Legislative Audit Division

Legislative Request 99SP-46
January, 1999

Speed Limit Analysis Update

- **Average speeds are up on all highways.**

- **Miles driven have leveled off in the last two years.**

- **Montana's fatality rate ranks in the top three compared to surrounding states for the last six years.**

- **Not using a seat belt continues to be a contributing factor to fatalities.**

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INTRODUCTION

Earlier this biennium, the Legislative Audit Division (LAD) was asked to analyze trends and changes which have occurred in motor vehicles speeds and accident rates since the removal of the numerical speed limit for the state of Montana on December 8, 1995. We published a report on this analysis on September 15, 1997. At the request of the Legislative Audit Committee, this current report contains updated information since the original was published.

On September 5, 1997, the director of the Montana Department of Transportation (MDT), reconvened the department's Ad Hoc Committee on Speeds to determine if a compelling argument can be made for establishing a specific, numeric speed limit for Montana. The Committee was directed to provide an analysis and make a specific recommendation based on available data and information. A report was issued in March 1998. The report supported a maximum numerical speed limit. Proposed speed limits included the following:

- 75 mph daytime and 65 mph nighttime on the Interstate,
- 65 mph daytime and 55 mph nighttime on paved rural roads, and,
- 55 mph both daytime and nighttime on gravel rural roads.

With these recommended speed limits, the report recommends no speed differential between classes of vehicles.

WHAT ARE THE SOURCES FOR HIGHWAY TRAFFIC SAFETY INFORMATION?

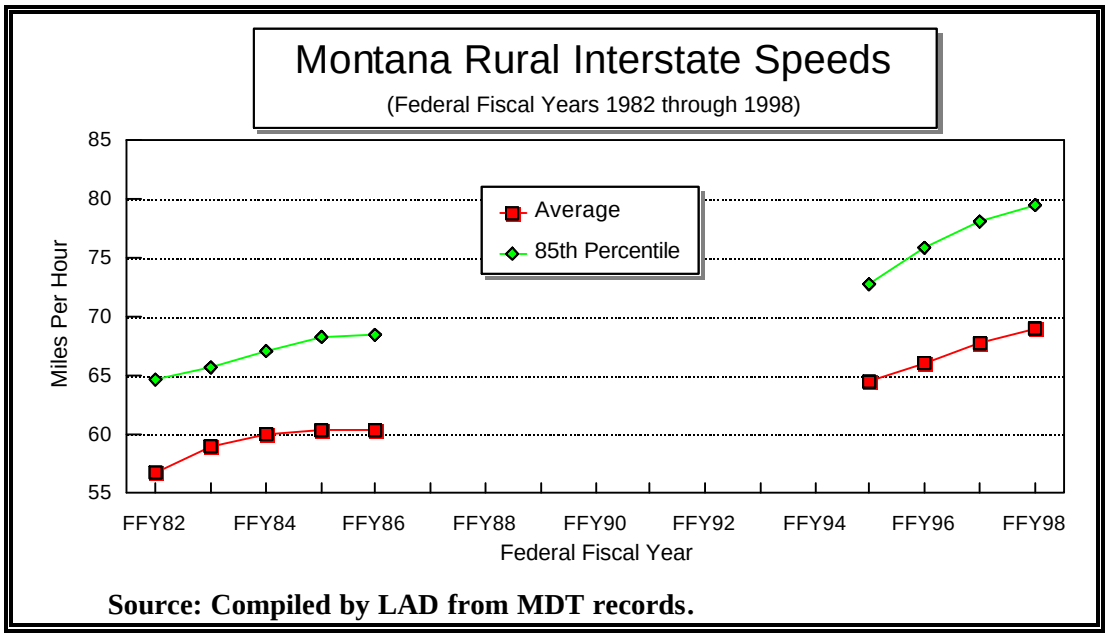
There are numerous systems in place which contain data related to highway traffic safety. One such system is the Fatality Analysis Reporting System (FARS). This is a national database which contains data on fatal traffic crashes. Information on this system was used to compile trends between Montana and other western states. For other areas of our analysis, we used data from the Montana Accident Reporting System (MARS). This system, along with a new Accident Investigator's report, was implemented by the Montana Highway Patrol (MHP), Department of Justice, in January 1996. Highway traffic safety data from the MDT was also used. In addition, MDT's Data and Statistics Bureau collects data on traffic speeds and volumes which are reported quarterly to the federal government. This data is collected in 24 hour periods, four times a year, at 39 sites throughout Montana. This data was also used in our analysis.

