Traffic Safety
Problem Identification

FFY 2009

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Rail, Transit and Planning Division
Montana Department of Transportation
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http://www.mdt.mt.gov/safety/safetyprg.shtml

Contents

A. INTRODUCTION

This document was created for the identification and analyses of trends to evaluate problem areas related to highway traffic safety in Montana with respect to National Highway Traffic Safety Administration funding. The data within is used for the planning of the Highway Safety Program for the upcoming fiscal year. The analysis is intended to provide information for highway traffic safety specialists that will assist in the design of counter-measures for specific problem areas. The data and analysis within may also be used for general information on highway safety.

Much of the information contained within this publication originates from reportable traffic crashes occurring upon public roadways. Reportable crashes are defined as those with a fatality, an injury, or in the case of a propertly damage only crash, those with at least $1000.00 of damage. The trends and contributing factors of the resultant injuries and fatalities along with the demographics for the drivers and vehicles involved are presented. Rates are calculated using vehicle miles, licensed drivers or population when possible.

Data is first presented on crash numbers, general exposure and demographics. Included in this are population statistics, driver license information, vehicle registrations, vehicle miles traveled and breakdowns of driver demographics within crashes. Information is presented in the latter part of this document on traffic safety emphasis areas and other areas of possible interest. Many tables contain ten years of data. In these tables, the latest year of data is compared to the year previous and the average of the previous five years. The last two lines of these tables usually contain the percentage change for these comparisons.

Some crashes such as minor single vehicle run off the road crashes, wild animal crashes and other minor crashes are not always reported to law enforcement. Most local law enforcement agencies are very good at submitting reports of investigated crashes to the Montana Highway Patrol. Few crash reports are received from most of the reservation law enforcement agencies because of the status of reservations as sovereign nations. The database does not contain every crash that meets the reporting criteria, but should be very nearly complete for crashes involving injuries and fatalities.

The data elements within the crash record system include information on vehicles, roadway, drivers, passengers, pedestrians, bicyclists, and general crash details. Some tables summarize crash counts, while others summarize the number of drivers, number of vehicles, number of occupants or number of injuries and these differences can be subtle and confusing. In addition, sections of tables may concern all crashes while other sections contain data for fatal crashes or other subsets. Special care must be taken by the reader to understand what exactly is being summarized within each table.

Other information related to highway traffic safety, such as citation data, conviction data, and observed seat belt use comes from other sources and is included when available.

B. TRAFFIC CRASH AND EXPOSURE STATISTICS

Montana, along with most of the Rocky Mountain States, has unique problems in traffic safety. Unfortunately, Montana is often at the extreme even among these states. The Rocky Mountain States tend to be high on roadway departure fatalities and the percent of miles driven that are rural.

A high percentage of miles traveled are at rural speeds compared to more urban states, thus increasing the likelihood of fatal crashes. The average national urban fatality rate is less than half of the rural fatality rate (about 1.0 compared to 2.3). Since Montana has the highest percentage of rural vehicle miles traveled in the nation, it should be no surprise that Montana has the highest fatality rate in the nation. The Insurance Institute for Highway Safety (IIHS) released a study during March 2006, in which they normalized various factors including rural versus urban fatality rates. The study found that Montana moved from #50 to #27 in fatality rate when normalized on urban vs. rural. So even though NHTSA data shows Montana as the worst state in fatality rate, states are not playing on a level playing field. The IIHS paper notes, "For example, 100 million vehicle miles traveled in the U.S. state of New Jersey, which is relatively urban, do not indicate the same exposure to risk of crash deaths as the same number of miles traveled in Montana, a very rural state."

According to IIHS, fatality rates are also affected by demographics such as median incomes, school spending per pupil and percentage of population with college degrees. Because median incomes are low and school spending is low, fatality rates would be higher than average in Montana. Seventy percent of the variability in state fatality rates results from rural versus urban and other demographic factors.

Single vehicle road departure crashes account for nearly 30% of all crashes, but over 61% of all fatal crashes. Single vehicle fatal crashes account for 58% of all fatal crashes nationally. In Montana over 70% of all fatal crashes are single vehicle crashes

American Indian fatalities as a percentage of all fatalities tends to be high for the Rocky Mountain States. Each year in Montana, 13 to 20 percent of traffic deaths are American Indians. Over 21% of the alcohol related fatalities in Montana were American Indians during 2007.

For three straight years, total fatalities in Montana have increased. There were 47 more fatalities in Montana during 2007 than in 2004. Injury crashes decreased by 4% over 2006. Ten years of reportable crash and injury data appear in Table 1.

Injury crashes and especially severe injury crash counts tend to be more accurate indicators of safety trends in Montana than do crashes and fatalities. These injury crashes can represent change without as much of the variation caused by the small numbers associated with fatalities. Total Crashes tend to have variation that is strongly associated with the amount of icy roads in Montana. Severe injury crashes are defined as those crashes involving a fatality or an incapacitating injury. This information will be shown later in Table 4.

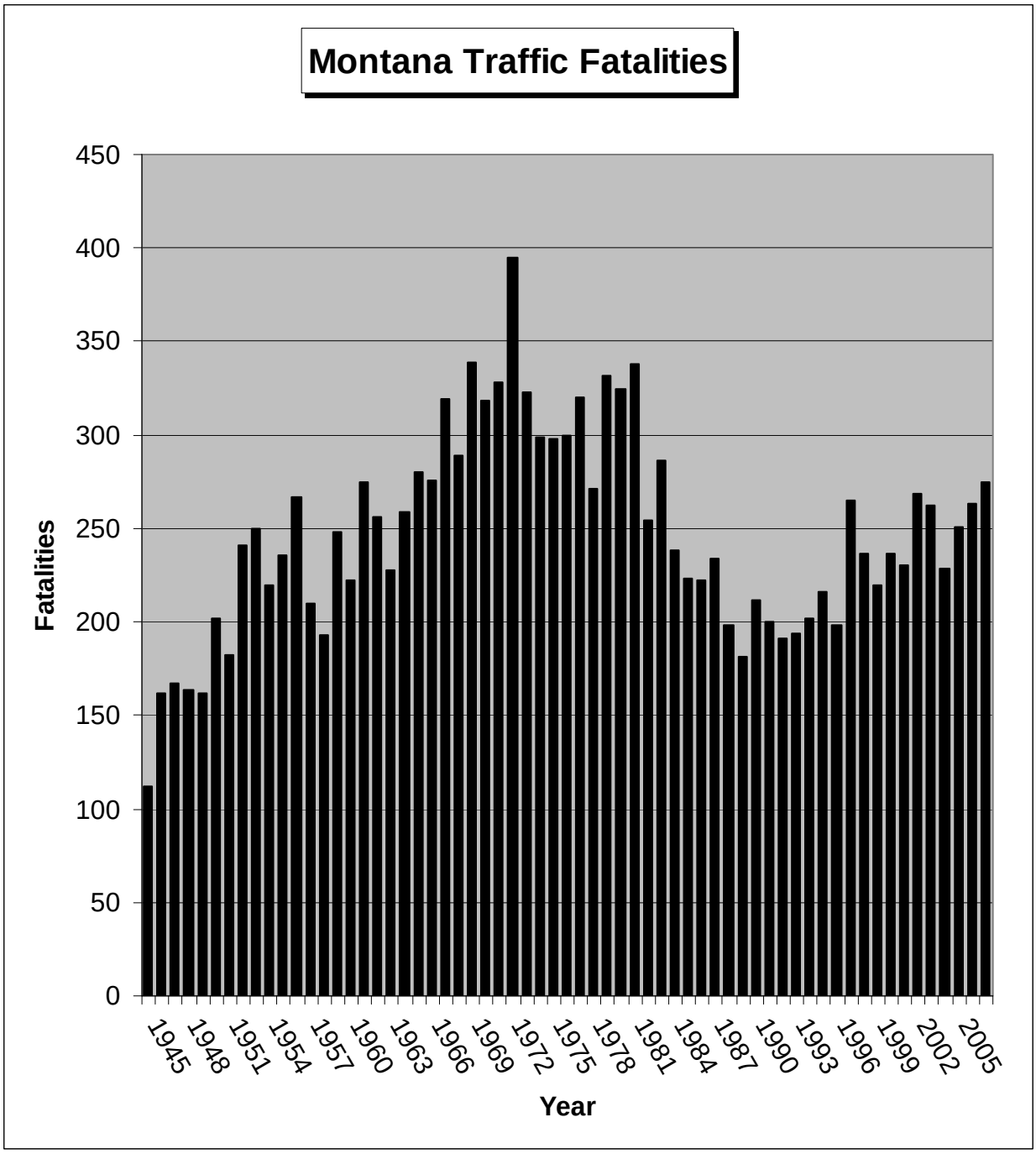
Table 1
Crashes by Severity

Year	All Crashes	Fatal Crashes	Injury Crashes	Property Damage Crashes	Fatalities	Injuries
1998	22,068	208	6,728	15,132	237	10,075
1999	21,078	194	6,769	14,113	220	10,459
2000	22,254	203	7,053	15,000	237	10,798
2001	21,846	201	6,220	15,420	230	8,982
2002	23,527	232	6,479	16,816	269	10,086
2003	23,160	239	6,229	16,681	262	9,632
2004	21,783	209	6,000	15,570	229	9,263
2005	22,376	224	6,066	16,086	251	9,211
2006	22,186	226	6,245	15,712	263	9,470
2007	21,829	249	5,990	15,584	276	9,067
Chg 1 Yr	-1.6%	+10.2%	-4.1%	-0.8%	+4.9%	-4.3%
Chg 5 Yr	-3.4%	+10.2%	-3.4%	-3.6%	+8.3%	-4.9%

Source: Traffic Information System (TIS) – Montana Department of Transportation

A Montana history of fatality numbers on public roadways is presented in the graph on the following page. Fatalities reached an all time high of 395 during 1972. The lowest number of fatalities since 1950 was 181, which occurred during 1989, the second year of Montana's seat belt law. The number of fatalities in 2007 was the sixth time that fatalities surpassed 250 during the last 24 years. This has occurred five times in the last six years which seems to indicate that the overall trend is moving up. During the period from 1988 to 1996, there were an average of 199.1 fatalities. From 1997 until 2007, this average has jumped to 248.9 and seems to be continuing to climb as shown on the chart on the following page. This shows a clear increase during the last 11 years when compared to the 9 years prior to that. The change coincides with the end of the national speed limit.

Figure 1


Montana Traffic Fatalities
Fatalities
450
400
350
300
250
200
150
100
50
0
1945
1948
1951
1954
1957
1960
1963
1966
1969
1972
1975
1978
1981
1984
1987
1990
1993
1996
1999
2002
2005
Year

There are several exposure statistics in the area of traffic safety. These include number and type of vehicles, number of licensed drivers by age and gender, physical road miles, population, and the number of vehicle miles driven. Table 2 displays Vehicle Miles Traveled (VMT), which is the estimated number of total miles driven by all vehicles on Montana public roads. This table also includes licensed drivers and registered motor vehicles. VMT is the exposure number that appears to have the greatest influence on the amount of traffic crashes that occur in Montana.

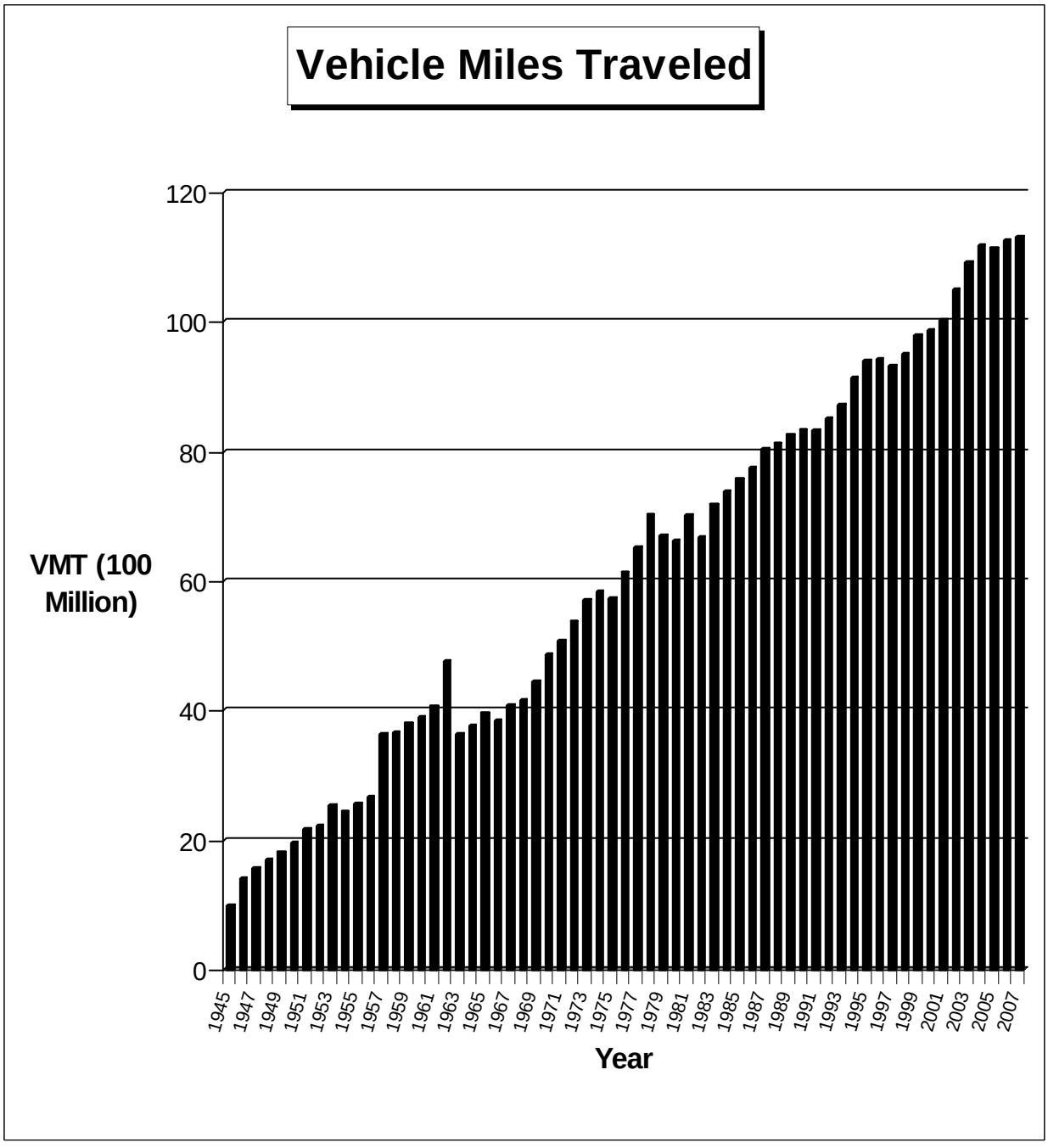
Table 2
Crash Exposure By Factors

Year	VMT (100 Million Miles) 2007	Licensed Drivers State FY 2007	Registered Motor Vehicles (plus trailers) 2007
1998	94.9	646,512	1,042,183
1999	97.8	NA	NA
2000	98.6	678,899	1,009,930
2001	100.1	683,351	1,135,491
2002	104.9	694,743	1,165,808
2003	109.0	704,509	1,207,314
2004	111.8	712,880	1,248,215
2005	111.3	715,512	1,356,165
2006	112.6	723,976	1,434,433
2007	113.1	735,753	1,516,060
Chg 1 Year	+0.4%	+1.6%	+5.7%
Chg 5 Year	+2.9%	+3.6%	+18.2%

Source: VMT – Montana Department of Transportation
Drivers Licenses and Registered Vehicles – Department of Justice

The annual vehicle miles traveled are shown on the following chart. These numbers increase almost every year. During 1972, the vehicle miles traveled (VMT) for Montana was 5.4 billion and 395 fatalities occurred. Now in 2007, this figure has more than doubled at more than 11 billion miles traveled with 276 fatalities occurring. Even when crash numbers, injuries and fatalities are held stable, gains in rates are made because of increases in exposure. Registration numbers are no longer particularly valid, since there are several vehicle types that require only a one time registration. So vehicles that are no longer used still could appear in the counts. A chart of the history of VMT is shown on the following page.

Figure 2


Vehicle Miles Traveled
VMT (100 Million)
120
100
80
60
40
20
0
1945
1947
1949
1951
1953
1955
1957
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
Year

The fatality rate for Montana was 7.64 fatalities per hundred million miles traveled during 1969. This rate has been generally decreasing since then. It had decreased to 4.92 by 1980. During 2007, the fatality rate was 2.45, which was higher than the record low rate during 2004.

The injury rate was 0.80 per one million miles traveled for the year 2007 and the crash rate was 1.93. These were both the lowest rates on record.

Table 3
Statewide Crash Rates
(Per Vehicle Miles Traveled)

Year	Fatality Rate (per 100 Million VMT)	Injury Rate (per 1Million VMT)	Crash Rate (per 1Million VMT)
1998	2.50	1.06	2.33
1999	2.25	1.07	2.15
2000	2.40	1.04	2.26
2001	2.30	0.90	2.18
2002	2.57	0.96	2.24
2003	2.40	0.88	2.13
2004	2.04	0.83	1.95
2005	2.26	0.83	2.01
2006	2.33	0.84	1.97
2007	2.45	0.80	1.93
Chg 1 Year	+5.2%	-4.8%	-2.0%
Chg 5 Year	+5.6%	-7.8%	-6.3%

Source: TIS and Traffic Data Collection - Montana Department of Transportation

Historically, western rural states have tended to have rates above the national average. One of the reasons is the greater percentage of rural miles traveled which translates to higher average speeds. During 2001, the United States rural fatality rate was 2.3 while the urban fatality rate was 1.0. For the nation, rural fatalities accounted for 61% of the traffic fatalities, while in Montana over 92% of the fatalities were rural fatal crashes. From this information, it stands to reason that the expected Montana rate would be much closer to 2.3 than the national rate of 1.5. Figure 3 compares the national fatality rate with the Montana rate.

Figure 3

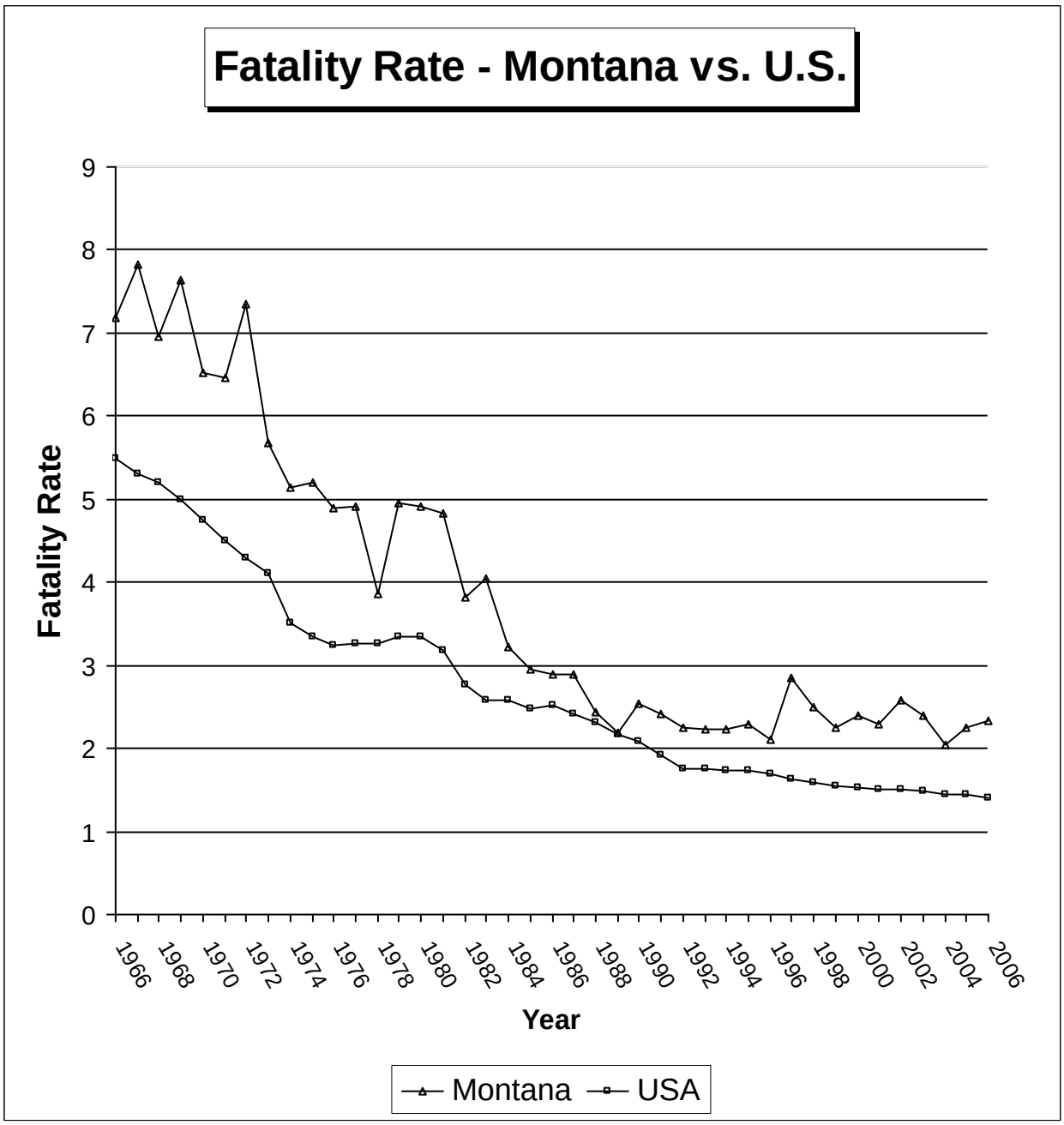

Fatality Rate - Montana vs. U.S.
Fatality Rate
0
1
2
3
4
5
6
7
8
9
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year
Montana
USA

Table 4 displays the distribution of injury severity to persons involved in motor vehicle crashes for the last ten years. Injury severity may aid in determining whether restraint use and airbags are saving lives and reducing the level of injury severity. Also displayed are Severe Injuries (Fatalities + Incapacitating), which may be the best true overall indicator for traffic crash trends.

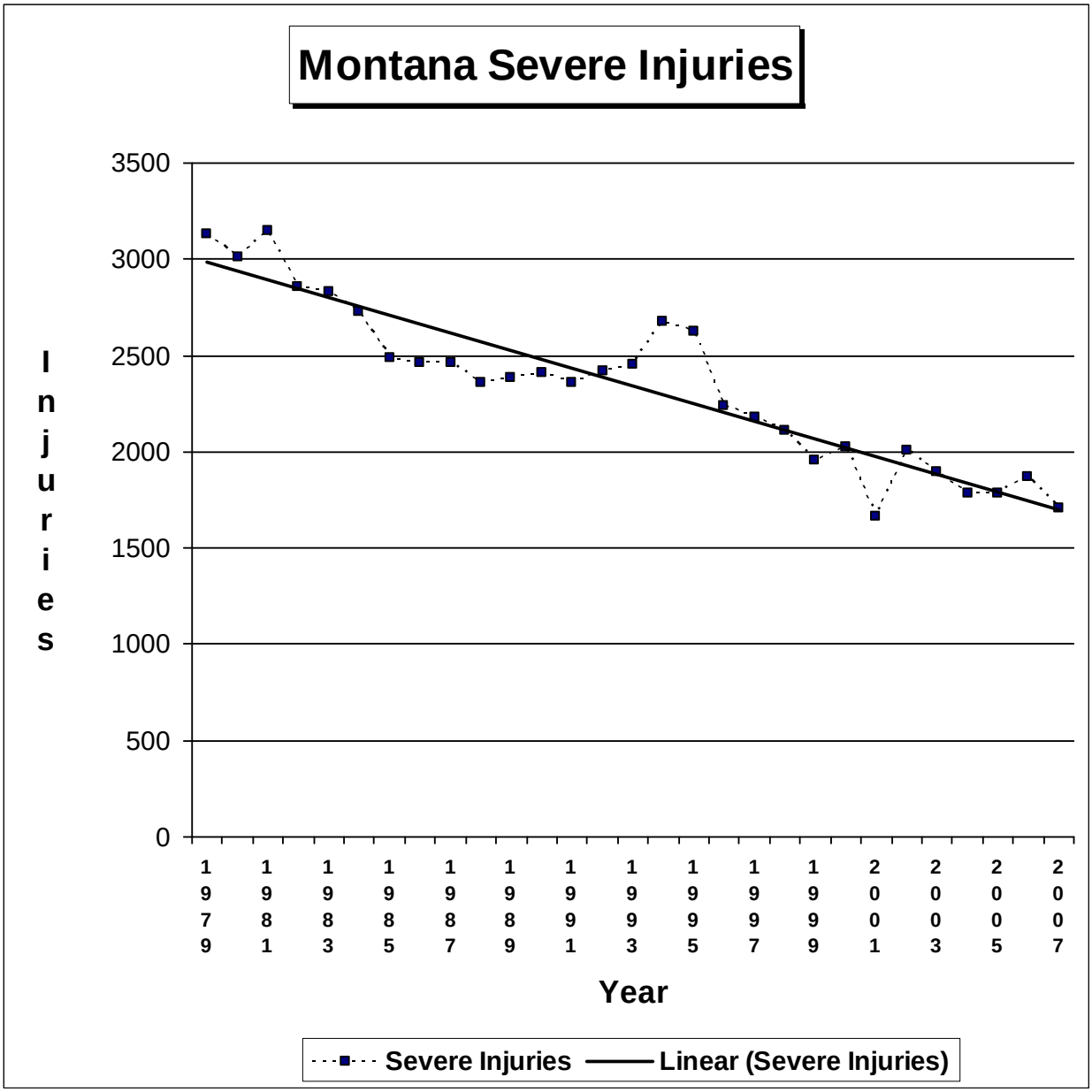
Table 4
Injury Severity
(persons)

Year	Fatalities	Incapacitating Injury	Non Incapacitating Injury	Possible & Other Injury	Severe Injuries (Fatalities plus Incapacitating)
1998	237	1,834	3,044	5,202	2,071
1999	220	1,739	3,254	5,466	1,959
2000	237	1,790	3,325	5,683	2,027
2001	230	1,433	2,645	4,904	1,663
2002	269	1,738	2,876	5,472	2,007
2003	262	1,634	2,812	5,186	1,896
2004	229	1,557	2,692	5,013	1,796
2005	251	1,541	2,509	5,161	1,792
2006	263	1,607	2,859	5,004	1,870
2007	276	1,427	2,593	5,047	1,703
Chg 1 Yr	+4.9%	-11.2%	-9.3%	+0.9%	-8.9%
Chg 5 Yr	+8.3%	-11.7%	-5.7%	-2.3%	-9.0%

Source: TIS - Montana Department of Transportation

Severe injuries (fatalities plus incapacitating injuries) have decreased over 29 percent since 1995. The change downward in the number of severe injuries would appear to be the most significant change in crash data within Montana during the last few years. The difficult thing to explain is why incapacitating injuries continue to decrease, while fatalities are increasing. Incapacitating injuries were lower during 2007 than in any year since 1960. It would seem that occupant restraints, airbags and child restraints have accounted for at least part of this decrease. The change in severity is also the result of more forgiving roadways with engineering improvements and quicker emergency medical service response times due to cell phones. Figure 4 on the following page shows clearly this history of injuries over time with severe injuries trending downward.

