



ECONOMIC COSTS OF **Alcohol-Related Vehicle Crashes in Montana**

by Steve Seninger

Five people are injured or killed each day in Montana because of alcohol-related vehicle crashes. These accidents cost Montanans \$621,000 per day and more than half a billion dollars per year in medical costs, lost wages, and lost productivity. The emotional cost to families and communities in psychological and human suffering is immeasurable. As a consequence of drinking and driving, children die, families are torn apart, and people's lives are shattered.

Previous estimates that the economic cost of alcohol abuse is \$511 million per year (Barkey, 2009) do not include costs from alcohol-related crashes with injuries. By adding the economic cost of these injury crashes, the total impact of alcohol abuse in Montana increases by \$131 million, bringing the annual cost to \$642 million.

Victims of alcohol-related crashes suffer more severe injuries than victims of crashes not involving alcohol. State-collected data show that half of the alcohol crash injuries involve Montanans under age 30 and include high-speed rollovers, rear-ending or T-boning another vehicle, and running into power poles, trees, or concrete abutments. These crashes often result in expensive hospital stays.

Trends in Crash Injuries

Crash reports on alcohol-related vehicle fatalities and non-fatal crashes are reported to the Montana Department of Transportation and compiled into annual data reports. A fatal crash that involves a driver with a blood alcohol concentration of .01 or greater is considered an alcohol-related crash. A drug-related fatal crash involves a driver with any amount of an illegal drug (which includes use of inhalants), and/or any amount of a prescription drug that has a known side effect of causing impairment. Non-fatal crashes are determined to be alcohol- or drug-related by the officer at the scene based on observation of evidence at the crash scene (e.g. open containers, drug paraphernalia) and implementation of standard field sobriety testing protocols.

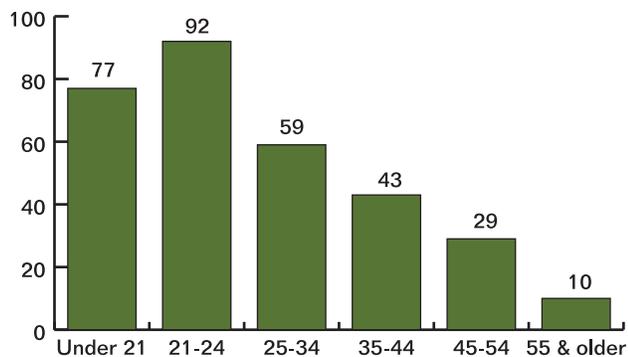
Alcohol-related fatalities are included in the crash-with-injury numbers and are reported through the Fatality Analysis Reporting (FARS) system database. The FARS database uses the results of blood alcohol content tests from the Montana Forensics Lab. Non-fatal crashes related to alcohol are reported by the Montana Highway Patrol.

Table 1
Alcohol and Drug Related Vehicle Crashes
in Montana, 1999-2008

Year	All Crashes			Injuries		
	Alcohol Related	All	Alcohol Related Fatalities	Alcohol Related	All	Percent of All
1999	2,177	21,078	109	1,771	10,459	16.9%
2000	2,211	22,254	117	1,824	10,798	16.9%
2001	2,035	21,846	104	1,652	8,982	18.4%
2002	2,288	23,527	126	1,745	10,086	17.3%
2003	2,173	23,160	128	1,638	9,632	17.0%
2004	2,113	21,783	106	1,767	9,263	19.1%
2005	2,182	22,373	124	1,623	9,211	17.6%
2006	2,243	22,186	126	1,816	9,470	19.2%
2007	2,273	21,829	124	1,771	9,067	19.5%
2008	2,313	21,971	124	1,645	8,465	19.4%
Change, 1 year	+1.8%	+0.7%		-7.1%	-6.6%	-0.5%
Change, 5 years	+5.3%	-1.3%		-4.5%	-9.3%	+5.1%

Source: Montana Department of Transportation – Safety Management System.

Figure 1
Alcohol-Related Crashes by Age of Driver
Per 10,000 Licenses in Montana, 2007



Source: Montana Department of Transportation.

Alcohol/drug-related crashes accounted for 10.5 percent of all reported traffic crashes during 2008, a proportion that has declined from the 22.3 percent of all traffic crashes represented by alcohol crashes in 1983. These alcohol/drug-related crashes tend to result in more severe injuries than do crashes with no impairment. During the early 1980s, crash injuries related to alcohol accounted for as much as 36 percent of total crashes with injuries. In 2008, alcohol/drug-related injuries were at 19.4 percent of all injuries. This is only slightly lower than in 2007, which had the highest percentage since the early 1990s. Table 1 above presents the impaired crash counts.

Drinking and driving is the most significant behavior associated with all substance abuse in Montana, with data

from the 2009 Montana Epidemiological Profile of Substance Abuse showing that both binge drinking and drinking and driving in Montana are significantly above national rates (Seninger and Herling, 2009). Alcohol abuse behavior is especially concentrated in underage youth and the 21- to 29-year-old-age groups. Binge drinking rates are 35 percent for high school students, 28 percent for 18- to 20-year-olds, and 26 percent in the 21- to 29-year-old-age cohort compared to just 12 percent for all other combined age groups.

