

U.S. Fire Administration/National Fire Data Center

# Case Study: Contribution of Alcohol to Fire Fatalities in Minnesota

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**FEMA**



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### Findings

- From 1996 to 2002, 36% of Minnesota's fire fatalities had alcohol levels of 0.1 or higher.
- 13% of children under age 15 died in fires during the 1996–2002 time period. None were alcohol impaired, but alcohol may have contributed to a number of these deaths by virtue of an alcohol- or drug-impaired caregiver.
- 69% of the alcohol-impaired fire victims in Minnesota were aged 35–54.
- Although the elderly (75+ years) are at high risk from fires, only 8% of the elderly victims in Minnesota were alcohol impaired.
- The cause of 26% of fire deaths was smoking. Of these deaths, 62% were alcohol impaired. There is a strong connection between smokers, drinkers, and fire deaths.

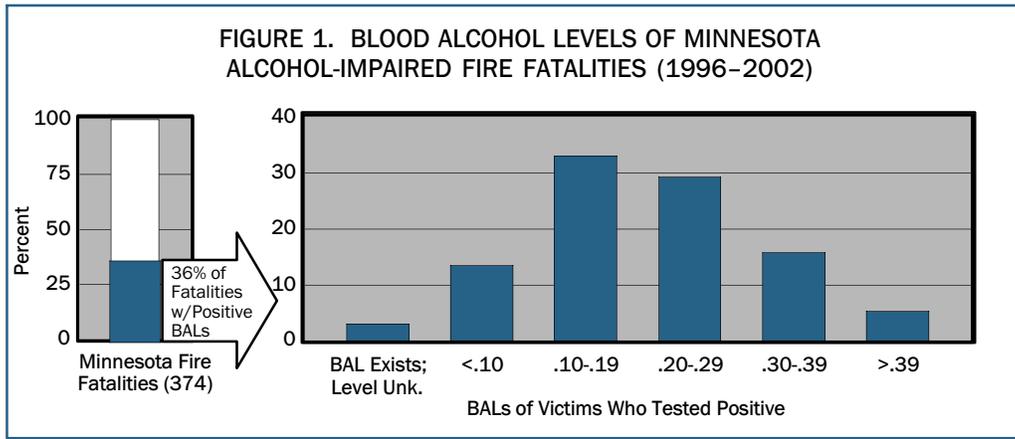
Alcohol abuse is a leading risk factor for unintentional injuries. A previous topical report, *Establishing a Relationship Between Alcohol and Casualties of Fire* (Vol. 3, Issue 3), demonstrated a connection between the involvement of alcohol and fire fatalities.<sup>1,2,3</sup>

The Minnesota Department of Health (MDH) collects alcohol use data as part of its ongoing injury surveillance system. Since 1991, the Minnesota Department of Public Safety began recording blood alcohol levels (BALs) for all unintentional injury deaths. The purpose was to learn more about the nature and extent of the alcohol problem as it relates to injuries, including fire deaths. The MDH Report of Injury form includes a variable on alcohol use before the injury. Autopsies are performed on all fire fatalities and BALs are recorded. (The legal limit for intoxication in the State of Minnesota is 0.1 percent BAL.)

Quantitative data from the State of Minnesota were used for this topical report to assess the impact of alcohol on fire fatalities. This case study is useful for understanding the scope, magnitude, and circumstances of the relationship between alcohol and unintentional injuries, especially fire fatalities.

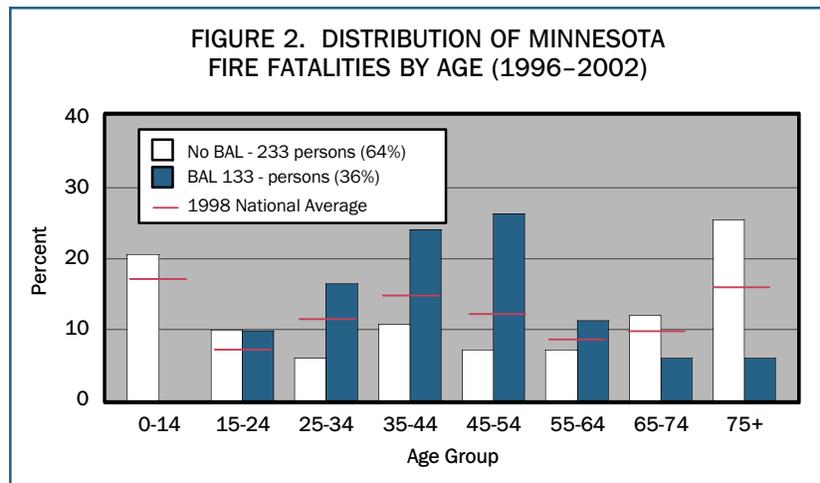
### FIRE FATALITIES

MDH reports that fire is the sixth highest cause of unintentional deaths in Minnesota, following deaths from motor vehicles, falls, poisoning, suffocation, and drowning.<sup>5</sup> From 1996 to 2002, 374 Minnesotans died from fire-related injuries (Figure 1).<sup>6</sup> Of these, 36% were found to have positive blood alcohol concentrations. Nearly 84% of these alcohol-impaired fatalities met or exceeded the Minnesota's legal intoxication standard. Half of the alcohol-impaired fatalities exceeded 0.2 BAL. Of those, 42% had a BAL between 0.3 and 0.55. A blood alcohol level of 0.3 produces confusion, 0.4 leads to stupor, and 0.5 is associated with coma.<sup>4</sup>



## AGE

Minnesota fire victims aged 45 to 54 accounted for the highest number of fire deaths (26%) that were under the influence of alcohol at the time of their death (Figure 2). This age group accounted for the second largest number of total fire fatalities. The 35 to 44 age group accounted for the largest number of fire deaths and was second for the number of fire fatalities under the influence of alcohol (24%).