Figure 4


Montana Severe Injuries
3500
3000
2500
2000
1500
1000
500
0
Injuries
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
Year
Severe Injuries
Linear (Severe Injuries)

The following table examines rural fatal crashes in Montana. Fatal crashes occur mostly on rural roads within the state, where there are higher speeds than in urban crashes. Twenty fatalities occurred on urban roads during 2007 from nineteen different crashes. The other 256 fatalities occurred on rural roads from 230 crashes. Similarly there were 237 incapacitating injuries on urban roads while 1,190 incapacitating injuries occurred in the rural setting.

Table 5
Rural Fatal Crashes

Year	Fatal Crashes	Rural Fatal Crashes	Percent Rural
1998	208	180	86.5%
1999	194	176	90.7%
2000	203	185	91.1%
2001	201	187	93.0%
2002	232	209	90.1%
2003	239	214	89.5%
2004	209	184	88.0%
2005	224	194	86.6%
2006	226	209	92.5%
2007	249	230	92.4%
Chg 1 Year	+10.2%	+10.0%	-0.1%
Chg 5 Year	+10.2%	+13.9%	+3.4%

Source: TIS - Montana Department of Transportation

Economic loss from motor vehicle crashes is shown for recent years in Table 6. These losses are calculated using national estimates for average property damage only crash cost, injury cost by injury level and fatality cost, which are provided by the National Safety Council. These estimates cover wage loss, medical expense, insurance administration and property damage costs. Indirect costs for human suffering and loss are more intangible and are not included as part of this estimate.

Table 6
Estimated Economic Loss in Crashes
(Millions of Dollars)

Year	Economic Loss
1998	$498
1999	$481
2000	$525
2001	$500
2002	$605
2003	$623
2004	$572
2005	$595
2006	$629
2007	$662
Change 1 Year	+5.2%
Change 5 Year	+9.5%

Source: Montana Department of Transportation

Economic loss due to traffic crashes increased during 2007. Last year the economic loss for Montana crashes was $662 million dollars. That is an average of over $690 for every citizen in Montana. Loss resulting from alcohol related crashes was about 178 million dollars.

C. CRASH DEMOGRAPHICS

1. Gender of Drivers

Male drivers are more likely to be involved in crashes than female drivers, when prorated by the number of licensed drivers. However, when based upon average national vehicle miles driven by gender, this difference in crash rates largely disappears. No state statistics on miles traveled by gender are available.

Driver involvement in crashes by gender is shown in Table 7. While male involvement is 58.6% of all crashes, involvement by females has been increasing consistently over the past 20 years as vehicle miles driven increases for female drivers.

Table 7
Driver's Gender in Crashes

Year	Gender of Drivers			Percent of Total	
	Female	Male	Total	Female	Male
1998	12,818	19,382	32,200	39.8%	60.2%
1999	12,248	18,904	31,152	39.3%	60.7%
2000	13,237	20,008	33,245	39.8%	60.2%
2001	13,189	19,036	32,225	40.9%	59.1%
2002	14,623	21,082	35,705	41.0%	59.0%
2003	14,330	20,650	34,980	41.0%	59.0%
2004	13,578	19,428	33,006	41.1%	58.9%
2005	13,943	19,720	33,663	41.4%	58.6%
2006	13,651	19,256	32,907	41.5%	58.5%
2007	13,430	18,978	32,408	41.4%	58.6%
Chg 1 Year	-1.6%	-1.4%	-1.5%	-0.2%	+0.2%
Chg 5 Year	-4.2%	-5.2%	-4.8%	+0.5%	-0.3%

Men have a disproportionate involvement in **fatal** crashes. Past studies have shown that men have higher involvement in overturns, other non-collision crashes, crashes into fixed objects and the striking of animals. Much of this is due to men's much higher

involvement in alcohol-related crashes. Table 8 follows with information on the gender of drivers in fatal crashes.

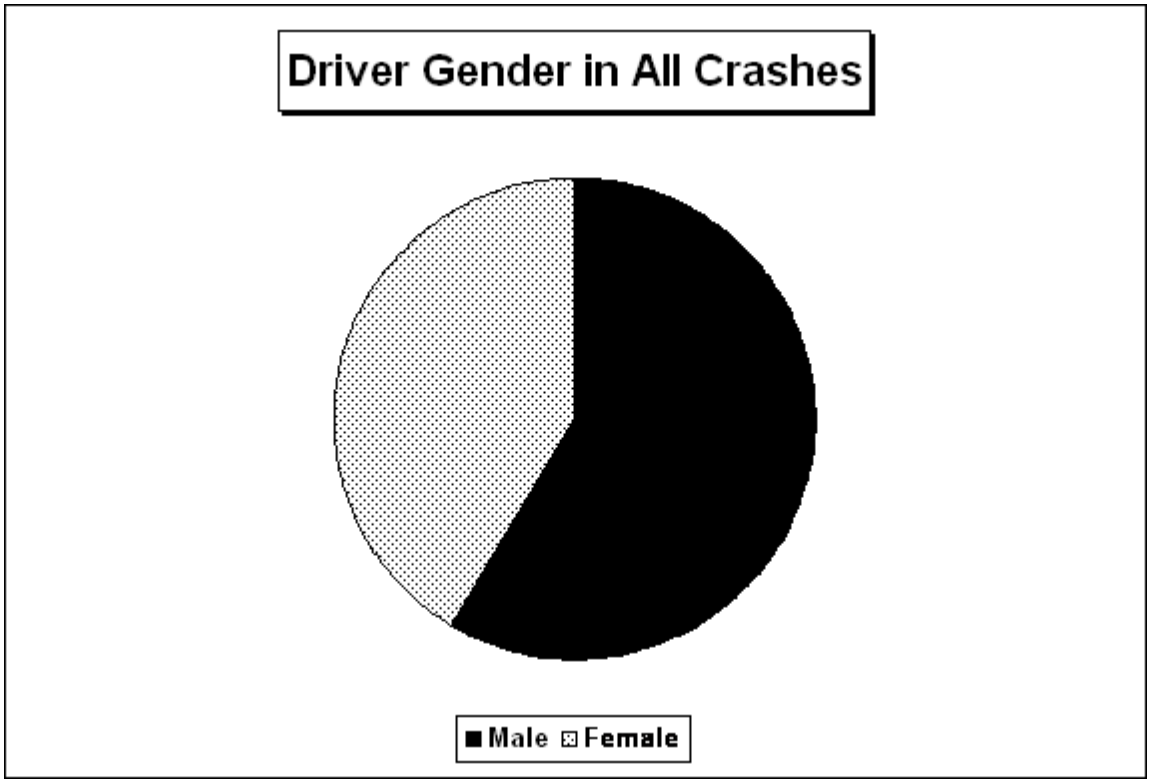
Table 8
Driver's Gender in Fatal Crashes

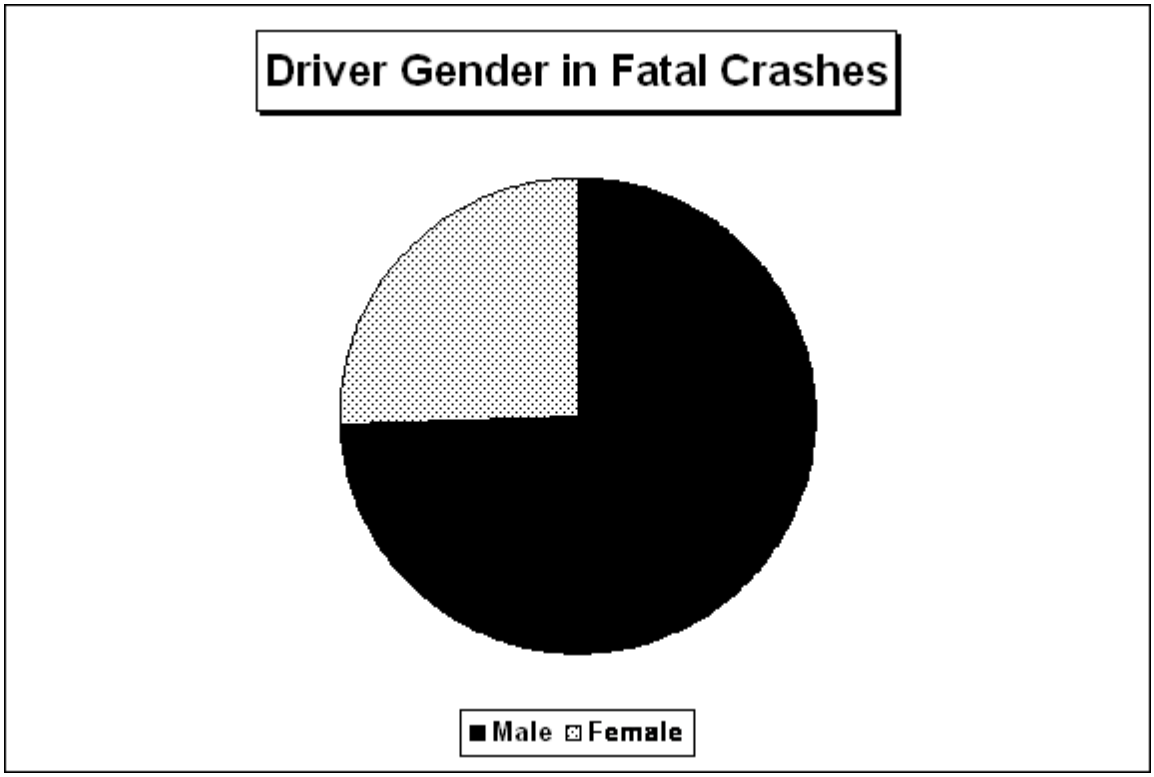
Year	Gender of Drivers			Percent of Total	
	Female	Male	Total	Female	Male
1998	68	213	281	24.2%	75.8%
1999	78	187	265	29.4%	70.6%
2000	77	225	302	25.5%	74.5%
2001	63	213	276	22.8%	77.2%
2002	71	248	319	22.3%	77.7%
2003	96	236	332	28.9%	71.1%
2004	86	198	284	30.3%	69.7%
2005	70	231	301	23.3%	76.7%
2006	82	208	290	28.3%	71.7%
2007	83	241	324	25.6%	74.4%
Chg 1 Year	+1.2%	+15.9%	+11.7%	-9.5%	+3.8%
Chg 5 Year	+2.5%	+7.5%	+6.2%	-3.8%	+1.4%

Source: TIS – Montana Department of Transportation

With the relatively small number of fatal crashes in Montana, the above percentages vary from year to year. During this ten-year period, approximately 75% of the drivers in these crashes are male. Figure 5 on the following page displays the ratio of drivers by gender involved in all crashes and fatal crashes during 2007.

Figure 5


Driver Gender in All Crashes
Male
Female


Driver Gender in Fatal Crashes
Male
Female

2. Gender and Age of Injuries

Injury involvement by gender is shown below in Table 9. During 1997, females for the first time in Montana sustained more injuries than males resulting from traffic crashes. This occurred again in 2001. There has been a slow and steady increase in vehicle miles traveled for women nationally over the past few decades. Men still account for about 60 to 75% of the fatalities.

Table 9
Injuries by Gender – 2007

Gender	Fatalities	Injuries
Male	190	4,692
Female	86	4,357

Source: TIS – Montana Department of Transportation

Table 10 shows injury numbers by age group for 2007. It should be noted that the injury numbers for the 15-19 age group are still very high.

Table 10
Injuries by Age – 2007

0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75+
202	223	285	1,610	1,302	1,459	1,087	1,278	854	428	297

Source: TIS – Montana Department of Transportation

The following table shows fatalities over time by age group. Fatalities were very high for the 35-44 and the 45-54 year age group during 2007.

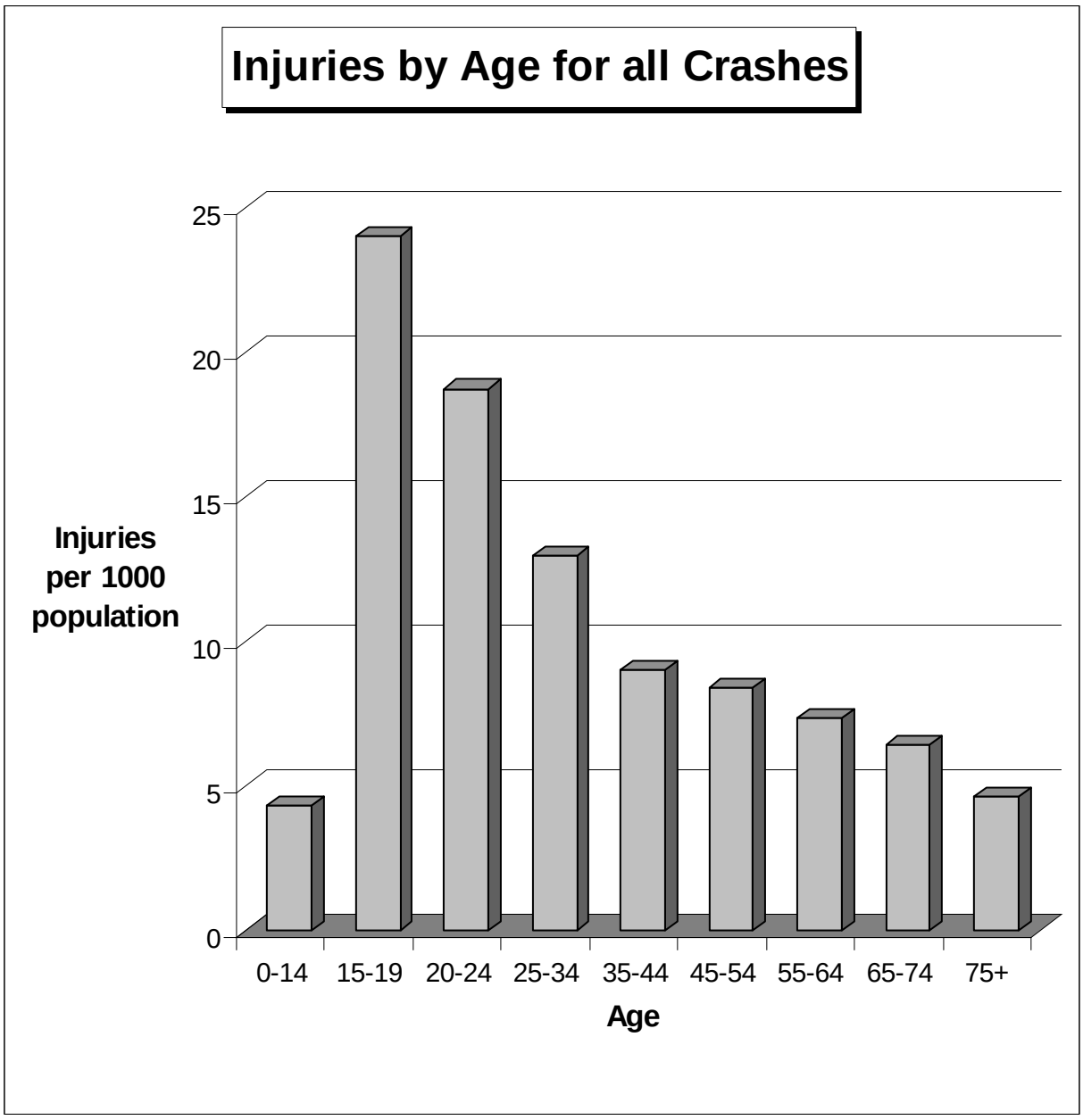
Table 11
Fatalities by Age

Year	0-4	5-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75+
1998	3	7	29	26	32	41	34	18	20	27
1999	1	8	39	28	30	34	31	19	11	17
2000	4	15	37	27	44	33	26	22	12	17
2001	1	13	16	32	38	39	38	26	13	14
2002	1	7	37	28	38	36	51	27	22	20
2003	4	9	36	37	34	34	42	27	17	22
2004	1	6	31	28	33	28	38	27	17	20
2005	5	6	22	31	52	32	31	34	18	20
2006	4	6	27	37	34	40	50	23	17	24
2007	1	7	27	39	37	45	56	31	21	12
Ave	2.5	8.4	30.1	31.3	37.2	36.2	39.7	25.4	16.8	19.3

Source: TIS – Montana Department of Transportation

Figure 6 on the following page shows the rate of injuries per 1000 population by age. From this chart, it is quite evident from that greater danger exists for teens and young adults.

Figure 6


Injuries by Age for all Crashes
Injuries per 1000 population
25
20
15
10
5
0
0-14
15-19
20-24
25-34
35-44
45-54
55-64
65-74
75+
Age

3. Vehicle Type

National Data

There are major differences in severity of crashes depending on vehicle type. The rate of fatalities per 100,000 registered vehicles varies greatly. Nationally, during 2004, this rate for single vehicle fatal crashes per 100,000 vehicles is shown in Table 12.

A large portion of this difference is due to the chance of a rollover. NHTSA conducted a crash analysis of fatal crashes for different vehicle types during 2004.

Table 12
Vehicle Characteristics

Type of Vehicle	Fatality Rate in Rollovers (per 100,000 vehicles)	Fatality Rate in all Crashes (per 100,000 vehicles)
SUV's	9.29	15.07
Pickups	6.72	15.05
Passenger Cars	3.25	14.32
Minivans	3.45	11.09
Vans	4.04	9.34

Source: NHTSA

SUV's and pickups have a much higher propensity to rollover. The tendency in single vehicle crashes is for a driver to overcorrect when they first realize that they are in trouble. This overcorrection often leads to a rollover.

Over 44 percent of unrestrained fatal occupants are ejected from all types of vehicles as compared to only 6 percent of restrained fatal occupants according to 2003 National data. The risk of a fatal injury is many times higher if ejected than if not ejected. Fatally injured unrestrained occupants were ejected from the different types of vehicles as shown in Table 13.

Table 13
Ejection Rates for Unrestrained Fatal Occupants (2003)

Type of Vehicle	Ejection Rates
Passenger Cars	35%
SUV's	65%
Pickups	49%
Minivan	49%
Other Vans	49%

Source: NHTSA

Montana Data

As noted above, pickups and SUV's have a high susceptibility to rollover. Montana seat belt usage is much lower in pickups, which compounds the problem of rollovers. The following usage rates by vehicle type were obtained from a survey conducted during April 2006.

Table 14
Seat Belt Usage by Vehicle Type - 2006

Type of Vehicle	Usage Rate
Passenger Cars	81.0%
SUV's	81.2%
Pickups	62.9%
Vans *	60.0%

Source: Montana Department of Transportation
* sample size is statistically small (n=209)

There may be a perception by the public that most fatalities occur in multi-vehicle crashes involving head on and angle crashes. Many occupants of large vehicles perceive that they are safer and then decide not to wear their seat belt. In reality, 70% of fatal crashes in Montana are single vehicle crashes and 61% are road departure crashes. Single vehicle fatal crashes usually involve a rollover.

There are many reasons why Montana has the one of the highest fatality rates in the nation in addition to a high incidence of impaired driving.

- A high percentage of driving is rural, so that a high percentage of the vehicle miles traveled are at high speeds.
- A high percentage of registered vehicles in the state are pickups and these vehicles have higher fatality rates.
- Restraint use is significantly lower in pickups.
- A high percentage of pickup drivers are male, are more likely to be impaired and are more likely to drive aggressively.

As mentioned earlier, the Insurance Institute for Highway Safety published a paper in March 2006, entitled the "Use and Misuse of Motor Vehicle Crash Death Rates in Assessing Highway Safety Performance. **This paper concluded that most of the difference between states death rates comes from factors like urban versus rural vehicle miles driven**, along with demographics such as median household income, percentage of population ages 16-20, percentage of population with a college degree and school spending per pupil and not highway safety programs. The study concluded that a state like Montana has no chance to equal fatality rates of states like Massachusetts simply because of rural driving and demographics which account for 70% of the variation in fatality rates.

D. TRAFFIC SAFETY EMPHASIS AREAS

1. Occupant Protection

Montana's seat belt law became effective on October 1, 1987, without penalties. A penalty was collected beginning January 1, 1988. The law was written for secondary law enforcement and covered all seating positions within vehicles. Although, there must be another reason for stopping a vehicle, the law has been effective. Montana is one of only fourteen states where all seating positions are covered. Only three standard enforcement states cover all positions. A bill for standard enforcement had been introduced to the Montana legislature during four sessions and did not make it out of committee during the first two attempts. During the 2005 legislative session, a bill passed the Senate and was within nine votes of passing the House. During the 2007 session a bill again passed the Senate and was defeated in the House by a vote of 55-45. Passage of standard enforcement will usually raise seat belt usage from 8 to 12 percentage points.

Montana's restraint usage rates are shown on the next page in Table 15. These rates are acquired using an approved NHTSA observational survey. The survey is conducted each year during June at 120 randomly selected locations statewide.

Montana restraint usage increased from 16.8% in 1984 to 33.3% by October 1987 before the mandatory seat belt bill became law. This gain was acquired by conducting seat belt incentive give away campaigns in many of Montana's cities along with public information programs. When the enforcement of the law began, usage jumped to 56% and has gradually increased since that time, with the exception of the 2005, 2006, 2007 and 2008 survey years. The current level of usage is 79.3%.

Usage is usually two to three percentage points higher in summer than in winter, spring and fall on Montana roadways. Tourists are more prevalent in the summer, which accounts for a larger percentage of long trips and likely higher usage. In addition, families traveling together tend to have higher usage than when there is just one person in the vehicle. A higher percentage of vehicles contain more than one person during the summer in Montana.

Table 15
Seat Belt Usage Rates

Year	Interstate	Primary	City	Other	All Roads
1984	24.7%	20.7%	8.4%	8.4%	16.8%
1986	43.4%	33.9%	14.8%	17.1%	29.5%
1987	54.8%	44.0%	24.0%	27.0%	39.7%
1988	75.8%	64.7%	41.2%	45.6%	59.5%
1989	78.6%	69.3%	40.6%	47.5%	61.8%
1990	79.1%	70.5%	40.2%	48.4%	62.6%
1991	80.9%	72.8%	41.4%	49.3%	64.5%
1992	83.1%	75.3%	47.8%	53.7%	68.0%
1993	84.2%	75.9%	49.6%	56.2%	69.2%
1994	84.7%	75.4%	51.1%	56.4%	69.6%
1995	86.4%	75.0%	51.3%	57.5%	70.1%
1996	86.2%	75.5%	51.8%	61.0%	70.8%
1997	87.9%	79.3%	52.4%	60.2%	72.6%
1998	88.4%	78.2%	54.0%	63.5%	73.1%
1999	89.1%	78.9%	55.3%	65.0%	74.0%
2000	91.3%	79.5%	58.3%	65.5%	75.6%
2001	92.5%	79.6%	59.7%	65.7%	76.3%
2002	94.3%	82.5%	60.8%	69.7%	78.4%
2003	93.6%	82.3%	65.1%	71.7%	79.5%
2004	93.0%	83.3%	67.7%	73.1%	80.9%
2005	92.6%	82.4%	66.9%	72.6%	80.0%
2006	92.6%	81.7%	64.9%	70.6%	79.0%
2007	92.2%	82.1%	67.4%	70.5%	79.6%
2008	92.1%	81.7%	66.6%	70.7%	79.3%
Chg 1 Year	-0.1%	-0.5%	-1.2%	+0.3%	-0.4%
Chg 5 Year	-0.8%	-0.8%	+0.3%	-1.4%	-0.6%

Source: State Highway Traffic Safety Bureau – Montana Department of Transportation

On the following page, Figure 7 shows a graph of Montana's seat belt usage since 1983.

Figure 7

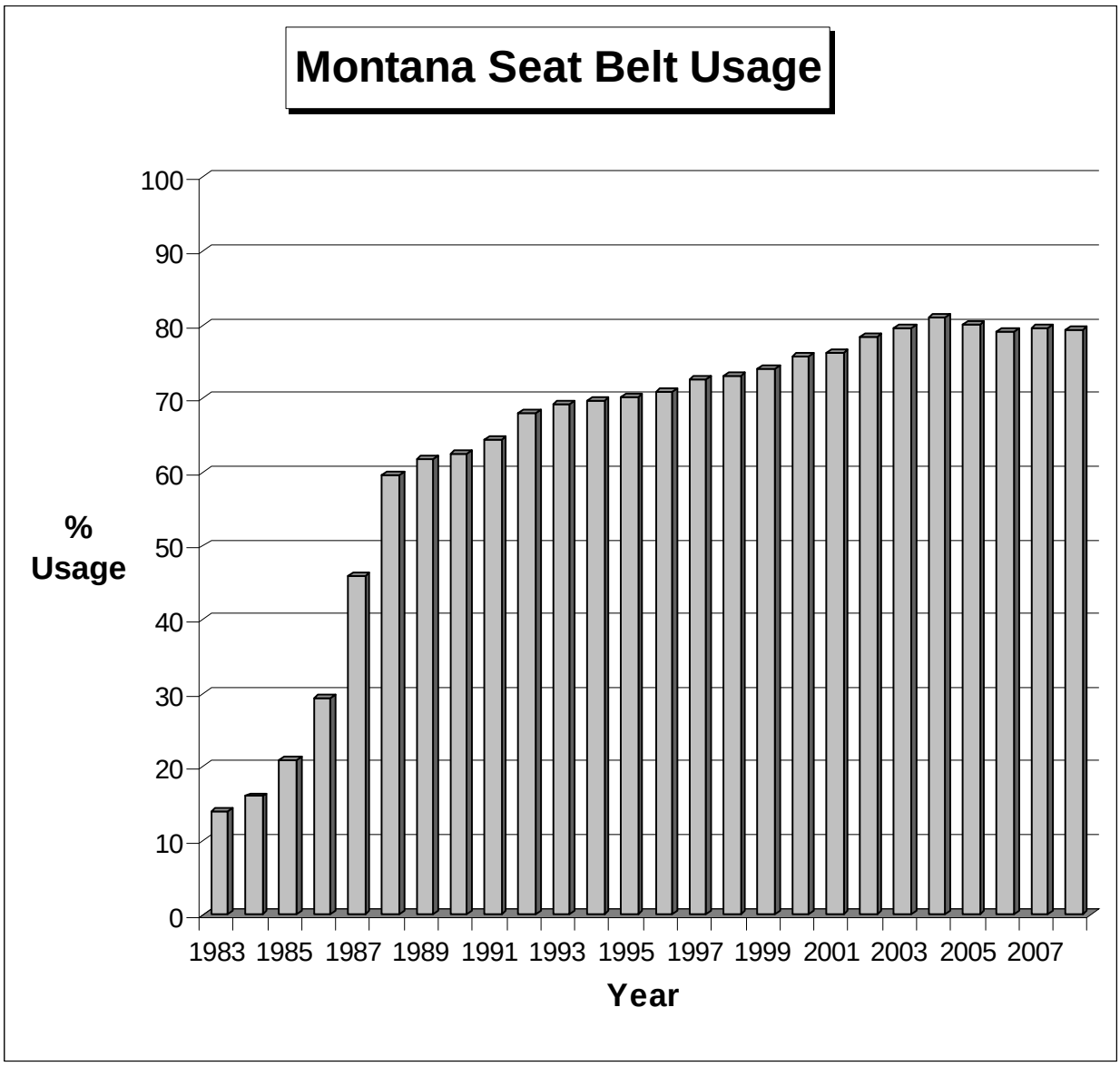

Montana Seat Belt Usage
100
90
80
70
60
50
40
30
20
10
0
% Usage
1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007
Year

Table 16 on the following page displays seat belt convictions by arresting agency. Over 13,500 convictions resulted from seat belt citations issued during 2006. This is slightly less than the convictions, which resulted from 2005 citations. During 2007, most convictions are being moved electronically to the Department of Justice, and summaries of this information are not yet available. This information should again be available for 2008.

