

U.S. Fire Administration/National Fire Data Center

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

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**FEMA**



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### Findings

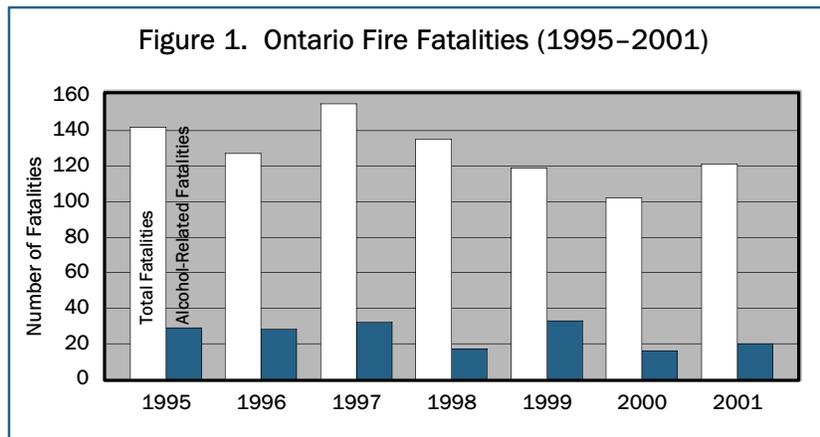
- Over a 7-year period (1995–2001), 19% of fire fatalities in Ontario were alcohol impaired. The trend in alcohol-related deaths, however, decreased over these 7 years.
- Fatalities increase from noon to midnight and then decline. Alcohol-related deaths, however, begin climbing at 4 p.m. and peak at 5 a.m.
- Fire fatalities are at their highest in the cold-weather months, probably due to an increase in heating fires. Alcohol-related fatalities are relatively constant throughout the year, with small spikes in March, August, and November.
- Nearly 70% of all alcohol-related fire fatalities were between the ages of 25 and 54. The elderly (>74) age group accounted for the largest number of fire deaths, but only 3% of this population was alcohol impaired.
- Nearly two of every three fire deaths were men; three of four alcohol-related deaths were men.
- Open flame and smoking were the leading causes of Ontario fire deaths. 28% of the fatalities where smoking was the cause were alcohol impaired.

The Ontario (Canada) Fire Marshal (OFM) investigates all fires involving fatalities and collects and maintains comprehensive records of each, including blood alcohol levels (BALs) of the deceased. The data from these records are input into the Ontario Fire Reporting System (OFRS). From this, quantitative assessments of the magnitude and characteristics of the fire problem are made.

This topical report, based on data from the OFRS, investigates the impact of alcohol consumption on fire fatalities in Ontario. The objective is to look at the circumstances and causes of fire fatalities in a way that alerts both the public and public officials about the connection of alcohol abuse to the fire problem overall and to fire fatalities specifically. It should be noted that the legal drinking age in Ontario is 19 years old, 2 years younger than in the United States.

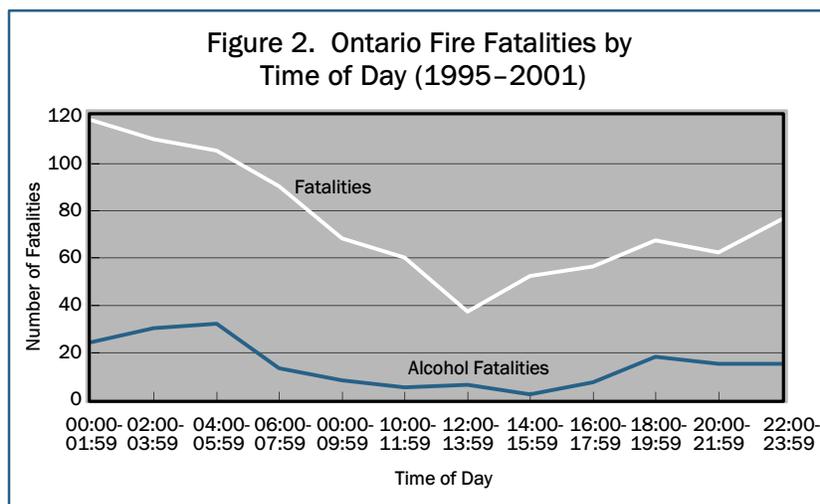
### FIRE FATALITIES

Fire is the fifth largest cause of unintentional deaths in Ontario, following deaths from motor vehicles, falls, poisoning, and drowning/suffocation.<sup>1</sup> From 1995 to 2001,<sup>2</sup> 901 Ontarians died from fire-related injuries (Figure 1).<sup>3</sup> Of these, 175 fatalities (19%) were impaired by alcohol. Even as the population increased during this period,<sup>4</sup> the 7-year trend of per capita fire fatalities was down 27%; and alcohol-related fire fatalities trended down 40%.