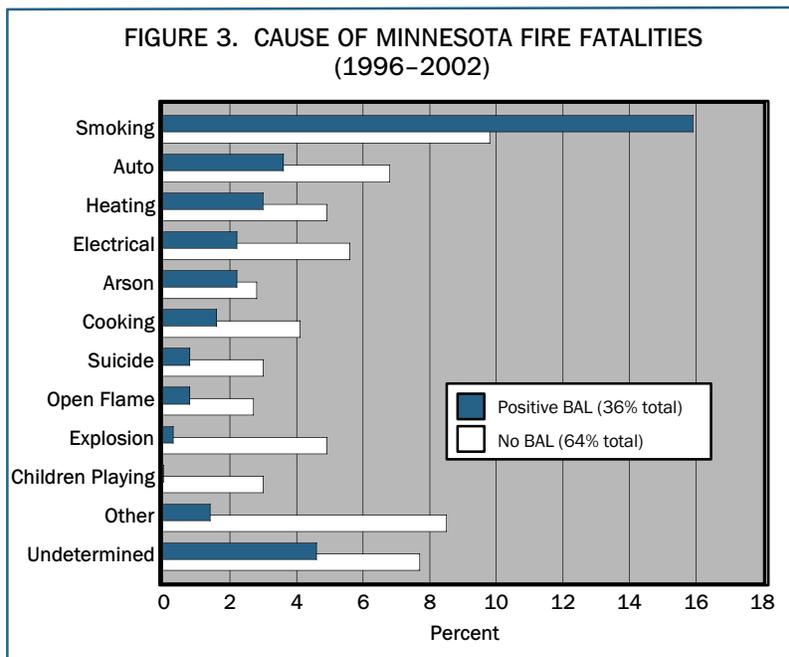
Forty-eight children under the age of 15 (13%) died as a result of fire. Although children comprise the most fatalities of persons who tested negative for alcohol (20%), that does not mean alcohol was not a contributing factor in their deaths. As discussed in the topical on the relationship of alcohol and fire casualties, juvenile fatalities can and do occur where the responsible adult was impaired by alcohol or drugs.<sup>7</sup> “Case after case revealed that fire deaths of children were attributed to the parents’ failure to perceive and respond to a fire emergency because of impairment of their sensory, judgment, or physical functions by alcohol consumption.”<sup>8</sup>

The elderly, aged 75 years and older, accounted for 31% of fire fatalities, but only 6% of all alcohol-impaired persons were in this age group.

Alcohol-impaired fire fatalities exhibit an age pattern quite different from the overall age death profile. The majority of alcohol-impaired fire fatalities were between the ages of 35 to 54 in Minnesota. The overall death profile the distribution of fire fatalities by age is different—children and the elderly have a larger proportion of deaths than other age groups.

## CAUSES OF FIRE FATALITIES

Smoking, the leading cause of fire fatalities in both Minnesota and across the nation,<sup>9</sup> was the cause of 26% of fire fatalities in Minnesota (Figure 3)—more than twice that of any other cause. Sixty-two percent of these smoking fatalities had a BAL of 0.1 or higher. Altogether, fire fatalities caused by smoking with a positive blood alcohol level amounts to 16% of all fire deaths.



Additionally, the Minnesota data indicate that more than one-third of fire fatalities caused by automobile fires and heating fires were under the influence of alcohol at the time of their death. Nearly 30% of cooking and electrical fire fatalities were also alcohol impaired.

## CONCLUSION

The quantitative data provided by the State of Minnesota regarding unintended injuries have proven valuable in establishing the link between unintended deaths and alcohol use. It is clear that persons with blood alcohol levels above 0.1 percent are at a significantly higher risk of injury than those who are not alcohol impaired. More than one-third of fire victims are found to have high BALs. And 69% of fire victims between the ages of 35 and 54 are alcohol impaired. The Minnesota results also show that a large number of intoxicated fire victims were smokers.

Public awareness of the proportion of fire victims who were intoxicated is probably underestimated.<sup>10</sup> Further studies at the national level are urgently needed to communicate this potential risk to the public. The results from such studies may provide impetus for the formation of working partnerships between groups that are involved in fire prevention programs and those that operate alcohol awareness and prevention programs.

For additional information on the effects of alcohol on the U.S. fire problem, contact your local fire department or the U.S. Fire Administration.

To request additional information, comment on this report, or view the detailed methodology used in this analysis, visit <http://www.usfa.fema.gov>

## Notes:

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