The Montana Highway Patrol wrote over 67% of the convictions statewide, which was a decrease from 2005. Police departments accounted for over 26% of statewide citations, up somewhat from 2005. Sheriff departments wrote citations that resulted in convictions which made up about 6% of the statewide total.

Many smaller local enforcement agencies, do not write significant numbers of seat belt citations. Usage may be lower on local streets and county roads since not as many citations are written and because of a lower perceived risk of a serious crash.

The Bureau of Indian Affairs and/or Tribal Police issue very few citations that result in convictions reported to the Montana Department of Justice. However, many citations from reservations are likely not sent to the Department of Justice so actual numbers are unknown. Restraint usage on most of Montana's reservations continues to be quite low.

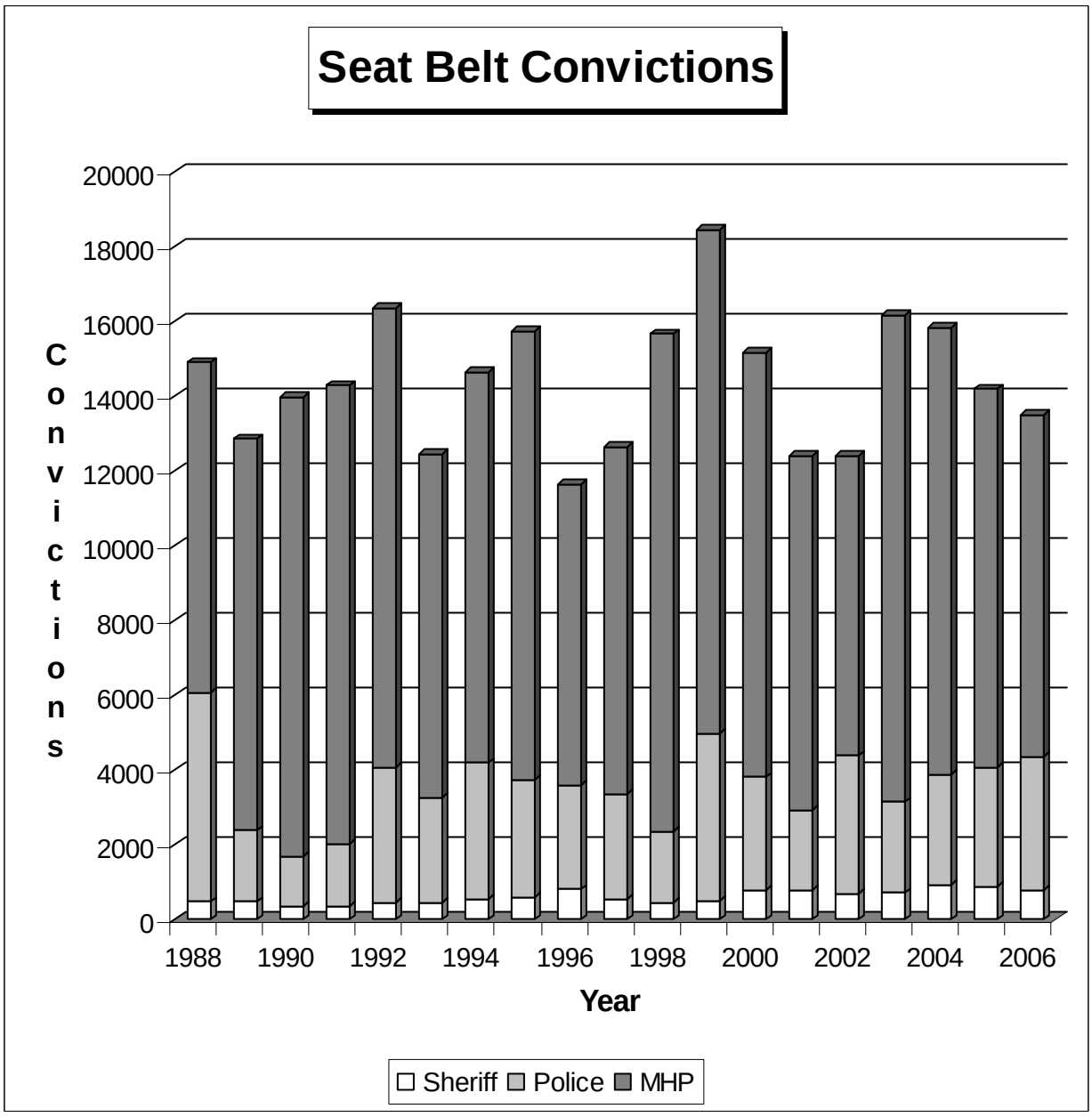
Table 16
Seat Belt Convictions by Agency Issuing Citation

Year	Police	Sheriff	MHP	Reservation Law Enf.	Total
1988	5,612	478	8,818	0	14,908
1989	1,907	483	10,463	0	12,853
1990	1,316	379	12,277	0	13,972
1991	1,658	355	12,269	15	14,297
1992	3,611	453	12,283	62	16,409
1993	2,799	474	9,192	106	12,571
1994	3,654	546	10,445	70	14,715
1995	3,173	585	11,986	38	15,782
1996	2,784	816	8,055	5	11,660
1997	2,798	567	9,289	11	12,665
1998	1,911	461	13,293	75	15,740
1999	4,454	521	13,459	32	18,466
2000	3,027	792	11,344	30	15,193
2001	2,141	786	9,463	9	12,399
2002	3,686	702	8,026	11	12,425
2003	2,422	724	13,022	2	16,170
2004	2,944	927	11,943	3	15,817
2005	3,192	889	10,112	2	14,195
2006	3,557	793	9,146	10	13,506
2007	NA	NA	NA	NA	NA
Chg 1 Year	---	---	---	---	---
Chg 5 Year	---	---	---	---	---

Source: Convictions received from Montana Department of Justice
Compiled by Montana Department of Transportation

Figure 8 on the next page shows convictions during the twenty years of the law.

Figure 8


Seat Belt Convictions
Convictions
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year
Sheriff
Police
MHP

Restraint usage acquired from crash reports is analyzed next. Usage as reported by the investigating officer is quite accurate in the case of fatalities. Even if the person is no longer in the vehicle, physical evidence usually allows the correct coding of this information. For persons injured in crashes, accurate coding of this field becomes more difficult. Generally, the investigating officer must rely on the honesty of the occupants when acquiring this data. The following table displays restraint use for occupant fatalities. Restraint usage is much lower for fatalities than for the overall population. There are thought to be two reasons for this. The first is that people that drive in a manner that tends to result in fatalities, are often under the influence of alcohol and/or drugs, are speeding or are involved in other hazardous driving. It has been shown in studies that these occupants tend to use restraints much less often—risk takers tend to be risk takers in many life choices. The second factor is that the occupants in crashes without belts are much more likely to die than those occupants wearing belts.

Table 17
Restraint Use for Occupant Fatalities in Crashes
(Excludes, Pedestrians, Bicyclists, Motorcyclists, ATV's, farm machinery, etc.)

Year	Not Belted	Belted	Unknown	Total Occupants	Percent Belted
1998	134	59	10	203	29.1%
1999	148	41	6	195	21.0%
2000	126	64	11	201	31.8%
2001	141	57	6	204	27.9%
2002	166	54	8	228	23.7%
2003	161	65	7	233	27.9%
2004	135	48	8	191	25.1%
2005	148	50	5	203	24.6%
2006	149	64	6	219	29.2%
2007	158	57	2	217	26.3%
Chg 1 Year	+6.0%	-10.9%	-66.7%	-0.9%	-9.9%
Chg 5 Year	+4.1%	+1.4%	-70.6%	+1.0%	+0.8%

Source: Fatal Analysis Reporting System (FARS)

Only about 25-30% of occupants killed in crashes were properly wearing an occupant restraint. Of the remaining 70-75%, NHTSA estimates that half could be saved if wearing a restraint. Note that the total fatalities shown in this table is not the same as in other tables throughout this paper. This table only shows occupant fatalities and does

not include, motorcyclists, pedestrians, bicyclists or other unusual vehicles such as farm machinery, ATV's, etc. Of the 217 fatal occupants, 105 were ejected from the vehicle.

Next is presented seat belt usage by vehicle type for occupant fatalities for crashes within Montana. Data is shown for crashes occurring during 2005 through 2007. Usage was much lower for pickups than for other types of vehicles.

Table 18
Seat Belt Usage of fatalities by Vehicle Type (2005-2007)

Vehicle Type	Usage
Pickups	18.5%
Passenger Cars	34.5%
SUV's	26.4%
Minivans	37.0%

Source: Fatal Analysis Reporting System (FARS)

In Table 19, it is shown that seat belt use of fatalities is much lower in crashes that are alcohol related than for those without alcohol involvement. Use in crashes without alcohol and drug involvement is 36.8% compared to 13.9% in those with alcohol and drugs.

Table 19
Seat Belt Usage versus Alcohol Involvement Fatal Crashes – 2007

		Seat Belt Used	Seat Belt Not Used	Unknown	Total
Alcohol Related	Fatalities	14	86	1	101
	Percent	13.9%	85.1%	1.0%	100.0%
Not Alcohol Related	Fatalities	43	73	1	117
	Percent	36.8%	62.4%	0.9%	100.0%
Total	Fatalities	57	159	2	218

Source: Fatal Analysis Reporting System (FARS)

The next table shows restraint usage for injured occupants in crashes. The usage in this table is much higher than that reported in the fatality table. This is due to three things: 1) occupants in injury crashes are not as likely to be involved in speeding, driving under the influence and hazardous driving actions and also tend to wear restraints more often, 2) Some of these occupants are not telling the truth about restraint usage and 3) survivors often survive simply because they were belted. Occupant usage for uninjured occupants is even higher and is usually above the observed average statewide usage.

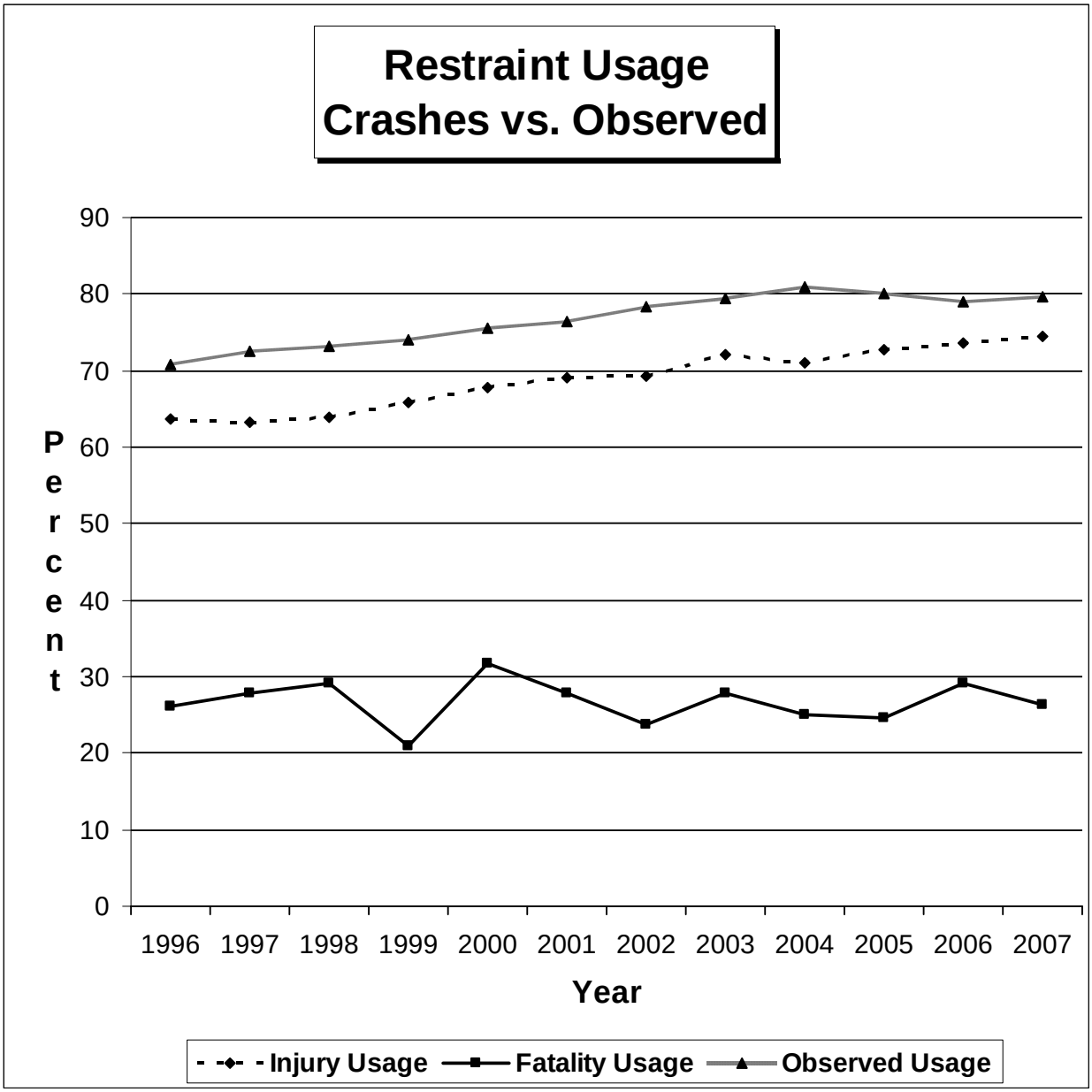
Table 20
Restraint Use for Occupant Injuries in Crashes

Year	Not Belted	Belted	Total Occupants	Percent Belted
1998	2,954	5,195	8,149	63.8%
1999	2,899	5,566	8,465	65.8%
2000	2,814	5,910	8,724	67.7%
2001	2,203	4,929	7,132	69.1%
2002	2,462	5,561	8,023	69.3%
2003	2,182	5,651	7,833	72.1%
2004	2,264	5,551	7,815	71.0%
2005	2,121	5,650	7,771	72.7%
2006	2,123	5,915	8,038	73.6%
2007	1,970	5,747	7,717	74.5%
Chg 1 Year	-7.2%	-2.8%	-4.0%	+1.2%
Chg 5 Year	-11.7%	+1.4%	-2.3%	+3.8%

Source: TIS - Montana Department of Transportation

This usage has been increasing during the past eleven years. The amount of increase seems to be similar to the state usage survey increases. Figure 9 on the following page shows usage from the previous two tables along with annual observed usage in Montana. The injury usage from crash reports seems to track about five to nine percent below the observed usage. Usage for uninjured occupants (not shown) tracks several percent above observed usage.

Figure 9


Restraint Usage
Crashes vs. Observed
90
80
70
60
50
40
30
20
10
0
Percent
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Injury Usage
Fatality Usage
Observed Usage

Fatalities and injuries to motor vehicle passengers whose ages are fourteen and under are of interest in relation to child safety and child restraint usage. The following table displays the history of occupant injury data over the last ten years. Injuries have decreased sginificantly from 1996 to 2007. A graph of fatalities plus injuries is shown for each of these age groups in figure 10 along with a trend line.

Table 21
Injuries – Age Fourteen and Under
(excludes pedestrians and bicyclists)

Year	Fatalities		Injuries	
	0-4	5-14	0-4	5-14
1998	3	7	278	626
1999	1	5	275	652
2000	4	10	242	693
2001	1	13	207	475
2002	1	6	220	593
2003	4	8	231	593
2004	1	4	210	562
2005	4	5	221	521
2006	4	4	199	496
2007	1	5	197	453
Change 1 Year	-75.0%	+25.0%	-1.0%	-8.7%
Change 5 Year	-64.3%	-7.4%	-8.9%	-18.1%

Source: TIS - Montana Department of Transportation

Restraint usage by age cannot be determined from the observational survey. We can analyze belt use data in crashes and acquire a general idea of how usage in Montana varies by age. While the actual usage rate is not accurate, the variation by age would be expected to be similar to actual use. In order to show significance, crash information for the last three years was analyzed (2005 – 2007). Usage is shown on the second figure below in Figure 11.

The age group with the lowest usage is from age 25 to 29, but all ages from 10-39 have relatively low usage rates. The age groups of 55 and above have higher usage along with 0 to 4 year olds.

Figure 10

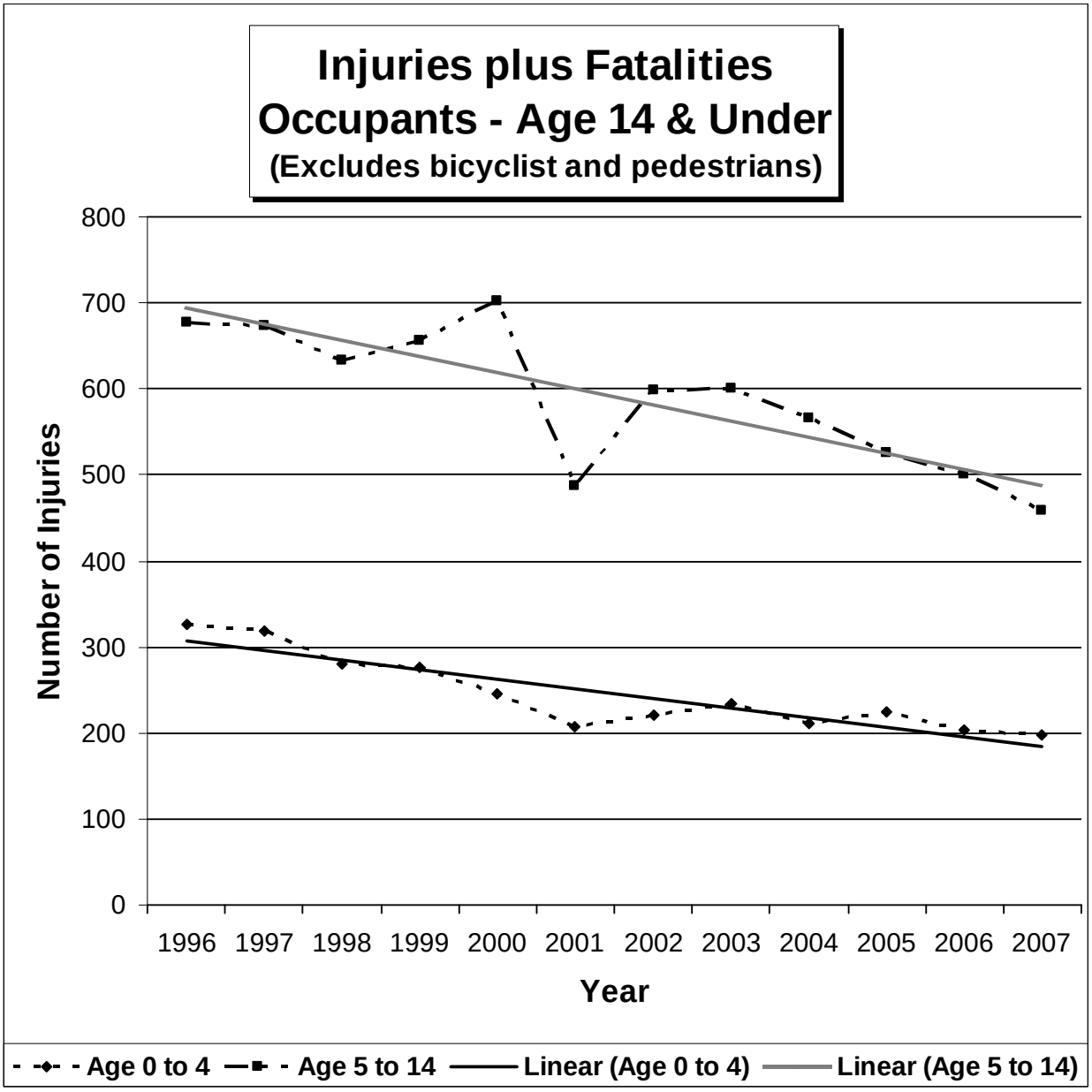
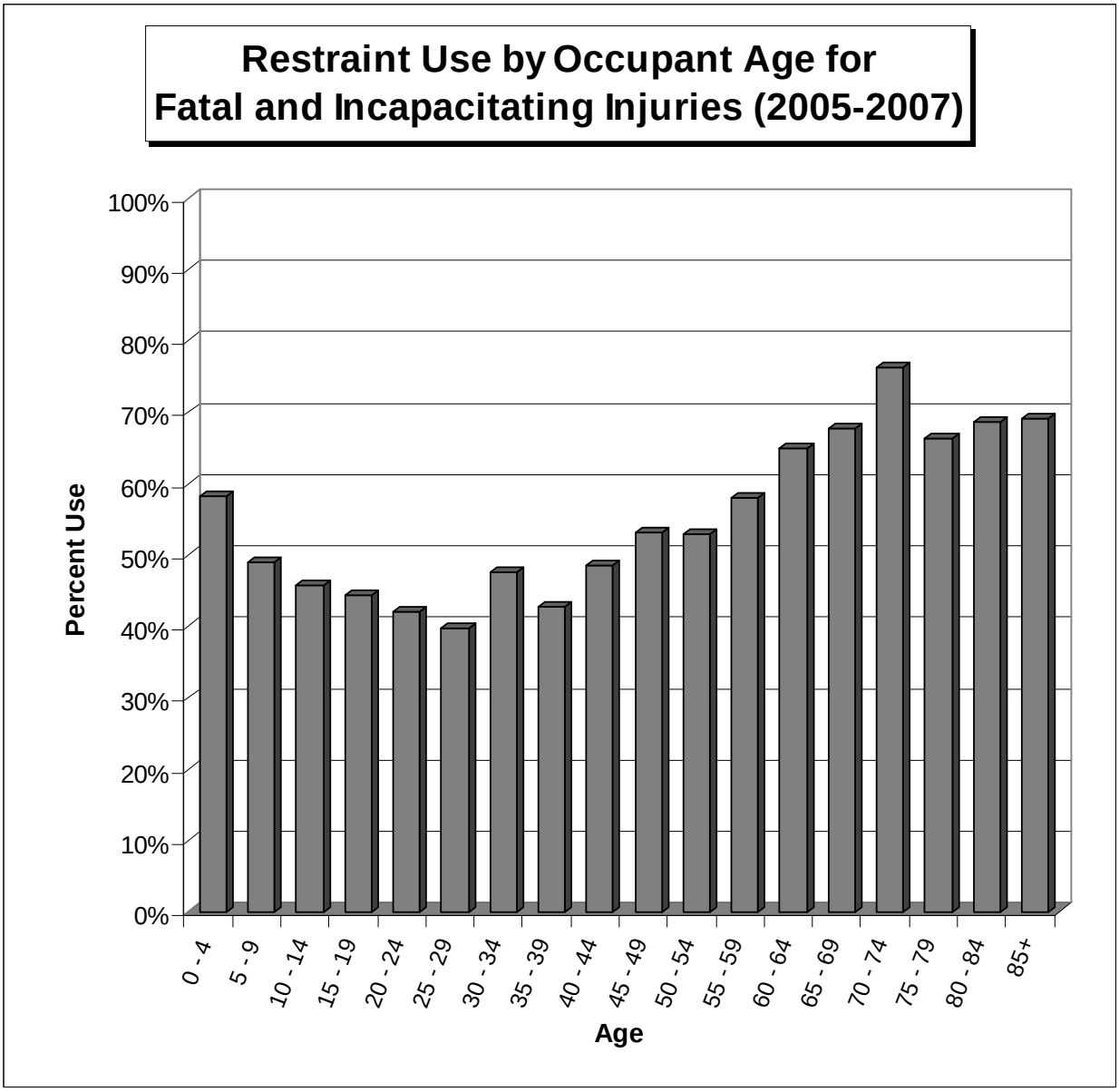

Injuries plus Fatalities
Occupants - Age 14 & Under
(Excludes bicyclist and pedestrians)
Number of Injuries
800
700
600
500
400
300
200
100
0
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Year
Age 0 to 4
Age 5 to 14
Linear (Age 0 to 4)
Linear (Age 5 to 14)

Figure 11


Restraint Use by Occupant Age for Fatal and Incapacitating Injuries (2005-2007)
Percent Use
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
0 - 4
5 - 9
10 - 14
15 - 19
20 - 24
25 - 29
30 - 34
35 - 39
40 - 44
45 - 49
50 - 54
55 - 59
60 - 64
65 - 69
70 - 74
75 - 79
80 - 84
85+
Age

2. Alcohol/Drug Impaired Driving

Alcohol/drug related crashes accounted for 10.4 percent of all reported traffic crashes during 2007. This percentage is higher than for all years since 1996, but is still far below the 22.3% of alcohol related crashes reported during 1983.

Alcohol/drug related crashes tend to result in more severe injuries than do crashes with no impairment. During the early 1980's, injuries related to alcohol accounted for as much as 36% of the total. Last year, alcohol/drug related injuries were at 19.5% of all injuries. This is the highest percentage since 1994. Economic Loss from driver impairment crashes was over 178 million dollars during 2007. Table 22 below presents the impaired crash counts.

Table 22
Alcohol/Drug Related Crashes

Year	All Crashes			Injuries		
	Alcohol Related	All	Percent of All	Alcohol Related	All	Percent of All
1998	2,142	22,068	9.7%	1,829	10,075	18.2%
1999	2,177	21,078	10.3%	1,771	10,459	16.9%
2000	2,211	22,254	9.9%	1,824	10,798	16.9%
2001	2,035	21,846	9.3%	1,652	8,982	18.4%
2002	2,288	23,527	9.7%	1,745	10,086	17.3%
2003	2,173	23,160	9.4%	1,638	9,632	17.0%
2004	2,113	21,783	9.7%	1,767	9,263	19.1%
2005	2,182	22,373	9.8%	1,623	9,211	17.6%
2006	2,243	22,186	10.1%	1,816	9,470	19.2%
2007	2,273	21,829	10.4%	1,771	9,067	19.5%
Chg 1 Year	+1.3%	-1.6%	+3.0%	-2.5%	-4.3%	+1.6%
Chg 5 Year	+3.3%	-3.4%	+6.8%	+3.1%	-4.9%	+8.1%

Source: TIS - Montana Department of Transportation

The National Highway Traffic Safety Administration (NHTSA) has moved away from placing emphasis on the percentage of fatalities that are alcohol related. NHTSA is now emphasizing the alcohol related fatality rate when comparing states. This rate is acquired by dividing the number of alcohol related traffic fatalities by the number vehicle

miles traveled. This data is compiled by NHTSA through the use of the Fatal Analysis Reporting System (FARS) database and state vehicle miles traveled estimates.

