

Study confirms cooking, smoking are top causes of house fires



September 26, 2012

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Canadian fire statistics are elusive: the last available analysis of nationwide fire losses in Canada is the 2002 Annual Report of Fire Losses in Canada, published by the Council of Canadian Fire Marshals and Fire Commissioners (CCFM/FC). What's more, statistics on home fires, which account for the majority of fire deaths and injuries in Canada, were not available in the 2002 report or in previous reports.



An analysis of numbers from seven provinces and one territory shows that cooking is the leading cause of home fires and home-fire injuries.

While anecdotal evidence indicates that most fires and fire deaths in Canadian homes are caused by cooking or smoking, there are no national numbers to back that up; statistics from most provincial fire marshals offices are available but, until now, have not been compiled and analyzed to form a national picture.

A study of available home-fire information by the public safety division of Alberta Municipal Affairs is based on a statistical analysis of fire-incident data from seven Canadian provinces and

one territory: British Columbia, Alberta, Manitoba, Ontario, New Brunswick, and Nova Scotia (for 2007), Saskatchewan (for 2008), and the Northwest Territories (2003-2007). Data for the rest of Canada was either not available or was incomplete. Analytical programs based on software developed at Alberta's Office of the Fire Commissioner were used for the analysis.

The findings are not surprising:

- Seniors aged 75 years and older have the highest risk of dying in home fires.
- Thirty per cent of all fires involved homes and 67 per cent of all fire deaths happened in homes.
- Most home fires occur in one- and two-family dwellings, and this partly reflects their higher proportion in the housing stock.
- Cooking is the leading cause of home fires and home-fire injuries.
- Kitchens are the leading area of origin for home fires (22 per cent) and civilian home fire injuries (29 per cent).
- Just eight per cent of home fires started in the living room/family room; these fires caused 33 per cent of home fire deaths and 17 per cent of home fire injuries.
- Nine per cent of reported home fires started in the bedroom. These fires caused 20 per cent of home fire deaths and 21 per cent of home-fire injuries.
- Smoking is the leading cause of home fire deaths.

Key variables used in the analysis were: year, property classification, source of ignition/igniting object, material first ignited, act or omission/possible cause, area of origin, deaths, injuries, and property losses. Results from a preliminary analysis of the data were presented at the CCFM/FC meeting in Calgary in September 2011, and subsequently posted on the CCFM/FC website. The report can be found at http://www.ccfmfc.ca/pdfs/report_e_07.pdf under the title, Fire Losses in Canada: Year 2007 and Selected Years.

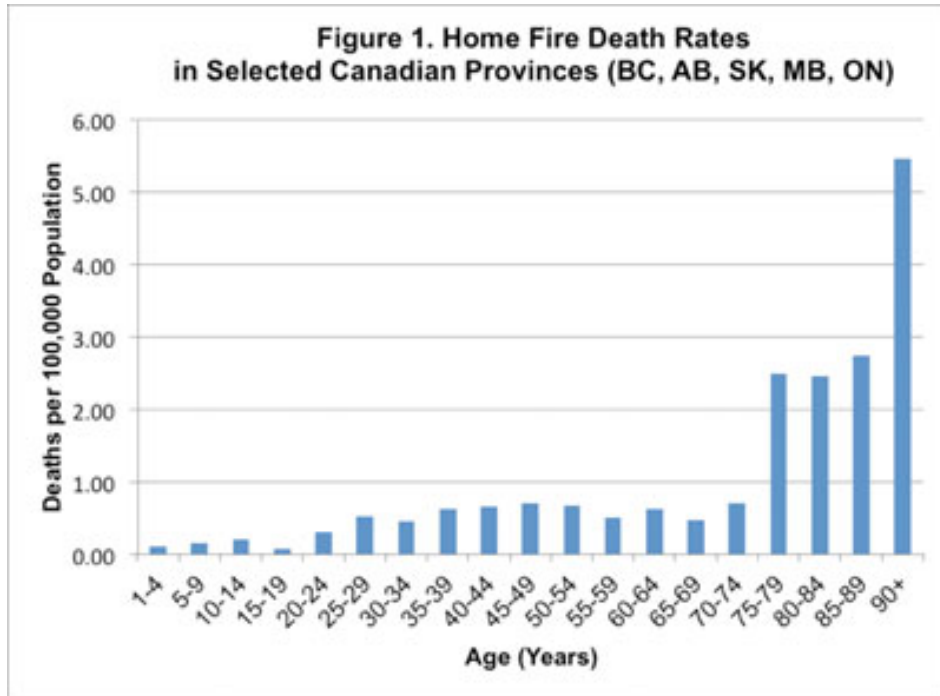
We assume that the picture of home fire losses for Canada can be constructed with reasonable accuracy using fire-incident data gathered from the provinces and territory listed above, which represents about 75 per cent of the Canadian population. The definition of homes includes one- and two-family dwellings, apartments or other multi-family housing, and mobile/manufactured homes.

