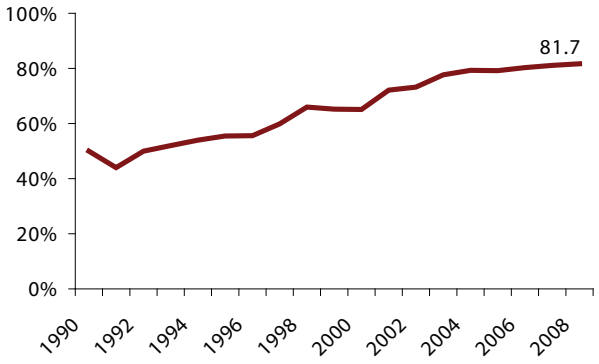
Historically, drivers of light trucks have been less likely to use seat belts than drivers of other vehicle types (e.g., passenger cars). In 2008, 70.2% of the light truck drivers were observed using seat belts. The increases in seat belt use by this group of drivers are very small year to year, and may be leveling off.

Nearly 30% of juveniles (ages 5 to 15) do not use a seat belt. The rate of juvenile seat belt use has been flat for several years.

In 2008, car seat/booster seat use by the youngest children increased to 86.9% statewide.

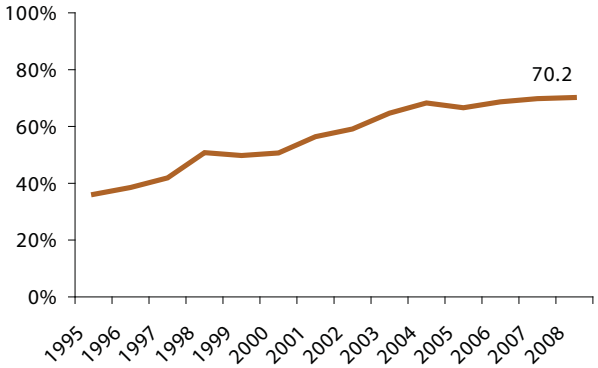
5. Statewide Overall Seat Belt Usage

Source: Colorado State University Annual Seat Belt Survey



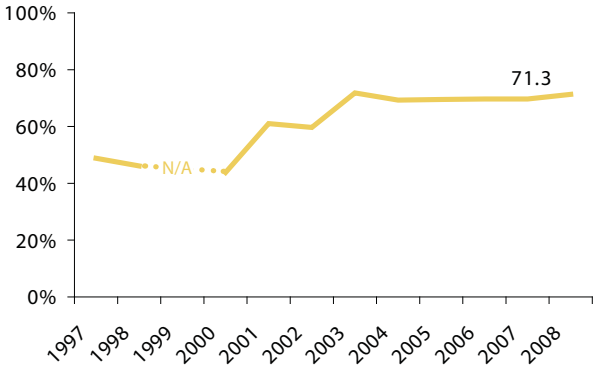
6. Use of Seat Belts by Front Seat Occupants of Light Trucks

Source: Colorado State University Annual Seat Belt Survey



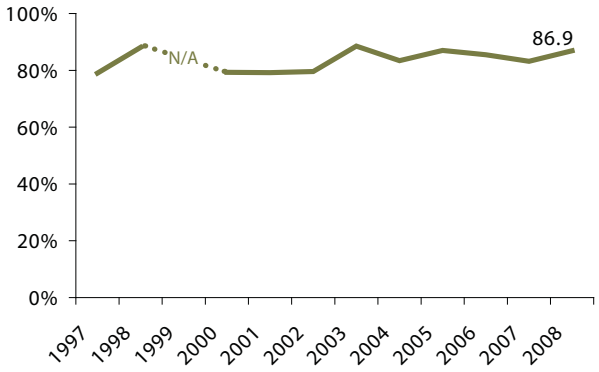
7. Use of Seat Belts by Juveniles Ages 5 to 15

Source: Colorado State University Annual Seat Belt Survey



8. Use of Car Seat/Booster Seats by Youngest Children

Source: Colorado State University Annual Seat Belt Survey



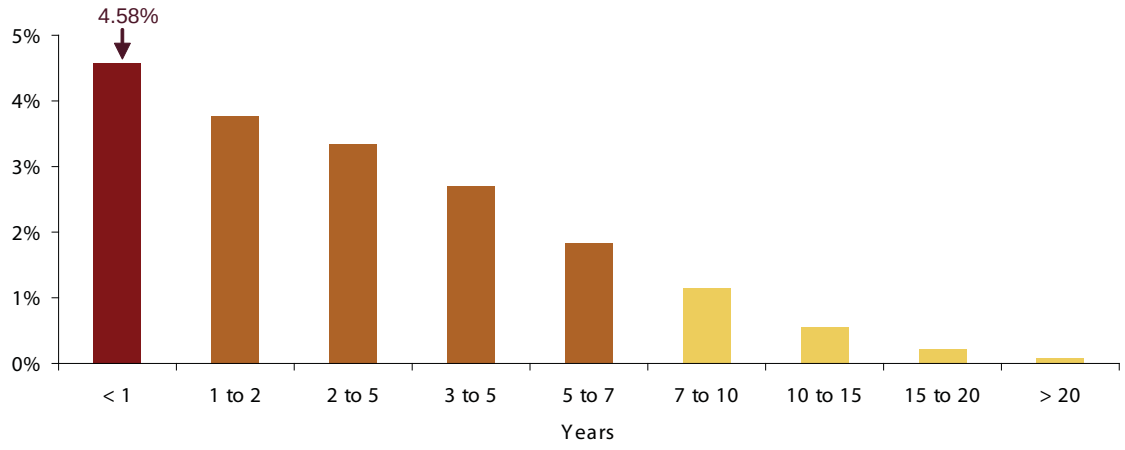
Other Factors

The analysis of high-risk drivers examined the effects of the years since a driver most recently changed their address as well as the years since a driver's most recent traffic citation.

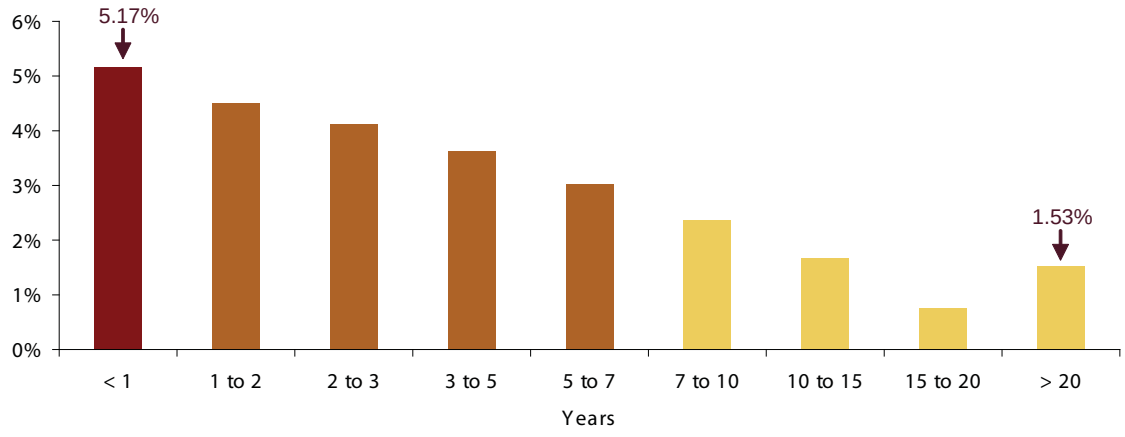
Drivers whose residences have been more stable, as measured by the duration between changes in address, are less likely to be involved in a crash. As shown in Exhibit 9, the more recently a driver has changed their address, the greater their odds of crash involvement. This same effect was seen in the analysis of the 2004 data. It is interesting to note that the total number of address changes on file was not a statistically significant effect on the odds of a crash. With respect to the address, only the timing of the last move matters.

Overall, drivers with recent traffic citations are significantly more likely than other drivers to be involved in a crash (Exhibit 10).

9. **Probability of Crashing: Years Since Last Address Change**
Source: 2005 Crash and Citation Model



10. **Probability of Crashing: Years Since Last Driving Citation**
Source: 2005 Crash and Citation Model

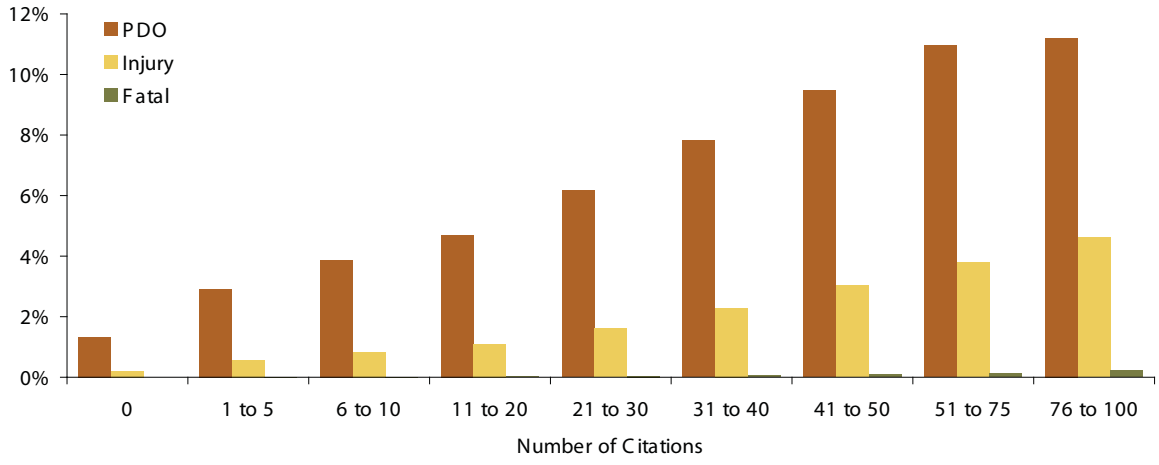


This result is also similar to the 2004 model.

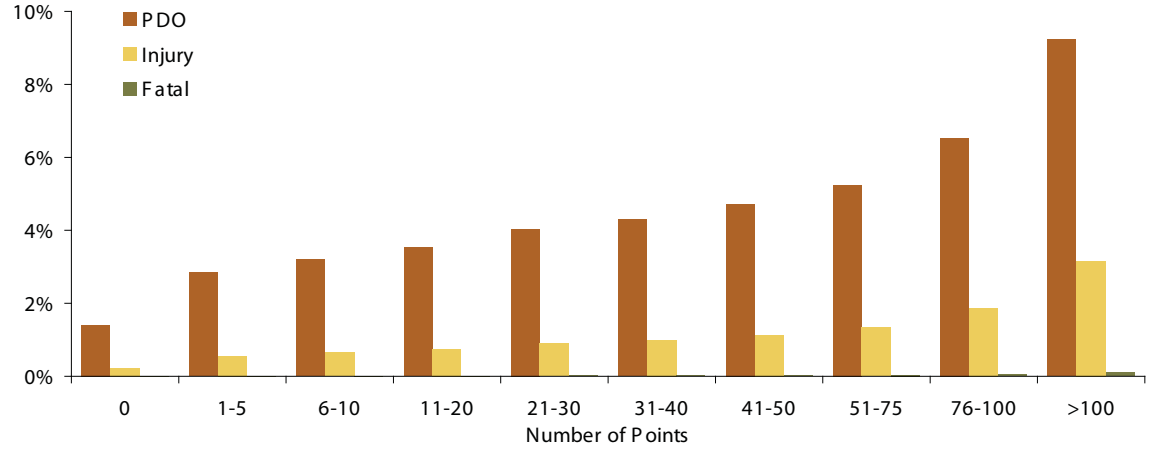
Similar to the 2004 results, in 2005, drivers with a greater number of traffic citations on their driver record have much higher odds of crash involvement than other drivers (Exhibit 11).

The probability of crash involvement increases with the number of points on a driver's record (Exhibit 12). This result is the opposite of the 2004 model.

11. Probability of Crashing: Number of Prior Citations on Driver Record
Source: 2005 Crash and Citation Model



12. Probability of Crashing: Number of Points on Driver's Record
Source: 2004 Crash and Citation Model

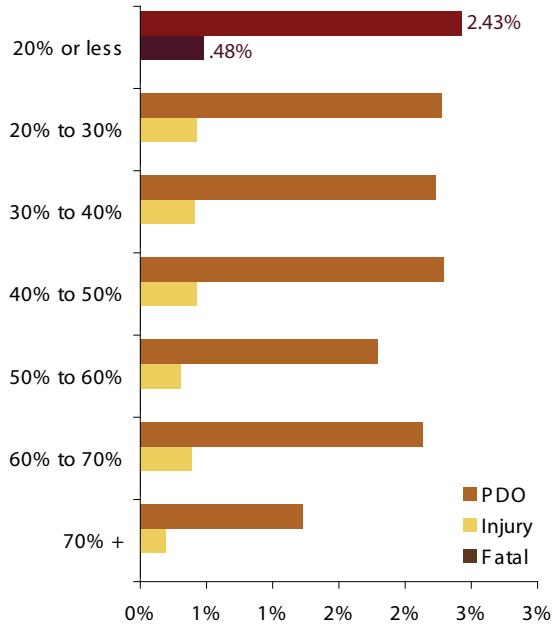


This section examines the influence of neighborhood (zip-code level) effects on crash outcomes, from the 2000 Census of Population and Housing. Driver incomes and most demographic characteristics are not reported in DOR records. Information about these characteristics among the population of the zip code of driver residence serves as approximations to these characteristics for individual drivers. This information also describes the community of driver residence, and helps identify community characteristics that are associated with differential risks of crash involvement.

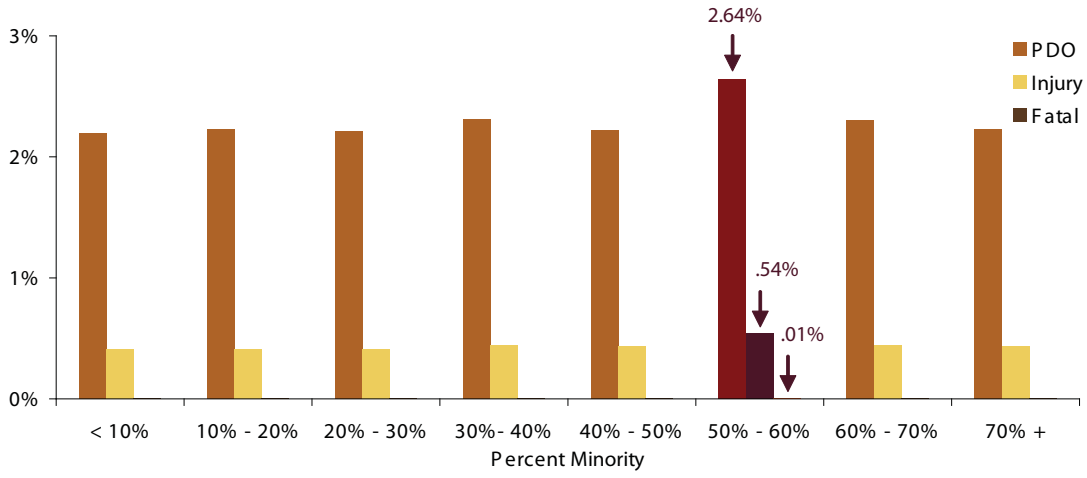
Previously Lived in a Different County

Exhibit 1 examines the impact on crash probabilities of neighborhoods with differing degrees of resident stability. Neighborhoods with the lowest proportion of residents who moved into the zip code in the past five years had the highest crash odds.

