

**Colorado Department of Transportation
Office of Transportation Safety
August 2003**

FY 2004 PROBLEM IDENTIFICATION:

Colorado Traffic Safety Problems & Opportunities

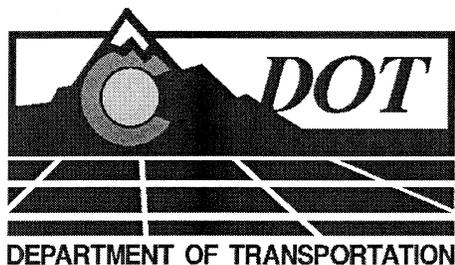
An Analysis of:

- **Colorado General Crash Trends**
- **Crash Data on High-Risk Drivers:**
 - 1) **Young**
 - 2) **Impaired**
 - 3) **Occupant Protection Non-Compliant**
 - 4) **Aggressive**
- **Lifestyle Patterns of High-Risk Drivers in Colorado**
- **Latino/Hispanic Community Leaders' Views on Traffic Safety**
- **Research on High-Risk Drivers' Views on Traffic Safety Issues**
- **Predictive 'Crash Reduction' Model Based on New Survey Data**

FY 2004 PROBLEM IDENTIFICATION:

Highway Traffic Problems in the State of Colorado

Prepared for:



Colorado Department of Transportation
Safety & Traffic Engineering Branch
4201 East Arkansas Avenue
Empire Park, Suite 770
Denver, Colorado 80222

Prepared by:



Weis Communications
P.O. Box 15632
Seattle, Washington 98115-0632
(206) 526-1414



Hebert Research, Inc.
13629 N.E. Bel-Red Road
Bellevue, Washington 98005
(425) 643-1337

Table of Contents

- Section I: Introduction, Executive Summary, Strategic Recommendations
- Section II: Colorado General Crash Trends
- Section III: Analysis of Fatal Crashes
- Section IV: Crash Data on Young Drivers
- Section V: Crash Data on Impaired Drivers
- Section VI: Crash Data on Occupant Protection Non-Compliers
- Section VII: Crash Data on Aggressive Drivers
- Section VIII: Lifestyle Patterns of High-Risk Drivers – ‘PRIZM’ Analysis
- Section IX: Focus Group Research on High-Risk Drivers’ Views About Traffic Safety
- Section X: Interviews of Latino/Hispanic Community Leaders About Traffic Safety Issues
- Section XI: Telephone Survey of High-Risk Drivers
- Section XII: Predictive ‘Crash Reduction’ Model Based on Survey Data
- Section XIII: Discussion of Implications, Strategic Recommendations
- Appendix: Methodology, Crash Data Tables

Introduction

Through public Request for Proposals procedures, the Colorado Department of Transportation (CDOT) retained Weis Communications and its subcontractor Hebert Research, Inc., to research and prepare this Federal Fiscal Year 2004 Problem Identification report.

Purpose

Each year CDOT examines crash records and conducts market research to identify highway safety problems and opportunities for improving highway safety in Colorado. The resulting document – this annual Problem Identification report – is used by CDOT managers to develop safety plans and programs. The document also is made available, upon request, to others interested in traffic safety.

Objective

CDOT's objective this year is continued improvement of the Problem Identification process to more effectively target resources (both State and Federal) to solve any and all identified specific problems.

In accord with this objective, this report includes such innovative features as a behavioral perspective on driver problems and communication opportunities, findings from initial focus-group research on drivers' views of highway safety issues, findings from in-person interviews with key Latino/Hispanic leaders in the community, an executive summary from a telephone survey among high-risk driver groups, findings from focus-group research among rural high-risk drivers discussing implementation of strategies and tactics tested in the survey, and a "crash reduction" model based on the survey and crash data, and including solutions identified in the focus groups and Latino/Hispanic community-leader interviews.

Analyses

This year's analyses continue traditional tracking of crash trends, crash locations, specific populations over-represented and involved in crashes, and recent emphasis on crash-drivers' place of residence. Of particular interest is the rise since 1994 in total crashes per 100 million vehicle miles traveled (VMT), including a significant increase in 2001.

This year's report also addresses CDOT's priority on four specific driver-related crash factors: young drivers, alcohol and driving, non-use of occupant-protection devices, and aggressive driving. The Department's expressed view is that successful projects focusing on these four areas have the greatest probability of reducing traffic fatalities, injuries, property damage, and associated economic costs.

As important as it is to identify in the crash data problematic locations and population groups, it also is important to better understand the *behaviors, values and motivators* of Colorado's drivers -- especially those in the priority, high-risk groups noted above.

Therefore, this Problem Identification updates CDOT's demographic clustering of problem drivers, using "PRIZM" analysis, which provides data on driver "lifestyles." (Note: PRIZM analysis includes terminology unique to the PRIZM data system established and owned by Claritas, Inc.)

This report also provides and interprets findings from four initial focus groups, conducted in February in Denver and in Grand Junction. These sessions probed behaviors, values and motivators of high-risk drivers. Based on the findings of the crash analysis, demographic profiling, the four focus groups and other available research, Weis Communications and Hebert Research interviewed key Latino/Hispanic community leaders in selected communities and conducted a statewide, stratified sample survey of high-risk drivers by telephone in May 2003.

In early July, the research team conducted an additional four focus groups, in Brighton and Limon, 1) to review traffic-safety conditions in Adams County and the Eastern Plains, especially as related to the behavior of high-risk drivers, and 2) to consider and discuss the implementation of crash-reduction strategies and tactics being quantified in a concurrent (July 2 – July 23) telephone survey of high-risk drivers throughout Colorado.

Summaries and details from the focus groups, the interviews, and the telephone survey are included in this report. Further details are available from CDOT's Traffic and Safety Engineering Branch.

Limitations of Crash Data

As in the past, the analysis of crash data in this report is based upon crash records compiled by law enforcement officials at crash locations. Since 2002 data were incomplete at the time of the first edition of this report, for the most part the analyses address 2001 and prior data. The data in the CDOT crash database are for State, U.S. and Interstate highways only; data on county and city roadways are not included except in the case of fatality crashes.

Also, accident records contain fields for information such as location of the crash, time of day, vehicle and road type, driver impairment and use of occupant-protection devices. Little data on "aggressive" driving as such was available. Linked driver's license records report age, gender and place of residence of the driver, but the address may be out of date. Finally, the data on property-damage-only crashes are generally considered to be less reliable, so statistical analyses – as in the past – are based on fatality and injury-related crashes.

One additional challenge in this year's study had to do with the newly created county of Broomfield. The county was created during 2001, making it qualify as a valid county during the 2001 year. This county was not shown in the previous report and was not included in the 2000 Census.

While the new county changed populations slightly in several adjacent counties, the major change was a noticeable reduction of approximately 15,000 in the population of Boulder County. The 2001 crash database featured county codes based on the current geographic definition of Broomfield and surrounding counties in Colorado. The population counts and the registered vehicle counts by county were available with Broomfield included for 2001.

All analyses featuring data based on “place of crash” take into account the latest geographic definitions and use comparable population and/or vehicle counts matching those definitions. The shifting of population between counties was relatively small overall and should not have significantly affected comparisons to prior years.

In the case of “place of residence” data, the software used to geocode driver addresses into Census block groups utilized the latest available 2000 Census geographic definitions, which did not include Broomfield County (formed in 2001). Therefore, the data reported for where drivers live is based on the same geographic boundaries used in the previous report. For comparability, the county driver totals were divided by a separate set of 2001 population counts by county that did *not* include Broomfield.

Acknowledgements

Weis Communications and Hebert Research wish to acknowledge the untiring efforts of CDOT’s Rahim Marandi, P.E., to obtain and provide crash database information in February. Also much appreciated were the timely contributions of Bonny Hathaway of CDOT, Joan Vecchi and Tom Weeks of the Department of Revenue, and Rebecca Picasso of the Colorado Department of Local Affairs.

Weis Communications and Hebert Research thank CDOT for the opportunity to work on this project, and are grateful for the diligent project coordination by Safety Programs Manager Karen Duffala. The researchers also thank Qwest for help and logistics support on this project.

Executive Summary

Fundamental to the findings and recommendations in this report are 1) a detailed analysis of crash trends in Colorado, as well as 2) “lifestyle” demographic profiles of problem drivers, 3) initial focus groups studying the behaviors, values and motivations of four high-risk groups of drivers, 4) Latino/Hispanic community leader interviews, 5) data from telephone-survey interviews with members of the four high-risk groups of drivers, and 6) findings from a second round of focus groups involving the four high-risk groups, which investigated local traffic conditions and investigated the implementation of ideas tested in the telephone survey.

The four high-risk groups of drivers were expressed priorities for CDOT: young drivers, impaired drivers, occupant protection non-compliers (drivers who do not wear or require occupant safety restraints as appropriate), and aggressive drivers.

Crash-Analysis Findings

Although Colorado saw a decline in crashes on the state’s highway system (Interstate, U.S. and State highways) during the early ‘90s, the total crash rate has risen since then. **Overall crash rates are reviewed in Section II.**

Between 1993 and 2001, the number of Colorado licensed drivers increased 26.9 percent, and vehicle miles traveled (VMT) on the state’s highways increased 32.1 percent, suggesting that congestion on some of the state’s highways, especially main traffic ways such as I-25, is becoming a critical problem as highway capacity has not increased to a similar extent.

Fatality Crash Rates (see Section III)

In 2002, when there was considerable emphasis by CDOT on preventing crash fatalities because of a large increase in them during 2001, the number of crash fatalities in Colorado dropped from 741 to 736. Even so, crash fatalities increased in rural areas. Among the most populated counties in the state, the mostly-rural counties of Mesa, Douglas, Pueblo, and Weld evidenced the highest fatal crash rates per 100,000 driving-age population in 2001.

Colorado’s rural counties account for the highest per capita fatal crashes in the state, and unincorporated areas comprised 62 percent of fatal crashes in 2001.

Overtaking a vehicle, or another “non-collision,” was the first harmful event in 31 percent of the fatal crashes in Colorado in 2001.

Young Drivers in Fatality Crashes

In 2001, 18-year-olds and 21-year-olds accounted for the highest shares of fatal crash involvement. Among large cities, particularly problematic were young drivers in Greeley, Lakewood, Fort Collins, Longmont and Pueblo.

Impaired Drivers in Fatality Crashes

For 2001, the percentage of alcohol-related fatal crashes in Colorado rose to 36 percent, compared with 30 percent the preceding year. Data for 2001 suggest a shift from the very youngest drivers to slightly older (but still “young”) drivers among drinking drivers involved in fatal and injury crashes. Perhaps this was related to Colorado’s relatively new Graduated Licensing Law.

Injury Crash Rates (Section II)

Between 2000 and 2001, injury crashes grew by 8.5 percent, but injuries grew by 5.4 percent. So even though there were more injury crashes, fewer people were injured per crash.

Among counties in 2001, Pueblo, Adams, Arapahoe and Denver counties had the highest driving-age-population percentages of resident drivers involved in an injury crash. In 1999-2001, Aurora and Pueblo led all large cities by having at least 2 percent (a relatively large number) of their driving-age population involved in an injury crash.

Drivers living in rural regions of the state were less likely than urban drivers to be involved in an injury crash.

Young Drivers (Section IV)

Between 2000 and 2001 there was a shift from very young to slightly older drivers involved in crashes in Colorado. Drivers 22 years old and younger are more likely to be involved in a traffic crash than is expected given their population. Even so, sixteen-year-old drivers still are the most likely age group to be involved in a traffic crash.

In 2001, cities with the highest percentages of young drivers in injury crashes were Loveland, Pueblo, Longmont, Colorado Springs, Arvada, Lakewood and Denver.

Impaired Drivers (Section V)

In 1981, more than half of all fatal crashes in Colorado were alcohol-related. Since then, the role of alcohol in fatal crashes had dropped until, in 2001, alcohol-related fatal crashes went up 24.3 percent over the preceding year, and alcohol-related fatalities went up 27.8 percent.

In 2002, 32 percent of Colorado fatal crashes involved alcohol. In 2001, Pueblo, Lakewood, Westminster and Colorado Springs had the greatest number of impaired drivers in injury crashes.

Occupant-Projection Issues (Section VI)

Occupant-protection use in Colorado rose from 2001 to 2002, with the highest rates of use in the Front Range. Even so, the percent of all drivers in incapacitating injuries not wearing seat belts in 2001 was highest in Loveland, Thornton, Longmont, Lakewood and Pueblo. People in other areas of the state continue to be less likely to consistently use seat belts. Only two-thirds of Colorado's drivers in the Eastern Plains and the Western Slope tended to wear seat belts.

Seat belt use by children ages 5-15 seemed to be on a plateau for 2001 and 2002 – but was at approximately 60 percent for younger children, which is deemed unacceptable. For children from birth through approximately age 4, car seat/booster seat use was at 80 percent during the 2002 measurement period.

After staying at approximately 50-51 percent during 1998-2000, seat belt use in pickups went up in 2001 and 2002, reaching 59 percent. This still is a low number, and use of seat belts in pick-ups emerged as a problem also in the telephone survey of occupant protection non-compliants.

Aggressive Drivers (see Section VII)

In relation to “aggressive driving,” data from 2001 suggest that speeding, “other harmful moving convictions,” and recent DUI convictions tend to be predictors of future involvement in fatal crashes.

Yet the concept of aggressive driving, which as defined by CDOT combines a variety of illegal acts and outright rudeness, poses difficulties. For example, it is difficult for enforcement officers to observe and stop drivers for doing more than one illegal act at a time. Clearly, however, speeding plays a central role in aggressive driving, and education and enforcement focused on speeding could be a key to dealing with these drivers.

Lifestyles Patterns of High-Risk Drivers – PRIZM Analysis

According to the **PRIZM analysis reported in Section VIII**, demographic profiling of drivers involved in injury and fatality crashes in 2001 shows eight lifestyle groups or “clusters” met the criteria for higher-than-average likelihood of involvement in an injury crash. (Note: PRIZM analysis includes terminology unique to the PRIZM data system established and owned by Claritas, Inc.) These include “Minority Blues, Military Quarters, Gray Collars, Blue-Chip Blues, Hispanic Mix, Latino America, Family Scramble, and Boomers & Babies.” The majority of these are located in metro-suburban areas.

Household clusters most likely to be involved in fatality crashes included “Shotguns & Pickups, Back Country Folks, Agri-Business, River City USA, Big Sky Families, Grain Belt, Rural Industria, and New Eco-topia.” Virtually all of these clusters are in rural areas.

Establishing profiles of high-risk, “problem” drivers shows:

- The profile of young drivers who in 2001 tended to be involved in injury or fatal crashes indicates that “Military Quarters” and young drivers from affluent-to-wealthy households tend to predominate.
- In regard to impaired crashes, relatively less well-to-do people among the very rural “Hard Scrabble” and the urban-core “Inner-Cities” and “Hispanic Mix” have a high tendency to be involved in an impaired crash.
- In regard to occupant-protection issues, Colorado drivers who, in 2001 were “non-compliant” in obeying occupant-protections laws while being involved in injury or fatal crashes, tended to live in rural areas.

Focus Groups: High-Risk Drivers’ Perspectives on Traffic Safety

Four focus groups conducted in Denver and Grand Junction (two in each city) in February 2003 suggested that drivers are attuned to consequences of their driving behavior to themselves and their families (especially their own children), and are interested in not just penalties but also in incentives for improving their driving. Major life transitions during which drivers tend to be receptive to safety information and to changing their driving behavior include, in particular, expecting a first child.

Participants also noted that times when officers give drivers warnings can be specific situations for officers to provide further (brief) safety information and education. Other significant situations are 1) entering points on highways that can feature “reminder signs” about speed and the use of seat belts, and 2) finding oneself impaired at locations where one could be given an opportunity to park and leave the car in a “safe-parking zone,” particularly in the early hours of the morning, and not have the car be ticketed.

Finally, the participants voiced some confusion or misunderstandings about the requirements of current seat belt laws. Further survey details are provided in Section IX.

A second round of four focus groups was conducted in July 2003, two in Brighton and two in Limon, coincident with the start of a statewide survey of high-risk drivers. The purpose was twofold: 1) to investigate why there are so many crashes in the local area, and 2) to discuss the implementation of strategies and tactics being tested in the survey.

The consensus of these focus groups was that drivers in rural areas tend to speed and to disregard stop signs on county roads. The perception tends to be that it is not necessary to stop at stop signs if traffic is light; unfortunately, these habits are carried into times of poor visibility or impaired traction on such roads. In Adams County, according to group members, there is more and more traffic congestion spreading into the county from the I-25 corridor, but without additions or improvements in traffic “signalization” – new signage and stop signals. Moreover, these individuals said there are considerable variations in the speed

limit on the various types of roads and highways in the county, and drivers tend to generalize and drive at speeds they feel are safe enough.

In regard to the survey strategies and tactics for developing safer driving, focus group members tended to favor drivers education, the one-time hanger card for an impaired driver to use to leave the driver's car overnight without getting a ticket, and other tactics such as promoting the use of designated drivers in drinking situations.

As far as effective, transitional times to connect with drivers, the groups thought it would be wise to connect with people becoming parents for the first time.

There was some interest in hearing a speaker at a school, church, service club or community group. Group members liked the idea of financial incentives for taking a refresher course in drivers training – if they could get a discount on their auto insurance or on their vehicle registration/license tabs, or, for some, if their employer paid for the training. Traffic-safety spokespersons most popular with these groups were firefighters and perhaps, for some, professional racecar drivers.

A repeated theme expressed by aggressive drivers was “I’m always in a hurry.” Among occupant protection non-compliants there seemed to be some confusion about the seat-belt laws once the discussion got into some details about actual points of law. All the groups tended to agree there is a need for more enforcement in general, that drivers training should be reintroduced in schools, and that (in the Brighton area and western Adams county) there needs to be relief (such as light rail) for traffic congestion.

A general observation developed in reflecting on comments in all eight focus groups was a method for promoting four-way-stop safety in rural areas. As fatality accidents are reported in rural areas at intersections with stop-signs, install solar-panel powered stop lights not only for added visibility but especially to signify that “this is a killer intersection,” and accompany the change with appropriate public relations information efforts. This would call attention to the problem for locals, and also provide an affordable way to phase out stop signs and phase in stop lights.

Interviews of Latino/Hispanic Community Leaders

To supplement focus group research and provide added perspective for the telephone survey – because both of these forms of research tend to underrepresent Latinos and Hispanics for a variety of reasons – six Latino/Hispanic community leaders in Greeley and six in Pueblo were selected for in-depth interviews in May 2003. Details of findings are provided in Section X.

The purpose of the interviews was 1) to identify elements of traffic safety problems and solutions in the two communities studied, and 2) to identify the views of Latino segments of the community about those issues.

In Greeley, one consistent message from the groups was that drivers tend to run stop signs at four-way stops on county roads. Another was that CDOT and other public agencies will be under increased pressure to offer traffic safety education programs, if not signage also, in Spanish.

In Pueblo, which is 40 percent Latino/Hispanic, community leaders were concerned about the affordability and availability of drivers education for young drivers. Drinking and driving, which is particularly a problem in Pueblo, reflects the high number of bars and taverns per capita – the highest in the state.

In terms of solutions, three programs were suggested by the Pueblo community leaders. The first was a suggestion that drinking establishments be able to offer a would-be impaired driver a one-time parking pass “hanger-card” that could be placed in the driver’s car so that it could stay parked through the night ticket-free while the owner went home by other means.

The other elements were programs already undertaken by the co-owners of two Latino radio stations in Pueblo: 1) impaired drivers or their friends can call the station to get a free taxi ride home for the would-be driver; 2) people observing especially good drivers can call in the driver’s car license number to the station, which passes the information to the Pueblo Police Department, which in turn sends a letter of commendation to the good driver.

Telephone Survey of High-Risk Drivers

A telephone survey of high-risk drivers conducted July 2-23 produced a number of findings for each of the four high-risk groups. These findings were supplemented and enhanced by “crash reduction” modeling using the survey data to predict the effectiveness of proposed solutions tested in the survey. The following represent major conclusions drawn from the survey.

The findings established by the crash reduction model are reported in Section XI.

In sampling these high-risk populations, the samples were drawn at random from Claritas PRIZM data, representing segments of population groups found through crash analysis to most likely include the four high-risk driver groups.

Young Drivers

The demographic profile for this group indicates that the median age (half older, half younger) of these drivers was 23 years; 38 percent were married; 70.1 percent were Caucasian; 18.2 percent were Hispanic or Latino, and the next largest minority group was African Americans, at 2.3 percent. The gender split was 48.9 percent female, 51.1 percent male. Young drivers comprised the least affluent and least well-educated group of the four groups studied. Some 62.8 percent came from “inside the city limits,” and 31.5 percent came from unincorporated areas.

Sedans clearly were the most popular vehicle for young drivers and those as well within the three behavioral-related driver groups, with pickup trucks second. Sport utility vehicles were third in popularity for all four high-risk driver groups.

Among young drivers aged 16-29, only 29 percent received drivers training in school; 14.9 percent used a private drivers education teacher or program. Three out of four indicated receiving training from their parents. Even though these young drivers seemed satisfied with their training, 42.2 percent said they had been involved in a traffic accident of some kind when they were driving.

Those who did not take a driver training course indicated that a primary reason was the expense of private training, since it was not generally offered in the public schools. Interest was relatively low in taking a short refresher course in driver training: one that lasts a day or two, is held at a convenient, nearby location, where the person reviews all of the basics but doesn't actually practice on the road. When given the incentive of an insurance rate reduction for taking such a course, however, interest was high.

Only 30.1 percent of these young drivers had ever received an award or recognition of some kind for safe driving. When they were asked what types of incentives might have an impact on causing safer driving among young drivers, insurance company incentive programs were by far the top choice, named by 79.6 percent of these drivers.

When asked about spokespersons about traffic safety matters, the most popular among young drivers – as for the other three high-risk groups as well – were a firefighter or ambulance driver who rescues people in wrecks. Young drivers expressed a significant – but not high – interest in hearing a guest speaker who spends an hour giving a free session at a school, church, etc. about tips for how to handle a car in special situations such as bad weather, heavy traffic and narrow country roads.

Asked which driving habits they might be likely to change in the next three years, young drivers responded, “not speeding as much” (28.5 percent) and “driving more carefully or less aggressively” (28.3 percent).

Impaired Drivers

The median age of this group was 43 years; 54.2 percent were married; 74.9 percent owned their own home; 83.2 percent were Caucasian, with Latinos/Hispanics the next largest ethnic group, at 6.5 percent. Some 65 percent were male, and 35 percent were female. This was a relatively well-educated and financially well-to-do group, with 50.4 percent living inside city limits.

Among these drivers there was a lack of awareness of the current .10 percent blood alcohol limit for drinking and driving in Colorado. Only 21.2 percent gave the correct answer, with most thinking it was .05 or .08. Male drinkers indicated it takes them an average of 2.4 drinks in an hour to be over their limit for driving, compared to 1.97 for women. In terms of what is a “safe” number of drinks to consume and then drive within an hour, men answered 1.5 on average while women reported an average of only 1.12 drinks.

Forty-three percent of drivers in the impaired high-risk group reported having driven after drinking and then afterwards realized it wasn't safe. When asked how they knew it wasn't safe, the top two responses involved feeling "paranoid" (21.2 percent) and "acting strange or funny" (18.6 percent).

According to the State of Colorado's educational materials on drinking and blood alcohol levels, an average sized male generally has to drink at least four drinks within an hour to reach the illegal level of .10 in blood alcohol, and a typical female has to drink at least 3 drinks. When drivers were asked how frequently in the last 5 years they consumed this many drinks and then drove within an hour, a slight majority (57.8 percent) said "0" times. The remaining 42.2 percent indicated doing this at least once over the 5 year period, with a small group reporting fairly high frequencies of 10, 20 or even 50 times.

One out of every five of these drivers (20.5 percent) indicated having received a DUI. Of this sub-group, nearly half indicated having received only one DUI, while more than 40 percent did not know or want to give an exact number of citations.

Six different proposed programs or features to help people be safer about drinking and driving were tested. Each one was rated as to its potential for making a positive impact on reducing risk and promoting safer driving. *The number-one rated concept was the "one-time hanger card" parking permit that a bartender would provide* so that a drinker's car could be parked on-site for the night, allowing the drinker to ride home with someone else. This program was rated nearly an "8" (on a scale of 0-10) on average, with 72.3 percent giving a high rating of 8-10.

Another very highly rated concept was the idea of having a "ticket-free zone" near the tavern, where the car could be parked until the next day. (Some 68.6 percent gave this a 8-10 rating.). Other suggestions, such as education about the risks and number of drinks it takes to be illegal, would still have an impact among 43-59 percent of the drinking drivers surveyed, and may deserve further consideration. Among these concepts, there appeared to be considerable merit in having such drivers learn "more about *how much it costs* you to get a DUI," with a 58.7 percent "high rating."

As with the other high-risk groups, these drivers said they would be quite likely to take either a refresher course or a full drivers-training course if they could get a discount on their auto insurance.

In terms of transitional situations, it is notable that more than 10 percent of these drivers "have a son or daughter nearing driving age." Perhaps these drivers would be more likely to change as they have opportunities to teach their children to drive. These drivers indicated they are somewhat "likely to actually change your driving habits in the next 3 years" in some of the areas discussed during the telephone interview, with being "safer about drinking and driving" at 20.8 percent and "driving more carefully or less aggressively" at 19.8 percent as what they would be "most likely to change."

Occupant Protection Non-Compliant Drivers

This was a somewhat younger group than impaired drivers, with a median age of 41 years. Some 28.3 percent were married and had children living with them, while 5.7 percent were single and had children living with them; 2.8 percent were living with a roommate or other adult, with children with them. Some 71.6 percent own their home, and 79.6 percent are Caucasian, with 9.4 percent Latino/Hispanic. At total of 55.2 percent had at least some college, with 55.6 percent living inside the city limits.

Although sedans make up 33.6 percent of the vehicles this group drive, 31.2 percent of the group's vehicles are pickups – the largest percentage for any of the four high-risk groups. This is significant not only because it is a distinct pattern of seat-belt non-compliance for pickup drivers, but also because of the difference in seat-belt laws – people riding in the back (cargo area) of a pickup do not have to wear seat belts.

These drivers were confident that they know the driving rules and the consequences for breaking the law.

Of these drivers, 37.1 percent said they always wear seat belts while driving, but 44.5 percent said they wear seat belts “most of the time.” Some 63.8 percent allow passengers to ride in the front seat of their vehicle without wearing seat belts, or children 16 and under to ride in the back seat without being buckled in. (Some 22.9 percent have children ages 6-16.)

As far as adult passengers 17 and older, only 30.8 percent said they “always follow the seat belt rule and at least have everyone in the front seat, including yourself, wearing a seat belt,” but only 47.1 percent do “most of the time.” Some 16.4 percent said they follow the rule only sometimes, and 4.8 percent said they “never do.”

Car seat/booster seat use was found to be higher for children under six, with 73.6 percent of these drivers “always” using this equipment. Some 34 percent of these drivers did NOT know that child car seat violations are a primary offense. One-half of parents with small children said they knew that drivers can be fined \$57 for car seat violations. As far as the reasonableness of the seat belt rules, 72.5 percent said the rules for children 6-16 are “very reasonable”, 11.4 percent said “somewhat reasonable,” 6.1 percent “neutral,” 6.1 percent “somewhat unreasonable,” and 3.8 percent “very unreasonable.”

Few in this segment reported ever having received a ticket for a seat belt or car seat violation, but 60.2 percent had been involved in a traffic accident of some kind as a driver.

Respondents were asked to rate the impact of four proposed programs or features on their likelihood of using seat belts or car seats more often. The top-rated concept was to have a fire station invite the public to come in, get an occupant-protection equipment inspection, and then receive information about occupant protection. This received an average rating of 6.14 on the 0-10 scale, with 44.9 percent giving a high rating of 8-10. The second most popular idea was for a school, church or community organization to give a presentation explaining the risks of not wearing seat belts, with a 5.84 rating; 40.8 percent of these drivers gave a high rating of 8-10 for this suggestion.

For this audience, the most popular spokesperson on safe driving or seat belt use was the firefighter or ambulance driver “that rescues people in wrecks,” at 19.5 percent approval, with “a traffic safety professional” second at 13.2 percent approval.

As can be expected, interest in receiving additional drivers training varied considerably by the type and cost of training. Some 17.5 percent expressed an interest in a full drivers-training course, but 40.2 percent were interested in hearing a guest speaker talk about how to handle a car in problem situations. The level of interest declined to 30.8 percent for watching a free CD or video featuring a guest speaker and demonstrations. Demand for a short, low-cost refresher course was lower still, at 25 percent.

Even so, the likelihood of these drivers taking either a refresher course or a full drivers-training course was high – if they could benefit from financial incentives, especially getting a discount on auto insurance.

Those expecting or having infants were quite interested in receiving a packet of instructions from their medical care providers on car seat laws and safety tips.

Near the end of the telephone interview, 69.2 percent of these respondents said they were at least moderately likely to actually change their driving habits in the next 3 years in some of the areas discussed in the interview. As for the one area they would most likely change, 28.5 percent of these drivers said “wearing seat belts more often,” and 22.6 percent said “driving more carefully or less aggressively.”

Aggressive Drivers

Initial demographics revealed this group of drivers had a median age of 36 years, and 37.5 percent had children living at home with them. Some 74.1 percent said they own their home. A total of 77.9 percent were white; 12.6 percent were Latino/Hispanic, with 2.9 percent African American. A well-educated group, 63.1 percent had at least some college, and 58.1 percent said they live inside city limits. The gender split was 54.9 percent male and 45.1 percent female.

Consistent with other findings that speeding seems to be central to the concept of aggressive driving, the average (mean) speed these drivers said they were “comfortable driving on the highways and freeways” was 9.8 m.p.h. – slightly less than 10 m.p.h. over the limit. This included 9.3 percent who are “comfortable” driving 20 or more m.p.h. over the speed limit.

The average rating by aggressive drivers on how well they follow “all of the traffic laws and rules for things like keeping your speed less than 5 or 6 over the speed limit, stopping completely at stop signs, not running a stale yellow light, and yielding and passing correctly” was 6.98 on a scale of 0-10 – the lowest of all for high-risk driver segments.

In fact, 26.7 percent said they “often” drive more than 10 m.p.h. over the limit. A total of 53.6 percent of this group admitted to driving more than 10 miles per hour over the speed limit “sometimes.”

Other frequent aggressive behaviors studied included tailgating. Some 59.6 percent admitted to sometimes or often tailgating the vehicle in front of them. Other activities included using one's horn (57.8 percent sometimes or often), not paying attention very well (53.1 percent), braking to get others to "back off" (48.8 percent), and not being careful about lane changes (32.9 percent).

A total of 72.5 percent of aggressive drivers indicated being committed (high 8-10 rating on a 0-10 point scale) to following the traffic safety rules, regardless of whether or not they agree with them. One interpretation is that aggressive drivers still have a respect for the rules as a baseline from which they measure their driving; they just use a less strict standard than other drivers in how far they can exceed the limits.

Aggressive drivers were asked how likely they would be to consider driving more safely if they were shown a video or given a flyer that talked about how those who drive more aggressively are much more likely to die in a car crash or be seriously injured. The average rating was 6.06 on the 0-10 scale, and a total of 40.6 percent gave a high rating of 8-10.

Only 15.1 percent of aggressive drivers considered themselves "aggressive" in their behavior, so these drivers do not think of themselves in these terms. CDOT may want to keep this in mind when designing messages for this group, so that the content of the messages is not blocked by a resistance to the label of "aggressive." Perhaps a better label might be "higher risk" driving style or driving behavior.

For those who are aware of their aggressive driving, information about the tendency for such drivers to become involved in injury and fatality crashes would perhaps be persuasive enough to change such behavior, especially – for those with children – for the safety of the family. Significant factors related to communicating with these drivers may be that they are the youngest *behavior*-related high-risk group – "child-bearing age" – and that more than a third said they have children living with them.

Predictive 'Crash Reduction Model' Based on Survey Data

The research team collaborated to complete and report a statistical "crash reduction model" for use by CDOT authorities, based on models Hebert Research has used in other studies. The model integrates elements of the focus group research and the Latino/Hispanic community leader interviews, and is based on the survey data. Details are provided in Section XII.

The crash reduction model essentially has two components:

- 1) Predicting change in behavior: The first component identifies which factors, potential programs or changes will have the greatest impact on changing driver behavior, and reducing problem behaviors that contribute to traffic accidents, alcohol-related accidents and un-belted accidents. This was accomplished through the use of four regression models, one for each major problem area (i.e., young, impaired, occupant protection non-compliant, and aggressive drivers).

- 2) Predicting reductions in crashes: The second component involves directly connecting the survey results with actual crash data in order to estimate the potential reduction in crashes that is possible assuming that CDOT will implement the types of high-impact changes recommended from the first component. Consistent with the previous emphasis on serious crashes in the crash-analysis reports, this model was calibrated to predict changes in injury and fatality crashes (predicting the combined sum of both types).

Calculating the potential crashes avoided each year involved modeling both drivers from the target PRIZM clusters included in the survey and those from the non-target clusters, based on survey data and actual crash rate information by PRIZM cluster.

Allowing for implementation delays, the model also assumes that the full effect of the potential reduction would not be felt until 2007, with a steadily increasing share each year of the potential crashes, starting in 2004 with 25 percent of the potential level for the first full year.

Young Drivers Model

The “young” drivers behavior model predicts change in behavior for young drivers age 16-29. Factors were included in the model based on their statistical independence as well as ability to predict change when grouped together with the other key predicting variables.

The “program-related” factors that were important in explaining change among young drivers included the following (in order of importance):

- Interest in a full drivers-training course.
- Interest in a guest speaker who spends an hour giving a free session at a school, church, etc. about tips for how to handle a car in special situations such as bad weather, heavy traffic and narrow country roads.
- Likelihood to take either a refresher course or full drivers-training course if they could get a discount on renewing their driver's license.
- Likelihood to take either a refresher course or a full drivers-training course if they could get their points adjusted with a better score on their driving record with the State.

Impaired Drivers Model

The “alcohol” drivers behavior model predicts change in behavior from those who reported drinking a minimum amount of drinks and then driving within an hour. Again, factors were included in the model based on their statistical independence as well as ability to predict change when together with the other key predicting variables.

Program-related factors that were important in explaining change among drinking drivers included the following (in order of importance, with most important first):

- Interest in a full drivers-training course.
- Likelihood of taking either a refresher course or a full drivers-training course if they could get a reduced fine on their next traffic ticket.
- Likelihood to consider being safer about drinking and driving if they or a friend could move their car at night to a ticket-free zone to ride home with someone else.
- Likelihood to consider being safer about drinking and driving if they learned more about how much it costs to get a DUI.
- Interest in a free CD or videotape showing a speaker talking about and also demonstrating tips on safe driving.
- Likelihood to consider being safer about drinking and driving if they heard their friends were trying to be more careful about drinking and driving.

Special Note: Another program idea was considered a very strong candidate for implementation but, because of its unique statistical distribution of answers, it did not show up in the model. This was the “one-time hanger card parking permit,” which a bartender could hand out to put on a car’s rear-view mirror so the driver could ride home with someone else and leave the vehicle where it was already parked, without getting a parking ticket.

This feature was actually one of the top-rated programs in the survey, but its appeal was too broad-based to have the segmentation needed to indicate influence within the regression model. Even so, the research team highly recommends adding this program to the above list of key features or programs.

Occupant Protection Non-Compliant Drivers Model

The “occupant protection” drivers behavior model predicts change in behavior from those who reported not always wearing their seat belt when driving or else allowing others in the vehicle to not use a seat belt or car seat as required by law.

The program-related factors that were important in explaining change among these non-compliant drivers included the following (in order of importance):

- Likelihood to consider using seat belts or car seats more often if a fire department in their area let them drive in and have their vehicle checked for free, and also receive information about occupant protection.
- Likelihood to take either a refresher course or a full drivers-training course if their employer paid for the cost of the drivers training.

- Likelihood of taking either a refresher course or a full drivers-training course if they could get a reduced fine on their next traffic ticket.
- Interest in a full drivers-training course.
- Likelihood to consider using seat belts or car seats more often if a person from a local school, church or community organization gave out a brief flyer of information and explained the need for these devices.
- Likelihood to take either a refresher course or a full drivers-training course if they could get a discount on renewing their driver's license.

Aggressive Drivers Model

The “aggressive” drivers behavior model predicts change in behavior from those who reported either being comfortable driving at least 10 miles per hour over the limit on highways or else rated themselves fairly low in how well they “follow the rules.”

Program-related factors that were important in explaining change among aggressive drivers included the following (in order of importance):

- Likelihood of taking either a refresher course or a full drivers-training course if they could get a reduced fine on their next traffic ticket.
- Likelihood to take either a refresher course or a full drivers-training course if they could get their points adjusted with a better score on their driving record with the state.
- Likelihood to take either a refresher course or a full drivers-training course if they could get a discount on their vehicle license tabs.
- Interest in a free CD or videotape showing a speaker talking about and also demonstrating tips on safe driving.
- Interest in a full drivers-training course.
- Interest in a guest speaker who spends an hour giving a free session at a school, church, etc. about tips for how to handle a car in special situations such as bad weather, heavy traffic and narrow country roads.

Further Observations: Drivers Training Incentive, Spokespersons

Just as the “one-time hanger card parking permit” failed to appear in the Impaired Drivers model, so also did a major finding of the survey for all four of the above models: receiving a discount on car insurance for taking more drivers training.

This also is considered a very strong candidate for implementation but, because of the unique statistical distribution of responses on this item, it did appear in the model. The research team highly recommends that CDOT work to keep existing discounts in place, if not working for increased discounts by participating insurance companies and similar discounts by companies that do not yet offer discounts to Colorado drivers.

Secondly, the survey finding about the high popularity of the “firefighter or ambulance driver who rescues people in wrecks” as an advertising spokesperson in traffic safety campaigns also is very robust, although it did not work out in the modeling. Again, the research team highly recommends CDOT give serious consideration to this survey finding and to using Emergency Medical Services firefighters as campaign spokespersons; participants in the second round of focus groups felt especially positive about using the firefighter as a spokesperson.

The General Crash Reduction Model

Baseline Crash Forecast:

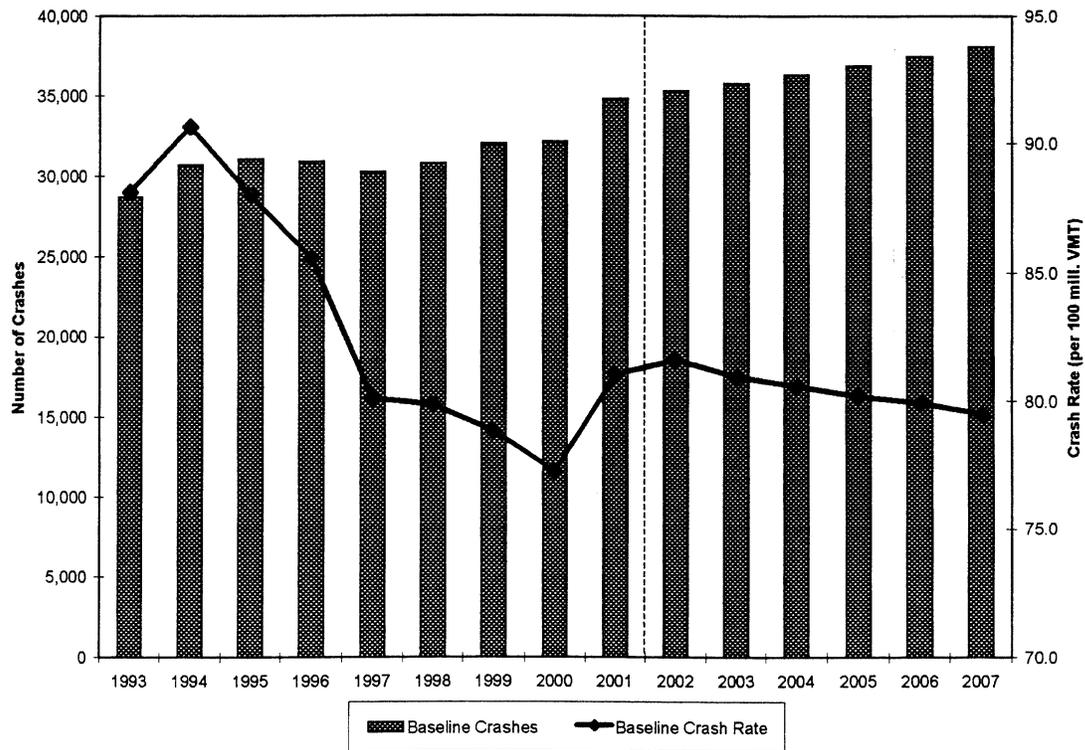
There were a total of 34,807 serious crashes (injury & fatality) in 2001, which is the last complete year of data available for analysis. The baseline forecast was developed and modeled at the neighborhood (Census block group) level and was based on a regression model driven primarily by forecasts of growth in households and the Latino/Hispanic population.

Other variables included in the baseline model that were not changed over the 2002-2007 period were average commute time (2000 Census), average age of residents, average household size and the degree of urbanization of the neighborhood (i.e., urban, suburban, town, rural, etc.).

Thus, for each year, the model predicted the number of serious crashes that would be expected given the current year’s number of households and the Latino/Hispanic population, together with several general demographic and lifestyle variables describing the type of neighborhood.

The results of the baseline forecast show continued growth in serious crashes until 2007, when the total would reach 38,061, as depicted in Exhibit I-1.

**Exhibit I-1.
Baseline Forecast: Injury/Fatality Crashes and Crash Rates to 2007**



The corresponding crash rate (crashes per 100 million vehicle miles traveled), which declined dramatically between 1993 and 2000 and then spiked in 2001, is expected to decline only slightly, to 79.5 – still well above the 2000 level of 77.2.

Crash Reduction Simulation

An alternative, potential forecast – based on the crash-reduction model – was developed using the crash data and input from the survey on likelihood to change behavior. The forecast assumes implementation starting in 2004 of the program factors identified above, as well as behavioral change by drivers who said in the survey they would use seat belts more often, or would change a driving-related behavior such as speeding.

The analysis assumed that the full effects of changes in CDOT strategies would not be felt until 2007, so the estimated reduction in crashes was phased in beginning in 2004.

Under this “potential scenario” by 2007 there would be 1,815 fewer crashes.

Exhibit I-2.
Crash-Reduction Model Forecast: Baseline vs. Potential Injury/Fatality Crashes to 2007

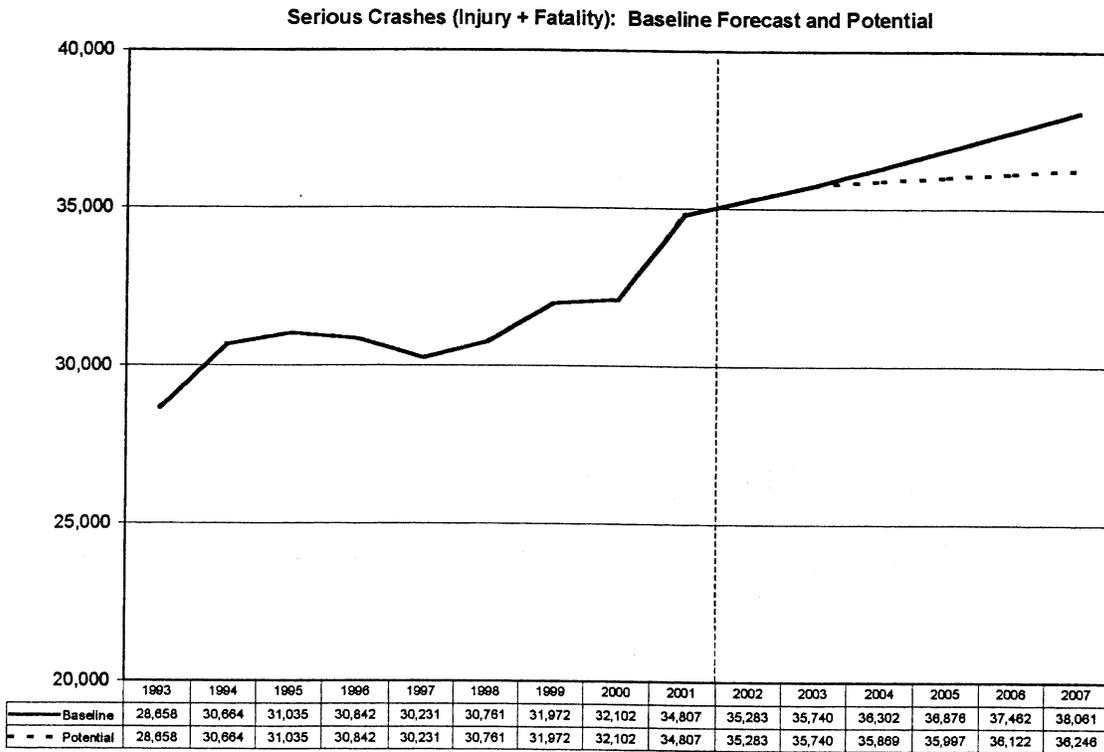
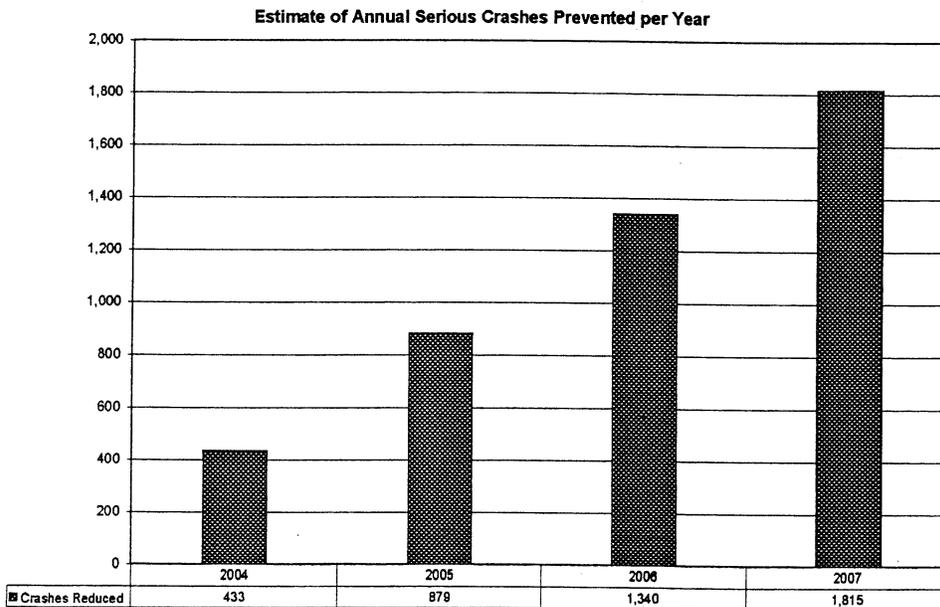
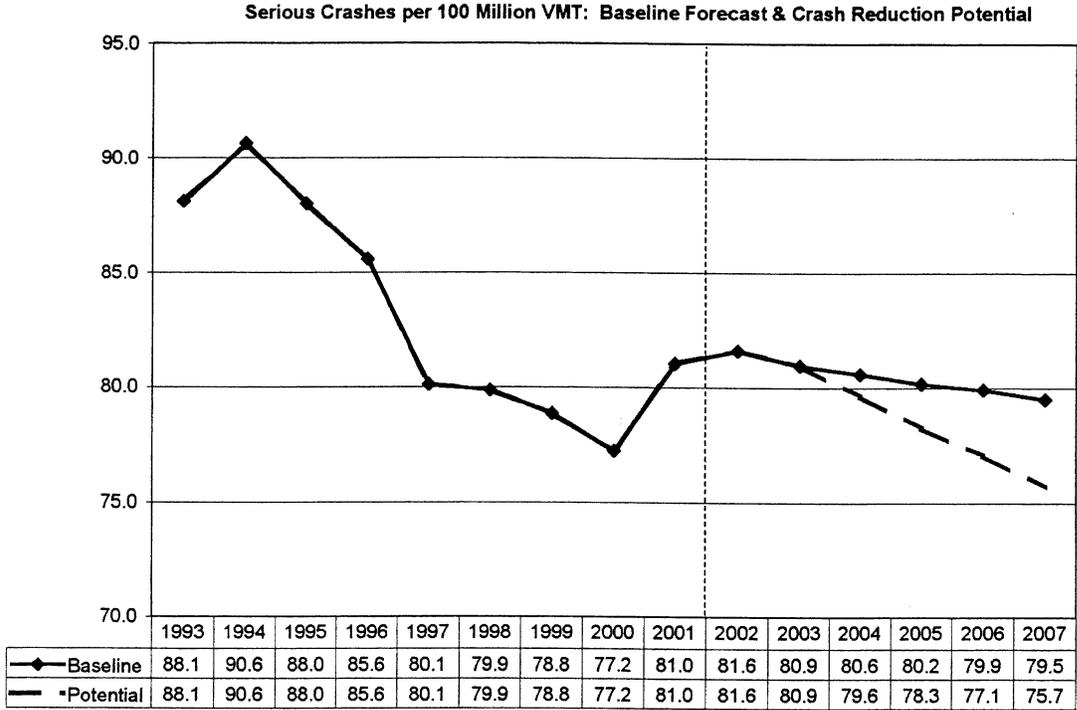


Exhibit I-3.
Crash-Reduction Forecast: Crashes Prevented If All Remedial Factors in Place to 2007



Expressed in terms of crash rates, the potential “crash reduction” scenario shows a steeper decline in crash rates, from 81.0 in 2001 to 75.7 by 2007.

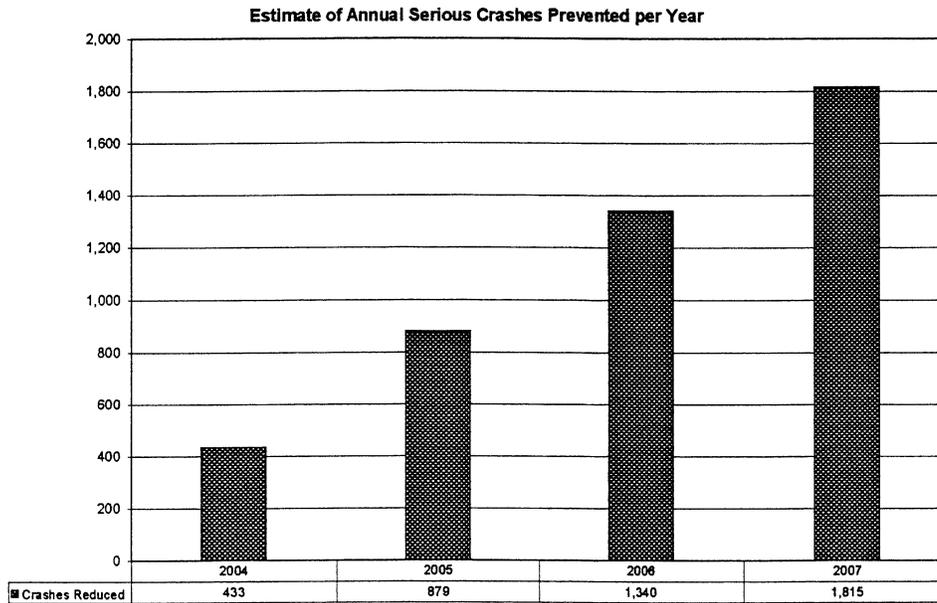
**Exhibit I-4.
Crash-Reduction Forecast: Baseline vs. Potential Injury/Fatality Crash Rates to 2007**



Implementation of a combination of the remedial factors identified in the model for all four high-risk driver groups **would result in 1,815 fewer crashes in 2007.**

Exhibit I-4.

Crash-Reduction Forecast: Crashes Prevented If All Remedial Factors in Place to 2007



Strategic Recommendations

The following are discussed in more detail in Section XIII:

1. Continue the emphasis on improving the behavior of high-risk drivers – including young drivers, impaired drivers, occupant protection non-compliers, and aggressive drivers – targeting these drivers in accord with findings from the PRIZM and survey demographic data:
 - For young drivers, target those in military households and in the more affluent, metro-suburban households.
 - For reaching impaired drivers, focus on messages and connections with less-well-to-do individuals.
 - For dealing with occupant protection non-compliance, consider special programs for small towns and rural areas.
 - In trying to reach aggressive drivers, recognize that 37.5 percent of the drivers have children living at home with them; communicate with those drivers in “family” terms about how aggressive driving behaviors are predictors of a driver becoming involved in serious accidents.
2. Look at ways to encourage or sponsor new drivers-training courses or related programs, and foster effective incentives and marketing. It is clear that motivating the average driver to take a full drivers-training course would make a large difference in driving behavior. Interest in such a program is strong among the high-risk driver segments studied, and several incentives tested appear to be sufficiently motivating.

This includes advocating stronger implementation of drivers training programs for different age groups and in different forms, especially programs that would allow the graduate to qualify for discounts on car insurance, or would provide other incentives.

While it may not be possible in the near term, the incentive of providing a reduction in the next traffic-ticket fine in exchange for taking either a refresher course or a full driving course was also a very strong predictor of change in behavior and should be considered as a possible longer-term option, technology and systems permitting. This incentive appeared in three of the four high-risk driver parts of the crash-reduction model.

3. Consider implementing five other programs in the crash-reduction model, although some of these would become practical only after changes or upgrades in government databases and systems:
 - Providing a favorable “points” allowance to new graduates of drivers training programs, as an incentive for taking such training (a strong incentive among young and aggressive drivers).
 - Giving drivers a free CD or videotape demonstrating tips on driving safety (especially for impaired and aggressive drivers).

- ♦ Having fire stations check occupant-protection equipment free of charge and provide drivers with free safety information (for occupant protection non-compliants).
 - ♦ As an incentive for taking drivers training, encouraging employers to pay the cost (for occupant protection non-compliance).
 - ♦ Advocating a discount on vehicle registration/license-plate tabs (especially for aggressive drivers) as an incentive for taking drivers training.
4. Feature firefighters, or other Emergency Medical Services professionals, as spokespersons in advertising about safe driving.

