

BRITISH COLUMBIA

# Office of the Fire Commissioner



**Annual Report  
2019**



Office of the  
Fire Commissioner  
Emergency Management BC





## Working Together for Fire Safety

### **IT IS MY PRIVILEGE TO PROVIDE YOU WITH**

the Office of the Fire Commissioner's 2019 annual report, a retrospective account of reported fires and their causes from 2014 to 2019 in British Columbia.

This report is intended to advise the fire service and the Office of the Fire Commissioner of the root causes and circumstances of fires over the last several years in order to identify common hazards and trends. By understanding this, we can focus our efforts on influencing British Columbians to act in ways that will greatly improve their safety in their homes and places of work. In addition, information in this report can influence legislation, policies and guidance to reduce deaths, injuries and the financial impact from fires that occur in our province.

This report identifies that most deaths and injuries caused by fire, by far, occur in people's homes. It's clear to me that the fire service's public education efforts need to be focused on delivering home fire safety programs. Fire prevention education campaigns that are evidenced based and target geographic areas, specific problems and groups, are most effective. A renewed focus will have the greatest effect on areas and individuals in greatest need, where outcomes can be measured and improved as needed.

With an evidence-based approach to fire prevention, I'm certain we can shift trends in the province and be a leader within the Canadian and international fire services.



Our areas of focus will include:

- Identification of the highest-risk areas of the community;
- Identification of risks based on dwelling types;
- Continued monitoring and evaluation to ensure fire prevention programs continue to target the community's areas of highest risk, and;
- Research of best practices to enhance fire prevention programs' process, content, and delivery, including the use of social media to distribute safety information.

In the same way it's a habit to buckle up for every car ride, being educated in fire safety and developing those fire safe habits are the heart of this principle.

Having working smoke alarms in every home must also become second nature. The fire service's time, energy, and focus on achieving this goal is critical, and the key to success lies with the development of sustainable fire prevention programs that work in partnership with other stakeholders and service providers.

The approach taken for this report is intended to assist in the development of a targeted application of existing fire prevention methods, and the logic of this approach can be replicated and applied everywhere. Focusing on the highest-risk members of the public and places within our communities will produce the biggest return on investment. We need others to follow.

***Brian Godlonton,  
Fire Commissioner***



## Executive Summary

**FIRE SERVICES ACT SECTION 9 (1)** requires local assistants of the fire commissioner in each municipality, district or part of British Columbia to investigate and report fires. This information has been collated to provide the data found in this report.

The report is organized in a way to reflect fires reported to the Office of the Fire Commissioner (OFC) between 2014 and 2019 and the tables contain information most important to British Columbia's fire service.

Fire reporting for 2014 to 2018 is contained in Appendix 1 and is provided for trend analysis.

In 2019 there were 6,907 fires that resulted in 205 injuries and 27 deaths. Of these, 2,921 (42.3%) were structure fires (165 injuries and 19 deaths), 1,063 (15.4%) were vehicle fires (12 injuries and 8 deaths), 14 (.02%) were person fires (13 injuries and no deaths) and 2,909 (42%) were outdoor fires (15 injuries and no deaths).

Of these fires, 66.3% were from the Lower Mainland, 15.9% were from Vancouver Island, 8.5% were from Thompson Okanagan, 6.3% were from Northern, and 1.5% were from South East and 1.6% from other Regional Districts and other agencies acting on behalf of the Office of the Fire Commissioner.

Structure fires are the most impactful to British Columbians due to the number of injuries and deaths. This category of fires occurred most frequently in residential structures: 2,279 events accounting for 78% of structure fires, 157 (95%) injuries and 17 (90%) deaths. The most frequent cause of these residential structure fires was cooking equipment (739 fires, 62 injuries, and 0 deaths) and smoker's materials and open flames (498 fires, 53 injuries, and 4 deaths).

With a focus on the influence (presence/absence) of fire safety systems such as smoke alarms and sprinkler systems, relative to the base case (no smoke alarm and no sprinkler protection), the following trends were observed:



- Injury rates were significantly higher in the presence of a working smoke alarm and no sprinkler protection likely because residents attempted to control the fires themselves when the alarms activated but the deaths were lower than without a functioning smoke alarm;
- Death rates were significantly lower whenever the fires occurred in the presence of sprinkler protection;
- The presence of smoke alarms and/or sprinkler protection significantly reduced the dependence on the fire department to control the fires; and
- The presence of smoke alarms and/or sprinkler protection significantly reduced the extent to which fires spread beyond the room of origin.

Citizens who are aged 50 and over were overrepresented with respect to frequency of death by fire. This is particularly significant given that BC Stats (2011) predicts the 65-and-over age group will increase to 23.7% of the population by 2036, compared with 15.0% in 2010, and 80-and-over will increase to 7.4% (from 4.2%).

A functioning smoke alarm when a fire breaks out can reduce the risk of dying by as much 50%. Despite this awareness, in 2019 only 44% of the structure fires reported to the OFC had a working smoke alarm. This finding presents

a significant opportunity for fire prevention education campaigns as well as requirements for buildings to enhance public safety.

Finally, it is important to note the costs of residential fires extend significantly beyond damage to the property and are estimated to be about 10 times the reported costs such as active fire protection costs, passive fire protection costs and human loss. Research is currently underway by the National Research Council of Canada (NRC) into the total cost of fire as defined as the losses that fire causes, directly and indirectly and the cost of provisions to prevent or mitigate the losses caused by the fire. These new insights will identify the broader implications and the impacts to our communities' most vulnerable populations<sup>1</sup>. Specifically, where these people live, how and where to apply precision programs for improvement.

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<sup>1</sup> Reduced frequency and severity of residential fires following delivery of fire prevention education by on-duty fire fighters: Cluster randomized controlled study: Author links open overlay panel Joseph Clare, Len Garis, Darryl Plecas, Charles Jennings. <https://www.sciencedirect.com/science/article/pii/S0022437512000230>

## CONTENTS

|  |           |
|--|-----------|
| Working Together for Fire Safety .....                                     | <b>2</b>  |
| Executive Summary .....  | <b>4</b>  |
| BC Fires in 2019 .....   | <b>8</b>  |
| <i>Reporting entities</i> .....  | <b>8</b>  |
| <i>Method of fire control</i> .....  | <b>10</b> |
| <i>Structure fires by property complex type</i> .....                      | <b>11</b> |
| <i>Residential structure fires</i> .....                                   | <b>13</b> |
| <i>Influence of life safety systems on residential fire outcomes</i> ..... | <b>16</b> |
| <i>Fire-related casualties: 5-year trends</i> .....                        | <b>17</b> |
| <i>Fire-related casualties: 2019 casualty behaviour</i> .....              | <b>19</b> |
| Appendix 1: Fire Reporting 2014 to 2018 .....                              | <b>21</b> |

Disclaimer: This report is based on data entered the FIRES system as of June 29th, 2020. Data content regularly changes in the FIRES system due to the nature of the data collection and entry into the database from numerous users in the province. As a result, the outcome of any additional data analysis conducted after June 29th, 2020 for the same period as this report will differ.