1. Probability of Crashing for Percent of Zip Code Population Living in a Different County in 1995
Source: 2005 CDOT Crash and Citation Model



2. Probability of Crashing and Neighborhood Effects: Minority Percentage of Zip Code Population
Source: 2005 CDOT Crash and Citation Model



3. Probability of Crashing and Neighborhood Effects: Zip Code Median Rent

Source: 2005 CDOT Crash and Citation Model

	Odds of Crash		
Median Rent	PDO	Injury	Fatal
Less than $300	1.88%	0.34%	0.00%
$300 - $400	2.02%	0.38%	0.01%
$400 - $500	2.11%	0.40%	0.01%
$500 - $600	2.23%	0.42%	0.01%
$600 - $700	2.17%	0.41%	0.01%
$700 - $800	2.27%	0.43%	0.01%
$800 - $900	**2.54%**	**0.50%**	**0.01%**
$900 - $1000	2.20%	0.41%	0.01%
$1,000 +	2.40%	0.44%	0.01%

4. Probability and Neighborhood Effects: Percent of Owner Occupied Housing Units

Source: 2005 CDOT Crash and Citation Model

	Odds of Crash		
Owner Occupation	PDO	Injury	Fatal
10% or less	1.23%	0.19%	0.00%
10% to 20%	1.52%	0.25%	0.00%
20% to 30%	1.84%	0.32%	0.00%
30% to 40%	1.52%	0.26%	0.00%
40% to 50%	1.79%	0.32%	0.00%
50% to 60%	1.94%	0.35%	0.00%
60% to 70%	2.22%	0.41%	0.01%
70% to 80%	2.33%	0.44%	0.01%
80% to 90%	2.56%	0.50%	0.01%
90% to 100%	**2.75%**	**0.53%**	**0.01%**

5. Probability and Neighborhood Effects: Vacancy Rates

Source: 2005 CDOT Crash and Citation Model

	Odds of Crash		
Vacancy Rate	PDO	Injury	Fatal
3% or Less	**2.42%**	**0.47%**	**0.01%**
3% to 6%	2.20%	0.41%	0.01%
6% to 10%	2.08%	0.38%	0.01%
20% to 30%	1.97%	0.35%	0.00%
30% to 40%	1.81%	0.31%	0.00%
40% to 60%	1.69%	0.29%	0.00%
60% +	1.41%	0.22%	0.00%

*Density

Minority Population Proportion

Exhibit 2 on the previous page examines the effect on crashes of the proportion of minority residents in a zip code on the probability of crashing. As the proportion of the minority population increases, the odds of crashing increase slightly. Drivers living in 50%-60% minority zip codes have a 2.64% higher probability of being involved in a property-damage only crash.

Median Rent

As the median rent in a zip code increases, so does the odds of crash involvement (Exhibit 3). Drivers living in zip codes with median rents of $800-$1,000 per month had the highest probability of crash involvement.

Owner-Occupied Housing Units

As the percentage of housing units that are owner-occupied increases, the odds of crashing increase (Exhibit 4). Drivers in zip codes with 90%-100% home ownership rates have the highest probability of crashing.

Vacancy Rates

As the vacancy rate increases, the odds of crashing decrease (Exhibit 5). When the zip code vacancy rate is 3% or less, drivers have the greatest probability of crash involvement.

Poverty Rate

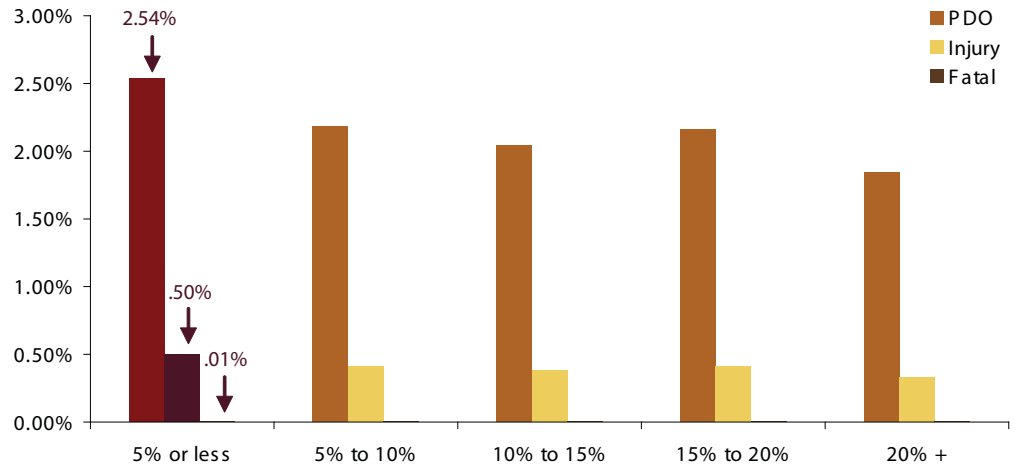
As the poverty increases, the odds of crashing decrease (Exhibit 6). Drivers living in zip codes with poverty rates of 5% or less had the highest odds of crash involvement.

Per Capita Income

Drivers living in zip codes with per capita incomes of $20,000 to $25,000 had the highest probability of crashing.

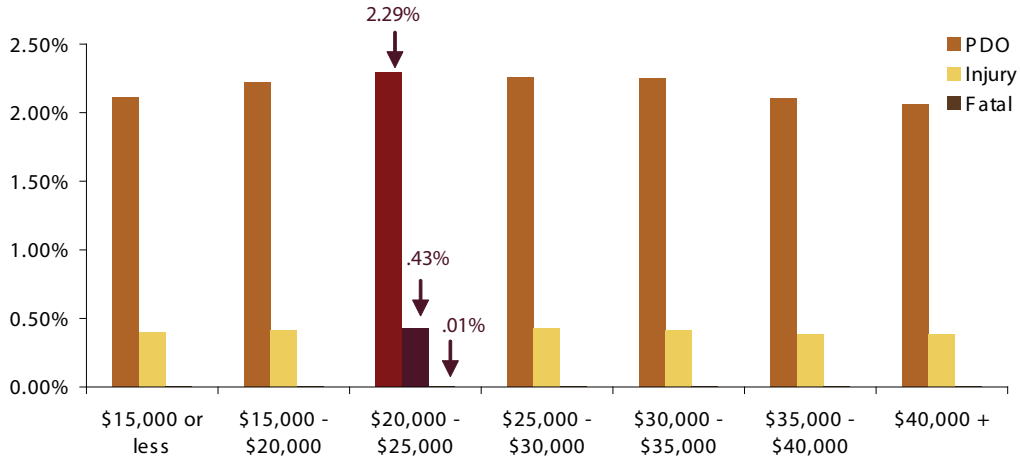
6. Probability of Crashing and Neighborhood Effects: Zip Code Poverty Rate

Source: 2005 CDOT Crash and Citation Model



7. Probability of Crashing and Neighborhood Effects: Zip Code Per Capita Income

Source: 2005 CDOT Crash and Citation Model



This section examines high risk drivers by their county of residence.

All Drivers – County of Residence

Exhibit 1 below presents the ten Colorado counties whose residents have the highest and lowest probabilities of crash involvement. Residents of Routt County have the highest predicted probability of crashing. Residents of Hinsdale County have the lowest odds. As in the 2004 analysis, Pueblo, Adams, Elbert, Broomfield and Weld counties are in the top ten most dangerous counties.

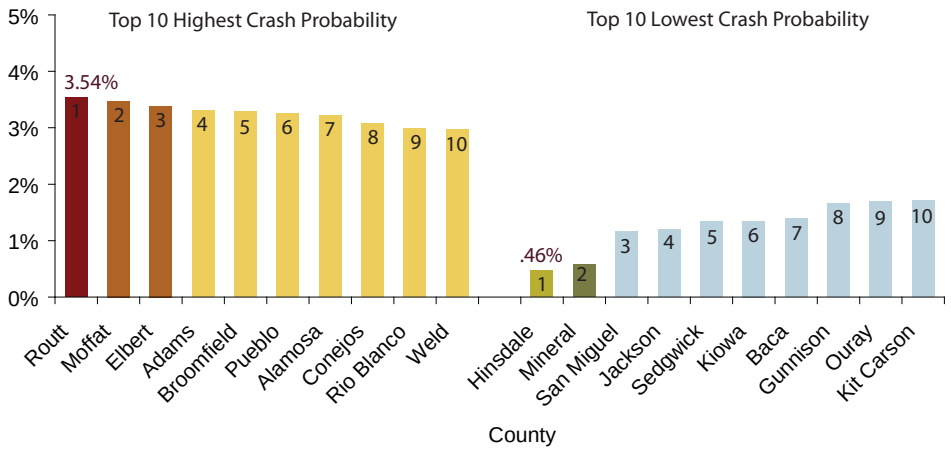
Young Drivers

Exhibit 2 examines the odds of crashing for drivers under age 21 (young drivers) by their county of residence and presents the ten counties with the highest and lowest odds of crashing. Young drivers in Moffatt, Pueblo, Adams and Alamosa counties have the highest predicted odds of crashing.

2. **Young Drivers' Odds of Crashing, by County of Residence**
Source: 2005 CDOT Crash and Citation Model

	Rank	County	Odds of Crash
Top 10 *Worst Counties*	1	**Moffat**	**5.40%**
	2	Pueblo	5.30%
	3	Adams	5.20%
	4	Alamosa	5.10%
	5	Broomfield	4.80%
	6	Conejos	4.80%
	7	Elbert	4.80%
	8	Jefferson	4.80%
	9	Morgan	4.80%
	10	Rio Blanco	4.80%
Top 10 *Best Counties*	1	**Hinsdale**	**0.80%**
	2	Mineral	1.00%
	3	San Miguel	1.80%
	4	Kiowa	2.00%
	5	Jackson	2.20%
	6	Baca	2.40%
	7	Sedgwick	2.60%
	8	Ouray	2.60%
	9	Gunnison	2.70%
	10	Summit	2.90%

1. **Counties Whose Licensed Drivers Have the *Highest* and *Lowest* Probability of Crashing**
Source: 2004 CDOT Crash and Citation Model



3. Young Drivers' Odds of Crashing, by Zip Code of Residence
Source: 2005 CDOT Crash and Citation Model

Rank	City	Zip	Odds of Crash
Top 10 *Worst Zip Codes*			
1	**Pueblo**	**81006**	**5.70%**
2	Thornton	80229	5.50%
3	Pueblo	81005	5.50%
4	Commerce City	80022	5.50%
5	Northglenn/Thornton	80233	5.40%
6	Craig	81625	5.40%
7	Denver	80219	5.20%
8	Federal Heights/ Thornton/Westminster	80221	5.20%
9	Arvada	80005	5.20%
10	Brighton	80601	5.20%
11	Pueblo	81007	5.20%
12	Pueblo	81004	5.20%
13	Lakewood	80232	5.20%
14	Arvada/Westminster	80003	5.10%
15	Northglenn/ Thornton/Westminster	80241	5.10%
16	Pueblo	81001	5.10%
17	Federal Heights/ Thornton/Westminster/ Northglenn	80260	5.10%
18	Alamosa	81101	5.10%
19	Arvada	80004	5.00%
20	Westminster	80031	5.00%
Top 10 *Best Zip Codes*			
1	**Boulder**	**80302**	**2.80%**
2	Fort Collins	80521	3.10%
3	Delta	81416	3.20%
4	Sterling	80751	3.20%
5	Durango	81301	3.30%
6	Cortez	81321	3.50%
7	Grand Junction	81501	3.50%
8	Boulder	80304	3.50%
9	Boulder	80303	3.50%
10	Fruita	81521	3.60%
11	Denver	80231	3.60%
12	Fort Collins	80525	3.60%
13	Fort Collins	80526	3.60%
14	Colorado Springs	80921	3.70%
15	Boulder	80301	3.70%
16	Louisville/Superior	80027	3.70%
17	Centennial/Cherry Hills/ Greenwood Village	80111	3.70%
18	Clifton	81520	3.80%
19	Denver	80210	3.80%
20	Denver	80220	3.80%

Exhibit 3 presents an analysis of the odds that a young driver (under age 21) would be involved in a crash, by the young driver's zip code of residence. The exhibit presents the top twenty most dangerous and least dangerous zip codes where young drivers live. It is the case that many drivers in this age cohort leave home for college and do not change their address with Motor Vehicles. Yet there is something about either living in or having one of these zip codes as a young driver's last known address that is associated with appreciably higher predicted odds of future crash involvement.

Five of the most dangerous zip codes are in Pueblo County and young drivers in zip code 81006 had the highest crash odds of all zip codes in Colorado. Numerous zip codes in Adams County (80229, 80022, 80233, 80601) and Jefferson County (80005, 80232, 80004) were also among the twenty most dangerous zip codes.

Young drivers living in Boulder, Fort Collins and Delta zip codes had the lowest probability of crashing.

The similarity in predicted crash odds by zip code between the 2005 model and the 2004 crash model suggests a persistent problem in these zip codes. There is something inherently different between Pueblo's zip code 81006, which yields predicted young driver crash odds that are almost twice as high as Boulder's zip code 80302. This analysis points to where the problem drivers live, but it does not tell us what the problem is. In developing programs to reduce the crash involvement of young drivers from these communities and neighborhoods, additional research is necessary to guide proper enforcement and education programs.

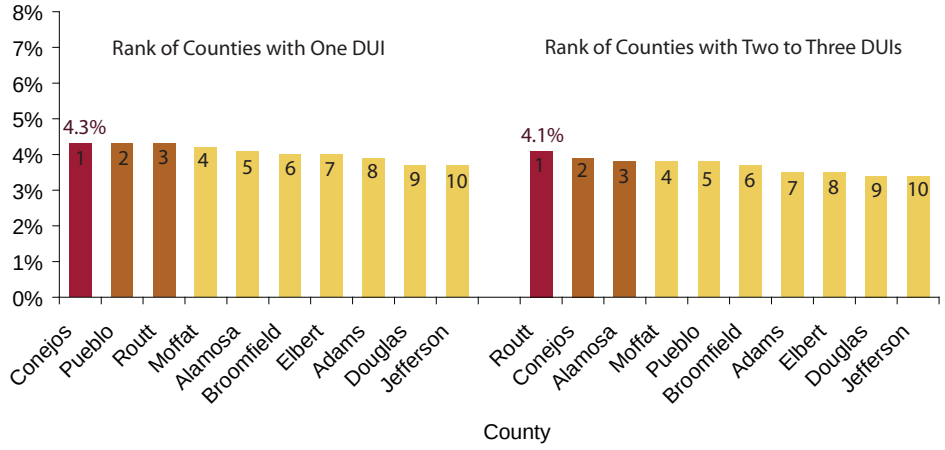
Impaired Drivers

Exhibit 4 presents the probability of crashing for drivers with a DUI record by their county of residence. Drivers with one DUI on their license and living in Conejos, Pueblo and Routt counties had the highest crash odds. Drivers with two to three DUIs and living in Routt County had the highest probability of crashing in this cohort.

The effect on crash odds of the maximum BAC level on a driver's record are presented in Exhibit 5 by the driver's county of residence. Among drivers with a maximum BAC level of 0.10 to 0.20, Routt County residences had the highest crash odds.