The FARS database inputs the results of BAC tests from the Montana Forensics Lab. If no test is performed or received, the alcohol code is generated using a number of other crash factors through a mathematical procedure. The FARS data is the most accurate data available because it is usually based upon BAC results. Timeliness is a problem with the FARS data since results from NHTSA are usually not available for over 12 months after the end of a year. The data in Table 23 is based upon FARS data, while most of the other data related to alcohol in this section is derived from the MHP crash records database. The MHP data is based upon perceptions and evidence at the scene along with on scene testing.

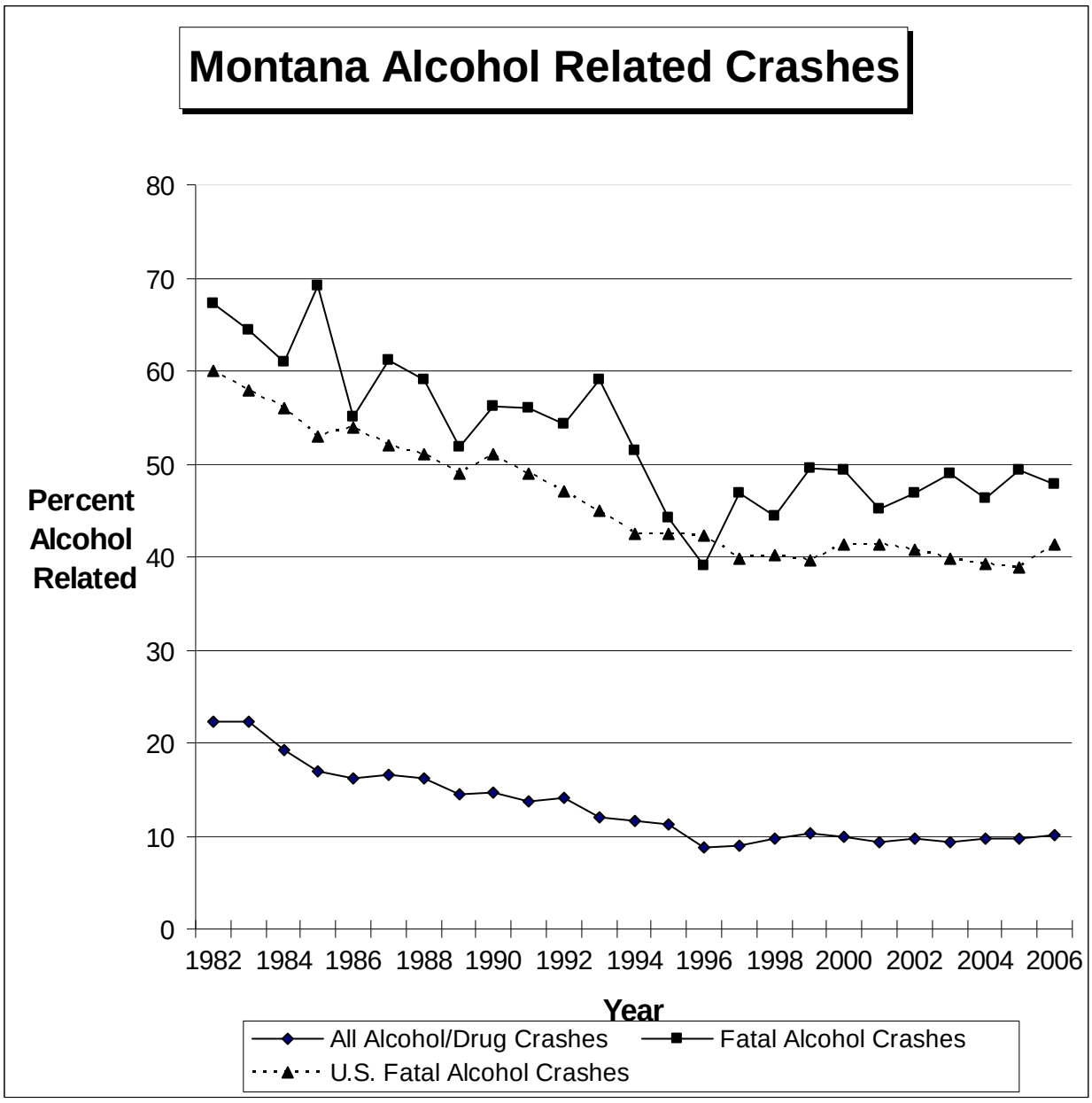
Table 23
Alcohol Fatalities & Fatality Rates

Year	Total Fatalities	Alcohol Related Fatalities	Alcohol Related Percent	Total Fatality Rate	Alcohol Related Fatality Rate
1997	265	124	46.8%	2.84	1.32
1998	237	105	44.3%	2.50	1.10
1999	220	109	49.5%	2.25	1.11
2000	237	117	49.4%	2.40	1.18
2001	230	104	45.2%	2.30	1.04
2002	269	126	46.8%	2.57	1.20
2003	262	128	48.9%	2.40	1.17
2004	229	106	46.3%	2.04	0.95
2005	251	124	49.4%	2.26	1.12
2006	263	126	47.9%	2.33	1.12
Chg 1 Year	+4.8%	+1.6%	-3.0%	+3.1%	---
Chg 5 Year	+6.0%	+7.1%	+1.2%	+0.7%	+2.2%

Source: Fatal Analysis Reporting System

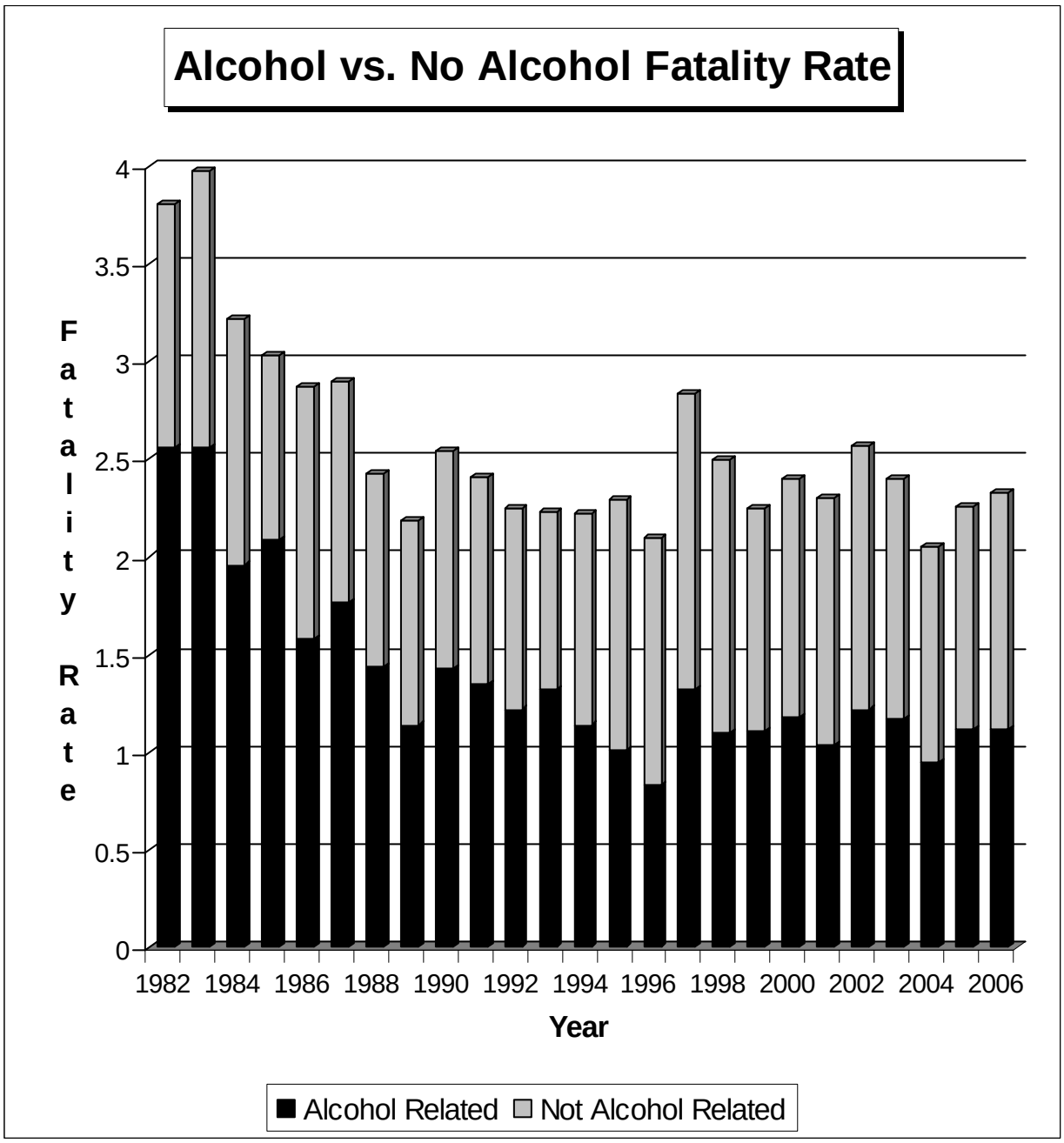
Figure 12 on the following page compares the Montana percentage of alcohol related crashes with the national percentage. The graph in Figure 12 displays alcohol and non-alcohol fatality rates in Montana since 1982. The alcohol fatality rate during 2004 was the lowest since 1996. The final rate during 2006 was higher at 1.12.

Figure 12



Source: Montana Department of Transportation and NHTSA

Figure 13


Alcohol vs. No Alcohol Fatality Rate
Fatality Rate
4
3.5
3
2.5
2
1.5
1
0.5
0
1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
Year
Alcohol Related
Not Alcohol Related

The Montana fatality rate during 1983 was 3.98 and the alcohol related fatality rate that year was 2.56. During the past twenty-two years, the alcohol rate has decreased more than 50%. The lowest rate was reached in 1996 and during the last ten years the rate has been nearly level. The current alcohol related fatality rate for the nation is 0.56 and for Montana the rate is 1.12.

Next, we examine alcohol related crashes by county. The final column of Table 24 displays the percentage of crashes with alcohol/drug involvement in the county. There is a tendency for the larger urban counties to have a lower percentage of alcohol involvement in crashes. It is not known whether this implies counties with higher populations truly have less alcohol involvement because of alcohol education and related activities, or whether the large number of fender benders at intersections makes the percentage of alcohol involvement lower. It is felt that these lower percentages result from a combination of these and possibly other factors. In addition, there are some enforcement agencies, which are not as precise in determining alcohol related involvement, which may cause some counties to show low percentages.

Table 24

Alcohol/Drug Related Crashes by County (2007)

County	Total Crashes	Fatal Crashes	Fatalities	Injuries	Percent Alcohol/Drug Crashes
Beaverhead	18	0	0	13	11.8%
Big Horn	33	5	5	32	20.8%
Blaine	13	3	4	17	20.0%
Broadwater	18	1	1	21	14.0%
Carbon	38	2	2	39	16.6%
Carter	1	0	0	1	11.1%
Cascade	181	5	5	154	8.3%
Chouteau	7	0	0	4	8.5%
Custer	23	3	3	12	8.3%
Daniels	1	0	0	1	5.9%
Dawson	14	1	1	19	6.5%
Deer Lodge	15	1	1	10	14.4%
Fallon	1	0	0	0	4.5%
Fergus	21	1	1	10	9.0%
Flathead	251	7	8	193	12.6%
Gallatin	195	9	10	129	9.9%
Garfield	2	1	1	2	28.6%
Glacier	35	8	8	66	21.7%
Golden Valley	4	0	0	5	17.4%
Granite	9	2	2	9	10.0%
Hill	32	2	2	21	10.8%
Jefferson	30	5	6	19	9.7%
Judith Basin	6	0	0	3	9.8%
Lake	103	6	8	98	20.9%
Lewis & Clark	123	5	5	86	7.1%
Liberty	0	0	0	0	0.0%
Lincoln	39	3	4	50	13.0%
Madison	26	2	2	23	15.1%
McCone	2	0	0	4	11.1%
Meagher	5	0	0	4	17.9%
Mineral	20	3	3	10	6.4%
Missoula	265	12	12	172	10.8%
Musselshell	14	2	2	11	22.6%
Park	37	3	4	24	8.1%
Petroleum	1	0	0	0	14.3%
Phillips	9	1	1	9	14.1%
Pondera	13	0	0	13	12.5%

Table 24 (continued)

Alcohol/Drug Related Crashes by County (2007)

County	Total Crashes	Fatal Crashes	Fatalities	Injuries	Percent Alcohol/Drug Related Crashes
Powder River	5	0	0	2	15.6%
Powell	12	1	1	9	7.3%
Prairie	2	0	0	1	5.4%
Ravalli	61	6	6	57	8.8%
Richland	31	1	2	22	13.1%
Roosevelt	30	2	3	34	26.1%
Rosebud	13	1	1	7	8.3%
Sanders	36	2	4	28	16.8%
Sheridan	10	1	1	4	15.9%
Silver Bow	46	2	2	29	7.0%
Stillwater	20	1	2	20	8.3%
Sweet Grass	11	1	1	8	12.1%
Teton	9	1	1	14	8.3%
Toole	6	0	0	5	7.1%
Treasure	3	0	0	1	9.7%
Valley	13	1	1	8	11.9%
Wheatland	8	1	1	10	16.0%
Wibaux	0	0	0	0	0.0%
Yellowstone	352	6	6	228	9.9%
Total	2,273	120	133	1,771	10.4%

Source: TIS -- Montana Department of Transportation

Complete DUI arrest data is not summarized by any agency in Montana. Not all arrests result in a conviction for DUI, since some are dismissed or not prosecuted and others are found not guilty. In lieu of arrest data for Montana, we now present conviction data, which is gathered by the Department of Justice and placed upon driver's records. This data includes out-of-state convictions for Montana licensed drivers. Total Convictions reported were higher during 2007 than the previous four years.

Table 25
Impaired Driving Convictions
(Reported to Records and Driver Control Bureau - DOJ)

Year	2003	2004	2005	2006	2007
DUI 1st Offense	2,790	3,009	2,832	3,250	3,051
DUI 2nd or Subsequent Offense	1,010	909	967	1,055	1,129
BAC 1st Offense	1,249	1,395	1,698	1,722	2,066
BAC 2nd or Subsequent Offense	204	174	179	247	244
0.02% BAC (Under 21) 1st Offense	438	429	361	415	302
0.02% BAC (Under 21) 2nd or Subsequent Offense	6	23	33	25	22
Felony DUI	209	258	286	217	213
Total	**5,906**	**6,197**	**6,356**	**6,931**	**7,027**
Implied Consent	1,149	1,073	1,171	1,083	1,236
P.A.S.T. (preliminary alcohol screening test)	1,208	1,213	1,243	1,330	1,533

Source: Montana Department of Justice – Records and Driver Control Bureau

Next, data is usually presented for DUI convictions by county and by type of arresting agency. Unfortunately, the Department of Justice is redesigning the databases in the department including the conviction system. While the database has been redesigned, the software for accessing certain types of data is not complete. Because of this, no data by county is available this year, but improved reporting capabilities should exist for the 2009 calendar year.

Table 26 examines the age of the drivers that are involved in alcohol related traffic crashes. Crash rates per licensed driver are calculated. This information can help those in the traffic safety community make decisions on targeting specific age groups concerning the drinking and driving problem. It should be noted that not all drivers involved in these alcohol crashes were drinking. While most alcohol crashes are single car crashes, when there are multiple vehicles involved (792 crashes), some of the drivers may not have been drinking.

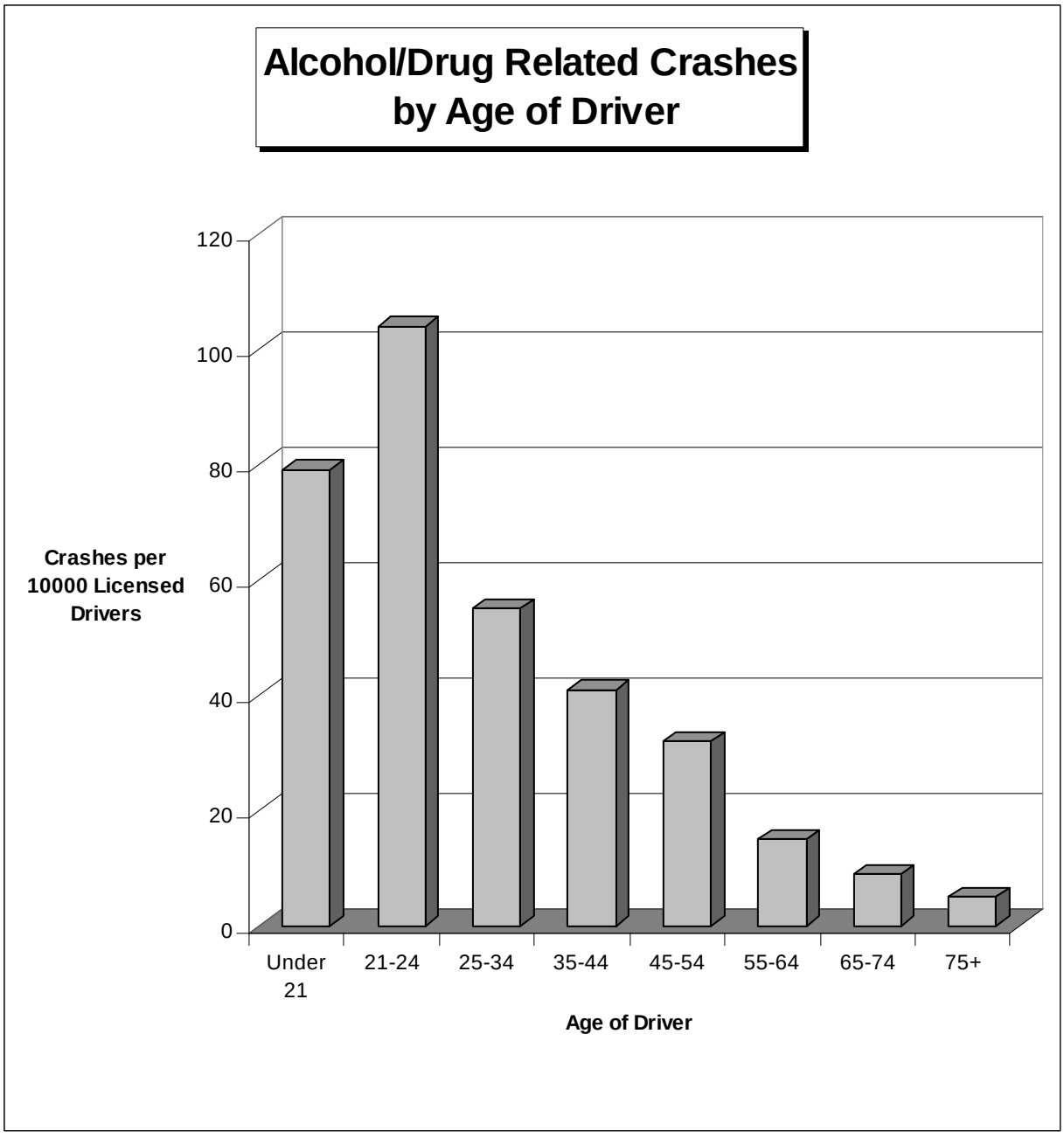
Table 26
Alcohol Related Crashes by Age of Driver
(2007 Crash Data)

Age	Licensed Drivers (FY2006)	Drivers in Alcohol Crashes	Alcohol Crashes per 10,000 Licenses	Drivers in Fatal Alcohol Crashes	Fatal Alcohol Crashes per 10,000 Licenses
Under 18	19,190	110	57	2	1.0
18-20	35,657	321	90	12	3.4
Under 21	54,847	431	79	14	2.6
21-24	49,345	514	104	20	4.1
25-34	121,587	674	55	27	2.2
35-44	115,990	479	41	26	2.2
45-54	150,121	486	32	34	2.3
55-64	124,593	182	15	12	1.0
65-74	71,592	68	9	6	0.8
75+	47,678	25	5	1	0.2

Source: TIS – Montana Department of Transportation, FARS – Montana Department of Transportation, Motor Vehicle Division – Department of Justice

The highest involved age group for alcohol related crashes was 21-24 years of age. The group between 18 and 20 is a very close second. For fatal crashes, the highest rate is for the 21-24 age group followed by the 18-20 age group. Figure 14 on the next page shows these rates by age. It is interesting to compare this chart with Figure 19 on page 65, which shows rates by age for all crashes.

Figure 14


Alcohol/Drug Related Crashes by Age of Driver
Crashes per 10000 Licensed Drivers
120
100
80
60
40
20
0
Under 21
21-24
25-34
35-44
45-54
55-64
65-74
75+
Age of Driver

The table below examines "drivers" under age 21 involved in crashes. Those drivers involved in all crashes and in alcohol/drug related crashes are compared. It should be emphasized that the counts are for drivers of age 20 and under (not crashes). There could be a few instances where the young driver had not been drinking, while another older driver involved in the crash had been drinking. Fortunately, most alcohol/drug related crashes involve only one vehicle.

Underage drivers have a lower use of involvement in alcohol/drug related crashes than the entire population of drivers. When young drivers are involved in crashes, 6.6% of those crashes involve alcohol and/or drugs, while the rate is 10.4% for all drivers regardless of age.

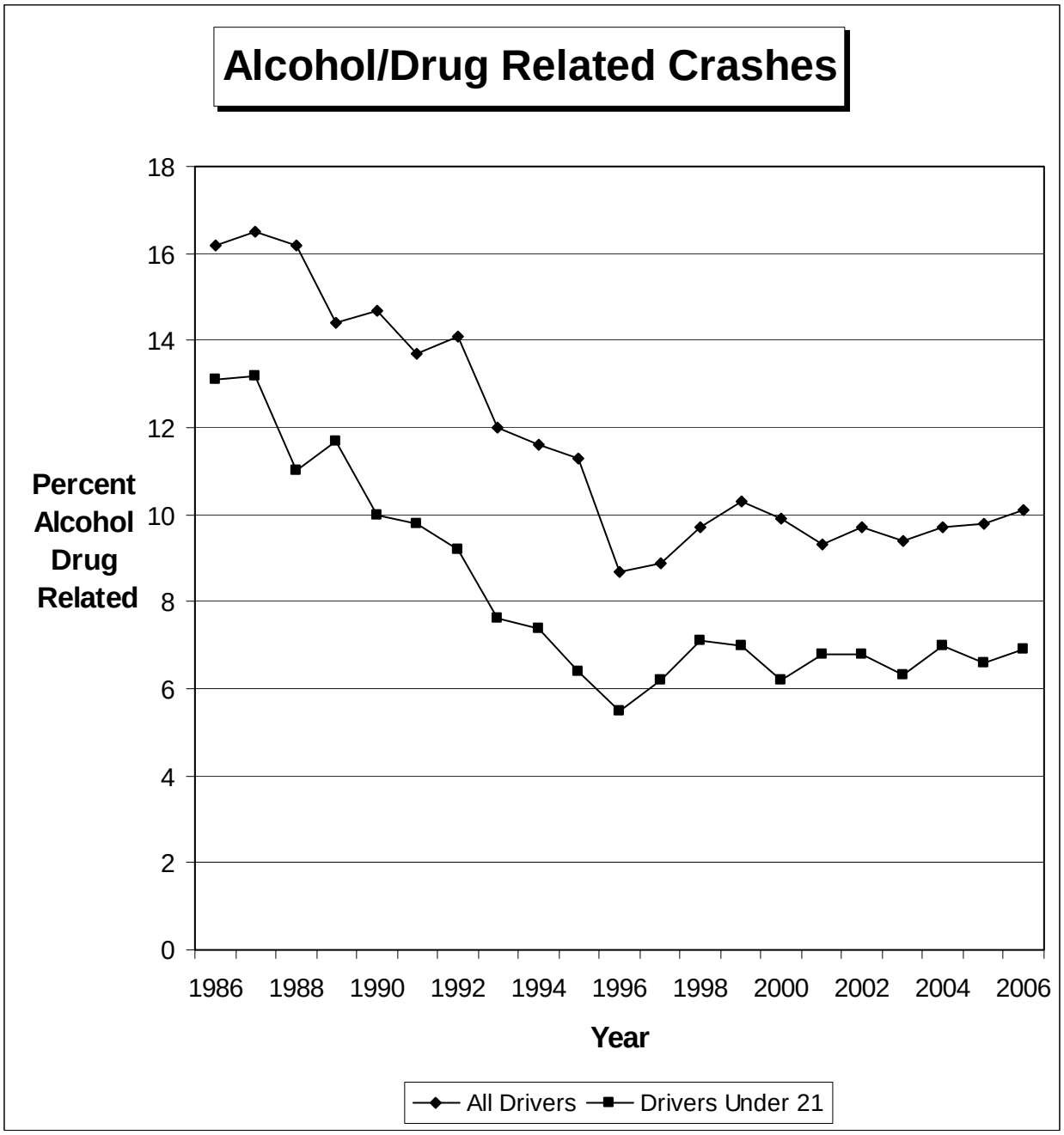
Table 27
Drivers Under 21 – Alcohol/Drug Related Crashes

Year	Young Drivers in All Crashes			Young Drivers In Fatal Crashes		
	Alcohol Related	All	Percent of All	Alcohol Related	All	Percent of All
1998	534	7,503	7.1%	14	44	31.8%
1999	497	7,064	7.0%	23	55	41.8%
2000	497	7,969	6.2%	13	49	26.5%
2001	531	7,781	6.8%	13	40	32.5%
2002	558	8,224	6.8%	16	47	34.0%
2003	473	7,551	6.3%	18	57	31.6%
2004	499	7,090	7.0%	17	39	43.6%
2005	468	7,096	6.6%	11	37	29.7%
2006	491	7,080	6.9%	19	37	51.4%
2007	431	6,534	6.6%	14	32	43.8%
Chg 1 Yr	-12.2%	-7.7%	-4.3%	-26.3%	-13.5%	-14.8%
Chg 5 Yr	-13.4%	-11.8%	-1.8%	-13.6%	-26.3%	+15.1%

Source: TIS – Montana Department of Transportation

Figure 15 on the following page examines these trends over time. A general decline for percentage of alcohol/drug related crashes occurred until 1995. From 1996 until 2006, this percentage appears to be increasing slightly.

Figure 15


Alcohol/Drug Related Crashes
Percent Alcohol Drug Related
18
16
14
12
10
8
6
4
2
0
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year
All Drivers
Drivers Under 21

3. Native American

The population of Montana has little racial diversity. The 2000 census showed the following breakdown of population.