## List of Tables

|   |    |  |    |   |    |
|---|----|--|----|---|----|
| Table 1. All BC fires (2019) by fire department type and incident type, showing percentage of fires, number/rate of injuries, and number/rate of deaths . . . .   | 8  | fire casualties (2015-2019), showing number/%/rate of injuries, and number/%/rate of deaths . . . . .  | 17 | origin, showing percentage of fires (annual rate), number/rate of injuries, number/rate of deaths, and number/rate of fires that extended beyond the room of origin. . . .  | 24 |
| Table 2. All BC fires (2019) by OFC region, showing percentage of fires, number/rate of injuries, and number/rate of deaths . . . .   | 9  | Table 12. All fire casualties and police/fire casualties (2015-2019) by injury seriousness, showing number/rate of minor, light, and serious injuries . . . . .                                      | 17 | Appendix Table 6. All BC residential structure fires (2014-2018) by source of ignition, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths. . . . .  | 25 |
| Table 3. All BC fires (2019) by method of fire control, showing percentage of fires, number/rate of injuries, and number/rate of deaths . . . . .   | 10 | Table 13. All fire casualties (2015-2019) by age group, showing number/rate of injuries/deaths, correcting for 'unknown' ages, and in comparison, to the population size of each age group . . . . . | 18 | Appendix Table 7. All BC residential structure fires (2014-2018) by act or omission, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths. . . . .   | 25 |
| Table 4. All BC structure fires (2019) by property complex, showing percentage of fires, number/rate of injuries, and number/rate of deaths. . . . .  | 11 | Table 14. All structure fire casualties (2019) by condition of casualty, showing number/% of injuries deaths . . . . .   | 19 | Appendix Table 8. All BC residential structure fires (2014-2018) by level of fire origin, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths. . . . .  | 26 |
| Table 5. All BC residential structure fires (2019) by room of fire origin, showing percentage of fires, number/rate of injuries, number/rate of deaths, and number/rate of fires that extended beyond the room of origin . . . . .  | 13 | Table 15. All structure fire casualties (2019) by action of casualty, showing number/% of injuries/deaths . . . . .  | 19 | Appendix Table 9. All BC residential structure fires (2014-2018) by building height, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths. . . . .   | 26 |
| Table 6. All BC residential structure fires (2019) by source of ignition, showing percentage of fires, number/rate of injuries, and number/rate of deaths. . . . .  | 14 | Table 16. All structure fire casualties (2019) by cause of injury, showing number/% of injuries/deaths . . . . .   | 20 | Appendix Table 10. All BC residential structure fires (2014-2018) by life safety system, showing number/percentage of fires, number/rate of injuries (with 95% confidence intervals, CI), number/rate of deaths (with 95% CI), fire department control (%), 95% CI), and extended beyond room of origin (%), 95% CI). . . . . | 26 |
| Table 7. All BC residential structure fires (2019) by act or omission, showing percentage of fires, number/rate of injuries, and number/rate of deaths. . . . .   | 14 | Table 17. All structure fire casualties (2019) by cause of failure to escape, showing number/% of injuries/deaths . . . . .  | 20 | Appendix Table 11. All structure fire casualties (2014-2018) by condition of casualty, showing number/% of injuries/deaths . . . . .  | 27 |
| Table 8. All BC residential structure fires (2019) by level of fire origin, showing percentage of fires, number/rate of injuries, and number/rate of deaths. . . . .  | 15 | Appendix Table 1. All BC fires (2014-2018) by fire department type and incident type, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths . . . . .        | 21 | Appendix Table 12. All structure fire casualties (2014-2018) by action of casualty, showing number/% of injuries/deaths . . . . .   | 27 |
| Table 9. All BC residential structure fires (2019) by building height, showing percentage of fires, number/rate of injuries, and number/rate of deaths. . . . .   | 15 | Appendix Table 2. All BC fires (2014-2018) by OFC region, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths . . . . .                                    | 22 | Appendix Table 13. All structure fire casualties (2014-2018) by cause of injury, showing number/% of injuries/deaths . . . . .  | 27 |
| Table 10. All BC residential structure fires (2019) by life safety system, showing number/percentage of fires, number/rate of injuries (with 95% confidence intervals, CI), number/rate of deaths (with 95% CI), fire department control (%), 95% CI), and extended beyond room of origin (%), 95% CI). . . . . | 16 | Appendix Table 3. All BC fires (2014-2018) by method of fire control, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths . . . . .                        | 22 | Appendix Table 14. All structure fire casualties (2014-2018) by cause of failure to escape, showing number/% of injuries/deaths . . . . .   | 27 |
| Table 11. All fire casualties and police/   |    | Appendix Table 4. All BC structure fires (2014-2018) by property complex, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths. . . . .                     | 23 |   |    |
|   |    | Appendix Table 5. All BC residential structure fires (2014-2018) by room of fire   |    |   |    |

# BC Fires in 2019

This section presents information about all the BC 2019 fires reported to the OFC. In total, 6,907 fires were reported, resulting in 205 injuries and 27 deaths.

## Reporting entities

Table 1 shows how the different types of fire departments in BC responded to these types of fire events. Structure fires and outdoor fires both accounted for 42% of the total fire events, with vehicle fires accounting for a further 15%. Career fire departments (57%) and composite departments (39%) responded to the bulk of the total fire events. There were almost 30 injuries and 4 deaths per 1,000 fires in 2019. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 1 (p.21).

**Table 1.** All BC fires (2019) by fire department type and incident type, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| FIRE DEPARTMENT TYPE | INCIDENT TYPE  | 2019 TOTAL | % FIRES | # INJURIES | INJURY/ 1,000 FIRES | # DEATHS | DEATH/ 1,000 FIRES |
|----------------------|----------------|------------|---------|------------|---------------------|----------|--------------------|
| CAREER               | All fires      | 3,923      | 56.8%   | 105        | 26.8                | 5        | 1.3                |
|                      | Structure fire | 1,580      | 22.9%   | 82         | 51.9                | 4        | 2.5                |
|                      | Vehicle fire   | 333        | 4.8%    | 4          | 12.0                | 1        | 3.0                |
|                      | Outdoor fire   | 1,997      | 28.9%   | 7          | 3.5                 | 0        | 0.0                |
|                      | Person fire    | 13         | 0.2%    | 12         | 923.1               | 0        | 0.0                |
| COMPOSITE            | All fires      | 2,721      | 39.4%   | 93         | 34.2                | 15       | 5.5                |
|                      | Structure fire | 1,179      | 17.1%   | 82         | 69.6                | 13       | 11.0               |
|                      | Vehicle fire   | 666        | 9.6%    | 8          | 12.0                | 2        | 3.0                |
|                      | Outdoor fire   | 875        | 12.7%   | 2          | 2.3                 | 0        | 0.0                |
|                      | Person fire    | 1          | 0.0%    | 1          | 1000.0              | 0        | 0.0                |
| VOLUNTEER            | All fires      | 235        | 3.4%    | 2          | 8.5                 | 6        | 25.5               |
|                      | Structure fire | 156        | 2.3%    | 1          | 6.4                 | 2        | 12.8               |
|                      | Vehicle fire   | 50         | 0.7%    | 0          | 0.0                 | 4        | 80.0               |
|                      | Outdoor fire   | 29         | 0.4%    | 1          | 34.5                | 0        | 0.0                |
|                      | Person fire    | 0          | 0.0%    | 0          | Undefined           | 0        | Undefined          |
| OTHER                | All fires      | 28         | 0.4%    | 5          | 178.6               | 1        | 35.7               |
|                      | Structure fire | 6          | 0.1%    | 0          | 0.0                 | 0        | 0.0                |
|                      | Vehicle fire   | 14         | 0.2%    | 0          | 0.0                 | 1        | 71.4               |
|                      | Outdoor fire   | 8          | 0.1%    | 5          | 625.0               | 0        | 0.0                |
|                      | Person fire    | 0          | 0.0%    | 0          | Undefined           | 0        | Undefined          |
| TOTAL                | All fires      | 6,907      | 100.0%  | 205        | 29.7                | 27       | 3.9                |
|                      | Structure fire | 2,921      | 42.3%   | 165        | 56.5                | 19       | 6.5                |
|                      | Vehicle fire   | 1,063      | 15.4%   | 12         | 11.3                | 8        | 7.5                |
|                      | Outdoor fire   | 2,909      | 42.1%   | 15         | 5.2                 | 0        | 0.0                |
|                      | Person fire    | 14         | 0.2%    | 13         | 928.6               | 0        | 0.0                |



Table 2 shows the variation in reporting across the OFC regions. Based on the caveats in the table note, two-thirds of 2019 fire reports originated from the Lower Mainland (accounting for 73% of injuries and 37% of deaths). For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 2 (p.22).