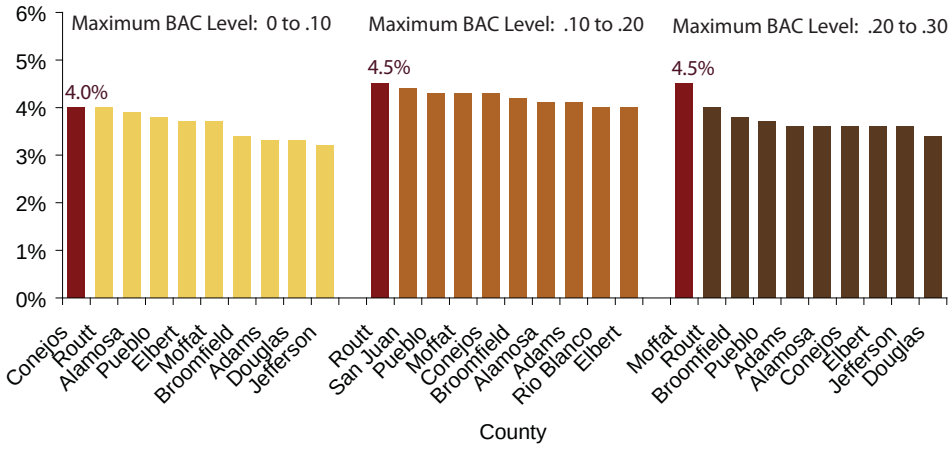
4. 10 Worst Counties: Odds of Crash by DUI Records

Source: 2005 CDOT Crash and Citation Model



5. Probability of Crashing: Maximum BAC on Driver Record, By County

Source: 2005 CDOT Crash and Citation Model



Occupant Protection

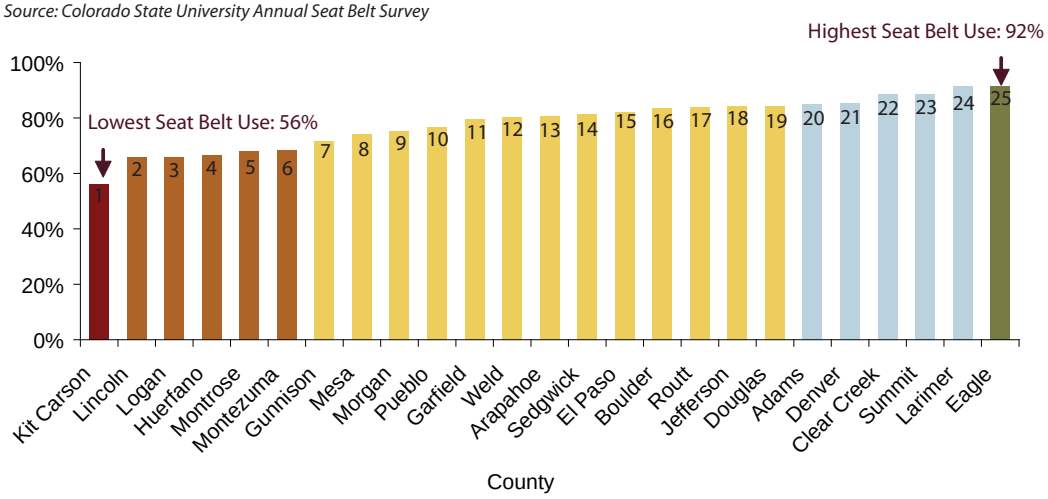
Exhibit 6 presents the county-level results from the 2008 Statewide Seat Belt Survey conducted by the Institute for Transportation Management at Colorado State University. In 2008, 25 counties from across Colorado were included in the statewide survey. This study's strict methodology relies on a complex sampling scheme to derive estimates of regional and statewide seat belt use. Among the 25 counties surveyed, Eagle County had the highest seat belt use of 92%, a rate which exceeds the 2008 statewide average (81.7%).

In addition to Eagle County, two other mountain counties, Summit and Clear Creek, were among the counties with the highest observed seat belt use.

Kit Carson County, on Colorado's Eastern Plains, had the lowest seat belt use rate, 56%. Among the counties surveyed, Lincoln, Logan, Huerfano, Montrose and Montezuma counties had observed seat belt use below 70%.

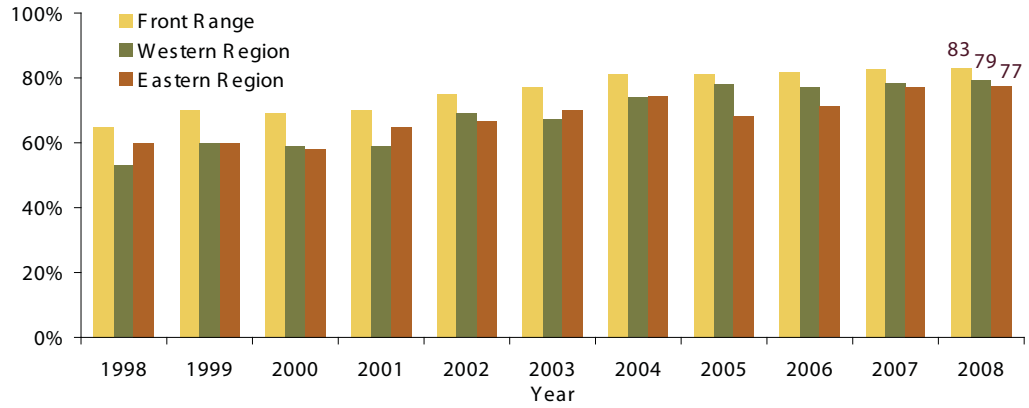
6. Observed Seat Belt Use - 25 County Ranking

Source: Colorado State University Annual Seat Belt Survey



7. Observed Seat Belt Use: Front Range, Western Region and Eastern Plains

Source: Colorado State University Annual Seat Belt Survey



Compared to the seat belt use rates observed in the 2007 survey, the relative ranking of county seat belt use rates is very similar.

Twenty counties were included in the Child Seat/Booster Seat Survey in 2008. Exhibit 8 details the results.

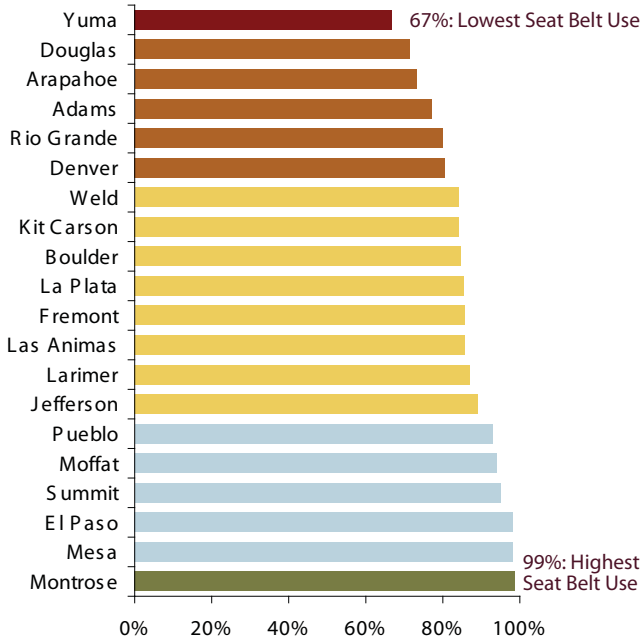
In Yuma County, fewer than 70% of children younger than age 5 were restrained. Put another way, three out of ten young children in vehicles in Yuma County were not in a car seat or a booster seat. Douglas and Arapahoe counties had the second and third lowest observed rates of child car seat/booster seat use at 72% and 73% respectively.

Car seat/booster seat use rates were highest in Montrose, Mesa and El Paso counties. As the OTS directs resources to increase proper restraint of young children, it would be instructive to investigate what is going right in Montrose, Mesa and El Paso counties and evaluate whether or not similar efforts would work in Yuma, Douglas, Arapahoe and Adams counties.

Juvenile (ages 5 to 15) seat belt use was lowest in Las Animas, Kit Carson, Denver and Arapahoe counties. La Plata, El Paso and Montrose counties had the highest juvenile seat belt use rates. As noted above, it would be beneficial for the OTS to determine what strategies occupant protection advocates and law enforcement are implementing in La Plata, El Paso and Montrose counties that may be associated with the relatively higher juvenile seat belt use in these counties.

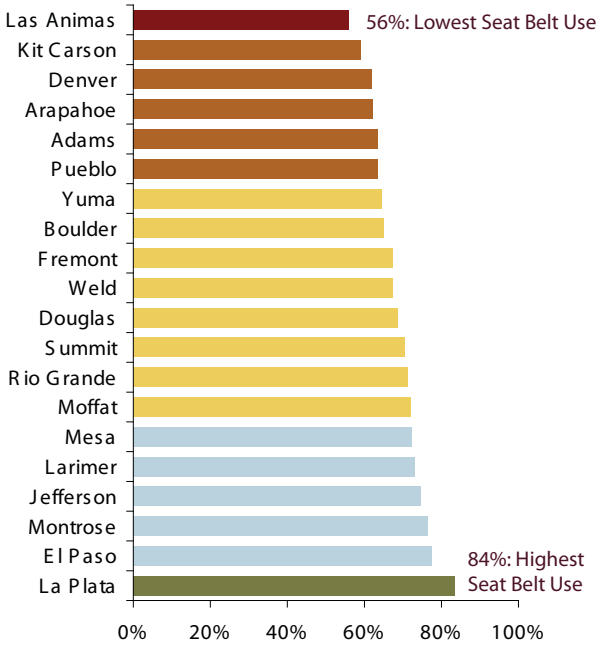
8. Observed Car seat/Booster Seat Use, Children Ages 0-4

Source: Colorado State University Annual Seat Belt Survey



9. Observed Front and Rear Seat Belt Use, Juveniles Ages 5-15

Source: Colorado State University Annual Seat Belt Survey



Each of the previous sections examined the probability that a driver may be involved in a crash based on characteristics aggregated across all individuals, across the state or in individual counties. For example, in Section II, analyses of gender focused on gender only, not the role of gender after controlling for other factors such as age or county of residence. Similarly, in Section IV, the analyses examined the odds of crashing a driver living in a particular county may be expected to acquire based on the driver's age or past DUI record. The analyses in this section examine the individual effect of particular characteristics while controlling for all other factors, therefore isolating the effect of a characteristic (e.g., getting one year older, having a maximum BAC of .20 on the record, moving to a different county, etc.) on the probability of crash involvement in the future.

Four profiles are examined: a 44 year old man, a 44 year old woman, a 22 year old man and a 22 year old woman. After establishing their "baseline" odds of crashing, the analysis explores how their probability of crash involvement would change if their profile were to change. For example, we take the same person and move that person from one county to another. The differences that we observe in the odds of crashing for that same individual in two different counties are entirely the consequence of the differences in the county specific environments, whether these are road conditions, traffic congestion or the intensity of traffic enforcement.

JACK MILLER

Height: **5' 6" tall** / Weight: **160 lbs.** / County of Residence: **Hinsdale**

Risk Profile:

Age: **22**

Address Changes: **3**

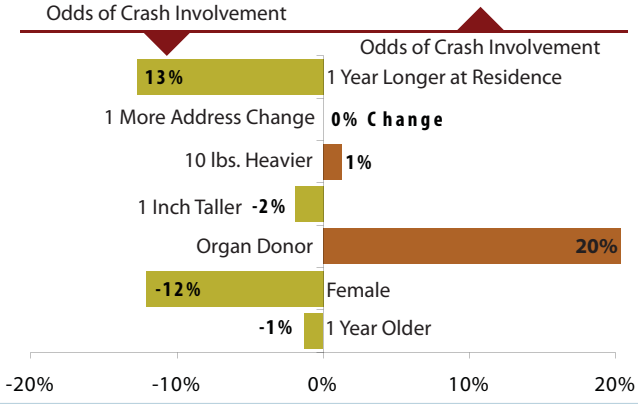
Last Address Change: **2 years**

Record: **1 citation** for **3 points**

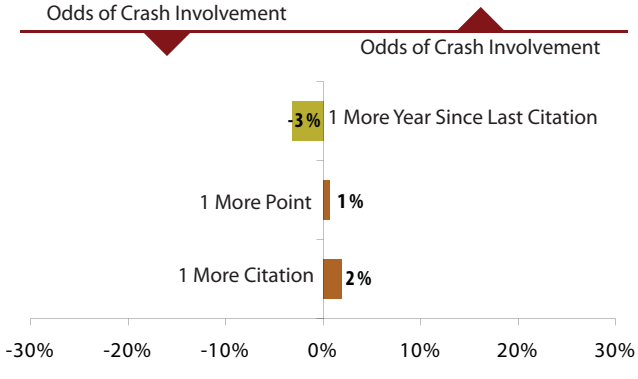
Filed on Record: **3 years ago**

If Jack was different, what would happen to his odds of crash involvement?

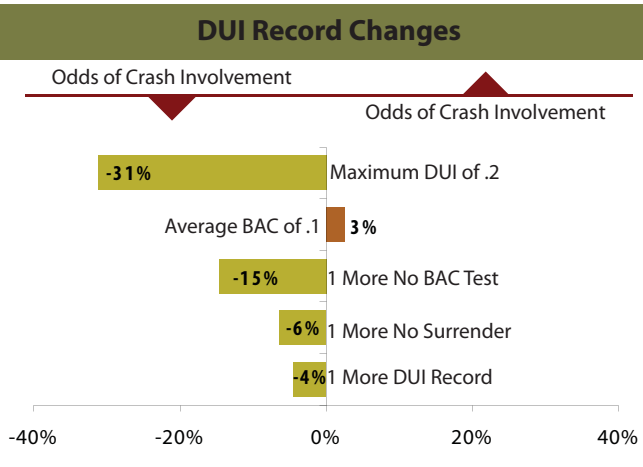
Demographic Changes



Driving Record Changes



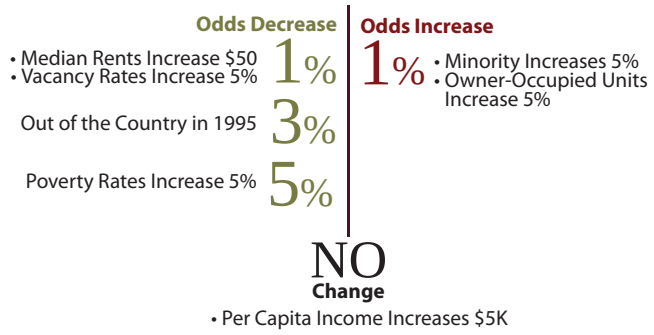
DUI Record Changes



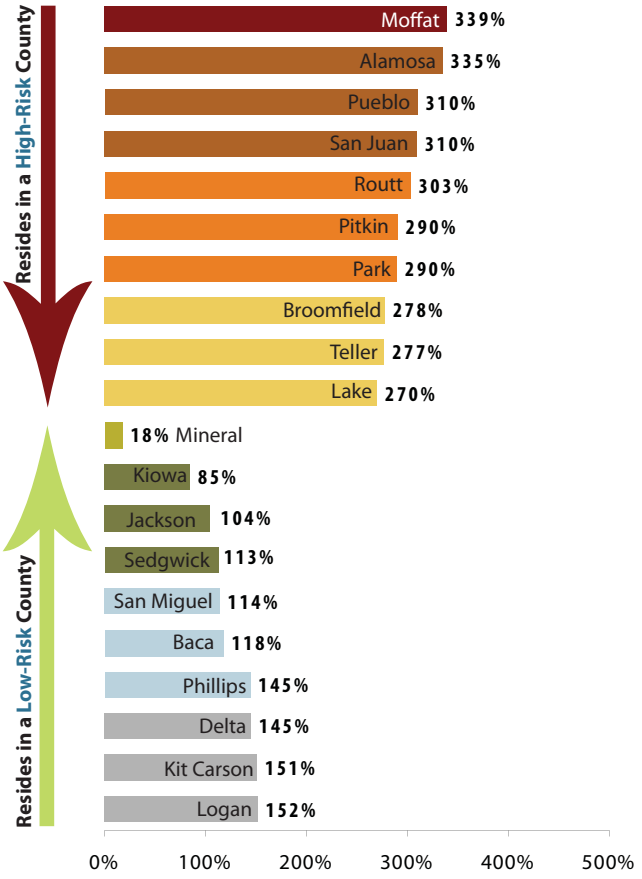
JACK MILLER

Height: **5' 6" tall** / Weight: **160 lbs.** / County of Residence: **Hinsdale**

If Jack's ***neighborhood changed***, what would happen to his odds of crash involvement?