Table 28
Montanans by Race

Race	White	American Indian	Two or More Races	Other	Asian	Black	Hawaiian and Pacific Isl
Percent	90.6%	6.2%	1.7%	0.6%	0.5%	0.3%	0.1%

The two predominant races account for 96.8 percent of the population and are the only two that contain enough data to analyze. Fatality data from the Fatality Analysis Reporting System (FARS) is the only available crash information by race from 1999 to date. This data includes crashes occurring in Montana, including out of state drivers.

Table 29
Fatalities by Race

	Fatalities			Percentage of Total		
Year	White	American Indian	Other Races	White	American Indian	Other Races
1999	169	43	3	76.8%	19.5%	1.4%
2000	189	35	1	79.7%	14.8%	0.4%
2001	183	37	7	79.6%	16.1%	3.0%
2002	206	51	12	76.6%	18.9%	4.5%
2003	206	42	7	78.6%	16.0%	2.7%
2004	175	46	4	76.4%	20.1%	1.7%
2005	204	34	7	81.3%	13.5%	2.8%
2006	208	46	5	79.1%	17.5%	1.9%
2007	227	43	5	81.9%	15.5%	1.8%

Source: FARS Database – MDT
* Percentages do not add to 100% because there are usually 0-5% unknown

The percentage of white fatalities was higher during 2007 than any of the previous 8 years, but less than the percentage of population. American Indian fatalities during each of the last ten years account for 13.5 to 20.1% of the total fatalities, which is two to three times the percentage of the population. Alcohol related American Indian fatalities accounted for 21.5% of the total alcohol related fatalities during 2007. During the past five years, seat belt usage for American Indian occupant fatalities has been under 8%. Seat belt usage for all other race occupant fatalities has been over 30%. Figure 16 displays the history of fatalities by race.

Figure 16

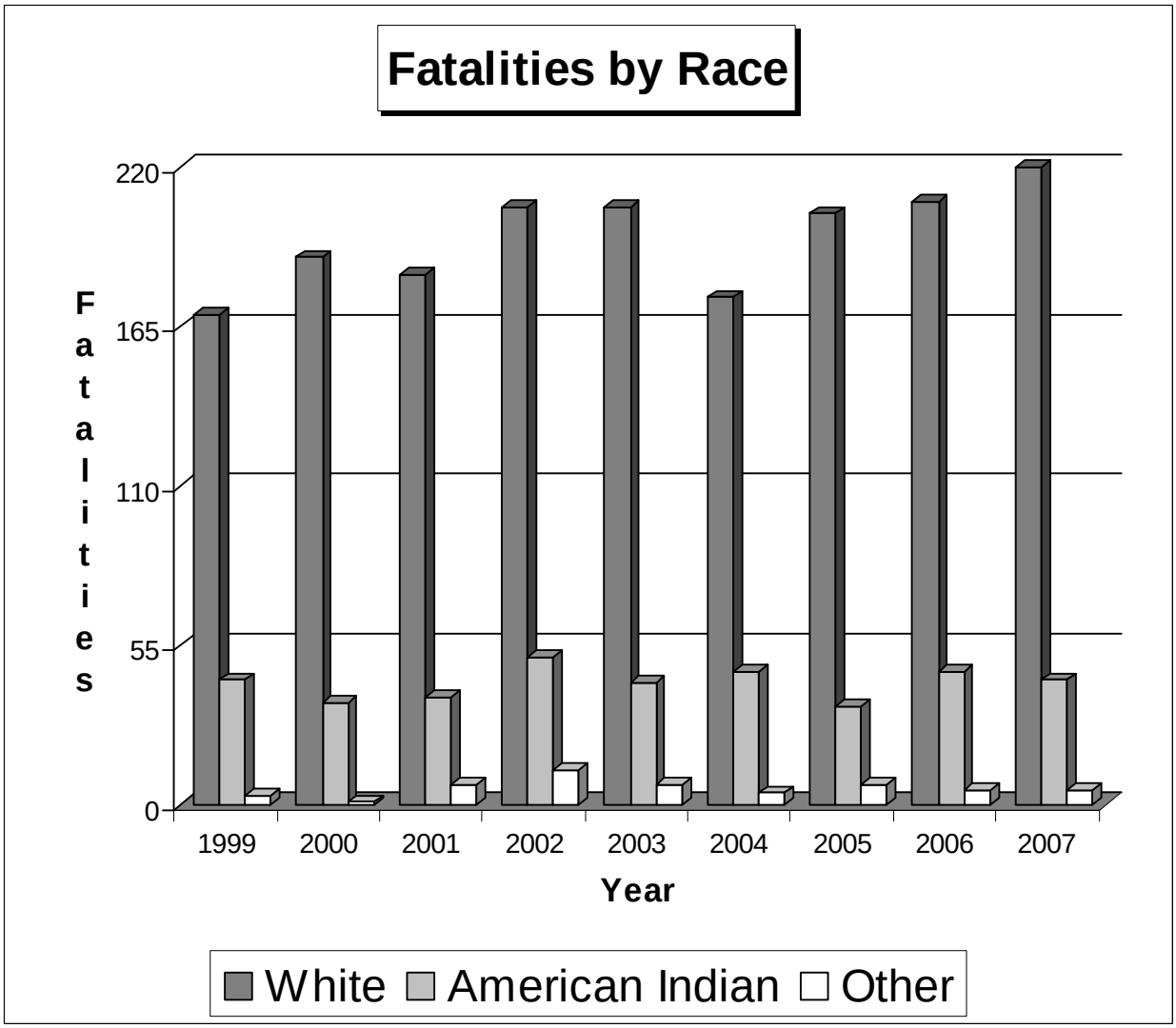

Fatalities by Race
220
165
110
55
0
Fatalities
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
White
American Indian
Other

Table 30 shows the number of American Indian fatalities that occur on any of the reservations versus those fatalities which occur off of any of the reservations. Two-thirds of the fatalities occur within a reservation.

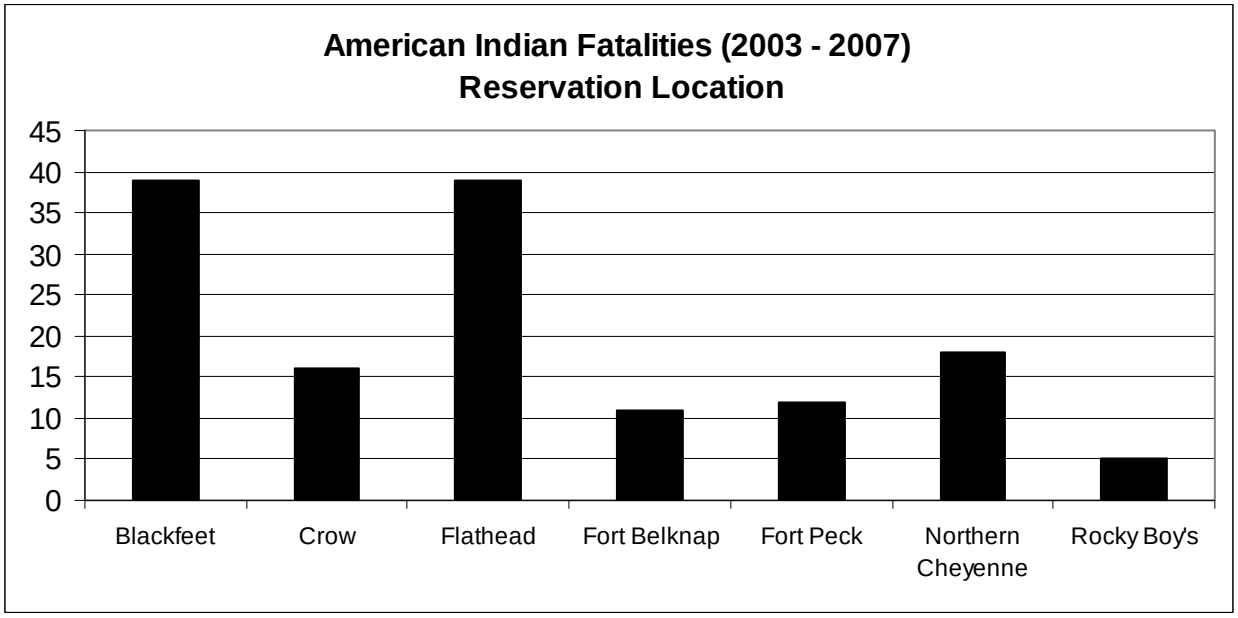
Table 30
Location of American Indian Fatalities

	On Reservation	Off Reservation
2003	30	12
2004	31	15
2005	15	19
2006	33	13
2007	31	12
Total	140	71

Source: FARS Database – MDT

Figure 17 shows a breakdown in graphical form as to the number of Indian fatalities that have occurred on the various reservations over the last five years. The Blackfeet and Flathead reservations have had the most fatalities of any of the seven reservations.

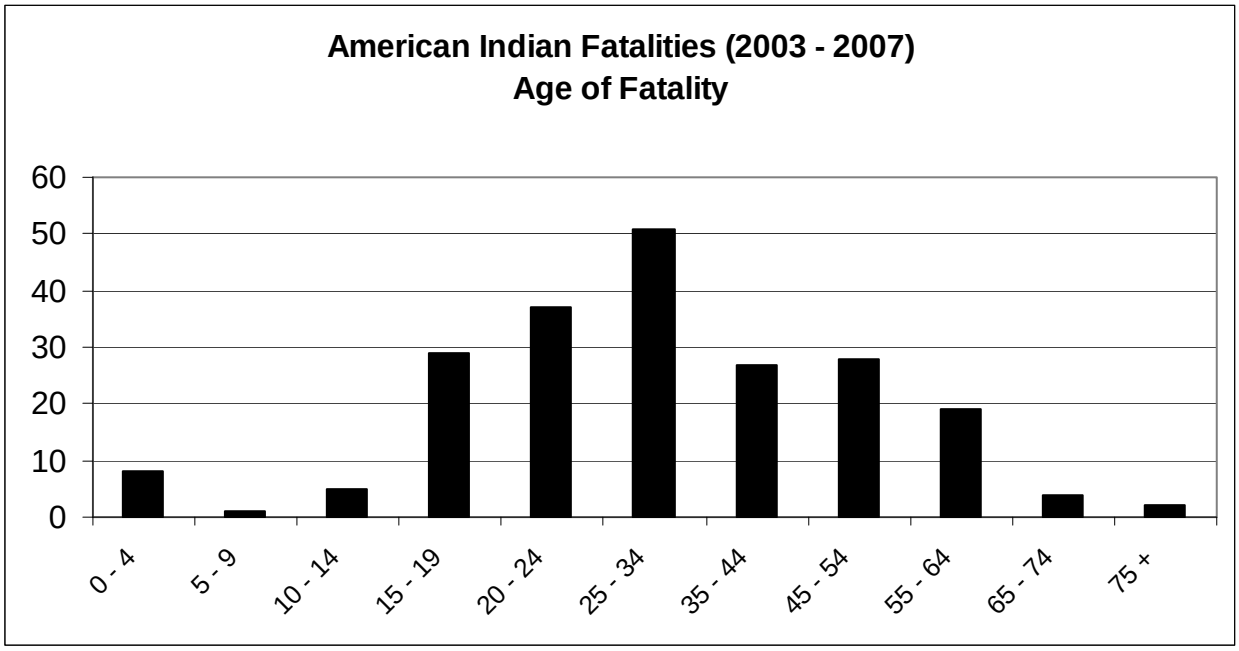
Figure 17



Source: FARS Database – MDT

The age of American Indian fatalities is shown in Figure 18 for the previous five years.

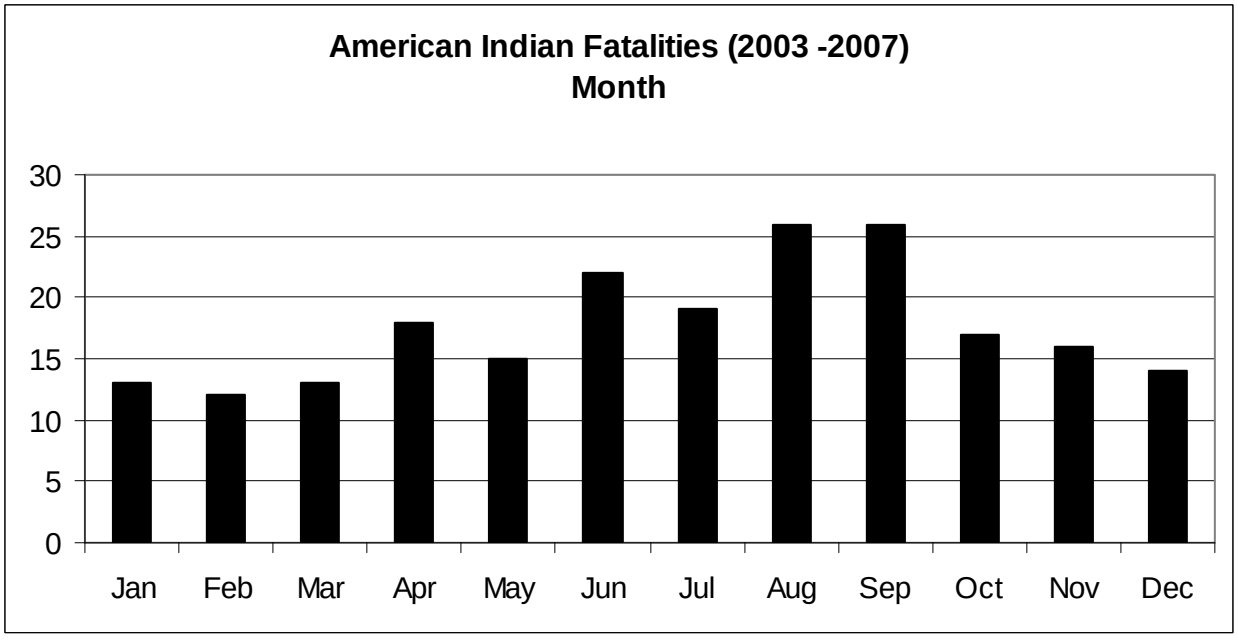
Figure 18



Source: FARS Database – MDT

The month of occurrence of fatalities is shown by month in Figure 19.

Figure 19



Source: FARS Database – MDT

4. Single Vehicle Run-Off-The-Road Crashes

Single vehicle run off the road crashes are a very high percentage of total crashes in Montana. There is no specific code for running off the road in the Montana crash report. In order to calculate a number that is an estimate, summaries were created where the first harmful event was overturn, immersion, other non-collision, collisions with motor vehicle on another roadway and collision with any fixed object, since these objects would be off the roadway. The table below presents the resulting data.

Table 31
Single Vehicle Run off the Road Crashes

Year	All Crashes			Fatal Crashes		
	Single Vehicle Run off the Road Crashes	All Crashes	Percent of All Crashes	Single Vehicle Run off the Road Fatal Crashes	All Fatal Crashes	Percent of All Fatal Crashes
1998	6,444	22,068	29.2%	114	208	54.8%
1999	6,403	21,078	30.4%	129	194	66.5%
2000	6,882	22,254	30.9%	107	203	52.7%
2001	6,265	21,846	28.7%	122	201	60.7%
2002	7,211	23,527	30.6%	139	232	59.9%
2003	7,216	23,160	31.2%	144	239	60.3%
2004	6,395	21,783	29.4%	131	209	62.7%
2005	6,808	22,376	30.4%	139	224	62.1%
2006	6,727	22,186	30.3%	138	226	61.1%
2007	6,406	21,829	29.3%	154	249	61.8%
Chg 1 Yr	-4.8%	-1.6%	-3.3%	+11.6%	+10.2%	+1.1%
Chg 5 Yr	-6.8%	-3.4%	-3.6%	+11.4%	+10.2%	+0.9%

Source: TIS – Montana Department of Transportation

During 2007, there were 6,406 single vehicle run off the road crashes, and 2,565 of these involved rollovers. Of the 154 single vehicle, run off the road fatal crashes, 118 involved a rollover and resulted in 129 fatalities. This is the single most common type of fatal crash that occurs in Montana.

The same information was calculated for rural crashes only. Single run off the road rural crashes account for an even higher percentage of crashes and fatal crashes. Over half of all rural crashes and nearly two-thirds of rural fatal crashes are instances of run off the road as the first harmful event.

Table 32
Single Vehicle Run off the Road Rural Crashes

Year	Rural Crashes			Rural Fatal Crashes		
	Single Vehicle Run off the Road Crashes	All Rural Crashes	Percent of All Rural Crashes	Single Vehicle Run off the Road Fatal Crashes	All Rural Fatal Crashes	Percent of All Rural Fatal Crashes
1998	5,603	11,061	50.7%	109	180	60.6%
1999	5,579	11,241	49.6%	121	176	68.8%
2000	5,889	11,637	50.6%	102	185	55.1%
2001	5,246	10,452	50.2%	118	187	63.1%
2002	6,033	11,489	52.5%	132	209	63.2%
2003	6,106	11,746	52.0%	139	214	65.0%
2004	5,409	10,576	51.1%	126	184	68.5%
2005	5,694	10,934	52.1%	130	194	67.0%
2006	5,648	10,939	51.6%	133	209	63.6%
2007	5,236	10,573	49.5%	144	230	62.6%
Chg 1 Yr	-7.3%	-3.3%	-4.1%	+8.3%	+10.0%	-1.6%
Chg 5 Yr	-9.4%	-5.1%	-4.6%	+9.1%	+13.9%	-4.4%

Source: TIS – Montana Department of Transportation

Montana usually ranks in the top three states as far as percentage of fatal crashes that are run off the road. This is partly a function of Montana not having a high amount of two or more vehicle fatal crashes, since these tend to occur in more congested areas or on roads with many intersections. Another factor is likely the long distances between communities.

5. Traffic Records

Traffic safety data and specifically crash data are an important part of any highway safety program. Without timely and relevant data, a traffic safety program cannot operate efficiently. Countermeasures cannot be developed without the ability to determine where problem areas occur. NHTSA requires the Highway Safety Plan to be data driven and this requires comprehensive, timely data systems.

During April 2004, a Traffic Records Assessment was conducted for Montana. This assessment reported the positives and negatives of traffic records concerning highway safety in the state. Of the many recommendations suggested in this report, the most important was the need to formalize a Traffic Records Coordinating Committee across multiple agencies and jurisdictions. The working level committee was established and has met numerous times over the years and is meeting every six weeks during 2008. A memorandum of understanding between the agencies has been drawn up and signed. Members of the working committee will contact directors or division administrators in their agencies as needed.

Cambridge Systematics completed a Traffic Records Strategic Plan during February of 2006. The plan has been updated each successive year by June 15. Montana applied for NHTSA 408 funding designated for the improvement of Traffic Records systems within the state and received that funding during September of 2006 and September of 2007.

The Traffic Records Coordinating Committee decided to hire a program manager in order to 1) manage the interaction between the various agencies and 2) more efficiently spend funds. The program manager was brought on board at the end of January 2007. The program manager facilitates the various areas of traffic records and assists in the organization to link and/or make information more accessible to users.

The linking of data systems across department boundaries requires budget and information technology approvals from the individual Departments and the Department of Administration. Since this will be a time consuming process which will require months or even years, it was felt that this portion of the plan be put off to the later years of funding.

At present, a court tracking system has been deployed to most courts in Montana. The software is called Full Court. Information from the citation is entered into the database along with adjudication information at the court level. The Department of Justice and the Office of Court Administration contracted for a broker to be built that would move the data from the Office of Court Administration to the Department of Justice driver history data base. This became effective during August of 2006, with most of this data moving electronically to the Department of Justice. Work is continuing on several systems including fingerprints and e*citations. Once the e*citation project is completed, this would allow entry of citation information at the law enforcement level. If this data could be uploaded to the appropriate court, then this final piece would provide Montana with a

citation tracking system. This is a very key part of a Traffic Records system. It would allow the summarization of citation data which could be used to calculate conviction rates for various citation types. This would give the state the ability to analyze how often and/or why convictions are not occurring. The final step to reaching this goal would be to have most or all law enforcement agencies enter citations electronically.

The Department of Justice has examined their business practices related to Vehicle Registration, Driver Licensing and Driver Improvement. This project is requiring major changes in their data files and information exchange. They are in the middle of this process and the resulting improvements should greatly affect data availability, linking and exchange. These changes should give better driver histories resulting in quicker and more accurate action, and will provide better available data to law enforcement, judges, prosecutors and highway safety advocates. One innovation is that the Department of Justice now allows Montanan's to access their driving record on-line. The registration of vehicles also may be carried out on-line in the future.

The Montana Highway Patrol contracted to have modifications performed on their crash database (MARS). This would allow for direct transmission of crash reports from vehicle and detachment offices to the database in Helena and decrease the lag time in crash data becoming available for analysis. The updated system will allow photos of crash scenes to be attached to the crash reports. Any of the reports that are transferred electronically, will not need to be scanned for use by the Department of Transportation. When the crash report is available, the image of the crash report will also be available, meaning that the image will be available much sooner than in the past. Before all of the preceding was implemented, the Highway Patrol decided that it is moving to a different crash reporting system during 2008. The implications of this change are not yet clear and the changeover may not occur until January 1, 2009. This change will still mean an increase in timliness of data and an increase in MMUCC compliance. However, it may come at the expense of having a clean history of data.

The Montana Department of Transportation, Montana Highway Patrol and Federal Highway Administration are working toward having all seven Montana reservations provide crash data to the Montana Highway Patrol, without identifiers. This would provide for more complete information on all roads within Montana. Testing of the reservation data is occurring in order to decide if the data is complete enough.

The Department of Transportation has concluded a study on the future direction of GIS. Currently, a requirements document is being prepared for the department. This will pave the way toward implementing a GIS/GPS system with the road inventory and the ability to tie all crash data to the road inventory. The Crash system has the ability to save GPS locations and testing of a sample of GPS data is currently underway. A link between the crash records and the road log could automatically fill some fields on the crash report, thus reducing law enforcement time required to fill out the report.

The Emergency Medical Services and Trauma Systems Section within the Department of Public Health and Human Services is currently installing a trip report database that is NEMSIS compliant. The system is projected to begin providing data sometime during

2008. A separate project will be the development of summary reports to pull information from this database.

Another project in the works, is to potentially replicate the court database in the Department of Transportation, and develop summary programs and queries in order to pull traffic safety data in various configurations. This will allow the tracking of DUI, Seatbelt, Speeding and other traffic citations through the courts.

The Traffic Records Coordinating Committee is currently soliciting projects that will be funded with 408 funding. Decisions on projects to support may begin during the summer of 2008.

6. Young Driver Crashes

This section examines the age of the drivers that are involved in traffic crashes. Crash rates per one thousand licensed drivers are calculated. This data provides additional information to improve decisions on targeting specific high-risk age groups. Table 33 contains this age related data.

Table 33
Crashes by Age of Driver
(2007 Crash Data)

Age	Licensed Drivers (SFY2007)	Drivers in Crashes	Crashes per 1000 Licenses	Drivers in Fatal Crashes	Fatal Crashes per 1000 Licenses
Under 16	2,219	576	260	4	2.80
16	7,340	1,046	143	2	0.27
17	9,631	1,240	129	2	0.21
18	11,362	1,379	121	8	0.70
19	11,880	1,211	102	9	0.76
20	12,415	1,082	87	7	0.56
Under 21	54,847	6,534	119	32	0.58
21-24	49,345	3,648	74	41	0.83
25-29	66,585	3,251	49	28	0.42
30-34	55,002	2,457	45	24	0.44
35-44	115,990	4,815	42	49	0.42
45-54	150,121	5,268	35	74	0.49
55-64	124,593	3,538	28	39	0.31
65-74	71,592	1,745	24	27	0.38
75+	47,678	1,211	25	10	0.21

Source: TIS – Montana Department of Transportation
Motor Vehicle Division – Department of Justice

Young drivers are over-represented in traffic crashes based upon the number of licensed drivers. Nationally the number of miles driven by teens is less than for drivers of all ages. In fact teens drive approximately 35% fewer miles than average adults. If teen drivers in Montana are similar to the teens across America, then their rate of crashes per vehicle miles driven would be even more extreme than the rate per licensed

driver shown above. Drivers between 15 and 20 years of age were involved in 119 crashes per thousand drivers during 2007. Every other age group over 20 years of age had a rate of 74 or less crashes per thousand licensed drivers. Each higher age group had fewer crashes per licensed driver than the previous age group, with the exception of the “75 year and over” age group. The data suggests that inexperience and/or risk-taking are factors in crash risk for youth. Certainly the change for each year of age between 15 and 20 supports the supposition that experience is a strong factor. It is of interest to note that a 15 year-old driver is seven times more likely to be in a crash than a driver between 65 and 74.

Similarly, the fatal crash rate is somewhat lower for older drivers. Drivers under 21 were involved in 0.58 fatalities per thousand licensed drivers. All age groups above 25 were involved at a rate of 0.49 or less fatalities per thousand drivers. It is interesting to note that 45 to 54 year olds had a rate higher than all other age groups over 24.
The following chart shown in Figure 20 shows the change in crash incidence by age of driver. On the page after this chart, Figure 21 shows the change in fatal crash incidence.