In Colorado, using firefighters as traffic safety advocates may be especially effective in rural areas, especially in connection with persuading “nonbelievers” to wear seatbelts.

5. To take the fight against traffic fatalities to the next level, reach out to rural drivers with traffic-safety education and information campaigns that fit their lifestyle and point of view, perhaps featuring rural firefighters (as above), who are volunteers and neighbors, as spokespersons for traffic safety.
6. Develop a program to place traffic safety speakers (firefighters, professional drivers, traffic safety professionals) with community groups throughout the state to talk about road and highway safety, including tips on how to handle vehicles in unfavorable conditions.
7. Consider a program to provide “family” traffic safety information to individuals expecting the birth of a first child, perhaps through medical care providers before the time of birth.
8. Look into providing further information and reminders in such specific situations as warnings issued by officers (during which officers could add a safety message in accord with seasonal themes), and put more reminder signs in areas where drivers are likely to have begun driving without putting on a seat belt.
9. In dealing with impaired drivers, strongly consider implementing the one-time hanger-card parking permit that drinking establishments could make available to potential drunk drivers so they can leave their cars without having them ticketed, and return home by other means. In addition, consider three other program elements that were specifically aimed at the alcohol segment and were highly predictive of change among those drivers:
- ♦ Being able to park their car in a ticket-free zone nearby after leaving a bar or tavern.
 - ♦ Learning more about the costs of DUIs – that is, provide more education on this topic.
 - ♦ Hearing that friends were being safer about drinking and driving: consider social marketing that emphasizes such communication through networks of friends.

10. Consider the remaining significant factors included in the crash-reduction modeling:
 - Encouraging community organizations such as schools and churches to have guest speakers on driving safety; while this was not a top predictor, it was important for some drivers, both in the young driver and aggressive driver segments.
 - Providing a discount on renewing a driver's license as an incentive for further training; as a predictor this was important to a certain small group of drivers.
 - Having community organizations hand out a flyer on seat-belt safety; this was a predictor for the occupant-protection segment, appealing to a small group of drivers.
11. A summary and major point stemming from the crash-reduction modeling is that in order to realize the potential reduction in crashes indicated in this research, CDOT will need to utilize a range of programs and initiatives studied in this research project rather than focusing on only one or two.

Only two ideas (taking a full drivers-training course, with the incentive of a reduced ticket) were widely favored. The other 11 suggestions would trigger change only among a limited number of those in the target markets.

12. Provide further information to Colorado's drivers about current occupant-protection requirements, since many in the occupant-protection focus groups expressed confusion about these matters.
13. As a general observation, consider partnering with the private and nonprofit sectors where possible to help minimize costs and maximize the implementation and appeal of safety programs.
14. There is positive evidence, in terms of driver perceptions, about the continued effectiveness of the campaign themes, "The Heat Is On" and "Click It or Ticket," and the value of humor and direct messages in such themes as "DUI – The Endless Hangover." These themes merit continued use.
15. To help reduce rural fatalities, consider installing stop lights at four-way-stop intersections as fatality accidents are reported, not only for added visibility but especially to signify that "this is a killer intersection." The change should be accompanied by appropriate public relations information or marketing efforts to make drivers aware of the problem.
16. Along with the above programs, maintain a strong emphasis on law enforcement to reduce driving infractions in general, and to control Colorado's drivers, particularly in regard to speeding.

Section II: Colorado General Crash Trends

Reducing the number of fatalities and injuries in traffic crashes, and the associated social and economic losses from these crashes, continues to drive the Colorado Department of Transportation's traffic safety program. Over the past 21 years, Colorado has undertaken a number of initiatives to reduce fatalities and injuries. These include:

- Efforts focusing on drinking and driving (e.g., creation of the Law Enforcement Assistance Fund in 1982)
- Child safety seat and seat belt laws (1985 and 1987)
- The Graduated Licensing Law for new drivers (1999)

Overview of Crash Trends

The number of fatal crashes has continued to go up on the state's highways since 1997. Between 2000 and 2001, fatal crashes went up 5.5 percent, but between 2001 and 2002 they increased at a slower rate – 4.5 percent.

In 2002, however, preliminary data from the Fatality Analysis Reporting System (FARS) show the number of fatalities actually decreased.

In 2001, alcohol-related fatal crashes went up 25.7 percent over the preceding year, and alcohol-related fatalities went up 26.5 percent.

Between 2000 and 2001, injury crashes grew by 8.5 percent, but injuries grew by 5.4 percent. So, even though there were more injury crashes, fewer people were injured per crash.

In the past 10 years, the number of Colorado-licensed drivers has increased 16.1 percent, and Vehicle Miles Traveled on the state's highways has increased 32.1 percent, suggesting that congestion on some of the state's highways represents a contributing problem.

A wide range of data is presented in Exhibit II-1 for the years 1993-2001. Fatality data for 2002 are also included, although percentages of change are given for only 2000 vs. 2001 data.

**Exhibit II-1.
Colorado Crash and Population Trends, 1993-2001**

| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | %Chg 2000-01 |
|---------------------------------|--------|--------|--------|---------|---------|---------|---------|---------|---------|-------|-----------------|
| Total Crashes | 90,406 | 94,489 | 98,393 | 101,943 | 105,852 | 109,984 | 115,145 | 119,845 | 131,020 | | 9.3% |
| Fatal Crashes | 509 | 523 | 572 | 552 | 534 | 551 | 558 | 613 | 647 | 676 | 5.5% |
| Injury Crashes | 28,149 | 30,141 | 30,463 | 30,290 | 29,697 | 30,210 | 31,414 | 31,489 | 34,160 | | 8.5% |
| Property Damage Crashes | 61,748 | 63,825 | 67,358 | 71,098 | 75,621 | 79,223 | 83,173 | 87,743 | 96,213 | | 9.7% |
| Total Crash Rate | 278.0 | 279.3 | 279.0 | 282.9 | 280.5 | 285.5 | 284.0 | 288.4 | 305.0 | | 5.8% |
| Injury Crash Rate | 86.6 | 89.1 | 86.4 | 84.0 | 78.7 | 78.4 | 77.5 | 75.8 | 79.5 | | 5.0% |
| Fatal Crash Rate | 1.57 | 1.55 | 1.62 | 1.53 | 1.41 | 1.43 | 1.38 | 1.47 | 1.51 | | 2.1% |
| Fatalities | 557 | 586 | 645 | 617 | 613 | 628 | 626 | 681 | 741 | 742 | 8.8% |
| Injuries | 43,007 | 45,862 | 46,099 | 45,448 | 42,878 | 45,089 | 46,109 | 46,169 | 48,649 | | 5.4% |
| Fatalities per 100 Million VMT | 1.71 | 1.73 | 1.83 | 1.71 | 1.62 | 1.63 | 1.54 | 1.64 | 1.73 | | 5.3% |
| Injuries per 100 Million VMT | 132.0 | 135.6 | 130.7 | 126.1 | 113.6 | 117.1 | 113.7 | 111.1 | 113.3 | | 1.9% |
| Alcohol related fatal crashes | 188 | 202 | 232 | 202 | 163 | 184 | 177 | 187 | 235 | | 25.7% |
| Alcohol related fatalities | 204 | 232 | 262 | 215 | 186 | 203 | 193 | 211 | 267 | | 26.5% |
| Population (thousands) | 3,588 | 3,689 | 3,782 | 3,867 | 3,954 | 4,054 | 4,161 | 4,301 | 4,437 | | 3.2% |
| VMT (billions) | 32.5 | 33.8 | 35.3 | 36.0 | 37.7 | 38.5 | 40.6 | 41.6 | 43.0 | | 3.4% |
| Licensed Drivers (thousands) | 2,592 | 2,733 | 2,815 | 2,849 | 2,996 | 3,014 | 3,040 | 3,113 | 3,288 | 3,295 | 5.6% |
| Registered Vehicles (thousands) | 3,450 | 3,619 | 3,556 | 3,841 | 3,961 | 4,053 | 4,130 | 4,225 | 4,006 | | -5.2% |

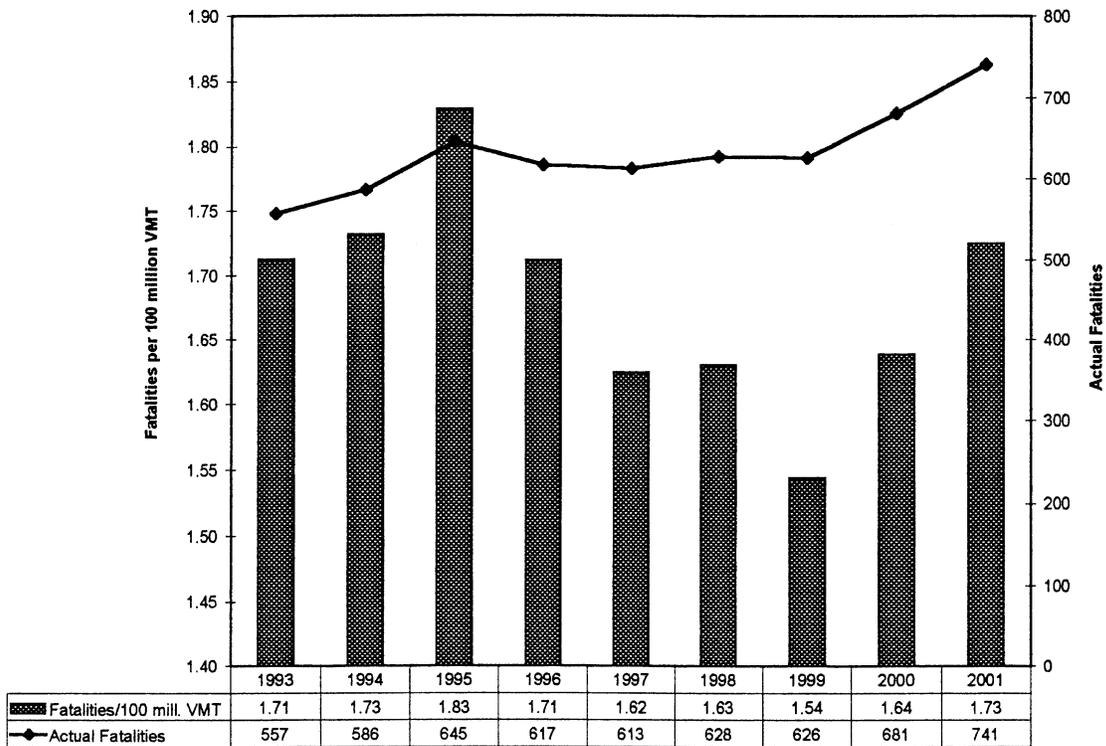
Source: Colorado Department of Revenue, Colorado Division of Local Government (population data), Fatality Analysis Reporting System (FARS) data from CDOT, crash data from CDOT

Fatalities Per 100 Million VMT

As shown in Exhibit II-2 below, the number of fatalities per 100 Million Vehicle Miles Traveled (VMT) on Colorado’s highways increased dramatically in 1995, and then dropped to a significant low point in 1999. In 2000 the fatality rate rose substantially, and then increased again in 2001 – to the second-highest point in the nine-year period, on a par with 1994.

In 2002, preliminary data from the Fatality Analysis Reporting System show the number of fatalities declined.

Exhibit II-2.
Fatalities per 100 Million VMT and Actual Fatalities, 1993-2001



Source: Fatality Analysis Reporting System (FARS) data from CDOT

Overview of Injury Crashes

Although injury crashes grew by 8.5 percent statewide in 2001, drivers from some communities had higher injury crash rates than would be expected given their community's driving-age population.

Place of residence of drivers in injury crashes—counties & regions

Analyses of where injury crash drivers live are useful in identifying communities that would benefit from traffic safety education programs.

Among large counties in 2001, Pueblo and Adams counties had the highest driving-age-population percentages of resident drivers involved in an injury crash.

As shown in Exhibit II-3, drivers living in rural regions of the state were less likely than urban drivers to be involved in an injury crash. Among rural regions, injury crash rates were highest in the Eastern Plains Region and Northwest Colorado. Crash rates were particularly low in the Gunnison Valley and Northern Mountain Resort region.

Exhibit II-3.

Drivers Involved in Injury Crashes by County and Region of Residence, 1999-2001

| County/Region Name | Percentage of 16+ Pop. Involved in Injury Crashes | | | Based on Index of Drivers in Injury Crashes (State = 1.00) | |
|---------------------------------|---|------|------|--|-----------|
| | 1999 | 2000 | 2001 | 2000 Rank | 2001 Rank |
| Pueblo | 1.9% | 1.9% | 2.2% | 1 | 1 |
| Adams | 1.8% | 1.8% | 2.1% | 4 | 2 |
| Arapahoe | 1.8% | 1.8% | 1.9% | 3 | 3 |
| Denver | 1.8% | 1.9% | 1.9% | 2 | 4 |
| El Paso | 1.5% | 1.6% | 1.8% | 5 | 5 |
| Weld | 1.5% | 1.4% | 1.7% | 8 | 6 |
| Jefferson | 1.5% | 1.5% | 1.7% | 6 | 7 |
| Boulder | 1.5% | 1.5% | 1.6% | 7 | 8 |
| Larimer | 1.4% | 1.4% | 1.6% | 11 | 9 |
| Mesa | 1.5% | 1.4% | 1.5% | 9 | 10 |
| Douglas | 1.6% | 1.4% | 1.5% | 10 | 11 |
| Eastern Plains Region | 1.1% | 1.1% | 1.6% | 15 | 12 |
| Northwest Colorado Region | 1.3% | 1.2% | 1.3% | 12 | 13 |
| San Luis Valley Region | 1.3% | 1.0% | 1.3% | 17 | 14 |
| Southwest Colorado Region | 1.3% | 1.1% | 1.3% | 14 | 15 |
| Central Mountain Region | 1.3% | 1.2% | 1.2% | 13 | 16 |
| Gunnison Valley Region | 0.9% | 0.9% | 1.0% | 18 | 17 |
| Northern Mountain Resort Region | 1.2% | 1.0% | 1.0% | 16 | 18 |

Note: An "injury crash" means an evident incapacitating injury was observed or where there was a fatality. Percentages were calculated by dividing the number of drivers residing in a city who were involved in an injury crash in Colorado in 2000 by the 16+ population of that city. The statewide average was 1.7 percent. The state average of the index is 1.0. The index is adjusted for the driving-age population in each city.

Source: 1999, 2000 and 2001 CDOT crash data and 2001 population data from the Colorado Division of Local Government

Place of residence of drivers involved in injury crashes—large cities

In 1999-2001, at least 2 percent of Aurora’s and Pueblo’s driving-age populations were involved in an injury crash. As shown in Exhibit II-4, in 2001 Pueblo, Aurora and five other cities reached this level: Longmont, Loveland, Colorado Springs, Thornton, and Denver.

**Exhibit II-4.
Percentage of Large-City Residents of Driving Age Involved in Injury Crashes, 1999-2001**

| City | 1999 | 2000 | 2001 | Chg. 2000-01 |
|------------------|------|------|------|-----------------|
| Pueblo | 2.1% | 2.0% | 2.8% | 0.8% |
| Aurora | 2.3% | 2.4% | 2.4% | 0.0% |
| Longmont | 1.9% | 1.9% | 2.4% | 0.5% |
| Loveland | 1.8% | 1.5% | 2.2% | 0.7% |
| Colorado Springs | 1.6% | 1.7% | 2.2% | 0.5% |
| Thornton | 1.9% | 1.9% | 2.1% | 0.2% |
| Denver | 1.9% | 1.9% | 2.1% | 0.2% |
| Arvada | 1.6% | 1.7% | 1.9% | 0.2% |
| Greeley | 1.4% | 1.4% | 1.8% | 0.4% |
| Lakewood | 1.5% | 1.6% | 1.7% | 0.1% |
| Westminster | 1.6% | 1.6% | 1.6% | 0.0% |
| Boulder | 1.4% | 1.4% | 1.6% | 0.2% |
| Fort Collins | 1.4% | 1.4% | 0.6% | -0.8% |

Note: An "injury crash" means a possible, evident, or incapacitating injury was observed or where there was a fatality. Percentages are calculated by dividing the number of drivers residing in a city who were involved in an injury crash in Colorado in 2001 by the 16+ population of that city. The statewide average in 2001 was 1.7 percent. The average for cities with over 50,000 driving age population was 2.2 percent.

Source: 1999, 2000 and 2001 CDOT crash data and the Colorado Division of Local Government 2000 population data by city

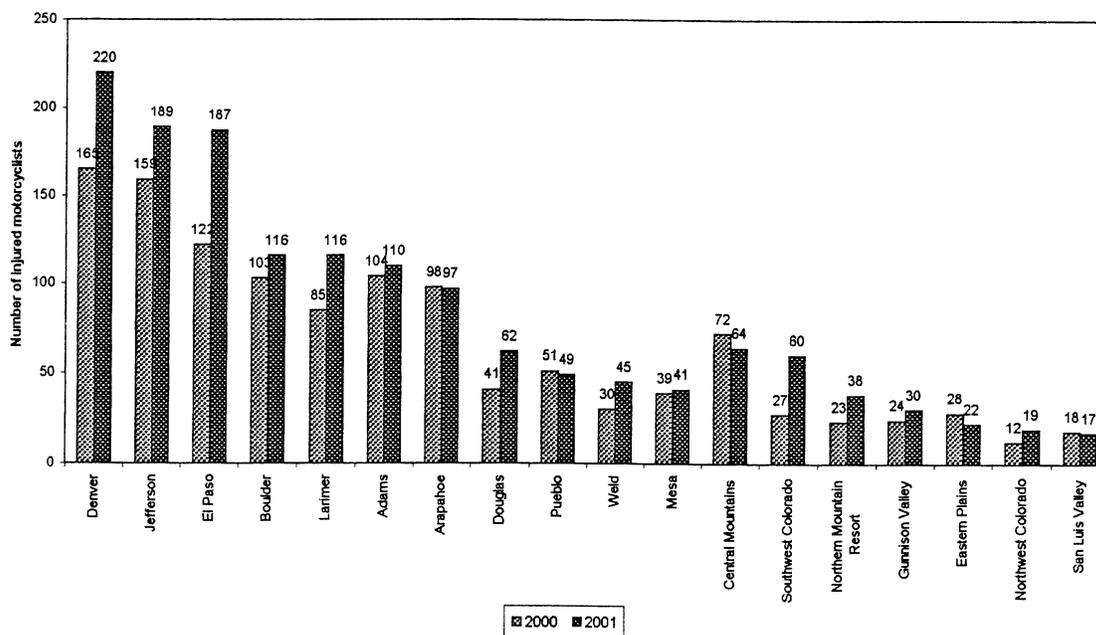
Special Populations: Crashes Involving Motorcyclists

In 2001, there were 104,377 registered motorcycles in Colorado, up from 95,089 in 2000. The crash data show that around 1.5 percent of these motorcycles were involved in an injury crash in 2001. This proportion has held steady since 1999, indicating that the size of the motorcycle population has been growing at about the same pace as the number of motorcycle crashes.

Motorcyclists involved in crashes by location of crash - large counties and regions

Among large counties, Denver, Jefferson, and El Paso had the greatest number of motorcyclists involved in injury crashes in both 2000 and 2001, with a sharp increase in the numbers for 2001 in each county.

Exhibit II-5.
Motorcyclists in Injury Crashes, Large Counties and Regions, 2000 and 2001

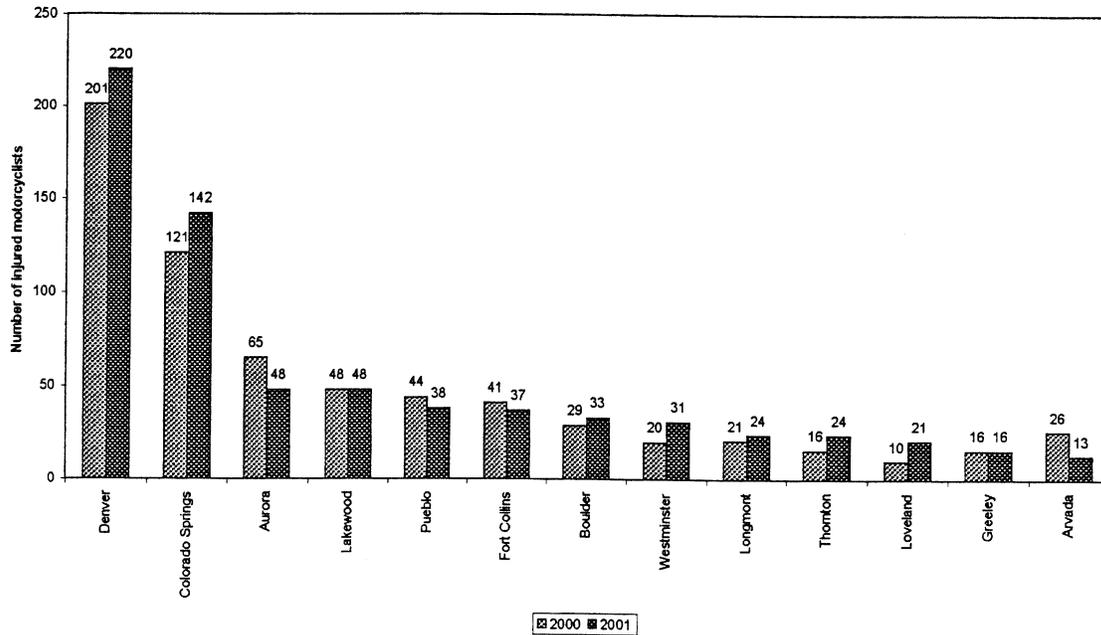


Source: 2001 CDOT crash data

Motorcyclists involved in crashes by location of crash—large cities

In 2001, approximately half of all motorcycle injury crash drivers crashed in cities with populations of 50,000 or greater. As shown in Exhibit II-6, Denver, and Colorado Springs had the highest numbers of motorcyclists involved in injury crashes.

**Exhibit II-6.
Motorcyclists in Injury Crashes, Large Cities, 2000 and 2001**

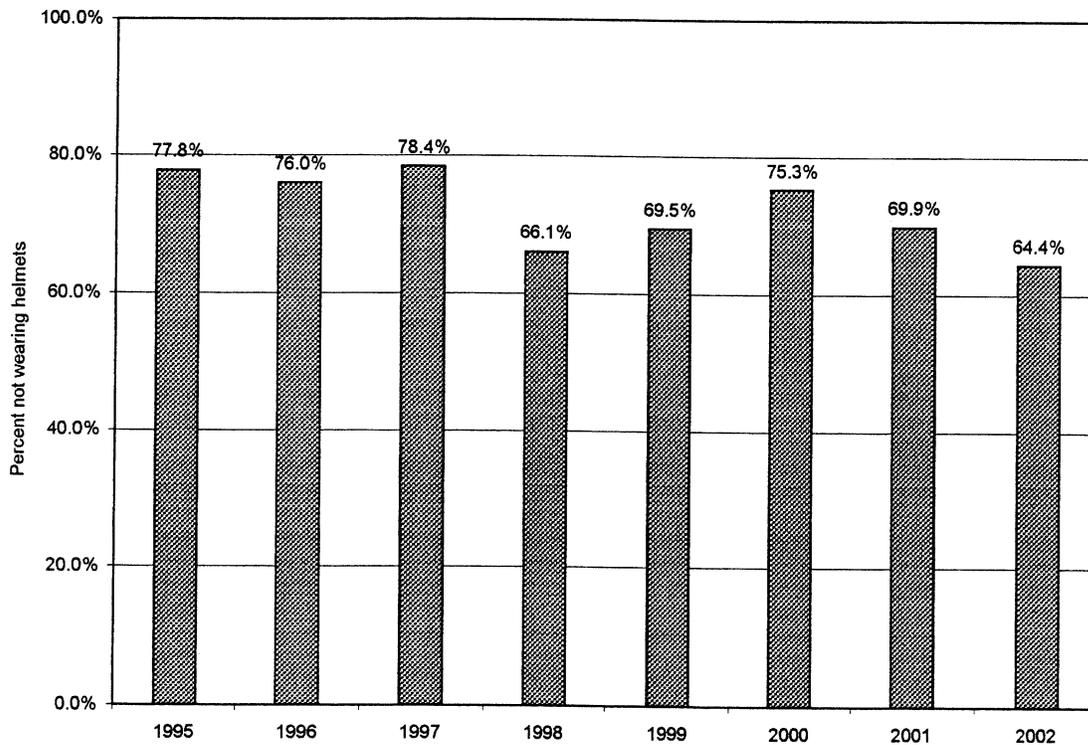


Source: 2001 CDOT crash data

Helmet use among motorcyclists

Use of helmets by motorcyclists continues to be a prime emphasis for traffic safety programs, and there continues to be a problem with helmet use among motorcyclists in Colorado (see Exhibit II-7). There has been a significant drop since 1995 in the percentages of motorcycle fatalities not wearing helmets, but approximately two-thirds of the motorcyclists who died in 2002 were not wearing a helmet. It should be noted that the underlying actual counts are small: in 2000, 55 motorcycle fatalities were not wearing a helmet. In 2001 the actual number was 58, and it then declined to 47 in 2002. Even so, this appears to be a problem meriting on-going attention.

Exhibit II-7
Percent of Motorcycle Fatalities Not Wearing Helmets, 1995-2002

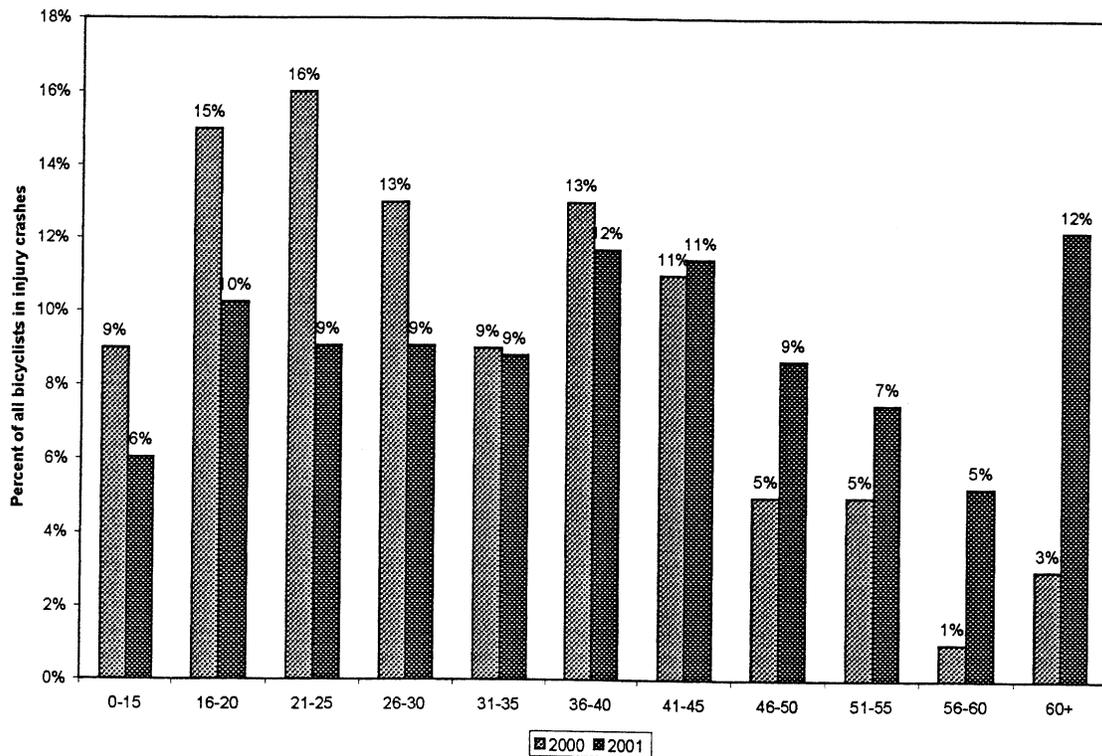


Source: FARS database

Special Populations: Crashes Involving Bicyclists

Exhibit II-8 provides an age profile of all Coloradoans involved in bicycle injury crashes on the state's highways. The incidence of injury crashes is a relatively small number: there was a total of 1,015 bicycle injury crashes in 2001. This means random variation can make differences from category to category seem relatively large, in percentage terms. Nonetheless, the 2001 data indicate somewhat of a shift in injury crashes among bicyclists from younger to older bicyclists.

Exhibit II-8.
Colorado Resident Bicyclists in Injury Crashes, by Age Groups, 2000 – 2001

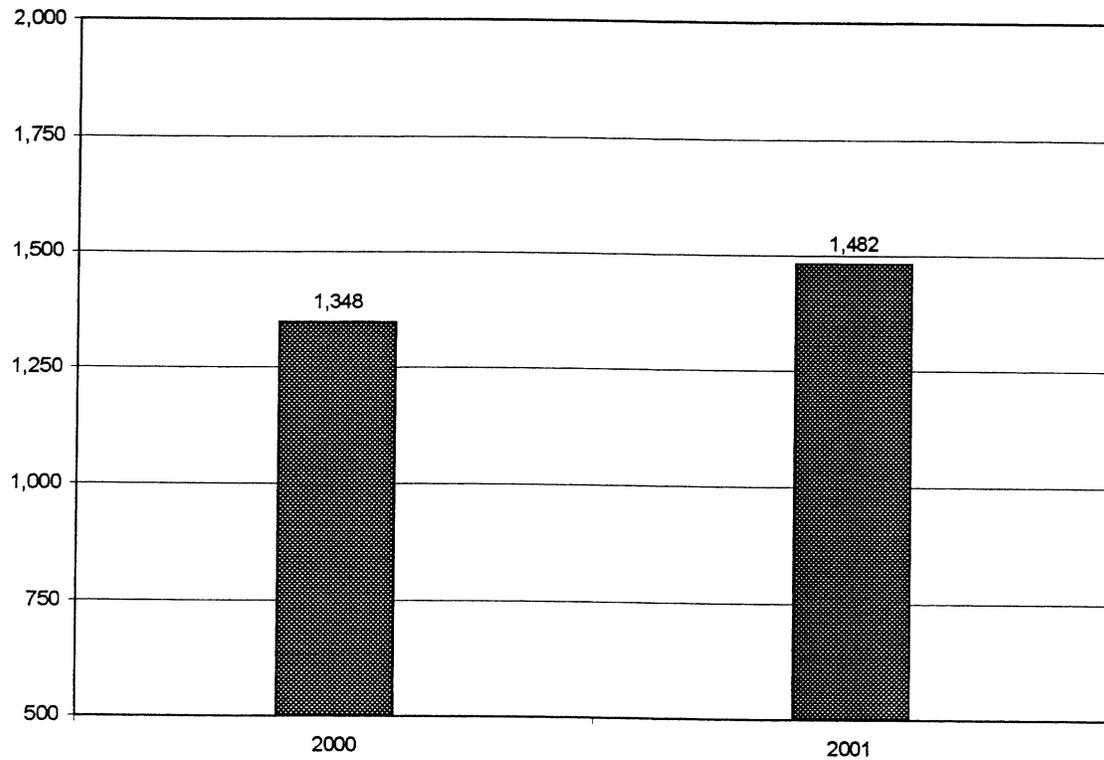


Source: 2001 Colorado Department of Transportation crash data

Special Populations: Crashes Involving Pedestrians

The following data point out that total crashes involving pedestrians in Colorado increased by 9.9 percent between 2000 and 2001, moving from 1,348 to 1,482.

Exhibit II-9.
Crashes Involving Pedestrians, 2000 vs. 2001



Source: 2001 CDOT crash files

School-aged pedestrians

As indicated in Exhibit II-10, school-aged pedestrians made up nearly 13 percent of all Colorado crashes involving pedestrians in 2001. The share of school-aged pedestrians was highest in El Paso and Douglas Counties.

**Exhibit II-10.
2001 Crashes Involving Pedestrians by County of Crash and Type of Pedestrian**

| County | School Age Pedestrians | All Others | Combined | School Age Share of Total |
|-----------|------------------------|------------|----------|---------------------------|
| Denver | 54 | 484 | 538 | 10.00% |
| Pueblo | 6 | 35 | 41 | 14.60% |
| Weld | 5 | 25 | 30 | 16.70% |
| El Paso | 30 | 111 | 141 | 21.30% |
| Larimer | 5 | 35 | 40 | 12.50% |
| Boulder | 6 | 74 | 80 | 7.50% |
| Mesa | 3 | 20 | 23 | 13.00% |
| Arapahoe | 24 | 138 | 162 | 14.80% |
| Jefferson | 17 | 121 | 138 | 12.30% |
| Adams | 25 | 115 | 140 | 17.90% |
| Douglas | 2 | 11 | 13 | 20.00% |
| Other | 11 | 125 | 136 | 5.90% |

Source: 2001 CDOT crash file

Pedestrian crash rates per 100,000 drivers

Overall, the rate of pedestrian crashes was 42.7 crashes per 100,000 drivers. The rate varied between a high of 120.9 in Denver to a low of just 9.1 in Douglas county. Pedestrian crash rates are particularly problematic in Denver County.

Exhibit II-11.

2001 Crash Rates for Pedestrian Crashes by County of Crash

| County | Total Ped. Related Crashes | Driving Age Pop. | Crash Rate per 100,000 |
|--------------|----------------------------|------------------|------------------------|
| Denver | 538 | 444,885 | 120.9 |
| Adams | 140 | 269,058 | 52.0 |
| Arapahoe | 162 | 385,652 | 42.0 |
| Pueblo | 41 | 111,830 | 36.7 |
| Boulder | 80 | 219,523 | 36.4 |
| El Paso | 141 | 403,382 | 35.0 |
| Jefferson | 138 | 413,317 | 33.4 |
| Mesa | 23 | 94,021 | 24.5 |
| Weld | 30 | 145,774 | 20.6 |
| Larimer | 40 | 205,519 | 19.5 |
| Other | 136 | 878,147 | 15.5 |
| Douglas | 13 | 142,822 | 9.1 |
| Total | 1,465 | 3,428,286 | 42.7 |

Source: 2001 CDOT crash file

Section III: Analysis of Fatal Crashes

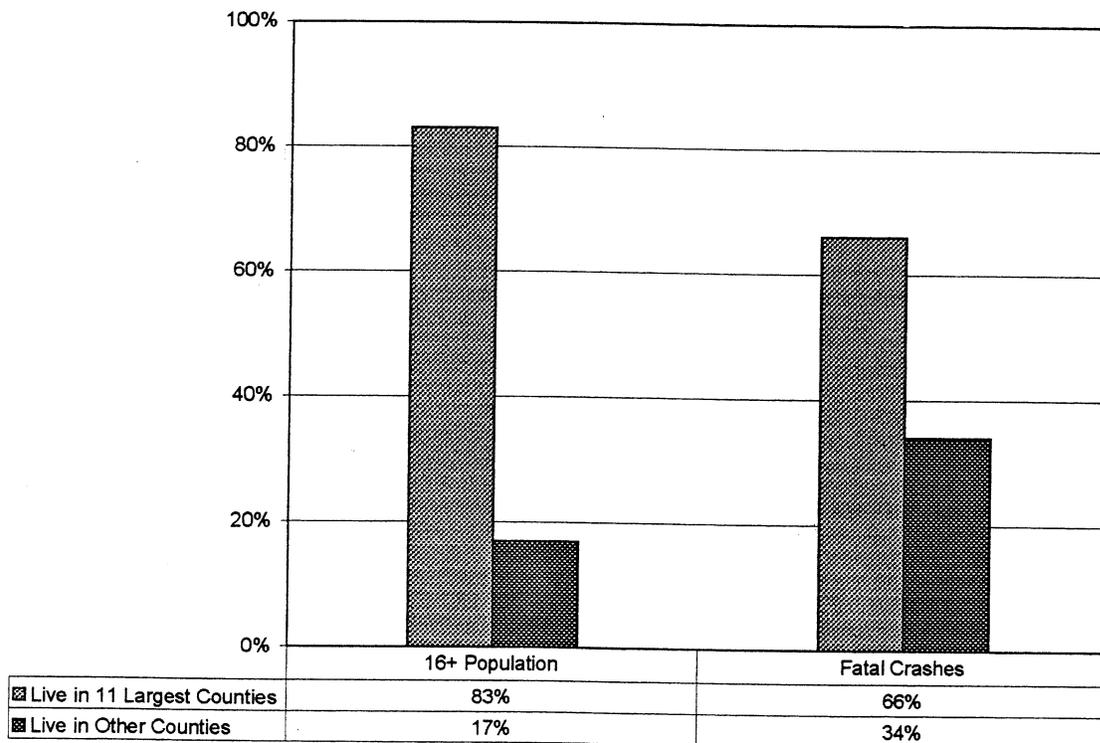
As shown in the previous section, Colorado fatal crashes and fatalities increased in 2000 and 2001, and fatalities declined somewhat in 2002. The nature and underlying cause of recent increases in fatal crashes are explored in detail in this section using FARS data and data from CDOT's crash record database, which has somewhat fewer fatal crashes than indicated in the more comprehensive FARS database.

Location of Fatal Crashes

The majority of fatal crashes occurred in Colorado's 11 most populous counties. However, fewer fatal crashes took place in these large counties than expected based on their population. Exhibit III-1 compares the distribution of Colorado's population between the 11 largest counties and the balance of the state with the distribution of fatal crashes between these two geographic segments. The 11 largest counties account for 83 percent of Colorado's population, but only 66 percent of Colorado's fatal crashes in 2001. In 2001 a substantial number of fatal crashes occurred in rural counties.

Exhibit III-1.

Largest Counties and Balance of State: Comparison of Driving Age Population and the Number of Fatal Crashes, 2001



Source: 2001 Colorado Department of Transportation crash data and Colorado Division of Local Government population data

Where fatal crashes occurred – large counties

Exhibit III-2 lists the number of fatal crashes in 2000 - 2002 for the 11 most populous Colorado counties, based on the 2001 driving-age population of each county. More fatal crashes occurred within Denver County than any other county, although the 2001 and 2002 totals are down considerably from the total for 2000. The next highest in 2002, in descending order, were Adams, Weld, and El Paso Counties.

Exhibit III-2.

Fatal Crashes Occurring Within the 11 Largest Colorado Counties, 2000-2002

| County | Fatal Crashes | | |
|--------------------|---------------|------|------|
| | 2000 | 2001 | 2002 |
| El Paso | 65 | 48 | 50 |
| Arapahoe | 31 | 37 | 39 |
| Jefferson | 50 | 54 | 40 |
| Weld | 36 | 59 | 52 |
| Douglas | 14 | 26 | 24 |
| Denver | 82 | 62 | 63 |
| Boulder | 27 | 25 | 33 |
| Adams | 40 | 43 | 54 |
| Mesa | 20 | 27 | 23 |
| Pueblo | 18 | 22 | 36 |
| Larimer | 25 | 27 | 34 |
| All Large Counties | 408 | 430 | 448 |

Source: 2000, 2001 CDOT crash data and 2002 FARS data from CDOT and Colorado Division of Local Government population data

Exhibit III-3 indicates whether the number of fatal crashes occurring in a county is in line with its *population*. Large counties with 2002 fatal crash rates well above crash rates in other large counties include Mesa, Douglas, Pueblo, Weld, and Larimer.

Exhibit III-3.

Fatal Crash Rate in the 11 Largest Colorado Counties (Place of Crash), 2000-2002

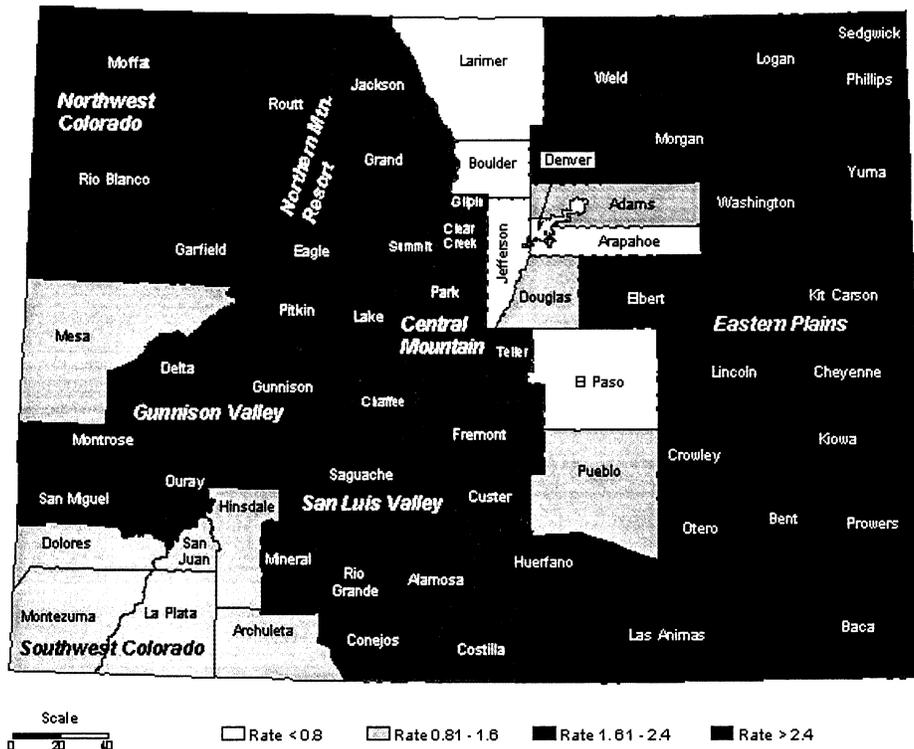
| County | Fatal Crashes per 100,000 Driving Age Pop. (2001) | | |
|--------------------|---|------|------|
| | 2000 | 2001 | 2002 |
| Mesa | 69.1 | 51.1 | 53.2 |
| Pueblo | 27.7 | 33.1 | 34.9 |
| Weld | 34.3 | 37.0 | 27.4 |
| Larimer | 17.5 | 28.7 | 25.3 |
| Adams | 5.2 | 9.7 | 8.9 |
| Douglas | 57.4 | 43.4 | 44.1 |
| Boulder | 12.3 | 11.4 | 15.0 |
| Denver | 9.0 | 9.7 | 12.1 |
| Arapahoe | 5.2 | 7.0 | 6.0 |
| Jefferson | 4.4 | 5.3 | 8.7 |
| El Paso | 6.2 | 6.7 | 8.4 |
| All Large Counties | 14.4 | 15.2 | 15.8 |

Source: 2000, 2001 CDOT crash data and 2002 FARS data from CDOT and Colorado Division of Local Government population data

Where fatal crashes occurred – balance of the state

As shown in Exhibit III-4, growth in fatal crashes in the Eastern Plains explains a large share of the growth in rural crashes in 2001. Fatal crashes also increased substantially in Northwest Colorado, the Northern and Central Mountains, in Gunnison Valley and San Luis Valley.

**Exhibit III-4.
Fatal Crash Index by Region and County, 2001**



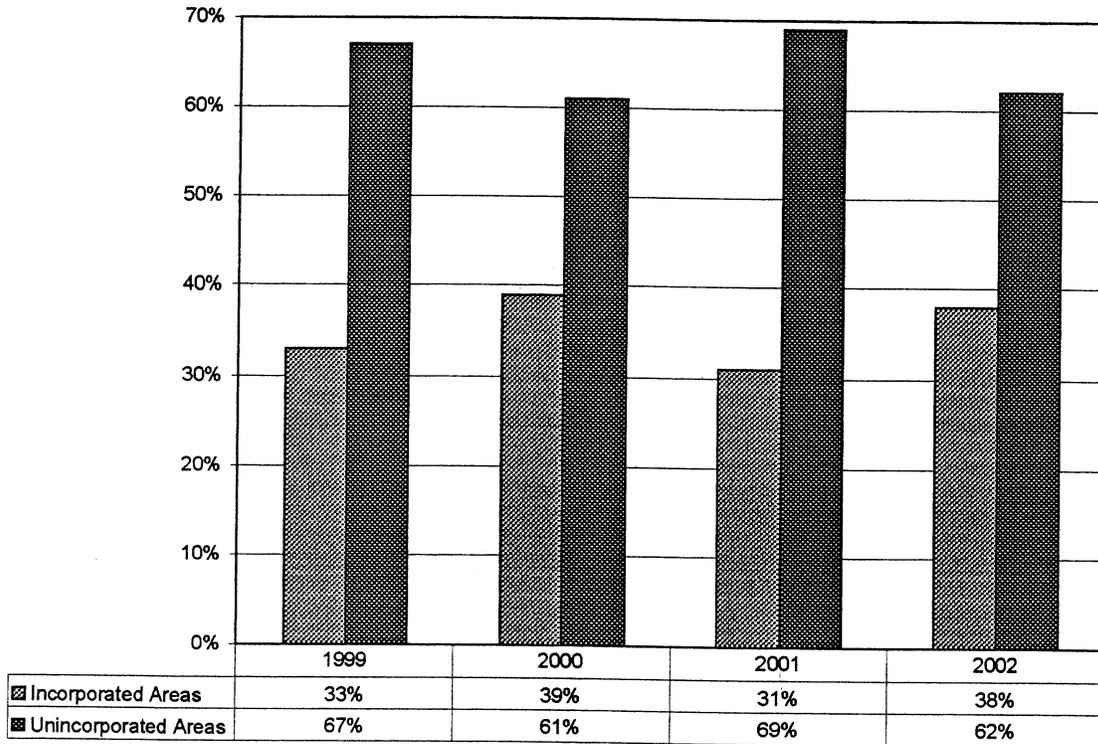
Note: Fatal crash index is based on the share of all fatal crashes by county and each county's relative proportion of the driving age population. The state average is 1.0.

Source: CDOT 2001 crash files

Location of fatal crashes by jurisdiction

Sixty-two percent of the fatal crashes in Colorado in 2002 took place outside incorporated cities and towns, down from 69 percent in 2001 (Exhibit III-5). Conversely, the number of fatal crashes in incorporated areas grew between 2001 and 2002.

**Exhibit III-5.
Location of Fatal Crashes by Jurisdiction, 1999 - 2002**



Source: 1999, 2000 and 2001 CDOT crash files and 2002 FARS data from CDOT; 'incorporated' refers to crash locations where a city code was recorded.

Location of fatal crashes by location in county, including largest city

Analysis of the data in Exhibit III-6 shows that Denver, Aurora, Colorado Springs and Lakewood account for a large share of fatal crashes in Colorado. In 2001, these four cities accounted for 17.8 percent of the state's total number of fatal crashes.

The data also show once again that there was a noticeable increase between 2000 and 2001 in fatal crashes in unincorporated areas.

**Exhibit III-6.
Fatal Crashes by Location in County, 2000 and 2001**

| County | Largest City | 2000 | | | 2001 | | | Total | |
|------------------|------------------|-------------------------|---------------------------------|----------------------------|-------------------------|---------------------------------|----------------------------|-------|-----|
| | | Crashes in Largest City | Other Incorporated Area Crashes | Crashes in Unincorp. Areas | Crashes in Largest City | Other Incorporated Area Crashes | Crashes in Unincorp. Areas | | |
| Denver | Denver | 82 | 0 | 0 | 82 | 61 | 1 | 0 | 62 |
| Jefferson | Lakewood | 16 | 11 | 23 | 50 | 10 | 12 | 32 | 54 |
| El Paso | Colorado Springs | 30 | 0 | 35 | 65 | 17 | 0 | 31 | 48 |
| Arapahoe | Aurora | 16 | 7 | 8 | 31 | 27 | 3 | 7 | 37 |
| Adams | Thornton | 5 | 18 | 17 | 40 | 3 | 23 | 17 | 43 |
| Boulder | Boulder | 1 | 9 | 17 | 27 | 2 | 3 | 20 | 25 |
| Larimer | Fort Collins | 3 | 3 | 19 | 25 | 4 | 0 | 23 | 27 |
| Weld | Greeley | 2 | 2 | 32 | 36 | 7 | 5 | 47 | 59 |
| Douglas | Parker | 1 | 1 | 14 | 31 | 2 | 0 | 24 | 26 |
| Pueblo | Pueblo | 9 | 0 | 9 | 18 | 7 | 0 | 15 | 22 |
| Mesa | Grand Junction | 6 | 0 | 20 | 20 | 6 | 0 | 21 | 27 |
| Balance of State | | - | 18 | 171 | 189 | - | 5 | 212 | 217 |
| Total State | | 171 | 69 | 374 | 614 | 146 | 52 | 449 | 647 |

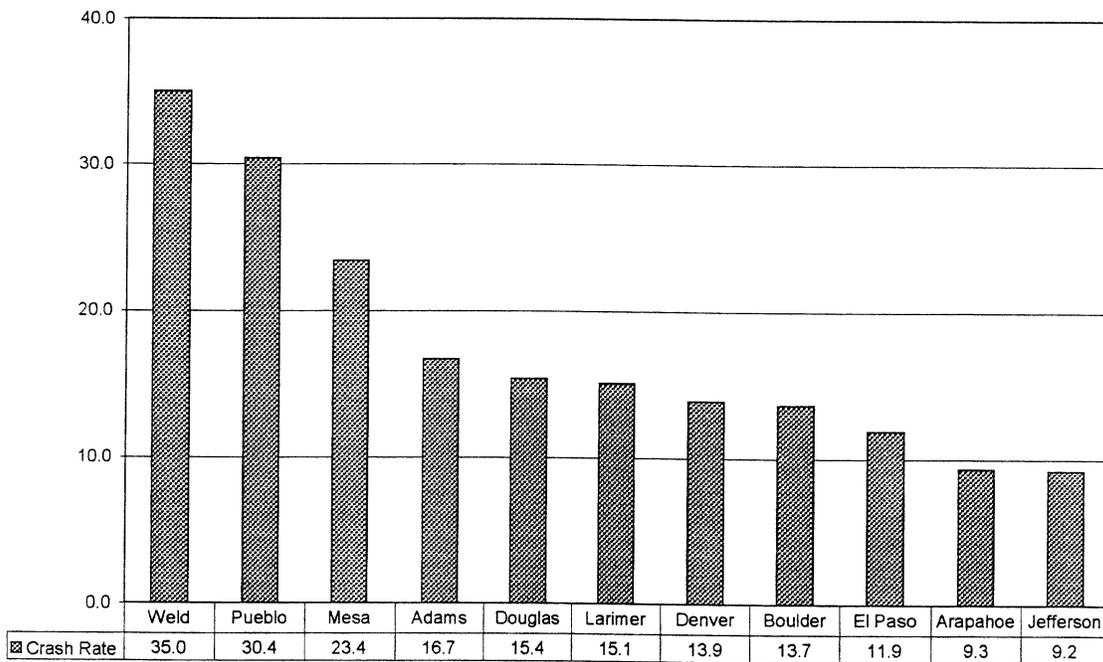
Source: 2000 and 2001 CDOT crash data

Place of Residence of Fatal Crash Drivers – Large Counties

Exhibit III-7 spotlights the resident counties of Coloradoans who were drivers in fatal crashes. The chart depicts crash rates adjusted for the number of fatal-crash drivers per 100,000 driving population in each county.

Drivers living in Weld (crash rate of 35.0) and Pueblo (30.4) Counties had the highest likelihood of being involved in a fatal crash, followed by Mesa County (23.4). These rates “by place of residence” differed considerably from crashes “by place of crash” for several counties.

Exhibit III-7.
Crash Rates of Drivers Involved in Fatality Crashes in the 11 Largest Colorado Counties (Place of Residence), 2001

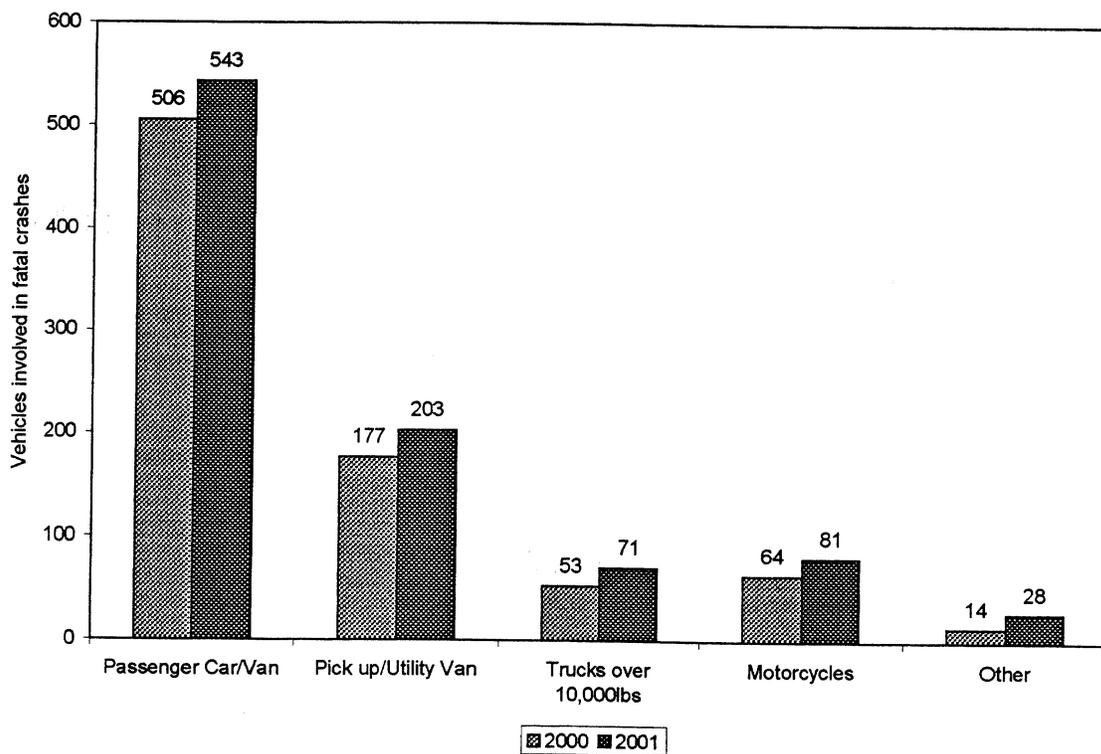


Source: 2001 CDOT crash data and Colorado Division of Local Government population data

Type of Vehicle

Most fatal crashes in Colorado involve cars or light trucks (see Exhibit III-8). However, motorcycles comprised a disproportionately large portion of vehicles in fatal crashes in 2001. There were 81 motorcycles involved in fatal crashes, or 8.7 percent of all vehicles involved in fatal crashes. Commercial trucks over 10,000 pounds gross weight accounted for 71 – or 7.7 percent – of the vehicles in fatal crashes in 2001.