Data Limitations

The new MARS system stores information from accident reports throughout the state. We did not examine the internal controls over the computer systems. Historic data on MARS is updated on an on-going basis, therefore, figures in this report may be updated and changed. Data used in this report was based on data in the system as of December 30, 1998.

ARE MOTORISTS DRIVING FASTER IN MONTANA?

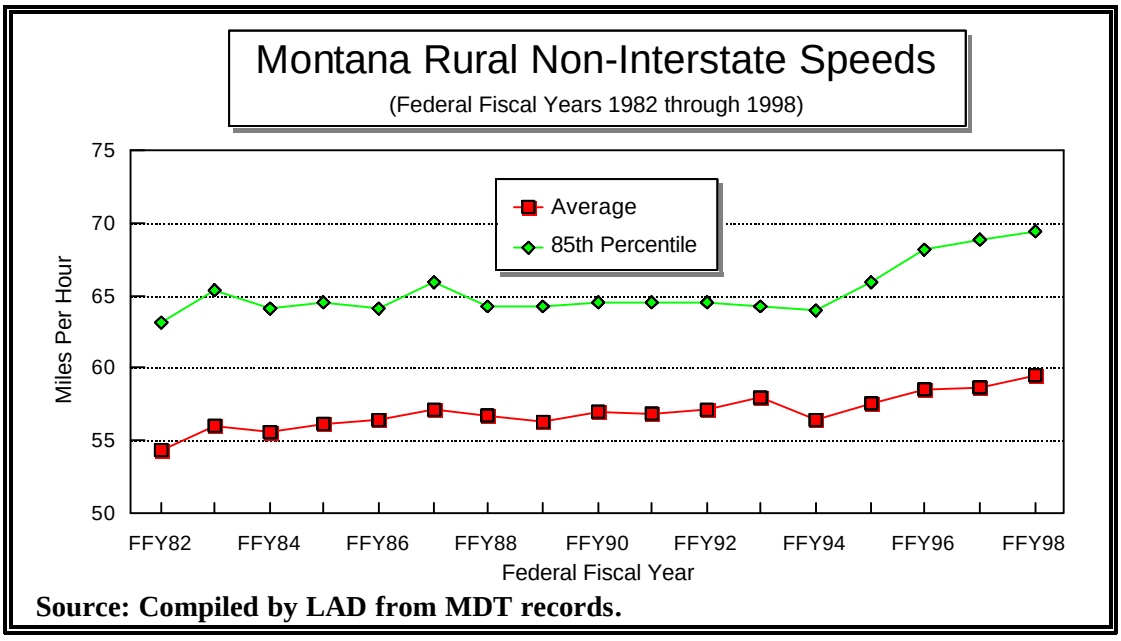
Motorists are driving faster on average than in the past. For rural Interstate highways (which are the majority of Interstate miles in Montana), the posted speed limit increased from 55 mph to 65 mph in April 1987. The MDT stopped data collection on the system at that time and did not start collecting speed data again until October 1, 1994. From FFY82 until FFY86, the average measured speed on rural Interstate gradually increased from about 57 mph to about 60 mph. When data collection started again in FFY95 the average measured speed was 64.5 mph. In December 1995, Montana returned to the "basic rule" speed limit. The average speed on rural Interstate highways has been gradually increasing since this change, and was at 68.9 mpg in FFY98. It should be noted these figures reflect speeds over a 24 hour period, including nighttime which has a posted speed limit.



Source: Compiled by LAD from MDT records.

The 85th percentile speed is the speed where 85 percent of the drivers drive at this speed or slower. According to a Federal Highway Administration (FHWA) report, the lowest accident rate occurs when vehicles are traveling at approximately the 85th percentile speed. This speed is often used to establish maximum speed limits. Since FFY95, the 85th percentile speed has been increasing at a faster rate than the average speed. For FFY98, the 85th percentile speed on the rural Interstate had increased to 79.4 mph.

For rural Non-Interstate highways the posted speed limits were 55 mph until December 1995 when the "basic rule" became effective again. As shown in the following chart, there appeared to be an increasing trend in measured speed prior to any change in the posted speed limit. Since the return to the "basic rule", the average measured speed has continued its gradual climb to around 59.5 mph.