**Table 2.** All BC fires (2019) by OFC region, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| FIRE BY OFC REGION | 2019 TOTAL   | % FIRES       | # INJURIES | INJURY/ 1,000 FIRES | # DEATHS  | DEATH/ 1,000 FIRES |
|--------------------|--------------|---------------|------------|---------------------|-----------|--------------------|
| Lower Mainland     | 4,577        | 66.3%         | 150        | 32.8                | 10        | 2.2                |
| Vancouver Island   | 1,101        | 15.9%         | 22         | 20.0                | 8         | 7.3                |
| Kamloops           | 584          | 8.5%          | 9          | 15.4                | 3         | 5.1                |
| Nelson             | 101          | 1.5%          | 7          | 69.3                | 0         | 0.0                |
| Prince George      | 435          | 6.3%          | 14         | 32.2                | 3         | 6.9                |
| Regional districts | 109          | 1.6%          | 3          | 27.5                | 3         | 27.5               |
| <b>TOTAL</b>       | <b>6,907</b> | <b>100.0%</b> | <b>205</b> | <b>29.7</b>         | <b>27</b> | <b>3.9</b>         |

## Percentage of total **fire events** in British Columbia in 2019



Structure Fires  
**42%**



Outdoor Fires  
**42%**



Vehicle Fires  
**15%**



## Method of fire control

Table 3 shows how the 2019 fires were controlled. Fire departments controlled 51% of fires: with almost all controlled through water application (and two thirds of these events requiring 1 hand line or less). Hand held extinguishers (18%) and makeshift firefighting aids (11%) controlled almost 30% of all reported fires, while 12% of fires burned out without intervention. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 3 (p.22).

**Table 3.** All BC fires (2019) by method of fire control, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| METHOD OF FIRE CONTROL (GROUPED)                    | METHOD OF FIRE CONTROL SUB-CATEGORIES (FIRE DEPARTMENT INVOLVEMENT ONLY) | 2019 TOTAL   | % FIRES       | # INJURIES | INJURY/ 1,000 FIRES | # DEATHS  | DEATH/ 1,000 FIRES |
|---|--|--------------|---------------|------------|---------------------|-----------|--------------------|
| Hand held extinguisher                              |  | 1,267        | 18.3%         | 31         | 24.5                | 1         | 0.8                |
| Standpipe and hose systems                          |  | 47           | 0.7%          | 2          | 42.6                | 1         | 21.3               |
| Makeshift fire fighting aids                        |  | 755          | 10.9%         | 25         | 33.1                | 0         | 0.0                |
| Fire Department – water application                 | <b>All fires</b>   | <b>3,366</b> | <b>48.7%</b>  | <b>104</b> | <b>30.9</b>         | <b>20</b> | <b>5.9</b>         |
|   | 25mm (1") or less hose   | 183          | 2.6%          | 0          | 0.0                 | 0         | 0.0                |
|   | 38/42mm (1 1/2"/1 3/4") hose – 1 hand line                               | 1,987        | 28.8%         | 45         | 22.6                | 3         | 1.5                |
|   | 65/70mm (2 1/2"/3") hose – 1 hand line                                   | 44           | 0.6%          | 0          | 0.0                 | 0         | 0.0                |
|   | 38/42mm (1 1/2"/1 3/4") hose – 2 or more hand lines                      | 740          | 10.7%         | 38         | 51.4                | 8         | 10.8               |
|   | 65/70mm (2 1/2"/3") hose – 2 or more hand lines                          | 73           | 1.1%          | 9          | 123.3               | 6         | 82.2               |
|   | Combo: 38/42/65/77mm or larger hand lines                                | 120          | 1.7%          | 9          | 75.0                | 3         | 25.0               |
|   | Portable/fixed water deluge/master stream set                            | 66           | 1.0%          | 1          | 15.2                | 0         | 0.0                |
|   | Unclassified   | 153          | 2.2%          | 2          | 13.1                | 0         | 0.0                |
| Fire Department – other than water                  | <b>All fires</b>   | <b>168</b>   | <b>2.4%</b>   | <b>3</b>   | <b>17.9</b>         | <b>3</b>  | <b>17.9</b>        |
|   | Dry chemical – under 450kg   | 9            | 0.1%          | 1          | 111.1               | 0         | 0.0                |
|   | Dry chemical – 450kg and over  | 0            | 0.0%          | 0          | Undefined           | 0         | Undefined          |
|   | Combination foam-dry chemical  | 1            | 0.0%          | 0          | 0.0                 | 0         | 0.0                |
|   | Compressed air foam systems  | 48           | 0.7%          | 1          | 20.8                | 0         | 0.0                |
|   | Crash-fire foam vehicle – using hand lines                               | 5            | 0.1%          | 0          | 0.0                 | 3         | 600.0              |
|   | Crash-fire foam vehicle – using monitor                                  | 0            | 0.0%          | 0          | Undefined           | 0         | Undefined          |
|   | Pumper – foam hand lines only  | 66           | 1.0%          | 0          | 0.0                 | 0         | 0.0                |
|   | Unclassified   | 39           | 0.6%          | 1          | 25.6                | 0         | 0.0                |
| Sprinkler protection                                |  | 138          | 2.0%          | 5          | 36.2                | 0         | 0.0                |
| Fixed system other than sprinklers                  |  | 47           | 0.7%          | 0          | 0.0                 | 1         | 21.3               |
| Burned out  |  | 827          | 12.0%         | 29         | 35.1                | 1         | 1.2                |
| Miscellaneous method of fire control/extinguishment |  | 192          | 2.8%          | 1          | 5.2                 | 0         | 0.0                |
| Cannot be determined                                |  | 100          | 1.4%          | 5          | 50.0                | 0         | 0.0                |
| <b>GRAND TOTAL</b>                                  |  | <b>6,907</b> | <b>100.0%</b> | <b>205</b> | <b>29.7</b>         | <b>27</b> | <b>3.9</b>         |



## Structure fires by property complex type

Table 4 shows the property complexes involved with the 2,921 structure fires reported to the OFC in 2019 (accounting for 165 (80%) injuries and 19 (70%) deaths). Residential structure fires contributed 78% to this group of fires and resulted in 95% of injuries and 90% of deaths. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 4 (p.23).