Exhibit III-8.
Vehicles Involved in Fatal Crashes, 2000-2001

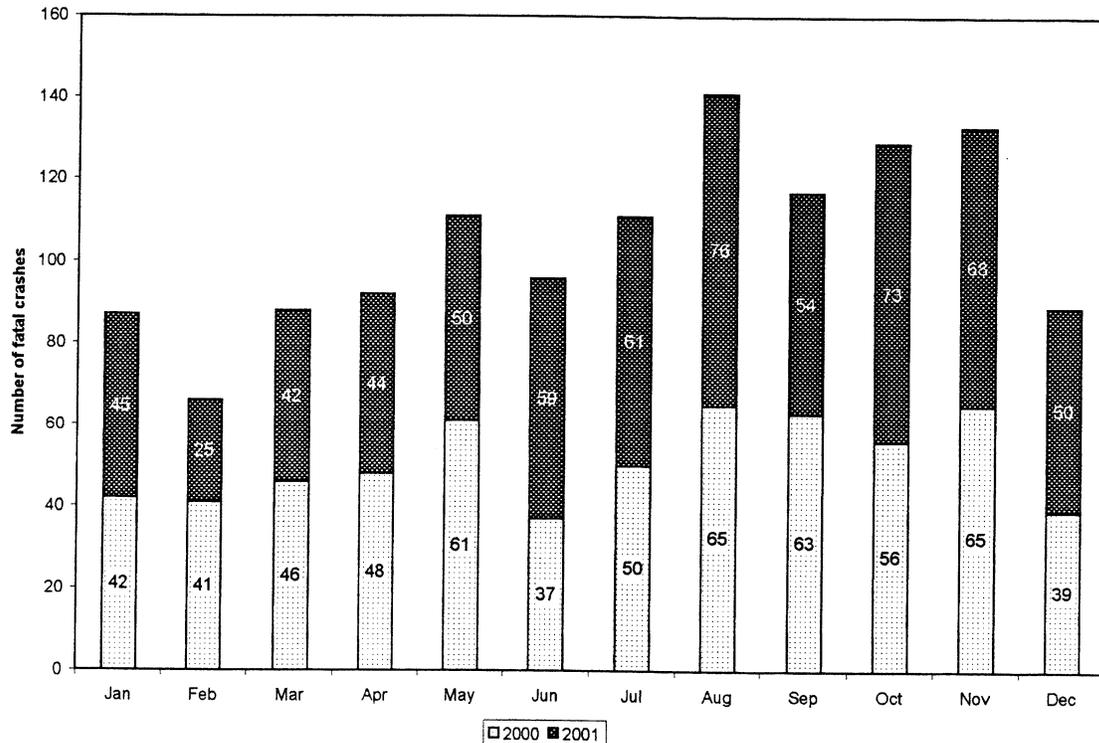


Source: 2000 and 2001 Colorado Department of Transportation crash data

Month of the Year

According to past research conducted by CDOT, there historically is relatively little seasonal variation in fatal crashes in Colorado, similar to the national pattern. Exhibit III-9 shows that in 2001 the peak month for fatal crashes was August, and that there were more fatal crashes throughout the second half of the year than in the first half.

Exhibit III-9.
Fatal Crashes in Colorado by Month, 2000 and 2001



Source: 2000 and 2001 FARS data from CDOT

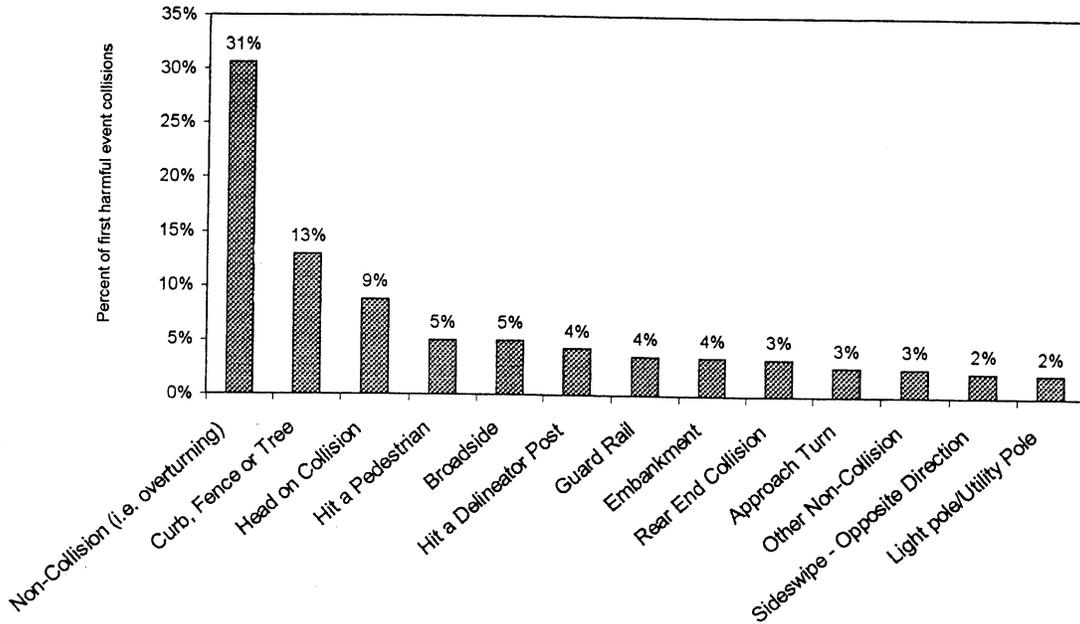
Cause of Crash

Numerous factors are associated with and may contribute to the number of fatal crashes. Fatal crashes may be higher in certain geographic areas, during particular times of day or on certain types of roads. In addition to these factors, other elements – including weather, driver behavior and driver characteristics – influence the probability of a fatal crash.

First harmful event

Crash records include an indication of the “first harmful event” in a crash (see Exhibit III-10). Overturning or another “non-collision” was the first harmful event in 31 percent of the fatal crashes in Colorado in 2001. Hitting a curb, fence or tree was the first harmful event in 13 percent of the fatal crashes.

Exhibit III-10.
“First Harmful Event” for Fatal Crashes, 2001

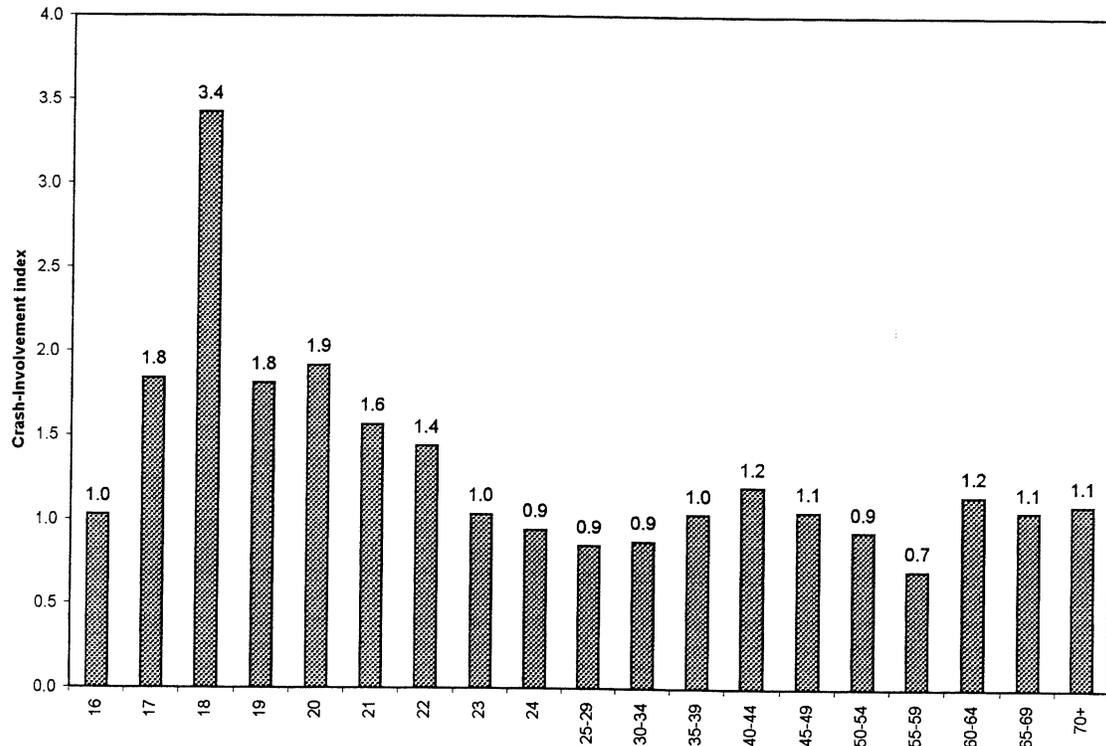


Source: 2001 Colorado Department of Transportation crash data

Fatal Crash Involvement by Age

Younger drivers are more likely than older drivers to be involved in a fatal crash (see Exhibit III-11). Yet in 2001 it was not the very youngest drivers, but instead the 18-year-olds that were 3.4 times as likely to be involved in a fatal crash than would be expected for their age (see “note” under the Exhibit).

Exhibit III-11.
Colorado Fatal Crash Involvement Index by Driver Age, 2001



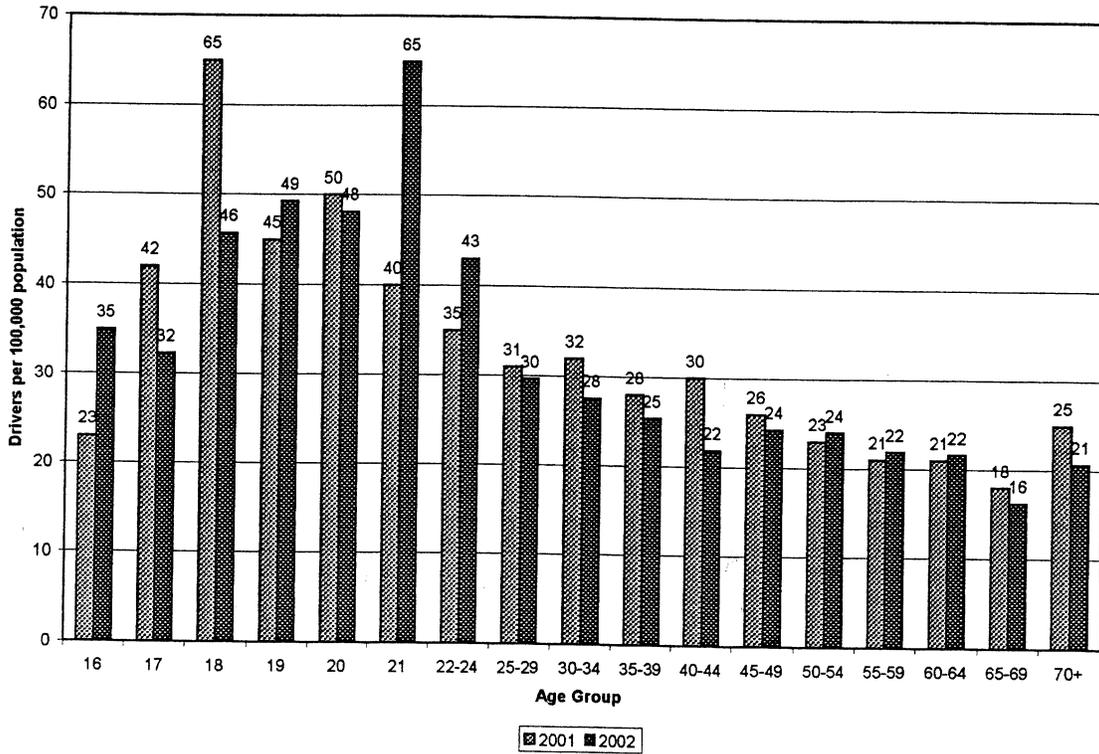
Note: The expected fatal crash involvement for each age is 1.0. The index is equal to the ratio of two percentages. The first (the numerator) is equal to the percentage of all drivers involved in fatal crashes who are from this age group. The second percentage (denominator) is the percentage of all licensed drivers who are from this age group.

Source: 2001 FARS data, 2001 Colorado Department of Transportation, and 2001 licensed driver data from the Colorado Department of Revenue – Motor Vehicle Division

In 2002, the largest *increase* in the number of drivers involved in fatal crashes per 100,000 population *by age* occurred among 21-year old drivers (Exhibit III-12).

Exhibit III-12.

Drivers Involved in Fatal Crashes per 100,000 Population, 2001 and 2002

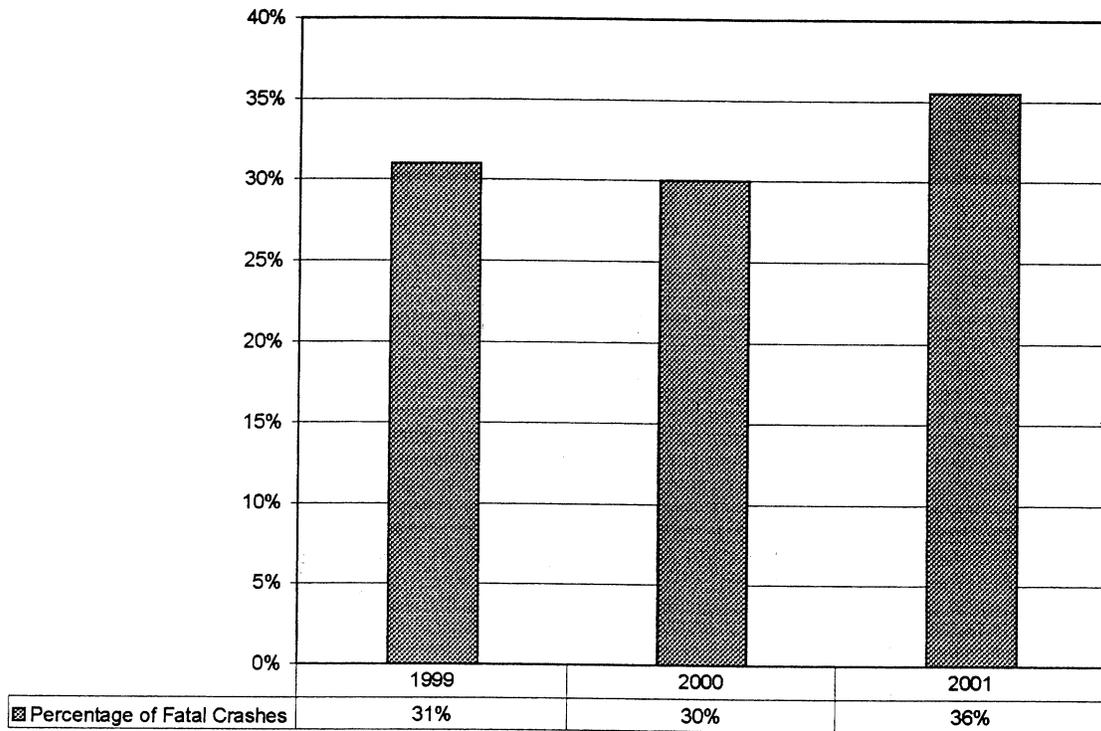


Source: 2001 and 2002 FARS data from CDOT and 2001 population data from the Colorado Division of Local Government

Traffic Fatalities and Impaired Driving

Although the percentages of alcohol-related fatal crashes were relatively unchanged between 1999 and 2000, the percentage rose substantially in 2001 (Exhibit III-13).

Exhibit III-13.
Alcohol-Related Fatal Crashes as a Percentage of All Fatal Crashes, 1999-2001



Source: 1999, 2000 and 2001 FARS data

Section IV: Crash Data on Young Drivers

Crash analyses that incorporate data on driver ages show that young drivers are more likely to be involved in traffic crashes overall. The analyses in this section further explore the relationship between age and involvement in traffic crashes. Young drivers are analyzed at the city and county levels to identify areas within the state that would most benefit from targeted safety programs, both in terms of location of crashes and in terms of where the high-risk drivers live.

Crash Involvement by Age

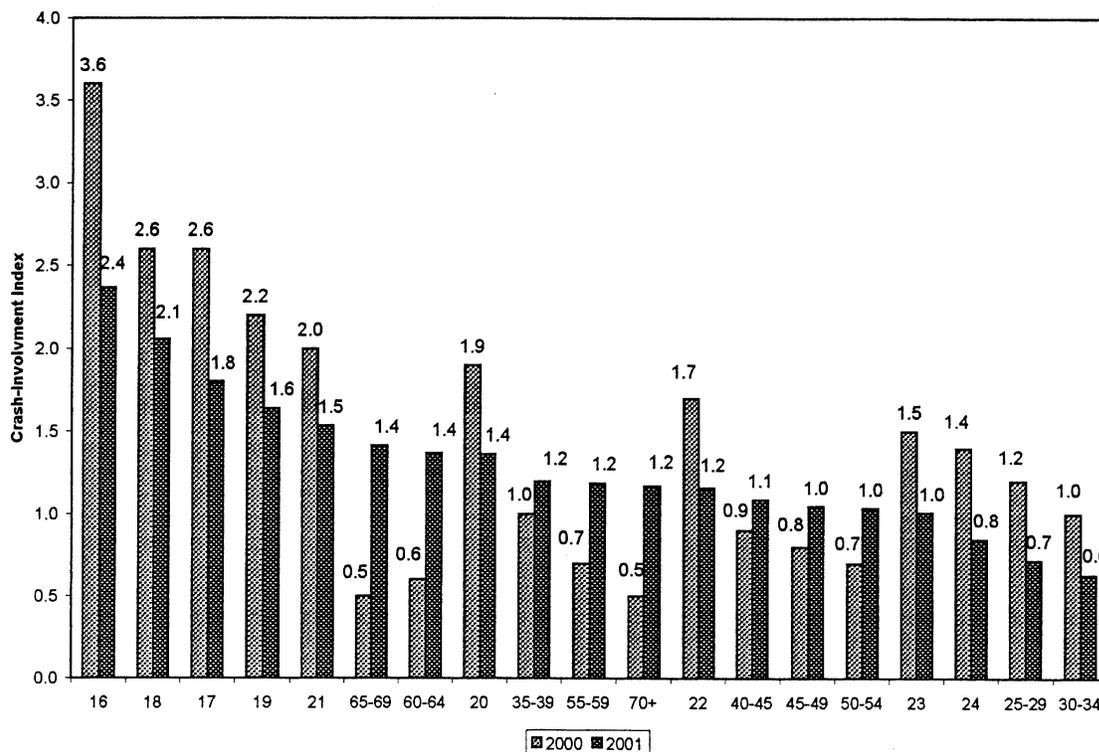
Younger, less-experienced drivers are more likely to be involved in a traffic crash than are older drivers. As drivers age, their involvement in traffic crashes decreases; senior drivers have the lowest likelihood of all age segments to be involved in traffic crashes.

Exhibit IV-1 on the next page shows the crash involvement index of the estimated Colorado driving population broken down by age. The index measures the likelihood of drivers from each age group to be involved in any type of reported crash. The expected value for all age groups is 1.0. Age groups that have a value greater than 1.0 are more likely to be involved in a traffic crash than would be expected given the proportion of drivers in their age group.

Several observations relating to drivers involved in crashes in 2001 can be made from Exhibit IV-1:

- Sixteen-year-old drivers still are the most likely age group to be involved in a traffic crash. This is likely attributable to their inexperience behind the wheel.
- Drivers 22 years old and younger are more likely to be involved in a traffic crash than is expected given their population.
- Between 2000 and 2001 there was a shift from younger to slightly older drivers involved in crashes in Colorado.
- Drivers 55 and older were involved in a significantly higher number of crashes in 2001.

**Exhibit IV-1.
Colorado Crash Involvement Index by Age, 2000 – 2001**



Note: The expected value for each age cohort is 1.0. The crash involvement index is equal to the ratio of two percentages. The first (the numerator) is equal to the percentage of all drivers involved in crashes who are from this age group. The second percentage (denominator) is the percentage of all licensed drivers who are from this age group.

Source: 2001 Colorado Department of Transportation crash data, and 2001 licensed drivers from the Colorado Department of Revenue – Motor Vehicle Division

Young Drivers

As shown in the previous exhibit, younger drivers have the highest incidence of involvement in any type of crash among all drivers. Even so, the incidence of crashes for this age group declined in 2001. Perhaps this reflects the results of Colorado’s new Graduated Driver Licensing Law (GDL).

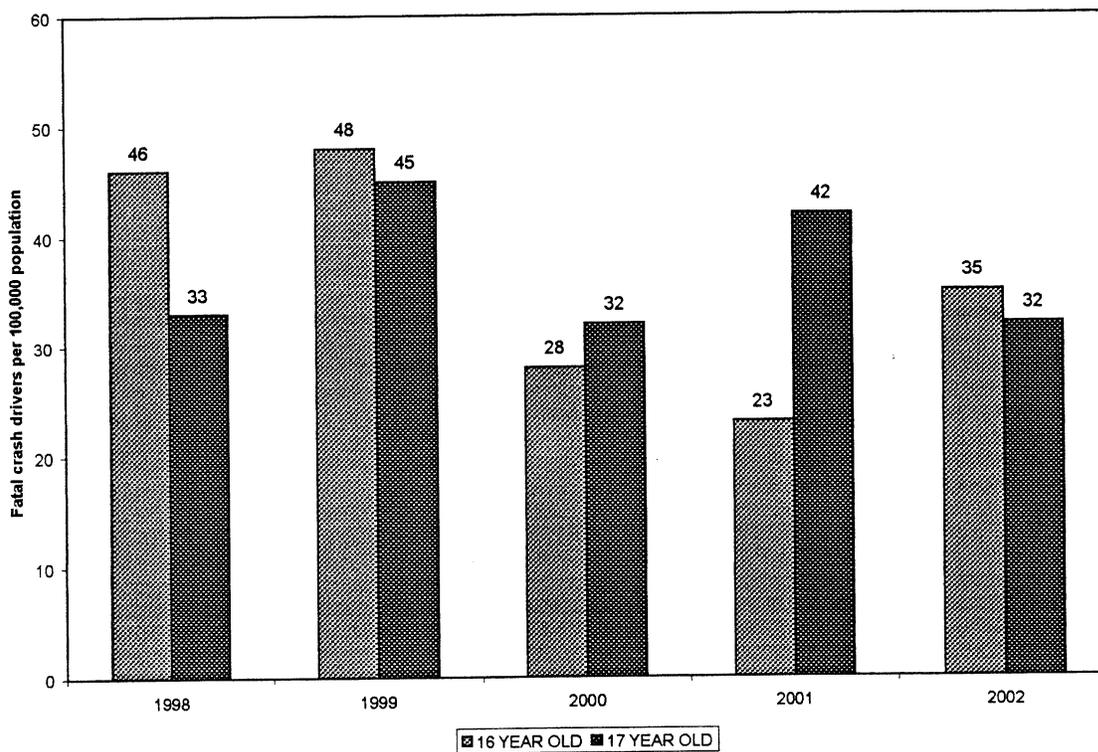
This law became effective July 1, 1999. Its purpose is to reduce young drivers’ crash involvement by increasing their experience behind the wheel before they become fully licensed. Key components of the law include:

- Young drivers must log a minimum of 50 hours of behind-the-wheel training with a parent, guardian or other qualified adult. Ten of these training hours must be at night.
- All passengers of young drivers must use seat belts. The number of passengers cannot exceed the vehicle’s number of seat belts.

- Other rules apply, including restrictions on driving between the hours of midnight and 5 a.m., and a requirement that learner's permits must be held for a full 6 months.

The fatal crash rate of the youngest drivers is shown in Exhibit IV-2. The data seem to demonstrate early results of the impact of GDL, indicating a general downtrend in crashes involving 16-year-olds and 17-year-olds. In order to evaluate GDL's impact more completely, this rate should continue to be monitored annually.

**Exhibit IV-2.
Young Driver Fatal Crash Rate, 1998 - 2002**



Note: The graduated Licensing Law (GDL) was enacted in July 1999 in Colorado.

Source: 1998 – 2002 FARS data and population data from the Colorado Division of Local Government

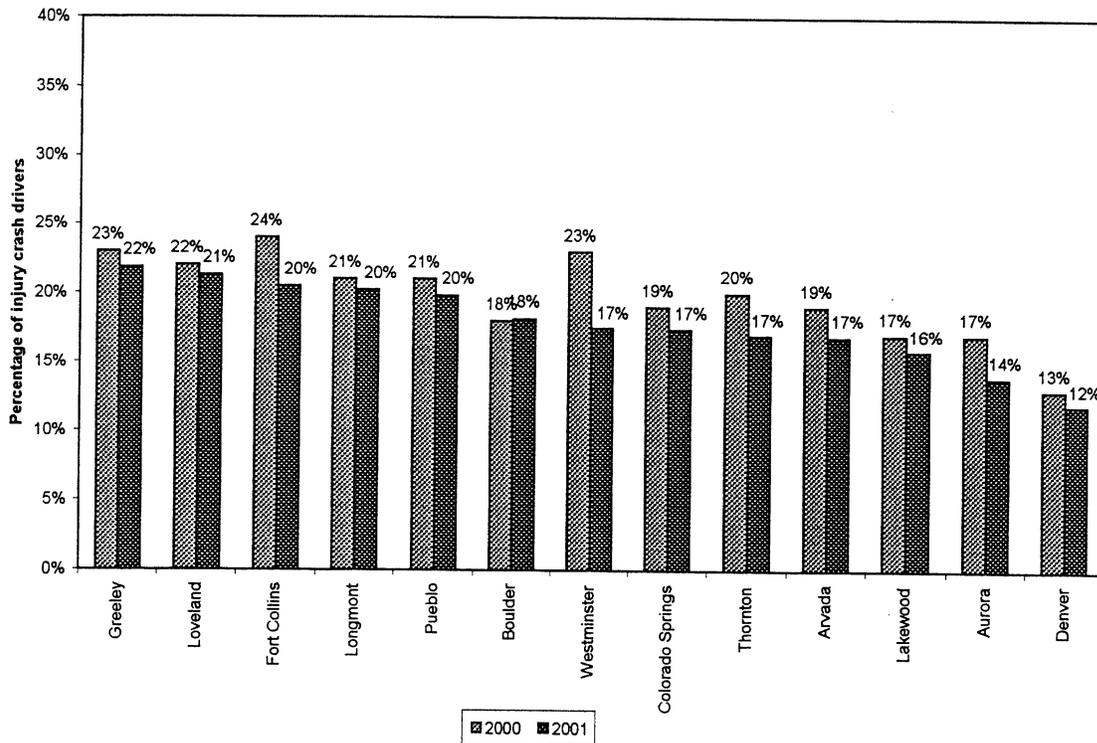
Geographic Differences in Young Driver Crash Rates

Crash rates vary across the state for drivers between the ages of 16 and 20 years. Some cities and counties have had consistently high young driver crash rates.

Cities where crashes occurred

Among cities with populations of 50,000 or greater, among all injury crash drivers, young drivers comprise a substantial percentage, particularly in Greeley, Lakewood, Fort Collins, Longmont, and Pueblo in 2001 (Exhibit IV-3). Conversely, Denver and Aurora rank low among large cities.

Exhibit IV-3.
Young Injury Crash Drivers by Large City of Crash, 2000 and 2001



Source: 2000-2001 CDOT crash data

Place of residence of young drivers in injury crashes

Some communities are home to large young injury crash driver populations and could benefit from targeted traffic safety education programs.

Young driver crash rates – for those living in large cities

Cities with populations of 50,000 or more accounted for approximately 50 percent of all young drivers involved in injury crashes in 2001. These cities also represented half of the state's young driver population.

While Denver has the largest young driver population, young drivers living in Loveland had the greatest likelihood of being in an injury crash out of all large cities in 2001. Pueblo and Longmont rated in the top three both in 2000 and 2001.

Exhibit IV-4 indicates that Colorado Springs, Arvada, and Aurora also tend to be areas where high-risk young drivers live.

Exhibit IV-4.

Young Driver Injury Crash Ratings, Large City of Crash, 2000 and 2001

| | 2000 Rank | 2001 Rank | 2001 Index |
|------------------|------------------|------------------|-------------------|
| Loveland | 6 | 1 | 1.80 |
| Pueblo | 3 | 2 | 1.77 |
| Longmont | 1 | 3 | 1.74 |
| Colorado Springs | 5 | 4 | 1.24 |
| Arvada | 7 | 5 | 1.17 |
| Aurora | 2 | 6 | 1.12 |
| Lakewood | 9 | 7 | 1.06 |
| Denver | 8 | 8 | 1.03 |
| Westminster | 10 | 9 | 0.97 |
| Greeley | 12 | 10 | 0.76 |
| Boulder | 13 | 11 | 0.59 |
| Fort Collins | 11 | 12 | 0.25 |
| Thornton | 4 | 13 | 0.17 |

Note: Young drivers are between the ages of 16 and 20. Includes only those cities with 2000 populations greater than 50,000. These crash rates are adjusted for size of the young driver population in the city.

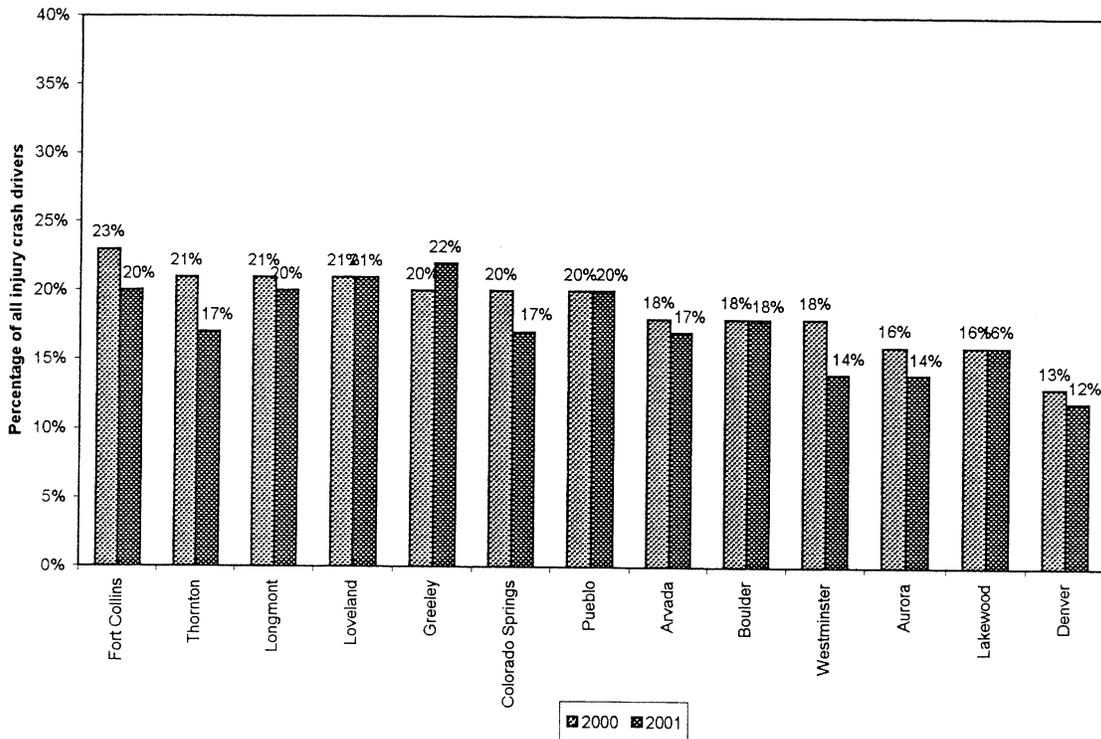
Source: 2000 and 2001 crash data from CDOT and 1999 and 2000 population data from the Colorado Division of Local Government.

Young drivers' role – as percentage among all injury-crash drivers living in large cities

On average, about 20 percent of the injury crash drivers from large cities are between the ages of 16 and 20. Several large cities saw a decrease in the percentage of young driver involvement in injury crashes from 2000 to 2001.

Exhibit IV-5.

Young Drivers as a Percentage of All Injury Crash Drivers Living in Large Cities, 2000-2001

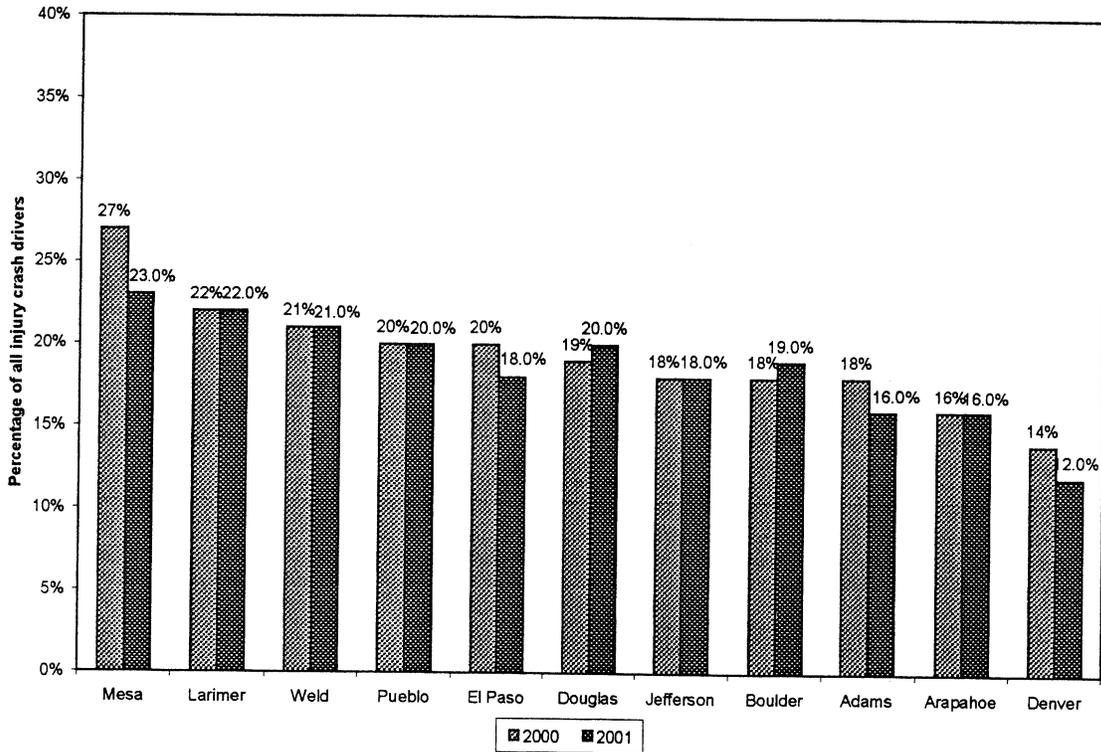


Source: 2000–2001 CDOT crash data

Young drivers' role in injury crashes – as a percentage of all injury-crash drivers living in large counties

In Mesa County, young drivers made up almost a quarter of all injury crash drivers in 2001 (Exhibit IV-6). Young drivers also tend to factor highly in Larimer and Weld counties.

**Exhibit IV-6.
Young Drivers as a Percentage of All Injury Crash Drivers Living in Large Counties, 2000 and 2001**



Source: 2000– 2001 CDOT crash data

Section V: Crash Data on Impaired Drivers

Since 1981, when 425 people lost their lives in Colorado in alcohol-related crashes, the State, law enforcement agencies, and local communities have made it a priority to reduce impaired driving. Alcohol-related crash fatalities have fallen dramatically since that time, to a low of 184 in 1998, but appear to be on the rise again. In 2001 there were 267 alcohol-related fatalities, representing more than one-third of all statewide crash fatalities.

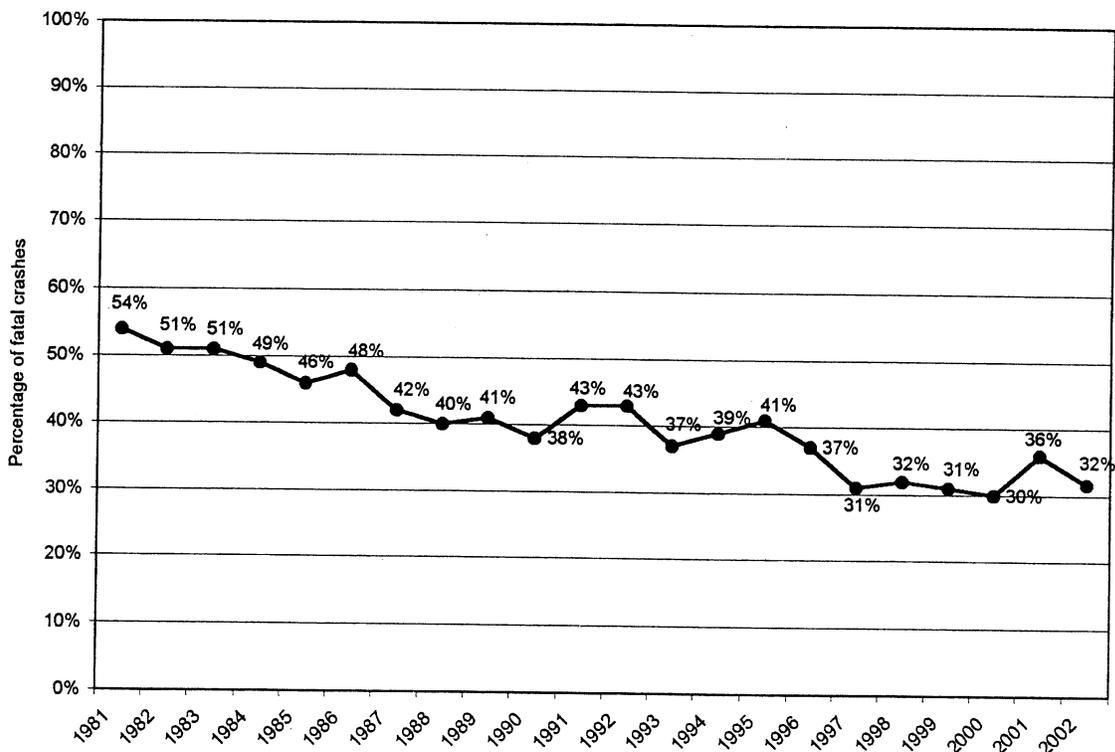
Identifying communities with the greatest impaired-driving problems and allocating safety program resources to these communities can be an important way to combat impaired driving.

The Role of Alcohol in Fatal Crashes

In 1981, more than half of all fatal crashes in Colorado were alcohol-related. Since then, the role of alcohol in fatal crashes has dropped substantially. In 2002, 32 percent of Colorado fatal crashes involved alcohol.

Exhibit V-1

Alcohol-Related Fatal Crashes as a Percentage of All Fatal Crashes in Colorado, 1981-2002



Note: Alcohol related fatal crashes are those where at least one driver was found to have a BAC of 0.05 or greater.

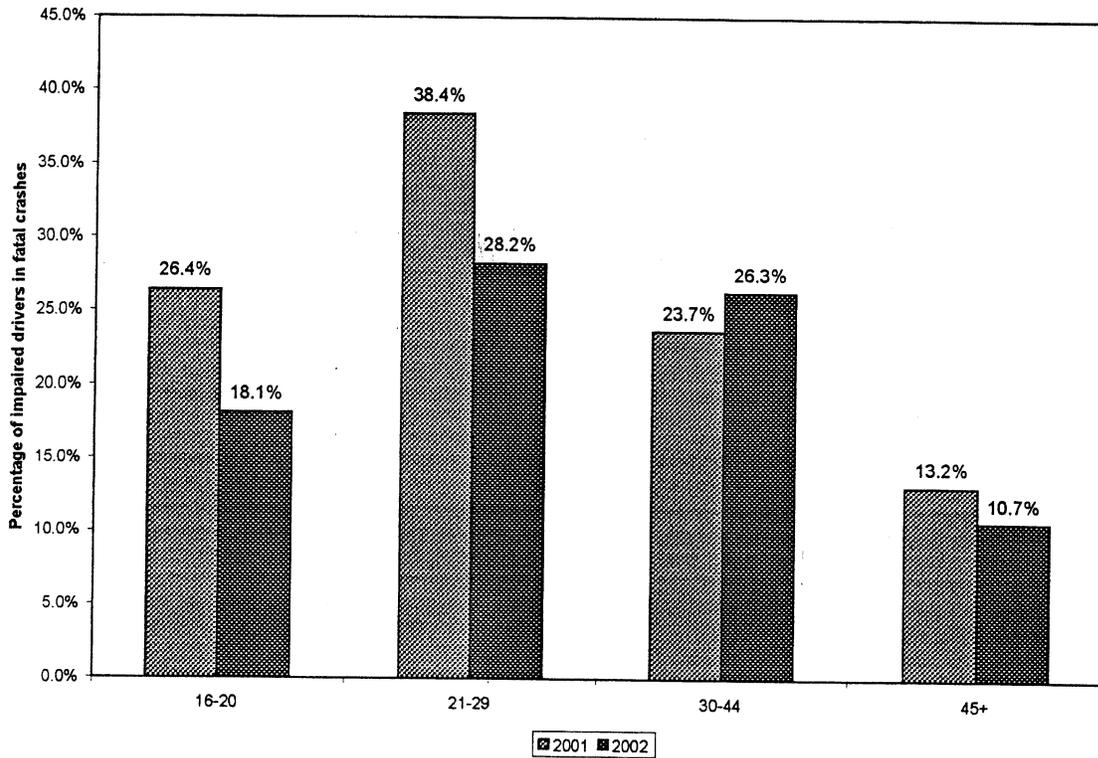
Source: FARS data from CDOT

Driver age and alcohol-related fatal crashes

Young drivers make up the largest portion of all drivers involved in alcohol-related fatal crashes. In 2002, more than 28 percent of all drivers between the ages of 21 and 29 who were involved in a fatal crash were impaired. Even so, the only age group that showed an increase for 2002 was ages 30-44.

Exhibit V-2.

Colorado Drinking Drivers Involved in Fatal Crashes by Age, 2001 and 2002



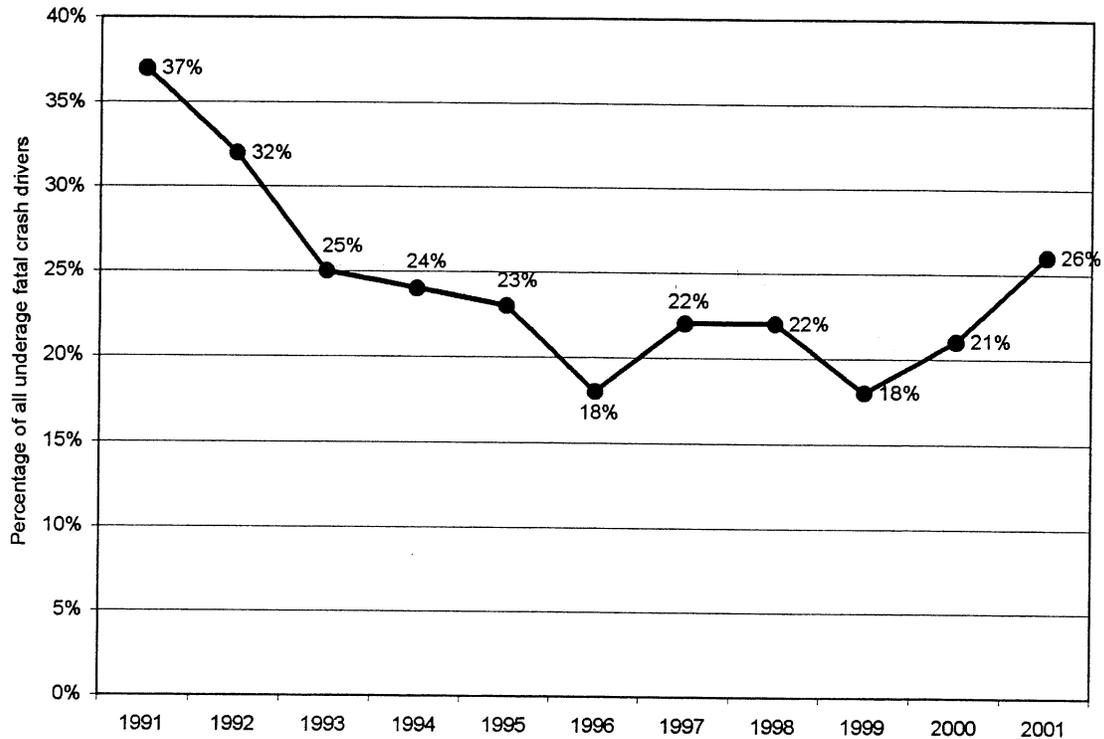
Note: Drinking drivers are those with BACs of 0.01 or greater as reported in the 2002 FARS database.

Source: 2002 FARS data from the Colorado Department of Transportation.

The role of underage drinking drivers in fatal crashes

More than one in four drivers under the age of 21 who were involved in a fatal crash in 2001 were suspected of impairment. This is an increase from 1999 and 2000, as shown in Exhibit V-3.

**Exhibit V-3.
Colorado Underage Drinking Drivers Involved in Fatal Crashes, 1991–2001**



Note: Underage drinking drivers are younger than 21 and had BACs greater than 0.01. This graph shows underage fatal crash drivers suspected of impairment as a percentage of all underage fatal crash drivers.

Source: FARS data from CDOT.

Geographic Differences in Drinking and Driving

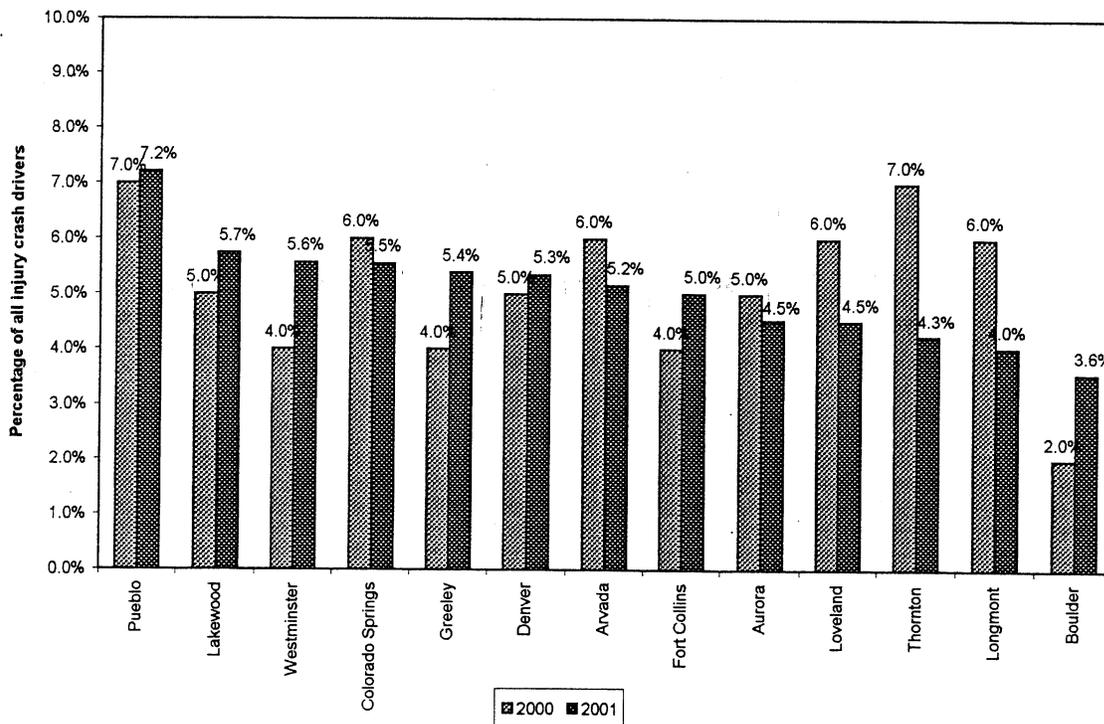
The distribution of impaired injury crash drivers varies in cities and counties throughout the state. The analyses in this section examine large cities and counties and regions where impaired injury crashes occurred, and where the drivers tended to live.

Impaired injury crash drivers by location of crash – large cities

In 2001, Pueblo, Lakewood, Westminster, and Colorado Springs had the greatest percentages of impaired injury crash drivers.

Exhibit V-4.

Percent of All Injury Crash Drivers Who Were Impaired, by Large City of Crash, 2000 and 2001

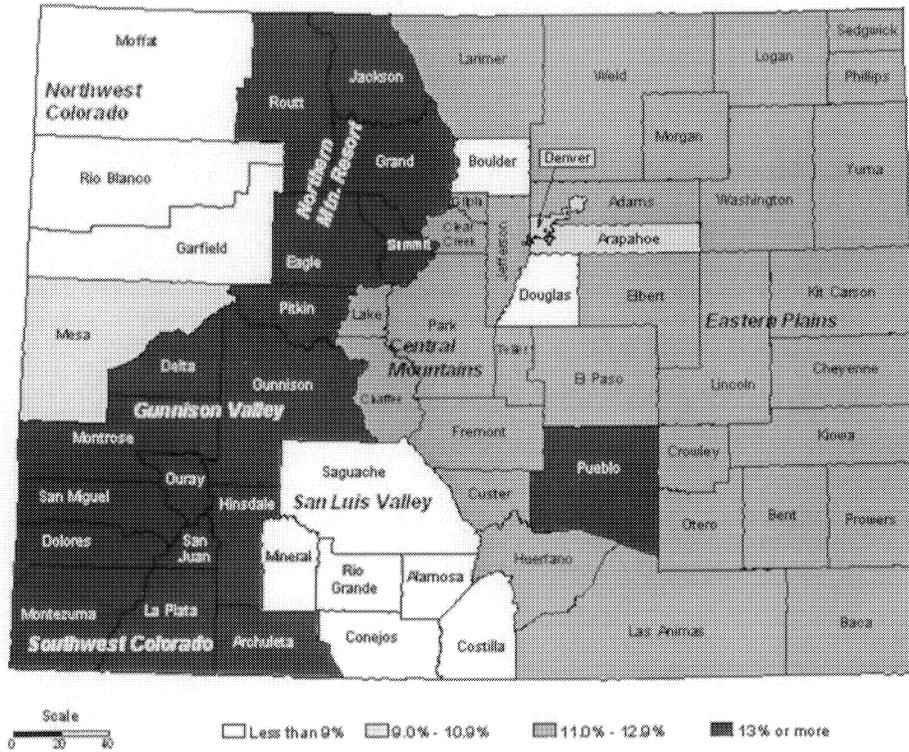


Source: 2000 and 2001 CDOT crash data.

Large counties and regions

As shown in Exhibit V-5, in 2001 a total of 11 percent or more of all injury crash drivers who crashed in the Eastern Plains – and 13 percent or more in Pueblo County, Southwest Colorado, Gunnison Valley and the Northern Mountain Resort regions – were impaired.

**Exhibit V-5.
Percent of All Injury Crash Drivers Who Were Impaired, by County and Region of Crash, 2001**

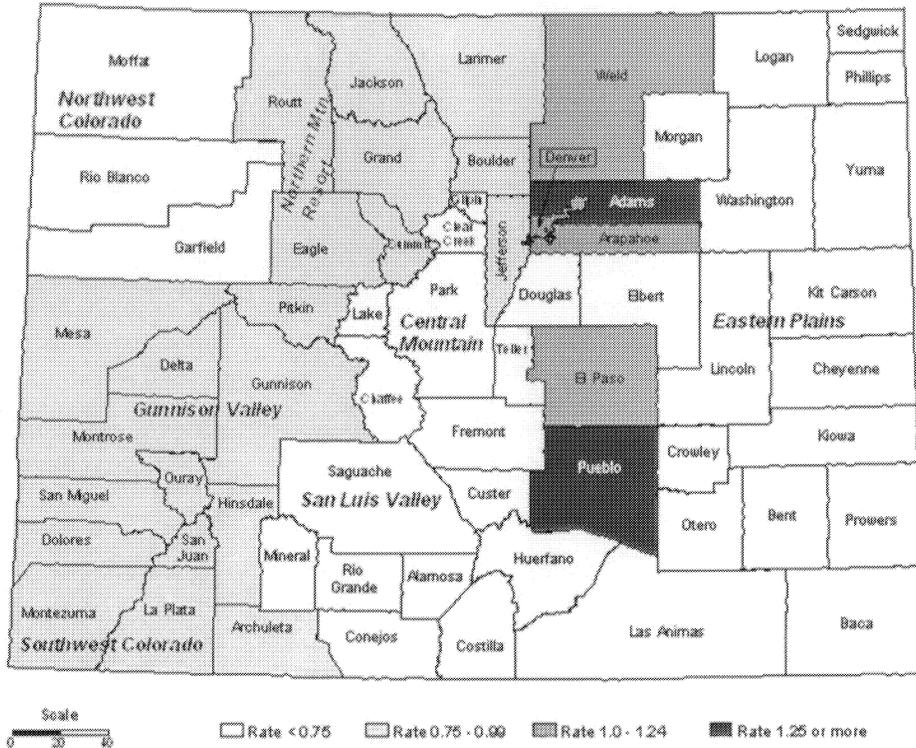


Source: 2001 CDOT crash data

Drinking driver injury crash rates—counties and regions

Drivers from Adams and Pueblo counties led all regions in the rate of impaired driver involvement in injury crashes in 2001.