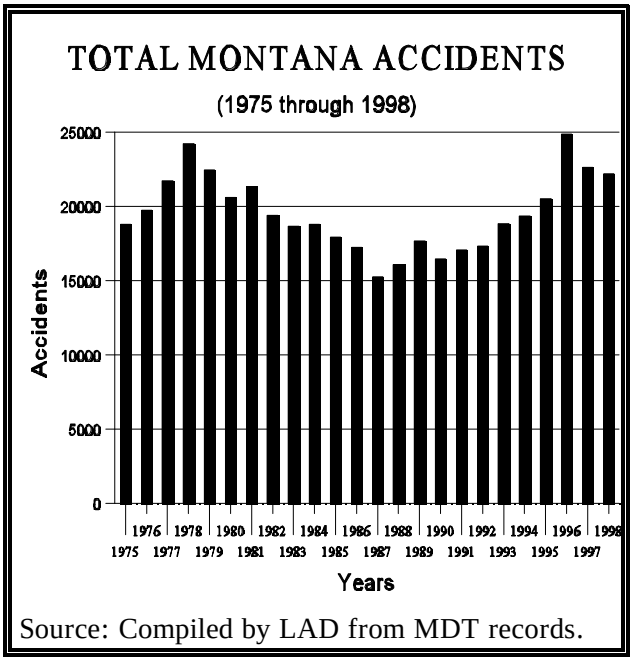


Source: Compiled by LAD from MDT records.

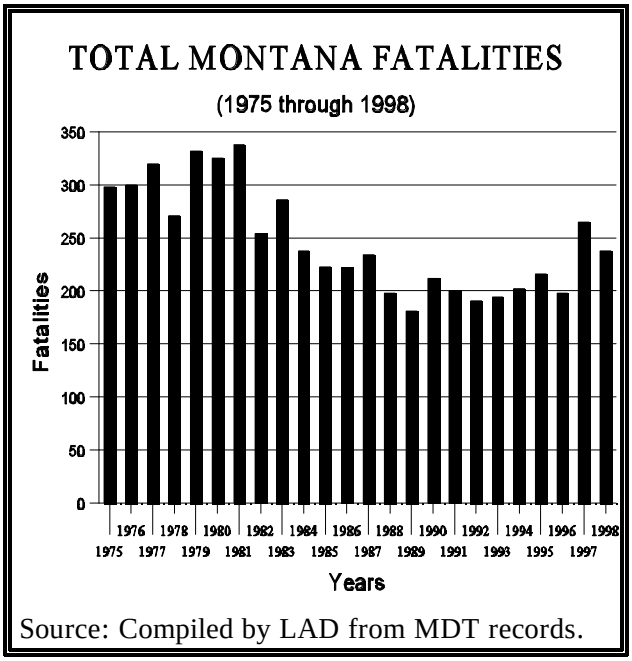
The 85th percentile speed on rural Non-Interstate has shown a similar pattern as on the rural Interstate system. For FFY98, the 85th percentile speed had increased to 69.4 mph.

ARE ACCIDENTS AND FATALITIES INCREASING?

The following charts illustrate trends in the number of traffic accidents and fatalities from 1975 through 1998.



Source: Compiled by LAD from MDT records.