If Jack ***lived in another county***, what would happen to his odds of crash involvement?



Risk Profile:

Age: **22**

Address Changes: **3**

Last Address Change: **2 years**

Record: **1 citation** for **3 points**

Filed on Record: **3 years ago**

WILLIAM HUNTINGTON

Height: **5' 6" tall** / Weight: **160 lbs.** / County of Residence: **Hinsdale**

Risk Profile:

Age: **44**

Address Changes: **4**

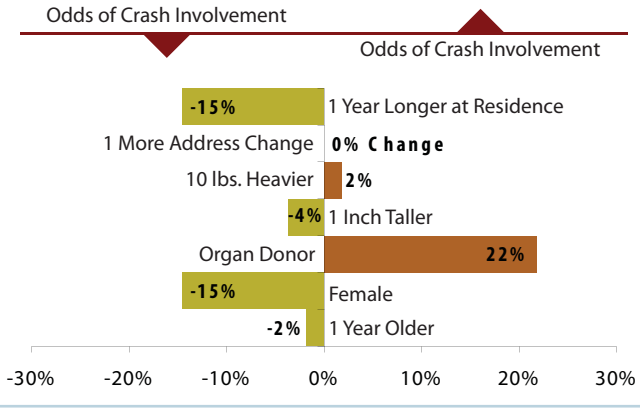
Last Address Change: **5 years**

Record: **1 citation** for **6 points**

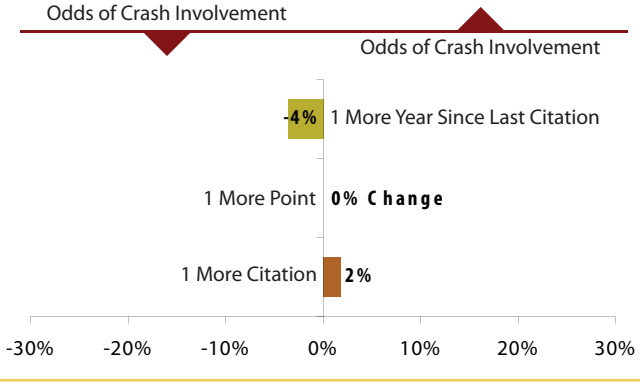
Filed on Record: **14 years ago**

If William was different, what would happen to his odds of crash involvement?

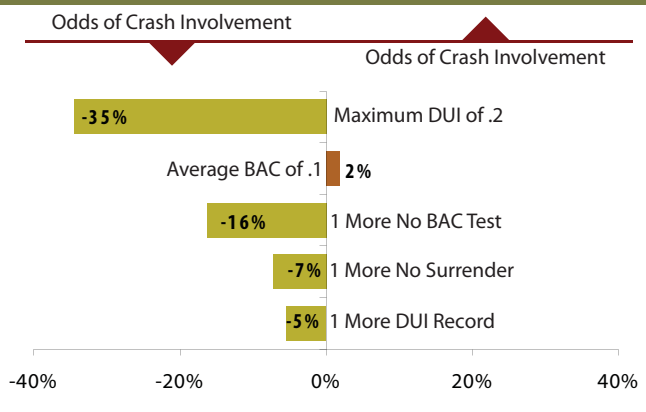
Demographic Changes



Driving Record Changes



DUI Record Changes



WILLIAM HUNTINGTON

Height: **5' 6" tall** / Weight: **160 lbs.** / County of Residence: **Hinsdale**

If William's ***neighborhood changed***, what would happen to his odds of crash involvement?

Odds Decrease

- Median Rents Increase $50
- Vacancy Rates Increase 5%

2%

Out of the Country in 1995 4%

Poverty Rates Increase 5% 7%

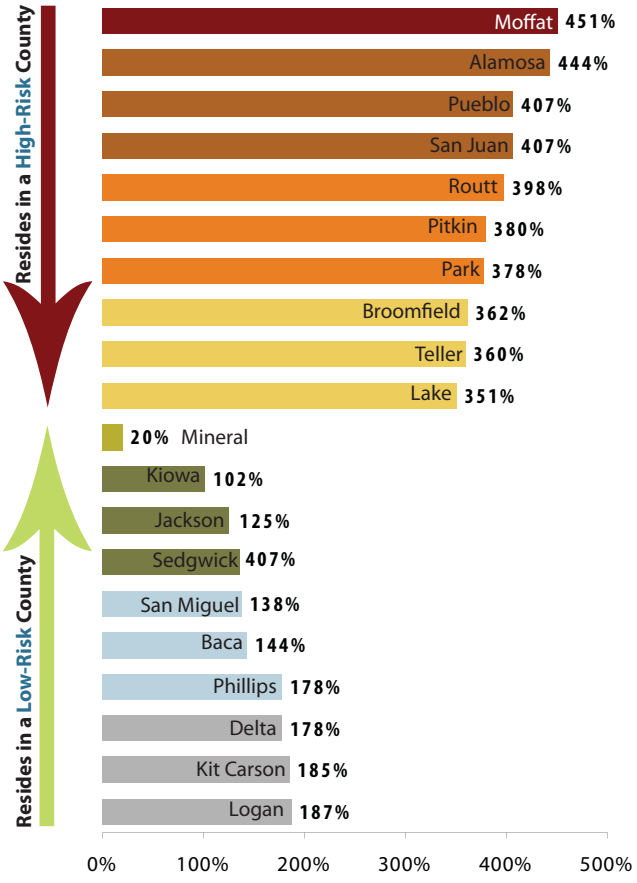
Odds Increase

2% Owner-Occupied Units Increase 5%

NO Change

- Per Capita Income Increases $5K
- Minority Increases 5%

If William ***lived in another county***, what would happen to his odds of crash involvement?



Risk Profile:

Age: **44**

Address Changes: **4**

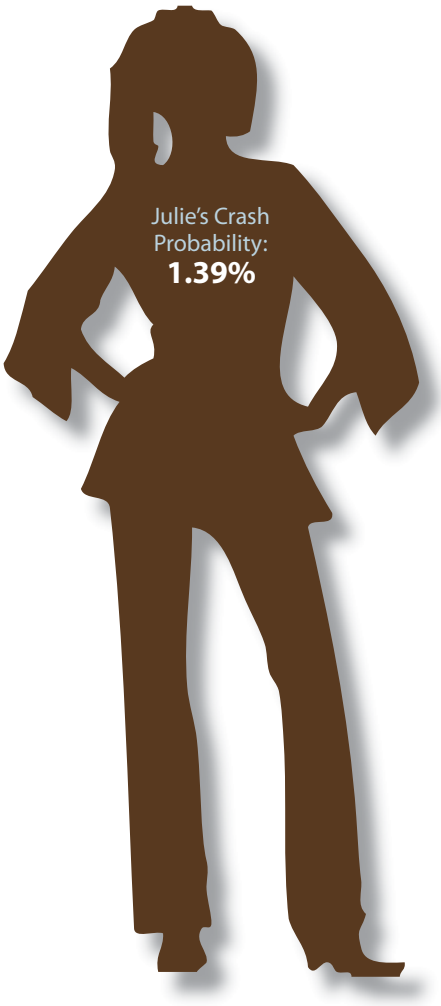
Last Address Change: **5 years**

Record: **1 citation** for **6 points**

Filed on Record: **14 years ago**

JULIE BARNES

Height: **5' 3" tall** / Weight: **130 lbs.** / County of Residence: **Hinsdale**



Risk Profile:

Age: **22**

Address Changes: **3**

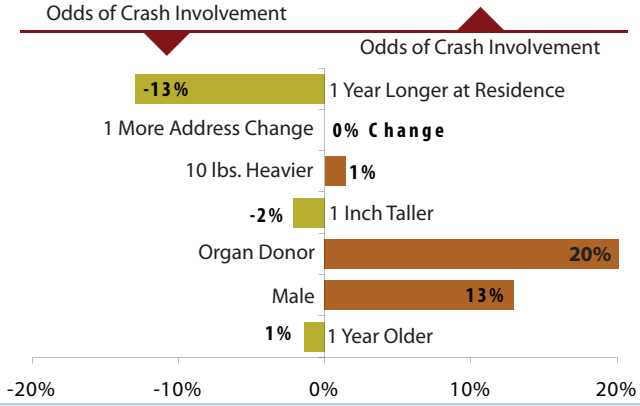
Last Address Change: **2 years**

Record: **1 citation** for **6 points**

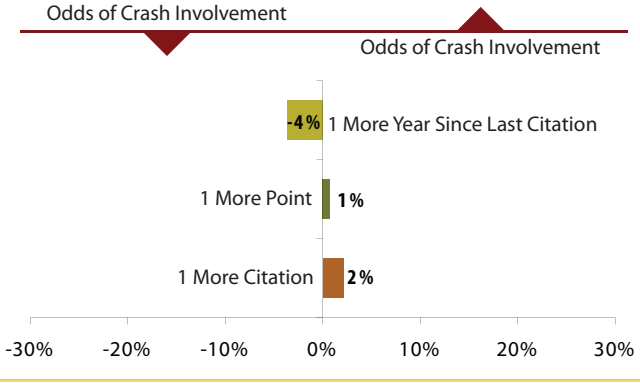
Filed on Record: **3 years ago**

If Julie was different, what would happen to her odds of crash involvement?

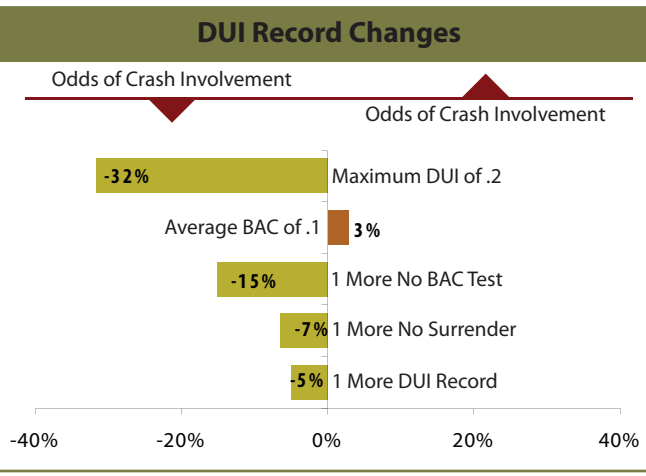
Demographic Changes



Driving Record Changes



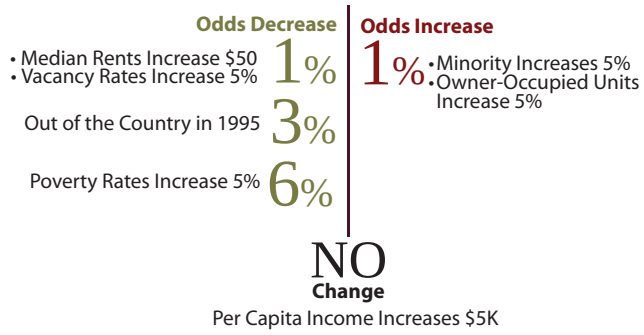
DUI Record Changes



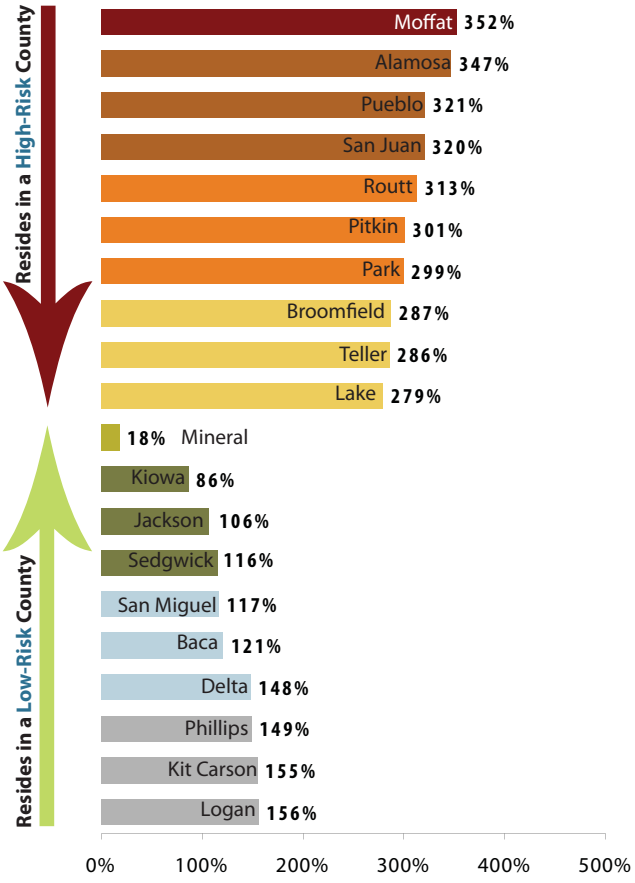
JULIE BARNES

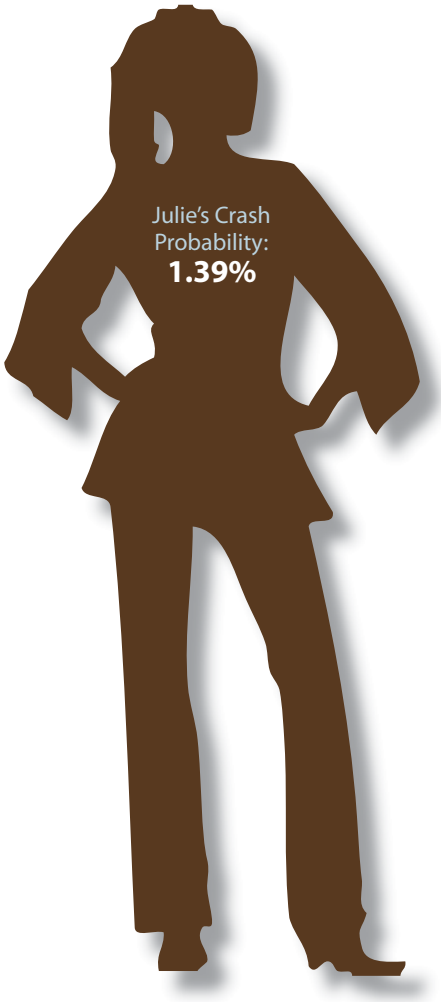
Height: **5' 3" tall** / Weight: **130 lbs.** / County of Residence: **Hinsdale**

If Julie's ***neighborhood changed***, what would happen to her odds of crash involvement?



If Julie ***lived in another county***, what would happen to her odds of crash involvement?