**Exhibit V-6.
Drinking Driver Injury Crash Rates by County and Region of Residence, 2001**

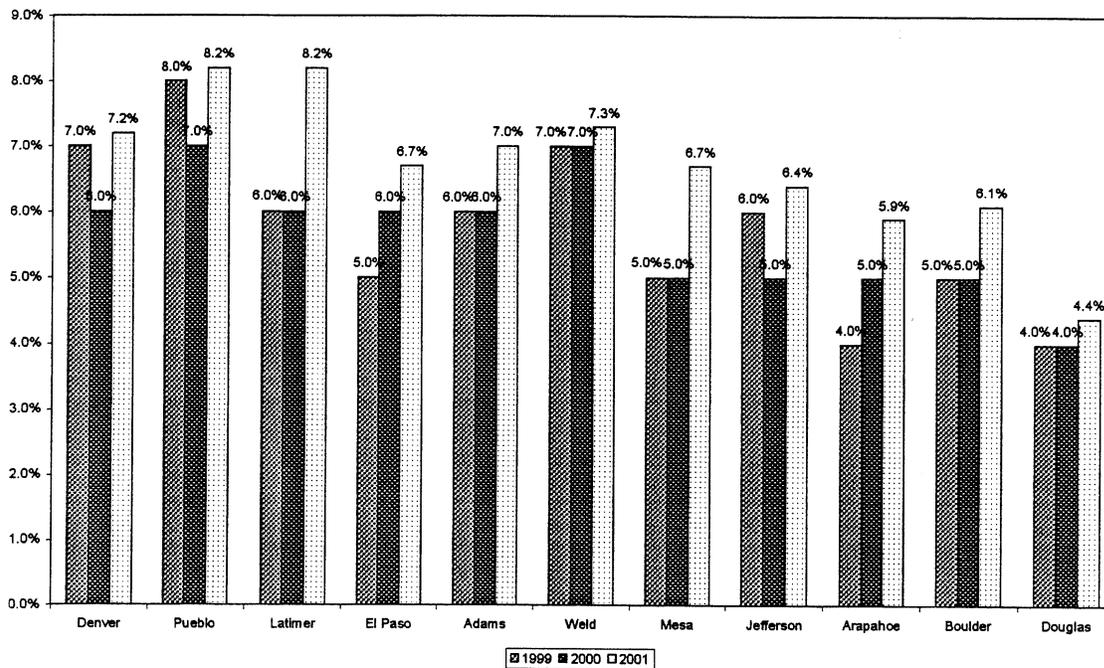


Source: 2001 CDOT crash data

Percentage of injury crash drivers who were impaired—large counties

Exhibit V-7 shows the percentage of all injury crash drivers in 1999, 2000, and 2001 who were impaired and living in large counties. As is evident, Pueblo, Larimer, Weld, Denver and Adams counties had the highest percentages in 2001.

**Exhibit V-7.
Resident Drivers Suspected of Impaired Driving as a Percentage of All Injury Crash Drivers, Large Counties, 1999, 2000, and 2001**



Source: 2001 crash data from the Colorado Department of Transportation.

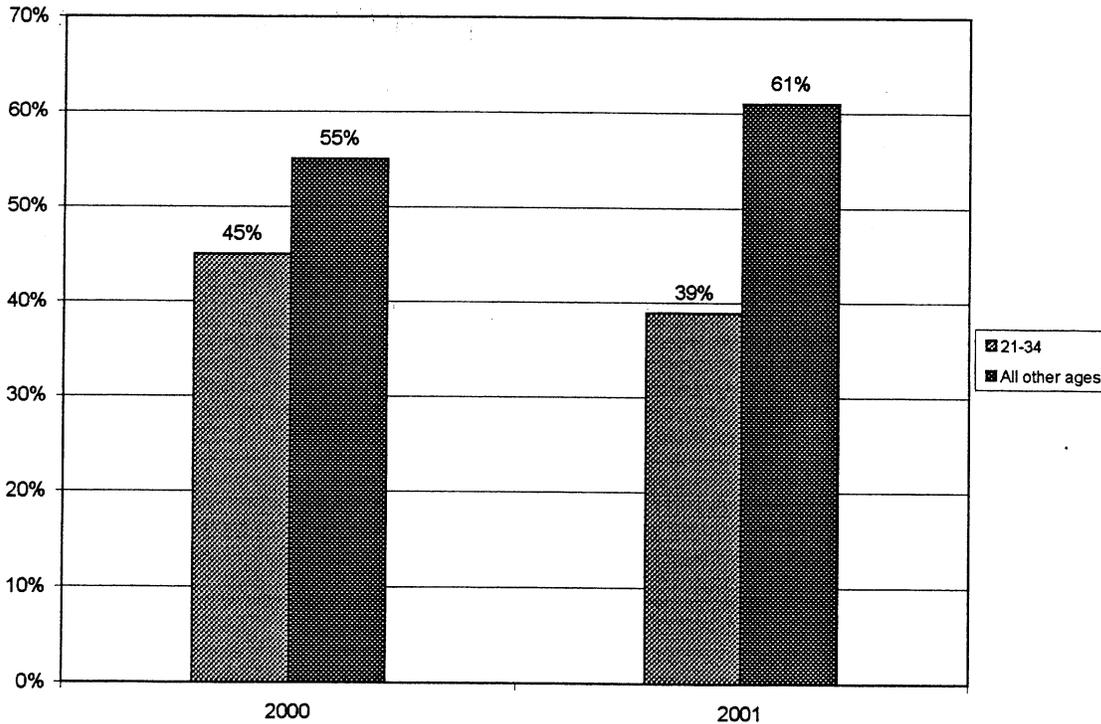
Age and Drinking and Driving

The extent to which drinking and driving is a problem in varying communities may be explained in part by the distribution of younger drivers throughout the state. As was previously discussed, younger drivers are responsible for more alcohol-related fatal crashes than are other age cohorts. Not surprisingly, they also make up a large portion of alcohol-related injury crashes. And yet, the change from 2000 to 2001 is encouraging.

The role of 21-34 year-olds in impaired crashes

As is evident in Exhibit V-8, from 2000 to 2001 the percentage of age 21-34 drivers involved in an injury crash declined significantly.

Exhibit V-8.
Drinking Drivers Involved in Injury Crashes by Age, 2000 - 2001



Note: Among all drivers involved in serious crashes who were suspected of impaired driving, 39 percent were between the ages of 21 and 34.

Source: 2001 crash data from the Colorado Department of Transportation.

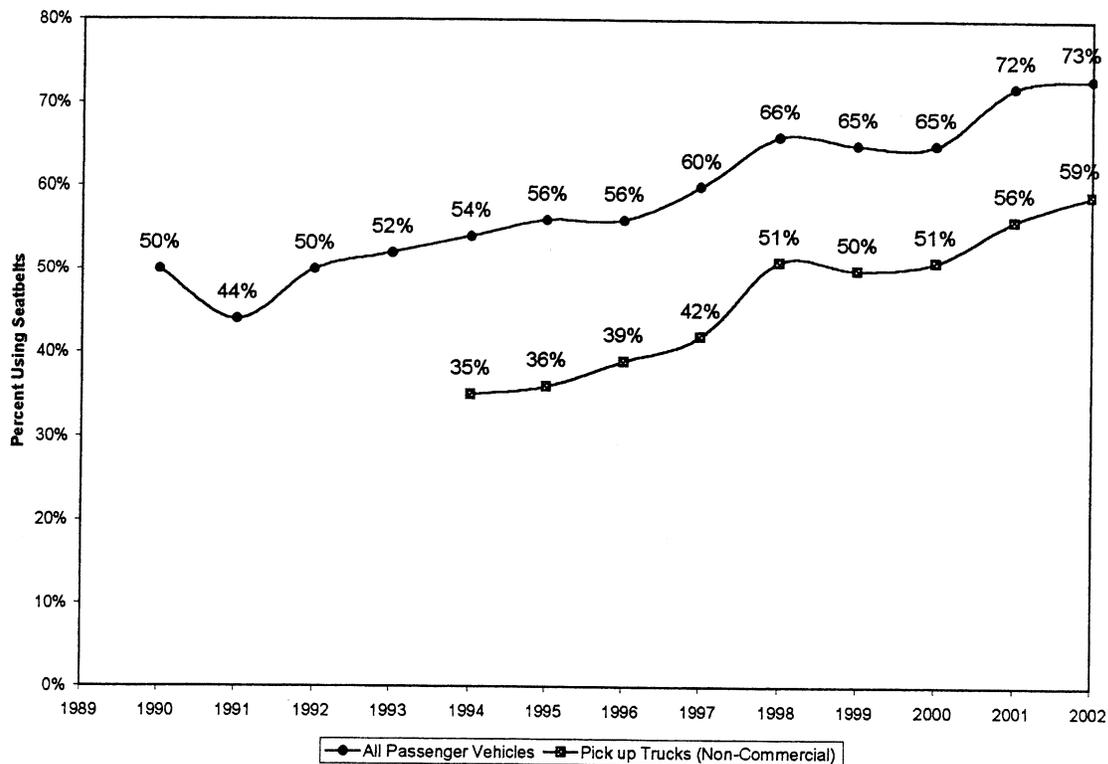
Section VI: Crash Data on Occupant Protection Non-Compliers

Use of occupant protection devices (seat belts, booster seats, car seats) in Colorado can reduce the injury severity of traffic crashes and save lives. In addition to analyzing seat-belt use among crash drivers, this section includes survey analyses of seat-belt use among drivers and front-seat passengers who were not involved in traffic crashes. Occupant-protection use among juveniles and young children also is reviewed.

Statewide Occupant-Protection Trends

Seat-belt use among drivers and front seat passengers has increased in Colorado since the early 1990s. The 2002 Seat Belt Usage Survey conducted by the Colorado State University Institute of Transportation Management on behalf of CDOT shows a passenger-vehicle seat-belt usage rate of 73 percent (Exhibit VI-1), with the rate for pickup trucks at 59 percent.

Exhibit VI-1.
Colorado Seat-Belt Use, 1990 - 2002

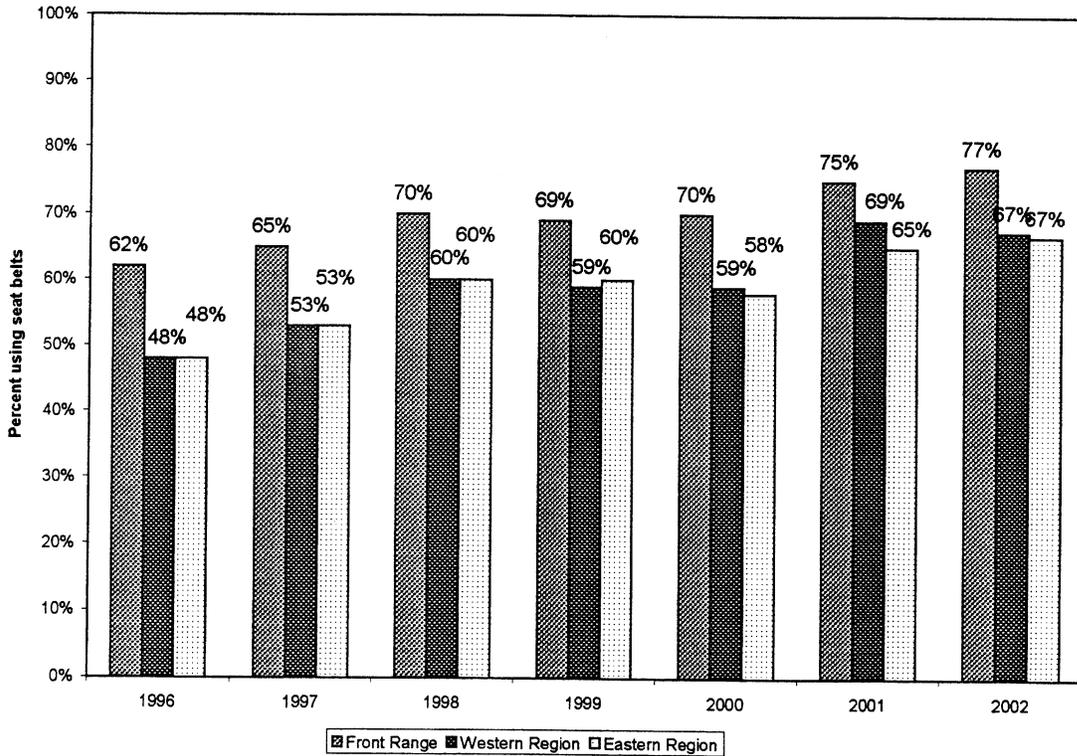


Source: Annual Seat Belt Survey conducted by the CSU Institute of Transportation Management on behalf of the Colorado Department of Transportation

Regional Occupant-Protection Trends

Over the past decade, seatbelt use in rural areas (Eastern and Western regions) has been consistently lower than in urban areas (Front Range). However, Exhibit VI-2 shows that seat belt usage has increased both in rural and in urban areas. Approximately 77 percent of all drivers and front-seat passengers (in cars, vans, SUVs, and non-commercial light trucks combined) along the Front Range were observed wearing seat belts.

Exhibit VI-2.
Colorado Regional Seat-Belt Use, 1996 – 2002



Source: Annual Seat Belt Surveys conducted by the CSU Institute of Transportation Management on behalf of Colorado Department of Transportation

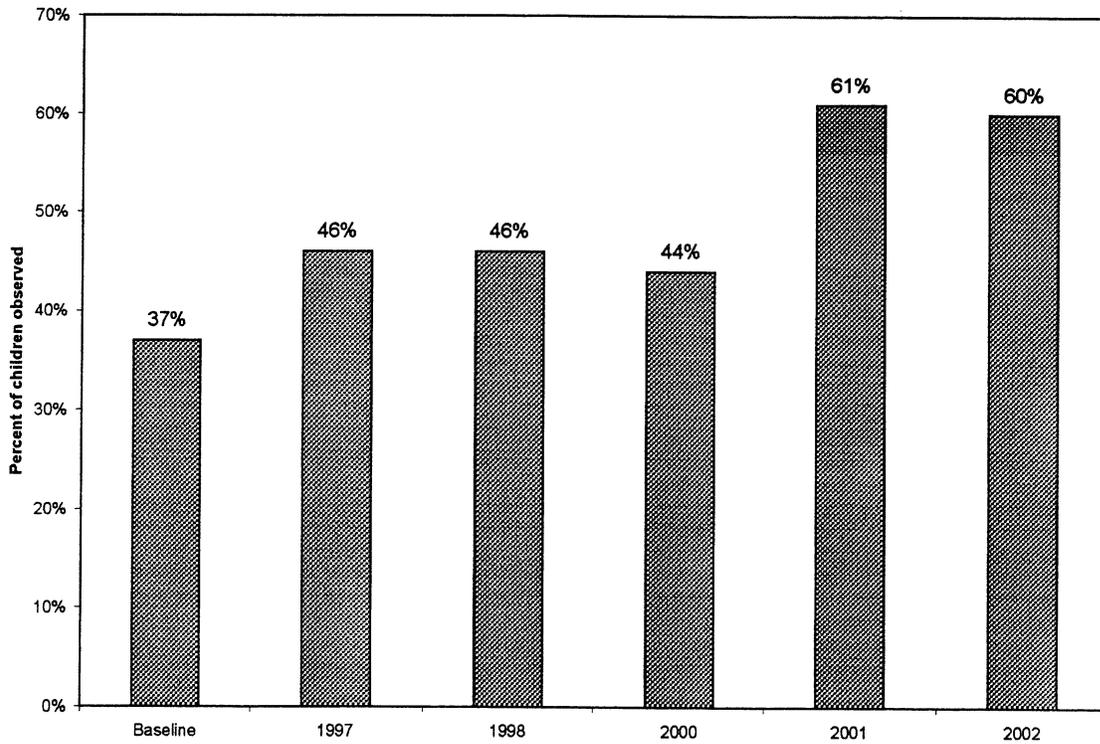
Child Occupant Protection

Since 1997, the CSU Institute of Transportation Management has conducted a child and juvenile occupant restraint study on behalf of CDOT. This study highlights seat belt and carseat usage trends among Colorado's child population.

Children 5 to 15 years of age

Between 1997 and 2002 (1999 data not available), children were much less likely than other Coloradans to wear a seat belt. In 2001, child seat-belt use jumped to over 60 percent, as shown in Exhibit VI-3, and stayed at approximately the same level in 2002.

**Exhibit VI-3.
Colorado Seat-Belt Use by Children Age 5 to 15, 1997 – 2002**



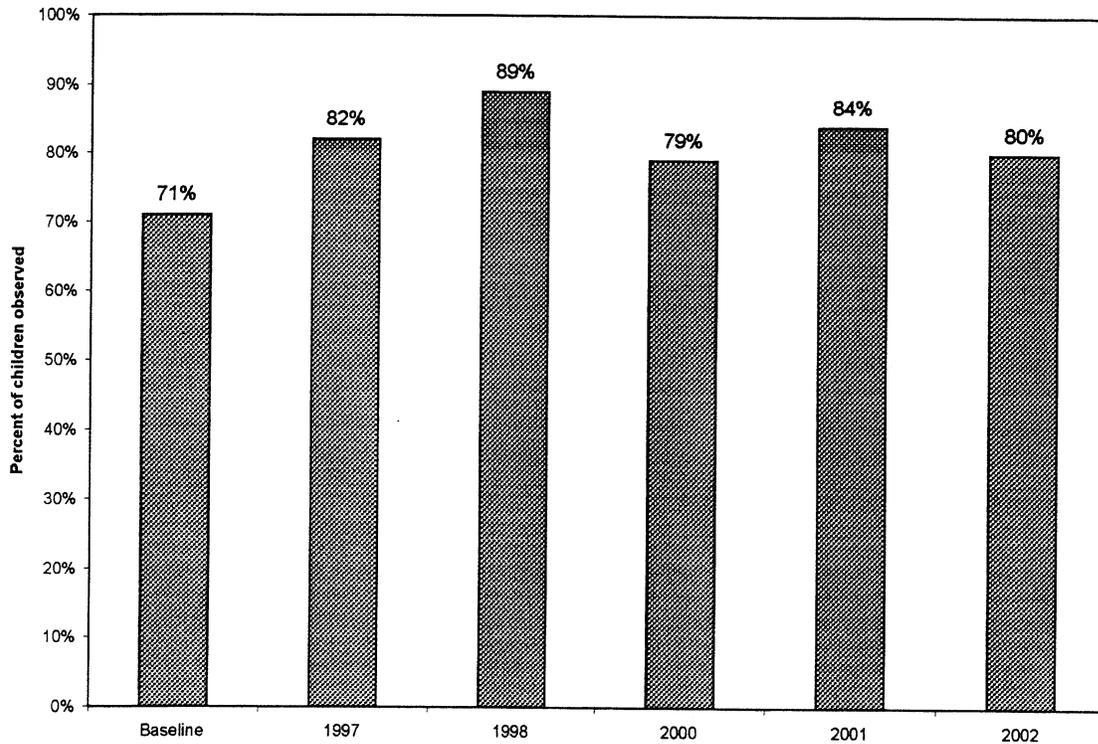
Note: A child/juvenile seat-belt use study was not conducted in 1999. Juveniles are between the ages of 5 and 15.

Source: 2002 Seat Belt Study, State of Colorado, Colorado State University Institute of Transportation Management

Car-Seat Use

Approximately 80 percent of all observed children ages up to 4 years were properly restrained in car seats in 2002. Car-seat use rates for the period 1997 through 2002 are shown in Exhibit VI-4 (no study was conducted in 1999).

Exhibit VI-4
Colorado Car-Seat Use by Children Age 0 to 4, 1997 – 2002



Note: A child/juvenile seat-belt use study was not conducted in 1999. Children are between the ages of 0 and 4 years of age.

Source: 2002 Seat-Belt Use study, State of Colorado, Colorado State University Institute of Transportation Management

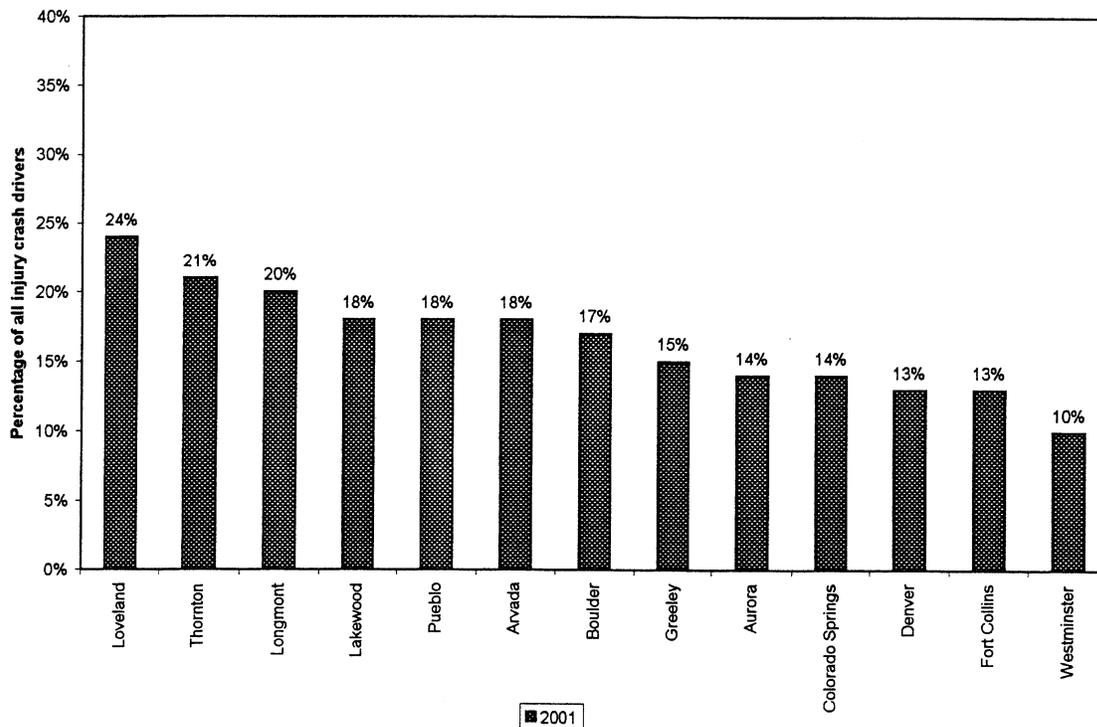
Crashes Included in Community-level Analyses of Drivers' Occupant-Protection Compliance

This section includes analyses of seat-belt use among incapacitating injury crash drivers living in cities and counties throughout Colorado. "Incapacitating injury crash drivers" include drivers who either suffered an evident incapacitating injury or who were killed in a traffic crash. Drivers in less serious crashes are excluded from these analyses because data on their seat-belt use are less reliable.

Drivers not wearing a seat belt by location of crash – large cities

Unbelted incapacitating injury crash drivers make up a substantial portion of all incapacitating injury crash drivers in large cities (see Exhibit VI-5). For 2001, the cities with the highest percentages were Loveland, Thornton, and Longmont.

Exhibit VI-5.
Percent of All Drivers in Incapacitating Injury Crashes Not Wearing a Seat Belt, by Large City of Crash, 2001

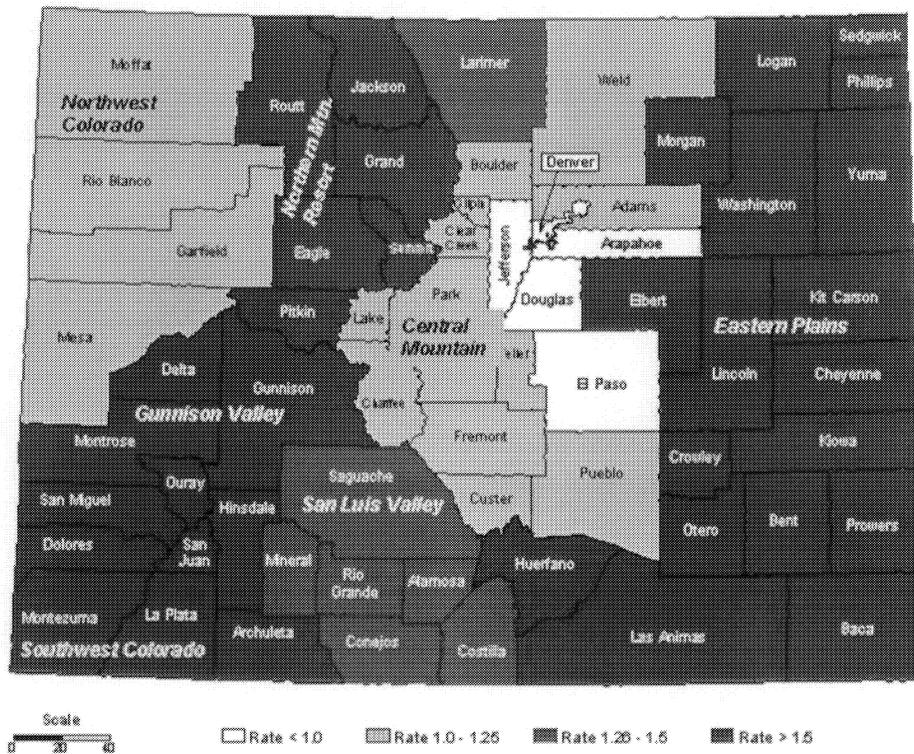


Source: 2001 CDOT crash files

Drivers in incapacitating injury crashes not wearing seat belts -- counties and regions

Seat-belt non-compliance among incapacitating injury crash drivers is more of a problem in rural areas than in urban areas. Areas of greatest concern include the Eastern Plains, Southwest Colorado, Gunnison Valley, and Northern Mountain Resort regions, where drivers were significantly more likely than drivers elsewhere in the state to not wear seat belts and to be involved in incapacitating injury crashes.

**Exhibit VI-7.
Unbelted Driver Incapacitating Injury Crash Rates, Counties and Regions, 2001**



Note: Incapacitating injury crashes are those with evident, incapacitating or fatal injuries. The state average is 1.0. These rates are adjusted for the driving age population in each county and region.

Source: CDOT crash files 2001

Section VII: Crash Data on Aggressive Drivers

Overview

Although public concern about “aggressive driving” is increasing, there is little historical data on this phenomenon. CDOT (2003-2005 Colorado Integrated Safety Plan) notes that aggressive includes “running red lights, passing on the shoulder, speeding, improper lane changes, following too close, careless and reckless driving, and DUI.”

Pertinent Statistics from 2001 Crash Data

Some of the definition points above are remarkably evident in 2001 data on Colorado fatality crashes (Exhibit VII-1).

Exhibit VII-1. Factors Reported as Primary Causes of 2001 Fatality Crashes

| Factors | Percent |
|---|---------|
| None reported | 34.6% |
| Driving too fast for conditions or in excess of posted limit | 29.8% |
| Inattentive (talking, eating, etc.) | 12.6% |
| Failure to keep in proper lane or running off road | 10.2% |
| Failure to yield right of way | 6.6% |
| Drowsy, asleep, fatigued, ill, or blackout | 5.6% |
| Overcorrecting/oversteering | 4.9% |
| Failure to obey traffic signs, signals, or officer | 4.5% |
| Swerving or avoiding due to wind, slippery surface, vehicle, object, nonmotorist in roadway, etc. | 4.5% |
| Operating vehicle in erratic, reckless, careless, or negligent manner | 1.7% |
| Driving wrong way on one-way traffic or wrong side of road | 0.6% |
| Making improper turn | 0.3% |
| Vision obscured (rain, snow, glare, lights, building, trees, etc.) | 0.0% |
| Other factors | 17.5% |
| Unknown | 0.0% |
| All Drivers in Fatality Crashes | 100.0% |

Source: 2001 FARS database obtained from the FARS website

The following data in Exhibit VII-2 suggest that speeding, “recent other harmful moving convictions,” and recent DUI convictions tend to be predictors of involvement in fatal crashes.

**Exhibit VII-2.
Recent Convictions or Tickets Within 3 Years of Fatal Crash in 2001**

| Previous Convictions or Convicted Speeding Tickets (on record) 3 Years Prior to Fatal Crash | Percent of All Fatal Crash Drivers in 2001 |
|---|--|
| Recent recorded crashes | 9.3% |
| Recent recorded suspensions or revocations | 13.2% |
| Recent DUI convictions | 4.7% |
| Recent speeding convictions | 17.9% |
| Recent other harmful moving convictions | 29.7% |
| Drivers with no convictions last 3 years | 53.8% |

Source: 2001 FARS database obtained from the FARS website

Section VIII: Lifestyle Patterns of High-Risk Drivers – ‘PRIZM’ Analysis

Introduction

As part of the Problem Identification research, Hebert Research and Weis Communications conducted a statistical analysis of the lifestyles of problem drivers: drivers who were involved in crashes. The analysis used the lifestyle clustering system known as “PRIZM,” developed by Claritas, Inc., together with the 2001 crash database provided by CDOT. Only drivers involved in injury and fatality crashes were included in the analysis, in order to focus on the most serious crashes.

Research Objectives

The objectives of the PRIZM analysis were:

- 1) To identify lifestyle groups or clusters that are more likely to become involved in a traffic accident, and
- 2) To profile and better understand the demographics and lifestyles of impaired drivers, occupant protection non-compliant drivers, and young drivers.

As employed in this analysis, PRIZM classifies every Colorado neighborhood into one of 62 distinct types or "clusters." Marketers typically use PRIZM to segment their customers into groups to better understand their lifestyles and behavior, and then target their best prospects. The clusters are considered to be “predictive” insofar as past behavior found to be characteristic of each cluster by Claritas is considered likely to be repeated in the future. This lifestyle information, and the underlying demographic and situational descriptors, can be highly useful in developing and targeting traffic safety information and education programs.

Methodology

The 2001 crash database provided by CDOT contained nearly 35,000 records of injury and fatality crashes statewide. The crash level database was linked to driver address files and the addresses were cleaned to remove out-of-state and incomplete addresses, producing a file of approximately 59,000 driver addresses. These addresses were then geocoded at the Census block group level and appended with PRIZM clusters.

The PRIZM-coded driver file was then split into two sections: 1) drivers involved in fatality crashes, and 2) drivers involved in injury crashes. A crash involvement index was developed comparing the percentage of crash drivers with a given PRIZM lifestyle and the natural share of all households that belong to that same lifestyle group. Lifestyles that are at least 20 percent more prevalent than the general population (i.e., index of 1.20 or greater) were initially selected for further analysis.

Clusters were taken out of this initial list wherever the difference between the percentage of crash drivers in a cluster and the percentage of all households in that cluster was less than 0.3 percent. This process removed several clusters with low populations where the apparently high crash index was triggered by slight difference in percentages of the total base of drivers and households. Smaller population clusters were included as long as the difference in overall percentages between drivers and the overall population was sufficiently large.

Part I: Lifestyle Groups Likely to Become Involved in Accidents

Findings on Lifestyle Clusters Related to Fatality Crashes

A total of 16 lifestyle segments were shown to be characteristic of involvement in fatality crashes within Colorado. Households belonging to these segments represent 29.9 percent of all households statewide. Drivers living in rural areas demonstrate a much greater tendency to be involved in fatal crashes than drivers living in metro, suburban, and small-town areas.

Exhibit VIII-1.

Lifestyle characteristics of driver-households likely to be involved in fatality crashes

| # | Cluster Name) | Social Group | Urbanization | Fatal Crash Index | Total Number of Households in Cluster |
|----|--------------------|------------------|-----------------------------|-------------------|---------------------------------------|
| 44 | Shotguns & Pickups | Country Families | Rural | 3.12 | 7,208 |
| 60 | Back Country Folks | Rustic Living | Rural | 2.71 | 3,190 |
| 56 | Agri-Business | Heartlanders | Rural | 2.23 | 36,488 |
| 43 | River City, USA | Country Families | Rural | 1.94 | 23,149 |
| 41 | Big Sky Families | Country Families | Rural | 1.82 | 59,873 |
| 57 | Grain Belt | Heartlanders | Rural | 1.65 | 37,667 |
| 53 | Rural Industria | Working Towns | Small Town | 1.54 | 13,475 |
| 42 | New Eco-topia | Country Families | Rural | 1.49 | 41,798 |
| 55 | Mines & Mills | Working Towns | Small Town | 1.41 | 17,137 |
| 31 | Latino America | Urban Midscale | Metro Urban | 1.40 | 33,226 |
| 35 | Sunset City Blues | 2nd City Centers | Second City | 1.36 | 25,378 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 1.31 | 34,276 |
| 15 | God's Country | Landed Gentry | Rural/Small Town Split | 1.25 | 68,995 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 1.23 | 61,663 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 1.23 | 32,351 |
| 49 | Hometown Retired | 2nd City Blues | Metro Suburb/2nd City Split | 1.22 | 21,234 |
| | TOTAL | | | 1.53 | 517,108 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Note: The first-column numbers refer to the 62 lifestyle types standardized within the Claritas PRIZM system.

Locations of lifestyle clusters

The following list indicates where serious-crash drivers in each cluster resided in 2001.

- “Shotguns & Pickups”: 71.3 percent resided in Ft. Lupton, Platteville, Bennett, Brush, Dacono, and Frederick; the rest were in 13 other communities.
- “Back Country Folks” resided in Ft. Lupton, Milliken, Lochbuie, Brighton, Dacono, and Fuita.
- “Agri-Business”: 33.5 percent resided in Montrose, Platteville, Kersey, Eaton, Longmont, Ft. Lupton, Greeley, Keenesburg, Ft. Collins, and Hudson; the rest were in 120 other communities.
- “River City, USA”: 50.4 percent resided in Pueblo West, Windsor, Rifle, Peyton, New Castle, Avon, Gypsum, Longmont, Montrose, and Cortez; the rest were in 58 other communities.
- “Big Sky Families”: 46.7 percent resided in Colorado Springs, Elizabeth, Bailey, Carbondale, Lyons, Pueblo West, Breckenridge, Golden, Dillon, Erie, Colorado Springs, Elizabeth, Bailey, Carbondale, and Lyons; the rest were in 91 other communities.
- “Grain Belt”: 25.3 percent resided in Ault, Yuma, Calhan, Monte Vista, Avondale, Delta, Hotchkiss, Pueblo, Fowler, and Holyoke; the rest were in 149 other communities.
- “Rural Industria”: 70.3 percent resided in Clifton, Brighton, Ft. Morgan, Fountain, and Pueblo West; the rest were in 16 other communities.
- “New Eco-topia”: 44.8 percent resided in Durango, Steamboat Springs, Bayfield, Colorado Springs, Estes Park, Peyton, Divide, Dolores, Larkspur, and Laporte; the rest were in 88 other communities.
- “Mines & Mills”: 60 percent resided in Sterling, Canon City, Ft. Morgan, Trinidad, and Montrose; the rest were in 13 other communities.
- “Latino America”: 96.6 percent resided in Denver, Aurora, Lakewood, Westminster and Edgewater; the rest were in Arvada, Englewood, Wheat Ridge, Federal Heights, Littleton, Pueblo, and Wray.
- “Sunset City Blues”: These individuals resided in Colorado Springs, Pueblo, Grand Junction, Longmont, Loveland, Greeley, Aurora, Clifton, and Longmont.
- “Blue-Chip Blues”: 74.5 percent reside in Denver, Thornton, Northglenn, Aurora, and Colorado Springs; the rest were in 14 other communities.

- “God’s Country”: 40.3 percent resided in Castle Rock, Parker, Colorado Springs, Longmont, and Loveland; the rest were in 63 other communities.
- “Family Scramble”: 71.9 percent resided in Pueblo, Aurora, Colorado Springs, Denver, and Greeley; the rest were in 24 other communities.
- “Hispanic Mix”: These individuals resided in Denver, Lakewood, Aurora, Edgewater, Buckley Field, Commerce City, and Westminster.
- “Hometown Retired”: 79.0 percent resided in Pueblo, Colorado Springs, Grand Junction, Denver, Ft. Collins, and Loveland; the rest were in 13 other communities.

Dominance of rural households as predictors of fatal crashes

Clearly, rural households dominated among the clusters with the highest fatality crash rates. The seven rural clusters had a combined weighted average index score of 1.87, comprising 12.1 percent of all Colorado households (209,373), as shown in Exhibit VIII-2.

**Exhibit VIII-2.
Degree of urbanization as characteristic of driver-household involvement in a fatality crash within Colorado**

| Urbanization | Total Number of Households in Cluster | % of Target Cluster Households | % of All Households |
|-----------------------------|---------------------------------------|--------------------------------|---------------------|
| Metro Urban | 65,577 | 12.7 % | 3.8% |
| Metro Suburb | 34,276 | 6.6% | 2.0% |
| Metro Suburb/2nd City Split | 82,897 | 16.0% | 4.8% |
| Second City | 25,378 | 4.9% | 1.5% |
| Small Town | 30,612 | 5.9% | 1.8% |
| Rural/Small Town Split | 68,995 | 13.3% | 4.0% |
| Rural | 209,373 | 40.5% | 12.1% |
| TOTAL | 517,108 | 100.0% | 29.9% |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

The demographic profiles in Exhibits VIII-3 and VIII-4 indicate a prevalence of the following among lifestyles in these target clusters: 1) rural or small town focus; 2) lower educational and income levels; 3) blue collar and farming emphasis; 4) several clusters with Hispanic dominance but not among the highest index clusters.

Exhibit VIII-3.

Basic demographic analysis of lifestyle clusters characteristic of driver-household involvement in fatality crashes

| # | Segment Name | Family Type | Pred. Age | Education | Occupation | Housing | Ethnicity | Fatal Crash Index |
|----|--------------------|--------------|-----------|-----------------|-----------------|---------|--------------------------------------|-------------------|
| 44 | Shotguns & Pickups | Fam/couples | Mixed | HS | BC/Farm | Single | White prevalent | 3.12 |
| 60 | Back Country Folks | Fam/couples | Mixed | Grade Sch/HS | BC/Farm | Single | White prevalent | 2.71 |
| 56 | Agri-Business | Fam/couples | 45-64 | HS/Some Coll | BC/Farm | Single | White prevalent | 2.23 |
| 43 | River City, USA | Fam/couples | 45-54 | HS | BC/Farm | Single | White prevalent | 1.94 |
| 41 | Big Sky Families | Fam/couples | 35-64 | HS / Some Coll. | Blue Coll/Farm | Single | White prevalent | 1.82 |
| 57 | Grain Belt | Fam/couples | Mixed | Grade Sch/HS | BC/Farm | Single | White prevalent; above avg. Hispanic | 1.65 |
| 53 | Rural Industria | Family | < 35 | Grade Sch/HS | Blue Coll/Srvs | Single | White prevalent; above avg. Hispanic | 1.54 |
| 42 | New Eco-topia | Fam/couples | 45+ | Mixed | WC/BC/Farm | Single | White prevalent | 1.49 |
| 55 | Mines & Mills | Single/Coupl | 65+ | Grade Sch/HS | Blue Coll/Srvs | Mixed | White prevalent | 1.41 |
| 31 | Latino America | Family | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent | 1.40 |
| 35 | Sunset City Blues | Single/Coupl | 55+ | High School | Blue Coll/Srvs | Single | White prevalent | 1.36 |
| 22 | Blue-Chip Blues | Fam/couples | 35-64 | HS / Some Coll. | White/Blue Coll | Single | White prevalent | 1.31 |
| 15 | God's Country | Fam/couples | 35-64 | Some Coll/Coll. | White Collar | Single | White prevalent | 1.25 |
| 50 | Family Scramble | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent | 1.23 |
| 46 | Hispanic Mix | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Hi-Rise | Hispanic prevalent | 1.23 |
| 49 | Hometown Retired | Singles | 65+ | Grade Sch/HS | Blue Coll/Srvs | Mixed | White prevalent | 1.22 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Exhibit VIII-4.

Further demographic analysis of lifestyle clusters of drivers in fatality crashes

| # | Segment Name | Social Group | Urbanization | Socio-Economic Rank (out of 62) | Median U.S. Household Income | Fatal Crash Index |
|----|--------------------------------|------------------|-----------------------------|---------------------------------|------------------------------|-------------------|
| 44 | Shotguns & Pickups | Country Families | Rural | 43 | \$38,500 | 3.12 |
| 60 | Back Country Folks | Rustic Living | Rural | 53 | \$27,800 | 2.71 |
| 56 | Agri-Business | Heartlanders | Rural | 45 | \$36,500 | 2.23 |
| 43 | River City, USA | Country Families | Rural | 34 | \$39,900 | 1.94 |
| 41 | Big Sky Families | Country Families | Rural | 23 | \$51,600 | 1.82 |
| 57 | Grain Belt | Heartlanders | Rural | 57 | \$24,400 | 1.65 |
| 53 | Rural Industria | Working Towns | Small Town | 50 | \$27,900 | 1.54 |
| 42 | New Eco-topia | Country Families | Rural | 25 | \$39,000 | 1.49 |
| 55 | Mines & Mills | Working Towns | Small Town | 56 | \$21,300 | 1.41 |
| 31 | Latino America | Urban Midscale | Metro Urban | 44 | \$32,600 | 1.40 |
| 35 | Sunset City Blues | 2nd City Centers | Second City | 39 | \$35,000 | 1.36 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 30 | \$47,500 | 1.31 |
| 15 | God's Country | Landed Gentry | Rural/Small Town Split | 11 | \$65,300 | 1.25 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 59 | \$20,600 | 1.23 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 60 | \$19,000 | 1.23 |
| 49 | Hometown Retired | 2nd City Blues | Metro Suburb/2nd City Split | 52 | \$20,000 | 1.22 |
| | AVERAGE TARGET CLUSTERS | | | 38.7 | \$37,547 | 1.53 |
| | AVERAGE U.S. | | | 32.0 | \$47,532 | na |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Findings on Lifestyle Clusters Related to Injury Crashes

A total of eight lifestyle clusters met the criteria for higher than average likelihood of involvement in an *injury* crash. The clusters are categorized in the tables below according to their broad social group (15 groups), level of urbanization, crash index score, and total number of households in each cluster.

As shown in Exhibit VIII-5, the injury-crash clusters tended to be concentrated in the urban and suburban metro areas rather than in the rural parts of Colorado.

“Mobility Blues” had the highest crash index, at 1.38, meaning households from that cluster were 38 percent more likely to be involved in an injury crash than average for the state. Households belonging to one of these clusters represent 15.7 percent of all households statewide.

Exhibit VIII-5.

Characteristics of households more likely to be involved in an injury crash than average

| # | Cluster Name | Social Group | Urbanization | Injury Crash Rate Index | Total Number of Households in Cluster |
|----------|---------------------|---------------------|-----------------------------|--------------------------------|--|
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 1.38 | 34,214 |
| 40 | Military Quarters | Exurban Blues | Small Town | 1.36 | 16,957 |
| 26 | Gray Collars | Inner Suburbs | Metro Suburb | 1.35 | 24,152 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 1.34 | 34,276 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 1.29 | 32,351 |
| 31 | Latino America | Urban Midscale | Metro Urban | 1.26 | 33,226 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 1.25 | 61,663 |
| 20 | Boomers & Babies | The Affluentials | Metro Suburb | 1.20 | 34,673 |
| | TOTAL | | | 1.29 | 271,512 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Locations of added lifestyle clusters

- “Mobility Blues”: 77.4 percent resided in Colorado Springs, Denver, Thornton, Aurora, and Westminster; the rest were in 20 other communities.
- “Military Quarters”: 88.4 percent resided in Colorado Springs, Ft. Carson, Aurora, Denver, and Littleton; the rest were in 18 other communities.
- “Gray Collars”: 74.6 percent resided in Denver, Commerce City, Thornton, Aurora, and Englewood; the rest were in 16 other communities.
- “Boomers & Babies”: 65.4 percent resided in Aurora, Broomfield, Colorado Springs, Thornton, and Westminster; the rest were in 17 other communities.

Locations of Lifestyle Clusters Associated with Injury Crashes

The injury clusters profiled with the highest crash rates tended to be concentrated in the metro-suburb areas rather than in the rural parts of Colorado, as shown in Exhibit VIII-6.

Exhibit VIII-6.

Location of households likely to be involved in an injury crash

| Urbanization | Total Number of Households in Cluster | % of Target Cluster Households | % of All Households |
|-----------------------------|--|---------------------------------------|----------------------------|
| Metro Urban | 65,577 | 24.2% | 3.8% |
| Metro Suburb | 127,315 | 46.9% | 7.4% |
| Metro Suburb/2nd City Split | 61,663 | 22.7% | 3.6% |
| Second City | 0 | 0.0% | 0.0% |
| Small Town | 16,957 | 6.2% | 1.0% |
| Rural | 0 | 0.0% | 0.0% |
| TOTAL | 271,512 | 100.0% | 15.7% |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Demographic Analysis of Key Lifestyle Clusters in Injury Crashes

Demographic analysis of the eight lifestyle clusters, in Exhibits VIII-7 and VIII-8, demonstrates the prevalence of Latino/Hispanic families, blue collar/working class occupations, high school educations and lower incomes.

Exhibit VIII-7.

Basic demographic analysis of lifestyle clusters likely to be involved in an injury crash

| # | Segment Name | Family Type | Pred. Age | Education | Occupation | Housing | Ethnicity | Injury Crash Rate Index |
|----------|---------------------|--------------------|------------------|------------------|-------------------|----------------|------------------------------------|--------------------------------|
| 25 | Mobility Blues | Family | < 35 | HS / Some Coll. | Blue Coll/Srvs | Multi | Hispanic prevalent | 1.38 |
| 40 | Military Quarters | Family | < 35 | HS / Some Coll. | White Coll/Srvs | Multi | Above avg. Black/Asian | 1.36 |
| 26 | Gray Collars | Couples | 65+ | HS | Blue Collar | Single | Above avg. Black | 1.35 |
| 22 | Blue-Chip Blues | Fam/couples | 35-64 | HS / Some Coll. | White/Blue Coll | Single | White prevalent | 1.34 |
| 46 | Hispanic Mix | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Hi-Rise | Hispanic prevalent | 1.29 |
| 31 | Latino America | Family | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent | 1.26 |
| 50 | Family Scramble | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent | 1.25 |
| 20 | Boomers & Babies | Family | 25-44 | Some Coll. | White Collar | Single | Above avg. Hispanic, White & Asian | 1.20 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

**Exhibit VIII-8.
Further demographic analysis of lifestyle clusters likely to be involved in an injury crash**

| # | Segment Name | Social Group | Urbanization | Socio-Economic Rank (out of 62) | Median U.S. Household Income | Injury Crash Rate Index |
|----|--------------------------------|------------------|-----------------------------|---------------------------------|------------------------------|-------------------------|
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 41 | \$33,600 | 1.38 |
| 40 | Military Quarters | Exurban Blues | Small Town | 40 | \$32,600 | 1.36 |
| 26 | Gray Collars | Inner Suburbs | Metro Suburb | 42 | \$34,600 | 1.35 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 30 | \$47,500 | 1.34 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 60 | \$19,000 | 1.29 |
| 31 | Latino America | Urban Midscale | Metro Urban | 44 | \$32,600 | 1.26 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 59 | \$20,600 | 1.25 |
| 20 | Boomers & Babies | The Affluentials | Metro Suburb | 21 | \$51,200 | 1.20 |
| | AVERAGE TARGET CLUSTERS | | | 43.8 | \$32,814 | 1.29 |
| | AVERAGE U.S. | | | 32.0 | \$47,532 | na |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Part II: Lifestyle Groups Among High Risk Drivers

Findings on Lifestyle Clusters Related to Impaired Drivers

Exhibit VIII-9 indicates PRIZM characteristics of drivers suspected of impairment involved in injury or fatality crashes.

The impaired crash index shows that the relatively less well-to-do people among very rural “Hard Scrabble” and the urban-core “Inner-Cities” and “Hispanic Mix” have a high tendency to be involved in an impaired crash.

Exhibit VIII-9.

Lifestyle characteristics of drivers suspected of impairment involved in injury or fatal crashes in Colorado

| # | Cluster Name) | Social Group | Urbanization | Impaired Crash Index | Total Number of Households in Cluster |
|----|---------------------|------------------|-----------------------------|----------------------|---------------------------------------|
| 62 | Hard Scrabble | Rustic Living | Rural | 4.84 | 3,190 |
| 47 | Inner-Cities | Urban Cores | Metro Urban | 2.27 | 3,964 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 1.85 | 32,351 |
| 40 | Military Quarters | Exurban Blues | Small Town | 1.62 | 16,957 |
| 31 | Latino America | Urban Midscale | Metro Urban | 1.57 | 33,226 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 1.51 | 34,276 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 1.49 | 61,663 |
| 34 | Starter Families | 2nd City Centers | 2nd City | 1.45 | 25,408 |
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 1.44 | 34,214 |
| 26 | Gray Collars | Inner Suburbs | Metro Suburb | 1.44 | 24,152 |
| 35 | Sunset City Blues | 2nd City Centers | 2nd City | 1.33 | 25,378 |
| 48 | Small-town Downtown | 2nd City Blues | Metro Suburb/2nd City Split | 1.33 | 66,598 |
| 53 | Rural Industria | Working Towns | Small Town | 1.27 | 13,475 |
| 43 | River City, USA | Country Families | Rural | 1.26 | 23,149 |
| 23 | Upstarts & Seniors | Inner Suburbs | Metro Suburb | 1.20 | 28,213 |
| 57 | Grain Belt | Heartlanders | Rural | 1.20 | 36,488 |
| | TOTAL | | | 1.46 | 462,702 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Note: The first-column numbers refer to the 62 lifestyle types standardized within the Claritas PRIZM system.

Locations of added lifestyle clusters

- “Hard Scrabble”: 55.3 percent resided in Florence, Monte Vista, Rocky Ford, Walsenburg, Del Norte, Delta, Ordway, Las Animas, Antonito, and Cedaredge; the rest were in 42 other communities.
- “Inner-Cities” resided in Denver (99.2 percent), and Wheat Ridge.
- “Starter Families”: 86.3 percent resided in Colorado Springs, Longmont, Loveland, Evans, and Grand Junction; the rest were in 8 other communities.
- “Small-town Downtown”: 65.8 percent resided in Colorado Springs, Pueblo, Grand Junction, Greeley, and Aurora; the rest were in 32 other communities.
- “Upstarts & Seniors”: 72.3 percent resided in Colorado Springs, Denver, Lakewood, Englewood, and Wheat Ridge; the rest were in 15 other communities.

Type of Location of Impaired-Driver Households Likely to be Involved in Injury or Fatality Crashes

As Exhibit VIII-10 indicates, Metro-Suburb and Metro Suburb/2nd City Split households are most likely to have a driver be involved in an impaired- driving crash.

Exhibit VIII-10.

Location of households more likely to have a driver be involved in an impaired-driving crash entailing injury or fatality

| Urbanization | Total Number of Households in Cluster | % of Target Cluster Households | % of All Households |
|-----------------------------|--|---------------------------------------|----------------------------|
| Metro Urban | 69,541 | 15.0% | 4.0% |
| Metro Suburb | 120,855 | 26.1% | 6.9% |
| Metro Suburb/2nd City Split | 128,261 | 27.7% | 7.4% |
| 2nd City | 50,786 | 11.0% | 2.9% |
| Small Town | 30,432 | 6.6% | 1.7% |
| Rural | 62,827 | 13.6% | 3.6% |
| TOTAL | 462,702 | 100.0% | 26.6% |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Demographics of Lifestyle Clusters in Impaired-Driver Injury Crashes

The following two exhibits demonstrate in detail the demographics of the lifestyle segments defined above.

Exhibit VIII-11.

Basic demographics of lifestyle clusters likely to be involved in impaired-driving crashes

| # | Segment Name | Family Type | Pred. Age | Education | Occupation | Housing | Ethnicity |
|----|---------------------|----------------|-----------|-----------------|------------------|---------|--------------------------------------|
| 62 | Hard Scramble | Family | 55+ | Less than HS | Blue Coll/Farm | Single | White prevalent |
| 47 | Inner-Cities | Single/Fam | Mixed | Less than HS | Blue Coll/Srvs | Multi | Black prevalent; above avg. Hispanic |
| 46 | Hispanic Mix | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Hi-Rise | Hispanic prevalent |
| 40 | Military Quarters | Family | < 35 | HS / Some Coll. | White Coll/Srvs | Multi | Above avg. Black/Asian |
| 31 | Latino America | Family | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 22 | Blue-Chip Blues | Fam/couples | 35-64 | HS / Some Coll. | White/Blue Coll | Single | White prevalent |
| 50 | Family Scramble | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 34 | Starter Families | Single/Fam | 25-34 | HS / Some Coll. | Blue Coll/Srvs | Mixed | Above avg. Black/Hisp. |
| 25 | Mobility Blues | Family | < 35 | HS / Some Coll. | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 26 | Gray Collars | Couples | 65+ | High School | Blue Collar | Single | Above avg. Black |
| 35 | Sunset City Blues | Couples | 55+ | High School | Blue Coll/Srvs | Single | White prevalent |
| 48 | Small-town Downtown | Single/Fam | < 35 | HS / Coll. | Blue Coll/Srvs | Multi | Above avg. Black/Hisp. |
| 53 | Rural Industria | Family | < 35 | High School | Blue Collar | Single | White prevalent; above avg. Hispanic |
| 43 | River City, USA | Family | 35-54 | High School | Blue Coll/Farm | Single | White prevalent |
| 23 | Upstarts & Seniors | couples/Single | Mixed | College | White Coll/Exec. | Multi | White prevalent |
| 57 | Grain Belt | Family | 45+ | High School | Farm | Single | White prevalent; above avg. Hispanic |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Exhibit VIII-12.

Further demographics of lifestyle clusters likely to be involved in impaired-driving crashes

| # | Segment Name | Social Group | Urbanization | Socio-Economic Rank (out of 62) | Median U.S. Household Income | Impaired Crash Index |
|----|--------------------------------|------------------|-----------------------------|---------------------------------|------------------------------|----------------------|
| 62 | Hard Scrabble | Rustic Living | Rural | 58 | \$18,100 | 4.84 |
| 47 | Inner-Cities | Urban Cores | Metro Urban | 61 | \$16,500 | 2.27 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 60 | \$19,000 | 1.85 |
| 40 | Military Quarters | Exurban Blues | Small Town | 40 | \$32,600 | 1.62 |
| 31 | Latino America | Urban Midscale | Metro Urban | 44 | \$32,600 | 1.57 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 30 | \$47,500 | 1.51 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 59 | \$20,600 | 1.49 |
| 34 | Starter Families | 2nd City Centers | 2nd City | 36 | \$35,300 | 1.45 |
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 41 | \$33,600 | 1.44 |
| 26 | Gray Collars | Inner Suburbs | Metro Suburb | 42 | \$34,600 | 1.44 |
| 35 | Sunset City Blues | 2nd City Centers | 2nd City | 39 | \$35,000 | 1.33 |
| 48 | Small-town Downtown | 2nd City Blues | Metro Suburb/2nd City Split | 49 | \$22,800 | 1.33 |
| 53 | Rural Industria | Working Towns | Small Town | 50 | \$27,900 | 1.27 |
| 43 | River City, USA | Country Families | Rural | 34 | \$39,900 | 1.26 |
| 23 | Upstarts & Seniors | Inner Suburbs | Metro Suburb | 28 | \$35,600 | 1.20 |
| 57 | Grain Belt | Heartlanders | Rural | 57 | \$24,400 | 1.20 |
| | Total Targeted Clusters | | | 45.6 | \$29,728 | 1.46 |
| | AVERAGE U.S. | | | 32.0 | \$47,532 | na |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Findings on Lifestyle Groups Related to Seat Belt Noncompliant Drivers

Clearly, Colorado drivers who, in 2001 were “non-compliant” in obeying occupant-protections laws while being involved in injury or fatal crashes, tended to live in rural areas.