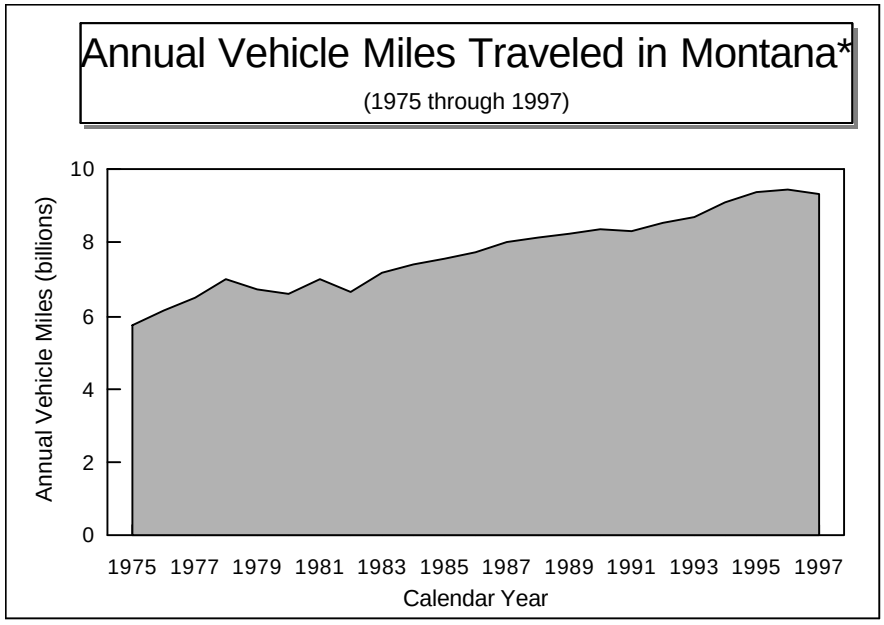


Source: Compiled by LAD from MDT records.

Overall, there has been an increasing trend in total accidents since 1987 while the number of fatalities has remained fairly constant at around 200 except for the last two years. In 1997 there was a significant jump in fatalities while in 1998 the number of fatalities decreased but are still higher than the previous ten years.

Are Montana Traffic Volumes Impacting Statistics?

One of the measures of the amount of traffic on the state's highways is annual vehicle miles of travel. When one vehicle travels one mile it equals one vehicle mile. The following chart shows that annual number of vehicle miles traveled in the state has been increasing steadily since 1975.

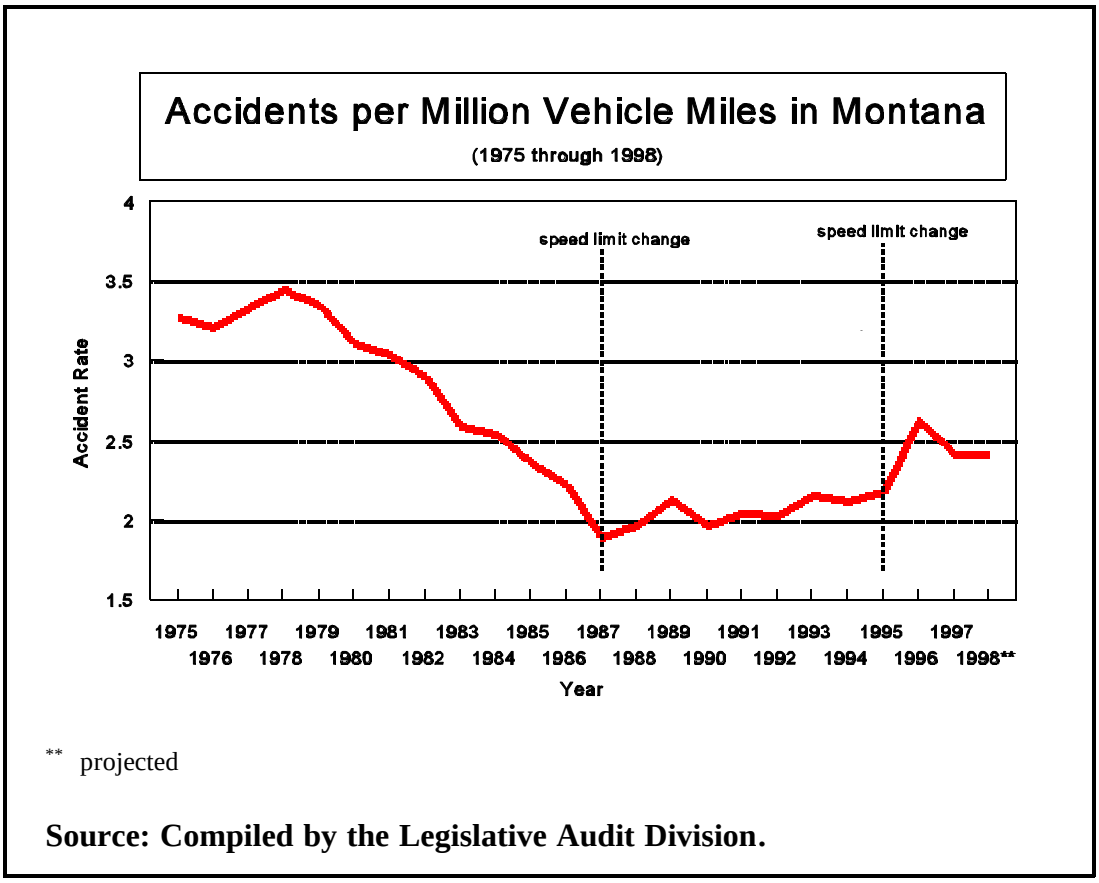


* Includes miles traveled on all interstate and state highway systems, and local roads.