Analysis of home-fire data focused on fire deaths, areas of fire origin and fire causes. Fire data in homes subject to this analysis included a total of 13,256 home fires, 172 deaths, 1,168 injuries and \$764 million in property losses. No further analysis was conducted on property losses due to data limitations.

Home-fire deaths

Fire deaths expressed as the number per 100,000 people within each age group are presented in Figure 1. Since ages of fatalities were not available from all jurisdictions, data from just five provinces were selected for this analysis. The risk of fire death increases dramatically for ages 75 and above. Compared to the average for the entire population, the death rate for those aged between 75 and 89 is 2.5 times the death rate for others. Those aged 90 years and older have rates that are five times higher. The vulnerability of older adults to fire deaths compared to the rest of

the population is due to a combination of factors including limited mobility, higher incidence of mental and physical disabilities and increased use of medications. Seniors are becoming the fastest growing segment of the population in Canada; they therefore deserve closer attention both from the fire service and health practitioners.



Population data source: Demography Division, Statistics Canada, Ottawa. Prepared and presented by: BC Stats, BC Ministry of Labour, Citizens’ Services and Open Government.
<http://www.bcstats.gov.bc.ca/statisticsbysubject/Demography/PopulationEstimates.aspx>
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Table 1 presents the distribution of home-fire deaths by type of property. The residential property category, made up largely of houses, accounts for the highest number of fire deaths in all jurisdictions. One- and two-family dwellings, apartments and mobile homes accounted for 82 per cent of all fires in residential properties and 83 per cent of all residential fire deaths (data not presented).

Table 1. Per cent distribution of fire deaths by property type and province

Property Type	BC	AB	SK	MB	ON	NB	NS	NT
Residential*	85	78	71	62	89	100	90	70
Automobiles	6	18	10	28	7	0	0	18
All Other	8	4	20	12	3	0	10	14

*Residential refers to properties with sleeping accommodation for normal residential purposes.

Table 2 presents the per cent contribution of homes to all fire deaths by province/territory. It is clear that, as in the United States, most fire deaths happen in places where Canadians feel the safest – their homes. When the total number of fires and related deaths in all property classes in all jurisdictions was considered, homes contributed to 30 per cent and 67 per cent of fires and deaths, respectively.

Table 2. Contribution of homes to all fire deaths by province/territory

Province or Territory	All Fire Deaths	Home Fire Deaths	%	Province or Territory	All Fire Deaths	Home Fire Deaths	%
BC	37	23	62	ON	92	74	80
AB	23	17	74	NB	11	5	45
SK	21	14	67	NS	10	9	90
MB	28	17	61	NT*	22	13	59

**Data for NT is for 2003-07, for all other contributing jurisdictions is for 2007.*

Home fires by areas of origin and causes

The per cent distribution of fires, deaths and injuries in homes is presented in Table 3. Most fire losses occur in one- and two-family dwellings. This is partly due to their relatively large representation in the housing stock.

Table 3. Home fires by type of home

Type of Home	% Fires	% Deaths	% Injuries
One/Two-Family Dwellings	74	78	62
Apartments, Tenements, Flats	24	17	36
Mobile Homes	2	5	2

Major areas of fire origin in Canadian homes (see Figure 2) were:

- Kitchen – 22 per cent
- Outside area, including porch, balcony, court, patio, terrace and lawn – 9 per cent
- Bedroom – 9 per cent
- Living room – 8 per cent
- Chimney/flue-pipe – 5 per cent
- Vehicle garage – 5 per cent
- Exterior wall – 4 per cent
- Laundry area – 3 per cent

A notable difference from this distribution – with chimneys being the primary area of fire origin – was seen in New Brunswick (31 per cent) and Nova Scotia (28 per cent). One-third (32 per cent) of all home fire deaths were caused by fires that started in the living room; 20 per cent resulted

from fires originating in the bedroom; and 12 per cent were caused by fires starting in the kitchen