Exhibit VIII-13.

Lifestyle characteristics of seat belt noncompliant drivers involved in injury or fatal crashes in Colorado

| # | Cluster Name | Social Group | Urbanization | Non-Belted Crash Index | Total Number of Households in Cluster |
|----------|---------------------|---------------------|-----------------------------|-------------------------------|--|
| 62 | Hard Scrabble | Rustic Living | Rural | 7.38 | 3,190 |
| 57 | Grain Belt | Heartlanders | Rural | 1.98 | 36,488 |
| 56 | Agri-Business | Heartlanders | Rural | 1.84 | 36,488 |
| 43 | River City, USA | Country Families | Rural | 1.66 | 23,149 |
| 53 | Rural Industria | Working Towns | Small Town | 1.64 | 13,475 |
| 39 | Red-White and Blues | Exurban Blues | Small Town | 1.48 | 8,475 |
| 26 | Gray Collars | Inner Suburbs | Metro Suburb | 1.44 | 24,152 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 1.36 | 32,351 |
| 55 | Mines and Mills | Working Towns | Small Town | 1.36 | 17,137 |
| 31 | Latino America | Urban Midscale | Metro Urban | 1.34 | 33,226 |
| 34 | Starter Families | 2nd City Centers | 2nd City | 1.31 | 25,408 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 1.30 | 61,663 |
| 52 | Golden Ponds | Working Towns | Small Town | 1.29 | 21,676 |
| 41 | Big Sky Families | Country Families | Rural | 1.25 | 59,873 |
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 1.22 | 34,214 |
| 35 | Sunset City Blues | 2nd City Centers | 2nd City | 1.21 | 25,378 |
| | TOTAL | | | 1.47 | 456,343 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Locations of added lifestyle clusters

- “Red, White & Blues”: 74.2 per cent resided in Brighton, Craig, and Castle Rock; the rest were in Loveland, Clifton, La Salle, Ft. Morgan, Trinidad, and La Salle.
- “Golden Ponds”: 76.0 percent resided in Canon City, Alamosa, Montrose, Cortez, Brighton, Durango, Golden, Loveland, Woodland Park, and Sterling; the rest were in 20 other communities.

Location of Seat Belt Noncompliant-Driver Households Likely to be Involved in Crashes

Exhibit VIII-14.

Location of households more likely to have a driver be involved in an impaired-driving crash entailing injury or fatality

| Urbanization | Total Number of Households in Cluster | % of Target Cluster Households | % of All Households |
|-----------------------------|---------------------------------------|--------------------------------|---------------------|
| Metro Urban | 65,577 | 14.4% | 3.8% |
| Metro Suburb | 58,366 | 12.8% | 3.4% |
| Metro Suburb/2nd City Split | 61,663 | 13.5% | 3.5% |
| 2nd City | 50,786 | 11.1% | 2.9% |
| Small Town | 60,763 | 13.3% | 3.5% |
| Rural | 159,188 | 34.9% | 9.1% |
| TOTAL | 456,343 | 100.0% | 26.2% |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Demographics of Key Lifestyle Clusters Likely to Include Seat Belt Noncompliant Drivers in Crashes

Exhibit VIII-15.

Basic demographics on lifestyle clusters likely to have seat belt noncompliant drivers in crashes

| # | Segment Name | Family Type | Pred. Age | Education | Occupation | Housing | Ethnicity |
|----|---------------------|----------------|-----------|-----------------|----------------|---------|--------------------------------------|
| 62 | Hard Scrabble | Family | 55+ | Less than HS | Blue Coll/Farm | Single | White prevalent |
| 57 | Grain Belt | Family | 45+ | High School | Farm | Single | White prevalent; above avg. Hispanic |
| 56 | Agri-Business | Fam/couples | 45-64 | HS/Some Coll | BC/Farm | Single | White prevalent |
| 43 | River City, USA | Family | 35-54 | High School | Blue Coll/Farm | Single | White prevalent |
| 53 | Rural Industria | Family | < 35 | High School | Blue Collar | Single | White prevalent; above avg. Hispanic |
| 39 | Red-White and Blues | Fam/couples | Mixed | High School | Blue Collar | Single | White prevalent |
| 26 | Gray Collars | Couples | 65+ | High School | Blue Collar | Single | Above avg. Black |
| 46 | Hispanic Mix | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Hi-Rise | Hispanic prevalent |
| 55 | Mines and Mills | Single/Couples | 65+ | Grade Sch/HS | Blue Coll/Srvs | Mixed | White prevalent |
| 31 | Latino America | Family | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 34 | Starter Families | Single/Fam | 25-34 | HS / Some Coll. | Blue Coll/Srvs | Mixed | Above avg. Black/Hisp. |
| 50 | Family Scramble | Single/Fam | < 35 | Grade Sch/HS | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 52 | Golden Ponds | Single/Couples | 65+ | HS / Some Coll. | WC/BC/Srvs | Mixed | White prevalent |
| 41 | Big Sky Families | Fam/couples | 35-64 | HS / Some Coll. | Blue Coll/Farm | Single | White prevalent |
| 25 | Mobility Blues | Family | < 35 | HS / Some Coll. | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 35 | Sunset City Blues | Couples | 55+ | High School | Blue Coll/Srvs | Single | White prevalent |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Exhibit VIII-16.

Further demographics lifestyle clusters likely to have seat belt noncompliant drivers in crashes

| # | Segment Name | Social Group | Urbanization | Socio-Economic Rank (out of 62) | Median U.S. Household Income | Non-Belted Crash Index |
|----|------------------------|------------------|-----------------------------|---------------------------------|------------------------------|------------------------|
| 62 | Hard Scrabble | Rustic Living | Rural | 58 | \$18,100 | 7.38 |
| 57 | Grain Belt | Heartlanders | Rural | 57 | \$24,400 | 1.98 |
| 56 | Agri-Business | Heartlanders | Rural | 45 | \$36,500 | 1.84 |
| 43 | River City, USA | Country Families | Rural | 34 | \$39,900 | 1.66 |
| 53 | Rural Industria | Working Towns | Small Town | 50 | \$27,900 | 1.64 |
| 39 | Red-White and Blues | Exurban Blues | Small Town | 35 | \$39,000 | 1.48 |
| 26 | Gray Collars | Inner Suburbs | Metro Suburb | 42 | \$34,600 | 1.44 |
| 46 | Hispanic Mix | Urban Cores | Metro Urban | 60 | \$19,000 | 1.36 |
| 55 | Mines and Mills | Working Towns | Small Town | 56 | \$21,300 | 1.36 |
| 31 | Latino America | Urban Midscale | Metro Urban | 44 | \$32,600 | 1.34 |
| 34 | Starter Families | 2nd City Centers | 2nd City | 36 | \$35,300 | 1.31 |
| 50 | Family Scramble | 2nd City Blues | Metro Suburb/2nd City Split | 59 | \$20,600 | 1.30 |
| 52 | Golden Ponds | Working Towns | Small Town | 38 | \$28,300 | 1.29 |
| 41 | Big Sky Families | Country Families | Rural | 23 | \$51,600 | 1.25 |
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 41 | \$33,600 | 1.22 |
| 35 | Sunset City Blues | 2nd City Centers | 2nd City | 39 | \$35,000 | 1.21 |
| | Target Clusters | | | 44.2 | \$32,248 | 1.47 |
| | AVERAGE U.S. | | | 32.0 | \$47,532 | na |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Findings on Lifestyle Groups Related to Young Drivers

The profile of young drivers who in 2001 tended to be involved in injury or fatal crashes indicates that “Military Quarters” and young drivers from affluent-to-wealthy households tend to predominate.

Exhibit VIII-17.

Young driver crash profile: Young drivers 16-20 involved in injury or fatality accident

| # | Segment Name | Social Group | Urbanization | Young Driver Crash Index | Total Number of Households in Cluster |
|----------|---------------------|---------------------|---------------------|---------------------------------|--|
| 40 | Military Quarters | Exurban Blues | Small Town | 1.49 | 16,957 |
| 05 | Kids & Cul-de-Sacs | Elite Suburbs | Metro Suburb | 1.32 | 91,369 |
| 20 | Boomers & Babies | The Affluentials | Metro Suburb | 1.31 | 34,673 |
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 1.30 | 34,214 |
| 35 | Sunset City Blues | 2nd City Centers | 2nd City | 1.23 | 25,378 |
| 02 | Winner's Circle | Elite Suburbs | Metro Suburb | 1.22 | 39,161 |
| 34 | Starter Families | 2nd City Centers | 2nd City | 1.22 | 25,408 |
| 15 | God's Country | Landed Gentry | Rural/Sm Town | 1.22 | 68,995 |
| 43 | River City, USA | Country Families | Rural | 1.20 | 23,149 |
| 22 | Blue-Chip Blues | The Affluentials | Metro Suburb | 1.20 | 34,276 |
| | TOTAL | | | 1.27 | 393,580 |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Locations of added lifestyle clusters

- “Kids & Cul-de-Sacs: 66.2 percent resided in Aurora, Littleton, Colorado Springs, Thornton, and Denver; the rest were in 20 other communities.
- “Winner’s Circle”: 67.6 percent resided in Littleton, Englewood, Centennial, Aurora, and Highlands Ranch; the rest resided in 18 other communities.

**Location of Households Including Young Drivers
Likely to be Involved in an Impaired-Driving Crash**

As Exhibit VIII-18 indicates, households including young drivers more likely to be involved in an impaired-driving crash largely tend to be located in metro-suburb areas.

**Exhibit VIII-18.
Location of young drivers more likely to be involved in an
impaired-driving crash entailing injury or fatality**

| Urbanization | Total Number of Households in Cluster | % of Target Cluster Households | % of All Households |
|---------------------------|--|---|--------------------------------|
| Metro Suburb | 233,693 | 59.4% | 13.5% |
| 2nd City | 50,786 | 12.9% | 2.9% |
| Small Town | 16,957 | 4.3% | 1.0% |
| Small Town/Rural Split | 68,995 | 17.5% | 4.0% |
| Rural | 23,149 | 5.9% | 1.3% |
| TOTAL | 393,580 | 100.0% | 22.8% |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Demographics of Lifestyle Clusters Likely to Have Young Drivers in Crashes

Detailed analysis of young drivers likely to be involved in crashes shows a variety of households but with a split basically between military and more affluent households.

Exhibit VIII-19.

Basic demographics of lifestyle clusters likely to have young drivers in crashes

| # | Segment Name | Family Type | Pred. Age | Education | Occupation | Housing | Ethnicity |
|----|--------------------|-------------|-----------|-------------------|-----------------|---------|---------------------------------|
| 40 | Military Quarters | Family | < 35 | HS / Some Coll. | White Coll/Srvs | Multi | Above avg. Black/Asian |
| 05 | Kids & Cul-de-Sacs | Family | 35-54 | College | White Coll/Exec | Single | White prevalent |
| 20 | Boomers & Babies | Family | 25-44 | Some College | White Collar | Single | Above avg. White/Hispanic/Asian |
| 25 | Mobility Blues | Family | < 35 | HS / Some Coll. | Blue Coll/Srvs | Multi | Hispanic prevalent |
| 35 | Sunset City Blues | Couples | 55+ | High School | Blue Coll/Srvs | Single | White prevalent |
| 02 | Winner's Circle | Fam/Couples | 45-64 | College | Executive | Single | White prevalent |
| 34 | Starter Families | Single/Fam | 25-34 | HS / Some Coll. | Blue Coll/Srvs | Mixed | Above avg. Black/Hispanic |
| 15 | God's Country | Fam/Couples | 35-64 | Some Coll/College | White Collar | Single | White prevalent |
| 43 | River City, USA | Family | 35-54 | High School | Blue Coll/Farm | Single | White prevalent |
| 22 | Blue-Chip Blues | Fam/couples | 35-64 | HS / Some Coll. | White/Blue Coll | Single | White prevalent |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Exhibit VIII-20.

Further demographics of lifestyle clusters likely to have young drivers in crashes

| # | Segment Name | Social Group | Urbanization | Socio-Economic Rank (out of 62) | Median U.S. Household Income | Young Driver Crash Index |
|----|--------------------------------|------------------|---------------|---------------------------------|------------------------------|--------------------------|
| 40 | Military Quarters | Exurban Blues | Small Town | 40 | \$32,600 | 1.49 |
| 05 | Kids & Cul-de-Sacs | Elite Suburbs | Metro Suburb | 10 | \$68,900 | 1.32 |
| 20 | Boomers & Babies | The Affluentals | Metro Suburb | 21 | \$51,200 | 1.31 |
| 25 | Mobility Blues | Inner Suburbs | Metro Suburb | 41 | \$33,600 | 1.30 |
| 35 | Sunset City Blues | 2nd City Centers | 2nd City | 39 | \$35,000 | 1.23 |
| 02 | Winner's Circle | Elite Suburbs | Metro Suburb | 2 | \$90,700 | 1.22 |
| 34 | Starter Families | 2nd City Centers | 2nd City | 36 | \$35,300 | 1.22 |
| 15 | God's Country | Landed Gentry | Rural/Sm Town | 11 | \$65,300 | 1.22 |
| 43 | River City, USA | Country Families | Rural | 34 | \$39,900 | 1.20 |
| 22 | Blue-Chip Blues | The Affluentals | Metro Suburb | 30 | \$47,500 | 1.20 |
| | Total Targeted Clusters | | | 21.0 | \$56,322 | 1.27 |
| | AVERAGE U.S. | | | 32.0 | \$47,532 | na |

Source: CDOT 2001 crash data and Claritas, Inc., as combined by Hebert Research, Inc.

Section IX: Focus Group Research on High-Risk Drivers' Views About Traffic Safety

To begin to develop a deeper understanding of problematic drivers in Colorado for this Problem Identification, Weis Communications and Hebert Research conducted a series of focus groups, in February and July 2003.

Initial Round of Focus Groups

Four focus groups were conducted in February 2003, with the following objectives:

- 1) Review and further understand patterns of behavior, including values, beliefs, and perceptions characteristic in Colorado of:
 - Young drivers
 - Aggressive drivers
 - Impaired (alcohol, drug) drivers
 - Drivers who are not consistent users of occupant protection.
- 2) Identify pertinent Colorado motivators for changing driving behavior among these four groups.
- 3) Identify and explore situational "points of communication" as opportunities for informing and educating drivers to change behavior to improve transportation safety in Colorado.
- 4) Evaluate possible communication approaches and activities related to informing and educating drivers in order to change behavior, thus improving transportation safety in Colorado.

Two of the focus groups were conducted in Denver on Feb. 26, and two in Grand Junction (at the request of CDOT Traffic & Safety Engineering Branch officials) on Feb. 27. In Denver there were 15 members in each group; one group included young and impaired drivers, the other included occupant protection non-compliers and aggressive drivers. In Grand Junction, there also were 15 people in each group, with the same split among the high-risk driver types.

Conclusions about High-Risk Drivers

Young (under age 30) drivers said they tend to drive alone or with friends. All younger participants received a learner's permit and some took a driver's education course when learning to drive. Several reported initial traffic violations and heightened sensitivity to the threat of losing "freedom" by getting their license revoked. In other words, these drivers tend to be particularly sensitive to information about the consequences of their actions.

Aggressive drivers tended to downplay, if not seemingly be in denial of, their aggressive driving behavior, except when talking about how other drivers influence their driving. Aggressive drivers reported being in a hurry, “going with the flow” of other speeders, and impatience with cautious, uncertain, or “slow” drivers.

Examples of their behavior included slowing down to make other drivers angry, boxing other drivers in, getting out and confronting the other driver, and in one case hanging out the window and pointing to the other driver’s tires in a threatening manner.

Being in a hurry, emergencies, and familiarity with the area and the time of day all caused participants, they said, to increase their acceptable speeds. Several, however, indicated they tend to change their behavior when they have to set a good example for their children, especially children approaching or entering driving age.

Impaired drivers readily admitted that they had failed at times to be completely safe about driving after drinking. While most of these participants felt they were able to drive a car without problem after drinking, a few admitted that their driving was compromised. Nearly all participants evidenced confusion about the law about blood-alcohol level and driving. (Note: The position of CDOT and the National Highway Transportation Safety Administration is that zero blood alcohol is the only safe level.)

Impaired drivers were especially attuned to such consequences as the total cost of a DUI (the court fees, higher insurance rates, loss of license, use of public transportation, and the effect on one’s ability to work). Participants who knew people who got into accidents or received DUIs said that these events often changed their own driving habits.

In discussing specific situations, Denver focus-group participants raised the idea of providing a location where drivers – if they knew they had had too much to drink – could leave their cars overnight without having them be impounded. Participants noted that right now in Denver, cars cannot be left on certain streets from 2 to 4 a.m., and that some people would rather risk driving home drunk than paying to get their car out of impoundment. The feasibility of this concept was debated, and most participants in the two focus groups supported the idea.

All four focus groups tested the idea of whether an informational wallet card distributed at places that serve alcohol (bars and restaurants) would be useful. This card could feature a table showing the relationship of number of drinks to increase in blood alcohol, by body weight. Overall, the reactions of the focus groups were mild or mixed about this idea.

Occupant protection non-compliants, like aggressive drivers, said they tend to react aggressively to other drivers, whereas younger drivers and those who misuse alcohol said they react to other drivers by becoming more “defensive.” (Yet “defensive” tends to be ambiguous and appears to mean very different things to different people.)

Occupant protection non-compliants reported that they could be influenced by seeing the consequences of traffic accidents in which occupants – particularly children – were not wearing seat belts or in car seats. Interestingly, as some participants said, consequences to

one's own children are the "same" as consequences to one's self.

These people seemed to be much more oriented to consequences to themselves than to consequences to other drivers, in the sense that "this wouldn't happen to me." Of particular concern is that there is some confusion about exactly what the occupant-protection laws require, and that some drivers are averse to limiting the "freedom" of their adult passengers by requiring they wear seat belts.

Throughout occupant-protection discussions, *there seemed to be confusion about exactly what the occupant-protection "rules" are.*

Some participants in the focus groups voiced appreciation for situation-specific reminders (for example, road signs to "Click It or Ticket") and felt that officers giving warnings instead of tickets could add a safety message at the time of the stop – perhaps a theme being emphasized during that particular period of time (such as the hazards of tailgating, or the advantages of wearing seat belts).

Situational Points of Communication and Change

Despite not agreeing with all traffic laws (primarily speed limits), nearly all participants with children said they changed and started driving at the speed limit when they started their families.

This life transition provides a major opportunity for increasing driver awareness of traffic safety laws and procedures, and providing education on consequences of driving behavior. In this major life-transition situation, as one individual commented, driving behavior matters to individuals (the children) who are "part" of the drivers themselves; that is, the driver is still focused on a self-directed consequence.

Other such life transitions discussed by the participants included learning to drive (many older drivers learned at a very early age, from a parent), getting married, and driving with a child who soon would begin driving ("to set a good example").

Specific situation points of communication, discussed in all four focus groups, included times when an officer stops a traffic violator and gives the driver a warning. Participants saw this as a time when they would be receptive to a further point of information and education provided by the officer on traffic matters. Some participants suggested officers could emphasize particular themes during specific times of the month or year.

All participants were highly receptive to the idea of taking "defensive driving" courses or further driving instruction IF they could receive a reduction in their insurance rates. Few participants said they would take a defensive driving course without some kind of incentive.

The Grand Junction focus groups elaborated on incentives, suggesting that, instead of continued emphasis on penalties, there could be private and government incentives for improved driving behavior. These ranged from breaks on insurance rates to good-driver discounts on State fees for drivers licenses, vehicle registrations, and other vehicle-related

fees and taxes.

Communication Themes

The groups reviewed themes promoted by CDOT statewide or in special regional campaigns:

- 1) "DUI – The Endless Hangover" was a popular campaign among all participants. When first mentioned, nearly all participants laughed and, when asked to explain why, they said the slogan struck a balance between humor and effectively communicating the consequences.
- 2) Thirty-two of the 58 participants were aware of "Click It or Ticket" when prompted, and 39 were aware of "The Heat is On" when prompted. None expressed negative opinions of these themes, and participants seemed to feel the themes were clear and to the point.

Traveling 'With the Flow of Traffic' – and Enforcement

Nearly all participants felt that driving "with the flow of traffic," even at 10 to 15 miles an hour above the speed limit, was acceptable unless there were poor weather or road conditions. Many expressed concern for their safety if they drove the speed limit while all other drivers exceeded it by 10 or 15 miles per hour. The few participants who had been pulled over for speeding when going with the flow of traffic expressed their frustration over the event, and other participants agreed that as long as the conditions were good, traveling at the speed of traffic should be allowed.

To the moderator/observer, this suggests a continuing need for law enforcement, as drivers continue to push the limit of speeding on Colorado's highways.

Second Round of Focus Groups

An additional four focus groups were conducted in July 2003, two in Brighton and two in Limon, with the following objectives:

- 1) To review traffic-safety conditions in the local area, especially as related to the behavior of high-risk drivers.
- 2) To consider and discuss the implementation of crash-reduction strategies and tactics being quantified in the telephone survey of high-risk drivers in Colorado.

The first two focus groups were conducted in Brighton on July 9, and two were held in Limon on July 10. In Brighton there were 11 members in the first group and 12 in the second. In Limon the turnout was restricted somewhat by acceleration of the wheat harvest by unusually hot weather; there were 7 people in the first group, and 10 in the second.

Traffic Safety Conditions in the Brighton and Limon Areas

The consensus of these focus groups was that in rural areas drivers tend to speed and to disregard stop signs on county roads. The perception tends to be that if traffic is light it is not necessary to stop at stop signs; unfortunately, these habits are carried into times of poor visibility or impaired traction on such roads.

Group members noted that in rural areas there are few enforcement officers and sometimes they “are too busy to pull people over” or “just don’t see” traffic safety violators.

In Adams County, according to group members, there is more and more traffic congestion spreading into the county from the I-25 corridor, but no additions or improvements in traffic “signalization” – new signage and stop signals. Moreover, these individuals said there are considerable variations in the speed limit on the various types of roads and highways in the county, and drivers tend to generalize and drive at speeds they feel are safe enough. What would be better, many said, would be more uniform and consistent application of speed limits.

Implementation of Strategies and Tactics

In regard to the survey strategies and tactics for developing safer driving, focus group members tended to favor drivers education, the one-time hanger card for an impaired driver to leave the driver’s car overnight without getting a ticket, and other tactics such as promoting the use of designated drivers in drinking situations. As far as transitional times to connect with drivers, the groups thought it would be quite effective to connect with people becoming parents for the first time.

There was some interest in hearing a speaker at a school, church, service club or community group. Groups members liked the idea of financial incentives for taking a refresher course in drivers training – if they could get a discount on their auto insurance or on their vehicle registration/license tabs or, for some, if their employer paid for the training. Traffic-safety spokespersons most popular with these groups were the firefighter and for some the professional racecar driver.

A repeated theme expressed by aggressive drivers was “I’m always in a hurry.” Among occupant protection non-compliants there seemed to be some confusion about the seat belt laws once the discussion got into details about actual points of law. All the groups tended to agree there is a need for more enforcement in general, that drivers training should be reintroduced in schools, and that (in the Brighton area and western Adams County) there needs to be relief (such as light rail) for traffic congestion.

General Comments

In general, these four groups seemed to parallel the first four groups in fundamental respects. First, in regard to the role of enforcement, many admitted that what would cause them to be safer in their driving would be “getting a ticket,” and some asked for “more

enforcement, and more enforcement campaigns.”

In regard to young drivers, the group members noted that younger drivers tend to use cell phones more when they drive. There were other comments about the use of cell phones, with some participants suggesting a campaign asking drivers to pull over before engaging in conversations on their cell phones. In regard to impaired drivers, many in the groups liked the advertising campaign emphasizing “friends don’t let friends drive drunk.”

An overriding theme was that group members were interested in the idea of more and better education for drivers – not only in schools and for those getting a license for the first time but also through having “refresher” courses for adults (especially parents), and having courses for older drivers, such as “55 Stay Alive” – particularly if there are financial incentives for taking such courses.

Finally, a general observation developed in reflecting on comments by focus group participants in all eight focus groups was a method for promoting four-way-stop safety in rural areas. As fatality accidents are reported in rural areas at intersections with stop signs, Colorado could install solar-panel-powered stop lights – not only for added visibility but especially to signify that “this is a killer intersection,” and accompany the change with appropriate public relations information or marketing efforts. This could call attention to the problem for locals, and also provide an affordable way to phase out stop signs and phase in stop lights where appropriate.

Section X: Interviews of Latino/Hispanic Community Leaders about Traffic Safety Issues

To develop a deeper understanding of high-risk drivers in Colorado, Weis Communications conducted a series of interviews with Latino and Hispanic community leaders in early May 2003. A key reason for this new dimension in CDOT Problem I.D. research was that general-public focus groups and surveys tend to underrepresent the views of Latino and Hispanic populations. The specific objectives of the interviews were:

- 1) To identify their views, as community leaders, on crashes, enforcement, and safety programs in the city and county area.
- 2) To consider these elements further from the point of view of the Latino/Hispanic community.
- 3) To begin to consider new solutions to traffic safety issues for the local community in general, and for Latinos/Hispanics in particular.
- 4) To review factors that may be included in the forthcoming telephone survey of the general public.
- 5) To ask these leaders if they would volunteer, if asked, to work with CDOT or its representatives to help develop new safety education and information programs, if feasible, in the near future.

Six Latino community leaders in Greeley and six in Pueblo were selected for the in-depth interviews. Each interview was structured to identify elements of traffic safety problems and solutions in the local community. Once these points were discussed in general terms, the interview proceeded to identify the views of Latino/Hispanic segments of the community about these issues.

In Greeley, county seat of Weld County, a major concern is that there are so many highway accidents in rural parts of the county. One consistent finding from the interviews was that drivers on county roads tend to run stop signs at four-way stops, to such an extent that this is the major reason for rural crashes. In Greeley, a noteworthy communication issue that emerged was that within five years Latinos/Hispanic children will comprise the majority of youth in the public school system. CDOT and other public agencies will be under increased pressure to offer traffic safety education programs, if not signage also, in Spanish.

In Pueblo once was a part of old Mexico and is 40 percent Latino/Hispanic. One consistent concern among the community leaders interviewed there was the expense of drivers education programs. Because of this, few young drivers have taken drivers training. Programs once offered through public schools are no longer available, and young drivers and immigrant drivers seem to depend more and more on driving instruction from parents and peers only.

Impaired driving is particularly a problem in Pueblo. The problem seems not to be an ethnic issue as such. Pueblo has an unusually high number of bars and taverns per capita – reportedly the highest in the state – and seems to have a “drinking culture” to go with this. According to these community leaders, this stems from the after-work drinking that tended to go hand-in-hand with Pueblo’s earlier days as a mill town.

In both Pueblo and Greeley, the interviews produced a number of suggestions, if not example strategies and tactics, for improving driving safety. Of particular interest was a suggestion in Pueblo that drinking establishments be able to offer a would-be impaired driver a one-time parking-pass “hanger-card.” The card could be placed in the driver’s car so that the car could stay parked through the night ticket-free after the owner went home by other means.

In Pueblo the interviewer learned of two programs undertaken by the co-owners of two Latino radio stations. The first arrangement allows impaired drivers or their friends to call either of the radio stations to get a free taxi-ride home for the would-be driver. The second arrangement involves asking people observing especially good drivers to call in the drivers’ car-license numbers to either of the stations, which pass the information to the Pueblo Police Department. The police captain in turn sends a letter of commendation to the good drivers.

Both of these programs, according to the community leader who started them, are very well received, and merit consideration by CDOT for implementation in other areas.

Section XI: Telephone Survey of High-Risk Drivers

July's telephone survey of high-risk drivers produced a number of findings for each of the four high-risk groups. These findings were supplemented and enhanced by "crash reduction" modeling using the survey data to predict the effectiveness of proposed solutions tested in the survey.

The following research objectives were addressed in this phase of the Problem I.D. project:

- 1) Examine values, beliefs and perceptions related to traffic safety among the following driver populations in Colorado:
 - Young drivers
 - Aggressive drivers
 - Impaired (alcohol, drug) drivers
 - Drivers who are not consistent users of occupant protection.
- 2) Test several potential motivators for changing driving behavior among these four groups to improve transportation safety in Colorado.
- 3) Explore situational "points of communication" and evaluate possible communication approaches and activities for informing and educating these drivers about driving safety.
- 4) Examine the willingness of Colorado drivers within each high-risk population to adopt specific patterns of behavior in the near future.
- 5) Measure the relative influence of a variety of factors on the likelihood of drivers to consider changing their driving style or behavior, and develop a statistical model that is predictive of these behavioral changes.
- 6) Combine data from the survey with geographic background data to develop and test a "crash reduction model" that will indicate the potential for improvements in crash rates statewide.

In sampling these high-risk populations, the samples were drawn at random from Claritas PRIZM clusters, representing segments of population groups found in crash analysis to most likely include the four high-risk driver groups. Hebert Research then completed a total of 973 interviews between July 2 and July 23, with the following number of completions among the four key driver segments:

- Young drivers, n=221
- Alcohol-related, n=261
- Aggressive driving, n=256
- Occupant protection non-compliance, n=235

In order for a respondent to qualify in any given “high-risk” behavior segment, he or she had to meet certain minimum qualifications. In the case of the “young” high-risk group, the qualification was simply being under age 30. Both the 16-20 and 21-29 age sub-groups were included in this quota based on the findings from the crash analysis age breakdown that showed driver behavior of those in their twenties to be significantly worse than drivers in older age groups.

The alcohol-related segment consisted of those who admitted to driving within an hour after drinking a minimum level of alcohol (2 or 3 drinks, depending on gender). Those in the “aggressive” segment had to indicate they were comfortable driving at least 10 miles per hour over the highway speed limit, or else give themselves a mediocre grade in how well they follow the driving and traffic rules. The occupant protection segment included those who do not always use seat belts as a driver or who do not always make others in the vehicle comply with seat belt laws.

Because many individuals contacted qualified in more than one key segment, the interview total represented 592 Colorado residents.

Use of Claritas PRIZM Clusters for Drawing Random Sample

Respondents were randomly selected from a list of households belonging to one of 18 PRIZM lifestyle clusters in Colorado that were previously identified in the Crash Analysis research as representing drivers more likely to become involved in a crash. Each of these clusters scored above average in propensity for crashes in at least 2 out of 5 indicators (fatal crashes, injury-only crashes, alcohol-related crashes, crashes where a seat belt was not used, and crashes involving a young driver ages 16-20). The interviews are thus representative of these 582,272 households statewide.

Adjusting for the screening criteria used and an overall incidence of 58.3 percent, the survey actually represents a total of 339,465 Colorado households who live in one of the 18 PRIZM cluster neighborhoods and also qualify as part of one of the high-risk segments studied.

The following exhibit depicts the proportions of the sample in terms of the PRIZM cluster of high-risk drivers:

**Exhibit XI-1.
Claritas PRIZM Clusters Comprising Sample for Telephone Survey**

| PRIZM Cluster Name | No. of Households | Share |
|---------------------------|--------------------------|---------------|
| Blue-Chip Blues | 34,276 | 5.9% |
| Mobility Blues | 34,214 | 5.9% |
| Latino America | 33,226 | 5.7% |
| Sunset City Blues | 25,378 | 4.4% |
| River City, USA | 23,149 | 4.0% |
| Hispanic Mix | 32,351 | 5.6% |
| Family Scramble | 61,663 | 10.6% |
| Gray Collars | 24,152 | 4.1% |
| Starter Families | 25,408 | 4.4% |
| Military Quarters | 16,957 | 2.9% |
| Rural Industria | 13,475 | 2.3% |
| Grain Belt | 37,667 | 6.5% |
| God's Country | 68,995 | 11.8% |
| Boomers & Babies | 34,673 | 6.0% |
| Big Sky Families | 59,873 | 10.3% |
| Mines & Mills | 17,137 | 2.9% |
| Agri-Business | 36,488 | 6.3% |
| Hard Scrabble | 3,190 | 0.5% |
| TOTAL | 582,272 | 100.0% |

The initial database of interviews was statistically weighted by gender to better represent the actual male/female distribution of all qualifying drivers in the target segments interviewed. The actual gender breakout for 16-29 year-olds available from the State licensing database was used and compared against the initial gender distribution among those in the “young” segment who only needed to be of this age to qualify for the study (i.e., 100 percent incidence rate).

This adjustment factor represented the degree of adjustment needed to remove any bias from the survey method itself, since women tend to be somewhat more willing to complete telephone surveys than men, all other things being equal.

When gender was properly adjusted, it was found that men tended to slightly outnumber women among those qualifying in one of the behavioral segments such as aggressive driving or alcohol.

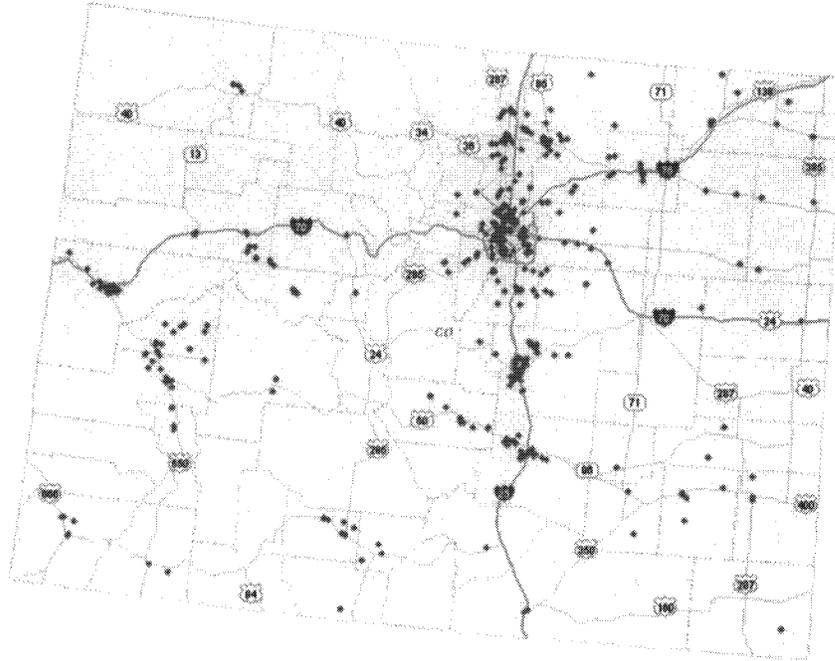
The response rate, which represents the proportion of individuals who agreed to participate in the research, was 43.9 percent. The incidence rate, which represents the proportion of those individuals who qualified to participate in the research, was 58.3 percent.

Spatial Array of Survey Respondents

The following spatial array shows the locations of the respondents interviewed, which are representative of the 18 PRIZM clusters selected within Colorado. Ninety percent of the households included in the study are indicated below. Some 10 percent had irregular rural addresses or P.O. boxes that were not able to be geocoded.

Exhibit XI-2.

Location of Households Included in Sample for Telephone Survey



The "tilt" of this map of Colorado is due to the perspective of the state as seen from the center (approx. 95° longitude) of a complete map of the United States, allowing for the curvature of the earth.

Seat Belt Use – All Segments

Always wearing a seat belt was the norm for all segments except the occupant protection group, which was selected based on not always wearing a seat belt or else allowing passengers to violate the rules. There was some crossover of seat belt violators in the other segments, particularly among those in the alcohol segment, where nearly a third did not always buckle up. Approximately one-third of the drivers within the young, alcohol and aggressive segments said they allow front seat passengers or children in the rear seat to not wear their seat belts.

**Exhibit XI-3.
How Often Survey Respondents Wear Seat Belts**

| | Young | Alcohol | Aggressive | Occupant Protection |
|------------------|--------|---------|------------|---------------------|
| Always | 74.3% | 68.0% | 71.5% | 37.1% |
| Most of the time | 19.3% | 21.1% | 19.0% | 44.5% |
| Sometimes | 3.0% | 5.5% | 4.5% | 12.4% |
| Never | 3.4% | 5.4% | 5.0% | 5.8% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

**Exhibit XI-4.
Allowing Front Seat Passengers or Children in Back Seat to Not Wear Seat Belts**

| | Young | Alcohol | Aggressive | Occupant Protection |
|-------|--------|---------|------------|---------------------|
| Yes | 30.3% | 33.3% | 29.5% | 63.8% |
| No | 69.7% | 66.7% | 70.5% | 36.2% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

High-Risk Driver Speeding on Highways and Freeways

In terms of highway speeding, the aggressive segment was comfortable driving an average of 9.91 miles per hour over the speed limit. Young drivers said they tended to drive approximately 8 m.p.h. over the limit, while those in the alcohol and occupant protection non-compliant groups were comfortable driving 6-7 over the limit. This question was part of the screening criteria for the aggressive group (who were selected either by their saying 10 m.p.h. or higher or else giving lower ratings for following the traffic rules).

Exhibit XI-5.

Speeds High-Risk Drivers Tend to Choose on Highways and Freeways

| Miles per Hour Over Limit | Young | Alcohol | Aggressive | Occupant Protection |
|---------------------------|-------------|-------------|-------------|---------------------|
| 0 | 9.1% | 15.3% | 4.0% | 21.1% |
| 1-4 | 5.5% | 8.4% | 4.0% | 6.0% |
| 5 | 41.9% | 36.6% | 21.8% | 39.0% |
| 6-9 | 3.6% | 4.6% | 3.7% | 1.9% |
| 10 | 22.4% | 20.7% | 46.3% | 18.4% |
| 11-14 | 2.3% | 3.2% | 2.4% | 2.6% |
| 15-19 | 6.6% | 3.8% | 8.5% | 4.5% |
| 20 or more | 8.6% | 7.3% | 9.3% | 6.4% |
| Average | 8.19 | 7.11 | 9.91 | 6.65 |

Self-Evaluation of Following All Driving Rules – All Segments

Drivers were asked to rate how well they follow “ALL of the traffic laws and rules for things like keeping your speed less than 5 or 6 over the speed limit; stopping completely at stop signs, not running a stale yellow light, and yielding and passing correctly.” A score of “10” meant that a driver consistently follows all the rules, while a “0” meant that they consistently break the rules. Average scores ranged from 7.54 to 7.89 and a majority gave themselves a high rating, with the exception of the aggressive segment. A relatively low score on this question was one qualifier for the aggressive group.

Exhibit XI-6.

Self-Rating on How Well the Respondents Follow All the Traffic Rules

| Rating for Following the Rules | Young | Alcohol | Aggressive | Occupant Protection |
|--------------------------------|-------------|-------------|-------------|---------------------|
| Very low (0) | 0.6% | 0.8% | 0.3% | 0.0% |
| Low (1-3) | 2.8% | 2.0% | 3.6% | 2.6% |
| Moderate (4-7) | 35.8% | 29.3% | 62.1% | 31.1% |
| High (8-9) | 54.8% | 58.4% | 31.4% | 51.1% |
| Very High (10) | 6.0% | 9.5% | 2.6% | 15.2% |
| Average Rating | 7.54 | 7.71 | 6.98 | 7.89 |

Drinking and Driving – All Segments

Aside from the alcohol segment, the incidence of those who have ever driven after having a minimum of 3 drinks for men or 2 drinks for women ranged from 27.3 percent for young drivers to 38.1 percent for aggressive drivers.

Exhibit XI-7.

Driving Within an Hour After Drinking 2 Drinks (Women) or 3 Drinks (Men)

| | Young | Alcohol | Aggressive | Occupant Protection |
|-------|--------|---------|------------|---------------------|
| Yes | 27.3% | 100.0% | 38.1% | 37.7% |
| No | 72.7% | 0.0% | 61.9% | 62.3% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

Vehicles Driven – All Segments

Sedans clearly are the most popular vehicle for young drivers and those within the three behavioral-related segments, with pickup trucks second. Sport utility vehicles were third in popularity for every segment.

Exhibit XI-8.

Type of Vehicles Respondents Drive

| Types of Vehicles | Young | Alcohol | Aggressive | Occupant Protection |
|-----------------------|-------|---------|------------|---------------------|
| Sedan | 43.1% | 35.0% | 35.4% | 33.6% |
| Pickup truck | 25.6% | 28.4% | 26.4% | 31.2% |
| Sport Utility Vehicle | 19.2% | 20.2% | 21.4% | 18.3% |
| Two-door sports car | 8.2% | 5.8% | 5.8% | 5.8% |
| Minivan | 3.2% | 5.3% | 4.7% | 4.6% |
| Full size van | 0.7% | 2.4% | 3.0% | 4.3% |
| Motorcycle | 0.0% | 2.7% | 2.7% | 1.5% |
| RV | 0.0% | 0.3% | 0.5% | 0.6% |

Awareness of Rules and Consequences – All Segments

In analyzing how well drivers understood the driving rules and consequences for breaking those rules, an interesting pattern emerged. The respondents tended to give very strong ratings for their own understanding of the actual driving rules, with very few moderate ratings, most giving an 8-9 rating and a large group giving a 10 rating.

When the question was asked about understanding the consequences, the average ratings were similar but the distribution of responses was very different. The large grouping of individuals giving ratings of 8-9 shifted in two directions, with additional drivers giving a 10 rating and additional drivers also giving lower ratings in the 4-7 range.

There clearly appears to be a segment that felt they know these consequences extremely well (10), and another group that felt they are only moderately versed in the consequences.

Exhibit XI-9.

How Well Respondents Feel They Understand Driving Rules

| How well you understand rules | Young | Alcohol | Aggressive | Occupant Protection |
|-------------------------------|-------------|-------------|-------------|---------------------|
| Not very well (0-3) | 1.2% | 1.0% | 1.0% | 0.5% |
| Moderately well (4-7) | 16.9% | 8.4% | 16.0% | 10.0% |
| Very well (8-9) | 57.2% | 56.4% | 52.4% | 53.7% |
| Extremely well (10) | 24.7% | 34.2% | 30.6% | 35.8% |
| Average Rating | 8.48 | 8.82 | 8.58 | 8.80 |

Exhibit XI-10.

How Well Respondents Feel They Understand Consequences for Breaking Driving Rules

| How well you understand consequences of breaking the rules? | Young | Alcohol | Aggressive | Occupant Protection |
|---|-------------|-------------|-------------|---------------------|
| Not very well (0-3) | 4.6% | 2.6% | 3.4% | 1.5% |
| Moderately well (4-7) | 22.7% | 14.6% | 21.3% | 18.2% |
| Very well (8-9) | 30.3% | 38.4% | 31.5% | 33.4% |
| Extremely well (10) | 42.5% | 44.3% | 43.8% | 46.9% |
| Average Rating | 8.22 | 8.59 | 8.38 | 8.61 |

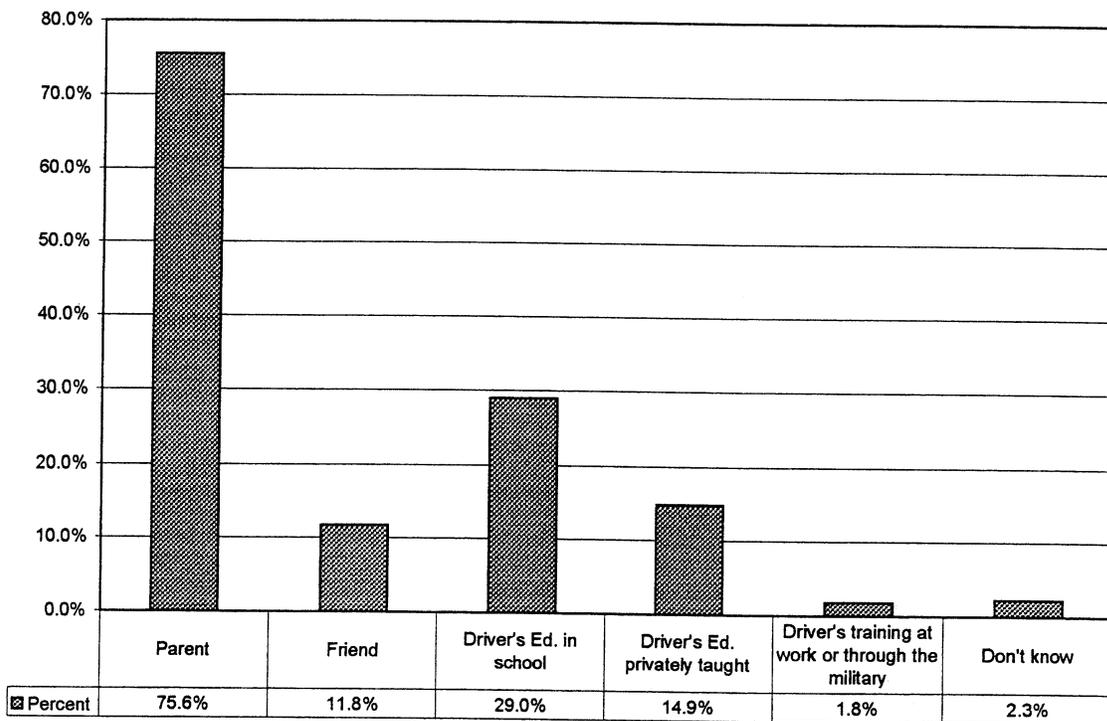
Young Drivers

The demographic profile for this group indicates that the median age (half older, half younger) of these drivers was 23 years; 38 percent were married; 70.1 percent were Caucasian; 18.2 percent were Hispanic or Latino, and the next largest minority group was African Americans, at 2.3 percent. The gender split was 48.9 percent female, 51.1 percent male. Young drivers comprised the least affluent and least well-educated group of the four groups studied. Some 62.8 percent came from “inside the city limits,” and 31.5 percent came from unincorporated areas.

How Learned to Drive

Among young drivers ages 16-29, less than 30 percent received drivers training in school and another 15 percent used a private driver education teacher or program. Three out of four indicated receiving training from their parents.

Exhibit XI-11.
Young Drivers' Source of Driver Training

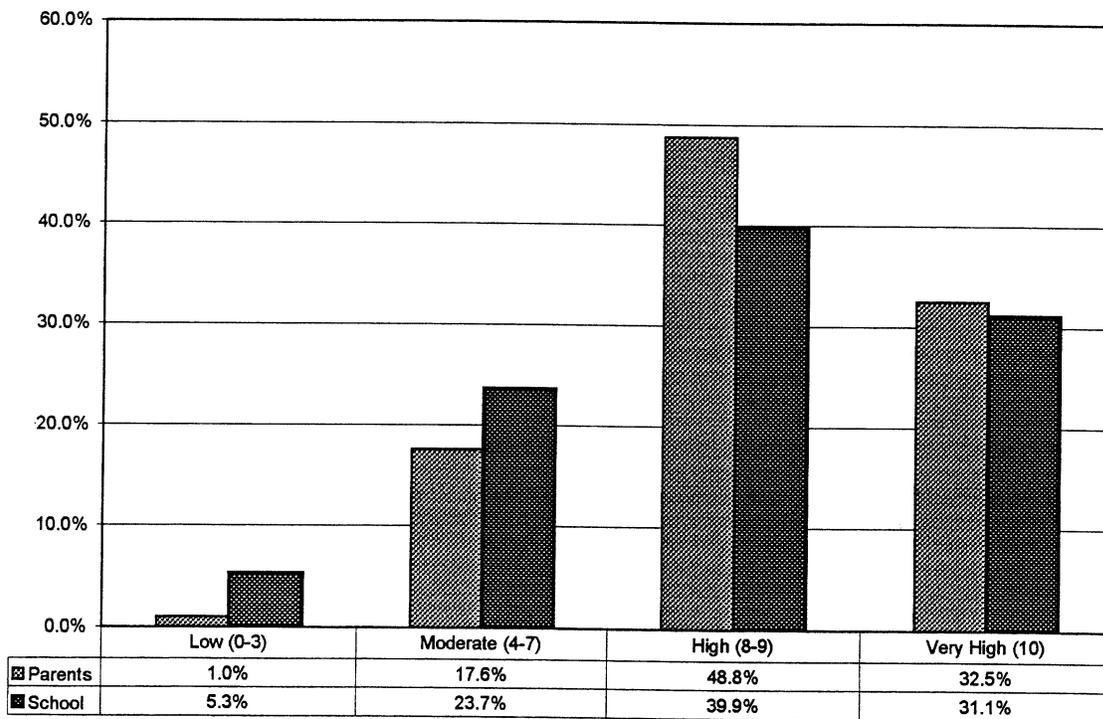


Effectiveness of Training

Young drivers gave high ratings for the effectiveness of their training, both from parents and from school. The average ratings were 8.51 for parents and 8.01 for school programs. These ratings would suggest that parental training is adequate for the challenges of driving. However, the crash data paints a different picture of a state that is higher than average for crashes while offering little in the way of public drivers training courses for beginning drivers. In the minds of young drivers, however, parents are providing quality driver training.

Exhibit XI-12.

Young Drivers' Ratings of Effectiveness of Driver Training by Parents, School

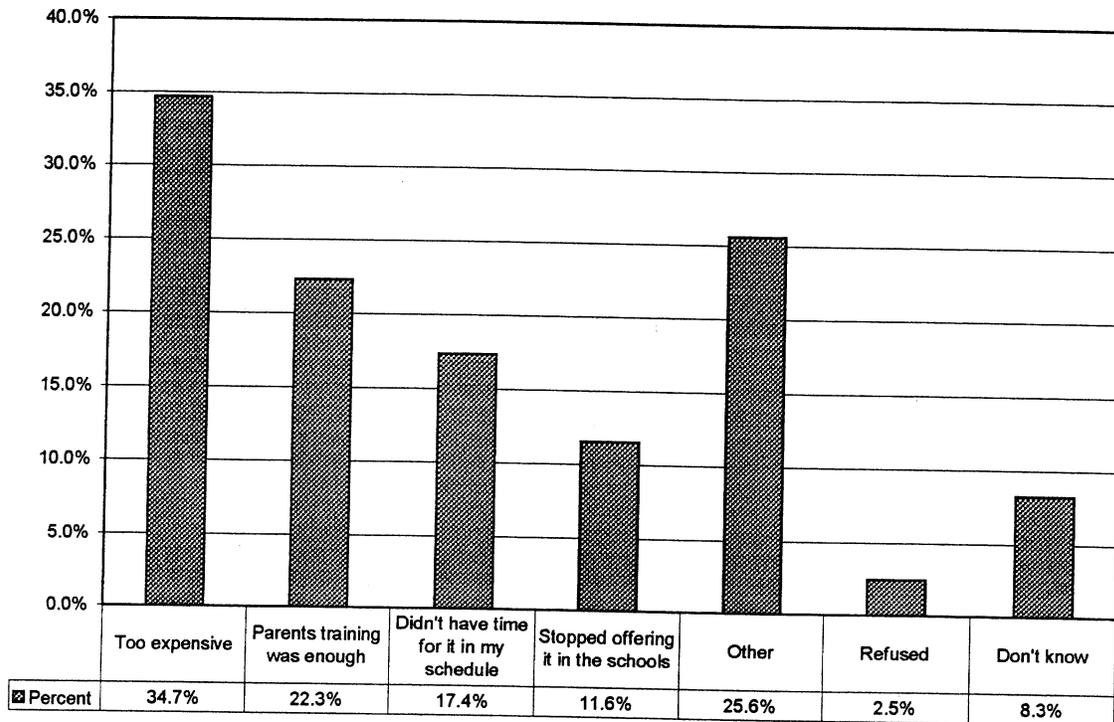


Note on accidents: Even though these young drivers seemed satisfied with their training, 42 percent said they had been involved in a traffic accident of some kind when they were driving, whether or not it was reported to the police.

Reasons for Not Taking Drivers Education

Those who did not take a driver training course indicated that the primary reason was the expense of private training, since it was not generally offered in the public schools.

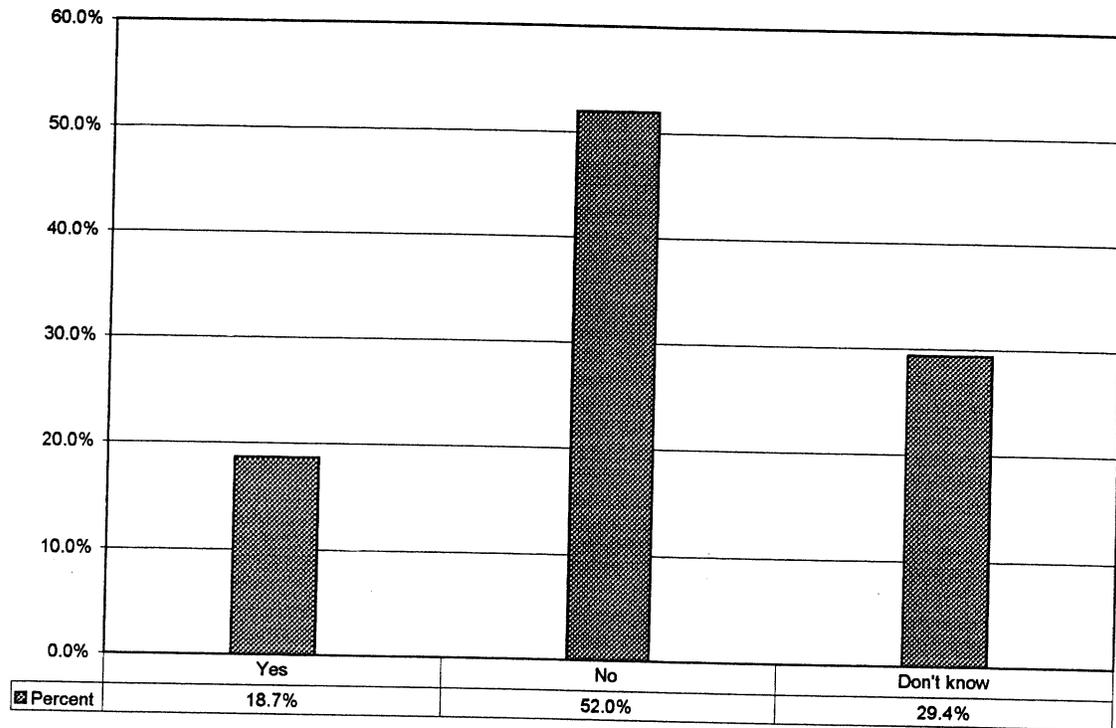
**Exhibit XI-13.
Young Drivers' Reasons for Not Taking Drivers Training**



Graduated Licensing Law

Nineteen percent of the young drivers interviewed indicated they had been under the State's Graduated Licensing Law.