Source: Compiled by LAD from MDT records

In 1975 there were approximately 5.7 billion vehicle miles traveled on the state's Interstate, state highway systems and local roads. The vehicle miles traveled appears to be leveling off to about 9 billion in the last two years.

Another way to analyze accident and fatality data is to calculate the accident and fatality rates per vehicle mile. Usually the accident rate is shown as the number of accidents per million vehicle miles as is shown in the following chart.

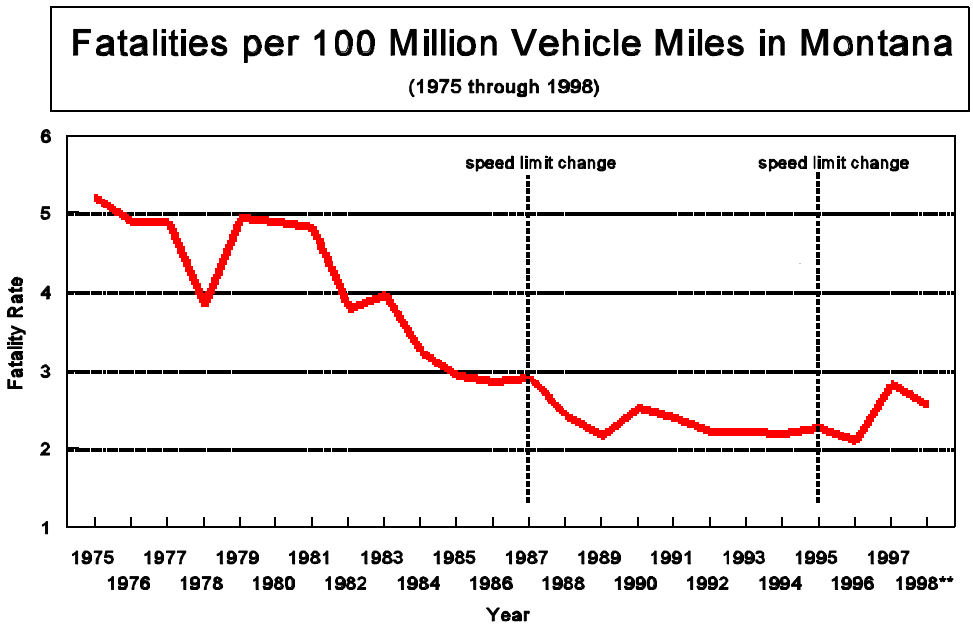


** projected

Source: Compiled by the Legislative Audit Division.

From 1975 to 1987 there was a steep decline in the number of accidents per million vehicle miles. Since then, the accident rate has been on an increasing trend with a peak in 1996. The projected rate for 1998 is estimated at 2.43 accidents per million vehicle miles.

The fatality rate is usually shown as the number of fatalities per 100 million vehicle miles as shown in the following chart.



** projected

Source: Compiled by the Legislative Audit Division.

The fatality rate has been on an overall decreasing trend since 1975. In 1997 there was an increased rate because of a significant increase in the number of fatalities and a slight drop in the number of vehicle miles traveled. We are projecting the fatality rate to drop in 1998 to around 2.6 fatalities per 100 million vehicle miles.

HOW DOES MONTANA'S EXPERIENCE COMPARE TO OTHER STATES?

When the Fuel Conservation Speed Limit was eliminated by the federal government in December 1995, the other states adopted various speed limits. Some states adopted different speed limits for Interstates and for other state highways, or for daytime or nighttime. We collected information on speed limits and fatalities in surrounding states. The following chart shows the maximum posted speed limit on rural Interstates in surrounding states and the effective date of these speed limits.