### TIME OF DAY

Fires and fire fatalities vary by time of day (Figure 2). This distribution of fire fatalities in Ontario is consistent with that of the United States.<sup>5</sup> Fires and fire fatalities peak between midnight and 2:00 a.m., when most people are asleep. After 2:00 a.m., fires and fire fatalities decline until 2:00 p.m., after which both increase. Slightly more than half of fatalities (52%) occur between 10 p.m. and 6 a.m. There is a slight peak in fire fatalities from 6:00 to 8:00 p.m., which corresponds to the dinner hour and an increase in cooking fires.

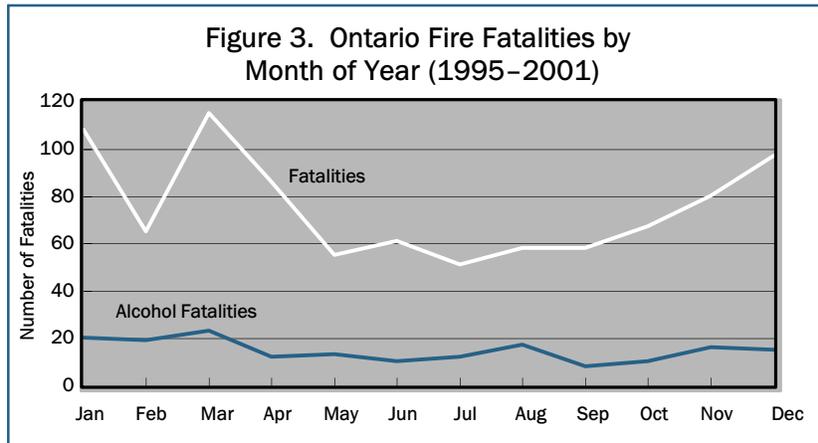


Alcohol-impaired fire fatalities exhibit a different pattern from all fire fatalities, with larger numbers of fatalities occurring in the evening hours. This is not unexpected, since alcohol consumption usually begins in the late afternoon and early evening hours. Sixty-six percent of all alcohol-related fire deaths occurred during the 8-hour period from 10:00 p.m. to 6:00 a.m. The number of these fatalities was highest from 4:00 to 5:00 a.m. (19 deaths) and second highest from 2:00 to 3:00 a.m. (17 deaths). These early morning hours may correspond to normal sleeping patterns and to the depressant effects of alcohol.

### MONTH OF YEAR

Over the 7-year period from 1995 to 2001, there were an average of 9 fatal fires and 11 fire fatalities per month (Figure 3). Fire fatalities ranged from a low of 51 in July to a high of 115 in March. Spring and summer months (May through September), on average, had the fewest number of fires and fire fatalities. The number of fires and fire fatalities increased gradually from October through January. This increase may reflect the change in temperature when heating fires add to the other types of year-round fires. From March to May, fire and fire fatalities dropped nearly 50%.

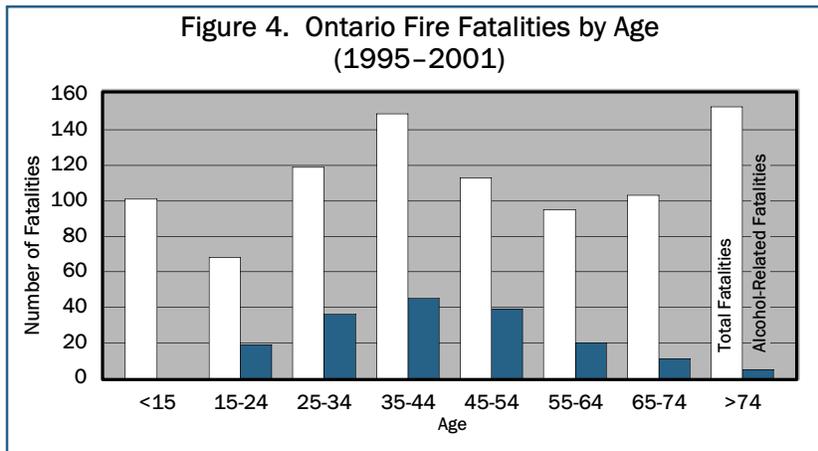
February is an unusual month in that the number of fires and fire fatalities decreases significantly compared to January and March—other cold months. Part of the decrease can be explained by the fact that February has fewer calendar days than other months; statistically, however, this deviation requires further investigation.



The monthly occurrence of alcohol-related fire fatalities follows a similar pattern. March is the highest month of alcohol-impaired fire fatalities. Spring and summer months have the fewest number of fires and fire fatalities (May through September). Unlike the general pattern, however, alcohol-impaired fatalities increased in August, with a decline in September and constant increase with minor variation from October through March.