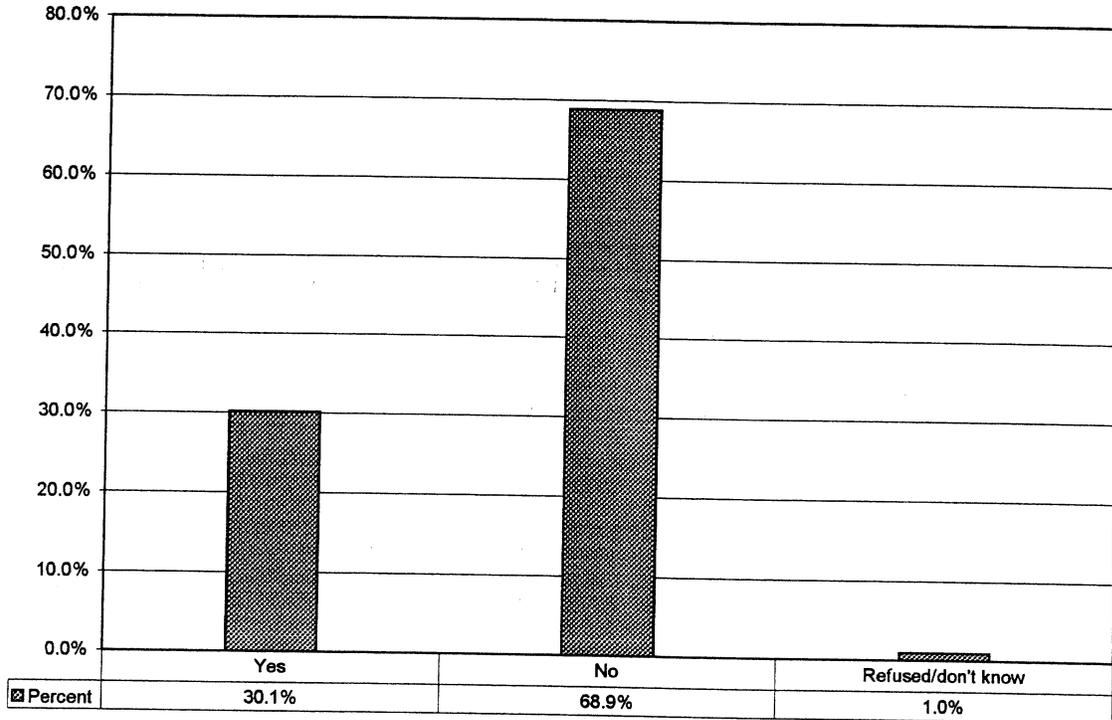
Exhibit XI-14.
Percentage of Young Drivers Covered Under Graduated Licensing Law



Received Recognition, Award or Incentive

Thirty percent (30.1 percent) of young drivers reported having received some type of recognition, award or incentive for safe driving, from school, their insurance company, police or other organization.

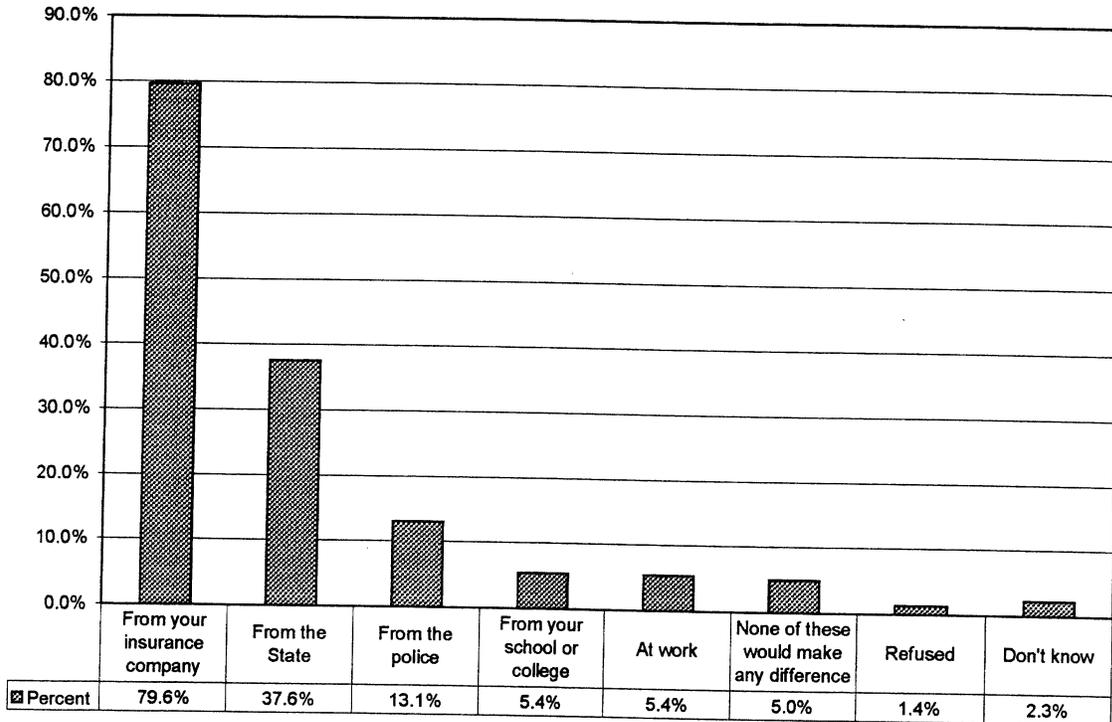
Exhibit XI-15.
Whether Young Drivers Ever Received Recognition for Safe Driving



Types of Incentives or Recognition That Might Work

When respondents were asked to think about what types of incentives might have an impact on causing safer driving among young drivers, insurance company incentive programs were by far the top choice, named by 79.6 percent of drivers.

Exhibit XI-16.
Incentives or Recognition That Might Lead to Safer Driving among Young Drivers



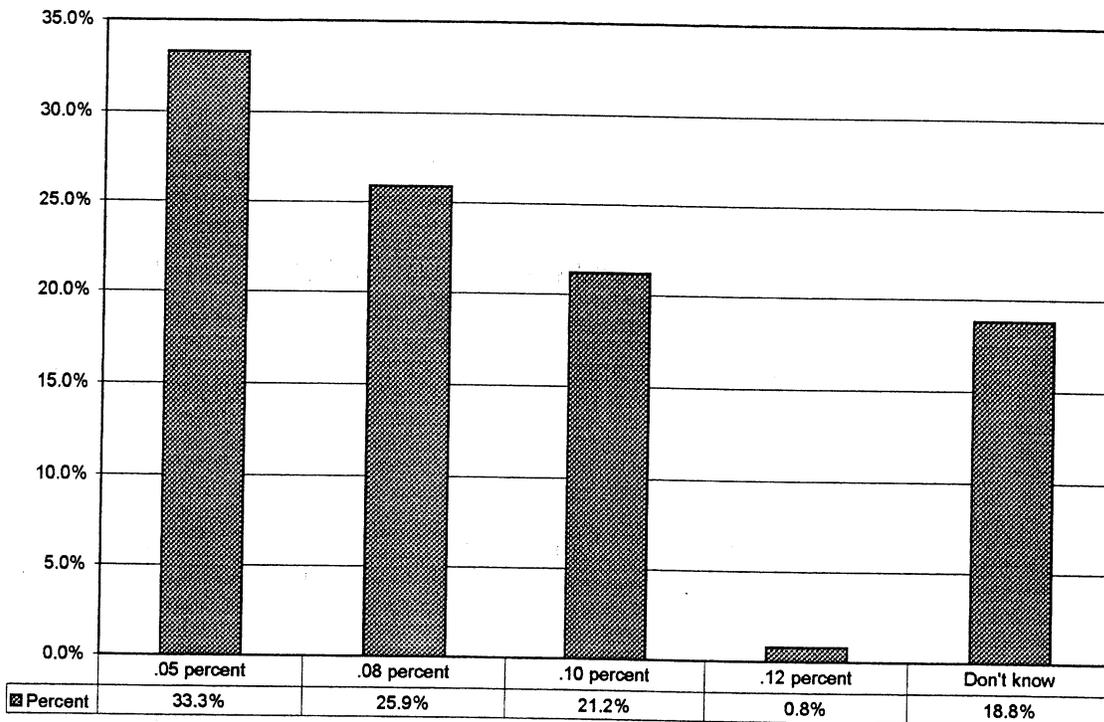
Impaired Drivers

The median age of this group was 43 years; 54.2 percent were married; 74.9 percent owned their own home; 83.2 percent were Caucasian, with Latinos/Hispanics the next largest ethnic group, at 6.5 percent. Some 65 percent were male, and 35 percent were female. This was a relatively well-educated and financially well-to-do group, with 50.4 percent living inside city limits.

Knowledge of Legal Blood-Alcohol Limit

There was definitely a lack of awareness among those in the alcohol segment of the current .10 blood-alcohol legal limit for drinking and driving in Colorado. Only 21.2 percent gave the correct answer.

Exhibit XI-17.
Impaired Drivers' Perceptions of Legal Blood-Alcohol Limit



Perceptions of Safety in Drinking & Driving

Male drinkers indicated it takes them an average of 2.4 drinks in an hour to be over their limit for driving, compared to 1.97 for women. In terms of what is a “safe” number of drinks to consume and then drive within an hour, men answered 1.5 on average while women reported an average of only 1.12 drinks.

Exhibit XI-18.

Impaired Drivers’ Perceptions of ‘Safe’ Number of Drinks to Consume Before Driving

| Number of drinks within an hour | Drinks to be over your limit | "Safe" # of drinks |
|---------------------------------|------------------------------|--------------------|
| None | 0.0% | 19.3% |
| 1 | 29.3% | 47.0% |
| 2 | 41.2% | 23.5% |
| 3 | 20.0% | 5.7% |
| 4 | 5.0% | 1.0% |
| 5 or more | 4.4% | 3.3% |
| Average Drinks | 2.24 | 1.36 |
| Average for men | 2.39 | 1.50 |
| Average for women | 1.97 | 1.12 |

(Note: The position of CDOT and the National Highway Transportation Safety Administration is that zero blood alcohol is the only safe level.)

Ever Drink and Drive and Afterwards Knew It Wasn’t Safe?

Forty-three percent of drivers in the alcohol segment indicated having driven after drinking and then afterwards realizing it wasn’t safe. When asked how they knew it wasn’t safe, the top two responses were paranoia (21.2 percent) and “acting strange or funny” (18.6 percent).

Exhibit XI-19.

Impaired Drivers’ Realization It Wasn’t Safe to Drive after Drinking

In the past 5 years, did you ever drink and drive and afterwards know it wasn’t safe?

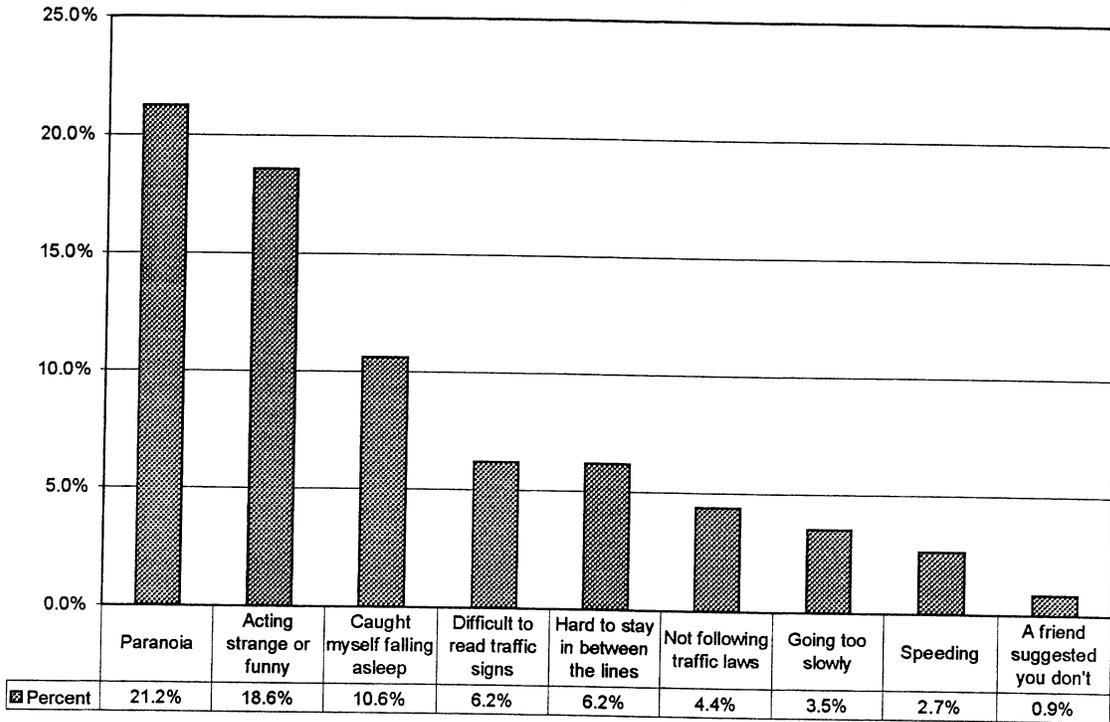
| | Percent |
|--------------------|---------|
| Yes | 43.1% |
| No | 55.5% |
| Refused/don't know | 1.4% |

(Note: The position of CDOT and the National Highway Transportation Safety Administration is that zero blood alcohol is the only safe level.)

How Did You Know It Wasn't Safe?

Exhibit XI-20.

Impaired Drivers' Realization It Wasn't Safe to Drive after Drinking



(Note: The position of CDOT and the National Highway Transportation Safety Administration is that zero blood alcohol is the only safe level.)

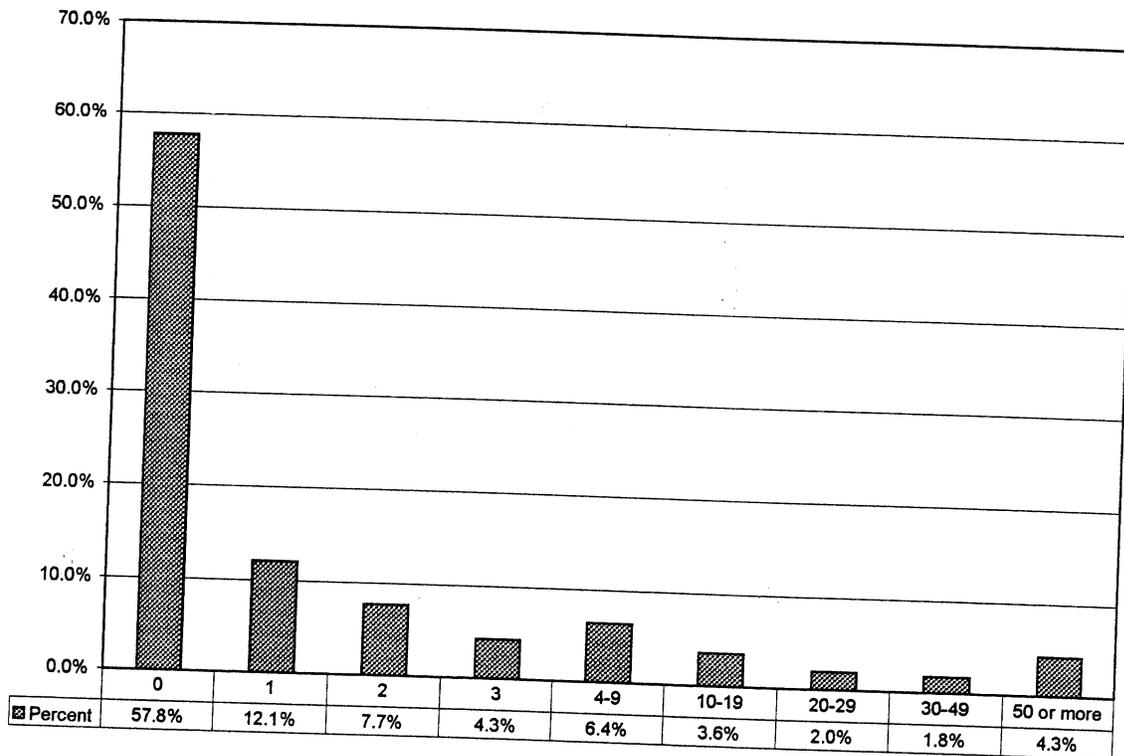
Frequency of Drinking and Driving at .10 Blood-Alcohol Level

According to the State of Colorado's educational materials on drinking and blood alcohol levels, an average-sized male generally has to drink at least 4 drinks within an hour to reach the illegal level of .10 in blood alcohol and a typical female has to drink at least 3 drinks.

When drivers were asked how frequently in the last 5 years they consumed this many drinks and then drove within an hour, a slight majority (57.8 percent) said "0" times. The remaining 42.2 percent indicated doing this at least once over the 5 year period, with a small group reporting fairly high frequencies of 10, 20 or even 50 times.

Exhibit XI-21.

How Many Times in Past 5 Years Respondents Drove with Approx. .10 Blood Alcohol



DUI History

Exhibit XI-22.

Impaired Drivers' Frequency of Being Cited for Driving Under the Influence

| Ever received DUI? | Percent |
|--------------------|---------|
| Yes | 20.5% |
| No | 79.5% |

| # of DUIs | Percent |
|---------------|---------|
| One | 46.2% |
| Two | 6.1% |
| Three or more | 4.7% |
| Refused | 22.2% |
| Don't know | 20.7% |

What Would Cause You to be Safer About Drinking/Driving?

Six different proposed programs or features to help people be safer about drinking and driving were tested. Each one was rated as to its potential for making a positive impact on reducing risk and promoting safer driving.

The number-one rated concept was the "one-time hanger card" parking permit that a bartender would provide so that a drinker's car could be parked on-site for the night while they ride home with someone else. This program was rated nearly an "8" on average, with 72.3 percent giving a high rating of 8-10.

Another very highly rated concept was the idea of having a "ticket-free zone" near the tavern where the car could be stored until the next day. Other suggestions such as education on the risks and number of drinks it takes to be illegal would still have an impact among 43-59 percent of the drinking drivers surveyed, and may deserve further consideration.

Exhibit XI-23 on the next page depicts these drivers' ratings of situations or special programs intended to alleviate impaired driving.

Exhibit XI-23.

Impaired Drivers' Ratings of Situations, Programs for Reducing Impaired Driving

| Situation or Special Program | Avg. Rating | % Giving High Rating (8-10) |
|---|-------------|-----------------------------|
| You could get a one-time hanger card parking permit from a bartender for overnight parking so you could ride home with someone else | 7.96 | 72.3% |
| You or a friend could move your car at night to a ticket-free zone so you could ride home with someone else | 7.57 | 68.6% |
| You learned more about how much it costs you to get a DUI | 6.78 | 58.7% |
| You heard your friends were trying to be more careful about drinking and driving | 6.32 | 47.7% |
| You learned more about how dangerous it is | 6.19 | 49.5% |
| You had information handy about # drinks it takes to raise blood-alcohol to unsafe level | 5.92 | 43.1% |

Additional analysis indicated that statistical relationships exist between considering these options and overall likelihood to change driving behavior.

Drivers who indicated being highly likely to change their behavior gave significantly higher ratings to each of these 6 concepts. (Hanger card = 8.64, ticket-free parking = 8.01, learning more about costs = 7.56, hearing about friends = 7.69, learning how dangerous it is = 6.96, and information handy = 6.99).

[Eta Squared measures of associations were .047, .029, .046, .111, .040, and .074, respectively].

Note: Definitions and a discussion of "Eta Squared" and other advanced statistics are found on the last page of this Section.

Occupant Protection Non-Compliant Drivers

This was a somewhat younger group than impaired drivers, with a median age of 41 years. Some 28.3 percent were married and had children living with them, while 5.7 percent were single and had children living with them; 2.8 percent were living with a roommate or other adult, with children with them. Some 71.6 percent own their home, and 79.6 percent are Caucasian, with 9.4 percent Latino/Hispanic. At total of 55.2 percent had at least some college, with 55.6 percent living inside the city limits.

Although sedans make up 33.6 percent of the vehicles this group drive, 31.2 percent of the group's vehicles are pickups – the largest percentage for any of the four high-risk groups. This is significant not only because it is a distinct pattern of seat-belt non-compliance for pickup drivers, but also because of the difference in seat-belt laws – people riding in the back (cargo area) of a pickup do not have to wear seat belts.

Awareness of Law for Children Ages 6-16

Twenty-three percent of those in the occupant protection segment have children ages 6-16, and nearly all of these parents knew the law that children 6-16 riding in the back seat must wear their seat belt.

Exhibit XI-24.

Occupant Protection Non-Compliant Drivers' Awareness of Seatbelt Law for Children 6-16

| Have 6-16 age children? | Percent |
|-------------------------|---------|
| Yes | 22.9% |
| No | 77.1% |

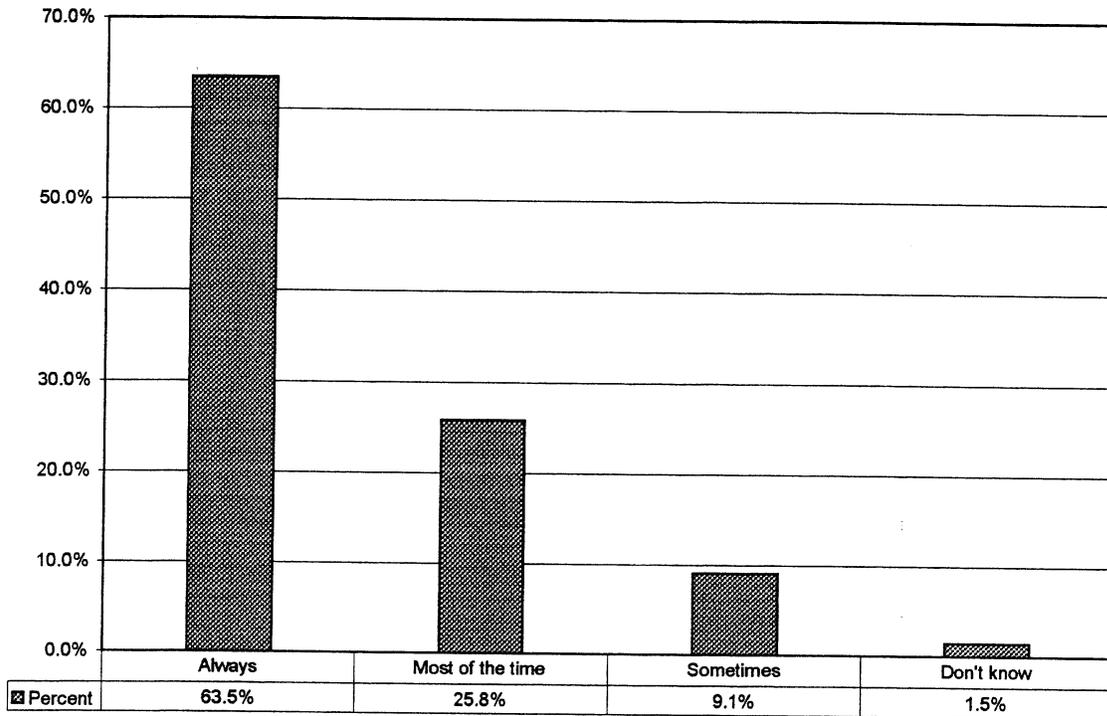
| Aware that kids must buckle up in back seat? | Percent |
|--|---------|
| Yes | 93.1% |
| No | 6.9% |

Obeying the 6-16 Age Seat Belt Law

Less than two-thirds of parents of children ages 6-16 said they “always” follow the law and make their children wear seat belts.

Exhibit XI-25.

Occupant Protection Non-Compliant Drivers' Making Children 6-16 Wear Seatbelts



Those who do not were asked whether they believed that their vehicle was safe enough that their child passengers didn't really need to buckle up. A total of 17.5 percent agreed with this position

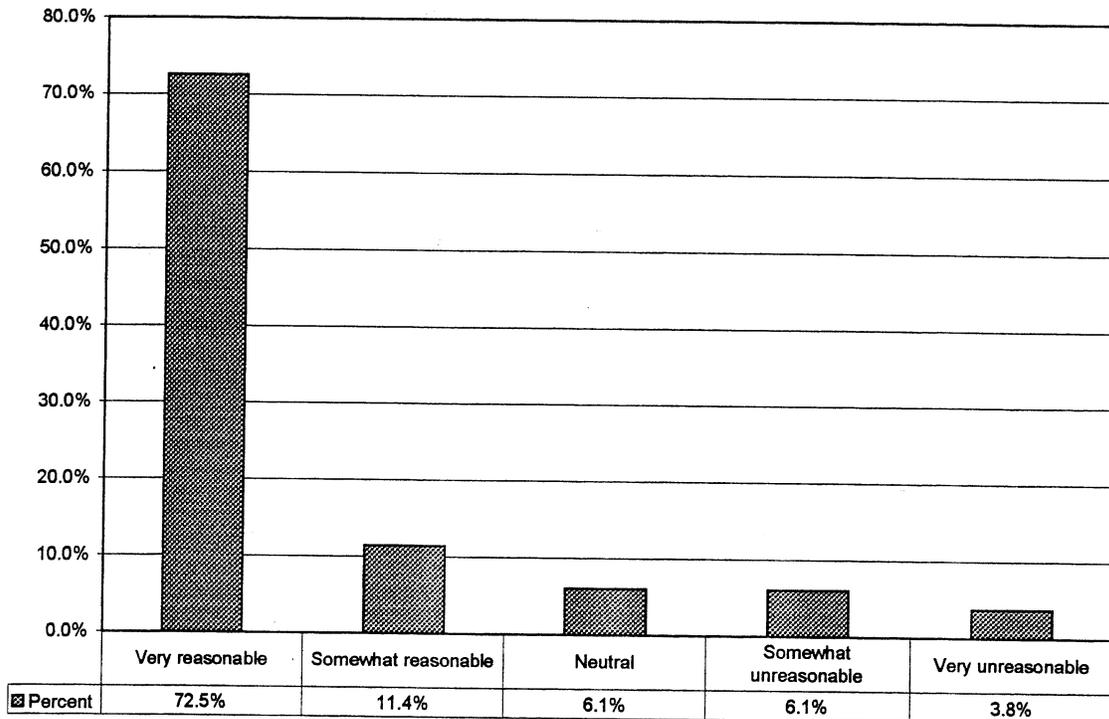
**Exhibit XI-26.
Occupant Protection Non-Compliant Drivers' Perception of Vehicle's Being Safe Enough for Children Not Wearing Seat Belts**

| Is vehicle you drive safe enough that they don't need to wear them? | Percent |
|---|---------|
| Yes | 17.5% |
| No | 82.5% |

Reasonableness of 6-16 Seat Belt Rules

At 72.5 percent, the percentage of parents who thought the age 6-16 age seat belt rules were "very reasonable" was somewhat higher than the percent who always follow these rules (63.5 percent). Less than 10 percent of parents felt these rules were unreasonable.

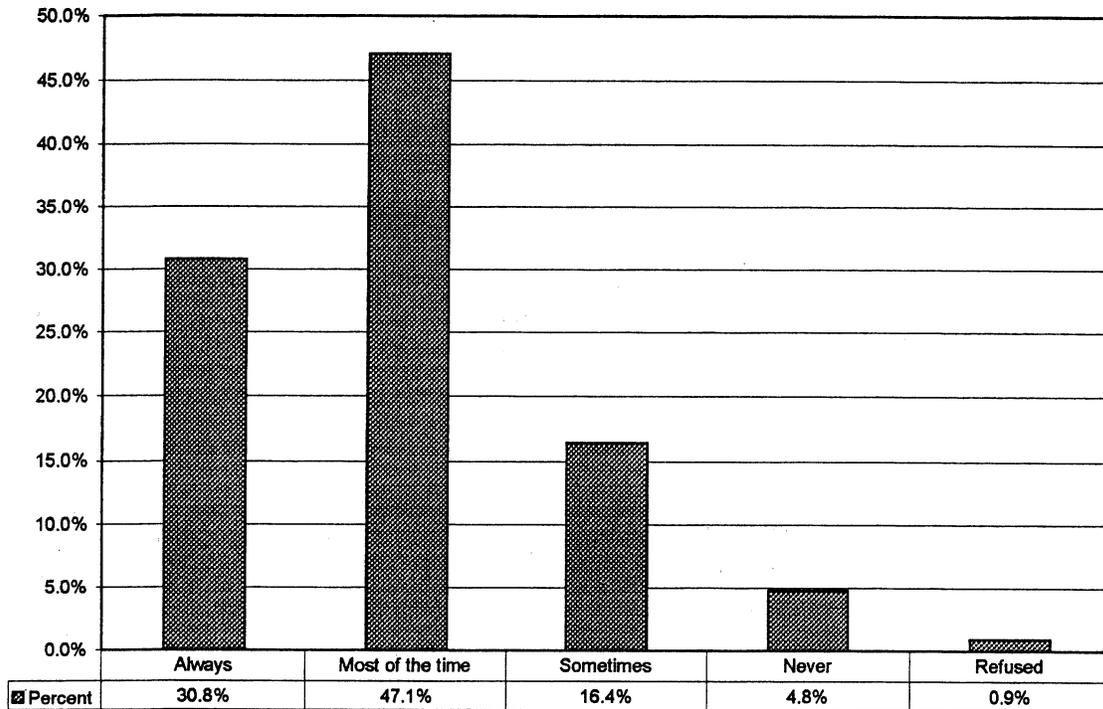
**Exhibit XI-27.
Occupant Protection Non-Compliant Drivers' Perception of Reasonableness of Seat Belt Rules For Children Age 6-16**



Following Rules for Adults 17 and Older

The greater issue in occupant protection enforcement appears to be adults 17 and older. Only 30.8 percent of those in the occupant protection segment said they “always” follow the seat belt rules for those at least 17 years old.

Exhibit XI-28.
Occupant Protection Non-Compliant Drivers' Following Seat Belt Rules For Adults



Frequency of Using Car Seat or Booster Seat

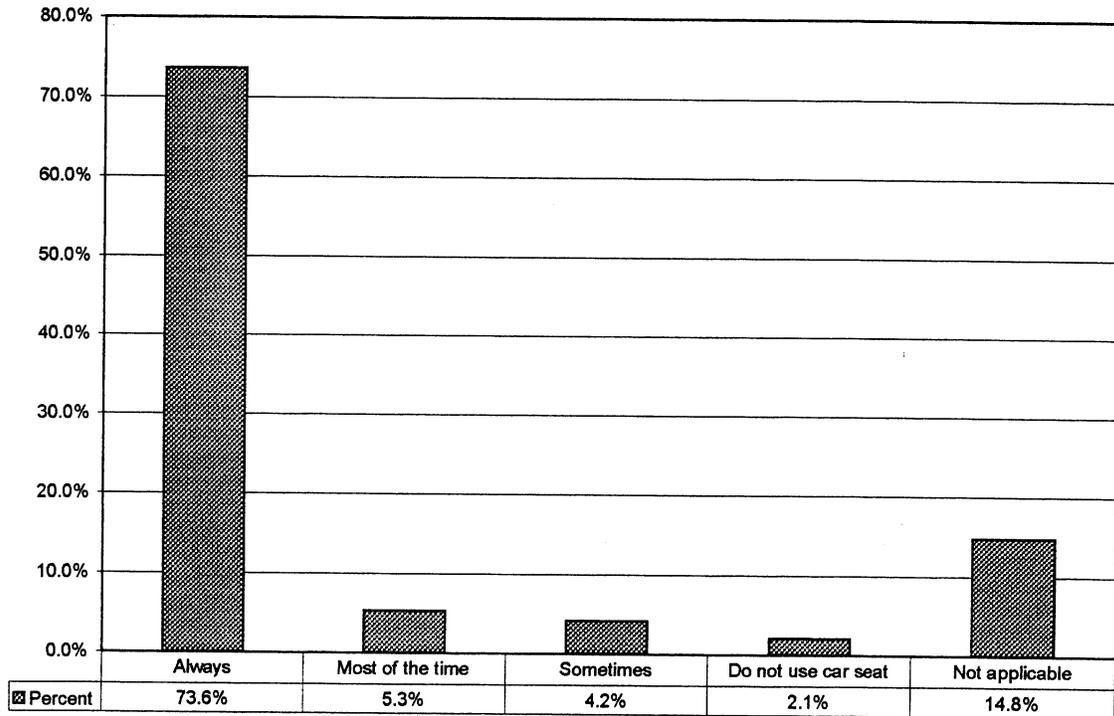
Sixteen percent of those in the occupant protection segment had children less than 6 years of age.

Exhibit XI-29.
Occupant Protection Non-Compliant Drivers Having Children Under Age 6

| Children under age 6? | Percent |
|-----------------------|---------|
| Yes | 16.4% |
| No | 82.8% |
| Don't know | 0.9% |

These parents indicated that they generally follow the car seat and booster seat rules, as the following chart demonstrates. Nearly three out of four said they always follow the rules, and another 15 percent indicated the question did not apply, presumably because they thought their child was too old or too large for a car seat. Less than 10 percent (9.5 percent) indicated they use car seats or booster seats “most of the time” or “sometimes.”

Exhibit XI-30.
Occupant Protection Non-Compliant Drivers' Following Car Seat and Booster Seat Rules



Awareness of Car Seat Fine and Type of Violation

One-half of parents with small children knew that drivers can be fined \$57 for car seat violations, and nearly two-thirds (63.9 percent) knew that it was a primary offense (one for which a driver can be stopped and ticketed solely for that reason).

Exhibit XI-31.
Occupant Protection Non-Compliant Drivers' Awareness of Fine for Car Seat Violations

| Know that drivers can be fined \$57 per child? | Percent |
|--|---------|
| Yes | 50.0% |
| No | 50.0% |

Exhibit XI-32.

Occupant Protection Non-Compliant Drivers' Awareness That Car Seat Violations Are a Primary Offense

| Know that this is a primary offense? | Percent |
|--------------------------------------|---------|
| Yes | 63.9% |
| No | 34.0% |
| Don't know | 2.1% |

Previous Tickets for Seat Belts and Car Seats

Few in this segment reported ever having received a ticket for a seat belt or car seat violation.

Exhibit XI-33.

Occupant Protection Non-Compliant Drivers' History of Receiving Tickets for Seat Belt or Car Seat Violations

| Ever received seat belt ticket? | Percent |
|---------------------------------|---------|
| Yes | 8.7% |
| No | 90.9% |
| Don't know | 0.3% |

| Ever received car seat ticket? | Percent |
|--------------------------------|---------|
| Yes | 2.9% |
| No | 95.8% |
| Refused | 0.5% |
| Don't know | 0.7% |

Impact of Special Programs on Seat Belt Compliance

Respondents were asked to rate the impact of four proposed programs or features on their likelihood of using seat belts or car seats more often. The top-rated concept was to have a fire station invite the public to come in, get an inspection of occupant-protection equipment and then receive information about occupant protection. This received an average rating of 6.14 on the 0-10 scale, with 44.9 percent giving a high rating of 8-10.

The second most popular idea was for a school, church or community organization to give a presentation explaining the risks of not wearing seat belts. Forty-one percent (40.8 percent) of drivers gave a high rating of 8-10 for this suggestion.

Exhibit XI-34.

Occupant Protection Non-Compliant Drivers' Ratings of Programs to Foster Seat Belt Compliance

| Proposed Program or Feature | Avg. Rating | % Giving a High Rating (0-10) |
|---|-------------|-------------------------------|
| A fire department in your area let you drive in and they check out your vehicle for free and also give you some information about it | 6.14 | 44.9% |
| A school, church or community organization gave you a presentation that explained how people who don't wear seat belts are much more likely to die in an accident | 5.84 | 40.8% |
| You saw a series of public service announcements on radio or TV or informational ads in a newspaper talking about seat belt use and car seat rules and safety | 5.49 | 36.8% |
| A person from a local school, church or community organization gave out a brief flyer of information and explained the reasons why to you in person | 5.16 | 33.6% |

All four ideas were significantly related to whether or not a driver is likely to change their behavior. Those highly likely to change gave significantly higher ratings for the fire department proposal (8.01 avg.; Eta Squared = .204), the presentation by a school or church (7.52 avg.; Eta Squared = .153), the public service announcements (7.47 avg.; Eta Squared = .190) and the person handing out a flyer (6.93 avg.; Eta Squared = .152).

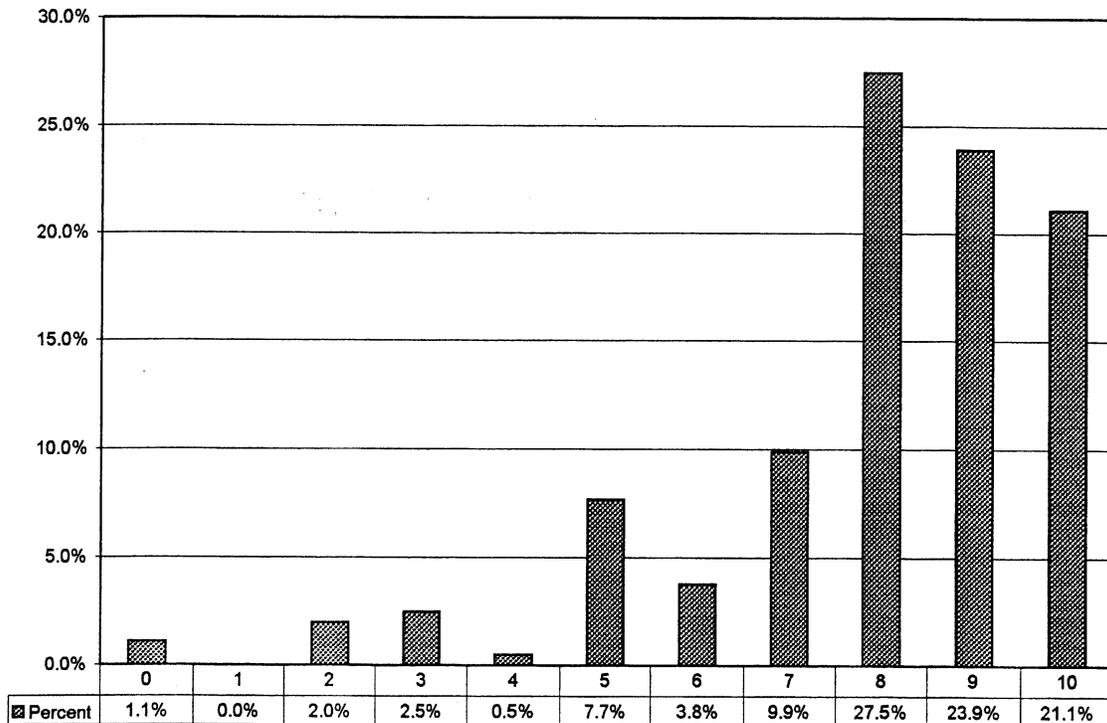
Aggressive Drivers

This group of drivers had a median age of 36 years, and 37.5 percent had children living at home with them. Some 74.1 percent said they own their home. A total of 77.9 percent were white; 12.6 percent were Latino/Hispanic, with 2.9 percent African American. A well-educated group, 63.1 percent had at least some college., and 58.1 percent said they live inside city limits. The gender split was 54.9 percent male and 45.1 percent female.

Commitment to Following the Rules

More than 70 percent of aggressive drivers indicated being highly committed to following the traffic safety rules, regardless of whether or not they agree with them, with an average rating of 7.90 on the 0-10 scale. This is interesting given their reported problems actually following these same rules. One interpretation is that aggressive drivers still have a respect for the rules as a baseline from which they measure their driving; they just use a less strict standard than other drivers in how far they can exceed the limits.

Exhibit XI-35.
Aggressive Drivers' Commitment to Following the Rules



Further analysis showed a relationship between commitment to following the rules and likelihood to change driving behavior. Those highly likely to change their behavior gave a significantly higher rating of 8.58 on this question, compared to 7.39 for those not likely to change and 7.68 for the remaining aggressive drivers. The Eta Squared measure of association was .055, meaning that 6 percent of the likelihood of changing behavior is due to the level of commitment to following the rules.

Audit of Aggressive Driving Behaviors

The following table provides an “audit” of the types of high-risk driving behavior engaged in by those in the aggressive driver segment. The typical driver engaged in four out of the 11 behaviors at least occasionally. More than 80 percent of this group admitted to driving more than 10 miles per hour over the speed limit at least occasionally. Another 60 percent admitted to tailgating the vehicle in front of them. Other activities include using one’s horn (58 percent), not paying attention very well (53 percent), braking to get others to “back off” (49 percent) and not being careful about lane changes (33 percent). More than one out of five aggressive drivers admitted to having run a red light or a stop sign.

**Exhibit XI-36.
Aggressive Drivers’ Patterns of Driving Behavior**

| Driving Behavior | Often + Sometimes | Sometimes | often |
|----------------------------------|----------------------|-----------|-------|
| More than 10mph over limit | 80.3% | 53.6% | 26.7% |
| Following close/tailgating | 59.6% | 49.4% | 10.2% |
| Using your horn | 57.8% | 46.8% | 11.0% |
| Not paying attention well | 53.1% | 47.9% | 5.2% |
| Brake to get others to back off | 48.8% | 44.1% | 4.7% |
| Not careful about lane changes | 32.9% | 27.1% | 5.8% |
| Running stop sign | 21.8% | 19.3% | 2.5% |
| Running red light | 21.2% | 18.4% | 2.8% |
| Drink 3/4 and then drive in hour | 15.1% | 11.0% | 4.1% |
| Reckless driving | 9.6% | 7.8% | 1.8% |
| Pass on the shoulder | 6.1% | 4.5% | 1.6% |

**Exhibit XI-37.
Aggressive Drivers’ Frequency of Aggressive Driving Behaviors – Number of Behaviors Engaged in Either Sometimes or Often**

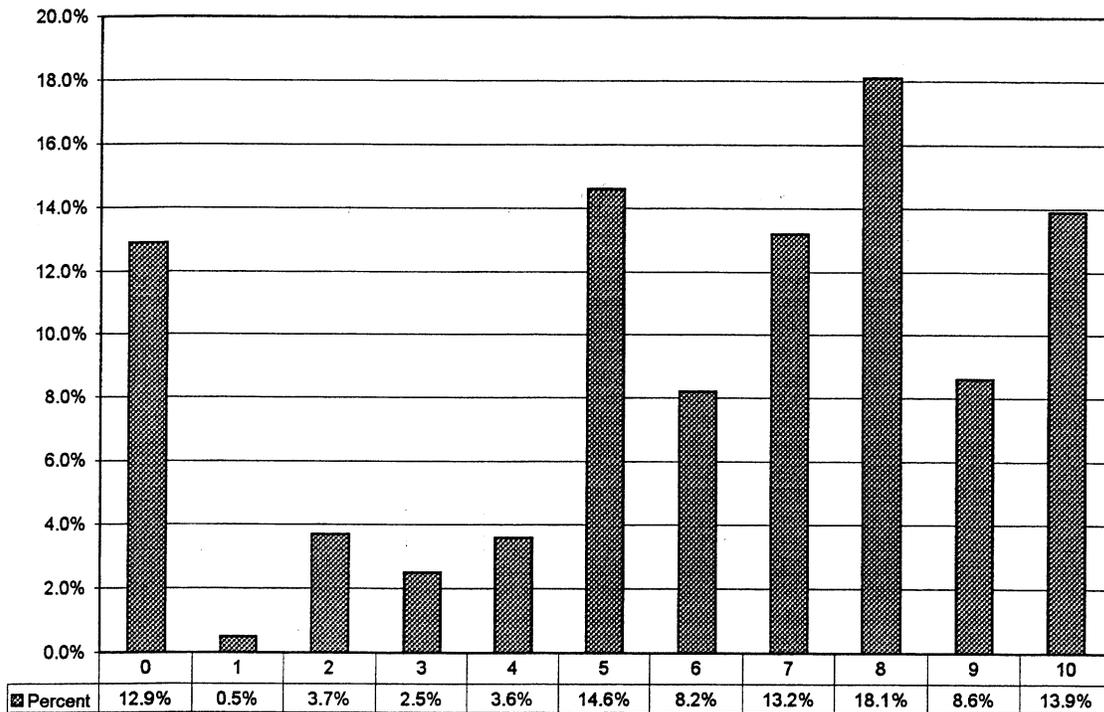
| Number | Percent of Drivers |
|----------------|--------------------|
| 1 | 4.9% |
| 2 | 15.6% |
| 3 | 22.0% |
| 4 | 24.3% |
| 5 | 14.6% |
| 6 | 10.2% |
| 7 | 2.9% |
| 8 | 4.4% |
| 10 | 0.8% |
| 11 | 0.5% |
| Average | 4.02 |

Impact of Video or Flyer on Dangers of Aggressive Driving

Aggressive drivers were asked how likely they would be to consider driving more safely if they were shown a video or given a flyer that described how those who drive more aggressively are much more likely to die in a car crash or be seriously injured. The average rating was 6.06 on the 0-10 scale, and a total of 40.6 percent gave a high rating of 8-10.

Exhibit XI-38.

Aggressive Drivers' Ratings of Their Likelihood To Consider Driving More Safely If Shown a Safety Video or Given a Brochure about Dangers of Aggressive Driving



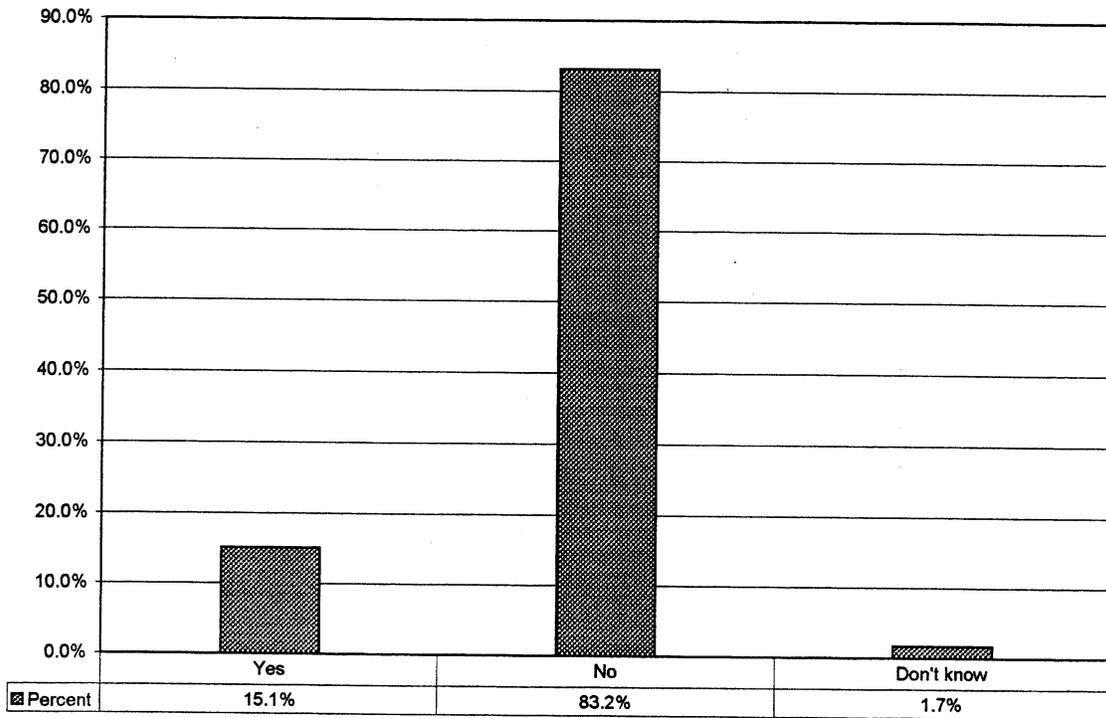
Further analysis indicated that drivers who were highly likely to change their behavior were significantly more likely (7.56 avg.) to be impacted by a flyer or video than were those moderately (6.07) or not likely (4.27) to change. The Eta Squared measure of association of .158 means that 16 percent of the likelihood of changing an aggressive driver's behavior is related to whether or not they would consider driving safer after seeing a flyer/video.

Consider Yourself “Aggressive”?

For those who are aware of their aggressive driving, perhaps information about the tendency for such drivers to become involved in injury and fatality crashes would be persuasive enough to change such behavior. Significant factors related to communicating with these drivers – from a perspective of safeguarding the family -- may be that they are the youngest behavior-related high-risk group, with a median (half above, half below) age of 36 years – “child-bearing age” – and 37.5 percent have children living with them.

Only 15.1 percent of aggressive drivers considered themselves “aggressive” in their behavior. These drivers apparently do not think of themselves in these terms. CDOT may want to keep this in mind when designing messages for this group so that the content of the messages is not blocked by a resistance to the label of “aggressive.” Perhaps a better label to use might be “higher risk” driving style or driving behavior.

Exhibit XI-39.
Aggressive Drivers' Perception of Selves as 'Aggressive'



All Four Segments

Awareness and Effectiveness of Ads & Messages

The vast majority of all drivers surveyed could recall seeing an ad, sign or commercial from the State of Colorado regarding driving safety, seat belts or drinking and driving.

The effectiveness of these ads in causing one to think about driving more safely was generally moderate to good, according to the respondents in each segment. While the average ratings were all under 7 on the 0-10 scale, the percentage giving a high rating of 8-10 ranged from 38 percent among young drivers to nearly 50 percent for the occupant protection group.

These ratings suggest that many of CDOT's advertising messages have been accomplishing their mission of reaching the target audiences of high-risk drivers.

Exhibit XI-40. High-Risk Drivers' Reaction to Safety Advertising

| Remember seeing an ad, sign or commercial in the last month? | Young | Alcohol | Aggressive | Occupant Protection |
|--|-------|---------|------------|---------------------|
| Yes | 85.5% | 89.1% | 84.1% | 86.6% |
| No | 14.1% | 10.9% | 14.5% | 12.0% |
| Don't Know | 0.4% | 0.0% | 1.5% | 1.4% |

| | Young | Alcohol | Aggressive | Occupant Protection |
|----------------------------|-------------|-------------|-------------|---------------------|
| Not very effective (0-3) | 15.4% | 21.0% | 19.3% | 14.5% |
| Moderately effective (4-7) | 46.7% | 37.5% | 37.1% | 35.9% |
| Very effective (8-9) | 24.9% | 25.4% | 27.2% | 29.0% |
| Extremely effective (10) | 13.0% | 16.1% | 16.4% | 20.5% |
| Average Rating | 6.29 | 6.13 | 6.30 | 6.68 |

Further analysis showed that those drivers who were highly likely to change their behavior rated the effectiveness of the ads significantly higher (7.49) overall than did drivers moderately likely (6.34) or not likely (5.34) to change. [Eta Squared = .086]

Desired Kind of Spokesperson for Ads or Messages

By far the most popular type of spokesperson for an ad on driving safety was a “fireman or ambulance driver that rescues people in wrecks.” Having a traffic safety professional serve as the spokesperson was a second choice in three of the four segments, but it was not nearly as strong as the top choice.

Exhibit XI-41.