**Table 4.** All BC structure fires (2019) by property complex, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| PROPERTY COMPLEX GROUP   | PROPERTY COMPLEX SUB-GROUP   | # FIRES | % FIRES | # INJURED | % INJURIES | INJURY/1,000 FIRES | # DEATHS | % DEATHS | DEATH/1,000 FIRES |
|--------------------------|--|---------|---------|-----------|------------|--------------------|----------|----------|-------------------|
| <b>ASSEMBLY USE</b>      | <i>(Total for whole group)</i>   | 148     | 5.1%    | 1         | 0.6%       | 6.8                | 0        | 0.0%     | 0.0               |
|                          | Amusement park, exhibition & fair ground, stadium                                | 2       | 0.1%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Auditorium, theatre, arena, cultural centre                                      | 4       | 0.1%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Church, funeral home   | 4       | 0.1%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Educational institution (non-residential)  | 37      | 1.3%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Food or beverage establishment   | 87      | 3.0%    | 1         | 0.6%       | 11.5               | 0        | 0.0%     | 0.0               |
|                          | Recreation, sports facility, sports club, social club                            | 14      | 0.5%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
| <b>INSTITUTIONAL USE</b> | <i>(Total for whole group)</i>   | 35      | 1.2%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Hospital, medical centre, clinic, sanatorium                                     | 16      | 0.5%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Licensed care facility   | 16      | 0.5%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Prison, penitentiary, jail, detention centre, correctional facility, reformatory | 3       | 0.1%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
| <b>RESIDENTIAL USE</b>   | <i>(Total for whole group)</i>   | 2,279   | 78.0%   | 157       | 95.2%      | 68.9               | 17       | 89.5%    | 7.5               |
|                          | Camp site/RV park  | 9       | 0.3%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Educational institution (residential)  | 2       | 0.1%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |
|                          | Hotel, motel, lodge, hostel, boarding house, dormitory                           | 168     | 5.7%    | 12        | 7.3%       | 71.4               | 0        | 0.0%     | 0.0               |
|                          | Residential – row, garden, town housing, condominium                             | 221     | 7.6%    | 20        | 12.1%      | 90.5               | 0        | 0.0%     | 0.0               |
|                          | Residential – single detached  | 1,089   | 37.3%   | 75        | 45.5%      | 68.9               | 9        | 47.4%    | 8.3               |
|                          | Residential – apartment  | 567     | 19.4%   | 29        | 17.6%      | 51.1               | 3        | 15.8%    | 5.3               |
|                          | Residential – duplex, 3-plex, 4-plex   | 103     | 3.5%    | 12        | 7.3%       | 116.5              | 0        | 0.0%     | 0.0               |
|                          | Residential – mobile home/trailer park   | 91      | 3.1%    | 8         | 4.8%       | 87.9               | 5        | 26.3%    | 54.9              |
|                          | Residential – with business/mercantile, up to 3 stories                          | 29      | 1.0%    | 1         | 0.6%       | 34.5               | 0        | 0.0%     | 0.0               |
| <b>BUSINESS USE</b>      | Office building  | 36      | 1.2%    | 0         | 0.0%       | 0.0                | 0        | 0.0%     | 0.0               |

TABLE 4 CONTINUED ON NEXT PAGE

| PROPERTY COMPLEX GROUP     | PROPERTY COMPLEX SUB-GROUP   | # FIRES      | % FIRES       | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|----------------------------|--|--------------|---------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| COMMERCIAL/ MERCANTILE USE | <i>(Total for whole group)</i>   | 122          | 4.2%          | 2          | 1.2%          | 16.4                | 1         | 5.3%          | 8.2                |
|                            | Commercial centre including fuel dispensing (may include restaurant, stores, etc.) | 23           | 0.8%          | 0          | 0.0%          | 0.0                 | 1         | 5.3%          | 43.5               |
|                            | Commercial centre, shopping centre, strip mall                                     | 64           | 2.2%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Department store, variety store  | 25           | 0.9%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Service station with storage in back lot (includes fuel dispensing)                | 10           | 0.3%          | 2          | 1.2%          | 200.0               | 0         | 0.0%          | 0.0                |
| MANUFACTURING USE          | Industrial manufacturing   | 121          | 4.1%          | 1          | 0.6%          | 8.3                 | 0         | 0.0%          | 0.0                |
| STORAGE USE                | <i>(Total for whole group)</i>   | 12           | 0.4%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Grain elevator   | 3            | 0.1%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Industrial storage facility, bulk storage tanks                                    | 9            | 0.3%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
| OTHER SPECIAL USE          | <i>(Total for whole group)</i>   | 163          | 5.6%          | 4          | 2.4%          | 24.5                | 1         | 5.3%          | 6.1                |
|                            | Air transportation use, air terminal, airport                                      | 3            | 0.1%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Building/structure unclassified (describe)   | 93           | 3.2%          | 4          | 2.4%          | 43.0                | 1         | 5.3%          | 10.8               |
|                            | Car park   | 5            | 0.2%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Communications   | 1            | 0.0%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Farm or agricultural use   | 34           | 1.2%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Harbour, waterfront property, marine terminal                                      | 4            | 0.1%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Laboratory   | 2            | 0.1%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                            | Parks (federal, provincial or city) (includes historic sites)                      | 13           | 0.4%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
| Utility                    | 8  | 0.3%         | 0             | 0.0%       | 0.0           | 0                   | 0.0%      | 0.0           |                    |
| UNKNOWN                    | Cannot be determined   | 5            | 0.2%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
| <b>TOTAL</b>               |  | <b>2,921</b> | <b>100.0%</b> | <b>165</b> | <b>100.0%</b> | <b>56.5</b>         | <b>19</b> | <b>100.0%</b> | <b>6.5</b>         |



**2,921** structure fires reported to the OFC in 2019, accounting for **165** injuries and **19** deaths



## Residential structure fires

Table 5 shows the room of fire origin for the 2,279 residential<sup>2</sup> structure fires reported to the OFC in 2019 (resulting in 157 injuries and 17 deaths). Kitchens accounted for nearly one-third of fires and 37% of injuries (with 0 deaths). Bedrooms accounted for a further 12% of fires (20% of injuries and 18% of deaths), and living rooms resulted in 8% of fires (10% of injuries and 24% of deaths). For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 5 (p.24).

**Table 5.** All BC residential structure fires (2019) by room of fire origin, showing percentage of fires, number/rate of injuries, number/rate of deaths, and number/rate of fires that extended beyond the room of origin