Risk Profile:

Age: **22**

Address Changes: **3**

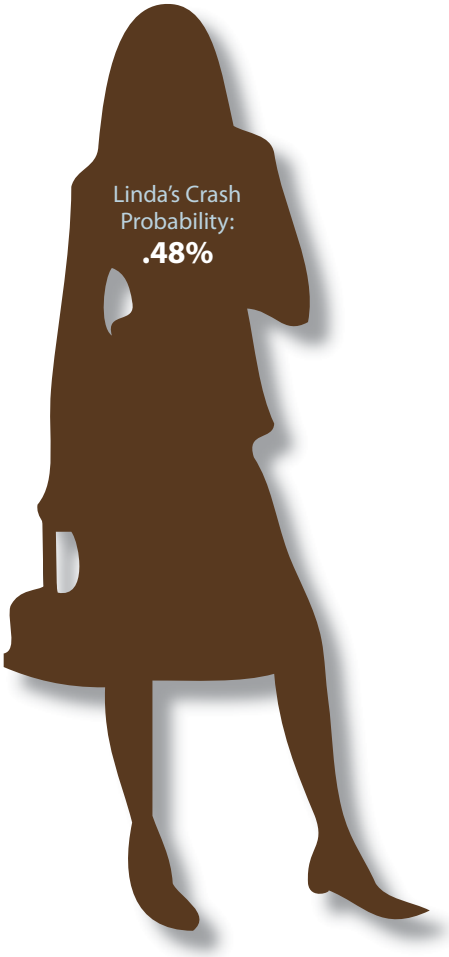
Last Address Change: **2 years**

Record: **1 citation** for **6 points**

Filed on Record: **3 years ago**

LINDA WEBER

Height: **5' 3" tall** / Weight: **130 lbs.** / County of Residence: **Hinsdale**



Risk Profile:

Age: **44**

Address Changes: **4**

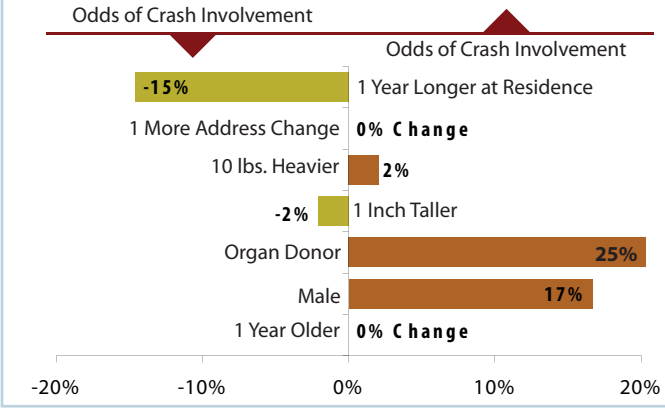
Last Address Change: **5 years**

Record: **1 citation** for **6 points**

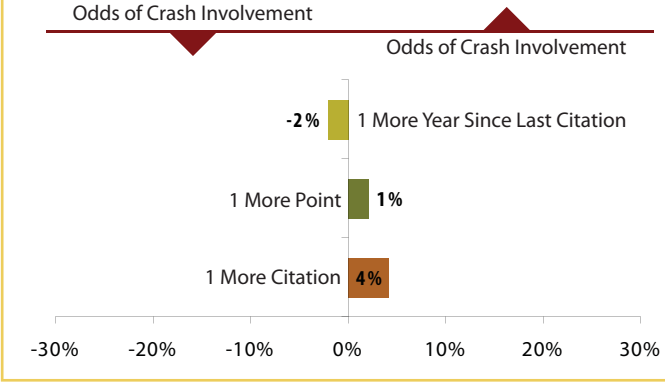
Filed on Record: **14 years ago**

If Linda was different, what would happen to her odds of crash involvement?

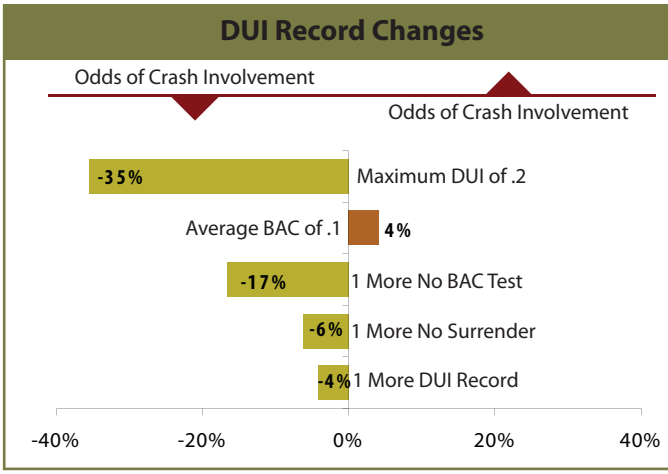
Demographic Changes



Driving Record Changes



DUI Record Changes



LINDA WEBER

Height: **5' 3" tall** / Weight: **130 lbs.** / County of Residence: **Hinsdale**

If Linda's ***neighborhood changed***, what would happen to her odds of crash involvement?

Odds Decrease

Out of the Country in 1995 **2%**

Poverty Rates Increase 5% **4%**

Odds Increase

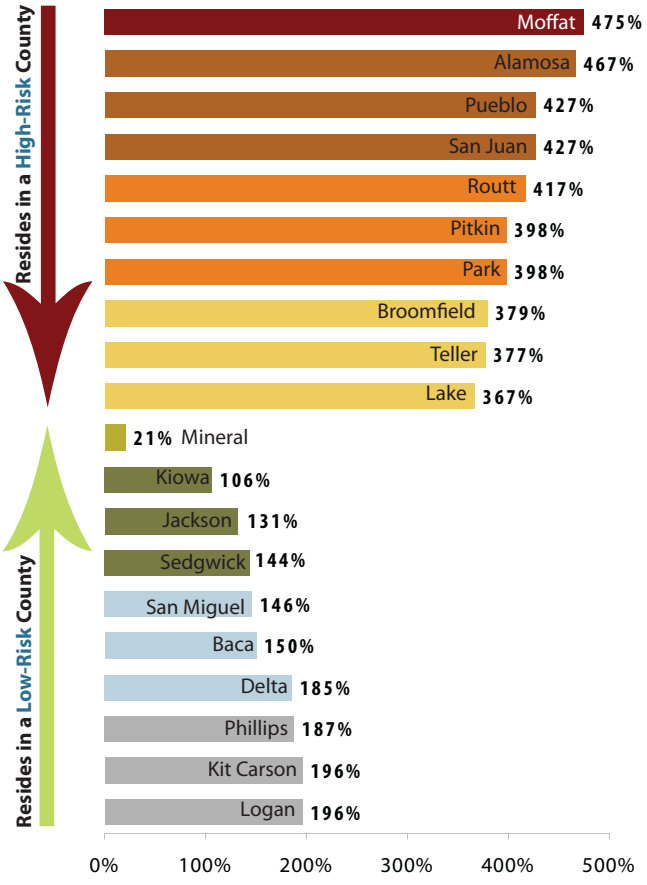
2%

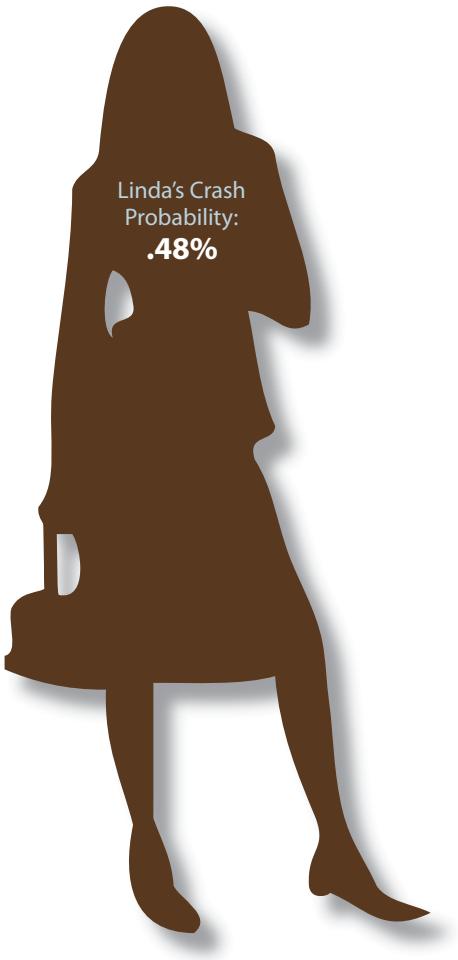
- Minority Increases 5%
- Owner-Occupied Units Increase 5%

NO Change

- Median Rents Increase $50
- Vacancy Rates Increase 5%
- Per Capita Income Increases $5K

If Linda ***lived in another county***, what would happen to her odds of crash involvement?





Risk Profile:

Age: **44**

Address Changes: **4**

Last Address Change: **5 years**

Record: **1 citation** for **6 points**

Filed on Record: **14 years ago**

Primary Counties to Focus On

Based on the results of the 2005 Crash and Citation ordered probit model and the 2008 Annual Seat Belt Survey, the study team recommends that the Office of Transportation Safety Educational Programs team consider developing, supporting or expanding traffic safety programs in the following communities:

- Adams County
- Pueblo County
- Yuma County

Adams County. As in the 2004 analysis, Adams County has persistent traffic safety problems across all areas of OTS focus but particularly drivers under age 21 (young drivers) and impaired drivers. In every examination of crashes by county, Adams County is among the ten most dangerous.

Pueblo County. Like Adams County, Pueblo County has persistent, long-term challenges. Young drivers living in Pueblo County have the highest predicted probability of crash involvement. Something is going on in Pueblo and it is not limited to drivers under the age of 21. Pueblo consistently ranks high in predicted crash odds among drivers with DUI records. Compared to other counties, Pueblo County consistently has low overall seat belt use rates, low juvenile seat belt use and low car seat/booster seat use rates. The OTS should continue to support traffic safety programs in Pueblo that engage both high-risk drivers but also the Pueblo community at large.

Yuma County. Among the counties surveyed in 2008, Yuma County had the lowest observed use of car seats/booster seats. While county-level data is not available with respect to adult seat belt use, it would not be surprising if Yuma County was found to have lower than average seat belt use rates, given the County's rural environment. With respect to Yuma County, the OTS should initially focus its efforts on car seat/booster seat programs.

Secondary Counties to Focus On

Several counties included in the in-depth analysis of high-risk counties (Appendix B) may be considered emerging problem areas (e.g., Routt County). In the 2005 analysis, Routt County was the most dangerous county in several analyses, but in the 2004 model, Routt County was never in the top ten. Other counties may be considered persistent problem areas which have consistently or often been in the top ten most dangerous, but rarely in the top three (e.g., Weld, Broomfield, Jefferson, Moffat). Depending on available resources,

these counties should be considered for enhanced enforcement and community-based traffic safety programs.

Quality of Crash Data

This analysis depends on the accuracy of the underlying data. In the case of the 2005 crash data, this accuracy is suspect. The original file contained 323,874 driver records. Of these, 116,270 had no drivers license number. Of those that remained, 10,805 had drivers license numbers which contained alphabetic characters, not actually present in Colorado drivers license numbers. Another 911 records had drivers license numbers equal to zero or greater than 1,000,000,000. This latter value is impossible in Colorado, because the drivers license number has only nine digits. Of the records with apparently valid drivers license numbers, 26,340 did not record any value for the severity of any crash. Lastly, 1,542 records contained duplicate license numbers and serial numbers, meaning that there were multiple records for the same driver in the same crash. Consequently, the crash data contained only 168,011 usable driver records. This is only 51.9% of the original file. The fact that 48.1% of the original records were demonstrably flawed suggests that the remaining records may also contain inaccuracies. Therefore, the analysis for which they form the foundation must be interpreted with appropriate caution.

Data Needed

Expanded Occupant Protection Data. Analyses of occupant protection are limited by the accuracy of available data. The Annual Seat Belt Survey conducted by Colorado State University represents the best and most reliable point-in-time data on seat belt use statewide. The study team would recommend that, if dollars are available, the survey include a supplemental component featuring observations in more than 25 counties, particularly rural counties. Any supplemental surveys should also include the child and juvenile survey components. The seat belt survey data are the best available to guide programming decisions.

Original Citation File. The ordered probit model estimated the probability of crashing using a wide array of data from the Motor Vehicle Division. Chief among these databases is the adjudicated citation file. If possible to obtain, the original citation file in addition to adjudicated citations would provide a rich dataset and would allow the study team to vastly expand its analyses.

Current Crash Data. Obviously, more current and accurate crash data is needed for the analyses to have improved relevance for program development and selection.

Recommended Analytical Focus for FY2010

The study team recommends that future Problem Identification reports continue to emphasize place-based analyses and expand those analyses whenever possible. The addition of neighborhood-level data in this report expanded the analysis to include socio-demographic factors. We suggest that efforts be made to incorporate prior crash experiences, to the extent that they are available, among predictors of current crash propensities. In addition, we recommend that greater efforts be made to understand the process by which the crash data are collected, in order to help assess their reliability.

Past Problem ID projects have attempted to understand the crash experiences of Colorado drivers by constructing multiple cross-tabulations. These cross-tabulations are convenient for presentational purposes. However, they are unavoidably reductionist. Each focuses on a small number of crash and driver characteristics. The exclusion of other characteristics that may also be important could lead to false inferences from any or all of such cross-tabulations.

Analytical Approach

The 2009 Problem ID project expands on a new way of interpreting the annual crash experiences of Colorado drivers, first introduced in the 2008 Problem ID report. This project takes a more comprehensive approach to the analysis of crash experiences. It characterizes each Colorado resident with a Colorado drivers license based on all available information about that driver as of December 31, 2004. It then imputes the probability that each driver will be involved in a property damage-only, possible injury, non-incapacitating injury, incapacitating injury or fatal crash during the year. These imputed probabilities can then be aggregated to identify demographic groups or geographic areas which contain high concentrations of at-risk drivers.

The foundation for these imputations is the data held by the Colorado Department of Revenue (DOR) in its various files regarding drivers licenses, traffic violations and sanctions. These files yield measures of age, sex, height, weight, county of residence, residential mobility, numbers and points from past citations, duration since last citation, numbers of DUI records, BAC scores, and refusals to surrender licences or to take BAC tests at DUI stops. These measures, matched with actual 2005 crash experiences in an ordered probit analysis, yield estimates of how each measured characteristic affects the probability of experiencing a crash of any given severity.

Socio-Demographic Data Added to the 2009 Problem ID Model

The analysis in this report expands on that in the 2008 Problem ID report by augmenting the individual driver characteristics analyzed in that report with socio-demographic information from the 2000 Census of Population and Housing about the zip code in which each driver lives. This information measures per capita income, median rent, the proportion of residents with incomes below the poverty line, the proportion of adult residents with at least a high school diploma, the proportion of residents who are minorities (black or Hispanic), the proportion of residents who live in urban areas, the proportion of residents who lived in a different county five years previously, the proportion of dwelling units that are owner-occupied and the proportion of dwelling units that are vacant.

Driver incomes and most demographic characteristics are not reported in DOR records. Information about these characteristics among the population of the zip code of driver residence serves as approximations to these characteristics for individual drivers. This information also describes the community of driver residence, and helps identify community characteristics that are associated with differential risks of crash involvement.