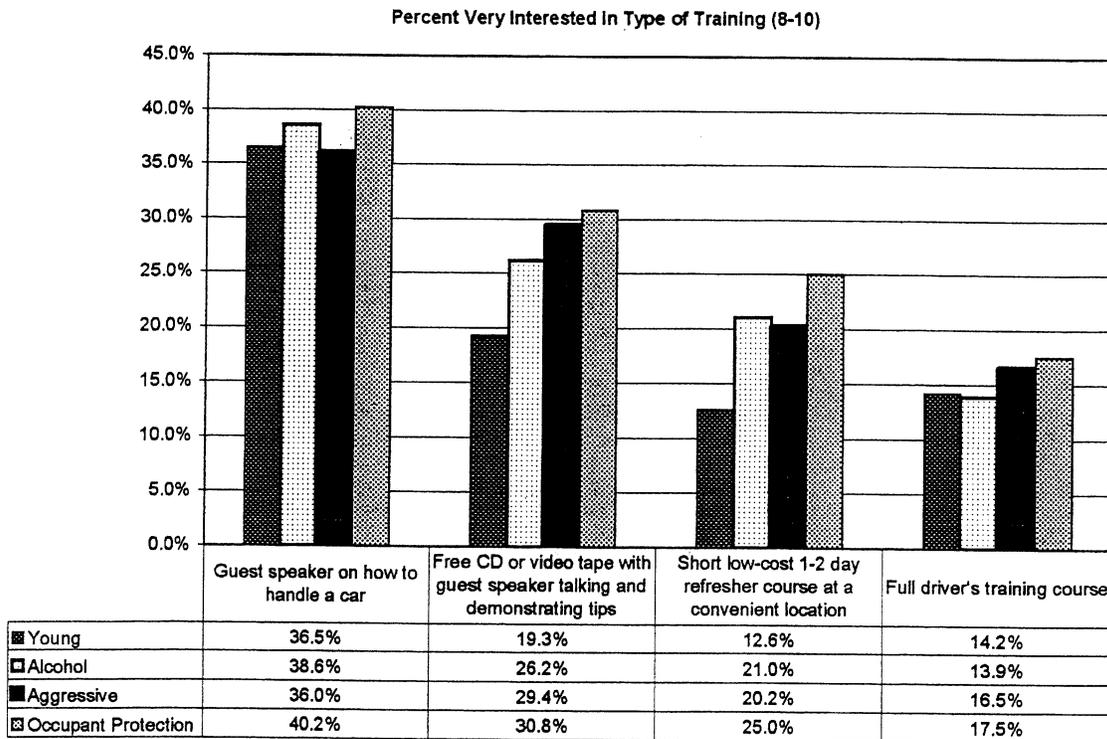
High-Risk Drivers' Assessment of Traffic Safety Spokespersons

| | Young | Alcohol | Aggressive | Occupant Protection |
|---|-------|---------|------------|---------------------|
| A fireman or ambulance driver that rescues people in wrecks | 21.9% | 25.4% | 23.1% | 19.5% |
| A traffic safety professional | 7.7% | 11.5% | 8.7% | 13.2% |
| A regular driver | 7.5% | 7.7% | 7.5% | 8.3% |
| A mom or dad | 9.2% | 7.2% | 7.3% | 7.1% |
| A professional racecar driver who drives carefully | 6.4% | 6.4% | 9.8% | 8.2% |
| A sports star | 9.3% | 4.7% | 8.1% | 6.2% |
| A famous actor or actress | 9.0% | 4.9% | 4.7% | 4.0% |
| A respected politician | 1.7% | 0.8% | 0.0% | 1.8% |
| Other | 16.5% | 21.0% | 18.1% | 17.7% |
| Refused | 1.7% | 3.7% | 3.4% | 1.6% |
| Don't know | 9.0% | 6.7% | 9.3% | 12.4% |

Interest in Taking Additional Drivers Training

As can be expected, interest in receiving additional drivers training varied considerably by the type and cost of training. Between 35 and 40 percent of each segment was highly interested in hearing a guest speaker talk about how to handle a car in different situations. The level of interest declined to 20-30 percent for watching a free CD or video featuring a guest speaker and demonstrations. Demand for a short, low-cost refresher course was lower still, at 13-25 percent, and a full drivers training course was highly appealing to 14-18 percent of the drivers interviewed.

Exhibit XI-42.
High-Risk Drivers' Interest in Various Types of Drivers Training



**Exhibit XI-43.
High-Risk Drivers' Ratings of Various Safety Programs**

| Average Ratings | Young | Alcohol | Aggressive | Occupant Protection |
|---|-------|---------|------------|---------------------|
| Guest speaker on how to handle a car | 5.73 | 5.40 | 5.29 | 5.53 |
| Free CD or video tape with guest speaker talking and demonstrating tips | 4.60 | 4.53 | 4.94 | 4.89 |
| Short low-cost 1-2 day refresher course at a convenient location | 3.97 | 3.80 | 3.84 | 4.13 |
| Full driver's training course | 3.61 | 3.08 | 3.43 | 3.47 |

Additional analysis showed that interest in each of the above types of training was a significant predictor of likelihood of changing one's driving behavior. Those highly likely to change gave significantly higher ratings on each:

- Guest speaker on how to handle a car (6.86 average; Eta Squared = .111)
- Free CD or video tape (6.11 average; Eta Squared = .105)
- Short low-cost refresher course (5.70 average; Eta Squared = .127)
- Full driver's training course (5.10 average; Eta Squared = .134)

Financial Incentives for Taking Drivers Training

The likelihood of taking either a refresher course or a full training course went up substantially when certain incentives were introduced. The incentive found to have the greatest impact for all segments was receiving a discount on auto insurance in exchange for taking more drivers training. Between 62 and 68 percent of drivers would be highly likely to take more training if this incentive were available. However, discounts on license tabs, getting points adjusted on one's driving record, and having a reduced fine on the next ticket were also strong motivators to receive more training. Having one's employer pay for the cost had the least amount of interest.

Exhibit XI-44.

High-Risk Drivers' Likelihood to Take Drivers Training Given Various Incentives

| Percent Very Likely (8-10) | Young | Alcohol | Aggressive | Occupant Protection |
|--------------------------------------|-------|---------|------------|---------------------|
| Discount on insurance | 67.9% | 61.8% | 63.0% | 63.4% |
| Discount on vehicle license tabs | 65.6% | 54.0% | 56.0% | 53.6% |
| Get your points adjusted | 65.3% | 53.4% | 58.9% | 50.5% |
| Reduced fine on next ticket | 61.3% | 49.1% | 56.7% | 50.6% |
| Discount on renewing drivers license | 51.0% | 39.5% | 43.7% | 46.3% |
| Employer Paid for the Cost | 34.7% | 28.6% | 30.7% | 32.2% |

| Average Likelihood Rating | Young | Alcohol | Aggressive | Occupant Protection |
|--------------------------------------|-------|---------|------------|---------------------|
| Discount on insurance | 8.12 | 7.48 | 7.47 | 7.35 |
| Discount on vehicle license tabs | 7.85 | 6.80 | 7.01 | 6.67 |
| Get your points adjusted | 7.58 | 6.47 | 6.77 | 6.28 |
| Reduced fine on next ticket | 7.44 | 6.22 | 6.67 | 6.22 |
| Discount on renewing drivers license | 6.79 | 5.57 | 6.09 | 5.95 |
| Employer Paid for the Cost | 5.62 | 4.49 | 4.78 | 4.52 |

Higher-level statistical analysis revealed that interest in each of these incentives was a significant predictor of whether or not a driver was likely to actually change his or her behavior. Those highly likely to change gave stronger ratings for each, as follows:

- Discount on insurance (8.82 average; Eta Squared = .114)
- Discount on license tabs (8.43 average; Eta Squared = .128)
- Getting your points adjusted (8.09 average; Eta Squared = .155)
- Reduced fine on next ticket (8.02; Eta Squared = .151)
- Discount on renewing drivers license (7.85 average; Eta Squared = .153)
- Employer paying for the cost (6.83 average; Eta Squared = .161)

Life Situation and Openness to Change

Situational points of change such as graduating from school or the birth of a child were thought to be times when drivers might be more receptive to changing behavior. One concept tested was offering information on car seat safety to parents after the birth of a child while still in the hospital. Tested only among those who were expecting a child or had a newborn, the average interest rating was 7.15, with 52.8 percent giving high ratings.

**Exhibit XI-45.
Profile of High-Risk Drivers' Life Situations**

| Situation | Young | Alcohol | Aggressive | Occupant Protection |
|--|-------|---------|------------|---------------------|
| Just graduated or will graduate from school soon | 36.2% | 10.3% | 16.4% | 9.4% |
| Just got married or getting married soon | 14.5% | 6.5% | 7.8% | 4.7% |
| Just started or will soon be starting a new job | 15.8% | 10.7% | 12.1% | 8.1% |
| Expecting a new child or new child was recently born | 12.7% | 8.0% | 7.8% | 7.7% |
| Have daughter or son nearing driving age | 1.8% | 11.9% | 9.4% | 8.9% |
| Currently training son or daughter to drive | 1.8% | 7.3% | 4.3% | 5.1% |
| Refused | 2.7% | 1.9% | 1.2% | 5.5% |
| Don't know | 1.4% | 2.7% | 1.6% | 4.3% |
| NONE | 26.2% | 49.4% | 48.8% | 51.9% |

**Exhibit XI-46.
High-Risk Drivers' Openness to Change, Interest in Information at Natal Hospital**

| Openness to change now versus other times in life | Young | Alcohol | Aggressive | Occupant Protection |
|---|-------|---------|------------|---------------------|
| More open | 41.9% | 45.5% | 40.8% | 37.7% |
| Less open | 8.3% | 8.7% | 12.1% | 11.3% |
| About the same as you have been | 47.0% | 44.9% | 45.0% | 48.3% |
| Refused | 1.9% | 0.6% | 1.3% | 1.7% |
| Don't know | 0.9% | 0.3% | 0.8% | 0.9% |

Exhibit XI-47.

High-Risk Drivers' Openness to Change, Interest in Information at Natal Hospital

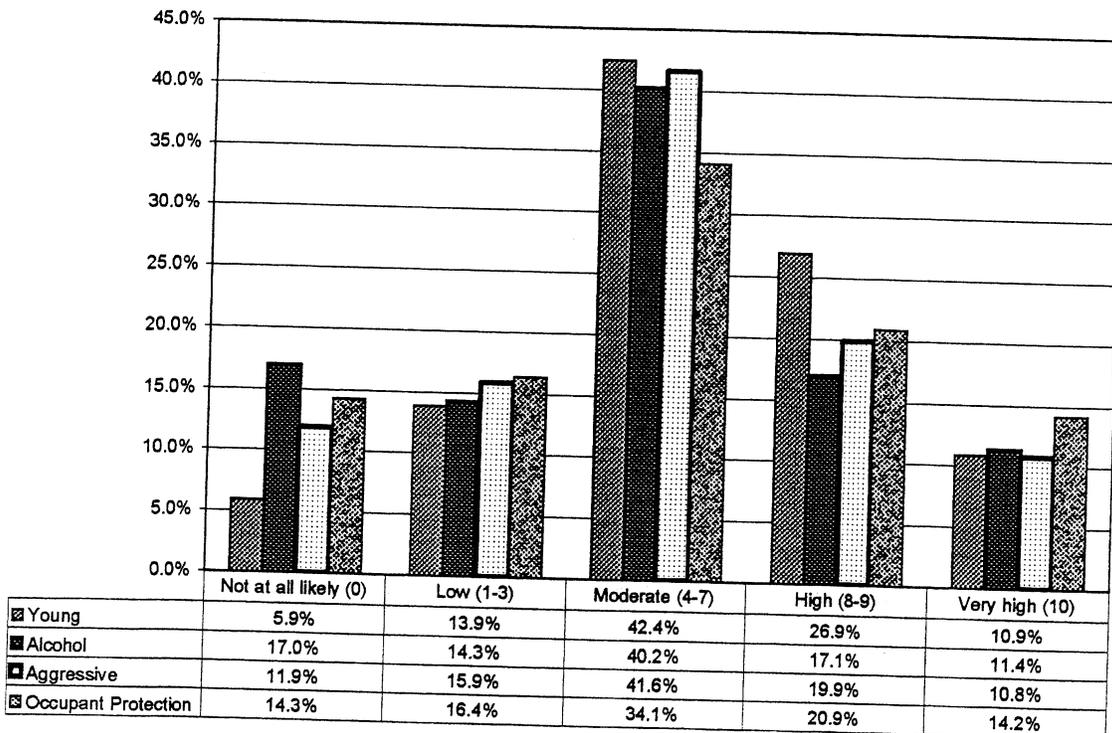
| Interest in packet of information at hospital from doctor after birth of child | Percent |
|--|---------|
| No interest (0) | 4.6% |
| Minimal interest (1-3) | 4.5% |
| Moderate interest (4-7) | 38.1% |
| High interest (8-9) | 13.9% |
| Very high interest (10) | 38.9% |

Overall Likelihood to Change Behavior

Overall, those in the alcohol segment had the lowest likelihood of changing their behavior, with an average likelihood rating of 5.17. Young drivers had the highest average, at 6.14. The total percentages of those highly likely (8-10 ratings) varied from 28.5 percent for the alcohol group to 37.8 percent among young drivers.

Exhibit XI-48.

High-Risk Drivers' Likelihood to Change Behavior



**Exhibit XI-49.
High-Risk Drivers' Average Rating of Likelihood to Change**

| Likelihood to Change | Young | Alcohol | Aggressive | Occupant Protection |
|-------------------------------|-------|---------|------------|---------------------|
| Average Rating | 6.14 | 5.17 | 5.47 | 5.40 |
| % Highly likely (8-10 rating) | 37.8% | 28.5% | 30.7% | 35.1% |

Areas Most Likely to Change

The following table shows the problem areas that drivers within each segment indicated they would be most likely to change. Young drivers and aggressive drivers indicated driving more carefully and not speeding as much were the primary areas for improvement. Those in the alcohol segment indicated both drinking and driving as well as driving more carefully. The occupant protection segment indicated wearing seat belts more often and driving more carefully.

**Exhibit XI-50.
High-Risk Drivers' One Behavior They Most Expect to Change**

| The One Area Most Expect to Change | Young | Alcohol | Aggressive | Occupant Protection |
|---|-------|---------|------------|---------------------|
| Safer about drinking and driving | 9.9% | 20.8% | 9.2% | 11.4% |
| Driving more carefully or less aggressively | 28.3% | 19.8% | 23.6% | 22.6% |
| Not speeding as much | 28.5% | 15.9% | 31.9% | 13.0% |
| Wearing seat belts more often | 12.4% | 15.9% | 10.5% | 28.5% |
| Other | 6.4% | 10.0% | 6.1% | 6.6% |
| Refused | 2.8% | 6.3% | 4.9% | 6.9% |
| Don't know | 11.7% | 11.3% | 13.9% | 11.0% |

Profile of Insurance, Accidents and Tickets

A profile of insurance costs, accidents and traffic tickets was prepared for each segment.

Exhibit XI-51.

High-Risk Drivers' Profile of Insurance, Accidents and Tickets

| Indicator | Young | Alcohol | Aggressive | Occupant Protection |
|--|---------|---------|------------|---------------------|
| Amount pay for insurance per driver in the family (Avg.) | \$1,030 | \$954 | \$1,049 | \$1,005 |
| Percent who have ever been in an auto accident as a driver | 42.2% | 66.1% | 53.9% | 60.2% |
| Percent who were in at least one accident last 5 years | 32.8% | 30.3% | 31.2% | 33.9% |
| Avg. crashes last 5 years | 0.573 | 0.487 | 0.449 | 0.482 |
| Avg. speeding tickets past 5 years | 0.90 | 0.68 | 0.73 | 0.61 |
| Other moving violations Past 5 Years | 0.43 | 0.58 | 0.44 | 0.50 |
| Warnings Past 5 Years | 0.63 | 0.62 | 0.64 | 0.51 |
| Total tickets & warnings 5 yrs. | 1.95 | 1.91 | 2.02 | 1.81 |

| License ever suspended? | Young | Alcohol | Aggressive | Occupant Protection |
|-------------------------|-------|---------|------------|---------------------|
| YES | 13.8% | 28.9% | 13.2% | 18.7% |

Demographic and Lifestyle Profile

The following section provides a demographic and lifestyle profile of the Colorado drivers within each segment.

Exhibit XI-52.
Demographic and Lifestyle Profile of High-Risk Drivers

| Family Situation | Young | Alcohol | Aggressive | Occupant Protection |
|---|-------|---------|------------|---------------------|
| Married with children living with you | 29.9% | 32.1% | 27.1% | 28.3% |
| Married with no children living with you | 8.1% | 22.1% | 25.5% | 28.5% |
| Single with children living with you | 6.5% | 5.8% | 6.2% | 5.7% |
| Single with no children living with you | 21.6% | 22.8% | 21.5% | 17.4% |
| Living with roommate or other adult, children with you | 4.5% | 1.9% | 4.2% | 2.8% |
| Living with roommate or other adult, no children with you | 10.6% | 7.5% | 3.6% | 6.0% |
| Other | 13.0% | 3.9% | 7.0% | 6.2% |
| Refused | 4.0% | 3.1% | 3.1% | 3.0% |
| Don't know | 1.7% | 0.8% | 1.8% | 2.1% |

| Ethnic Background | Young | Alcohol | Aggressive | Occupant Protection |
|-------------------|-------|---------|------------|---------------------|
| White/Caucasian | 70.1% | 83.2% | 77.9% | 79.6% |
| Hispanic | 16.7% | 5.2% | 9.7% | 8.7% |
| Latino | 1.5% | 1.3% | 2.9% | 0.7% |
| African American | 2.3% | 1.8% | 2.9% | 1.8% |
| Asian | 1.5% | 0.0% | 1.0% | 1.4% |
| Native American | 1.1% | 1.9% | 0.8% | 1.4% |
| Other | 1.9% | 2.2% | 1.4% | 2.1% |
| Refused | 3.4% | 3.4% | 2.6% | 3.5% |
| Don't know | 1.5% | 1.1% | 0.8% | 0.9% |

| Ethnic Background | Young | Alcohol | Aggressive | Occupant Protection |
|----------------------------|-------|---------|------------|---------------------|
| Total % Hispanic or Latino | 18.2% | 6.5% | 12.6% | 9.4% |

Demographic and Lifestyle Profile, cont'd.

Exhibit XI-53.

Further Demographics on High-Risk Drivers

| Education | Young | Alcohol | Aggressive | Occupant Protection |
|---------------------------------------|-------|---------|------------|---------------------|
| Less than high school | 14.9% | 2.9% | 6.0% | 6.0% |
| High school or equivalent | 31.0% | 29.1% | 27.7% | 34.8% |
| Some college or 2 year college degree | 32.0% | 30.8% | 33.6% | 27.8% |
| 4 year college degree | 15.9% | 19.9% | 21.0% | 17.6% |
| Graduate school study or degree | 2.4% | 13.0% | 8.5% | 9.8% |
| Refused | 3.8% | 3.8% | 3.2% | 3.5% |
| Don't know | 0.0% | 0.5% | 0.0% | 0.5% |

| Homeownership | Young | Alcohol | Aggressive | Occupant Protection |
|---------------|-------|---------|------------|---------------------|
| Own | 57.1% | 74.9% | 74.1% | 71.6% |
| Rent | 32.7% | 19.0% | 19.8% | 19.4% |
| Refused | 10.2% | 6.2% | 6.0% | 9.0% |

| Income | Young | Alcohol | Aggressive | Occupant Protection |
|---------------------------------|-------|---------|------------|---------------------|
| Under \$30,000 | 26.6% | 17.7% | 16.1% | 15.0% |
| Between \$30,000 and \$49,000 | 20.1% | 23.7% | 25.8% | 26.0% |
| Between \$50,000 and \$74,000 | 17.9% | 21.0% | 20.0% | 20.1% |
| Between \$75,000 and \$99,000 | 9.9% | 13.0% | 15.2% | 12.0% |
| Between \$100,000 and \$124,000 | 4.7% | 6.8% | 5.3% | 4.2% |
| At least \$125,000 | 0.9% | 5.5% | 3.3% | 3.9% |
| Refused | 9.3% | 11.0% | 8.9% | 12.6% |
| Don't know | 10.7% | 1.4% | 5.3% | 6.3% |

| Living in City or County? | Young | Alcohol | Aggressive | Occupant Protection |
|---------------------------|-------|---------|------------|---------------------|
| Inside City Limits | 62.8% | 50.4% | 58.1% | 55.6% |
| Unincorporated | 31.5% | 44.0% | 37.5% | 38.4% |
| Don't know/refused | 5.6% | 5.6% | 4.4% | 5.9% |

| Gender | Young | Alcohol | Aggressive | Occupant Protection |
|--------|-------|---------|------------|---------------------|
| Male | 51.1% | 65.0% | 54.9% | 56.9% |
| Female | 48.9% | 35.0% | 45.1% | 43.1% |

Conclusions Related to Findings of High-Risk Driver Survey:

- In terms of speeding, those in the occupant protection segment indicated being reasonably careful, comfortable with driving only 6.65 m.p.h. over the limit on highways compared to 8.2 for young drivers and 9.9 for aggressive drivers. Those in the alcohol segment were also more cautious, at 7.1.
- The incidence of drinking and driving after 2/3 drinks (male/female) ranged from 27 percent among young drivers surveyed to 37-38 percent among aggressive drivers and those in the occupant protection group.
- All drivers tended to give high ratings for how well they understood the driving rules and consequences.
- While more than 80 percent recalled seeing or hearing an ad or message about traffic safety, not all were effective. The percentage of drivers indicating the ads were effective ranged from 38 percent among young drivers to 50 percent for occupant protection drivers.
- In terms of an appealing spokesperson for a driving safety ad or message, the clear favorite suggestion was a firefighter or ambulance driver who “rescues people in wrecks.”
- For young drivers, the primary reason for not taking drivers training was the cost. The issue of affordability surfaced in several different places in the study, such as the appeal of financial incentives for seeking further training. These findings indicate that in thinking about cost, drivers will be influenced by any offsetting factors such as insurance discounts.
- Nearly 80 percent of young drivers thought a discount from their insurance company would be a good type of incentive to cause safer driving, and another 38 percent felt an incentive offered by the State would have an impact.
- Among drivers in the alcohol segment, there was a low awareness of the actual blood alcohol limit in Colorado. Many thought the limit was stricter than it really was; yet, when asked how many drinks it takes in an hour to be over the limit, the answers generally were less than the official published figures. The number of “safe” drinks was 1.5 for men and 1.1 for women.
- A total of 43 percent in this group admitted to drinking and driving and later figuring out that it really wasn’t safe. The top reason for the way they knew was “paranoia.” A similar 42 percent said in the last five years they had drunk at the published limit of 4 for men and 3 for women and driven within an hour.
- Twenty-one percent had received a DUI.

- Aggressive drivers tend to be composed of primarily those who speed. Speeding appears to be the one behavior that is feasible to target in enforcement, with 80.3 percent of drivers saying they will drive more than 10 miles per hour over the limit. Other behaviors are engaged in by smaller segments of drivers and are more difficult to monitor and enforce.
- Only 15 percent of aggressive drivers would label themselves as “aggressive.”
- In the occupant protection section, the major problem with seat belt compliance appears to be with adults 17 and older. Most were complying with the occupant-protection rules for children.

Explanation of Advanced Statistical Analysis

Multiple Regression Statistical Analysis

In the crash reduction modeling, several multiple regression models were developed, which involved the building of a statistical equation that predicts values of a dependent variable, such as likelihood to change behavior or number of crashes. In working with multiple regression models, a number of variables are tested together as to their joint ability to predict values of the dependent variable. Those predicting variables that are not truly independent or do not have any predictive ability are removed in this process, and the final set of variables reflects the most influential and predictive combination.

The four driver models that predict change in behavior of each type of driver each report the relative influence of each predicting variable using standardized coefficients that add up to 1.00. Thus, a coefficient of .150 would indicate a given factor has 15 percent of the influence in that model.

Statistical Analysis by Specific Driver Segments

Statistical analysis was conducted in order to examine differences among respondents according to their likelihood to improve their driving behavior, based on post-classified segments. The process involves comparing a single dependent variable (likelihood to change) against a number of independent variables (i.e., individual questions in the survey) one at a time, and determining which independent variables are statistically related to the dependent variable. The segments tested are summarized below:

All questions tested against sub-groups of Q75 – Likelihood to Change Driving Behavior

- Not likely to change behavior
- Moderately likely to change
- Very likely to change behavior

If statistical relationships were found to be significant and meaningful, they are listed at the end of each section.

This statistical analysis included advanced statistical techniques used in the testing of hypotheses and measuring the degree of association between variables. This report indicates statistically significant findings only and reports the statistic, “Eta Squared,” which is a measure of the variability in the dependent variable that can be explained by the independent variable. For example, an Eta Squared of .367 means that 36.7 percent of the variability in the dependent variable can be explained or accounted for by the independent variable. The analysis also included other statistical tests of independence and association.

Interpretations and inferences set forth in the analysis are intended to provide an independent statistical perspective. The statistical procedures utilized were applied with a 0.95 confidence level for estimating values and/or providing significant inferences. A 0.05 significance level was used as the criterion to test hypotheses.

Section XIII: Predictive ‘Crash Reduction’ Model Based on Survey Data

Hebert Research, Inc., and Weis Communications collaborated to develop and report a statistical “crash reduction model,” an innovation of Hebert Research used in other studies, for use by CDOT authorities. The model pulls together elements of the focus group research and the Latino community leader interviews, and is based on the survey data.

The crash reduction model essentially has two components:

- 1) Predicting change in behavior: The first component identifies which factors, potential programs or changes will have the greatest impact on changing driver behavior, and on reducing problem behaviors that contribute to traffic accidents, alcohol-related accidents and un-belted accidents. This was accomplished through the use of four regression models, one for each major problem area (i.e., young, impaired, occupant protection non-compliant, and aggressive drivers).
- 2) Predicting reductions in crashes: The second component involves directly connecting the survey results with the actual crash data in order to estimate the potential reduction in crashes that is possible, assuming that CDOT will implement the types of high-impact changes recommended from the first component. Consistent with the previous emphasis on serious crashes in the crash analysis reports, this model was calibrated to predict changes in injury and fatality crashes (predicting the combined sum of both types).

Calculating the potential crashes avoided each year involved modeling both drivers from the target PRIZM clusters included in the survey and those from the non-target clusters, based on survey data and actual crash rate information by PRIZM cluster.

Allowing for implementation delays, the model also assumes that the full effect of the potential reduction would not be felt until 2007, with a steadily increasing share each year of the potential crashes, starting in 2004 with 25 percent of the potential level for the first full year.

Young Drivers Model

The “young” drivers behavior model predicts change in behavior for young drivers ages 16-29. Factors were included in the model based on their statistical independence as well as ability to predict change when grouped together with the other key predicting variables.

The “program-related” factors that were important in explaining change among young drivers included the following (in order of importance):

- Interest in a full drivers-training course.

- Guest speaker who spends an hour giving a free session at a school, church, etc. about tips for handling a car in special situations such as bad weather, heavy traffic and narrow country roads.
- Likelihood to take either a refresher course or full drivers-training course if they could get a discount on renewing their driver's license.
- Likelihood to take either a refresher course or a full drivers-training course if they could get their points adjusted with a better score on their driving record with the State.

**Exhibit XII-1.
Data on Predicting Change in Behavior Among Young Drivers**

| Predicting Factor | Standardized Coefficient |
|--|--------------------------|
| Q65. How interested are you in the following - A full driver's training course over a number of weeks, including actual hands-on driving with a car | 0.105 |
| Q10. How effective was the training you received from your parents? | 0.088 |
| Q86. What is your age? | 0.081 |
| Q82. How many traffic tickets have you received in the past 5 years for speeding? | 0.061 |
| Q83. Other than speeding, how many tickets have you received for a moving violation? | 0.054 |
| S6. Have ever drank 2/3 and driven within an hour? | 0.054 |
| Q62. How interested are you in the following - A guest speaker who spends an hour giving a free session at a school, church, etc. about tips for how to handle a car in special situations such as bad weather, heavy traffic and narrow country roads | 0.053 |
| S3. Allow other passengers to not wear their seat belts | 0.051 |
| Q4. What kind of rating would you give yourself for how well you understand the consequences for breaking the rules? | 0.051 |
| Q80. Been involved in at least one crash in the last 5 years | 0.047 |
| Q88. Renting home | 0.046 |
| S2. Always wear my seat belt | 0.046 |
| MALE | 0.045 |
| Q68. How likely would you be to take either a refresher course or a full drivers training course if - You could get a discount on renewing your driver's license | 0.045 |
| Q85. Ever had your license suspended? | 0.041 |
| Q78. How many drivers are there in your households that are on that insurance policy? | 0.038 |
| Q71. How likely would you be to take either a refresher course or a full drivers training course if - You could get your points adjusted with a better score on your driving record with the state | 0.035 |
| Q90. Have a 4 year college degree or higher education | 0.032 |
| Q77-78. Insurance cost per driver in the family | 0.026 |

Impaired Drivers Model

The “alcohol” drivers behavior model predicts change in behavior from those who reported drinking a minimum amount of drinks and then driving within an hour. Again, factors were included in the model based on their statistical independence as well as ability to predict change when combined with the other key predicting variables.

Program-related factors were important in explaining change among drinking drivers included the following (in order of importance):

- Interest in a full drivers-training course.
- Likelihood of taking either a refresher course or a full drivers-training course if they could get a reduced fine on their next traffic ticket.
- Likelihood of considering being safer about drinking and driving if they or a friend could move their car at night to a ticket-free zone to ride home with someone else.
- Likelihood of considering being safer about drinking and driving if they learned more about how much it costs to get a DUI.
- How interested they are in the following: A free CD or videotape where they see a guest speaker talking and also demonstrating some of these tips.
- Likelihood to consider being safer about drinking and driving if they heard their friends were trying to be more careful about drinking and driving. (This could be translated into a marketing message as part of safety advertising.)

Another program idea was also considered a very strong candidate for implementation but, because of its unique statistical distribution of answers, it did not show up in the model. This was the “one-time hanger card parking permit,” which a bartender could hand out to put on a car’s rear-view mirror so the driver could ride home with someone else and leave the vehicle where it was parked, without getting a parking ticket.

This feature was actually one of the top-rated programs in the survey, but its appeal was too broad-based to have the segmentation needed to indicate influence within the regression model. Even so, the research team highly recommends adding this program to the above list of key features or programs.

Exhibit XII-2.**Data on Predicting Change in Behavior among Impaired Drivers**

| Predicting Factor | Standardized Coefficient |
|--|---------------------------------|
| Q65. How interested are you in the following - A full driver's training course over a number of weeks, including actual hands-on driving with a car | 0.113 |
| Q70. How likely would you be to take either a refresher course or a full drivers training course if - You could get a reduced fine on your next traffic ticket | 0.097 |
| Q22. Have you ever received a DUI? | 0.074 |
| Q85. Has your license ever been suspended? | 0.073 |
| Q27. How likely would you be to consider being safer about drinking and driving if - You or a friend could move your car at night to a ticket-free zone so you could ride home with someone else | 0.067 |
| Q26. How likely would you be to consider being safer about drinking and driving if - You learned more about how much it costs you to get a DUI | 0.066 |
| Q86. What is your age? | 0.064 |
| Q83. Other than speeding, how many tickets have you received for a moving violation? | 0.058 |
| S4B. How would you rate yourself in terms of how well you follow ALL of the traffic laws and rules for things like keeping your less than 5 or 6 over the speed limit? | 0.055 |
| Q63. How interested are you in the following - A free CD or video tape where you see a guest speaker talking and also demonstrating some of these tips | 0.055 |
| Live within a rural PRIZM cluster | 0.054 |
| Q27A. How likely would you be to consider being safer about drinking and driving if - You heard your friends were trying to be more careful about drinking and driving | 0.053 |
| Q18. How many drinks in an hour do you normally think of as being safe for you to consume and then go drive a vehicle within the same hour? | 0.053 |
| Q78. How many drivers are there in your households that are on that insurance policy? | 0.049 |
| Q2. How well would you say you understand and know the driving safety laws and rules? | 0.044 |
| Q21. In the last 5 years, how often have you driven within an hour after drinking 3/4 or more alcoholic beverages? | 0.026 |

Occupant Protection Non-Compliant Drivers Model

The “occupant-protection” drivers behavior model predicts change in behavior from those who reported not always wearing their seat belt when driving or else allowing others in the vehicle to not use a seat belt or car seat as required by law.

Program-related factors that were important in explaining change among occupant protection non-compliant drivers included the following (in order of importance):

- Likelihood to consider using seat belts or car seats more often if a fire department in their area let them drive in and have their vehicle’s occupant-protection equipment checked for free and also receive information about occupant protection.
- Likelihood to take either a refresher course or a full drivers-training course if their employer paid for the cost of the training.
- Likelihood of taking either a refresher course or a full drivers-training course if they could get a reduced fine on their next traffic ticket.
- Interest in a full drivers-training course.
- Likelihood to consider using seat belts or car seats more often if a person from a local school, church or community organization gave out a brief flyer of information and explained the reasons for using occupant protection.
- Likelihood to take either a refresher course or a full drivers-training course if they could get a discount on renewing their driver’s license.

Exhibit XII-3.

Data on Predicting Change in Behavior Among Occupant Protection Non-Compliers

| Predicting Factor | Standardized Coefficient |
|--|---------------------------------|
| Q60. How likely would you be to consider using seat belts or car seats more often if - A fire department in your area let you drive in and they check out your vehicle for free and also give you some information about it | 0.122 |
| Q66. How likely would you be to take either a refresher course or a full drivers training course if - Your employer paid for the cost of the driver training | 0.1213 |
| Q70. How likely would you be to take either a refresher course or a full drivers training course if - You could get a reduced fine on your next traffic ticket | 0.0907 |
| Q87. Marital Status | 0.0748 |
| Q65. How interested are you in the following - A full driver's training course over a number of weeks, including actual hands-on driving with a car | 0.0669 |
| Q84. How many warnings have you received in the last 5 years for speeding or another moving violation? | 0.0634 |
| Q58. How likely would you be to consider using seat belts or car seats more often if - A person from a local school, church or community organization gave out a brief flyer of information and explained the reasons why to you in person | 0.0614 |
| Q80. How many total accidents have you been involved in as a driver in the past 5 years? | 0.0576 |
| Q2. How well would you say you understand and know the driving safety laws and rules? | 0.0562 |
| S4. How many miles over the speed limit are you comfortable driving on the highways and freeways? | 0.0545 |
| Q82. How many traffic tickets have you received in the past 5 years for speeding? | 0.0503 |
| Q68. How likely would you be to take either a refresher course or a full drivers training course if - You could get a discount on renewing your driver's license | 0.0448 |
| Q89. Hispanic Ethnicity | 0.0362 |
| Q4. What kind of rating would you give yourself for how well you understand the consequences for breaking the rules? | 0.0279 |
| S4B. How would you rate yourself in terms of how well you follow ALL of the traffic laws and rules for things like keeping your less than 5 or 6 over the speed limit? | 0.0252 |
| Q93. Living in unincorporated area | 0.0238 |
| Q77-78. Avg. Insurance costs per driver in the family | 0.0231 |

Aggressive Drivers Model

The “aggressive” drivers behavior model predicts change in behavior among those who reported either being comfortable driving at least 10 miles per hour over the limit on highways or else rated themselves fairly low in how well they “follow the rules.”

The program-related factors that were important in explaining change among aggressive drivers included the following (in order of importance):

- Likelihood of taking either a refresher course or a full drivers-training course if they could get a reduced fine on their next traffic ticket.
- Likelihood to take either a refresher course or a full drivers-training course if they could get their points adjusted with a better score on their driving record with the State.
- Likelihood to take either a refresher course or a full drivers-training course if they could get a discount on their vehicle license tabs.
- Interest in a free CD or videotape where they see a speaker talking about and demonstrating tips on safe driving.
- Interest in a full drivers-training course.
- Interest in a guest speaker who spends an hour giving a free session at a school, church, etc. about tips for handling a car in special situations such as bad weather, heavy traffic and narrow country roads.

**Exhibit XII-4.
Data on Predicting Change in Behavior among Aggressive Drivers**

| Predicting Factor | Standardized Coefficient |
|--|--------------------------|
| Q70. How likely would you be to take either a refresher course or a full drivers training course if - You could get a reduced fine on your next traffic ticket | 0.137 |
| Q71. How likely would you be to take either a refresher course or a full drivers training course if - You could get your points adjusted with a better score on your driving record with the state | 0.120 |
| Q69. How likely would you be to take either a refresher course or a full drivers training course if - You could get a discount on your vehicle license tabs | 0.113 |
| Q63. How interested are you in the following - A free CD or video tape where you see a guest speaker talking and also demonstrating some of these tips | 0.087 |
| Q65. How interested are you in the following - A full driver's training course over a number of weeks, including actual hands-on driving with a car | 0.080 |
| Q83. Number of speeding tickets last 5 years | 0.078 |
| Q30. How committed are you to trying to closely follow the rules regardless of whether you agree with them? | 0.071 |
| Q86. What is your age? | 0.053 |
| Q84. Number of warnings received in last 5 years | 0.049 |
| Q83. Number of tickets last 5 yrs for moving violations (not speeding) | 0.041 |
| S4B. How well you follow all of the driving rules | 0.038 |
| Q62. How interested are you in the following - A guest speaker who spends an hour giving a free session at a school, church, etc. about tips for how to handle a car in special situations such as bad weather, heavy traffic and narrow country roads | 0.038 |
| Q89. Of Hispanic origin | 0.036 |
| Q4. What kind of rating would you give yourself for how well you understand the consequences for breaking the rules? | 0.030 |
| Q80. Total accidents last 5 years | 0.029 |

Further Observations: Drivers Training Incentive, Spokespersons

Just as the “one-time hanger card parking permit” ended up not being included in the Impaired Drivers model, so also did a major finding of the survey for all four of the above models: receiving a discount on car insurance for taking more drivers training.

This also is considered a very strong candidate for implementation but, because of the unique statistical distribution of the responses, it did not show up in the model. The research team highly recommends CDOT work to keep existing discounts in place, if not increasing discounts offered by some insurance companies.

Secondly, the survey finding about the popularity of the firefighter as an advertising spokesperson in traffic safety campaigns also is very robust, although it did not work out in the modeling. Again, the research team highly recommends CDOT give serious consideration to this survey finding and make use of firefighters as spokespersons.

Combining the Key Factors in the Four Problem Areas

The following table summarizes the combined coefficients of each “program-related” factor that appeared in at least one of the four models. Whenever a factor was in more than one model, all of the standardized coefficients were added together for that variable. This method allows a single point of comparison that takes into account the number of models as well as the relative strength of a factor within each model.

The number-one factor with the strongest ability to predict change in driver behavior was having a full drivers-training course available, which had a combined score of .365. It was closely followed by likelihood to take drivers training if a person could obtain a reduced fine on his or her next ticket (.325).

Exhibit XII-5.
Combined Influence of ‘Program-Related’ Factors that Predict Behavior

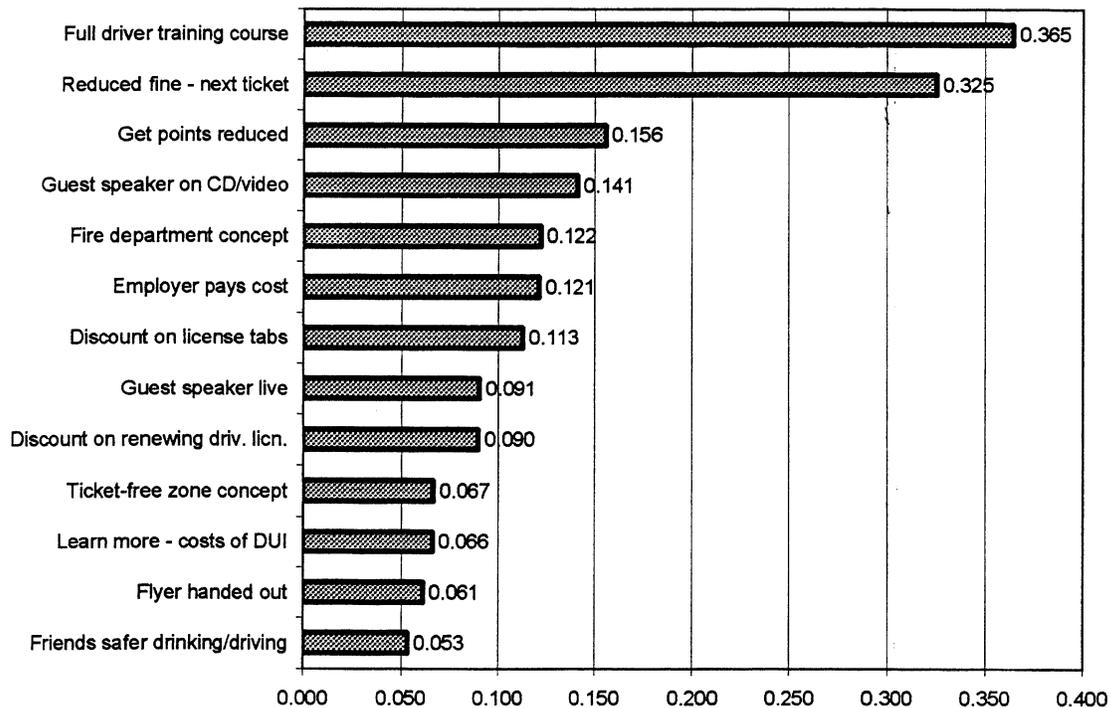


Exhibit XII-6.

Data on Predicting Change in Behavior among Combined High-Risk Drivers

| Predicting Factor | Sum of Coefficients for 4 Behavior Models | Number of Models Factor is in |
|--|--|--------------------------------------|
| Q65. How interested are you in the following - A full driver's training course over a number of weeks, including actual hands on driving with a car | 0.365 | 4 |
| Q70. How likely would you be to take either a refresher course or a full drivers training course if - You could get a reduced fine on your next traffic ticket | 0.325 | 3 |
| Q71. How likely would you be to take either a refresher course or a full drivers training course if - You could get your points adjusted with a better score on your driving record with the state | 0.156 | 2 |
| Q63. How interested are you in the following - A free CD or video tape where you see a guest speaker talking and also demonstrating some of these tips | 0.141 | 2 |
| Q60. How likely would you be to consider using seat belts or car seats more often if - A fire department in your area let you drive in and they check out your vehicle for free and also give you some information about it | 0.122 | 1 |
| Q66. How likely would you be to take either a refresher course or a full drivers training course if - Your employer paid for the cost of the driver training | 0.121 | 1 |
| Q69. How likely would you be to take either a refresher course or a full drivers training course if - You could get a discount on your vehicle license tabs | 0.113 | 1 |
| Q62. How interested are you in the following - A guest speaker who spends an hour giving a free session at a school, church, etc. about tips for how to handle a car in special situations such as bad weather, heavy traffic and narrow country roads | 0.091 | 2 |
| Q68. How likely would you be to take either a refresher course or a full drivers training course if - You could get a discount on renewing your driver's license | 0.090 | 2 |
| Q27. How likely would you be to consider being safer about drinking and driving if - You or a friend could move your car at night to a ticket-free zone so you could ride home with someone else | 0.067 | 1 |
| Q26. How likely would you be to consider being safer about drinking and driving if - You learned more about how much it costs you to get a DUI | 0.066 | 1 |
| Q58. How likely would you be to consider using seat belts or car seats more often if - A person from a local school, church or community organization gave out a brief flyer of information and explained the reasons why to you in person | 0.061 | 1 |
| Q27A. How likely would you be to consider being safer about drinking and driving if - You heard your friends were trying to be more careful about drinking and driving | 0.053 | 1 |

The General Crash Reduction Model

Baseline Crash Forecast

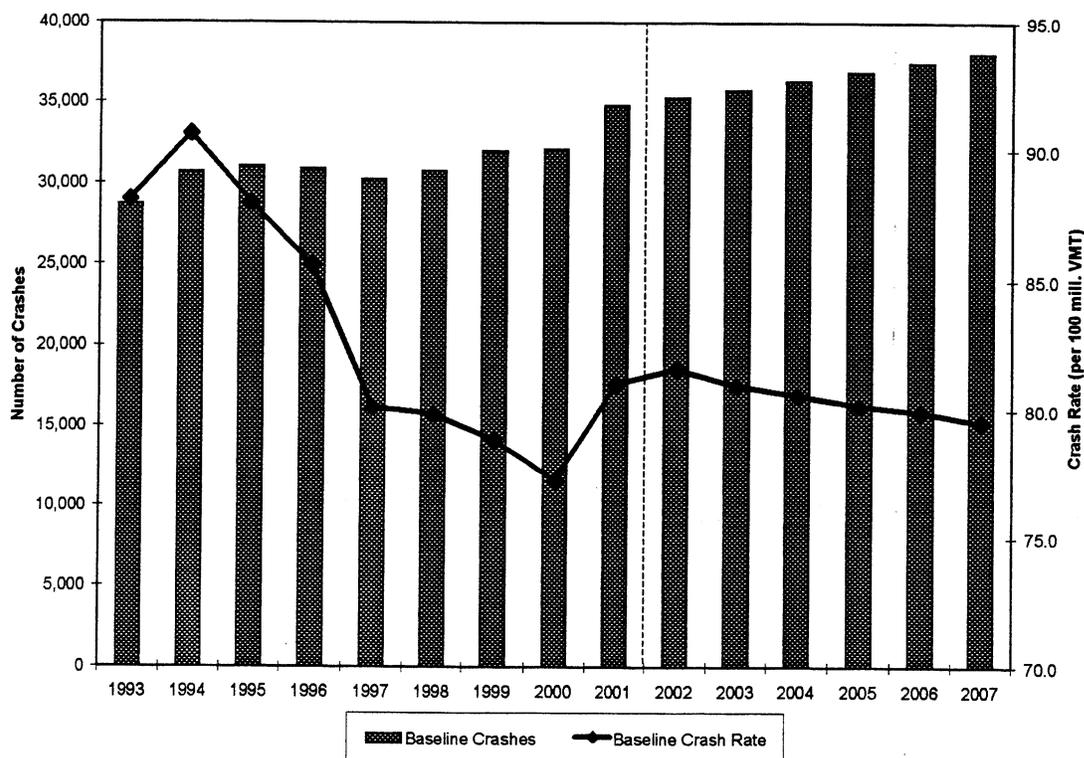
There were a total of 34,807 serious crashes (injury & fatality) in 2001, which is the last complete year of data available for analysis. The baseline forecast was developed and modeled at the neighborhood (Census block group) level and was based on a regression model primarily driven by forecasts of growth in households and the Latino/Hispanic population.

Other variables included in the baseline model that were not changed over the 2002-2007 period were average commute time (2000 Census), average age of residents, average household size and the degree of urbanization of the neighborhood (i.e., urban, suburban, town, rural, etc.). Thus, for each year, the model predicted the number of serious crashes that would be expected given the current-year number of households and Latino/Hispanic population, together with several general demographic and lifestyle variables describing the type of neighborhood.

The results of the baseline forecast show continued growth in serious crashes until 2007, when the total would reach 38,061. The corresponding crash rate (crashes per 100 million vehicle miles traveled), which declined dramatically between 1993 and 2000 and then spiked in 2001, is expected to decline only slightly, to 79.5 – still well above the 2000 level of 77.2.

Exhibit XII-7.

Baseline Forecast: Injury/Fatality Crashes and Crash Rates to 2007

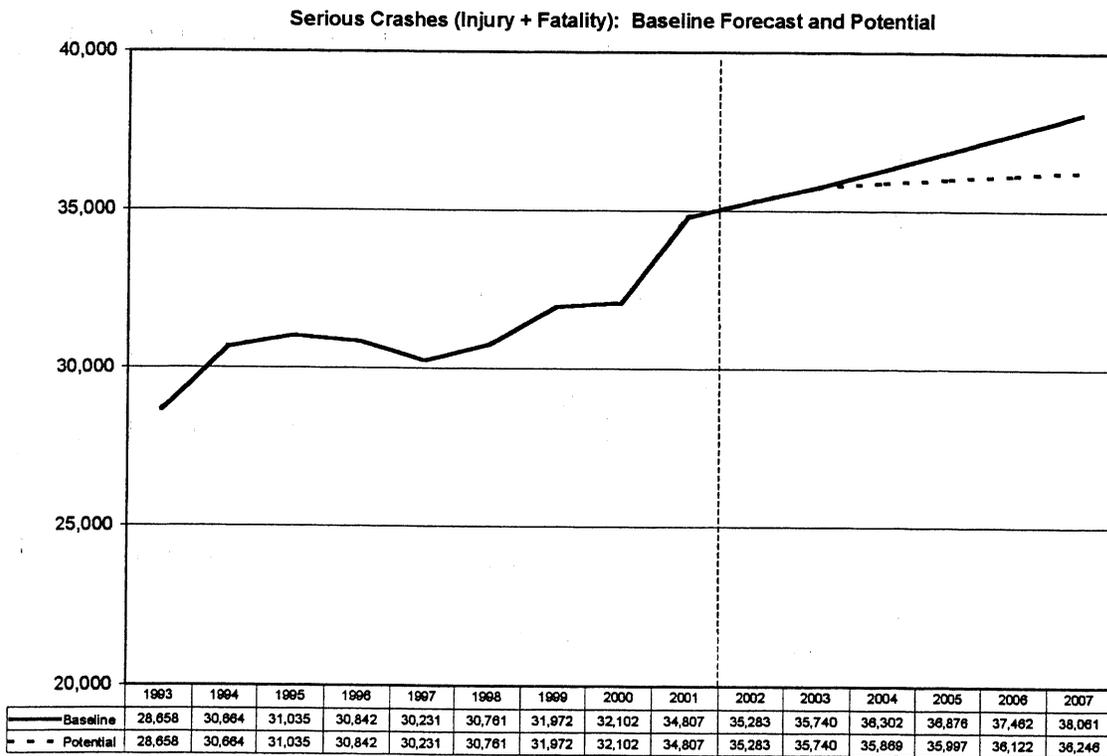


Crash Reduction Simulation

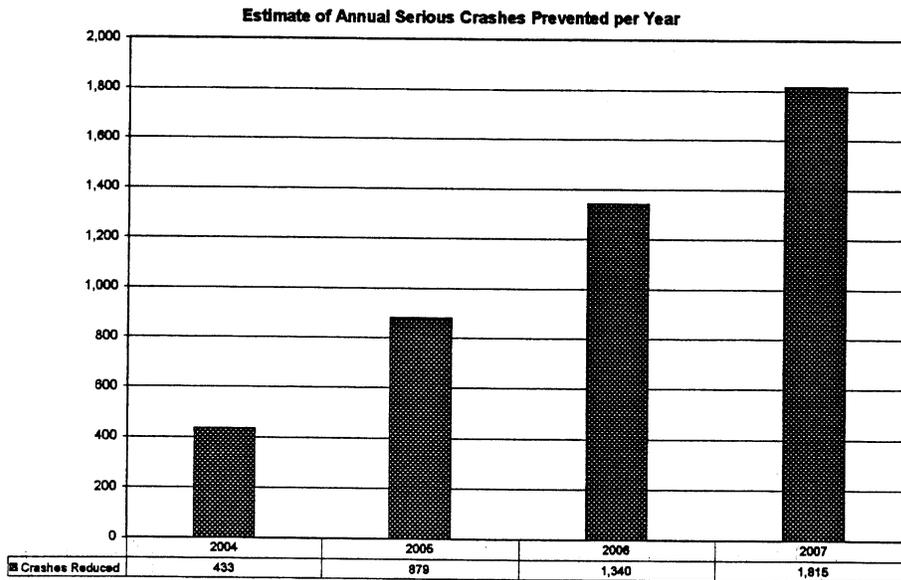
An alternative potential forecast was developed using the crash data and input from the survey on likelihood to change behavior (given implementation of the program factors identified above) and who said in the survey they would use seat belts more often, or would change a driving-related behavior such as speeding. The analysis assumed that the full effects of changes in CDOT strategies would not be felt until 2007, so the estimated reduction in crashes was phased-in beginning in 2004.

By 2007, implementation of the program factors identified in each of the four high-risk driver models would provide a **“potential scenario”** resulting in **1,815 fewer crashes than under the baseline scenario**.

Exhibit XII-8.
Projected Crashes Baseline vs. Potential Scenarios

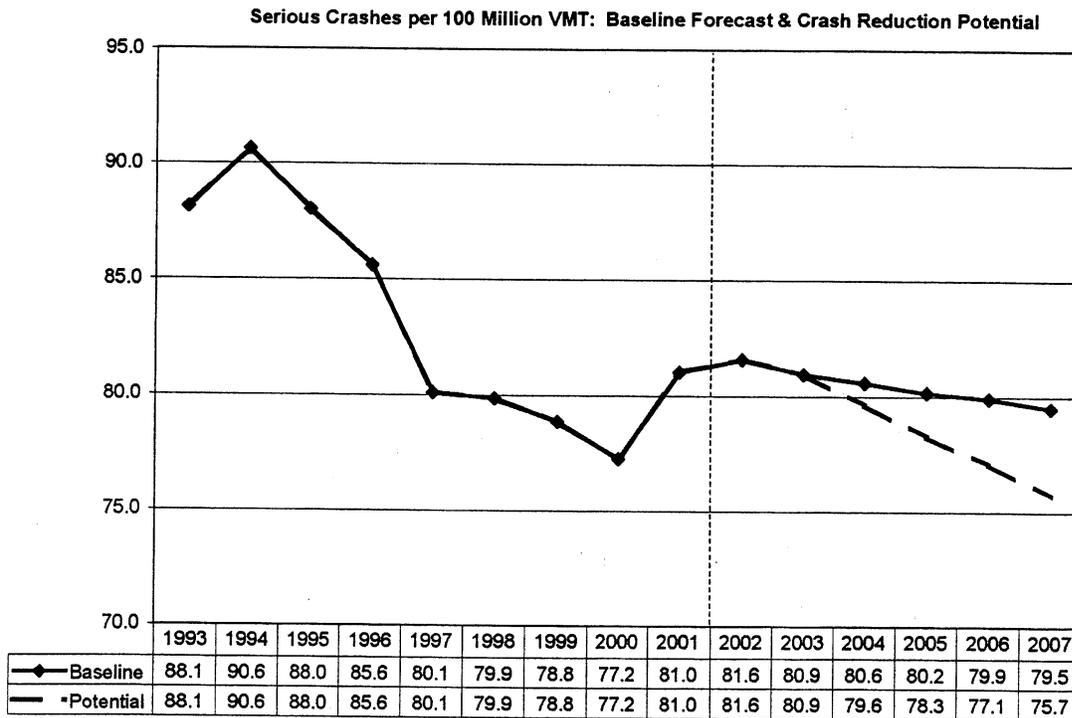


**Exhibit XII-9.
Estimate of Annual Serious Crashes Prevented per Year Under Potential Scenario**



Expressed in terms of crash rates, the **potential scenario** shows a steeper decline in crash rates, from 81.0 in 2001 to 75.7 by 2007.

**Exhibit XII-10.
Decline in Crash Rates under Baseline vs. Potential Scenarios**



Conclusions

The following conclusions were based on an analysis of the research findings:

The crash reduction model shows a potential annual reduction of more than 1,800 injury and fatality crashes by 2007. This translates into a decrease in crashes per 100 million VMT from 81.0 in 2001 to 75.7 by 2007.

Based on the results of the driver-behavior models, it is clear that motivating the average driver to take a full drivers-training course would make a large difference in driving behavior. Interest in such a program is strong among the high-risk driver segments studied, and several incentives tested appear to be sufficiently motivating. This factor was a predictor in all four models. This suggests that CDOT look at ways to encourage or sponsor new driving courses or related programs, and include effective incentives and marketing.