| ROOM OF ORIGIN GROUPED           | # FIRES      | % FIRES       | # INJURED  | % INJURIES    | INJURY/1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/1,000 FIRES | # EXTENDED BEYOND ROOM OF ORIGIN | % EXTENDED BEYOND ROOM OF ORIGIN |
|----------------------------------|--------------|---------------|------------|---------------|--------------------|-----------|---------------|-------------------|----------------------------------|----------------------------------|
| Bathroom                         | 36           | 1.6%          | 4          | 2.5%          | 111.1              | 1         | 5.9%          | 27.8              | 3                                | 8.3%                             |
| Bedroom                          | 283          | 12.4%         | 32         | 20.4%         | 113.1              | 3         | 17.6%         | 10.6              | 56                               | 19.8%                            |
| Office                           | 4            | 0.2%          |            | 0.0%          | 0.0                |           | 0.0%          | 0.0               |                                  | 0.0%                             |
| Closet                           | 10           | 0.4%          | 1          | 0.6%          | 100.0              | 0         | 0.0%          | 0.0               | 3                                | 30.0%                            |
| Assembly area – other            | 12           | 0.5%          |            | 0.0%          | 0.0                |           | 0.0%          | 0.0               | 6                                | 50.0%                            |
| Laundry room                     | 57           | 2.5%          | 1          | 0.6%          | 17.5               | 0         | 0.0%          | 0.0               | 4                                | 7.0%                             |
| Hallways and means of egress     | 51           | 2.2%          | 5          | 3.2%          | 98.0               | 1         | 5.9%          | 19.6              | 7                                | 13.7%                            |
| Living room                      | 170          | 7.5%          | 16         | 10.2%         | 94.1               | 4         | 23.5%         | 23.5              | 48                               | 28.2%                            |
| Function area – unclassified     | 13           | 0.6%          | 0          | 0.0%          | 0.0                | 1         | 5.9%          | 76.9              | 7                                | 53.8%                            |
| Foyer                            | 11           | 0.5%          |            | 0.0%          | 0.0                |           | 0.0%          | 0.0               | 4                                | 36.4%                            |
| Kitchen                          | 743          | 32.6%         | 58         | 36.9%         | 78.1               | 0         | 0.0%          | 0.0               | 49                               | 6.6%                             |
| Dining area                      | 16           | 0.7%          | 2          | 1.3%          | 125.0              | 1         | 5.9%          | 62.5              | 3                                | 18.8%                            |
| Porch                            | 116          | 5.1%          | 1          | 0.6%          | 8.6                | 0         | 0.0%          | 0.0               | 25                               | 21.6%                            |
| Balcony                          | 71           | 3.1%          | 3          | 1.9%          | 42.3               | 0         | 0.0%          | 0.0               | 26                               | 36.6%                            |
| Storage area                     | 51           | 2.2%          | 2          | 1.3%          | 39.2               | 0         | 0.0%          | 0.0               | 27                               | 52.9%                            |
| Garage                           | 106          | 4.7%          | 9          | 5.7%          | 84.9               | 1         | 5.9%          | 9.4               | 39                               | 36.8%                            |
| Outside area – other             | 84           | 3.7%          | 1          | 0.6%          | 11.9               | 1         | 5.9%          | 11.9              | 52                               | 61.9%                            |
| Utility, equipment, furnace room | 71           | 3.1%          | 5          | 3.2%          | 70.4               | 0         | 0.0%          | 0.0               | 11                               | 15.5%                            |
| Trash area                       | 12           | 0.5%          |            | 0.0%          | 0.0                |           | 0.0%          | 0.0               | 4                                | 33.3%                            |
| Chimney, flue pipe, gas vent     | 40           | 1.8%          | 2          | 1.3%          | 50.0               | 0         | 0.0%          | 0.0               | 5                                | 12.5%                            |
| Service facilities               | 10           | 0.4%          |            | 0.0%          | 0.0                |           | 0.0%          | 0.0               |                                  | 0.0%                             |
| Crawl space                      | 19           | 0.8%          |            | 0.0%          | 0.0                |           | 0.0%          | 0.0               | 7                                | 36.8%                            |
| Structural area – other          | 183          | 8.0%          | 7          | 4.5%          | 38.3               | 0         | 0.0%          | 0.0               | 74                               | 40.4%                            |
| All other areas                  | 110          | 4.8%          | 8          | 5.1%          | 72.7               | 4         | 23.5%         | 36.4              | 81                               | 73.6%                            |
| <b>TOTAL</b>                     | <b>2,279</b> | <b>100.0%</b> | <b>157</b> | <b>100.0%</b> | <b>68.9</b>        | <b>17</b> | <b>100.0%</b> | <b>7.5</b>        | <b>541</b>                       | <b>23.7%</b>                     |

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<sup>2</sup> PC3100-PC3900 throughout the report when referring to residential-use structure fires.

Table 6 shows the source of ignition for residential structure fires reported to the OFC in 2019. One-third (32%) of fires were caused by cooking equipment (40% of injuries and 0 deaths), one-fifth (22%) resulted from smoker's material and open flames (34% injuries and 24% deaths, with the sub-category source of ignition shown in the table), and in almost one-fifth (19%) of cases the source of ignition could not be determined. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 6 (p.25).

**Table 6.** All BC residential structure fires (2019) by source of ignition, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| SOURCE OF IGNITION GROUPED        | SOURCE SUB-CATEGORY (SMOKER'S MATERIAL ONLY) | # FIRES      | % FIRES       | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|-----------------------------------|--|--------------|---------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| Cooking equipment                 |  | 739          | 32.4%         | 62         | 39.5%         | 83.9                | 0         | 0.0%          | 0.0                |
| Heating equipment                 |  | 183          | 8.0%          | 11         | 7.0%          | 60.1                | 3         | 17.6%         | 16.4               |
| Appliances & equipment            |  | 94           | 4.1%          |            | 0.0%          | 0.0                 |           | 0.0%          | 0.0                |
| Electrical distribution equipment |  | 145          | 6.4%          | 7          | 4.5%          | 48.3                | 0         | 0.0%          | 0.0                |
| Other electrical equipment        |  | 77           | 3.4%          | 1          | 0.6%          | 13.0                | 0         | 0.0%          | 0.0                |
| Smoker's material and open flame  | <b>(Total for whole group)</b>               | <b>498</b>   | <b>21.8%</b>  | <b>53</b>  | <b>33.8%</b>  | <b>106.4</b>        | <b>4</b>  | <b>23.5%</b>  | <b>8.0</b>         |
|                                   | Cigarette, pipe, or cigar                    | 149          | 6.5%          | 12         | 7.6%          | 80.5                | 1         | 5.9%          | 6.7                |
|                                   | Ashtray                                      | 23           | 1.0%          | 3          | 1.9%          | 130.4               | 0         | 0.0%          | 0.0                |
|                                   | Lighter or match                             | 174          | 7.6%          | 18         | 11.5%         | 103.4               | 1         | 5.9%          | 5.7                |
|                                   | Lamp/lantern – non-electric                  | 1            | 0.0%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                                   | Candle                                       | 54           | 2.4%          | 8          | 5.1%          | 148.1               | 2         | 11.8%         | 37.0               |
|                                   | Cutting torch/welding equipment              | 5            | 0.2%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                                   | Hot ashes/embers (non-smoking)               | 16           | 0.7%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                                   | Torch (non-cutting/welding)                  | 31           | 1.4%          | 5          | 3.2%          | 161.3               | 0         | 0.0%          | 0.0                |
|                                   | Unclassified/cannot be determined            | 45           | 2.0%          | 7          | 4.5%          | 155.6               | 0         | 0.0%          | 0.0                |
| Exposure                          |  | 57           | 2.5%          | 2          | 1.3%          | 35.1                | 0         | 0.0%          | 0.0                |
| Miscellaneous igniting object     |  | 62           | 2.7%          | 9          | 5.7%          | 145.2               | 0         | 0.0%          | 0.0                |
| Cannot be determined              |  | 424          | 18.6%         | 12         | 7.6%          | 28.3                | 10        | 58.8%         | 23.6               |
| <b>TOTAL</b>                      |  | <b>2,279</b> | <b>100.0%</b> | <b>157</b> | <b>100.0%</b> | <b>68.9</b>         | <b>17</b> | <b>100.0%</b> | <b>7.5</b>         |

Table 7 shows the act or omission involved with residential structure fires reported to the OFC in 2019. Human failing was responsible for 42% of these fires (resulting in 59% of injuries and 41% of deaths). Other major acts/omissions were mechanical/ electrical failure/malfunctions (12% of fires, 5% of injuries, and 6% of deaths) and incendiary fires (9% fires, 6% injuries, and 0 deaths). The act or omission involved could not be determined in almost one-fifth (18%) of fires. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 7 (p.25).

**Table 7.** All BC residential structure fires (2019) by act or omission, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| ACT OR OMISSION GROUPED                         | # FIRES      | % FIRES       | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|---|--------------|---------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| Incendiary fires                                | 206          | 9.1%          | 9          | 5.7%          | 43.7                | 0         | 0.0%          | 0.0                |
| Misuse of source of ignition                    | 184          | 8.1%          | 12         | 7.6%          | 65.2                | 0         | 0.0%          | 0.0                |
| Misuse of material ignited                      | 109          | 4.8%          | 14         | 8.9%          | 128.4               | 0         | 0.0%          | 0.0                |
| Mechanical/electrical failure/malfunction       | 263          | 11.6%         | 8          | 5.1%          | 30.4                | 1         | 5.9%          | 3.8                |
| Construction, design or installation deficiency | 42           | 1.8%          | 1          | 0.6%          | 23.8                | 1         | 5.9%          | 23.8               |
| Misuse of equipment                             | 105          | 4.6%          | 3          | 1.9%          | 28.6                | 0         | 0.0%          | 0.0                |
| Human failing                                   | 951          | 41.7%         | 92         | 58.6%         | 96.7                | 7         | 41.2%         | 7.4                |
| Vehicle accident                                | 1            | 0.0%          |            | 0.0%          | 0.0                 |           | 0.0%          | 0.0                |
| Miscellaneous act or omission                   | 5            | 0.2%          |            | 0.0%          | 0.0                 |           | 0.0%          | 0.0                |
| Cannot be determined                            | 399          | 17.5%         | 18         | 11.5%         | 45.1                | 7         | 41.2%         | 17.5               |
| Not applicable                                  | 14           | 0.6%          | 0          | 0.0%          | 0.0                 | 1         | 5.9%          | 71.4               |
| <b>TOTAL</b>                                    | <b>2,279</b> | <b>100.0%</b> | <b>157</b> | <b>100.0%</b> | <b>68.9</b>         | <b>17</b> | <b>100.0%</b> | <b>7.5</b>         |

Table 8 shows the level of fire origin for residential structure fires reported to the OFC in 2019. Almost half (45%) originated on the ground floor of the building (45% injuries and 41% deaths) and a further 20% commenced on the second storey (25% injuries and 24% deaths). For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 8 (p.26).