Data Quality Issues

The analysis here depends on the accuracy of the underlying data. In the case of the 2005 crash data, this accuracy is suspect. The original crash data file contained 323,874 driver records. Of these, 116,270 had no drivers license number. Of those that remained, 10,805 had drivers license

1. | **Ordered Probit Estimates of Determinants of Crash Severity**
Source: 2005 Crash and Citation Model

Severity	Coeficient	Stand. Error	z	P > |z|
age	-0.0043197	0.0000802	-53.89	0.000
sex	-0.0499016	0.0033817	-14.76	0.000
donor	0.0751953	0.0024506	30.68	0.000
newheight	-0.006714	0.0004511	-14.88	0.000
weight	0.0006283	0.0000407	15.44	0.000
count	0.0003843	0.0004276	0.90	0.369
duration	-0.0523289	0.0003961	-132.11	0.000
numcitation	0.009084	0.0007699	11.80	0.000
numpoints	0.0033785	0.0002995	11.28	0.000
citduration	-0.0131647	0.0001489	-88.42	0.000
duinumber	-0.0183171	0.0092748	-1.97	0.048
dnosurrender	-0.0259092	0.0068361	-3.79	0.000
dnotest	-0.0607456	0.0100238	-6.06	0.000
dbac	0.1118548	0.1084251	1.03	0.302
maxbac	-0.7213078	0.1344956	-5.36	0.000
county01	0.5808227	0.1581799	3.67	0.000
county02	0.6641089	0.1591749	4.17	0.000
county03	0.5466994	0.1581954	3.46	0.001
county04	0.4387575	0.1594948	2.75	0.006
county05	0.3299549	0.1643060	2.01	0.045
county06	0.528284	0.1630662	3.24	0.001
county07	0.5315139	0.1582376	3.36	0.001
county08	0.5921399	0.1583509	3.74	0.000
county09	0.442763	0.1591787	2.78	0.005
county10	0.4353816	0.1673646	2.60	0.009
county11	0.5212832	0.1603962	3.25	0.001
county12	0.5680957	0.1609176	3.53	0.000
county13	0.5175289	0.1623313	3.19	0.001
county14	0.5393824	0.1644266	3.28	0.001
county15	0.5006857	0.1631394	3.07	0.002
county16	0.3828612	0.1588223	2.41	0.016
county17	0.5554505	0.1582200	3.51	0.000
county18	0.4126914	0.1696717	2.43	0.015
county19	0.5704155	0.1583991	3.60	0.000
county20	0.4889481	0.1581345	3.09	0.002
county21	0.579462	0.1591063	3.64	0.000
county22	0.5267109	0.1580735	3.33	0.001
county23	0.5295389	0.1583964	3.34	0.001
county24	0.533576	0.1586532	3.36	0.001
county25	0.5668966	0.1587711	3.57	0.000
county26	0.4426628	0.1587863	2.79	0.005
county27	0.4357302	0.1590362	2.74	0.006
county29	0.5081717	0.1608937	3.16	0.002
county30	0.3014063	0.1747852	1.72	0.085
county31	0.5749533	0.1581610	3.64	0.000
county32	0.2571256	0.1780725	1.44	0.149
county33	0.3948765	0.1612947	2.45	0.014
county34	0.5819347	0.1598889	3.64	0.000
county35	0.4961765	0.1582380	3.14	0.002

numbers which contained alphabetic characters, not actually present in Colorado drivers license numbers. Another 911 records had drivers license numbers equal to zero or greater than 1,000,000,000. This latter value is impossible in Colorado, because the drivers license number has only nine digits. Of the records with apparently valid drivers license numbers, 26,340 did not record any value for the severity of any crash. Lastly, 1,542 records contained duplicate license numbers and serial numbers, meaning that there were multiple records for the same driver in the same crash.

Consequently, the crash data contained only 168,011 usable driver records. This is only 51.9% of the original file. The fact that 48.1% of the original records were demonstrably flawed suggests that the remaining records may also contain inaccuracies. Therefore, the analysis for which they form the foundation must be interpreted with appropriate caution.

Results

The table shown at left presents the ordered probit estimates based on the apparently valid crash data. The coefficients estimate the effect of each characteristic on the propensity of a driver to become involved in a crash. Almost all of these effects are statistically significant by conventional standards. However, the sample size is huge, 5,348,085 drivers. Consequently, it is appropriate to set more rigorous standards for the purpose of interpretation.

Many of these effects are very similar to those from the analysis of 2004 crashes. For example, in both 2004 and 2005, older drivers and women were significantly less likely to become involved in crashes than were younger drivers and men. Drivers whose residences had been more stable, as measured by the length of time since the last change to these records,

were significantly less likely to become involved in crashes than were drivers who had changed residences more often and more recently. Taller drivers and drivers who weigh less were also significantly less likely to become involved in a crash.

Similarly, some elements of driving history have similar effects in the two years. In both, drivers with more citations were significantly more likely to become involved in crashes. Drivers whose citations were more recent were also significantly more likely to become involved in crashes.

Those with more DUI records were significantly less likely to subsequently become involved in a crash in 2004 and 2005. In both years, drivers who did not surrender their licenses at a DUI stop were significantly less likely to subsequently become involved in a crash than were drivers whose DUI profile was otherwise similar, but who surrender their licenses.

However, five driver characteristics had estimated effects on 2005 crashes that were opposite their estimated effects on 2004 crashes. In 2005, crash involvement increased with the numbers of accumulated points and the average BAC recorded at all DUI stops. In 2004, these characteristics reduced crash involvement. Conversely, 2005 crash involvement declined with the number of times a driver refused a sobriety test and with the maximum BAC recorded at any sobriety test. In 2004, these characteristics increased the probability of crash involvement.

Lastly, the number of residential records had no effect on the probability of crash involvement in 2005. In 2004, more records indicated a significantly lower probability of involvement.

These differences between the 2004 and 2005 analysis may reflect changes in driver behavior. However, the uncertain quality of the 2005 data suggests that they may instead reflect differences in the reliability of the information upon which these estimates are based. It seems somewhat unlikely that behavior would change so markedly between the two years.

Among the zip code characteristics, two, the proportion of adults with high school diplomas and the proportion living in urban areas, are not significantly associated with crash probabilities. The estimated effects of the remaining seven characteristics indicate that crash probabilities increase with two, the proportion of zip code residents who are minorities and the proportion of zip code dwelling units that are owner-occupied.

Crash probabilities decline with increases in the remaining five characteristics. Zip codes in which a greater proportion of the population is beneath the poverty line or lived in a different county in 1995 are associated with lower crash risks. Zip codes with higher median rents and per capita incomes are similarly associated with lower crash frequencies. Lastly, the same is true of zip codes in which greater proportions of dwelling units are vacant.

The behavioral interpretations of these effects are uncertain. For example, they suggest that both richer zip codes – those with higher per capita incomes – and poorer zip codes – those with higher poverty rates – are likely to have residents who are at lower risk for crash involvement. The same appears to be true about zip codes with more robust housing markets – higher median values – and zip codes with less robust housing markets – higher vacancy rates.

Subtle behavioral mechanisms may be capable of resolving these apparent contradictions. However, these results may also be distorted by inaccuracies in other data employed in these analyses. The reliability of these results cannot be confidently assessed in the presence of doubts regarding data reliability.

The probabilities of becoming involved in crashes of varying severity, as presented in the 2009 Problem ID document, combine the effects represented by the coefficients in this table with the characteristics of each driver and of the zip code in which each driver resides. The simulations in this document take a reference individual with a specified set of characteristics, and vary those characteristics systematically to examine the consequent changes in the probabilities of crash involvement.

The ordered probit analysis makes possible a range of analyses that are more comprehensive and more precise than does the previous practice of cross-tabulation. At the same time, the results here could be improved with additional data. In the future, the predictions could be refined further with the incorporation of past crash experience. It would also be improved if the data could identify Colorado license holders who are still resident in the State. The sample of drivers analyzed here must contain many who have left the State or who are deceased, because present DOR records do not identify them.

APPENDIX B.
High-Risk County Profiles

In the 2008 Problem ID, the study team prepared in-depth summaries of five counties. In an expansion of this approach, this section includes in-depth summaries of nine of the state's most problematic counties with respect to traffic safety: Adams County, Alamosa County, Broomfield County, Elbert County, Jefferson County, Moffat County, Pueblo County, Routt County and Weld County. It also includes an in-depth summary of Montrose County to add to the geographic diversity of the counties examined in depth.

Each summary includes a snapshot of the county's socio-demographic characteristics from the Census Bureau's County QuickFacts reports. In addition to the data characterizing each county, the county profiles also summarize each county's traffic safety challenges, including young drivers, impaired drivers and occupant protection.

ADAMS COUNTY

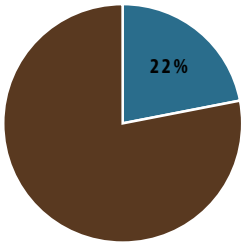
A Focus on High-Risk County Population Demographics

11th highest

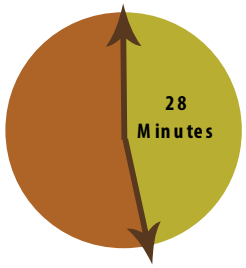
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$50,229
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work

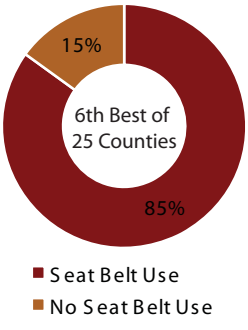


48
Fatal Crashes
Out of 554 Statewide

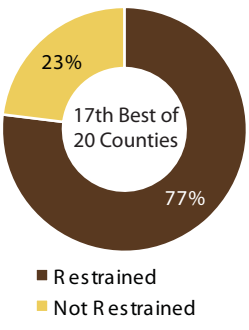
54
Fatalities
Out of 606 Statewide

OCCUPANT PROTECTION IN ADAMS COUNTY

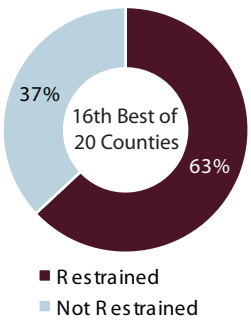
Overall Seat Belt Use



Car Seat/Booster Seat Use



Juvenile Seat Belt Use



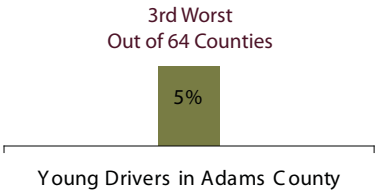
ADAMS COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **48 fatal crashes** out of 554 statewide; and **54 fatalities** out of 606 statewide, Adams County has a **3.31% probability of crash involvement** and is **ranked 4th** out of 64 counties. Adams County also ranks 11th out of 64 counties in county-only effects.

YOUNG DRIVERS IN ADAMS COUNTY

Odds of Crash Involvement: Drivers Under Age 21 Residing in Adams County

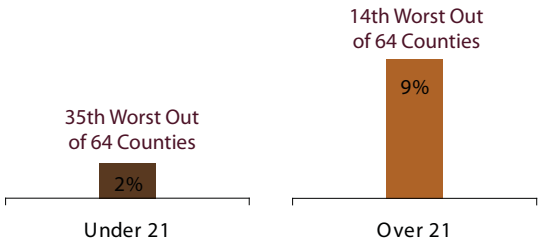


8 of the 20 Worst Zip Codes Where Young Drivers Had the Highest Odds of Crash Involvement

Zip	City
80229	Thorton
80022	Commerce City
80233	Northglenn/Thornton
80221	Federal Heights/Thornton/Westminster
80601	Brighton
80241	Northglenn/Thorton/Westminster
80260	Federal Heights/Thornton/Westminster/Northglenn
80031	Westminster

IMPAIRED DRIVERS IN ADAMS COUNTY

Percentage of Drivers with 1+ DUIs on Record



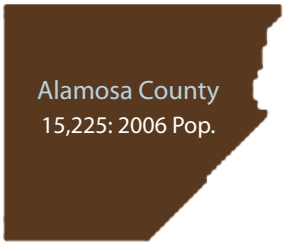
Odds of Crash: Drivers with One DUI on Record

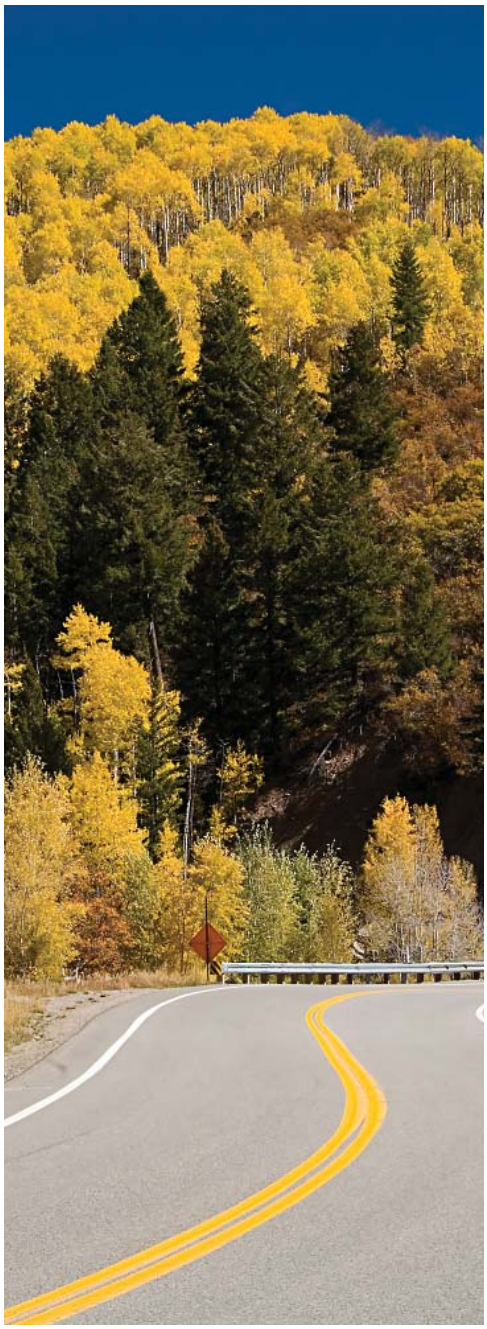
Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

ALAMOSA COUNTY

A Focus on High-Risk County Population Demographics



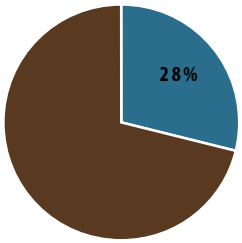


2nd highest

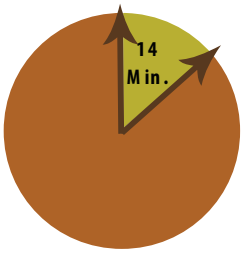
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$31,587
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



4
Fatal Crashes
Out of 554 Statewide

5
Fatalities
Out of 606 Statewide

OCCUPANT PROTECTION IN ALAMOSA COUNTY

**Data is Currently Unavailable*

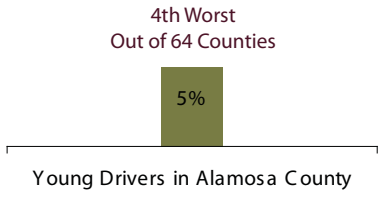
ALAMOSA COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **4 fatal crashes** out of 554 statewide; and **5 fatalities** out of 606 statewide, Alamosa County has a **3.21% probability of crash involvement** and is **ranked 7th** out of 64 counties. Alamosa County also ranks 2nd highest out of 64 counties in county-only effects.

YOUNG DRIVERS IN ALAMOSA COUNTY

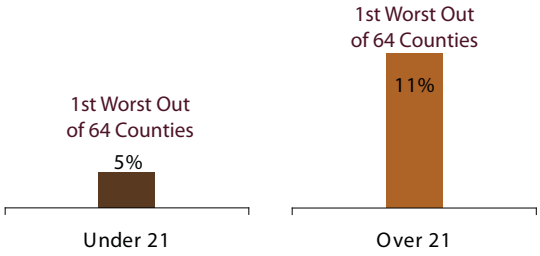
Odds of Crash Involvement: Drivers Under Age 21 Residing in Alamosa County



***Zip Code 81101 Ranks 18th Most Dangerous for Drivers Under 21 Out of 123 Large Zip Codes**

IMPAIRED DRIVERS IN ALAMOSA COUNTY

Percentage of Drivers with 1+ DUIs on Record



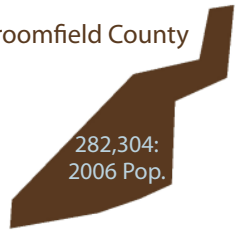
Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

BROOMFIELD COUNTY

A Focus on High-Risk County Population Demographics

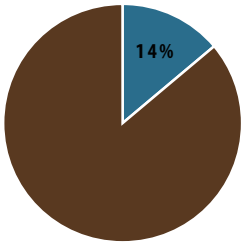


8th highest

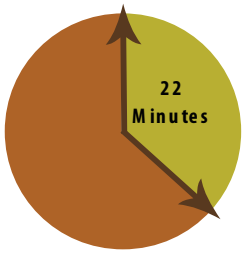
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$57,908
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



2
Fatal Crashes
Out of 554 Statewide

2
Fatalities
Out of 606 Statewide

OCCUPANT PROTECTION IN BROOMFIELD COUNTY

**Data is Currently Unavailable*

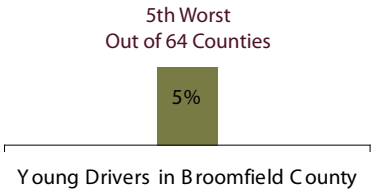
BROOMFIELD COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **2 fatal crashes** out of 554 statewide; and **2 fatalities** out of 606 statewide, Broomfield County has a **3.28% probability of crash involvement** and is **ranked 5th** out of 64 counties. Broomfield County also ranks 8th highest out of 64 counties in county-only effects.