MAXIMUM SPEED LIMITS IN OTHER STATES

State	Maximum Speed Limit Rural Interstate (MPH)	Speed Limit Effective Date
Colorado	75	6/24/96
Idaho	75	5/1/96
Kansas	70	3/7/96
Nebraska	75	6/1/96
Nevada	75	12/8/95
North Dakota	70	6/10/96
Oregon	65	6/27/87
South Dakota	75	4/1/96
Utah	75	5/1/96
Washington	70	3/15/96
Wyoming	75	12/8/95

Source: Insurance Institute for Highway Safety

All of the surrounding states except for Oregon raised their maximum posted speed limits. The most common speed limit is 75 mph. Most of the limits were changed in the first half of 1996. We collected historical data on fatalities and traffic volumes in these same surrounding states. This information can be used to show the number of fatalities per 100 million vehicle miles. The following chart shows fatality information for surrounding states for calendar years 1992 through 1997.

Fatalities and Fatality Rate per 100 Million Vehicle Miles
1992 through 1997

	1992		1993		1994		1995		1996		1997	
State	Rank	Fatalities Per 100 Million VMT	Rank	Fatalities Per 100 Million VMT	Rank	Fatalities Per 100 Million VMT	Rank	Fatalities Per 100 Million VMT	Rank	Fatalities Per 100 Million VMT	Rank	Fatalities Per 100 Million VMT
Colorado	7	1.69	10	1.71	9	1.74	7	1.84	9	1.71	9	1.62
Idaho	2	2.26	3	2.04	4	2.15	4	2.13	4	1.99	3	2.01
Kansas	10	1.60	6	1.77	7	1.79	8	1.76	6	1.89	5	1.81
Montana	**3**	**2.25**	**2**	**2.24**	**2**	**2.22**	**2**	**2.28**	**3**	**2.12**	**1**	**2.82**
Nebraska	6	1.84	9	1.72	8	1.75	10	1.61	7	1.80	8	1.77
Nevada	1	2.33	1	2.26	1	2.26	3	2.24	2	2.18	2	2.13
North Dakota	11	1.45	11	1.45	11	1.39	12	1.13	12	1.26	11	1.47
Oregon	8	1.69	8	1.76	10	1.68	6	1.89	8	1.73	10	1.62
South Dakota	4	2.23	4	1.89	5	2.02	5	2.06	1	2.24	4	1.86
Utah	9	1.65	5	1.78	6	1.90	9	1.73	10	1.64	7	1.79
Washington	12	1.32	12	1.43	12	1.35	11	1.33	11	1.44	12	1.32
Wyoming	5	1.90	7	1.77	3	2.15	1	2.41	5	1.94	6	1.81
Average		1.70		1.74		1.75		1.77		1.75		1.71

Source: Compiled by LAD from National Highway Traffic Safety Administration information.

For most of the period shown, Montana has a fatality rate comparable to Idaho, Nevada, and South Dakota. These states fatality rates are higher than the other surrounding states. In 1997, because Montana had a higher number of fatalities than in past years, the fatality rate was higher than the rest of the surrounding states. For all of the years shown, Montana's fatality rate is higher than the average for the other states.

WHERE DO MONTANA ACCIDENTS OCCUR?

We identified and compared the type of roadway where accidents occurred for 1996 through 1998. This was done for both fatal and non-fatal accidents. In 1998 there was a drop in the number of fatal accidents on the Interstate system down to a number comparable to 1996. The higher numbers in 1997 ties to the peak number of fatalities in that year.

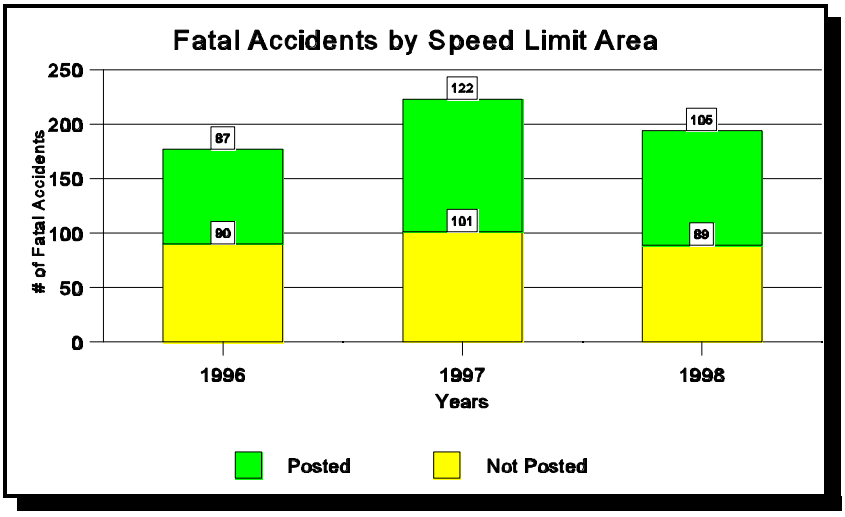
MONTANA HIGHWAY ACCIDENTS BY TYPE OF ROADWAY
(January through October)