**Table 8.** All BC residential structure fires (2019) by level of fire origin, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| LEVEL OF ORIGIN GROUPED                           | # FIRES      | % FIRES       | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|---|--------------|---------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| Basement, sub-basement                            | 188          | 8.2%          | 19         | 12.1%         | 101.1               | 1         | 5.9%          | 5.3                |
| Ground floor, grade level or grade to 3m          | 1,029        | 45.2%         | 70         | 44.6%         | 68.0                | 7         | 41.2%         | 6.8                |
| 2nd storey or over 3-6m above grade               | 457          | 20.0%         | 40         | 25.5%         | 87.5                | 4         | 23.5%         | 8.8                |
| 3rd storey or over 6-9m (20-30ft) above grade     | 135          | 5.9%          | 9          | 5.7%          | 66.7                | 0         | 0.0%          | 0.0                |
| 4-12 storey or over 9-36m (30-120ft) above grade  | 203          | 8.9%          | 9          | 5.7%          | 44.3                | 2         | 11.8%         | 9.9                |
| Over 12 storey or over 36m (120ft)                | 31           | 1.4%          | 2          | 1.3%          | 64.5                | 0         | 0.0%          | 0.0                |
| Crawl space, under structure                      | 21           | 0.9%          |            | 0.0%          | 0.0                 |           | 0.0%          | 0.0                |
| Mezzanine (any floor)                             | 5            | 0.2%          |            | 0.0%          | 0.0                 |           | 0.0%          | 0.0                |
| Roof level (includes concealed roof space, attic) | 63           | 2.8%          | 3          | 1.9%          | 47.6                | 0         | 0.0%          | 0.0                |
| Exposure fire                                     | 72           | 3.2%          | 3          | 1.9%          | 41.7                | 1         | 5.9%          | 13.9               |
| Cannot be determined                              | 75           | 3.3%          | 2          | 1.3%          | 26.7                | 2         | 11.8%         | 26.7               |
| <b>TOTAL</b>                                      | <b>2,279</b> | <b>100.0%</b> | <b>157</b> | <b>100.0%</b> | <b>68.9</b>         | <b>17</b> | <b>100.0%</b> | <b>7.5</b>         |

Table 9 shows the height of residential buildings that experienced a residential structure fire reported to the OFC in 2019. Almost 9 out of 10 (87%) of all residential structure fires occurred in buildings 6 storeys high or lower (92% of injuries and 100% of deaths). For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 9 (p.26).

**Table 9.** All BC residential structure fires (2019) by building height, showing percentage of fires, number/rate of injuries, and number/rate of deaths

| BUILDING HEIGHT GROUPED         | # FIRES      | % FIRES       | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|---------------------------------|--------------|---------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| 1 storey above grade            | 562          | 24.7%         | 46         | 29.3%         | 81.9                | 11        | 64.7%         | 19.6               |
| 2 storeys above grade           | 839          | 36.8%         | 64         | 40.8%         | 76.3                | 3         | 17.6%         | 3.6                |
| 3 storeys above grade           | 287          | 12.6%         | 22         | 14.0%         | 76.7                | 1         | 5.9%          | 3.5                |
| 4 storeys above grade           | 209          | 9.2%          | 9          | 5.7%          | 43.1                | 2         | 11.8%         | 9.6                |
| 5 or 6 storeys above grade      | 91           | 4.0%          | 4          | 2.5%          | 44.0                | 0         | 0.0%          | 0.0                |
| 7 to 12 storeys above grade     | 127          | 5.6%          | 8          | 5.1%          | 63.0                | 0         | 0.0%          | 0.0                |
| 13 storeys and over above grade | 103          | 4.5%          | 4          | 2.5%          | 38.8                | 0         | 0.0%          | 0.0                |
| Cannot be determined            | 61           | 2.7%          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
| <b>TOTAL</b>                    | <b>2,279</b> | <b>100.0%</b> | <b>157</b> | <b>100.0%</b> | <b>68.9</b>         | <b>17</b> | <b>100.0%</b> | <b>7.5</b>         |



More than 3 out of 5 (**62%**) of all residential structure fires occur in **1 or 2 storey** buildings (**70%** of injuries and **82%** of deaths)



## Influence of life safety systems on residential fire outcomes

Table 10 looks at the fire outcomes (casualties, fire department involvement in extinguishing fires, and extent of fire spread beyond the room of origin) for residential structure fires reported to the OFC in 2019 as a function of life safety systems in place. Smoke alarm status in this table represents those fires that had an alarm activated ('yes') or no smoke alarm installed ('no'). Similarly, sprinkler status represents those fires that had complete sprinkler protection ('yes') or no sprinkler protection ('no'). According to this classification process, the 'other' category fires shown in these tables were neither 'yes' or 'no' for smoke alarm nor for sprinkler protection. Where appropriate, 95% confidence intervals are included to show the estimated range around each rate and percentage.

**Table 10.** All BC residential structure fires (2019) by life safety system, showing number/percentage of fires, number/rate of injuries (with 95% confidence intervals, CI), number/rate of deaths (with 95% CI), fire department control (%), 95% CI), and extended beyond room of origin (%), 95% CI)

| SMOKE ALARM  | SPRINKLER | FIRES (% TOTAL)         | INJURIES (% TOTAL)    | INJURY RATE (95% CI)        | DEATHS (% TOTAL)     | DEATH RATE (95% CI)       | % FIRE DEPARTMENT EXTINGUISH (95% CI) | % BEYOND ROOM OF ORIGIN (95% CI) |
|--------------|-----------|-------------------------|-----------------------|-----------------------------|----------------------|---------------------------|---------------------------------------|----------------------------------|
| Yes          | Yes       | 390<br>(17%)            | 16<br>(10%)           | 41.0<br>(20.9 61.1)         | 0<br>(0%)            | 0.0<br>(0.0 0.0)          | 13.6%<br>(11.9% 15.3%)                | 2.1%<br>(1.3% 2.8%)              |
| No           | Yes       | 90<br>(4%)              | 6<br>(4%)             | 66.7<br>(13.3 120.0)        | 0<br>(0%)            | 0.0<br>(0.0 0.0)          | 18.9%<br>(14.8% 23.0%)                | 7.8%<br>(5.0% 10.6%)             |
| Yes          | No        | 544<br>(24%)            | 58<br>(37%)           | 106.6<br>(79.2 134.1)       | 3<br>(18%)           | 5.5<br>(-0.7 11.8)        | 48.7%<br>(46.6% 50.9%)                | 22.2%<br>(20.5% 24.0%)           |
| No           | No        | 711<br>(31%)            | 52<br>(33%)           | 73.1<br>(53.3 93.0)         | 5<br>(29%)           | 7.0<br>(0.9 13.2)         | 55.6%<br>(53.7% 57.4%)                | 33.5%<br>(31.7% 35.2%)           |
| Other        | Other     | 544<br>(24%)            | 25<br>(16%)           | 46.0<br>(27.9 64.0)         | 9<br>(53%)           | 16.5<br>(5.7 27.4)        | 42.5%<br>(40.3% 44.6%)                | 30.7%<br>(28.7% 32.7%)           |
| <b>TOTAL</b> |           | <b>2,279<br/>(100%)</b> | <b>157<br/>(100%)</b> | <b>68.9<br/>(58.1 79.7)</b> | <b>17<br/>(100%)</b> | <b>7.5<br/>(3.9 11.0)</b> | <b>42.2%<br/>(41.1% 43.2%)</b>        | <b>23.7%<br/>(22.8% 24.6%)</b>   |