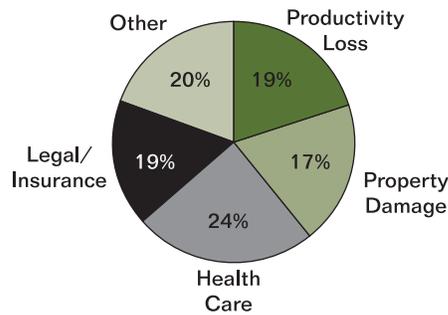
The patterns of drinking and driving being concentrated in younger age cohorts are replicated in data on alcohol-related crashes by age of driver (Figure 1). Motor vehicle crashes involving alcohol occur across the life span, and the age cohort involved in the largest number of fatal alcohol crashes is in the 25-year-old and younger age group.

The alcohol crash rate for drivers between 21 and 24 years of age is 92 per 10,000 licensed drivers, and for drivers under 21 years old, it is 77 per 10,000 licensed drivers. The rate drops for drivers 25 years old and higher and continues to drop for each older cohort, reaching a low of 10 per 10,000 licensed drivers for the 55 and older group.

Cost of Injury Crashes

Victims of alcohol-related crashes suffer more severe injuries than victims from crashes not involving alcohol. Higher levels of injury severity impose greater personal costs on victims and their families and higher costs to employers, health care providers, and government agencies. The positive relation between injury severity and costs shows up in a number of studies. Economic cost studies of alcohol crashes with injuries (Miller, et al. 1998; Miller, et al. 2009) analyze health care costs, victims' personal work losses, employers'

Figure 2
Components of the Economic Cost of
Alcohol-Related Crashes with Injuries,
Montana, 2005



Source: National data modified for Montana, crash data from Montana Department of Transportation.

Table 2
Economic Costs of Alcohol Abuse
Including Crashes with Injuries, 2005

Sources of Costs	Economic Costs	Percent of Total Costs
Crashes with Injuries	\$131 Million	20%
Crashes with Fatalities	\$96 Million	15%
Other Costs of Alcohol Abuse	\$415 Million	65%
Total Cost of Alcohol Abuse	\$642 Million	100%

Source: National data modified for Montana, crash data from Montana Department of Transportation.

lost worker productivity and absenteeism, and property damage. These costs account for almost 33 percent of annual highway crash costs even though alcohol crashes represent only about 10 percent of all crashes.

Montana data show a similar relationship between alcohol-related crashes with injuries and economic costs. Injured victims who survive alcohol crashes suffer severe injuries and spend a significant number of days in the hospital. Montana Trauma Registry Data collected from a cross section of hospitals and emergency medicine providers show that one-half of the alcohol crash injuries involve Montanans under the age of 30. The severity of alcohol crash injuries results in hospitalization for crash victims, with more than half of these hospitalizations lasting 24 days or longer, up to extreme cases of 50 days in the hospital.

The economic costs of crashes with injuries have been estimated in a number of studies. If a similar methodology for national cost estimates (Miller, et al. 2009) and state estimates for Washington (Mueller, et al. 1998) is applied to Montana data, it shows costs of \$81,000 for each injured survivor of an alcohol-related crash in 2005. This \$81,000 breaks down as health care costs of \$19,500, productivity losses of \$16,000 (both individual earnings loss and employers' costs), legal and insurance costs of \$15,500, and property damages of \$13,800. Losses in quality of life make

up the remaining \$16,200. Figure 2 shows this breakdown as a percent of total cost.

Applying this average economic cost of \$81,000 to Montana's 1,623 victims of alcohol crashes with injuries (2004/2005/2006 three-year average) yields an annual cost of \$131 million. It is important to remember that this figure does not include the economic cost of alcohol-related vehicle fatalities; those costs are estimated separately and discussed below. However, the cost of alcohol crashes with injuries varies slightly each year as the total number of alcohol injury crashes vary and as the prices of medical services and other factors increase due to inflation. Also, these victims experience work loss, out-of-pocket expenses, years lost in quality of life, and, more subjective but equally significant, emotional and traumatic costs of coping after the crash.

Economic Costs of All Alcohol Related-Vehicle Crashes

The combined cost of alcohol-related vehicle crashes with both injuries and fatalities represent a little more than one-third of the \$642 million total costs of alcohol abuse (Table 2). These costs occur every year and accrue to individual victims and their families, employers, health care and emergency service providers, and taxpayers. Moreover, Montana's price tag of \$642 million due to alcohol abuse and drinking and driving is spread over all 56 counties in the state.

Cost Impacts in Montana Counties

The costs of alcohol abuse are borne by all Montanans from all socioeconomic levels regardless of whether they live in rural or urban areas.

The county patterns of alcohol abuse are spread all over the state in rural and urban counties alike. It is possible to geographically distribute Montana's alcohol abuse cost over counties using county-level data on alcohol-related vehicle crashes with fatalities and with injuries. Alcohol crash data by county is a strong, leading indicator of where binge and heavy drinking and drinking and driving are major problems.