The incentive of getting a reduction in the next traffic ticket in exchange for taking either a refresher course or a full drivers-training course was also a very strong predictor of change in behavior, and it appeared in three of the four models. This finding suggests CDOT consider the logistics and feasibility of implementing this incentive in order to encourage more training for high-risk drivers. While it may not be possible in the near term, it should be considered as a possible longer-term option, technology and systems permitting.

The next five program-related ideas that were highly predictive of behavior change included the following (specific models listed in brackets):

- [Young & Aggressive] Incentive to take drivers training: getting points reduced by the State
- [Alcohol & Aggressive] Interest in a free CD or videotape with guest speaker talking and demonstrating tips on driving safety
- [Occupant Protection] Having a fire station in the area let them drive in, have their vehicle checked for free, and receive safety information
- [Occupant Protection] Incentive to take drivers training: having employers offer to pay the cost
- [Aggressive] Incentive to take drivers training: discount on vehicle license tabs

The options of having points reduced by the State and granting a discount on vehicle license tabs should be considered – if not in the near term then as longer-term possibilities, which may require changes or upgrades in government databases and systems.

Three programs not listed above that were specifically aimed at the alcohol segment and were highly predictive of change among those drivers included:

- Being able to park their car in a ticket-free zone nearby after leaving a bar or tavern
- Learning more about the costs of DUIs.
- Hearing that one's friends were being safer about drinking and driving

As mentioned, the “one-time hanger card parking permit” concept should also be strongly considered. This feature was one of the top-rated programs but its appeal was so broad-based (based on its unusually high Kurtosis score) that it did not have the segmentation needed to indicate influence within the regression model.

Each of these concepts or themes could be incorporated into a specific program or marketing message and would be effective in reaching this audience.

The remaining factors that were included in one or more of the models included such items as encouraging community organizations such as schools or churches to have guest speakers on driving safety. While it was not a top predictor, this suggestion was important for some, both in the young driver and aggressive driver segments. Obtaining a discount on renewing a driver’s license as an incentive for further training was included in the models as a predictor and was also important to a certain small group of drivers. Finally, the concept of having community organizations hand out a flyer on seat belt safety was a predictor for the occupant-protection segment, appealing to a small group of drivers.

One of the considerations in applying these results to CDOT’s current situation is that with the exception of the top two ideas (full drivers-training course and a reduced ticket), the other 11 suggestions would trigger change among a limited number of those in the target market. This means that in order to realize the potential reduction in crashes indicated in this research, CDOT will need to utilize a range of the programs and initiatives included in the model rather than focus on only one or two. For this, partnering with the private and nonprofit sectors where possible – as has already been suggested in several of the ideas tested – would help minimize costs.

Section XIII: Discussion of Implications, Strategic Recommendations

1. Continue the emphasis on improving the behavior of high-risk drivers – including young drivers, impaired drivers, occupant protection non-compliers, and aggressive drivers – targeting these drivers in accord with findings from the PRIZM and survey demographic data:
 - For young drivers, target those in military households and in the more affluent, metro-suburban households.
 - For reaching impaired drivers, focus on messages and connections with less-well-to-do individuals.
 - For dealing with occupant protection non-compliance, consider special programs for small towns and rural areas.
 - In trying to reach aggressive drivers, recognize that 37.5 percent of the drivers have children living at home with them; communicate with those drivers in “family” terms about how aggressive driving behaviors are predictors of the driver becoming involved in serious accidents.

Considerable demographic detail about PRIZM clusters is provided in Section VIII and in the beginning of Section XII, regarding the survey sampling.

2. Look at ways to encourage or sponsor new drivers training courses or related programs, and foster effective incentives and marketing. It is clear that motivating the average driver to take a full drivers-training course would make a large difference in driving behavior. Interest in such a program is strong among the high-risk driver segments studied, and several incentives tested appear to be sufficiently motivating.

The entire primary research process – interviews, focus groups, and the telephone survey – found a clear, consistently evident interest on the part of Colorado drivers in drivers training, under the right conditions.

This includes advocating stronger implementation of drivers training programs for different age groups and in different forms, especially programs that would allow the graduate to qualify for discounts on car insurance, or would provide other incentives.

Focus group participants strongly advocated reviving drivers training in schools. While this may be a difficult budget issue statewide at this time, it seems to be a glaring problem that many citizens would like to see rectified soon.

While it may not be possible in the near term, the incentive of providing a reduction in the next traffic-ticket fine in exchange for taking either a refresher course or a full driving course was also a very strong predictor of change in behavior and should be considered as a possible longer-term option, technology and systems permitting. This incentive appeared in three of the four high-risk driver parts of the crash-reduction model.

It may be tempting to dismiss this incentive as “impractical” and “too hard to administer,” but the possible reduction in crashes and promotion of safe driving in many ways should not be overlooked. At least part of the problem is “only” an information-systems issue, and may be more easily dealt with in the near future than would seem possible at this point.

3. Consider implementing five other programs in the crash-reduction model, although some of these would become practical only after changes or upgrades in government databases and systems.
 - Providing a favorable “points” allowance to new graduates of drivers training programs, as an incentive for taking such training (a strong incentive among young and aggressive drivers).
 - Giving drivers a free CD or videotape demonstrating tips on driving safety (especially for impaired and aggressive drivers).
 - Having fire stations check occupant-protection equipment free of charge and provide the driver with free safety information (for occupant protection non-compliance).
 - As an incentive for taking drivers training, encouraging employers to pay the cost (for occupant protection non-compliance).
 - Advocating a discount on vehicle registration/license-plate tabs (especially for aggressive drivers) as an incentive for taking drivers training.

Again, these programs require improvements in State and local government information systems. The employer-pay “program” is different in that it entails a public-private partnership effort that may be unfamiliar or go against tradition, or recall experiences in the past when such a program just didn’t work. On such matters, it’s not so much the “idea,” it seems, but the way it is *implemented* that makes all the difference.

Some companies such as Qwest, headquartered in Denver, may be a candidate either for such a program statewide if they do not have it already, or to advocate such a program to other large companies. A company that may be a strong partner on a more local basis is Swift & Co. in Greeley.

4. Feature firefighters, or other Emergency Medical Services professionals, as spokespersons in advertising about safe driving.

Officials at NHTSA in Washington, D.C., would be interested in this finding, and may feel it has nationwide implications.

In Colorado, using firefighters as traffic safety advocates may be especially effective in rural areas, especially in connection with persuading “nonbelievers” to wear seatbelts. Creating new and different programs that would work in rural areas is a priority with NHTSA.

5. To take the fight against traffic fatalities to the next level, reach out to rural drivers with traffic-safety education and information campaigns that fit their lifestyle and point of view, perhaps featuring rural firefighters (as above), who are volunteers and neighbors, as spokespersons for traffic safety.
6. Develop a program to place traffic safety speakers (firefighters, professional drivers, traffic safety professionals) at community groups throughout the state to talk about road and highway safety, including tips on handling vehicles in unfavorable conditions.

Hearing guest speakers was a favored item in the telephone survey of high-risk drivers, and a significant element in the crash-reduction model.

7. Consider a program to provide “family” traffic safety information to individuals expecting the birth of a first child, perhaps through medical care providers before the time of birth.

This recommendation stems from situational communication theory and relates to programs already in place in some natal hospitals across the country. There may be other fruitful transition times that become evident as officials look further into implementing such programs.

8. Look into providing further information and reminders in such specific situations as warnings issued by officers (during which officers could add a safety message in accord with seasonal themes), and put more reminder signs in areas where drivers are likely to have begun driving without putting on a seat belt.

These suggestions stem from focus group participants trying to visualize how to make more of existing opportunities for officer-driver communication, and to use reminder signs for well-intentioned drivers who tend to forget to wear seat belts.

9. In dealing with impaired drivers, strongly consider implementing the one-time hanger-card parking permit that drinking establishments could make available to would-be drunk drivers so they can leave their cars without having them ticketed, and return home by other means. In addition, consider three other program elements that were specifically aimed at the alcohol segment and were highly predictive of change among those drivers:
 - Being able to park their car in a ticket-free zone nearby after leaving a bar or tavern.
 - Learning more about the costs of DUIs – that is, provide more education on this topic.
 - Hearing that friends were being safer about drinking and driving: consider social marketing that emphasizes such communication through networks of friends.

The hanger-card idea appears to be all-new, and perhaps so is the ticket-free zone. Education on the costs of DUIs may have been implemented; but, even if so, it deserves further emphasis, based on the survey findings and the results of the focus groups.

It appears that “social marketing” about being safer in regard to drinking and driving has had good effects at the college level, and may be successful among more organized groups, associations, and other social networks.

10. Consider the remaining significant factors included in the crash-reduction modeling:
 - Encouraging community organizations such as schools and churches to have guest speakers on driving safety; while this was not a top predictor, it was important for some drivers, both in the young driver and aggressive driver segments.
 - Providing a discount on renewing a driver’s license as an incentive for further training; as a predictor this was important to a certain small group of drivers.
 - Having community organizations hand out a flyer on seat-belt safety; this was a predictor for the occupant-protection segment, appealing to a small group of drivers.
11. A summary and major point stemming from the crash-reduction modeling is that in order to realize the potential reduction in crashes indicated in this research, CDOT would need to utilize a range of the programs and initiatives studied in this research project rather than focusing on only one or two.

Only two ideas (taking a full drivers-training course, with the incentive of a reduced ticket) were widely favored. The other 11 suggestions would trigger change only among a limited number of those in the target markets.

Although CDOT’s Integrated Safety Plan always considers how a variety of programs should fit together, the point is to consider combining a number of the programs covered in the predictive crash-reduction model, because their effectiveness in working together is significantly evident in the model.

12. Provide further information to Colorado’s drivers about current occupant-protection requirements, since many in the occupant-protection focus groups expressed confusion about these matters.

There are many factors in the law, by age and type of vehicle, and – although drivers are confident they know the law – the focus groups and the survey found significant gaps in drivers’ awareness and understanding of occupant-protection rules and regulations.

13. As a general observation, consider partnering with the private and nonprofit sectors where possible to help minimize costs and maximize the implementation and appeal of safety programs.

An example of corporate interest in such matters was the cooperation provided by Qwest in this program of research.

This applies not only to drivers training, as discussed above, but to several of the programs studied in this research and perhaps already under consideration by CDOT.

14. There is positive evidence, in terms of driver perceptions, about the continued effectiveness of the campaign themes, “The Heat Is On” and “Click It or Ticket,” and the value of humor and direct messages in such themes as “DUI – The Endless Hangover.” These themes merit continued use.
15. To help reduce rural fatalities, consider installing stop lights at four-way-stop intersections as fatality accidents are reported, not only for added visibility but especially to signify that “this is a killer intersection.” The change should be accompanied by appropriate public relations information or marketing efforts to make drivers aware of the problem.

This recommendation stems from comments by focus group participants. The program would call attention to the problem, especially for locals who take these intersections for granted, and also provide for phasing in stop lights, where appropriate, in an affordable way.

16. Along with the above programs, maintain a strong emphasis on law enforcement to reduce driving infractions in general, and to control Colorado’s drivers, particularly in regard to speeding.

Focus group participants consistently noted that enforcement – along with “positive” programs – is essential to achieve and reinforce safe driving in Colorado.

Appendix A: Analysis Methodology

CDOT provided detailed information on 2001 crashes that took place in Colorado and the addresses of drivers involved in these crashes. There were a total of 131,021 records in the 2000 crash database that ranged from property damage only crashes—which made up nearly three-quarters of all records—to injury crashes in which someone was killed or injured.

The geographic segmentation analyses in this report only focus on crashes in which someone was killed or injured, as data is more complete and consistent for these records. The address database included 221,978 addresses. Out-of-state addresses were excluded from the analyses, as were records without an address city, state or zip code. The address and crash databases were linked using corresponding serial numbers and driver vehicle numbers, resulting in a table with 58,964 records of injury crash drivers.

The address table was geocoded using GIS software to verify the city and/or county where injury crash drivers live. All Colorado counties were included in this process and only cities with 2000 populations of 10,000 or more were assigned to city addresses. Some addresses, especially those in rural areas, could not be matched because of P.O. boxes, rural route numbers and other problems.

Data were analyzed using a consistent set of criteria to define varying types of high-risk drivers. For the age analyses, the “young driver” category consisted of drivers between the age of 16 and 20 years old.

Drivers were impaired drivers if their driving record included one of four criteria:

1. Alcohol was involved,
2. Prescription drugs or medication were involved,
3. Illegal drugs were involved, or
4. Alcohol and drugs were involved.

The occupant protection analyses only included crashes in which a driver was either killed or had injuries that were evident or incapacitating and whose seat belt use was known. Recorded seat belt use for these incapacitating injury crash drivers is believed to be more reliable than that collected for less severe crashes.

Data Sources

Crash Data

Crash data comes from crash reports completed by officers investigating crashes. By Colorado law, all crashes resulting in a fatality, injury or property damage in excess of \$1,000 must be investigated. The resulting reports are submitted to the Colorado Department of Revenue, Motor Vehicle Division (MVD), which is the legal custodian of records for crash reports. The Safety & Engineering Branch of CDOT then acquires the data from the Motor Vehicle Division.

Fatal Analysis Reporting System (FARS)

Crashes that result in a fatality are investigated in greater detail in accordance with this federally-funded program. Information includes more detailed information about drivers, as well as information about other occupants. This is the best source of reliable data about a driver's alcohol use. The database also gives information about the make and model of vehicles involved.

Population Data

Population data come from the Colorado Division of Local Government.

Vehicle miles traveled

The OTS provided the number of vehicle miles traveled (VMT) statewide for the years 1975 through 2001, with the exception of 1985 and 1986. These two years, 1985 and 1986, were obtained from the Federal Highway Administration, Office of Highway Information Management, *Highway Statistics Summary to 1995*.

Licensed drivers

The MVD provided the number of licensed drivers statewide as of December 2001 by gender and by age.

Appendix B. Drivers Involved in Injury Crashes, 2001, by City of Residence

| 2001 Rank | 2000 Rank | City of Residence | 2001 Drivers in Injury Crashes | 2000 16+ Population | Percentage of the 16+ Population Involved in Injury Crashes | Index of Drivers in Injury Crashes |
|-----------|-----------|-------------------------|--------------------------------|---------------------|---|------------------------------------|
| 1 | 8 | Littleton | 1,107 | 32,099 | 3.4% | 2.05 |
| 2 | 18 | Golden | 480 | 14,144 | 3.4% | 2.02 |
| 3 | 7 | Englewood | 829 | 26,053 | 3.2% | 1.89 |
| 4 | 13 | Brighton | 491 | 15,553 | 3.2% | 1.88 |
| 5 | 20 | Castle Rock | 407 | 14,382 | 2.8% | 1.68 |
| 6 | 35 | Montrose | 268 | 9,726 | 2.8% | 1.64 |
| 7 | 2 | Commerce City | 419 | 15,247 | 2.7% | 1.64 |
| 8 | 27 | Parker | 410 | 16,153 | 2.5% | 1.51 |
| 9 | 1 | Aurora | 4,950 | 208,074 | 2.4% | 1.42 |
| 10 | 6 | Longmont | 1,240 | 53,403 | 2.3% | 1.38 |
| 11 | 3 | Pueblo | 1,772 | 79,548 | 2.2% | 1.33 |
| 12 | 19 | Loveland | 846 | 38,555 | 2.2% | 1.31 |
| 13 | 12 | Broomfield | 602 | 28,197 | 2.1% | 1.27 |
| 14 | 9 | Thornton | 1,260 | 60,109 | 2.1% | 1.25 |
| 15 | 4 | Northglenn | 498 | 24,122 | 2.1% | 1.23 |
| 16 | 5 | Denver | 9,176 | 445,311 | 2.1% | 1.23 |
| 17 | 31 | Grand Junction | 681 | 34,210 | 2.0% | 1.18 |
| 18 | 14 | Colorado Springs | 5,436 | 275,522 | 2.0% | 1.17 |
| 19 | 15 | Arvada | 1,517 | 78,500 | 1.9% | 1.15 |
| 20 | 10 | Fountain | 202 | 10,475 | 1.9% | 1.15 |
| 21 | 33 | Durango | 224 | 11,952 | 1.9% | 1.12 |
| 22 | 22 | Lafayette | 309 | 17,494 | 1.8% | 1.05 |
| 23 | 24 | Greeley | 1,034 | 59,303 | 1.7% | 1.04 |
| 24 | 16 | Lakewood | 1,970 | 115,719 | 1.7% | 1.01 |
| 25 | 25 | Boulder | 1,344 | 82,205 | 1.6% | 0.97 |
| 26 | 17 | Westminster | 1,249 | 76,780 | 1.6% | 0.97 |
| 27 | 11 | Wheat Ridge | 434 | 26,716 | 1.6% | 0.97 |
| 28 | 34 | Canon City | 190 | 12,225 | 1.6% | 0.92 |
| 29 | 30 | Federal Heights | 137 | 9,333 | 1.5% | 0.87 |
| 30 | 28 | Louisville | 185 | 14,038 | 1.3% | 0.78 |
| 31 | 26 | Sterling | 108 | 8,782 | 1.2% | 0.73 |
| 32 | 23 | Greenwood Village | 78 | 8,188 | 1.0% | 0.57 |
| 33 | 21 | Fort Collins | 589 | 95,854 | 0.6% | 0.37 |
| 34 | 29 | Fort Morgan | 38 | 8,085 | 0.5% | 0.28 |
| 35 | 32 | Trinidad | 0 | 7,075 | 0.0% | 0.00 |
| | | Total Large City | 40,480 | 2,033,132 | 2.0% | 1.17 |
| | | Total State | 58,964 | 3,508,609 | 1.7% | 1.00 |

Appendix B. Drivers Involved in Injury Crashes by County of Residence, 2001-2000

| 2001 Rank | 2000 Rank | County of Residence | Drivers In Injury Crashes | | Percent Change | 16+ Population | | Percentage of the 16+ Population Involved in Injury Crashes | | Index of Drivers in Injury Crashes | |
|-----------|-----------|---------------------|---------------------------|-------|----------------|----------------|---------|---|-------|------------------------------------|------|
| | | | 2001 | 2000 | | 2001 | 2000 | 2001 | 2000 | 2001 | 2000 |
| 1 | 5 | Adams | 6084 | 5,092 | 19% | 279,625 | 279,625 | 2.18% | 1.82% | 1.26 | 1.14 |
| 2 | 2 | Pueblo | 2298 | 2,191 | 5% | 111,830 | 111,830 | 2.05% | 1.96% | 1.19 | 1.23 |
| 3 | 4 | Arapahoe | 7585 | 7,204 | 5% | 384,121 | 384,121 | 1.97% | 1.88% | 1.15 | 1.18 |
| 4 | 3 | Denver | 8643 | 8,807 | -2% | 444,286 | 444,286 | 1.95% | 1.98% | 1.13 | 1.24 |
| 5 | 10 | El Paso | 7395 | 6,513 | 14% | 403,376 | 403,376 | 1.83% | 1.61% | 1.06 | 1.01 |
| 6 | 14 | Weld | 2524 | 2,114 | 19% | 145,822 | 145,822 | 1.73% | 1.45% | 1.01 | 0.91 |
| 7 | 11 | Jefferson | 7022 | 6,636 | 6% | 414,686 | 414,686 | 1.69% | 1.60% | 0.98 | 1.00 |
| 8 | 9 | Gilpin | 65 | 64 | 2% | 3,944 | 3,944 | 1.65% | 1.62% | 0.96 | 1.02 |
| 9 | 12 | Boulder | 3896 | 3,824 | 2% | 237,065 | 237,065 | 1.64% | 1.61% | 0.95 | 1.01 |
| 10 | 6 | Elbert | 261 | 266 | -2% | 15,953 | 15,953 | 1.64% | 1.67% | 0.95 | 1.04 |
| 11 | 24 | Alamosa | 189 | 155 | 22% | 11,631 | 11,631 | 1.62% | 1.33% | 0.94 | 0.84 |
| 12 | 19 | Larimer | 3307 | 2,927 | 13% | 205,519 | 205,519 | 1.61% | 1.42% | 0.93 | 0.89 |
| 13 | 21 | Archuleta | 129 | 102 | 26% | 8,304 | 8,304 | 1.55% | 1.23% | 0.90 | 0.77 |
| 14 | 15 | Mesa | 1448 | 1,382 | 5% | 94,016 | 94,016 | 1.54% | 1.47% | 0.89 | 0.92 |
| 15 | 17 | Douglas | 2180 | 1,816 | 20% | 142,822 | 142,822 | 1.53% | 1.27% | 0.89 | 0.80 |
| 16 | 8 | Teller | 255 | 269 | -5% | 17,012 | 17,012 | 1.50% | 1.58% | 0.87 | 0.99 |
| 17 | 7 | Clear Creek | 114 | 128 | -11% | 7,643 | 7,643 | 1.49% | 1.67% | 0.87 | 1.05 |
| 18 | 29 | Montrose | 376 | 299 | 26% | 26,582 | 26,582 | 1.41% | 1.12% | 0.82 | 0.70 |
| 19 | 26 | Moffat | 138 | 123 | 12% | 9,976 | 9,976 | 1.38% | 1.23% | 0.80 | 0.77 |
| 20 | 33 | Prowers | 145 | 120 | 21% | 10,497 | 10,497 | 1.38% | 1.14% | 0.80 | 0.72 |
| 21 | 50 | Lake | 81 | 48 | 69% | 5,962 | 5,962 | 1.36% | 0.81% | 0.79 | 0.50 |
| 22 | 13 | Park | 163 | 181 | -10% | 12,117 | 12,117 | 1.35% | 1.49% | 0.78 | 0.94 |
| 23 | 25 | Montezuma | 242 | 229 | 6% | 18,319 | 18,319 | 1.32% | 1.25% | 0.77 | 0.78 |
| 24 | 22 | Garfield | 455 | 445 | 2% | 34,830 | 34,830 | 1.31% | 1.28% | 0.76 | 0.80 |
| 25 | 20 | Morgan | 263 | 270 | -3% | 20,210 | 20,210 | 1.30% | 1.34% | 0.76 | 0.84 |
| 26 | 28 | Summit | 262 | 235 | 11% | 20,364 | 20,364 | 1.29% | 1.15% | 0.75 | 0.72 |
| 27 | 1 | San Juan | 6 | 10 | -40% | 472 | 472 | 1.27% | 2.12% | 0.74 | 1.33 |
| 28 | 58 | Kiowa | 16 | 8 | 100% | 1,268 | 1,268 | 1.26% | 0.63% | 0.73 | 0.40 |
| 29 | 35 | Washington | 48 | 41 | 17% | 3,820 | 3,820 | 1.26% | 1.07% | 0.73 | 0.67 |
| 30 | 27 | Otero | 192 | 192 | 0% | 15,340 | 15,340 | 1.25% | 1.25% | 0.73 | 0.78 |
| 31 | 47 | Ouray | 38 | 25 | 52% | 3,121 | 3,121 | 1.22% | 0.80% | 0.71 | 0.50 |
| 32 | 18 | Grand | 123 | 145 | -15% | 10,448 | 10,448 | 1.18% | 1.39% | 0.68 | 0.87 |
| 33 | 37 | Las Animas | 145 | 129 | 12% | 12,393 | 12,393 | 1.17% | 1.04% | 0.68 | 0.65 |
| 34 | 23 | Conejos | 71 | 80 | -11% | 6,097 | 6,097 | 1.16% | 1.31% | 0.68 | 0.82 |

| | | | | | | | | | | | | |
|----|----|--------------------|---------------|---------------|------|------------------|------------------|------------------|--------------|--------------|------|------|
| 35 | 44 | Eagle | 387 | 298 | 30% | 34,056 | 34,056 | 34,056 | 1.14% | 0.88% | 0.66 | 0.55 |
| 36 | 39 | Costilla | 33 | 29 | 14% | 2,921 | 2,921 | 2,921 | 1.13% | 0.99% | 0.66 | 0.62 |
| 37 | 63 | Cheyenne | 19 | 6 | 217% | 1,698 | 1,698 | 1,698 | 1.12% | 0.35% | 0.65 | 0.22 |
| 38 | 60 | Sedgwick | 24 | 13 | 85% | 2,181 | 2,181 | 2,181 | 1.10% | 0.60% | 0.64 | 0.37 |
| 39 | 42 | Phillips | 38 | 33 | 15% | 3,458 | 3,458 | 3,458 | 1.10% | 0.95% | 0.64 | 0.60 |
| 40 | 55 | Rio Grande | 104 | 69 | 51% | 9,497 | 9,497 | 9,497 | 1.10% | 0.73% | 0.64 | 0.46 |
| 41 | 46 | Lincoln | 51 | 41 | 24% | 4,888 | 4,888 | 4,888 | 1.04% | 0.84% | 0.61 | 0.53 |
| 42 | 40 | Fremont | 404 | 378 | 7% | 38,770 | 38,770 | 38,770 | 1.04% | 0.97% | 0.61 | 0.61 |
| 43 | 16 | Custer | 30 | 41 | -27% | 2,976 | 2,976 | 2,976 | 1.01% | 1.38% | 0.59 | 0.86 |
| 44 | 30 | Rio Blanco | 47 | 54 | -13% | 4,670 | 4,670 | 4,670 | 1.01% | 1.16% | 0.58 | 0.72 |
| 45 | 38 | Saguache | 45 | 47 | -4% | 4,614 | 4,614 | 4,614 | 0.98% | 1.02% | 0.57 | 0.64 |
| 46 | 36 | Yuma | 72 | 80 | -10% | 7,510 | 7,510 | 7,510 | 0.96% | 1.07% | 0.56 | 0.67 |
| 47 | 52 | Delta | 217 | 168 | 29% | 22,741 | 22,741 | 22,741 | 0.95% | 0.74% | 0.55 | 0.46 |
| 48 | 48 | Huerfano | 61 | 53 | 15% | 6,439 | 6,439 | 6,439 | 0.95% | 0.82% | 0.55 | 0.52 |
| 49 | 41 | Dolores | 14 | 15 | -7% | 1,488 | 1,488 | 1,488 | 0.94% | 1.01% | 0.55 | 0.63 |
| 50 | 59 | Kit Carson | 58 | 38 | 53% | 6,181 | 6,181 | 6,181 | 0.94% | 0.61% | 0.54 | 0.39 |
| 51 | 31 | Logan | 157 | 183 | -14% | 17,322 | 17,322 | 17,322 | 0.91% | 1.06% | 0.53 | 0.66 |
| 52 | 49 | Routt | 147 | 127 | 16% | 16,527 | 16,527 | 16,527 | 0.89% | 0.77% | 0.52 | 0.48 |
| 53 | 45 | Chaffee | 115 | 117 | -2% | 13,727 | 13,727 | 13,727 | 0.84% | 0.85% | 0.49 | 0.53 |
| 54 | 34 | Pitkin | 107 | 137 | -22% | 12,931 | 12,931 | 12,931 | 0.83% | 1.06% | 0.48 | 0.66 |
| 55 | 56 | San Miguel | 47 | 37 | 27% | 5,875 | 5,875 | 5,875 | 0.80% | 0.63% | 0.46 | 0.39 |
| 56 | 54 | Jackson | 9 | 9 | 0% | 1,282 | 1,282 | 1,282 | 0.70% | 0.70% | 0.41 | 0.44 |
| 57 | 43 | Bent | 32 | 44 | -27% | 4,669 | 4,669 | 4,669 | 0.69% | 0.94% | 0.40 | 0.59 |
| 58 | 51 | Crowley | 28 | 36 | -22% | 4,573 | 4,573 | 4,573 | 0.61% | 0.79% | 0.36 | 0.49 |
| 59 | 62 | Hinsdale | 4 | 3 | 33% | 656 | 656 | 656 | 0.61% | 0.46% | 0.35 | 0.29 |
| 60 | 61 | Baca | 22 | 18 | 22% | 3,612 | 3,612 | 3,612 | 0.61% | 0.50% | 0.35 | 0.31 |
| 61 | 57 | Gunnison | 68 | 84 | -19% | 11,691 | 11,691 | 11,691 | 0.58% | 0.72% | 0.34 | 0.45 |
| 62 | 53 | Mineral | 4 | 5 | -20% | 696 | 696 | 696 | 0.57% | 0.72% | 0.33 | 0.45 |
| 63 | 32 | La Plata | 81 | 402 | -80% | 36,677 | 36,677 | 36,677 | 0.22% | 1.10% | 0.13 | 0.69 |
| | | Total State | 58,964 | 54,635 | | 3,423,797 | 3,423,797 | 3,423,797 | 1.72% | 1.60% | | |

Note: 2001 16+ population counts were used for both 2000 and 2001 years

Appendix C. Crashes Occurring in Colorado Cities, 2001-2000

| City Name | County Name | 2001 | | | | 2000 | | | | % Change |
|-------------|-------------|---------|-------------|---------|---------------|---------|---------|---------|---------------|----------|
| | | PDO | Injury Only | Fatal | Total Crashes | PDO | Injury | Fatal | Total Crashes | |
| | | Crashes | Crashes | Crashes | Crashes | Crashes | Crashes | Crashes | Crashes | |
| Aguilar | Las Animas | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | -100% |
| Akron | Washington | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | ** |
| Alamosa | Alamosa | 255 | 61 | 1 | 317 | 211 | 55 | 0 | 266 | 19% |
| Alma | Park | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | ** |
| Antonito | Conejos | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | ** |
| Arriba | Lincoln | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | -100% |
| Arvada | Adams | 41 | 6 | 0 | 47 | 49 | 18 | 0 | 67 | -30% |
| Arvada | Jefferson | 1,740 | 422 | 7 | 2,169 | 1,687 | 481 | 4 | 2,172 | 0% |
| Aspen | Pitkin | 353 | 30 | 0 | 383 | 323 | 29 | 0 | 352 | 9% |
| Ault | Weld | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | ** |
| Aurora | Adams | 984 | 395 | 6 | 1,385 | 892 | 434 | 4 | 1,330 | 4% |
| Aurora | Arapahoe | 4,288 | 1806 | 23 | 6,117 | 4,303 | 1,992 | 11 | 6,306 | -3% |
| Aurora | Denver | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | ** |
| Avon | Eagle | 101 | 17 | 1 | 119 | 97 | 20 | 0 | 117 | 2% |
| Basalt | Eagle | 33 | 7 | 1 | 41 | 18 | 3 | 0 | 21 | 95% |
| Basalt | Park | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | ** |
| Basalt | Pitkin | 2 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | ** |
| Bayfield | La Plata | 5 | 5 | 0 | 10 | 6 | 0 | 0 | 6 | 67% |
| Bennett | Adams | 10 | 3 | 0 | 13 | 2 | 1 | 0 | 3 | 333% |
| Berthoud | Larimer | 79 | 12 | 0 | 91 | 77 | 15 | 0 | 92 | -1% |
| Berthoud | Weld | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | ** |
| Bethune | Kit Carson | 5 | 0 | 0 | 5 | 1 | 0 | 0 | 1 | 400% |
| Blackhawk | Gilpin | 27 | 10 | 0 | 37 | 38 | 7 | 0 | 45 | -18% |
| Blanca | Costilla | 5 | 0 | 0 | 5 | 1 | 1 | 0 | 2 | 150% |
| Blue River | Summit | 21 | 6 | 0 | 27 | 28 | 7 | 0 | 35 | -23% |
| Boone | Pueblo | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | -50% |
| Boulder | Boulder | 2,086 | 888 | 2 | 2,976 | 1,930 | 837 | 0 | 2,767 | 8% |
| Bow Mar | Arapahoe | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | ** |
| Brecknridge | Summit | 140 | 21 | 0 | 161 | 140 | 27 | 0 | 167 | -4% |
| Brighton | Adams | 530 | 100 | 5 | 635 | 517 | 113 | 5 | 635 | 0% |
| Broomfield | Adams | 173 | 66 | 0 | 239 | 127 | 51 | 2 | 180 | 33% |
| Broomfield | Boulder | 516 | 171 | 0 | 687 | 616 | 201 | 2 | 819 | -16% |
| Broomfield | Broomfield | 134 | 36 | 0 | 170 | 0 | 0 | 0 | 0 | ** |
| Broomfield | Jefferson | 79 | 25 | 2 | 106 | 59 | 28 | 0 | 87 | 22% |
| Broomfield | Weld | 2 | 4 | 1 | 7 | 0 | 0 | 0 | 0 | ** |
| Brush | Morgan | 22 | 7 | 0 | 29 | 26 | 8 | 0 | 34 | -15% |

| | | | | | | | | | | |
|------------------|-------------|--------|----|--------|--------|-------|----|--------|-------|------|
| Buena Vista | Chaffee | 1 | 0 | 2 | 3 | 1 | 1 | 1 | 5 | -60% |
| Burlington | Kit Carson | 39 | 0 | 44 | 41 | 4 | 0 | 0 | 45 | -2% |
| Calhan | Elbert | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | ** |
| Calhan | El Paso | 4 | 0 | 9 | 4 | 3 | 0 | 0 | 7 | 29% |
| Canon City | Fremont | 330 | 0 | 413 | 325 | 62 | 2 | 389 | 6% | |
| Carbondale | Garfield | 41 | 0 | 52 | 41 | 12 | 0 | 53 | -2% | |
| Castle Rock | Douglas | 344 | 0 | 447 | 296 | 80 | 1 | 377 | 19% | |
| Cedaredge | Delta | 2 | 0 | 3 | 0 | 2 | 0 | 2 | 50% | |
| Centennial | Arapahoe | 233 | 0 | 273 | 0 | 0 | 0 | 0 | ** | |
| Centennial | Douglas | 1 | 0 | 1 | 0 | 0 | 0 | 0 | ** | |
| Center | Saguache | 19 | 0 | 20 | 7 | 0 | 0 | 7 | 186% | |
| Central City | Gilpin | 12 | 0 | 15 | 21 | 1 | 0 | 22 | -32% | |
| Cheraw | Otero | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** | |
| Cherry Hills | Arapahoe | 231 | 0 | 300 | 232 | 54 | 0 | 286 | 5% | |
| Cheyenne Wells | Cheyenne | 11 | 0 | 12 | 11 | 0 | 0 | 11 | 9% | |
| Collbran | Mesa | 1 | 0 | 1 | 0 | 0 | 0 | 0 | ** | |
| Colorado Springs | El Paso | 8,965 | 19 | 12,144 | 8,515 | 2,973 | 28 | 11,516 | 5% | |
| Columbine Valley | Arapahoe | 13 | 0 | 19 | 11 | 5 | 0 | 16 | 19% | |
| Commerce City | Adams | 620 | 5 | 910 | 525 | 238 | 1 | 764 | 19% | |
| Cortez | Montezuma | 132 | 1 | 176 | 149 | 41 | 0 | 190 | -7% | |
| Craford | Delta | 1 | 0 | 1 | 0 | 0 | 0 | 0 | ** | |
| Craig | Moffat | 128 | 0 | 158 | 121 | 36 | 1 | 158 | 0% | |
| Creede | Mineral | 13 | 0 | 15 | 7 | 1 | 0 | 8 | 88% | |
| Crested Butte | Gunnison | 9 | 0 | 9 | 4 | 2 | 0 | 6 | 50% | |
| Cripple Creek | Teller | 32 | 0 | 36 | 21 | 6 | 0 | 27 | 33% | |
| Crowley | Crowley | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0% | |
| Dacono | Weld | 37 | 0 | 46 | 19 | 12 | 1 | 32 | 44% | |
| De Beque | Mesa | 0 | 0 | 0 | 2 | 0 | 0 | 2 | -100% | |
| Deer Trail | Arapahoe | 1 | 0 | 2 | 3 | 0 | 0 | 3 | -33% | |
| Del Norte | Rio Grande | 5 | 0 | 8 | 10 | 2 | 0 | 12 | -33% | |
| Delta | Delta | 1 | 0 | 1 | 0 | 1 | 1 | 2 | -50% | |
| Denver | Denver | 21,804 | 65 | 28,086 | 22,630 | 6,162 | 77 | 28,869 | -3% | |
| Dillon | Summit | 25 | 0 | 37 | 33 | 7 | 0 | 40 | -8% | |
| Dinosaur | Moffat | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 100% | |
| Dolores | Montezuma | 6 | 0 | 7 | 11 | 3 | 0 | 14 | -50% | |
| Dove Creek | Dolores | 2 | 0 | 3 | 3 | 1 | 0 | 4 | -25% | |
| Durango | La Plata | 432 | 0 | 535 | 407 | 123 | 2 | 532 | 1% | |
| Eagle | Eagle | 66 | 0 | 70 | 64 | 10 | 0 | 74 | -5% | |
| Eaton | Weld | 32 | 0 | 37 | 18 | 2 | 0 | 20 | 85% | |
| Edgewater | Jefferson | 46 | 0 | 74 | 61 | 15 | 2 | 78 | -5% | |
| Elizabeth | Elbert | 53 | 0 | 69 | 64 | 17 | 0 | 81 | -15% | |
| Empire | Clear Creek | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 200% | |
| Englewood | Arapahoe | 603 | 0 | 830 | 653 | 241 | 3 | 897 | -7% | |

| | | | | | | | | | | | |
|---------------------|-------------|-------|-----|----|-------|-------|-----|----|----|-------|------|
| Holyoke | Phillips | 18 | 3 | 0 | 21 | 10 | 1 | 0 | 0 | 11 | 91% |
| Hot Sulphur Springs | Grand | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0% |
| Hudson | Weld | 4 | 2 | 0 | 6 | 15 | 3 | 0 | 0 | 18 | -67% |
| Hugo | Lincoln | 1 | 0 | 0 | 1 | 3 | 1 | 0 | 0 | 4 | -75% |
| Idaho Springs | Clear Creek | 3 | 0 | 0 | 3 | 10 | 5 | 0 | 0 | 15 | -80% |
| Ignacio | La Plata | 11 | 4 | 0 | 15 | 5 | 9 | 0 | 0 | 14 | 7% |
| Iliff | Logan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** |
| Johnstown | Larmer | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | ** |
| Johnstown | Weld | 44 | 9 | 0 | 53 | 15 | 9 | 0 | 0 | 24 | 121% |
| Julesburg | Sedgwick | 3 | 0 | 0 | 3 | 7 | 1 | 0 | 0 | 8 | -63% |
| Keensburg | Weld | 13 | 0 | 0 | 13 | 6 | 2 | 0 | 0 | 8 | 63% |
| Kersey | Weld | 5 | 1 | 0 | 6 | 5 | 0 | 0 | 0 | 5 | 20% |
| Kim | Las Animas | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | ** |
| Kiowa | Elbert | 11 | 7 | 0 | 18 | 8 | 3 | 0 | 0 | 11 | 64% |
| Kit Carson | Cheyenne | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | ** |
| Kremmling | Grand | 2 | 0 | 0 | 2 | 4 | 1 | 0 | 0 | 5 | -60% |
| La Jara | Conejos | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** |
| La Junta | Otero | 92 | 27 | 0 | 119 | 76 | 38 | 0 | 0 | 114 | 4% |
| La Salle | Weld | 14 | 3 | 0 | 17 | 8 | 3 | 0 | 0 | 11 | 55% |
| La Veta | Huerfano | 2 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 200% |
| Lafayette | Boulder | 269 | 109 | 1 | 379 | 266 | 102 | 1 | 1 | 369 | 3% |
| Lake City | Hinsdale | 2 | 0 | 0 | 2 | 3 | 1 | 0 | 0 | 4 | -50% |
| Lakeside | Jefferson | 40 | 8 | 0 | 48 | 21 | 9 | 0 | 0 | 30 | 60% |
| Lakewood | Jefferson | 2,636 | 971 | 10 | 3,617 | 2,542 | 939 | 16 | 16 | 3,497 | 3% |
| Lamar | Douglas | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | ** |
| Lamar | Prowers | 131 | 35 | 0 | 166 | 128 | 34 | 1 | 1 | 163 | 2% |
| Larkspur | Douglas | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** |
| Las Animas | Bent | 29 | 4 | 0 | 33 | 24 | 10 | 0 | 0 | 34 | -3% |
| Leadville | Lake | 6 | 1 | 0 | 7 | 11 | 1 | 0 | 0 | 12 | -42% |
| Limon | Lincoln | 28 | 9 | 0 | 37 | 34 | 2 | 0 | 0 | 36 | 3% |
| Littleton | Arapahoe | 965 | 188 | 4 | 1,157 | 874 | 199 | 3 | 3 | 1,076 | 8% |
| Littleton | Douglas | 15 | 5 | 0 | 20 | 7 | 2 | 0 | 0 | 9 | 122% |
| Lochbuie | Weld | 9 | 3 | 0 | 12 | 3 | 1 | 0 | 0 | 4 | 200% |
| Log Lane Village | Morgan | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | ** |
| Lone Tree | Douglas | 84 | 17 | 0 | 101 | 21 | 4 | 0 | 0 | 25 | 304% |
| Longmont | Boulder | 1,400 | 498 | 2 | 1,900 | 1,381 | 479 | 5 | 5 | 1,865 | 2% |
| Longmont | Weld | 3 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | ** |
| Louisville | Boulder | 277 | 63 | 0 | 340 | 284 | 75 | 0 | 0 | 359 | -5% |
| Loveland | Larmer | 386 | 278 | 0 | 664 | 396 | 255 | 3 | 3 | 654 | 2% |
| Loveland | Weld | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | ** |
| Lyons | Boulder | 28 | 6 | 0 | 34 | 17 | 6 | 0 | 0 | 23 | 48% |
| Manassa | Conejos | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 100% |
| Mancos | Montezuma | 3 | 2 | 0 | 5 | 12 | 4 | 1 | 1 | 17 | -71% |

| | | | | | | | | | | |
|---------------------|------------|-------|-----|---|-------|-------|-------|----|-------|-------|
| Manitou Springs | El Paso | 114 | 22 | 0 | 136 | 99 | 29 | 0 | 128 | 6% |
| Manzanola | Otero | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** |
| Marble | Gunnison | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | -100% |
| Mead | Weld | 16 | 6 | 1 | 23 | 9 | 7 | 0 | 16 | 44% |
| Meecher | Rio Blanco | 33 | 2 | 0 | 35 | 47 | 7 | 0 | 54 | -55% |
| Merino | Logan | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | ** |
| Millikin | Weld | 8 | 2 | 0 | 10 | 31 | 6 | 0 | 37 | -73% |
| Minutun | Eagle | 4 | 1 | 0 | 5 | 4 | 1 | 0 | 5 | 0% |
| Monte Vista | Rio Grande | 3 | 1 | 0 | 4 | 1 | 2 | 0 | 3 | 33% |
| Montrose | Montrose | 357 | 95 | 1 | 453 | 338 | 86 | 1 | 425 | 7% |
| Monument | El Paso | 11 | 1 | 0 | 12 | 9 | 1 | 0 | 10 | 20% |
| Morrison | Jefferson | 20 | 4 | 0 | 24 | 19 | 10 | 0 | 29 | -17% |
| Mount Crested Butte | Gunnison | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 | -100% |
| Mountain View | Jefferson | 1 | 0 | 0 | 1 | 16 | 7 | 0 | 23 | -96% |
| Mountain Village | San Miguel | 15 | 3 | 0 | 18 | 0 | 0 | 0 | 0 | ** |
| Mt. Crested Butte | Gunnison | 7 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | ** |
| Nederland | Boulder | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** |
| New Castle | Garfield | 24 | 5 | 1 | 30 | 33 | 8 | 0 | 41 | -27% |
| Northglenn | Adams | 699 | 171 | 2 | 872 | 758 | 173 | 1 | 932 | -6% |
| Norwood | San Miguel | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | -50% |
| Nucla | Montrose | 4 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | ** |
| Oak Creek | Routt | 7 | 0 | 0 | 7 | 10 | 3 | 0 | 13 | -46% |
| Olathe | Montrose | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 2 | 0% |
| Olney Springs | Crowley | 1 | 0 | 2 | 3 | 1 | 0 | 0 | 1 | 200% |
| Ordway | Crowley | 7 | 1 | 0 | 8 | 6 | 0 | 0 | 6 | 33% |
| Otis | Washington | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | ** |
| Ouray | Ouray | 4 | 3 | 0 | 7 | 3 | 3 | 0 | 6 | 17% |
| Ouray | Sedgwick | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | ** |
| Pagosa Springs | Archuleta | 59 | 20 | 0 | 79 | 63 | 28 | 0 | 91 | -13% |
| Palisade | Mesa | 15 | 3 | 0 | 18 | 22 | 3 | 0 | 25 | -28% |
| Palmer Lake | El Paso | 11 | 4 | 0 | 15 | 11 | 3 | 0 | 14 | 7% |
| Paoli | Phillips | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | ** |
| Paonia | Delta | 27 | 0 | 0 | 27 | 10 | 0 | 0 | 10 | 170% |
| Parachute | Garfield | 14 | 2 | 0 | 16 | 21 | 0 | 0 | 21 | -24% |
| Parker | Douglas | 502 | 106 | 2 | 610 | 448 | 87 | 1 | 536 | 14% |
| Peeetz | Logan | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | ** |
| Pierce | Weld | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ** |
| Platteville | Weld | 17 | 5 | 0 | 22 | 7 | 7 | 0 | 14 | 57% |
| Poncha Springs | Chaffee | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0% |
| Pueblo | Pueblo | 2,297 | 960 | 9 | 3,266 | 2,287 | 1,024 | 10 | 3,321 | -2% |
| Rangely | Rio Blanco | 22 | 5 | 0 | 27 | 12 | 1 | 0 | 13 | 108% |
| Red Cliff | Eagle | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | -100% |
| Ridgway | Ouray | 8 | 4 | 0 | 12 | 0 | 1 | 0 | 1 | 1100% |

| | | | | | | | | | |
|---------------|---------------|---------------|------------|---------------|---------------|---------------|------------|---------------|------------|
| Westcliffe | 19 | 3 | 0 | 22 | 19 | 4 | 0 | 23 | -4% |
| Westminister | 1,147 | 358 | 5 | 1,510 | 1,162 | 291 | 5 | 1,458 | 4% |
| Westminister | 762 | 208 | 2 | 972 | 754 | 183 | 2 | 939 | 4% |
| Wheat Ridge | 1,130 | 385 | 1 | 1,516 | 1,171 | 447 | 1 | 1,619 | -6% |
| Wiggins | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | -50% |
| Wiley | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 100% |
| Williamsburg | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | -100% |
| Windsor | 70 | 20 | 1 | 91 | 76 | 22 | 1 | 99 | -8% |
| Winter Park | 38 | 11 | 1 | 50 | 34 | 6 | 0 | 40 | 25% |
| Woodland Park | 142 | 42 | 0 | 184 | 123 | 39 | 0 | 162 | 14% |
| Wray | 18 | 4 | 0 | 22 | 25 | 6 | 0 | 31 | -29% |
| Yampa | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | ** |
| Yuma | 47 | 3 | 0 | 50 | 50 | 9 | 0 | 59 | -15% |
| Total | 71,631 | 22,857 | 213 | 94,701 | 69,989 | 22,509 | 227 | 92,725 | 24% |

Appendix C. Crashes in Colorado Counties, 2001-2000

| County Name | 2001 | | | 2000 | | | % Change |
|-------------|-------------|---------------------|---------------|-------------|---------------------|---------------|----------|
| | PDO Crashes | Injury-only Crashes | Fatal Crashes | PDO Crashes | Injury-only Crashes | Fatal Crashes | |
| Adams | 8,186 | 3,026 | 43 | 11,255 | 7,125 | 38 | 15% |
| Alamosa | 401 | 135 | 3 | 539 | 305 | 2 | 28% |
| Arapahoe | 9,363 | 3,586 | 37 | 12,986 | 9,283 | 27 | 0% |
| Archuleta | 231 | 111 | 5 | 347 | 219 | 3 | 3% |
| Baca | 70 | 28 | 3 | 101 | 55 | 1 | 42% |
| Bent | 78 | 32 | 2 | 112 | 59 | 3 | 29% |
| Boulder | 5,679 | 2,356 | 25 | 8,060 | 5,326 | 26 | 6% |
| Broomfield | 135 | 36 | 0 | 171 | 0 | 0 | ** |
| Chaffee | 263 | 87 | 3 | 353 | 236 | 8 | -1% |
| Cheyenne | 30 | 23 | 4 | 57 | 39 | 1 | 14% |
| Clear Creek | 470 | 180 | 6 | 656 | 517 | 9 | -14% |
| Concejos | 78 | 41 | 2 | 121 | 78 | 2 | -5% |
| Costilla | 99 | 40 | 4 | 143 | 63 | 2 | 61% |
| Crowley | 47 | 26 | 4 | 77 | 43 | 2 | 20% |
| Custer | 54 | 29 | 1 | 84 | 54 | 1 | 4% |
| Delta | 266 | 121 | 6 | 393 | 180 | 3 | 41% |
| Denver | 21,809 | 6,220 | 63 | 28,092 | 22,657 | 77 | -3% |
| Dolores | 26 | 26 | 0 | 52 | 28 | 2 | 4% |
| Douglas | 3,278 | 1,115 | 26 | 4,419 | 2,837 | 14 | 18% |
| Eagle | 952 | 322 | 10 | 1,284 | 748 | 8 | 25% |
| El Paso | 10,888 | 4,013 | 48 | 14,949 | 9,998 | 61 | 9% |
| Elbert | 200 | 91 | 6 | 297 | 208 | 7 | -7% |
| Fremont | 674 | 265 | 10 | 949 | 532 | 12 | 27% |
| Garfield | 870 | 269 | 14 | 1,153 | 996 | 8 | -15% |
| Gilpin | 136 | 62 | 3 | 201 | 139 | 0 | 7% |
| Grand | 388 | 126 | 9 | 523 | 289 | 4 | 33% |
| Gunnison | 308 | 86 | 4 | 398 | 224 | 7 | 21% |
| Hinsdale | 10 | 1 | 1 | 12 | 9 | 0 | -20% |
| Huerfano | 153 | 64 | 4 | 221 | 124 | 3 | 19% |
| Jackson | 76 | 25 | 0 | 101 | 62 | 1 | 19% |
| Jefferson | 9,405 | 3,288 | 54 | 12,747 | 8,808 | 46 | 7% |
| Kiowa | 22 | 20 | 1 | 43 | 16 | 2 | 34% |
| Kit Carson | 178 | 82 | 7 | 267 | 164 | 6 | 24% |
| La Plata | 1,024 | 366 | 10 | 1,400 | 821 | 11 | 22% |
| Lake | 80 | 61 | 1 | 142 | 57 | 2 | 42% |
| Larimer | 4,659 | 1,887 | 26 | 6,572 | 4,231 | 24 | 12% |

| | | | | | | | | | | |
|--------------|---------------|---------------|------------|------------|----------------|---------------|---------------|------------|----------------|-----------|
| Las Animas | 287 | 126 | 7 | 7 | 420 | 244 | 116 | 7 | 367 | 14% |
| Lincoln | 129 | 54 | 5 | 5 | 188 | 129 | 53 | 4 | 186 | 1% |
| Logan | 298 | 132 | 4 | 4 | 434 | 257 | 134 | 6 | 397 | 9% |
| Mesa | 1,979 | 823 | 27 | 27 | 2,829 | 1,937 | 771 | 20 | 2,728 | 4% |
| Mineral | 41 | 19 | 3 | 3 | 63 | 38 | 13 | 1 | 52 | 21% |
| Moffat | 459 | 91 | 3 | 3 | 553 | 255 | 80 | 3 | 338 | 64% |
| Montezuma | 406 | 193 | 7 | 7 | 606 | 352 | 162 | 5 | 519 | 17% |
| Montrose | 574 | 213 | 7 | 7 | 794 | 483 | 175 | 2 | 660 | 20% |
| Morgan | 481 | 185 | 7 | 7 | 673 | 319 | 190 | 7 | 516 | 30% |
| Otero | 259 | 109 | 5 | 5 | 373 | 217 | 117 | 4 | 338 | 10% |
| Ouray | 102 | 37 | 3 | 3 | 142 | 51 | 33 | 0 | 84 | 69% |
| Park | 176 | 67 | 8 | 8 | 251 | 278 | 126 | 15 | 419 | -40% |
| Phillips | 48 | 17 | 0 | 0 | 65 | 33 | 17 | 2 | 52 | 25% |
| Pitkin | 691 | 121 | 0 | 0 | 812 | 621 | 128 | 1 | 750 | 8% |
| Prowers | 286 | 92 | 4 | 4 | 382 | 214 | 63 | 4 | 281 | 36% |
| Pueblo | 2,834 | 1,265 | 22 | 22 | 4,121 | 2,735 | 1,275 | 19 | 4,029 | 2% |
| Rio Blanco | 250 | 80 | 2 | 2 | 332 | 162 | 50 | 1 | 213 | 56% |
| Rio Grande | 177 | 69 | 1 | 1 | 247 | 127 | 43 | 2 | 172 | 44% |
| Routt | 579 | 120 | 7 | 7 | 706 | 545 | 119 | 4 | 668 | 6% |
| Saguache | 61 | 29 | 2 | 2 | 92 | 56 | 35 | 2 | 93 | -1% |
| San Juan | 22 | 10 | 2 | 2 | 34 | 24 | 11 | 0 | 35 | -3% |
| San Miguel | 206 | 46 | 3 | 3 | 255 | 131 | 49 | 3 | 183 | 39% |
| Sedgwick | 63 | 28 | 1 | 1 | 92 | 63 | 11 | 2 | 76 | 21% |
| Summit | 846 | 287 | 4 | 4 | 1,137 | 755 | 246 | 14 | 1,015 | 12% |
| Teller | 450 | 156 | 3 | 3 | 609 | 325 | 131 | 4 | 460 | 32% |
| Washington | 98 | 44 | 3 | 3 | 145 | 55 | 38 | 2 | 95 | 53% |
| Weld | 3,204 | 1,449 | 59 | 59 | 4,712 | 2,370 | 1,161 | 36 | 3,567 | 32% |
| Yuma | 157 | 53 | 3 | 3 | 213 | 150 | 56 | 6 | 212 | 0% |
| Total | 95,749 | 34,161 | 647 | 647 | 130,557 | 89,456 | 31,940 | 599 | 121,995 | 7% |