With a focus on the presence/absence of fire safety systems, relative to the base case (no smoke alarm and no sprinkler protection), the following trends can be seen in Table 10:

- ▶ Injury rates are significantly higher in the presence of a working smoke alarm and no sprinkler protection – likely because residents attempted to control the fires themselves when the alarms activated;
- ▶ Death rates are significantly lower whenever the fires occurred in the presence of sprinkler protection;
- ▶ The presence of smoke alarms and/or sprinkler protection significantly reduced the dependence on the fire department to control the fires; and
- ▶ The presence of smoke alarms and/or sprinkler protection significantly reduced the extent to which fires spread beyond the room of origin.

For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 10 (p.26).





## Fire-related casualties: 5-year trends

From 2015 to 2019 there were 968 fire-related injuries reported to the OFC (65% of these were male). During the same time there were 127 fire-related deaths reported (71% male).

Table 11 shows the annual casualties (2015-2019) for all fires reported to the OFC. The average injury rate per 1,000 fires over this time period was 28.6 and the average death rate was 3.8. The injury rate was fire/police was 2.0 and there were no fatalities for first responders in this data.

**Table 11.** All fire casualties and police/fire casualties (2015-2019), showing number/%/rate of injuries, and number/%/rate of deaths

| YEAR         | # FIRES       | ALL CASUALTIES |               |             |            |               |            | FIRE/POLICE |             |          |            |
|--------------|---------------|----------------|---------------|-------------|------------|---------------|------------|-------------|-------------|----------|------------|
|              |               | # INJURIES     | % INJURIES    | INJURY RATE | # DEATHS   | % DEATHS      | DEATH RATE | # INJURIES  | INJURY RATE | # DEATHS | DEATH RATE |
| 2015         | 7,090         | 197            | 20.4%         | 27.8        | 23         | 18.1%         | 3.2        | 16          | 2.3         | 0        | 0.0        |
| 2016         | 6,259         | 185            | 19.1%         | 29.6        | 25         | 19.7%         | 4.0        | 11          | 1.8         | 0        | 0.0        |
| 2017         | 6,818         | 177            | 18.3%         | 26.0        | 26         | 20.5%         | 3.8        | 11          | 1.6         | 0        | 0.0        |
| 2018         | 6,742         | 204            | 21.1%         | 30.3        | 26         | 20.5%         | 3.9        | 20          | 3.0         | 0        | 0.0        |
| 2019         | 6,907         | 205            | 21.2%         | 29.7        | 27         | 21.3%         | 3.9        | 10          | 1.4         | 0        | 0.0        |
| <b>TOTAL</b> | <b>33,816</b> | <b>968</b>     | <b>100.0%</b> | <b>28.6</b> | <b>127</b> | <b>100.0%</b> | <b>3.8</b> | <b>68</b>   | <b>2.0</b>  | <b>0</b> | <b>0.0</b> |

Table 12 shows all injuries and police/fire injuries by injury seriousness for all fires reported to the OFC between 2015 and 2019. The average rate for minor injuries over this time was 13.3 per 1,000 fires, with corresponding rates of 11.4 for light injuries and 4.0 for serious injuries. The rates for fire/police injuries were lower and the rate of serious injuries for this group was 0.1 per 1,000 fires.

**Table 12.** All fire casualties and police/fire casualties (2015-2019) by injury seriousness, showing number/rate of minor, light, and serious injuries

| YEAR         | # FIRES       | ALL CASUALTIES (INJURY SERIOUSNESS AND RATE) |             |            |             |            |              | FIRE/POLICE (INJURY SERIOUSNESS AND RATE) |            |           |            |           |              |
|--------------|---------------|--|-------------|------------|-------------|------------|--------------|---|------------|-----------|------------|-----------|--------------|
|              |               | # MINOR                                      | RATE MINOR  | # LIGHT    | RATE LIGHT  | # SERIOUS  | RATE SERIOUS | # MINOR                                   | RATE MINOR | # LIGHT   | RATE LIGHT | # SERIOUS | RATE SERIOUS |
| 2015         | 7,090         | 96   | 13.5        | 79         | 11.1        | 22         | 3.1          | 12  | 1.7        | 4         | 0.6        | 0         | 0.0          |
| 2016         | 6,259         | 82   | 13.1        | 76         | 12.1        | 27         | 4.3          | 9   | 1.4        | 1         | 0.2        | 1         | 0.2          |
| 2017         | 6,818         | 85   | 12.5        | 70         | 10.3        | 22         | 3.2          | 5   | 0.7        | 6         | 0.9        | 0         | 0.0          |
| 2018         | 6,742         | 97   | 14.4        | 79         | 11.7        | 28         | 4.2          | 12  | 1.8        | 7         | 1.0        | 1         | 0.1          |
| 2019         | 6,907         | 89   | 12.9        | 80         | 11.6        | 36         | 5.2          | 6   | 0.9        | 3         | 0.4        | 1         | 0.1          |
| <b>TOTAL</b> | <b>33,816</b> | <b>449</b>                                   | <b>13.3</b> | <b>384</b> | <b>11.4</b> | <b>135</b> | <b>4.0</b>   | <b>44</b>                                 | <b>1.3</b> | <b>21</b> | <b>0.6</b> | <b>3</b>  | <b>0.1</b>   |

NB. 'Minor' injuries required less than one day in hospital or off work, 'light' injuries required 1-2 days hospital and/or 1-15 days off work, and 'serious' injuries required 3 or more days in hospital and/or more than 15 days off work.

Table 13 shows the relative frequency of fire casualties by age group for all fires submitted to the OFC between 2015 and 2019. As over 50% of injuries and 26% of deaths were classified as 'missing' the age information, this table also corrects the percentages within each age group to remove the influence of unknowns. These percentages are then compared (for deaths) to the overall population size of each age group in Canada, using Census data. This shows that citizens who are aged 50 and over are overrepresented with respect to frequency of death by fire.