Figure 20

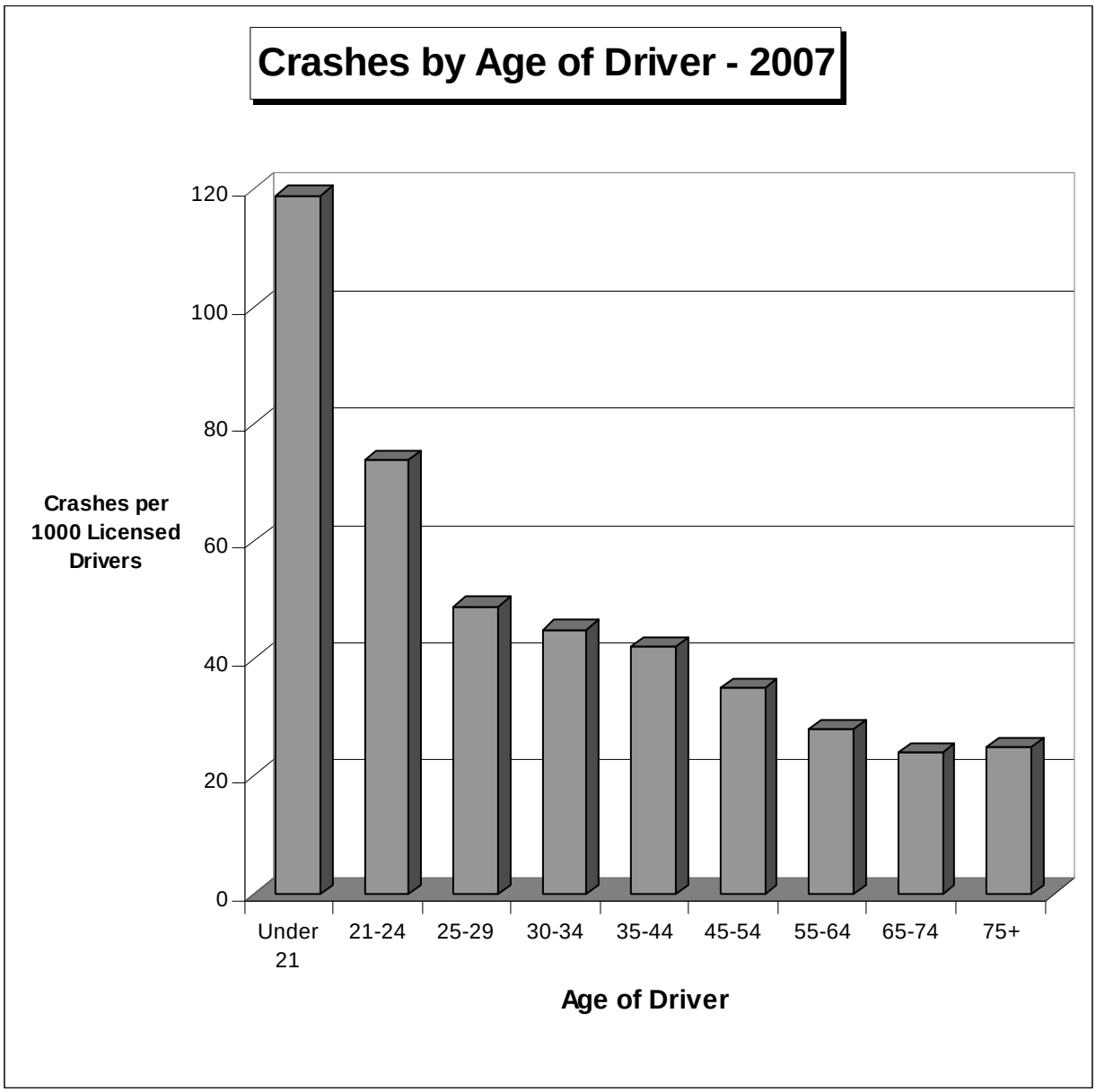

Crashes by Age of Driver - 2007
Crashes per 1000 Licensed Drivers
120
100
80
60
40
20
0
Under 21
21-24
25-29
30-34
35-44
45-54
55-64
65-74
75+
Age of Driver

Figure 21


Fatal Crashes by Age of Driver - 2007
Fatal Crashes per 1000 Licensed Drivers
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Under 21
21-24
25-29
30-34
35-44
45-54
55-64
65-74
75+
Age of Driver

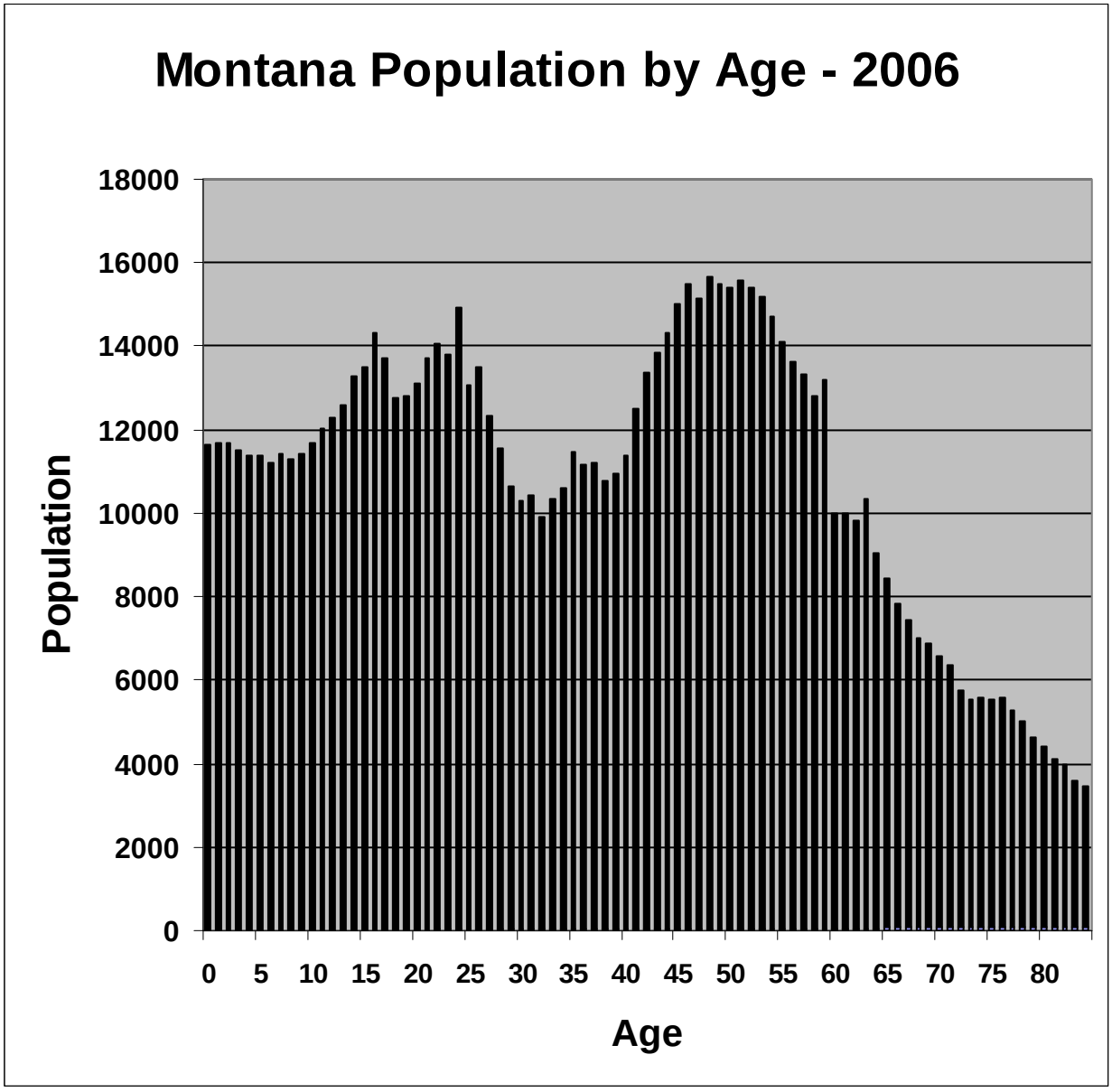
In order to envision the challenges before Montana's citizens in the traffic safety area, the population by age estimate for 2006 is next presented on the following page. During 2006, the baby boom population in Montana seemed to span the age group from 43-59. There is a second boom in Montana from age 14-27. The variation in population for some ages is quite significant. It interesting to note that there are more than 14,000 Montana citizens for each of the ages sixteen, twenty-two, twenty-four and forty-four to fifty-five; but there are less than 10,000 thirty-two year olds.

What does this mean to traffic safety? Currently, and over the next few years, Montana will have an above average number of teen and young adult drivers. This is the highest risk group in traffic safety. So the number of elderly drivers and the number of drivers under 30 is increasing while the group of drivers between 30 and 55 will be decreasing.

Some of the gains made in Traffic Safety during the 1980's were related to demographics rather than actual gains. They were achieved in part because the drivers most likely to be in fatal crashes are between 15 and 35. There were less of these drivers during that decade. For the opposite reason, there have been minimal gains over the last ten years because of a high number of teen and young adult drivers. Five to ten years from now, Montana may realize greater improvement as this age group begins moving into their thirties.

These population figures are being noted because of the special challenges that they present to traffic safety. It will be doubly difficult in the near future to show improvement in traffic safety while the number of drivers in the high-risk age groups increases. Some rate improvements may be realized in traffic safety, but it will be much more difficult to decrease the number of incidents relating to these age groups. Population by age is shown on the following page in Figure 22.

Figure 22



Source: Age Estimates - Montana Department of Commerce

7. High Crash Corridors / High Crash Locations

High crash corridors were determined by the Traffic and Safety Bureau in the Engineering Division during 2005. The list of these corridors appear in the Comprehensive Highway Safety Plan. Using these corridors as a basis, the Montana Highway Patrol and Highway Traffic Safety Bureau derived corridors for enforcement emphasis. These high crash corridors were determined to be reasonable for locations of extra emphasis patrolling activities. Sixteen corridors were designated based upon a combination of objective calculations of the Traffic and Safety Bureau and subjective determinations which allow several enforceable corridors that occur within a geographical area.

Table 34
Enforcement Corridors

Route	Towns	Corridor and Mileposts
US 93	Hamilton – Missoula	N-007 049+0.541 – 090+0.152
	DeSmet Interchange – Whitefish	N-005 000+0.000 – 125+0.446
Sec 269	Hamilton – Stevensville	S-269 000+0.000 – 021+0.364
Sec 203	Stevensville – Florence	S-203 000+0.000 – 011+0.963
US 2	Kalispell – West Glacier	N-001 121+0.855 – 153+0.253
I 90	9 Mile Interchange – Clinton	I-090 082+0.623 – 120+0.993
I 90	Manhattan – Bozeman Pass	I-090 288+0.680 – 321+0.739
US 191	Big Sky – Four Corners	N-050 047+0.934 – 081+0.903
Montana 85	Four Corners – Belgrade	P-085 000+0.000 – 006+0.661
I 90	Laurel – Pinehill Interchange	I-090 434+0.090 – 456+0.580
US 212	Rockvale – Laurel	N-004 042+0.765 – 054+0.307
Montana 78	Red Lodge – Absarokee	P-078 000+0.000 – 037+0.000
I 90	West of Butte – Whitehall	I-090 227+0.455 – 249+0.026
I 15	Buxton Interchange – Woodville	I-015 116+0.316 – 134+0.039
I 15	Boulder – Lincoln Road	I-015 164+0.920 – 200+0.087
Sec 430	Helena – Sec 284	S-430 000+0.000 – 009+0.241
Sec 231	Custer Ave – Lincoln Road	S-231 000+0.000 – 006+0.189

8. Truck Involvement In Crashes

This section examines Montana crashes involving trucks. The table that follows contains a ten-year history of truck-involved crashes within the state. This analysis is not for commercial trucks only, but for all trucks. The database containing commercial vehicle crash data within Motor Carrier Services will not coincide with the data shown below.

The number of truck crashes reached a high in 1996 and has decreased by nearly 30% over the ten years since then. The number of fatal crashes involving trucks during 2007 was higher than the year before.

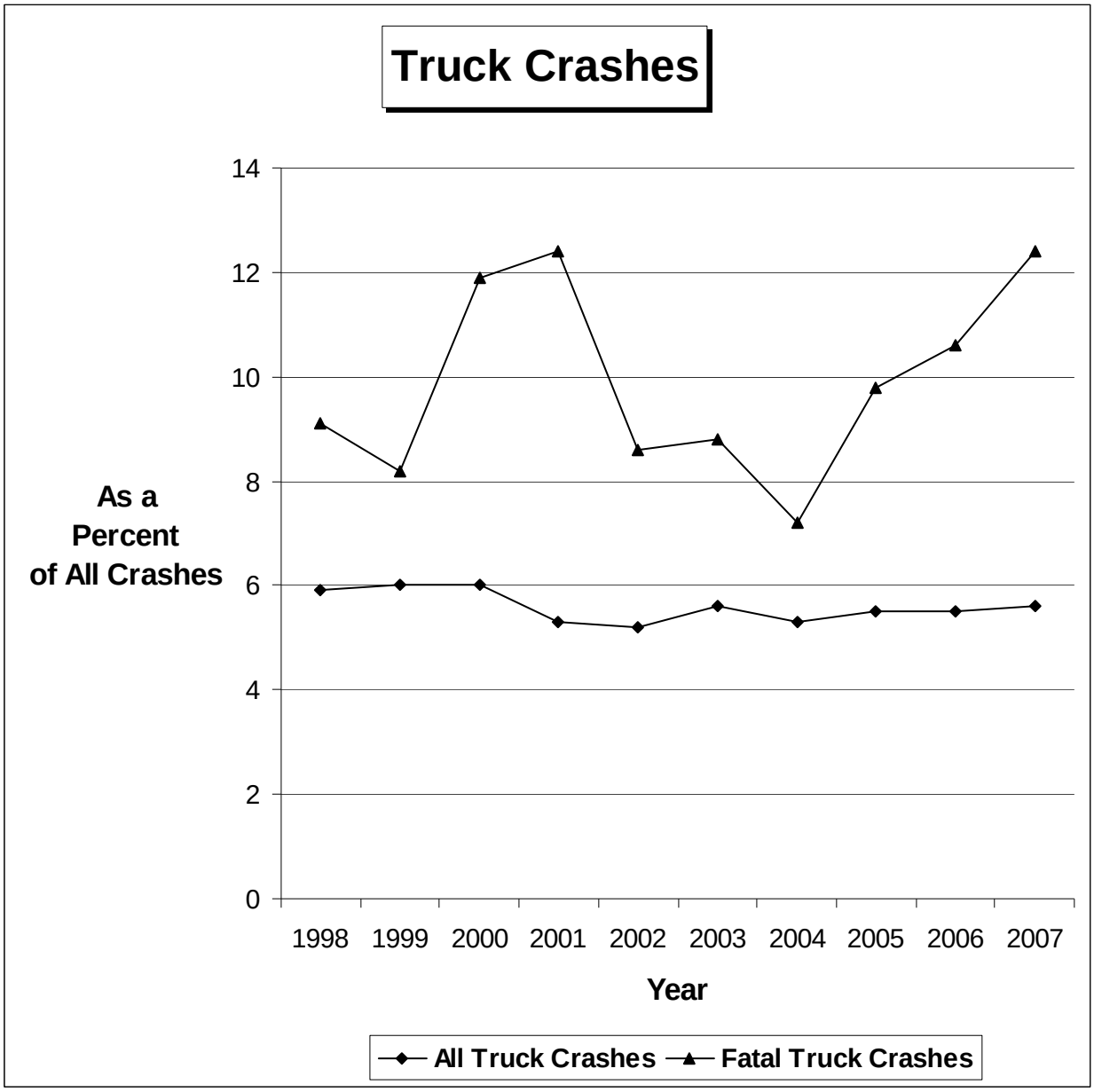
Table 35
Number of Crashes Involving Trucks

Year	Crashes		Fatal Crashes	
	Number	Percent of all Crashes	Number	Percent of all Fatal Crashes
1998	1,310	5.9%	19	9.1%
1999	1,262	6.0%	16	8.2%
2000	1,346	6.0%	24	11.9%
2001	1,159	5.3%	25	12.4%
2002	1,228	5.2%	20	8.6%
2003	1,288	5.6%	21	8.8%
2004	1,163	5.3%	15	7.2%
2005	1,241	5.5%	22	9.8%
2006	1,227	5.5%	24	10.6%
2007	1,223	5.6%	31	12.4%
Chg 1 Year	-0.3%	+1.8%	29.2%	+17.0%
Chg 5 Year	-0.5%	+3.3%	+52.0%	+37.8%

Source: TIS - Montana Department of Transportation

Figure 23 on the following page shows the number of truck crashes as a percentage of all motor vehicle crashes and fatal truck crashes as a percentage of all motor vehicle fatal crashes.

Figure 23


Truck Crashes
As a Percent of All Crashes
14
12
10
8
6
4
2
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
All Truck Crashes
Fatal Truck Crashes

This table presents the type of trailer for trucks. The counts below include trucks and truck/tractor combinations.

Table 36
Truck Crashes by Trailer Type

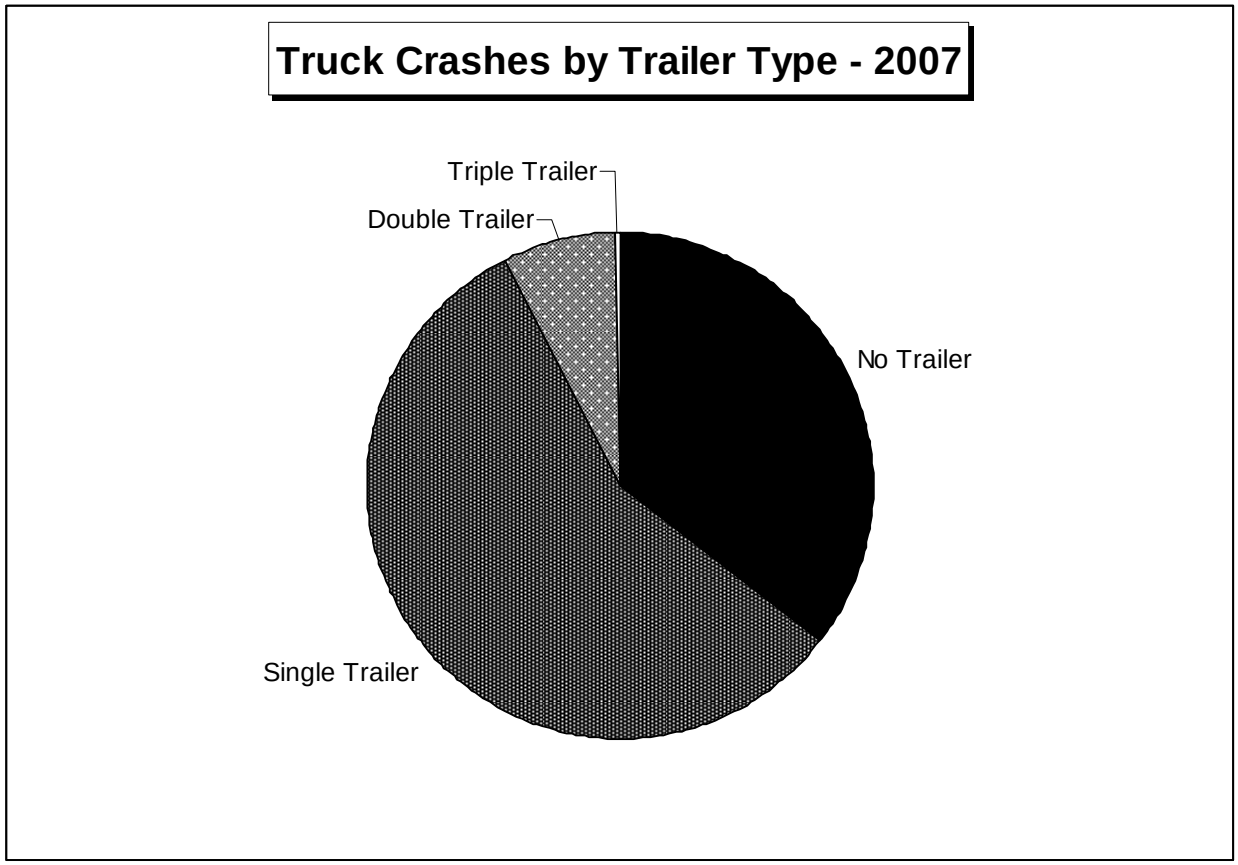
	Crashes				Fatal Crashes			
Year	No Trailer*	Single Trailer	Double Trailer	Triple Trailer	No Trailer	Single Trailer	Double Trailer	Triple Trailer
1998	393	785	131	1	5	12	2	0
1999	336	800	125	1	5	8	3	0
2000	328	905	111	2	5	19	0	0
2001	335	722	102	0	2	20	3	0
2002	340	801	84	3	6	12	2	0
2003	470	712	100	6	8	13	2	0
2004	461	634	103	2	6	9	1	0
2005	509	701	92	1	8	13	2	0
2006	534	649	84	3	13	10	2	0
2007	452	724	92	2	8	19	4	0
Chg 1 Yr	-15.4%	+11.6%	+9.5%	-33.3%	-38.5%	+90.0%	+100%	---
Chg 5 Yr	-2.3%	+3.5%	-0.6%	-33.3%	-2.4%	+66.7%	+122%	---

Source: TIS – Montana Department of Transportation

* Trucks with no trailer would include single unit vehicles. This could also include Tractor-Trucks that currently are not pulling a trailer.

Figure 24 shows the percentage of trucks in crashes by number of trailers with the truck.

Figure 24


Truck Crashes by Trailer Type - 2007
Triple Trailer
Double Trailer
No Trailer
Single Trailer

9. Emergency Medical Services

Emergency Medical Services differs from many program areas that are related to Traffic Safety because there is no intention of affecting the number of crash occurrences. Theoretically, better EMS will reduce the number of fatalities and complications from severe injuries by reducing response times and improving on site care with improved quality control. Table 37 lists the total number of crashes involving either fatalities or incapacitating injuries by county. This provides a basis for approximating the need of EMS as related to traffic crashes in each county.

Table 37
Severe Injury Crashes by County – 2007

County	Severe Crashes	County	Severe Crashes
Beaverhead	18	McCone	2
Big Horn	17	Meagher	5
Blaine	10	Mineral	37
Broadwater	10	Missoula	169
Carbon	27	Musselshell	11
Carter	0	Park	24
Cascade	72	Petroleum	3
Chouteau	8	Phillips	6
Custer	13	Pondera	9
Daniels	0	Powder River	3
Dawson	12	Powell	13
Deer Lodge	13	Prairie	3
Fallon	1	Ravalli	51
Fergus	14	Richland	11
Flathead	164	Roosevelt	22
Gallatin	76	Rosebud	11
Garfield	1	Sanders	21
Glacier	40	Sheridan	2
Golden Valley	5	Silver Bow	26
Granite	9	Stillwater	25
Hill	10	Sweet Grass	11
Jefferson	28	Teton	9
Judith Basin	7	Toole	3
Lake	40	Treasure	2
Lewis and Clark	52	Valley	8
Liberty	1	Wheatland	4
Lincoln	40	Wibaux	1
Madison	19	Yellowstone	106

Source: TIS – Montana Department of Transportation

The county with the most severe crashes in Montana was Missoula with 169. Flathead County was a close second with 164. Yellowstone County follows with 106 and then Gallatin County has 76.

The Emergency Medical Services and Trauma Systems (EMS & TS) Section is moving forward in the development and/or acquisition and implementation of a statewide Online Prehospital Information (OPHI) database. This system will allow for the tracking of detailed information of many variables concerning ambulance runs including data related to treatment and procedures given to patients, quality control, response times and much more. A subset of the data will be transferred to the state EMS & TS Section for statewide informational purposes. Testing at some initial services began during January of 2008. The OPHI database is National EMS Information System compatible. For the first time, there will be a statewide system in Montana to collect EMS data and data elements will be uniform at the local, state and national levels.

Part of this effort will be to develop standard reports for EMT's, service managers, medical directors and the state which facilitates evaluation and planning. In addition, users will be able to produce ad hoc reports from any of the OPHI data fields.

10. Urban Area Crashes

Table 38 shows the number of reported urban crashes over the last ten years. Crashes within city limits for all incorporated towns are summarized. The system cannot produce a summary for within urban limits.

Table 38
Urban Crashes by Severity

Year	All Urban Crashes	Urban Fatal Crashes	Urban Injury Crashes	Urban Property Damage Crashes	Urban Fatalities	Urban Incapa-citating Injuries
1998	11,019	28	2,794	8,197	28	332
1999	9,861	19	2,738	7,104	19	344
2000	10,695	18	2,935	7,742	18	335
2001	11,482	14	2,841	8,627	14	284
2002	12,077	23	2,833	9,221	26	261
2003	11,785	25	2,706	9,054	26	263
2004	11,236	25	2,594	8,617	28	261
2005	11,448	30	2,717	8,701	33	280
2006	11,278	17	2,735	8,525	17	306
2007	11,268	19	2,667	8,581	20	238
Chg 1 Yr	-0.1%	+11.8%	-2.5%	+0.7%	+17.6%	-22.2%
Chg 5 Yr	-2.6%	-20.8%	-1.8%	-2.7%	-23.1%	-13.2%

Source: Traffic Information System (TIS) – Montana Department of Transportation

Rural crashes averaged 1.29 vehicles per crash, while urban crashes averaged 1.96 vehicles. Crash configurations are much different. Most rural crashes (73.2%) involve just one vehicle, while most urban crashes (80.9%) involve two vehicles. Tables 39 and 40 on the following page tabulate rural and urban crashes by the number of vehicles involved. A large number of run off the road single vehicle crashes occur on the rural roads of Montana. City crashes tend to be collisions of multiple vehicles at or near intersections. These events tend to be multiple vehicles crashing at an angle or one vehicle striking the rear of another vehicle.