Table 3 shows the total costs of alcohol abuse by county in Montana. Counties are subdivided into those that are currently involved in environmental prevention strategies under Montana's federally funded Strategic Prevention Framework State Incentive Grant (SPF SIG) and all other counties. These prevention strategies are being implemented at the community level through the Montana Community Change Project (MTCCP), which operates in 19 counties throughout the state.

These estimates for all Montana counties are based on their share of Montana alcohol-related crashes with fatalities and with injuries over a three period, 2005-2007. Each county's share of total statewide alcohol crashes was applied to the annual cost of alcohol abuse of \$642 million. The counties impacted by the SPF SIG or MTCCP funding are listed at the beginning of the table, with all other non-funded counties following.

The funded counties have an estimated economic cost incidence of \$152,327,609, or 24 percent of the state total, while their population represents 22 percent of the state total. These high costs for many of Montana's small rural counties represent a significant burden on a range of stakeholders and individuals. County-level costs in the millions are especially serious in counties with very few resources and a small tax base.

Economic costs of alcohol abuse affect all households directly from the trauma of a family member or loved one being killed or injured as a result of drinking and driving. The costs also affect business and households in terms of lost work and productivity, taxes to pay for services associated with alcohol abuse, and government agencies and nonprofits affected by the consequences of drinking and driving and alcohol-related crashes.

The dollar scale of cost impacts by county can be brought into perspective by computing them on a per capita or per person basis. Most of the MTCCP counties have a per person cost burden from alcohol abuse of almost \$1,000. The actual per person cost burden for all MTCCP counties is \$723, which compares to a \$655 burden per person for the other Montana counties.

Conclusion

The devastation that alcohol-related traffic crashes brings to Montana families in injuries and deaths are an obvious heartbreak. The economic costs that these crashes bring to the Montana economy are also significant, contributing to the staggering \$642 million impact of alcohol abuse each year. □

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Table 3
County Shares of Montana's \$642 Million Alcohol Abuse Costs, 2005

Total Costs		Costs Per Capita Based on County Population	Total Costs		Costs Per Capita Based on County Population	Total Costs		Costs Per Capita Based on County Population
Montana Community Change Counties			All Other Counties			All Other Counties		
Beaverhead	\$6,902,195	\$784	Big Horn	\$8,915,335	\$697	Petroleum	\$287,591	\$657
Blaine	\$3,738,689	\$571	Broadwater	\$3,930,417	\$856	Pondera	\$3,451,098	\$581
Dawson	\$5,272,510	\$616	Carbon	\$10,640,884	\$1,095	Powder River	\$1,246,230	\$734
Deer Lodge	\$3,546,961	\$401	Carter	\$191,728	\$151	Prairie	\$1,246,230	\$1,194
Glacier	\$10,353,293	\$774	Cascade	\$51,287,143	\$627	Ravalli	\$17,926,534	\$444
Hill	\$11,407,795	\$689	Chouteau	\$1,821,413	\$347	Rosebud	\$3,546,961	\$386
Jefferson	\$9,011,199	\$810	Custer	\$6,710,467	\$600	Stillwater	\$5,655,965	\$653
Lake	\$27,704,644	\$974	Daniels	\$575,183	\$349	Sweet Grass	\$3,355,234	\$881
Lincoln	\$11,311,931	\$599	Fallon	\$862,774	\$320	Teton	\$2,971,778	\$493
Madison	\$7,573,242	\$1,020	Fergus	\$5,751,829	\$514	Toole	\$3,355,234	\$652
Mineral	\$5,080,782	\$1,304	Flathead	\$69,309,542	\$798	Treasure	\$766,911	\$1,178
Phillips	\$2,684,187	\$680	Gallatin	\$48,698,820	\$557	Valley	\$4,409,736	\$639
Powell	\$3,259,370	\$458	Garfield	\$575,183	\$473	Wheatland	\$2,013,140	\$1,015
Richland	\$8,148,425	\$887	Golden Valley	\$1,246,230	\$1,108	Yellowstone	\$101,040,466	\$722
Roosevelt	\$8,819,471	\$869	Granite	\$2,300,732	\$807	Sub-Total	\$489,672,391	\$655
Sanders	\$9,682,246	\$878	Judith Basin	\$1,342,093	\$655	TOTAL ALL COUNTIES	\$642,000,000	\$671
Sheridan	\$2,780,051	\$824	Lewis & Clark	\$34,894,430	\$582	Source: Barkey (2009) and crash data from Montana Department of Transportation.		
Silver Bow	\$13,900,254	\$426	Liberty	\$383,455	\$214			
Wibaux	\$1,150,366	\$1,281	McCone	\$862,774	\$500			
Sub-Total	\$152,327,609	\$723	Meagher	\$1,150,366	\$605			
Share of Total Cost	24%		Missoula	\$72,952,367	\$691			
Share of State Population	22%		Musselshell	\$2,684,187	\$597			
			Park	\$11,311,931	\$703			