	Fatal Accidents				Total Accidents		
	1996	1997	1998		1996	1997	1998
Interstate	33	42	26		2212	2009	1803
NHS Highways*	47	53	49		4670	4531	4347
State Highways 39	50	55		6019	5875	5856	
County Roads	26	31	39		2534	2335	2394
Local	6	4	8		4070	3628	3183

*-National Highway System Highways
Source: Montana Highway Patrol Database

MONTANA FATAL ACCIDENTS OCCURRING IN POSTED SPEED ZONES

We gathered data on fatal accidents for 1996, 1997 and 1998. For 1996 the number of fatal accidents was almost equal on roadways with or without a posted speed limit in effect - 87 on roads with a posted limit and 90 when there was no posted limit. For 1997 and 1998 there were more fatal accidents in areas where there was a posted limit. The following chart illustrates the change.



To further examine the circumstances surrounding these fatal accidents we gathered additional data from MHP records on whether speed or alcohol contributed to the accidents. We also identified whether the accident occurred in daylight or darkness. The following charts illustrate the relationships among these factors.

Factors Involved in Fatal Accidents	Posted			Not Posted		
	1996	1997	1998	1996	1997	1998
Speed a Factor	40	52	46	31	47	39
Speed not Factor	47	70	46	59	54	50
Alcohol and Speed	24	40	26	6	11	12
Total Fatal Accidents	87	122	105	90	101	89

There is no clear relationship between the roadway having a posted speed limit and speed being a factor in the accident. Calendar year 1996 (on non-posted roadways) shows a lower percentage of fatal accidents where speed was a factor - 33%. Calendar years 1997 and 1998 show an increase in the percentage of fatal accidents where speed was a factor on roadways with no posted limit. Forty-six percent of the total fatal accidents in 1997 and 44 percent of fatal accidents in 1998 (on non-posted roads) had speed as a factor. However, this makes the percentages more in line with fatal accidents on posted roadways. Speed as a factor on posted roads has remained relatively constant at around 43 to 46 percent.

Since the night speed limit has remained in effect during the previous three year period we gathered data on the date, time and location of the accident. Using this information we determined if the accident occurred in daylight or night conditions. Weather conditions were not considered in the analysis. The following chart summarizes the results.

Light Conditions for Fatal Accidents	1996	1997	1998	Total
Daytime	111	124	125	360
Night	66	99	69	234
Total	177	223	194	594

Most fatal accidents are occurring in daytime hours. Calendar year 1997, which was a higher than normal fatality year, shows a marked increase in the number of fatal accidents during nighttime hours.