Table 39
Number of Involved Vehicles --- Rural vs. Urban Crashes – 2007

Vehicles	Urban		Rural		Total	
	Crashes	Percent	Crashes	Percent	Crashes	Percent
1	1,349	12.0%	7,736	73.2%	9,085	41.6%
2	9,111	80.9%	2,677	25.3%	11,788	54.0%
3	703	6.2%	138	1.3%	841	3.9%
4	78	0.7%	17	0.2%	95	0.4%
>=5	15	0.1%	5	0.0%	20	0.1%
Total	11,256	100.0%	10,573	100.0%	21,829	100.0%

Source: Traffic Information System (TIS) – Montana Department of Transportation

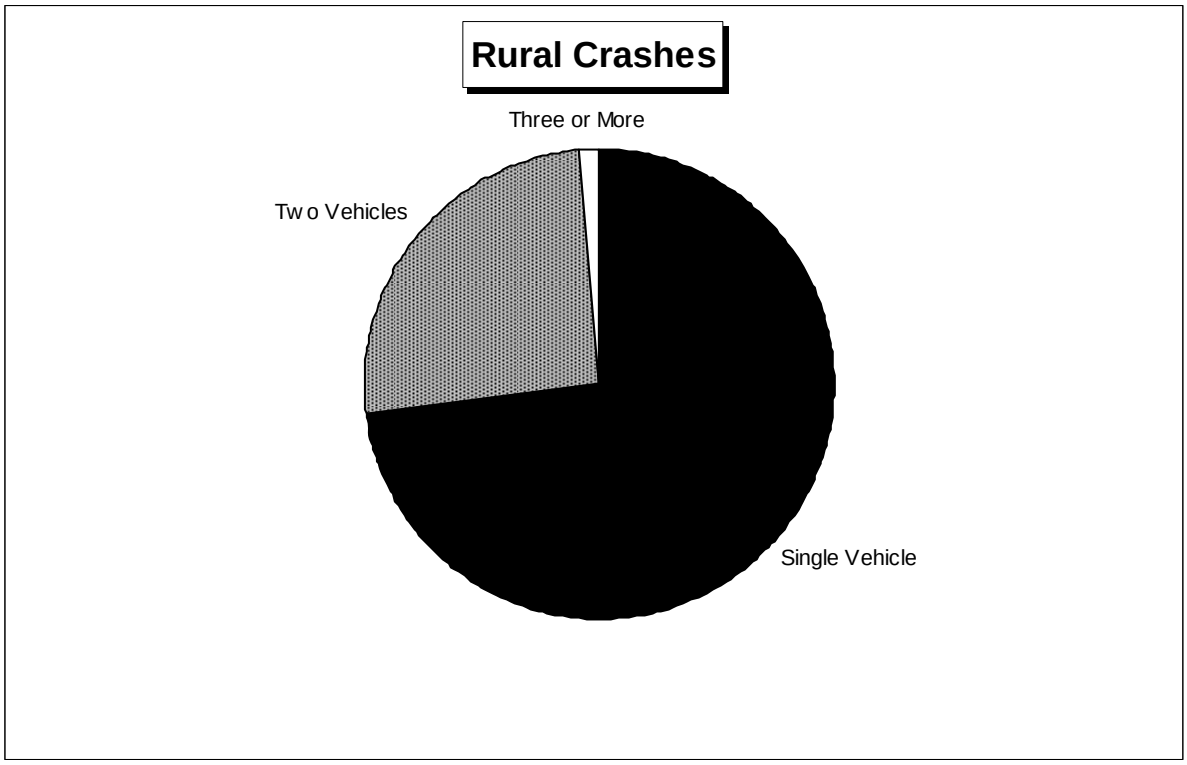
Table 40
Number of Involved Vehicles --- Rural vs. Urban Fatal Crashes – 2007

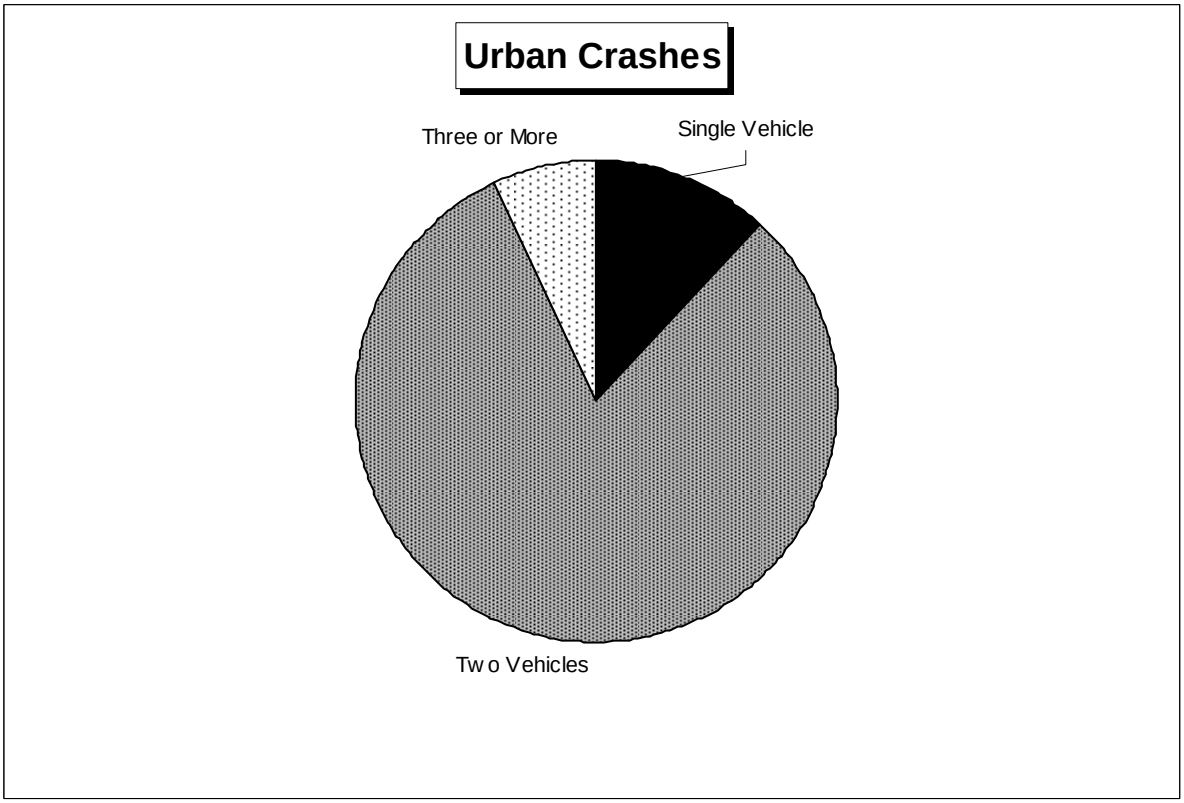
Vehicles	Urban		Rural		Total	
	Fatal Crashes	Percent	Fatal Crashes	Percent	Fatal Crashes	Percent
1	10	52.6%	161	70.0%	171	68.7%
2	8	42.1%	63	27.4%	71	28.5%
3	0	0.0%	5	2.2%	5	2.0%
4	0	0.0%	1	0.4%	1	0.4%
>=5	1	5.3%	0	0.0%	1	0.4%
Total	19	100.0%	230	100.0%	249	100.0%

Source: Traffic Information System (TIS) – Montana Department of Transportation

Figure 25 on the following page shows the number of vehicles by percentage in both rural and urban situations.

Figure 25


Rural Crashes
Three or More
Two Vehicles
Single Vehicle


Urban Crashes
Three or More
Single Vehicle
Two Vehicles

When examining type of collision for multiple-vehicle crashes in rural incidents, rear end collisions were most numerous. Right angle crashes and sideswipe crashes were next. These collision-types accounted for over 77% of the total. For Urban areas, rear end crashes were the most common collision type, followed closely by right angle crashes. Rear end and right angles crashes accounted for nearly 68% of urban crashes.

Table 41
Type Of Collision --- Urban vs. Rural Crashes - 2007
(Two or More Vehicles)

Type of Collision	Urban		Rural	
	Crashes	Percent	Crashes	Percent
Rear End	3,305	33.4%	897	32.3%
Sideswipe – Same Direction	799	8.1%	351	12.6%
Sideswipe – Opposite Direction	185	1.9%	214	7.7%
Left Turn – Same Direction	117	1.2%	50	1.8%
Left Turn – Opposite Direction	324	3.3%	94	3.4%
Right Angle	3,206	32.4%	678	24.4%
Right Turn – Same Direction	60	0.6%	10	0.4%
Right Turn – Opposite Direction	15	0.1%	11	0.4%
Head On	112	1.1%	167	6.0%
Other	1,783	18.0%	305	11.0%
Total	9,906	100.0%	2,777	100.0%

Source: Traffic Information System (TIS) – Montana Department of Transportation

11. Motorcycle Involvement in Crashes

Motorcyclists in traffic crashes comprise a relatively small percentage of all persons involved in crashes. However, these persons are at much greater risk when involved in a crash. Because of this, people who ride motorcycles account for a significant amount of Montana's fatalities and serious injuries. Table 42 examines the number of crashes, fatal crashes and injury crashes over the past ten years.

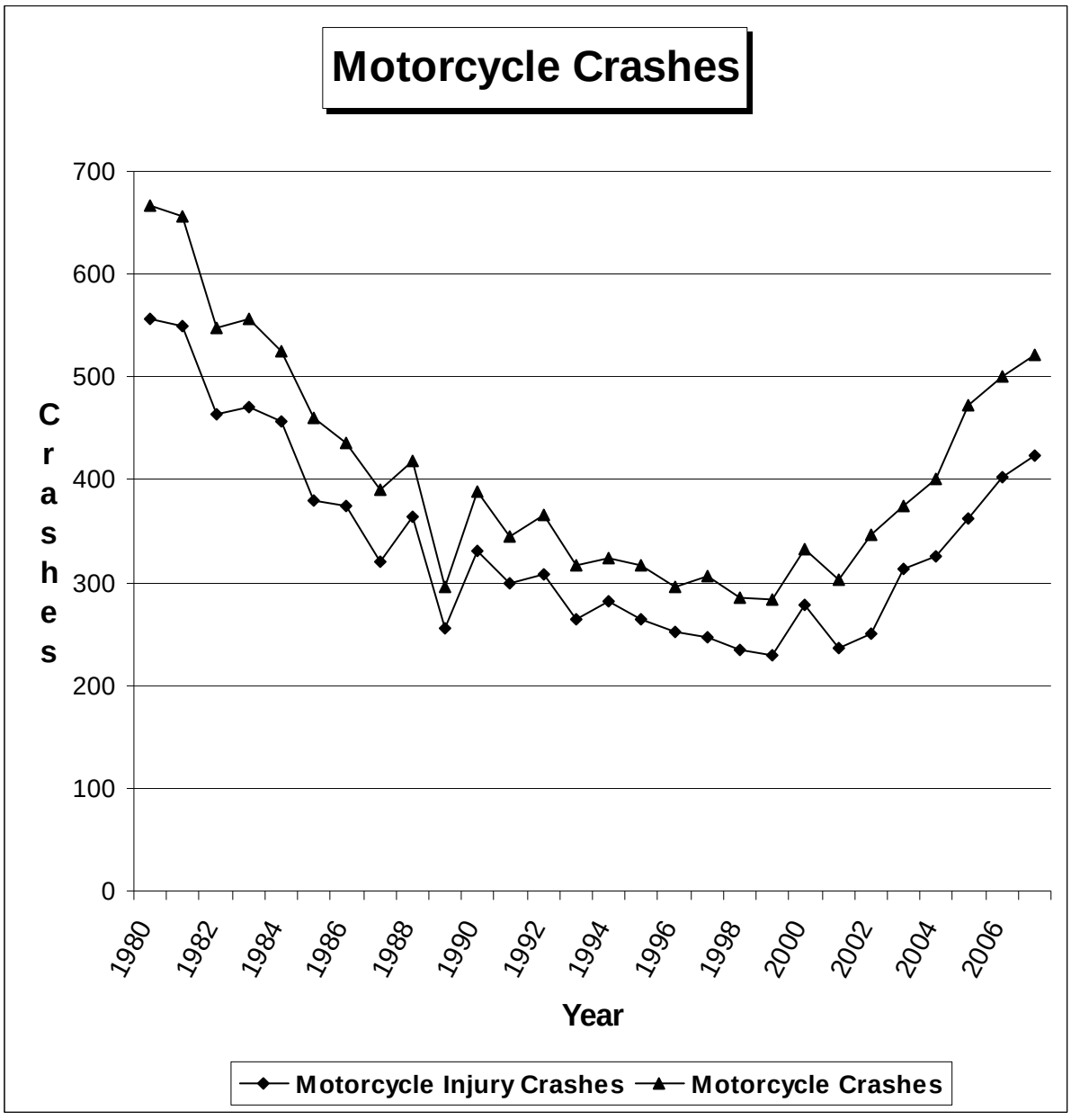
Table 42
Motorcycle Crashes

Year	Crashes	% of All Crashes	Fatal Crashes	Fatalities	% of all Fatal Crashes	Injury Crashes	% of all Injury Crashes
1998	286	1.3%	13	14	6.3%	235	3.5%
1999	284	1.3%	15	15	7.7%	229	3.4%
2000	332	1.5%	13	13	6.4%	279	4.0%
2001	302	1.4%	11	12	5.5%	236	3.8%
2002	347	1.5%	24	24	10.3%	251	3.9%
2003	375	1.6%	12	12	4.6%	314	5.0%
2004	400	1.8%	20	20	9.6%	325	5.4%
2005	473	2.1%	28	28	12.5%	362	6.0%
2006	501	2.3%	25	26	11.1%	402	6.4%
2007	522	2.4%	33	36	13.3%	424	7.1%
Chg 1 Year	+4.2%	+4.3%	+32.0%	+38.5%	+19.8%	+5.5%	+10.9%
Chg 5 Year	+24.5%	+29.0%	+51.4%	+63.6%	+38.3%	+28.2%	+33.0%

Source: TIS – Montana Department of Transportation

There were more motorcycle fatalities during 2007 than any other year. Beginning in 2005, motorcycle registrations became a one time registration rather than an annual registration. Since motorcycle registrations don't expire there is no longer a method to determine registrations for active motorcycles. Registration counts cannot be used for rates. At this time, vehicle miles traveled by motorcycles cannot be calculated because of technology issues, although the Montana Department of Transportation is working on a method to acquire this in the future. Currently, there is no valid data to determine rates and trends. Figure 26 on the following page shows the trend in motorcycle crashes and injuries. Motorcycle involved crashes as a percentage of all crashes, fatal crashes and injury crashes are all steadily increasing in Montana. This is thought to be primarily because there are more motorcycles being driven in the state.

Figure 26


Motorcycle Crashes
700
600
500
400
300
200
100
0
Crashes
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year
Motorcycle Injury Crashes
Motorcycle Crashes

Helmet usage for drivers and passengers in motorcycle crashes is displayed in the following table. For most age groups in crashes, usage was between 40 and 50 percent.

Table 43
Motorcycle Helmet Use by Age
(2007 Crash Data)

Age	Driver		Passenger	
	Used	Not Used	Used	Not Used
14 & Under	1	2	0	0
15-17	11	4	2	1
18-19	16	11	0	5
20-24	25	36	2	4
25-34	27	41	4	4
35-64	148	166	17	22
65 & Over	14	8	3	1
Not Stated	0	12	0	2
Total	242	280	28	39

Source: TIS - Montana Department of Transportation

The observational helmet use survey estimates a 72.8 percent usage rate for 2008. Usage on interstate routes was relatively high at 85.5%. Primary route usage was 82.6%, while city usage was lower at 54.2%. Secondary and county roads had 53.3% on only 30 observations. The overall statewide usage rate is derived from only 307 observations making the precision of the estimate less than desirable. This small sample size means that there is 95 percent confidence that the estimate is within 6 percentage points of the actual usage. In addition, there may be sampling error problems, since there is so much through-state motorcycle travel in the summer and there may be an overrepresentation of motorcycles on rural roads where helmet wear tends to be highest. Without VMT data there is no way to collect a proper sample.

Of the crashes involving motorcyclists, 42.1% of the crashes involve a fatal or severe injury. In crashes of all vehicle types only 6.0% of the crashes have this level of injury. The chance of severe injury is about seven times higher when riding motorcycles and involved in a crash. Severe injuries have a large impact because of the medical costs and continuing care costs to the public and private sectors.

Differences between riders from crashes involving a motorcycle and drivers from all crashes were investigated. There were three different fields where motorcyclist exhibited worse characteristics than the general driver. These are shown in Table 44 below.

Table 44
Comparison of Motorcycle Drivers and All Drivers
(2007 Crash Data)

Driver Status	MC Drivers	All Drivers
Driver's by Sobriety – Alcohol or Drugs Present	9.9%	6.4%
No License, Suspended, Canceled, Expired or Revoked	6.5%	6.0%
No Valid License for Vehicle Type	3.8%	0.1%

Source: TIS - Montana Department of Transportation

In the next table, we examine the age of motorcycle fatal crash victims. Most fatalities in past decades occurred in the 20-34 year age group. However, in recent years there has been a shift occurring with most fatalities coming from the 45 to 64 age group. This group accounted for four fatalities during 1998, 1999 and 2001, but reached 20 during 2007. A few fatalities are even occurring in the 65 and over age group, which prior to 1995 was a rarity. All of the other age groups seem relatively stable in fatality numbers.

Table 45
Motorcycle Fatalities by Age

Year	Age Groups							
	0-14	15-19	20-24	25-34	35-44	45-64	65+	Total
1998	0	1	0	3	4	4	2	14
1999	0	0	2	3	6	4	0	15
2000	0	0	3	1	3	5	1	13
2001	0	0	2	2	3	4	2	13
2002	0	1	4	2	4	10	3	24
2003	0	0	1	2	5	2	2	12
2004	0	2	2	1	3	12	1	21
2005	0	0	4	5	3	14	2	28
2006	1	1	3	4	6	11	0	26
2007	0	2	2	3	6	20	3	36
10 Yr Total	1	7	23	26	43	86	16	202

Source: TIS – Montana Department of Transportation

Table 46 shows the number of severe motorcycle crashes where the motorcycle is the only vehicle involved versus those severe crashes where other vehicles are involved. Over 70% of the severe crashes during 2007 were motorcycle only crashes, while over 78% of the fatal crashes during 2007 involved only a motorcycle. Over the ten year period shown in the table, 64% of the fatal crashes involved a motorcycle only while 36% involved at least one other vehicle.

Table 46
Number of Vehicles in Severe Motorcycle Crashes

	Severe Crashes		Fatal Crashes	
Year	Single Vehicle	Multiple Vehicle	Single Vehicle	Multiple Vehicle
1998	93	34	7	6
1999	89	38	11	4
2000	95	39	6	8
2001	97	42	8	4
2002	82	44	13	9
2003	108	38	8	4
2004	126	49	16	4
2005	119	61	17	10
2006	131	58	12	13
2007	151	63	26	7

Source: TIS – Montana Department of Transportation

Table 47, on the following page breaks down motorcycle fatalities by gender. Both riders and fatalities are dominated by males. However, it appears that female fatalities may be an increasing trend.

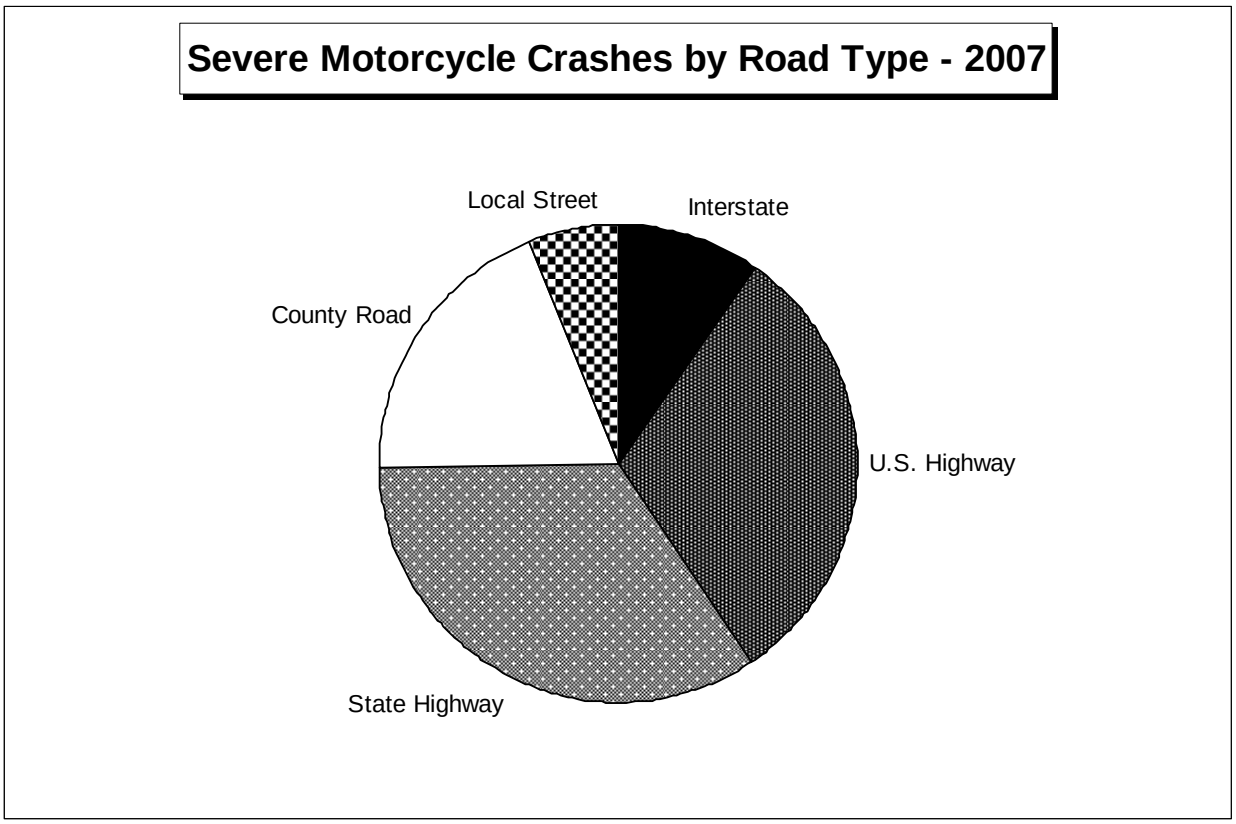
Table 47
Motorcycle Fatalities by Gender

Year	Male	Female
1998	10	4
1999	14	1
2000	13	0
2001	12	1
2002	21	3
2003	12	0
2004	14	7
2005	25	3
2006	19	7
2007	32	4

Source: FARS – Montana Department of Transportation

Figure 27, shows the breakdown of motorcycle severe crashes by road type. State Highways, followed by U.S. Highways are the most common location for crashes.

Figure 27



12. Older Driver Crashes

As the baby boom generation ages, there will be a higher percentage of older drivers (see figure 22 on page 68). As this aging of America continues, it will provide special challenges to highway safety. Older drivers have special areas where they have more difficulty in driving. Left turns and the judgement of spacing is one of the key areas. Loss of vision – especially at night is another problem with older drivers. Also, older drivers may become confused at locations with a large number of signs. Efforts to help older drivers spans the entire spectrum of highway safety and includes engineering issues, traffic safety education and information and also includes licensing issues.

Table 48 shows the trends of crashes for drivers over age 65. Crashes and fatal crashes are increasing for 65 to 74 year old drivers, while crashes and fatal crashes are decreasing for drivers over 75.

Table 48
Number of Older Drivers in Crashes

Year	65 – 74 Year Old Drivers		75 and Above Drivers	
	Crashes	Fatal Crashes	Crashes	Fatal Crashes
1998	1,639	23	1,270	22
1999	1,467	14	1,195	16
2000	1,590	20	1,304	18
2001	1,566	16	1,278	15
2002	1,810	26	1,348	18
2003	1,719	20	1,361	17
2004	1,689	17	1,311	19
2005	1,682	18	1,371	17
2006	1,571	18	1,322	21
2007	1,745	27	1,211	10
Chg 1 Year	+11.1%	+50.0%	-8.4%	-52.4%
Chg 5 Year	+3.0%	+36.4%	-9.8%	-45.7%

Source: TIS – Montana Department of Transportation

Some drivers contributing circumstances are different for older drivers than for drivers of all ages. Some of these are shown in Table 49. Those above the double line are more common with Older Drivers, while those below the double line are less common.

Table 49
Contributing Circumstances for Older Drivers as a Percentage of the Total

	Drivers 65 and Older	Drivers of All Ages
Failed to Yield ROW	12.7%	8.2%
Wrong Side or Wrong Way	0.4%	0.1%
Made Improper Turn	2.0%	1.3%
Improper Lane Change, Backing, Passing, Signals, or Parking	3.9%	3.1%
Fell Asleep, Fainted	1.3%	1.1%
Alcohol & Drugs	1.3%	5.0%
Exceeded Speed Limit or Too Fast For Conditions	4.3%	9.4%
Cell Phone Use	0.1%	0.3%

Source: TIS – Montana Department of Transportation

13. Other Areas of Interest

a. Speed and Driver Contributing Circumstances

The current speed limits became law on Memorial Day weekend of 1999. The limit on the interstate was set at 75, while the limit on most other non-interstate routes was set at 70 mile per hour. Night speeds are 75 on the interstate and 65 on non-interstate routes. Trucks have limits that are slower on many roads.

There is a correlation between alcohol related fatalities and exceeding the speed limit as shown in the table below. Vehicles were speeding for 39.2% of alcohol related fatalities and in only 30.2% of the non-alcohol related fatalities. This difference was much less during 2007 than during previous years.

Table 50
Speed versus Alcohol Involvement
Fatalities – 2007

		Speeding	Not Speeding	Total
Alcohol Related	Fatalities	51	79	130
	Percent	39.2%	60.8%	100.0%
Not Alcohol Related	Fatalities	45	102	147
	Percent	30.6%	69.4%	100.0%
Total		96	181	277

Source: Fatal Analysis Reporting System (FARS)

Characteristics recorded about the driver and his or her actions leading up to crashes are now examined. Inattentive Driving is the major contributing circumstance in crashes. Inattentive driving is an overall category for not concentrating on the task of driving and is very subjective as determined by the investigating officer. It is apparent that many drivers are doing other things in their car besides driving---such as eating, smoking, talking on cell phones, adjusting vehicle controls, inserting tapes or CD's, looking at GPS mapping, looking at personal digital assistants (pda) along with many other non-driving activities. There are more and more possible distractions in our busy and electronic world and many of these seem to be taking a priority over actually operating a car. Cell phone use was admitted to as a contributor in 143 crashes and was likely a distraction in many more. This number is increasing on a yearly basis as shown in Table 51.

Table 51
Inattentive Driving and Distractions

Year	Inattentive Driving	Fell Asleep	Cell Phone
1998	7,051	531	--
1999	7,106	594	--
2000	7,326	547	--
2001	7,290	499	--
2002	7,768	542	62
2003	7,380	564	62
2004	7,148	573	78
2005	7,285	522	101
2006	7,406	555	138
2007	6,994	471	143
Change 1 Year	-5.6%	-15.1%	+3.6%
Change 5 Year	-5.5%	-14.6%	+62.1%

The most common contributing circumstances involving drivers in crashes, as determined by the investigating officer, are summarized in Table 52. The number of times that careless driving was noted has increased over the last few years. During 1996, crash investigators decided that careless driving was one of the contributors to the crash in 3,924 instances, while it was a contributor in over 5,800 instances for each year since 2002.

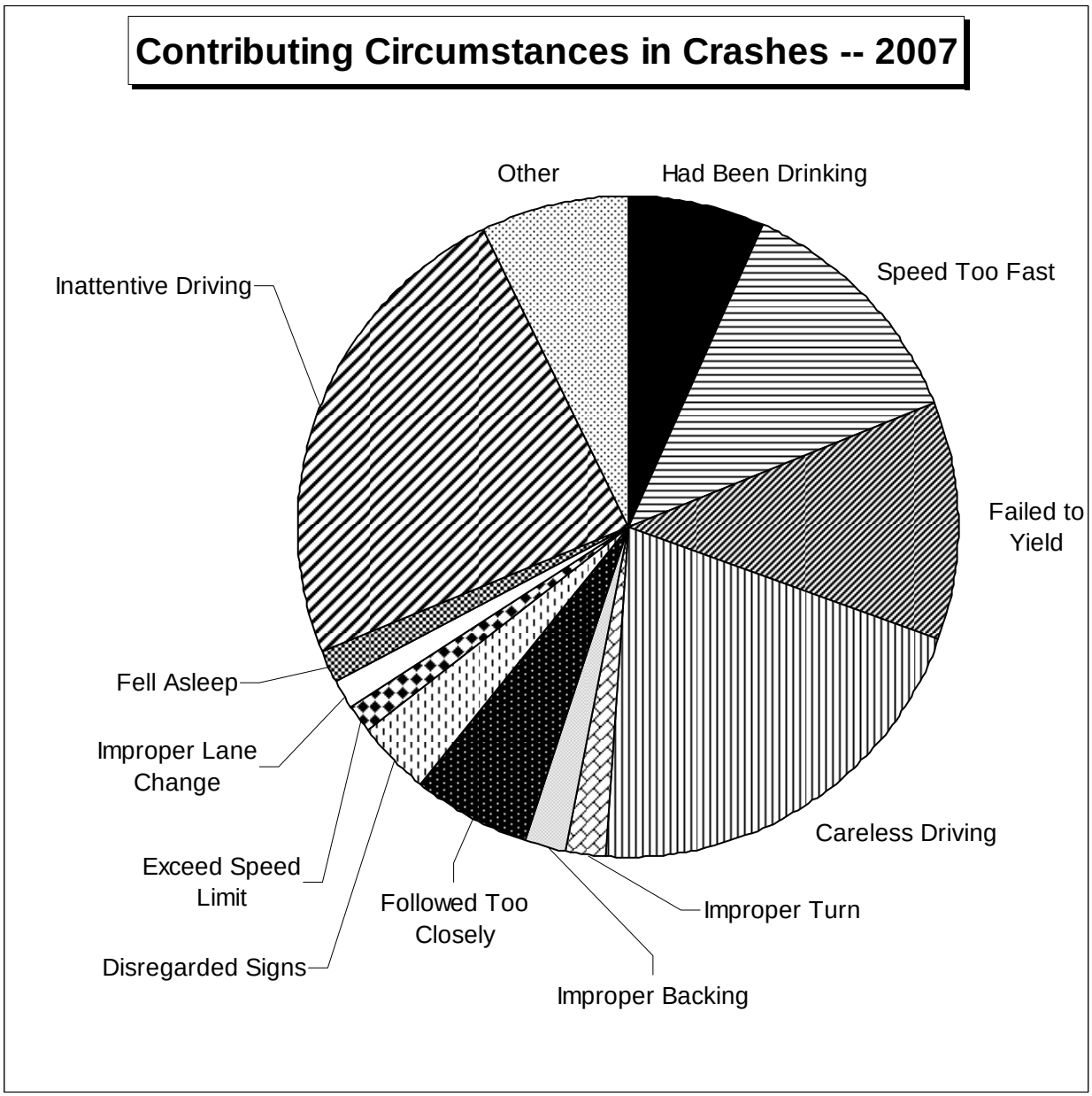
Table 52
Contributing Circumstances Actions Involving Driver

Year	Alcohol	Speed Too Fast	Failed to Yield	Careless Driving	Follow Too Closely	Improper Turn	Improper Backing	Total
2006	1,937	3,634	3,436	5,963	1,722	531	506	17,729
2007	1,944	3,564	3,469	6,035	1,707	551	589	17,859

Source: TIS – Montana Department of Transportation

The acquisition of a numerical speed limit in May 1999 affected the category of hazardous actions. Figure 25 on the following page shows a percentage breakout for driver's hazardous actions in crashes for 2007.