YOUNG DRIVERS IN BROOMFIELD COUNTY

Odds of Crash Involvement: Drivers Under Age 21 Residing in Broomfield County

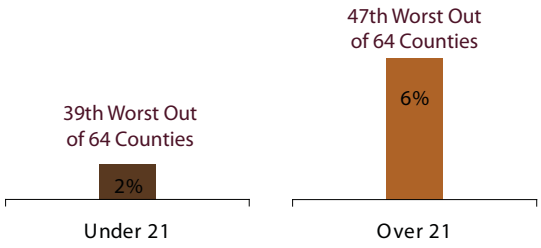


2 Boomfield Zip Codes are Ranked the 22nd and 27th Most Dangerous for Drivers Under 21 Out of 123 Large Zip Codes

Zip	County	City	Rank
80020	Broomfield	Broomfield	22nd
80021	Broomfield	Broomfield	27th

IMPAIRED DRIVERS IN BROOMFIELD COUNTY

Percentage of Drivers with 1+ DUIs on Record



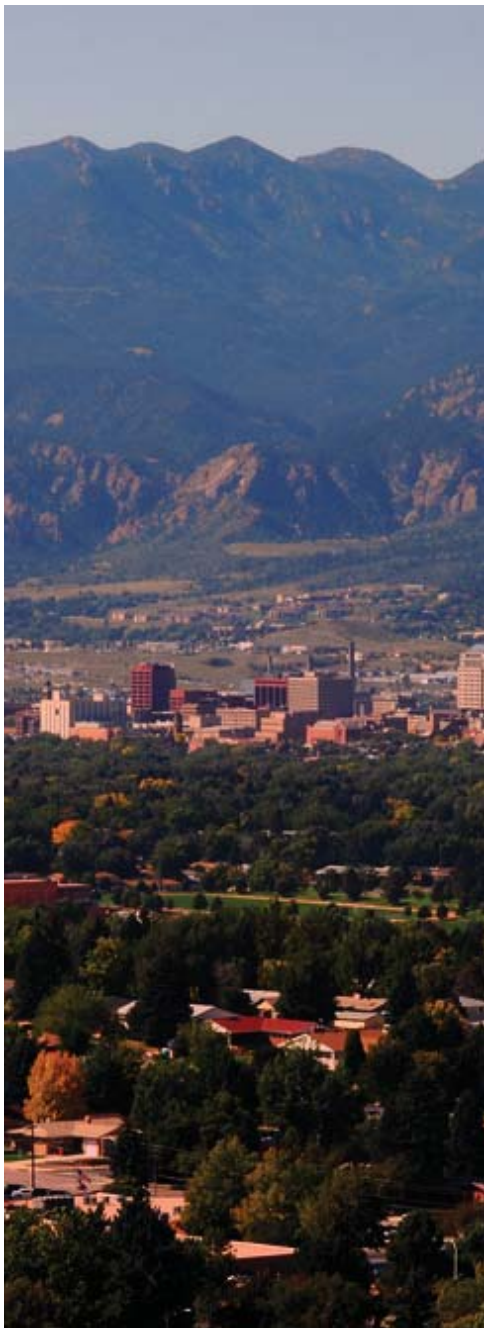
Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

ELBERT COUNTY

A Focus on High-Risk County Population Demographics

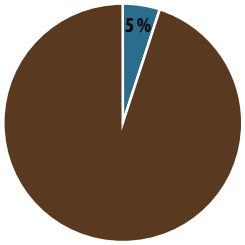


12th highest

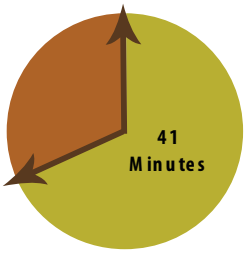
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$69,631
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



9
Fatal Crashes
Out of 554 Statewide

10
Fatalities
Out of 606 Statewide

OCCUPANT PROTECTION IN ELBERT COUNTY

**Data is Currently Unavailable*

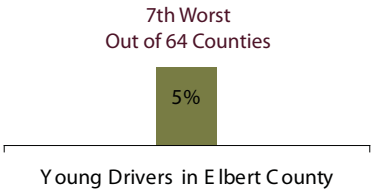
ELBERT COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **9 fatal crashes** out of 554 statewide; and **10 fatalities** out of 606 statewide, Elbert County has a **3.39% probability of crash involvement** and is **ranked 3rd** out of 64 counties. Elbert County also ranks 12th highest out of 64 counties in county-only effects.

YOUNG DRIVERS IN ELBERT COUNTY

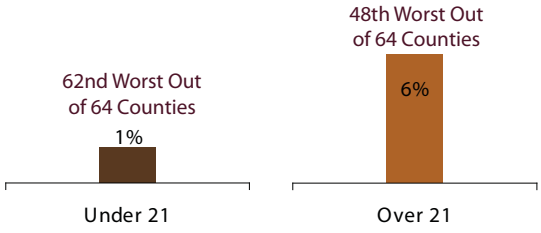
Odds of Crash Involvement: Drivers Under Age 21 Residing in Elbert County



***80106 Ranks 23rd Most Dangerous Out of 354 Zip Codes with Fewer than 1,000 Under 21 Drivers**

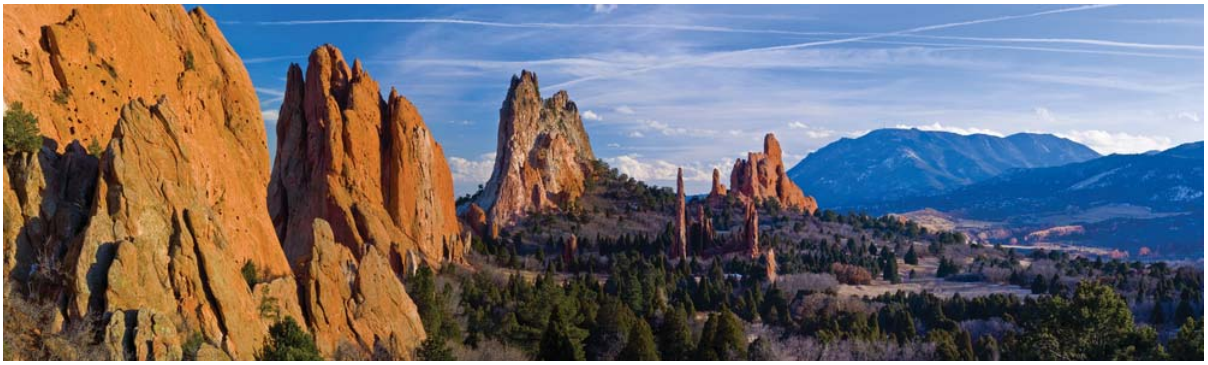
IMPAIRED DRIVERS IN ELBERT COUNTY

Percentage of Drivers with 1+ DUIs on Record



Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20



*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

JEFFERSON COUNTY

A Focus on High-Risk County Population Demographics

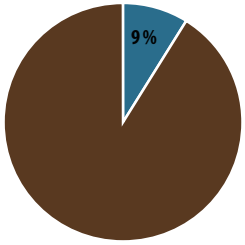
526,994:
2006 Population

13th highest

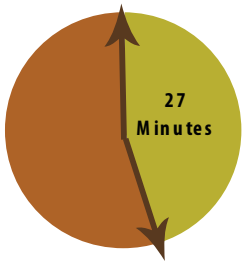
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$59,060
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work

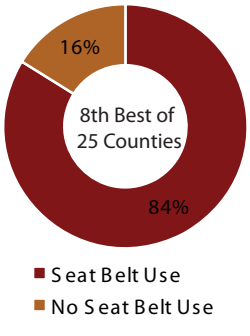


46
Fatal Crashes
Out of 554 Statewide

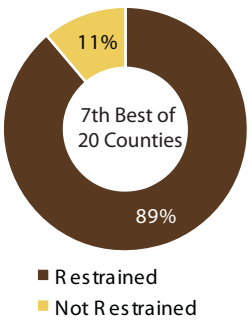
47
Fatalities
Out of 606 Statewide

OCCUPANT PROTECTION IN ADAMS COUNTY

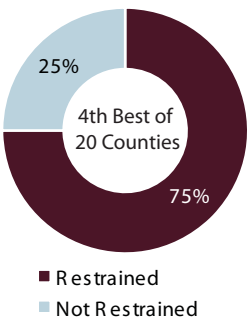
Overall Seat Belt Use



Car Seat/Booster Seat Use



Juvenile Seat Belt Use



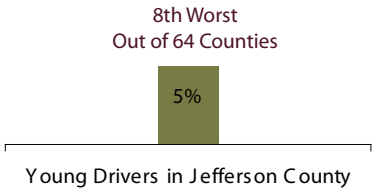
JEFFERSON COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **46 fatal crashes** out of 554 statewide; and **47 fatalities** out of 606 statewide, Jefferson County has a **2.94% probability of crash involvement** and is **ranked 14th** out of 64 counties. Jefferson County also ranks 13th out of 64 counties in county-only effects.

YOUNG DRIVERS IN JEFFERSON COUNTY

Odds of Crash Involvement: Drivers Under Age 21 Residing in Jefferson County

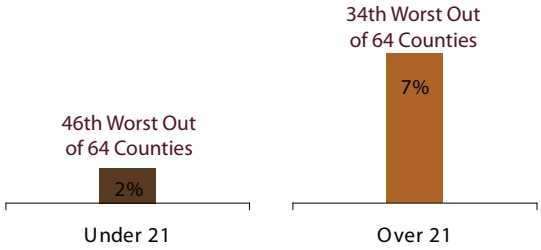


4 of the 20 Worst Zip Codes Where Young Drivers Had the Highest Odds of Crash Involvement

Zip	County	City
80005	Jefferson	Arvada
80232	Jefferson	Lakewood
80003	Jefferson	Arvada/Westminster
80004	Jefferson	Arvada

IMPAIRED DRIVERS IN JEFFERSON COUNTY

Percentage of Drivers with 1+ DUIs on Record



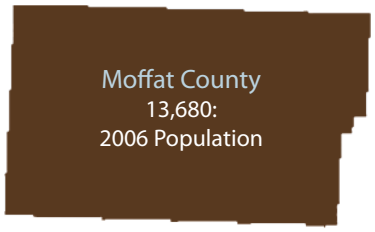
Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

MOFFAT COUNTY

A Focus on High-Risk County Population Demographics

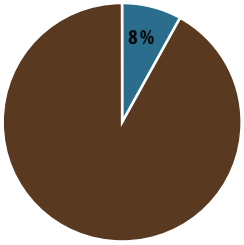


1st highest

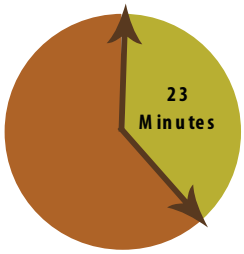
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$46,102
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



1
Fatal Crash
Out of 554 Statewide

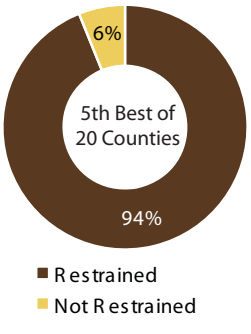
1
Fatality
Out of 606 Statewide

OCCUPANT PROTECTION IN MOFFAT COUNTY

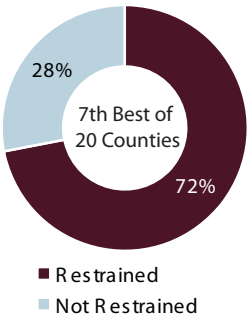
Overall Seat Belt Use

**Data is Currently Unavailable*

Car Seat/Booster Seat Use



Juvenile Seat Belt Use



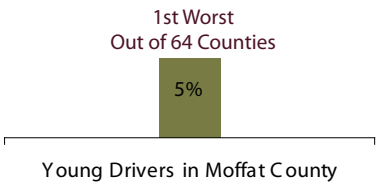
MOFFAT COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **1 fatal crash** out of 554 statewide; and **1 fatality** out of 606 statewide, Moffat County has a **3.47% probability of crash involvement** and is ranked 2nd out of 64 counties. Moffat County also ranks 1st out of 64 counties in county-only effects.

YOUNG DRIVERS IN MOFFAT COUNTY

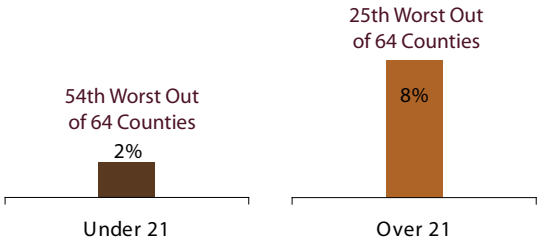
Odds of Crash Involvement: Drivers Under Age 21 Residing in Moffat County



***Zip Code 81625, Located in Craig, is the 6th Most Dangerous Zip Code for Under 21 Drivers Out of Colorado's 123 Most Populous Zip Codes**

IMPAIRED DRIVERS IN MOFFAT COUNTY

Percentage of Drivers with 1+ DUIs on Record



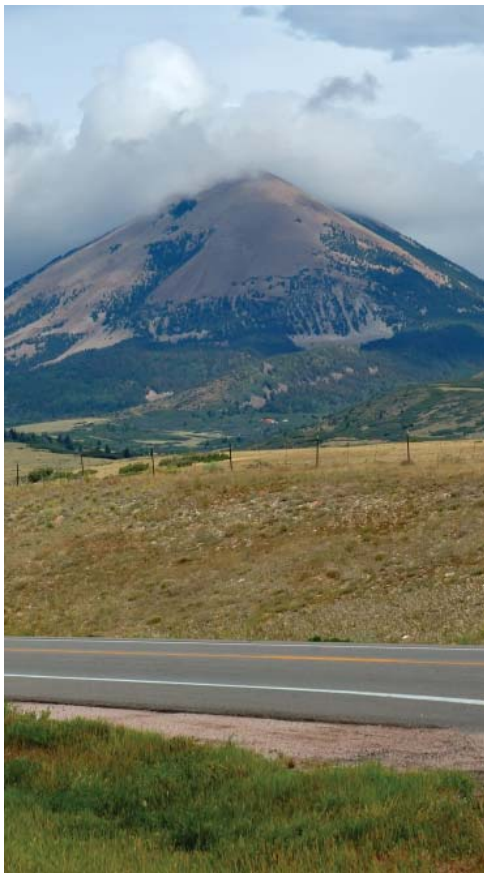
Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

MONTROSE COUNTY

A Focus on High-Risk County Population Demographics



32nd highest

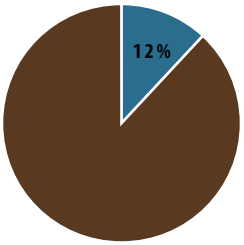
Rank in County Only Effects on Crash Odds

Out of 64 Counties

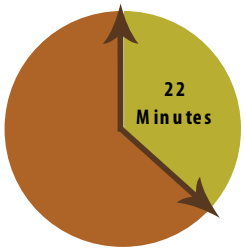
$40,234

Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



6

Fatal Crashes

Out of 554 Statewide

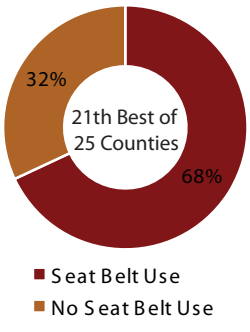
7

Fatalities

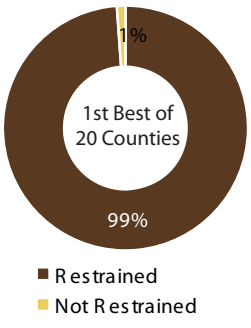
Out of 606 Statewide

OCCUPANT PROTECTION IN MONTROSE COUNTY

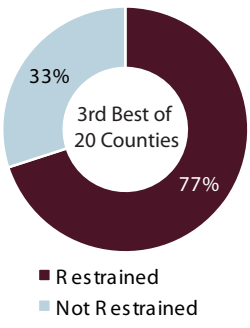
Overall Seat Belt Use



Car Seat/Booster Seat Use



Juvenile Seat Belt Use



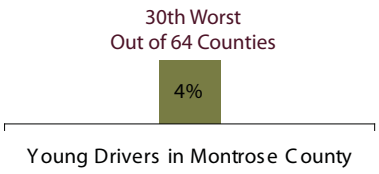
MONTROSE COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **6 fatal crashes** out of 554 statewide; and **7 fatalities** out of 606 statewide, Montrose County has a **2.45% probability of crash involvement** and is **ranked 27th** out of 64 counties. Montrose County also ranks 32nd out of 64 counties in county-only effects.