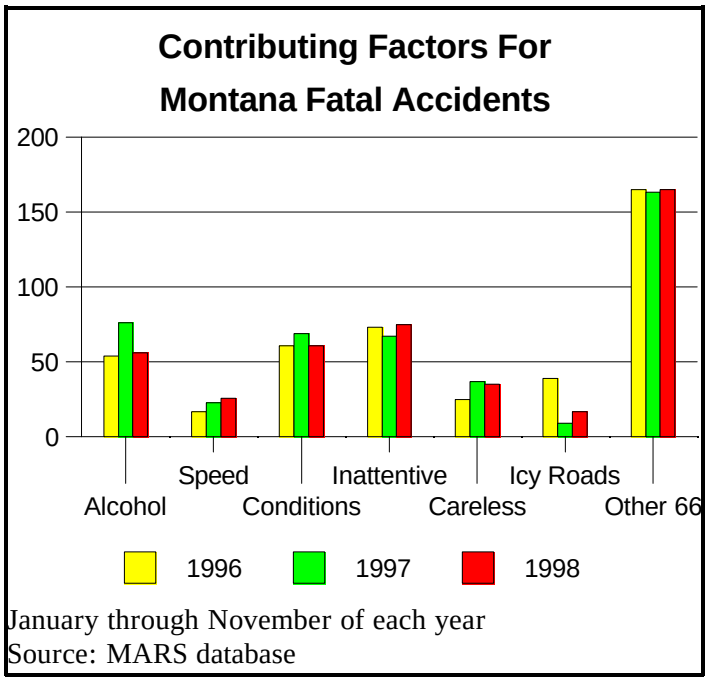
OTHER CONTRIBUTING FACTORS IN MONTANA FATAL ACCIDENTS

In a large majority of Montana fatal accidents, several different contributing factors were present. We analyzed the number of fatal accidents for each year. The six most often identified contributing factors, two of which are speed-related, include:

--Too Fast for Conditions
--Alcohol
--Inattentive Driving

--Icy Roads
--Careless Driving
--Exceeding Stated Speed Limit

The following chart illustrates the percent of time MHP officers mentioned one of these factors as a contributing circumstance in a fatal accident. Up to five contributing circumstances can be identified for each accident.



January through November of each year
Source: MARS database

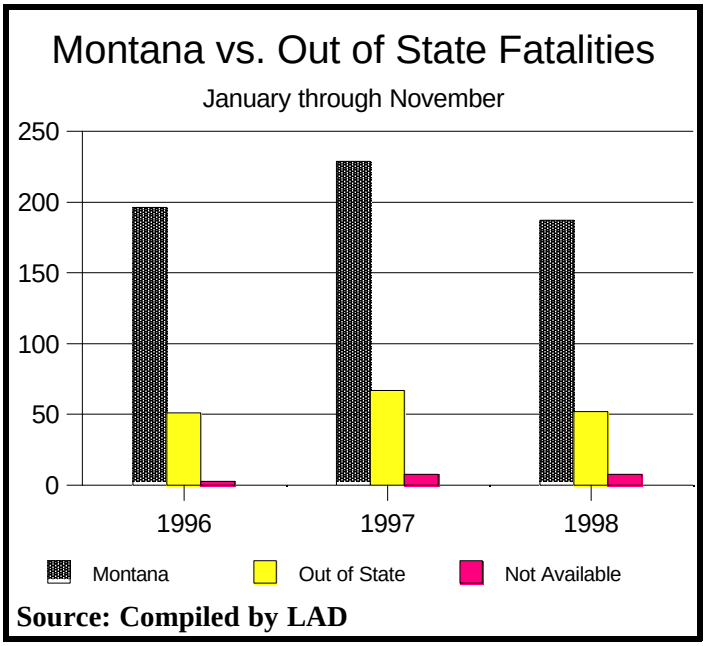
We found these factors are generally occurring at relatively the same rate in all three years except for a decline in icy roads in 1997 and 1998. The only notable changes in factors reported was an increase in alcohol and careless driving as contributing factors.

DOES USE OF SEAT BELTS INCREASE SAFETY?

In 1996 of the 185 Montana vehicular deaths (where seat belt data was available) those who were unbelted or improperly belted accounted for 125 (68%) of the deaths. In 1997, of the 257 vehicular deaths 173 (67%) were unbelted. Then in 1998, through November, there were 136 out of the total 202 fatalities (67%) where seat belts were not used. Not using a seat belt is definitely a contributing factor to fatalities.

WHAT PERCENT OF FATALITIES INVOLVE VEHICLES WITH OUT OF STATE LICENSE PLATES?

We gathered data on Montana versus out of state license plates from the MARS system. This data only distinguishes the license plates on the vehicles involved in the accident not the state of residence of the driver. The following chart illustrates the percentage of Montana plates versus non-Montana plates for each year.



Source: Compiled by LAD

SUMMARY

We attempted to answer questions that may help the Legislature and the public make decisions related to speed limits in Montana. A summary of information we gathered included:

- Average measured speeds on rural Interstate and rural non-Interstate highways are increasing.

- Annual vehicle miles traveled have been increasing steadily since 1975 with some leveling off over the last two years.

- Montana's fatality rate ranks in the top three compared to surrounding states for the last six years.

- Not using a seat belt continues to be a contributing factor to fatalities.