Figure 28


Contributing Circumstances in Crashes -- 2007
Other
Had Been Drinking
Speed Too Fast
Failed to Yield
Careless Driving
Improper Turn
Improper Backing
Followed Too Closely
Disregarded Signs
Exceed Speed Limit
Improper Lane Change
Fell Asleep
Inattentive Driving

b. Driver's License Compliance

The next table examines the license status of each driver at the time of involvement in an injury or fatality crash. Only the most common status codes are included in the table. The addition of a short crash reporting form, which doesn't capture status of the driver's license has complicated this table. Since short forms are used on some Property Damage Only crashes, this table excludes all property damage crashes and examines injury crashes only to assure data consistency over the ten year period.

Table 53
License Status for Drivers in Injury Crashes
(Injury crashes only)

Year	Valid License	No License	Proba-tionary	Expired	Suspended	Revoked
1998	9,883	333	52	151	213	120
1999	9,984	320	51	155	289	150
2000	10,570	320	63	102	280	145
2001	8,908	299	49	75	239	119
2002	9,784	314	49	88	294	112
2003	9,263	296	40	78	304	114
2004	8,947	307	42	73	289	112
2005	9,036	278	35	69	271	100
2006	9,081	291	39	71	346	99
2007	8,842	270	42	64	358	80
Chg 1 Yr	-2.6%	-7.2%	+7.7%	-9.9%	+3.5%	-19.2%
Chg 5 Yr	-4.1%	-9.2%	+2.4%	-15.6%	+19.0%	-25.5%

Source: TIS – Montana Department of Transportation

Drivers involved in crashes while driving with a suspended license have increased significantly in the last ten years. During 1996 there were 156 of these occurrences and this count was 358 in 2007. Drivers with no license during a crash are decreasing slightly.

c. Collisions with Pedestrians

A general summary of pedestrian collisions is displayed below in Table 54. Pedestrian crashes during 2007 accounted for 5.2% of all fatal crashes, but less than one percent of all crashes.

Table 54
Motor Vehicle Collisions with Pedestrians

Year	Crashes	% of All Crashes	Fatal Crashes	% of all Fatal Crashes	Fatalities	Injury Crashes	Injuries
1998	166	0.8%	13	6.3%	13	135	148
1999	153	0.7%	7	3.1%	7	128	139
2000	161	0.7%	11	5.5%	11	139	148
2001	167	0.8%	9	4.5%	9	141	163
2002	174	0.7%	14	6.0%	14	152	164
2003	163	0.7%	10	4.2%	10	138	158
2004	156	0.7%	10	4.8%	10	114	124
2005	148	0.7%	14	6.3%	14	131	141
2006	147	0.7%	12	5.3%	12	120	131
2007	141	0.6%	13	5.2%	15	103	112
Chg 1 Year	-4.1%	-14.3%	+8.3%	-1.9%	+25.0%	-14.2%	-14.5%
Chg 5 Year	-10.5%	-14.3%	+8.3%	-2.3%	+25.0%	-21.4%	-22.0%

Source: TIS – Montana Department of Transportation

Table 55 lists the pedestrian injuries plus fatalities by age. Injuries from pedestrians makes up a small percentage of total injuries in the state, but the number of pedestrian fatalities still makes up a significant amount of the total number of fatalities. Injuries seem to be on the increase for pedestrians from 35 to 64 years of age. The baby boom is in the middle of this age group and may account for much of this increase.

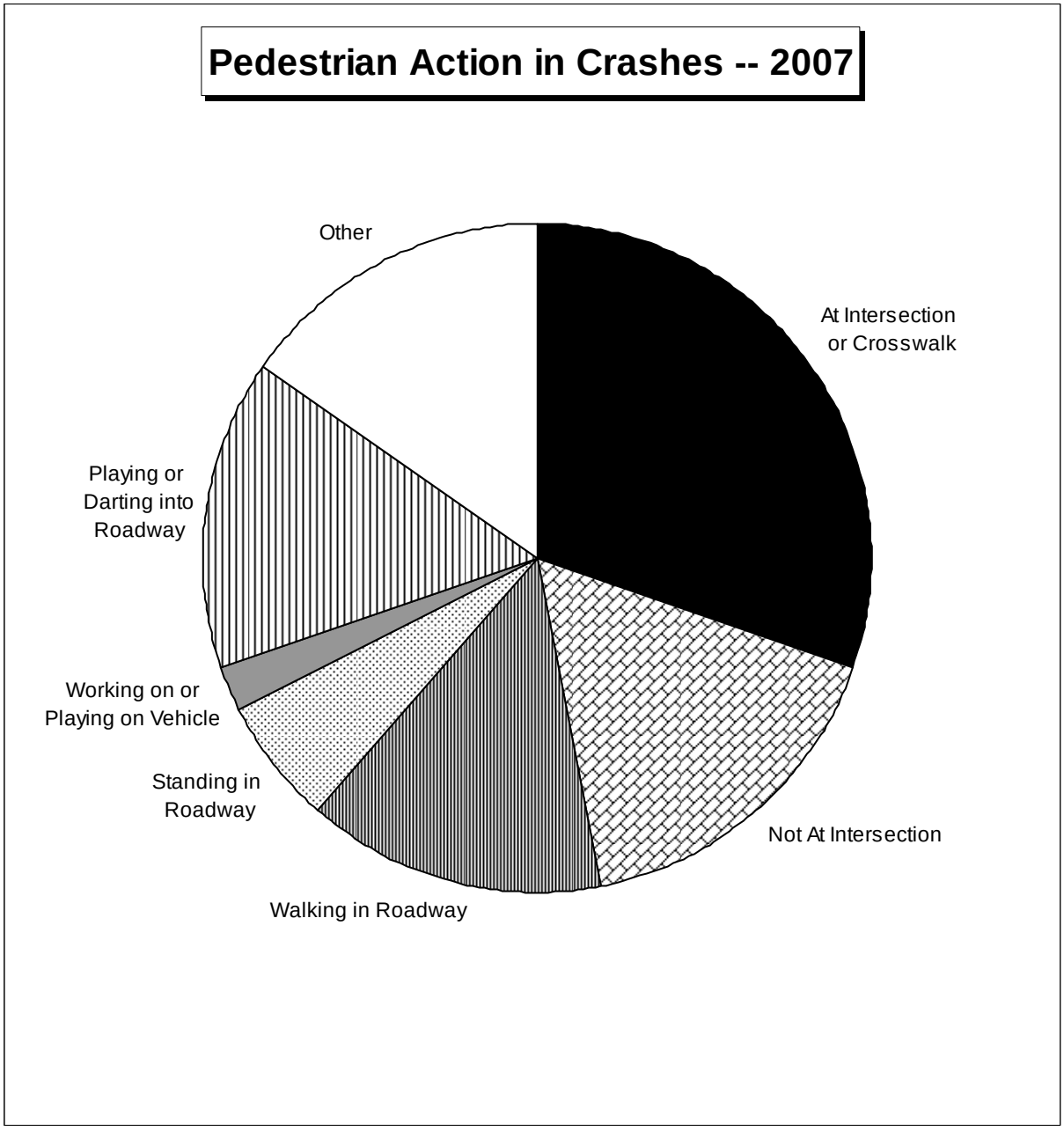
Table 55
Pedestrian Fatalities and Injuries by Age – 2007

0-4	5-14	15-24	25-34	35-44	45-54	55-64	65+	Total
2	21	31	7	9	24	18	14	127

Source: TIS – Montana Department of Transportation

Figure 29 shows a pie chart for all pedestrian collisions by pedestrian action during 2007.

Figure 29



d. Collisions with Bicyclists

Four bicycle related fatalities occurred during 2007. The summary data is presented in Table 56.

Table 56
Motor Vehicle Collisions with Bicyclists

Year	Crashes	Percent of All Crashes	Fatalities	Percent of all Fatalities	Injuries
1998	198	0.90%	1	0.42%	183
1999	178	0.84%	3	1.36%	183
2000	200	0.90%	8	3.40%	177
2001	177	0.81%	0	0.00%	163
2002	172	0.73%	1	0.37%	158
2003	170	0.73%	2	0.76%	153
2004	167	0.77%	2	0.87%	149
2005	157	0.70%	4	1.59%	137
2006	176	0.79%	2	0.76%	155
2007	174	0.80%	4	1.45%	145
Chg 1 Year	-1.1%	+1.3%	+100.0%	+90.8%	-6.5%
Chg 5 Year	+3.3%	+7.5%	+81.8%	+66.7%	-3.6%

Source: TIS – Montana Department of Transportation

Table 57 presents bicyclist casualties (fatalities + injuries) by age. The 10-14 year old age group remains the highest risk group. In recent years, the age group from zero to nine has decreased in number of injuries, while the age groups ranging from 35 to 54 have increased in casualties.

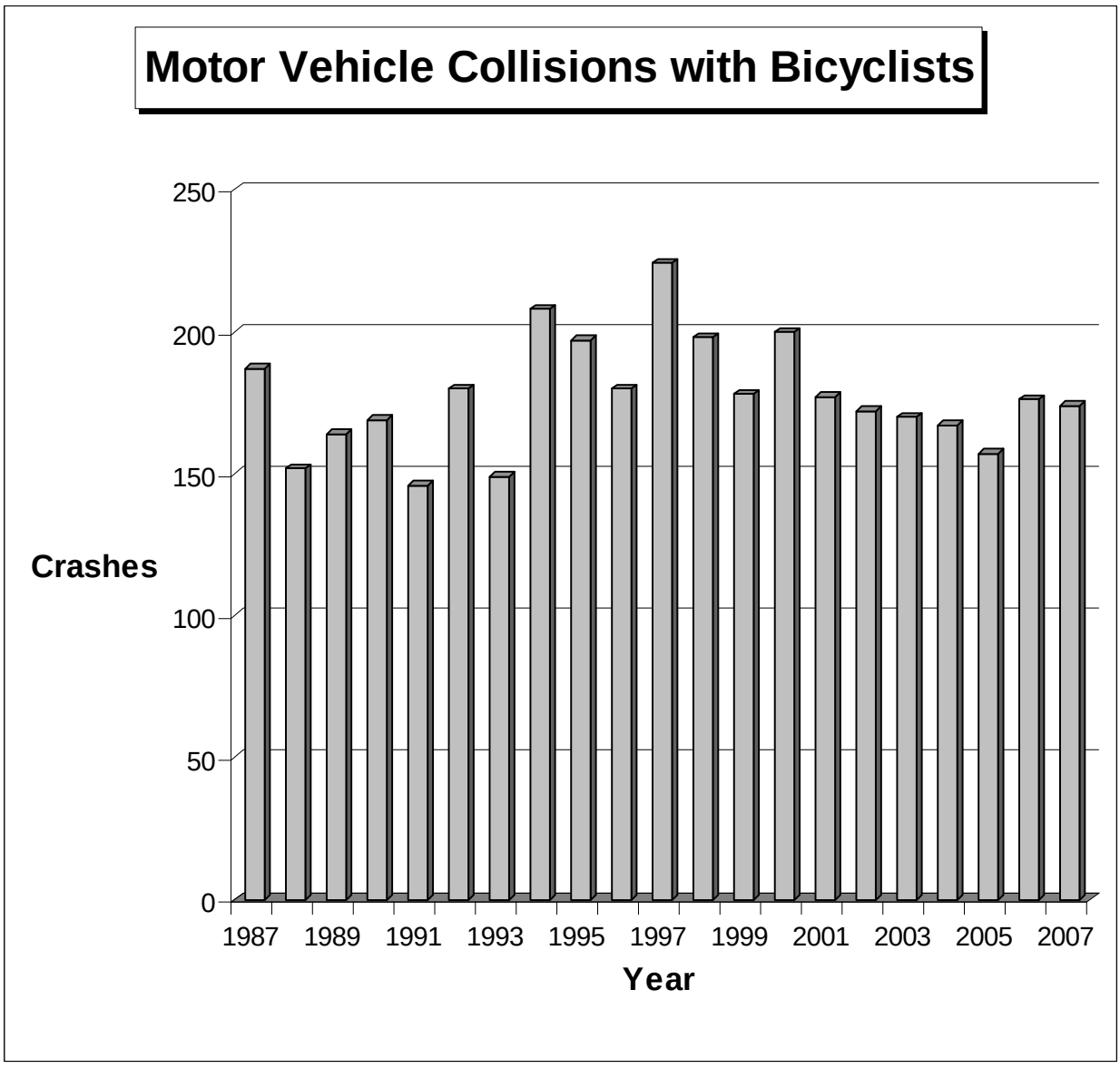
Table 57
Bicyclist Casualties by Age – 2007

0-9	10-14	15-19	20-24	25-34	35-44	45-54	55+	Total
14	25	23	14	32	9	18	8	149

Source: TIS – Montana Department of Transportation

Figure 30 on the following page shows a history of bicycle crashes. These crashes seemed to have hit a peak during 1994 – 2000 and have since declined somewhat.

Figure 30


Motor Vehicle Collisions with Bicyclists
Crashes
250
200
150
100
50
0
1987
1989
1991
1993
1995
1997
1999
2001
2003
2005
2007
Year

e. Buses and Unusual Vehicle Involvement in Crashes

This section displays data for unusual vehicles such as buses, ambulances, farm machinery and fire trucks. Table 58 contains data on the number of crashes involving these unusual vehicles for a ten-year period.

Table 58
Unusual Vehicle Types in Crashes

Year	School Bus	Bus	Ambulance	Farm Machinery	Fire Truck	Snow-mobile
1998	48	58	11	32	15	13
1999	63	60	9	16	8	12
2000	59	67	10	23	11	5
2001	65	69	8	15	12	6
2002	83	76	13	16	5	4
2003	66	63	11	18	10	3
2004	65	65	13	18	7	1
2005	80	71	3	11	7	5
2006	71	78	15	27	11	5
2007	60	85	13	18	11	4
Chg 1 Yr	-15.5%	+9.0%	-13.3%	-33.3%	---	-20.0%
Chg 5 Yr	-17.8%	+20.4%	+18.2%	---	+37.5%	+11.1%

Source: TIS – Montana Department of Transportation

School Bus involvement in crashes is lower than the last few years while bus involvement in crashes during 2007 was the highest during the past ten years. Snowmobiles certainly seem to be trending down from earlier years.

f. Collisions with Animals

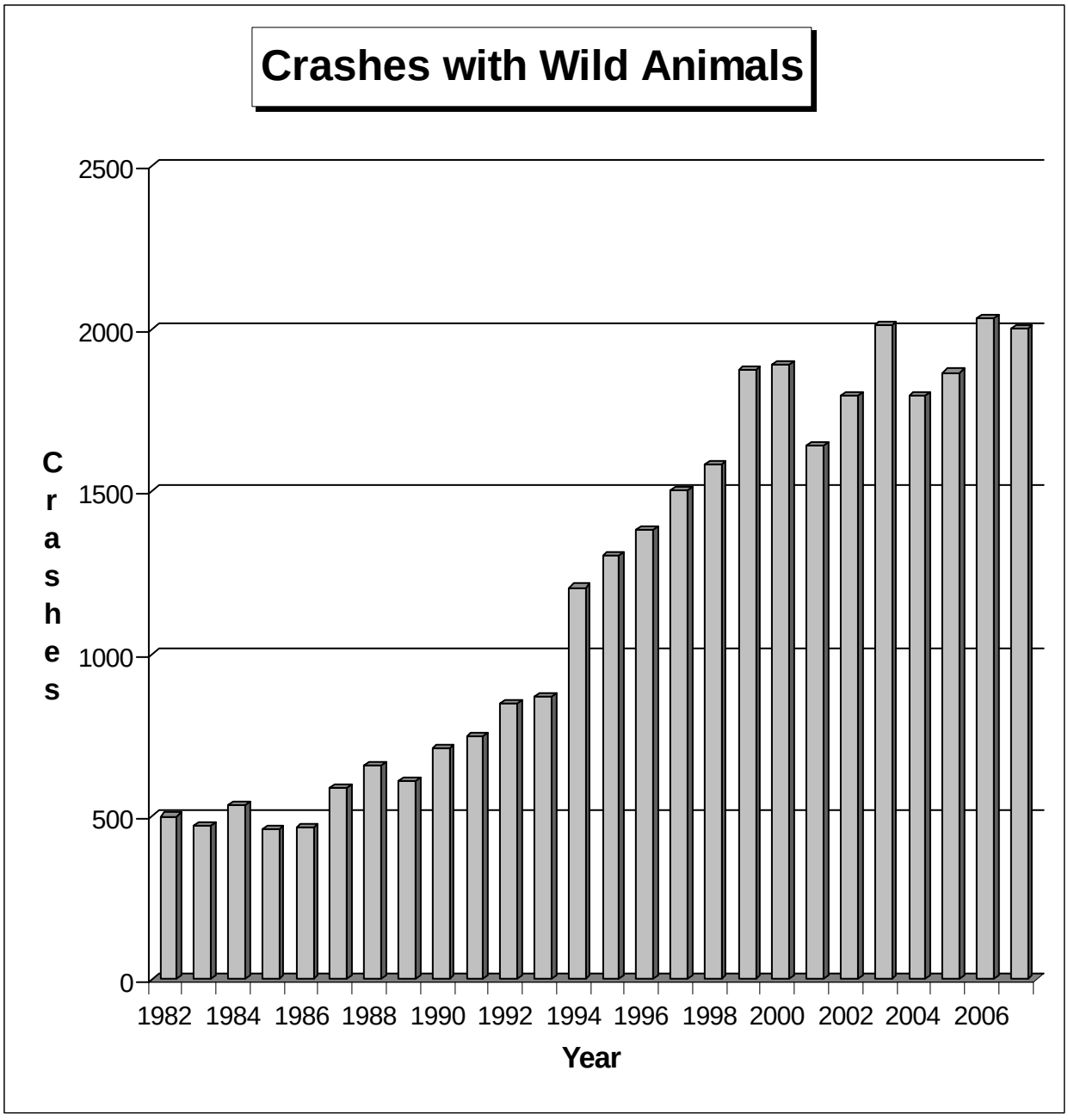
During the twenty-year period from 1984 to 2003, the number of reported crashes involving wild animals increased from 468 to 2,012. This number has leveled off during the last five years as shown in Table 59. The key word in the first sentence is 'reported', since many animal crashes are not reported. The long-term trend is shown on the following page in Figure 31. The number of crashes involving domestic animals has shown no trend over the years.

Table 59
Crashes Involving Animals

Year	Crashes With Wild Animals	Fatal Crashes With Wild Animals	Crashes With Domestic Animals	Fatal Crashes With Domestic Animals
1998	1,585	0	262	2
1999	1,875	0	298	2
2000	1,891	1	237	1
2001	1,643	3	201	1
2002	1,796	3	239	3
2003	2,012	3	234	1
2004	1,794	2	233	4
2005	1,866	5	194	2
2006	2,034	4	203	1
2007	2,000	4	184	2
Chg 1 Year	-1.7%	---	-9.4%	+100%
Chg 5 Year	+5.2%	+17.6%	-16.6%	-9.1%

Source: TIS – Montana Department of Transportation

Figure 31


Crashes with Wild Animals
2500
2000
1500
1000
500
0
Crashes
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
Year

g. Railroad Crossing Safety

Motor vehicle collisions with trains are a relatively rare event, but the severity of such collisions is often very high. Table 60 presents a history of these collisions on public roadways in Montana for rural roads and for all roadways. Crashes in rural areas may be declining.

Table 60
Collisions with Trains

Year	Rural			Total		
	Crashes	Fatal Crashes	Injury Crashes	Crashes	Fatal Crashes	Injury Crashes
1998	16	2	6	24	2	11
1999	11	1	4	12	1	4
2000	19	1	6	22	1	6
2001	7	0	2	9	0	2
2002	9	1	3	20	2	6
2003	2	0	0	19	3	3
2004	10	0	4	15	0	5
2005	9	1	4	14	1	4
2006	8	1	5	11	1	7
2007	12	0	5	16	0	6
Chg 1 Yr	+50.0%	-100%	---	+45.5%	-100%	-14.3%
Chg 5 Yr	+57.9%	-100%	+56.3%	+1.3%	-100%	+20.0%

Source: TIS – Montana Department of Transportation

E. COUNTY RANKING

The following section places a ranking on the 56 counties in Montana. This ranking is one of several factors used to determine funding level for safety programs. The first three categories are indices of traffic safety problems, while the last one indicates level of local enforcement in seat belt convictions, or ability to respond to the problem. There are a number of ways to calculate a ranking and this is simply one possible method.

Table 61
County Ranking for Traffic Safety

Rank	County	Severe Crash Rank	Alcohol Crashes Rank	Ped+Bike +Mcycle Rank	Fatality Rank	Sum of Ranks
1	Missoula	1	2	2	2	7
2	Yellowstone	3	1	1	5	10
3	Flathead	2	3	5	1	11
4	Gallatin	4	4	4	3	15
5	Cascade	5	5	3	5	18
6	Lewis and Clark	6	6	6	7	25
7	Ravalli	7	8	7	9	31
8	Glacier	8	14	11	3	36
9	Lake	8	7	13	9	37
10	Lincoln	8	10	9	14	41
11	Park	16	12	11	14	53
12	Carbon	13	11	9	21	54
13	Jefferson	12	18	16	11	57
13	Sanders	18	13	15	11	57
15	Silver Bow	14	9	7	29	59
16	Big Horn	21	15	26	7	69
17	Custer	23	21	14	14	72
18	Stillwater	15	23	16	21	75
19	Mineral	11	23	30	13	77
20	Madison	19	20	26	14	79
21	Richland	27	17	19	21	84
21	Roosevelt	17	18	30	19	84
23	Hill	31	16	24	21	92
24	Fergus	22	22	16	33	93
25	Powell	23	34	19	19	95
26	Musselshell	27	28	30	14	99
27	Deer Lodge	23	27	22	33	105
28	Dawson	26	28	22	33	109
29	Rosebud	27	30	26	29	112

Table 61 (continued)						
Rank	County	Severe Crash Rank	Alcohol Cr+Inj+F Rank	Ped+Bike +Mcycle Rank	Fatality Rank	Sum of Ranks
30	Teton	34	37	19	29	119
31	Blaine	31	30	39	21	121
32	Broadwater	31	25	47	21	124
33	Beaverhead	20	25	39	41	125
34	Sweet Grass	27	35	47	29	138
34	Judith Basin	39	42	36	21	138
36	Pondera	34	30	26	49	139
37	Granite	34	37	36	33	140
38	Valley	37	30	33	41	141
39	Phillips	40	37	47	21	145
40	Wheatland	43	40	33	33	149
41	Meagher	41	44	24	41	150
42	Chouteau	37	41	47	33	158
43	Powder River	44	44	39	33	160
44	Sheridan	48	36	36	41	161
45	Golden Valley	41	46	39	41	167
46	Toole	44	42	33	49	168
47	Prairie	44	48	39	41	172
48	Petroleum	44	51	47	33	175
49	Treasure	48	47	47	41	183
50	McCone	48	48	39	49	184
51	Garfield	51	48	47	41	187
52	Liberty	51	55	39	49	194
52	Daniels	55	51	39	49	194
54	Fallon	51	51	47	49	198
55	Carter	55	51	47	49	202
55	Wibaux	51	55	47	49	202

Source: TIS – Montana Department of Transportation

The four rankings are summed and then those totals are ordered. This table can be used as a very general ordering for traffic safety problems and solutions by county. Other considerations are often used including high crash corridors.

Some counties or cities within counties will have special safety problems that are not represented by the above table and these instances will be taken into account if necessary. Many counties and cities will not have sufficient resources to manage an attack on their safety problems. Sometimes, several counties or cities may work together on certain issues.

Cost benefit is a factor when funding counties. If a large benefit can be gained with a small amount of money, this could override a project in a higher priority county. There is a limited amount of funding and sometimes this funding is earmarked to certain areas. This and other factors may also override priorities.

Conclusion

The Problem Identification for FFY 2009 explores many traffic safety issues in Montana. It is a compilation, which contains a large amount of varied data. There is much statistical "noise" in the various data, since there are so many variables that affect crashes including but not limited to driver behavior, vehicles, road characteristics, weather conditions, road conditions, laws and even something as minor as a change to a reporting form. It is difficult to reach significance because of these many factors along with the relatively small number of crashes and fatal crashes in the state.

This paper should be used as a guide when looking at the traffic safety problem or when attempting to find solutions for Montana traffic safety. Often it is safer to look at long-term trends, rather than a one-year increase or decrease which may have occurred from something as simple as an unusual winter or statistical variation. A change of 30 fatalities is not significant in Montana and can be caused by simple statistical variation. Perhaps a particular traffic safety intervention had no impact at all, but some other variable created the perceived result. Care should always be given that you don't make assumptions for the cause of certain situations without looking at all possibilities. When in doubt one should error on the side of caution.

Questions or comments on this study should be directed to the State Highway Traffic Safety Office at the Montana Department of Transportation. For additional information call the office at (406) 444-3298.