Figure 2. Major areas of fire origin in Canadian homes

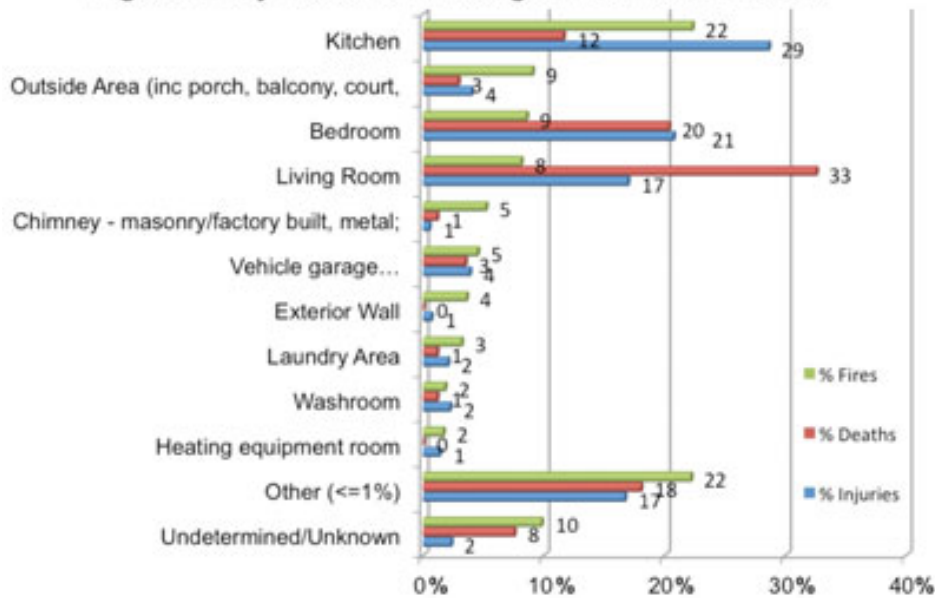
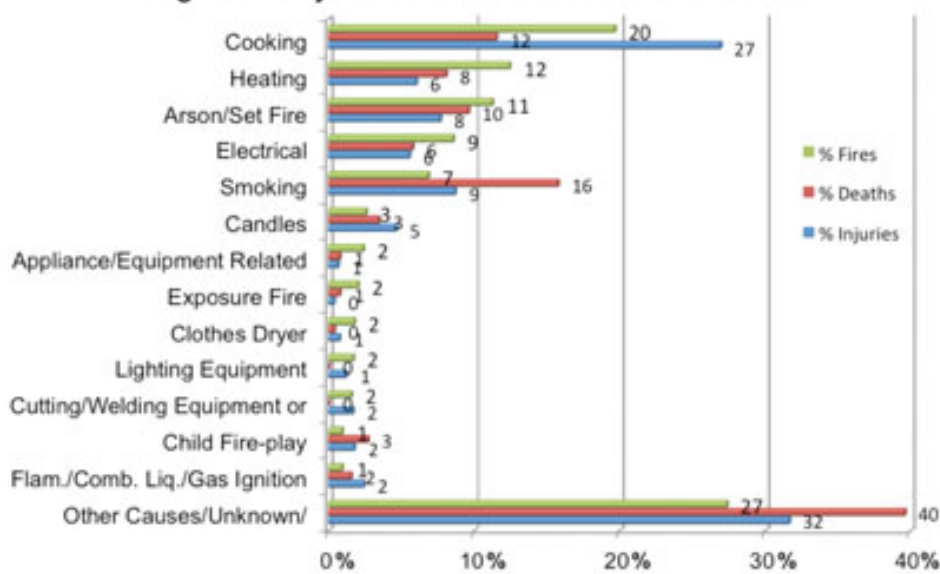


Figure 3. Major causes of fire in Canadian homes



The major causes of home fires in Canada (see Figure 3) on the basis of data from the seven provinces and the Northwest Territories were:

- Cooking – 20 per cent
- Heating-equipment related – 12 per cent
- Arson/set fires – 11 per cent
- Electrical – 8 per cent
- Smoking – 7 per cent

- Candles – 3 per cent
- Appliance/equipment, clothes dryer, exposure, lighting equipment, cutting/welding or blow torch – 2 per cent each
- Child fire-play – 1 per cent

Where cause was identified, most fire deaths in Canadian homes were from:

- Smoking – 22 per cent
- Arson/set fire – 10 per cent
- Cooking – 7 per cent
- Electrical – 7 per cent
- Candles – 3 per cent
- Child fire-play – 3 per cent

The leading cause of home fire injuries in Canadian homes were:

- Cooking – 27 per cent
- Smoking – 9 per cent
- Arson/set fire – 8 per cent
- Heating equipment and electrical – 6 per cent each
- Candles – 5 per cent

About 50 per cent of all cooking-related fire injuries were from cooking-oil fires.

Several considerations to keep in mind based on the available data:

- Not all jurisdictions strictly conform to the Canadian coding structure for coding fire incidents. Yet, the definition of homes among jurisdictions is remarkably similar. This enabled creation of one data set for analysis of Canadian home fires.
- A number of inconsistencies exists among jurisdictions, for example in definitions of fire, fire death, child, and fires with and without dollar loss. This study did not attempt to address these jurisdictional fire-data differences.

Despite the data limitations, this study and the larger study posted on the CCFM/FC website demonstrated that a fire picture for Canadian homes can be constructed. The findings on Canadian home fires in this study also correspond closely with those reported for the United States. This further supports the analysis and shows the remarkable similarity in home-fire patterns in the two countries. It is hoped that this analysis contributes to home fire prevention efforts in Canada.

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