**AGE**

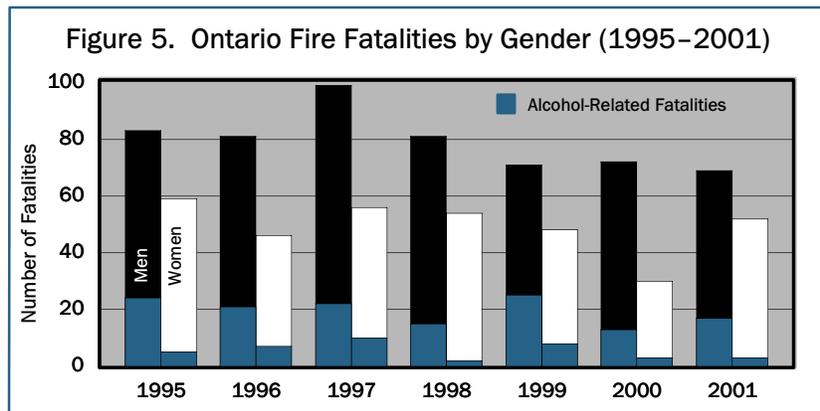
The elderly (older than age 74) accounted for the largest number of fire deaths (153); only 3% of these victims were alcohol impaired (Figure 4). The age group from 35 to 44 accounted for slightly fewer fire deaths (149) than the elderly, but 30% of these victims were alcohol impaired.



Although 43% of all fire fatalities were between the ages of 25 and 54, nearly 70% of all alcohol-related deaths were in this age group. None of the 101 children under the age of 15 (11%) who died as a result of fire were impaired by alcohol; however, in some multiple-fatality fires, an adult was impaired by alcohol and a child below the age of 15 years died in the same fire.

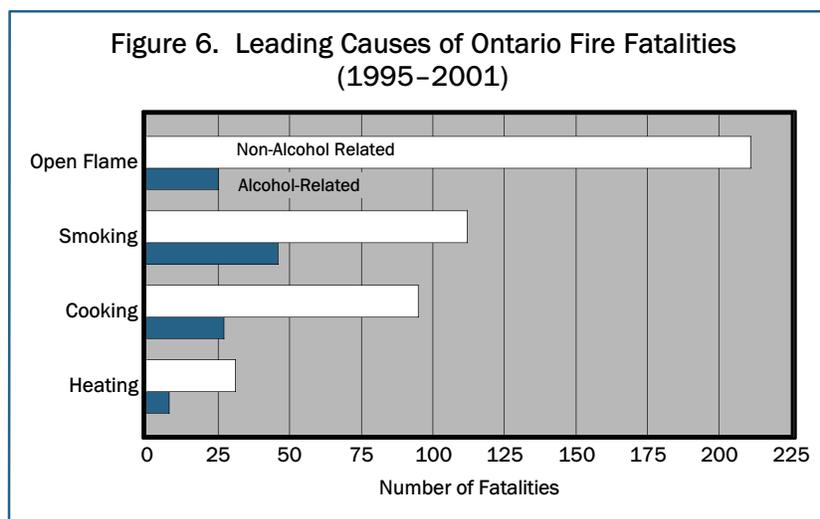
**GENDER**

Males accounted for 62% of the 901 fire deaths from 1995 to 2001. Among the total of 175 alcohol-impaired fire fatalities in Ontario, men substantially outnumbered women, accounting for 78% of these fatalities. Figure 5 depicts the number of both alcohol-related fatalities and total fatalities by gender in each of the 7 years.



**CAUSE**

Figure 6 shows the four leading causes of fire fatalities and those in which alcohol was a factor. These four causes accounted for 59% of all fatalities and 92% of all fatalities for which cause is known (the cause for 33% of the fatalities is unknown). Open flame was the leading cause of fire fatality in Ontario. Smoking, the second leading cause overall, was the leading cause in alcohol-related fatalities—28% of alcohol-related deaths. Smokers who are incapacitated because of alcohol consumption may be more careless with their smoking materials than their sober counterparts.



**CONCLUSION**

The data provided by the Ontario Fire Reporting System is a valuable tool in understanding the circumstances and causes of fire fatalities, and is an effective way to study the impact of alcohol on fires and fire fatalities. Similar data collection efforts in other Canadian provinces and U.S. states would contribute to more in-depth assessments of the link of alcohol use to fatal fires. For additional information on the role of alcohol in fire fatalities, contact the U.S. Fire Administration or your local fire department.

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

**Notes:**

1. 2002 Chief Medical Officer of Health Report – Injury: Predictable and Preventable, Ontario Ministry of Health, November 2002.
2. Data from 1990 to 1995 were analyzed in *Establishing a Relationship Between Alcohol and Casualties of Fire*, USFA, 1999.
3. *Fatal Fires in Ontario – 1995–2001*, Office of the Fire Marshal. (<http://www.gov.on.ca/OFM>)
4. *Population and Dwelling Counts, for Canada, Provinces, and Territories, 1996 and 2001 Canadian Census*. (<http://www12.statcan.ca/english/census01/products/standard/popdwell/TablePR.cfm>)
5. *Fire in the United States: 1989–1998*, Twelfth Edition, FA-216, August 2001.