YOUNG DRIVERS IN MONTROSE COUNTY

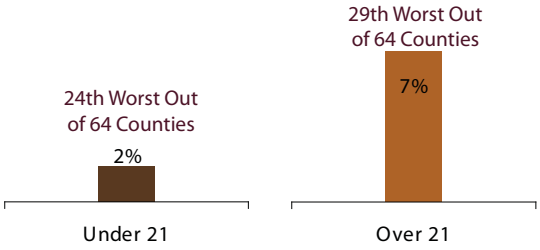
Odds of Crash Involvement: Drivers Under Age 21 Residing in Montrose County



***81004 Ranks 89th Most Dangerous for Under 21 Drivers Out of the 134 Largest Zip Codes**

IMPAIRED DRIVERS IN MONTROSE COUNTY

Percentage of Drivers with 1+ DUIs on Record



Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

PUEBLO COUNTY

A Focus on High-Risk County Population Demographics

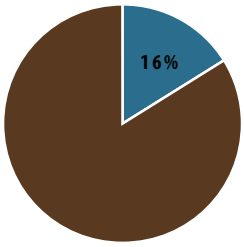
Pueblo County
152,912:
2006 Population

3rd highest

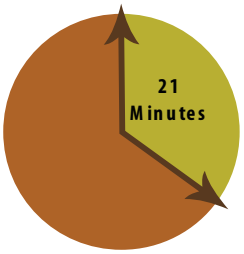
Rank in County Only Effects on Crash Odds
Out of 64 Counties

$35,693
Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work

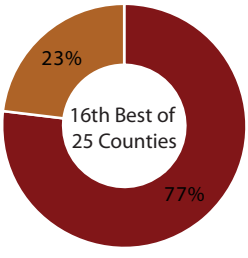


15
Fatal Crashes
Out of 554 Statewide

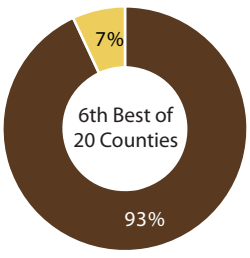
16
Fatalities
Out of 606 Statewide

OCCUPANT PROTECTION IN PUEBLO COUNTY

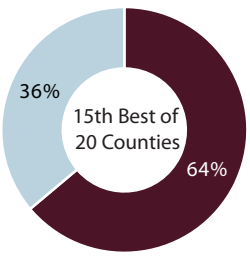
Overall Seat Belt Use



Car Seat/Booster Seat Use



Juvenile Seat Belt Use



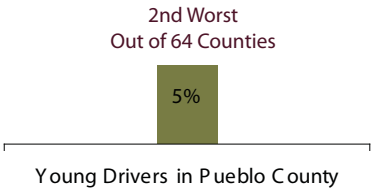
PUEBLO COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **15 fatal crashes** out of 554 statewide; and **16 fatalities** out of 606 statewide, Pueblo County has a **3.25% probability of crash involvement** and is **ranked 6th** out of 64 counties. Pueblo County also ranks 3rd highest out of 64 counties in county-only effects.

YOUNG DRIVERS IN PUEBLO COUNTY

Odds of Crash Involvement: Drivers Under Age 21 Residing in Pueblo County

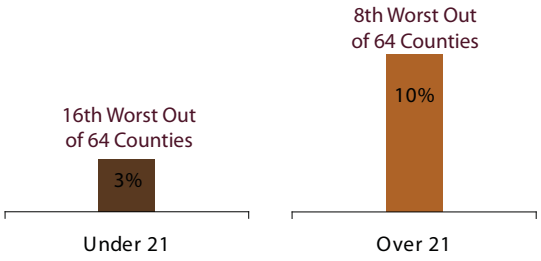


4 of the 20 Worst Zip Codes Where Young Drivers Had the Highest Odds of Crash Involvement

Zip	County	City
81005	Pueblo	Pueblo
81007	Pueblo	Pueblo
81004	Pueblo	Pueblo
81001	Pueblo	Pueblo

IMPAIRED DRIVERS IN PUEBLO COUNTY

Percentage of Drivers with 1+ DUIs on Record



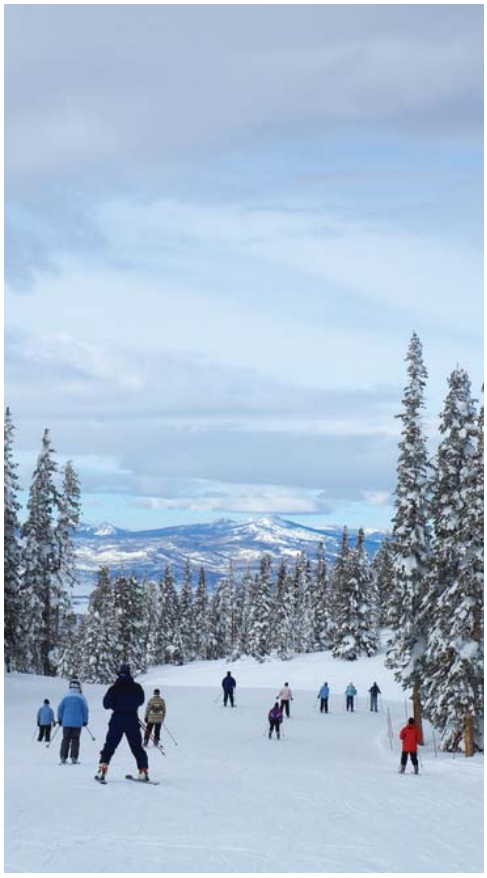
Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

ROUTT COUNTY

A Focus on High-Risk County Population Demographics



5th highest

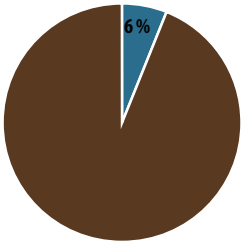
Rank in County Only Effects on Crash Odds

Out of 64 Counties

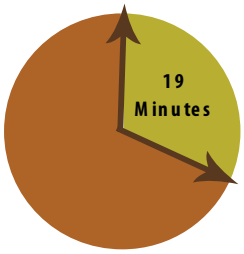
$54,539

Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



5

Fatal Crashes

Out of 554 Statewide

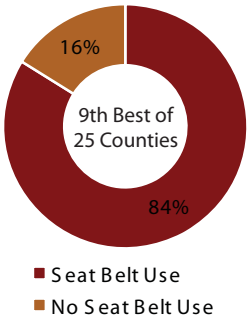
5

Fatalities

Out of 606 Statewide

OCCUPANT PROTECTION IN ROUTT COUNTY

Overall Seat Belt Use



Car Seat/Booster Seat Use

**Data is Currently Unavailable*

Juvenile Seat Belt Use

**Data is Currently Unavailable*

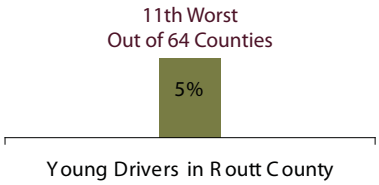
ROUTT COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **5 fatal crashes** out of 554 statewide; and **5 fatalities** out of 606 statewide, Routt County has a **3.54% probability of crash involvement** and is **ranked 1st** out of 64 counties. Routt County also ranks 5th out of 64 counties in county-only effects.

YOUNG DRIVERS IN ROUTT COUNTY

Odds of Crash Involvement: Drivers Under Age 21 Residing in Routt County

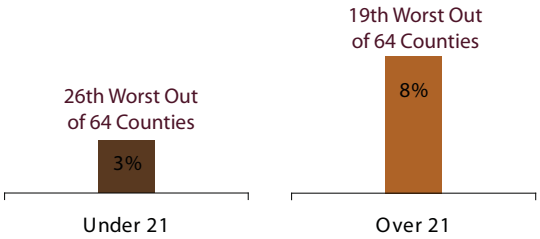


Zip Codes Where Young Drivers Had the Highest Odds of Crash Involvement

**Data is Currently Unavailable*

IMPAIRED DRIVERS IN ROUTT COUNTY

Percentage of Drivers with 1+ DUIs on Record



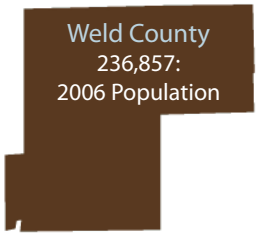
Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

WELD COUNTY

A Focus on High-Risk County Population Demographics



29th highest

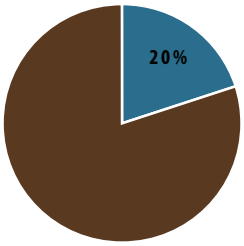
Rank in County Only Effects on Crash Odds

Out of 64 Counties

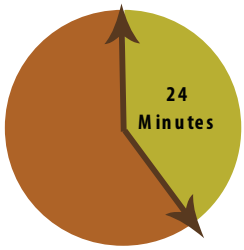
$46,241

Median Household Income

Language Other than English Spoken at Home



Mean Travel Time to Work



43

Fatal Crashes

Out of 554 Statewide

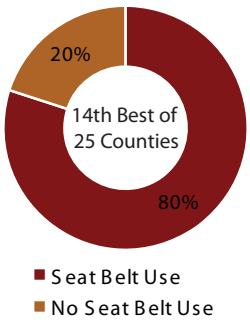
46

Fatalities

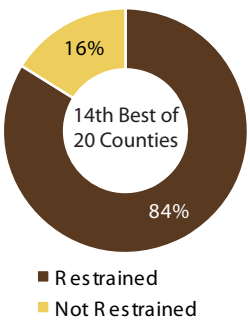
Out of 606 Statewide

OCCUPANT PROTECTION IN WELD COUNTY

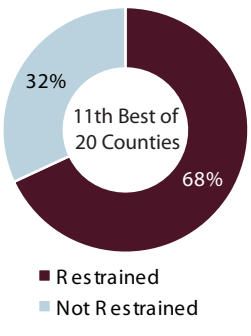
Overall Seat Belt Use



Car Seat/Booster Seat Use



Juvenile Seat Belt Use



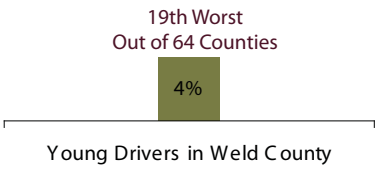
WELD COUNTY

A Focus on High-Risk County Crash Trend Behavior

With **43 fatal crashes** out of 554 statewide; and **46 fatalities** out of 606 statewide, Weld County has a **2.98% probability of crash involvement** and is **ranked 10th** out of 64 counties. Weld County also ranks 29th out of 64 counties in county-only effects.

YOUNG DRIVERS IN WELD COUNTY

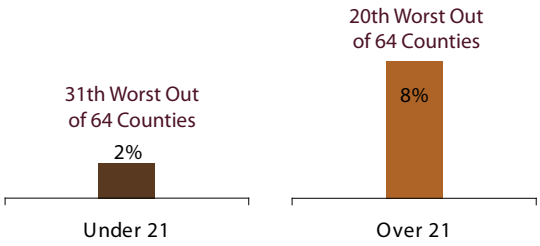
Odds of Crash Involvement: Drivers Under Age 21 Residing in Weld County



***5 of the 25 Most Dangerous Small Zip Codes (Less Than 1,000 Under 21 Drivers) Are in Weld County**

IMPAIRED DRIVERS IN WELD COUNTY

Percentage of Drivers with 1+ DUIs on Record



Odds of Crash: Drivers with One DUI on Record

Odds of Crash: Drivers with a Max. BAC of .10 to .20

*Data sources: 2005 CDOT Crash & Citation Model, 2008 Seat Belt Survey, 2005 FARS data, US Census County QuickFacts

Safety Doesn’t Happen by Accident

Adams Alamosa Arapahoe Archuleta Baca Bent Boulder Broomfield Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Hinsdale Huerfano Jackson Jefferson Kiowa Kit Carson La Plata Lake Larimer Las Animas Lincoln Logan Mesa Mineral Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers Pueblo Rio Blanco Rio Grande Routt Saguache San Juan San Miguel Sedgwick Summit Teller Washington Weld Yuma Adams Alamosa Arapahoe Archuleta Baca Bent Boulder Broomfield Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Hinsdale Huerfano Jackson Jefferson Kiowa Kit Carson La Plata Lake Larimer Las Animas Lincoln Logan Mesa Mineral Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers Pueblo Rio Blanco Rio Grande Routt Saguache San Juan San Miguel Sedgwick Summit Teller Washington Weld Yuma Adams Alamosa Arapahoe Archuleta Baca Bent Boulder Broomfield Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Hinsdale Huerfano Jackson Jefferson Kiowa Kit Carson La Plata Lake Larimer Las Animas Lincoln Logan Mesa Mineral Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers Pueblo Rio Blanco Rio Grande Routt Saguache San Juan San Miguel Sedgwick Summit Teller Washington Weld Yuma Adams Alamosa Arapahoe Archuleta Baca Bent Boulder **Broomfield** Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Hinsdale Huerfano Jackson Jefferson Kiowa Kit Carson La Plata Lake Larimer Las Animas Lincoln Logan Mesa Mineral Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers **Pueblo** Rio Blanco Rio Grande Routt Saguache San Juan San Miguel Sedgwick Summit Teller Washington Weld Yuma Adams Alamosa Arapahoe Archuleta Baca Bent Boulder Broomfield Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso Elbert Fremont Garfield Gilpin Grand Gunnison Hinsdale Huerfano Jackson Jefferson Kiowa Kit Carson La Plata Lake Larimer Las Animas Lincoln Logan Mesa Mineral Moffat Montezuma Montrose Morgan Otero Ouray Park Phillips Pitkin Prowers Pueblo Rio Blanco Rio Grande Routt Saguache San Juan San Miguel Sedgwick Summit Teller Washington Weld Yuma Adams Alamosa Arapahoe Archuleta Baca Bent Boulder Broomfield Chaffee Cheyenne Clear Creek Conejos Costilla Crowley Custer Delta Denver Dolores Douglas Eagle El Paso El-

Colorado Department of Transportation
Office of Transportation Safety