**Table 13.** All fire casualties (2015-2019) by age group, showing number/rate of injuries/deaths, correcting for 'unknown' ages, and in comparison, to the population size of each age group

| AGE GROUP    | ALL FIRES  |               |            |               | CORRECTED<br>(REMOVING UNKNOWN) |          | % POPULATION | DEATH:<br>POPULATION RATIO |
|--------------|------------|---------------|------------|---------------|---------------------------------|----------|--------------|----------------------------|
|              | # INJURIES | % INJURIES    | # DEATHS   | % DEATHS      | % INJURIES                      | % DEATHS |              |                            |
| Under 5      | 18         | 1.9%          | 4          | 3.1%          | 3.7%                            | 4.3%     | 4.7%         | 0.9                        |
| 5 to 9       | 4          | 0.4%          | 1          | 0.8%          | 0.8%                            | 1.1%     | 5.1%         | 0.2                        |
| 10 to 14     | 4          | 0.4%          | 1          | 0.8%          | 0.8%                            | 1.1%     | 5.0%         | 0.2                        |
| 15 to 19     | 18         | 1.9%          | 1          | 0.8%          | 3.7%                            | 1.1%     | 5.6%         | 0.2                        |
| 20 to 24     | 34         | 3.5%          | 6          | 4.7%          | 7.1%                            | 6.4%     | 6.2%         | 1.0                        |
| 25 to 29     | 48         | 5.0%          | 1          | 0.8%          | 10.0%                           | 1.1%     | 6.5%         | 0.2                        |
| 30 to 34     | 45         | 4.6%          | 5          | 3.9%          | 9.3%                            | 5.3%     | 6.8%         | 0.8                        |
| 35 to 39     | 33         | 3.4%          | 4          | 3.1%          | 6.8%                            | 4.3%     | 6.3%         | 0.7                        |
| 40 to 44     | 46         | 4.8%          | 5          | 3.9%          | 9.5%                            | 5.3%     | 6.3%         | 0.8                        |
| 45 to 49     | 39         | 4.0%          | 3          | 2.4%          | 8.1%                            | 3.2%     | 6.9%         | 0.5                        |
| 50 to 54     | 40         | 4.1%          | 11         | 8.7%          | 8.3%                            | 11.7%    | 7.6%         | 1.5                        |
| 55 to 59     | 40         | 4.1%          | 13         | 10.2%         | 8.3%                            | 13.8%    | 7.6%         | 1.8                        |
| 60 to 64     | 28         | 2.9%          | 13         | 10.2%         | 5.8%                            | 13.8%    | 7.0%         | 2.0                        |
| 65 to 69     | 35         | 3.6%          | 10         | 7.9%          | 7.3%                            | 10.6%    | 6.2%         | 1.7                        |
| 70 to 74     | 18         | 1.9%          | 8          | 6.3%          | 3.7%                            | 8.5%     | 4.3%         | 2.0                        |
| 75 to 79     | 10         | 1.0%          | 1          | 0.8%          | 2.1%                            | 1.1%     | 3.1%         | 0.3                        |
| 80 and over  | 22         | 2.3%          | 7          | 5.5%          | 4.6%                            | 7.4%     | 4.6%         | 1.6                        |
| Unknown      | 486        | 50.2%         | 33         | 26.0%         |                                 |          |              |                            |
| <b>TOTAL</b> | <b>968</b> | <b>100.0%</b> | <b>127</b> | <b>100.0%</b> |                                 |          |              |                            |

NB. Population estimates derived from the 2016 Census Profile, accessed at: <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/index-eng.cfm>



Citizens who are aged **50** and over are overrepresented with respect to frequency of death by fire.



## Fire-related casualties: 2019 casualty behaviour

Focusing on the fires detailed in the residential structure fires section (above, commencing p.4), the following tables detail the information recorded about the fire-related casualties resulting from structure fires reported to the OFC in 2019 (resulting in 157 injuries and 17 deaths).

Table 14 shows the conditions of casualties from 2019 residential structure fires. Over one-quarter of injuries were unknown/unclassified and 47% were awake with no impairment at the time of injury. Almost half of deaths were unknown/unclassified and one-quarter (24%) were asleep at the time of the fire. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 11 (p.27).

**Table 14.** All structure fire casualties (2019) by condition of casualty, showing number/% of injuries/deaths

| CONDITION OF CASUALTY                       | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|---|------------|---------------|-----------|---------------|
| Awake or no physical/mental impairment      | 74         | 47.1%         | 2         | 11.8%         |
| Too young to react to fire emergency        | 1          | 0.6%          | 0         | 0.0%          |
| Asleep at time of fire                      | 25         | 15.9%         | 4         | 23.5%         |
| Bedridden or other physical disability      | 0          | 0.0%          | 0         | 0.0%          |
| Mental disability                           | 2          | 1.3%          | 1         | 5.9%          |
| Impairment by alcohol, drugs, or medication | 11         | 7.0%          | 2         | 11.8%         |
| Under restraint or detention                | 1          | 0.6%          | 0         | 0.0%          |
| Unknown                                     | 33         | 21.0%         | 7         | 41.2%         |
| Unclassified                                | 10         | 6.4%          | 1         | 5.9%          |
| <b>TOTAL</b>                                | <b>157</b> | <b>100.0%</b> | <b>17</b> | <b>100.0%</b> |

Table 15 shows the actions of casualties from 2019 residential structure fires. One-quarter of injuries were unknown/unclassified, and 39% voluntarily entered/remained the fire area, and one-fifth (19%) were injured while attempting to escape. Over half of deaths (53%) were unknown/unclassified and 18% died attempting to escape. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 12 (p.27).

**Table 15.** All structure fire casualties (2019) by action of casualty, showing number/% of injuries/deaths

| ACTION OF CASUALTY                           | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|--|------------|---------------|-----------|---------------|
| Injured while attempting to escape           | 30         | 19.1%         | 3         | 17.6%         |
| Over-exertion, heart attack                  | 1          | 0.6%          | 0         | 0.0%          |
| Voluntarily entered/remained – rescue        | 5          | 3.2%          | 1         | 5.9%          |
| Voluntarily entered/remained – fire fighting | 39         | 24.8%         | 0         | 0.0%          |
| Voluntarily entered/remained – save property | 17         | 10.8%         | 0         | 0.0%          |
| Loss of judgement/panic                      | 13         | 8.3%          | 1         | 5.9%          |
| Received delayed warning                     | 4          | 2.5%          | 1         | 5.9%          |
| Did not act                                  | 9          | 5.7%          | 2         | 11.8%         |
| Unknown                                      | 25         | 15.9%         | 8         | 47.1%         |
| Unclassified                                 | 14         | 8.9%          | 1         | 5.9%          |
| <b>TOTAL</b>                                 | <b>157</b> | <b>100.0%</b> | <b>17</b> | <b>100.0%</b> |

Table 16 shows the cause of injuries from 2019 residential structure fires. Over half (52%) of injuries resulted from smoke inhalation and 40% resulted from burns. Almost half (47%) of deaths were classified as unknown with respect to the cause of injury, with a further 29% caused by smoke inhalation and 24% resulting from fire-related burns. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 13 (p.27).

**Table 16.** All structure fire casualties (2019) by cause of injury, showing number/% of injuries/deaths

| CAUSE OF INJURY           | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|---------------------------|------------|---------------|-----------|---------------|
| Smoke inhalation          | 82         | 52.2%         | 5         | 29.4%         |
| Burns – fire/flames       | 45         | 28.7%         | 4         | 23.5%         |
| Burns – hot substances    | 18         | 11.5%         | 0         | 0.0%          |
| Struck by objects/persons | 2          | 1.3%          | 0         | 0.0%          |
| Falls                     | 3          | 1.9%          | 0         | 0.0%          |
| Explosives                | 1          | 0.6%          | 0         | 0.0%          |
| Electrical current        | 1          | 0.6%          | 0         | 0.0%          |
| Unknown                   | 0          | 0.0%          | 8         | 47.1%         |
| Unclassified              | 5          | 3.2%          | 0         | 0.0%          |
| <b>TOTAL</b>              | <b>157</b> | <b>100.0%</b> | <b>17</b> | <b>100.0%</b> |

Table 17 shows the cause of failure to escape from 2019 residential structure fires. Almost 88% of injuries and 59% of deaths were classified as unknown/unclassified with respect to the cause of failure to escape. A further 29% of deaths were classified as trapped by fire/smoke. For equivalent presentation of 2014 to 2018 aggregated figures see Appendix Table 14 (p.27).

**Table 17.** All structure fire casualties (2019) by cause of failure to escape, showing number/% of injuries/deaths

| CAUSE OF FAILURE TO ESCAPE                  | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|---|------------|---------------|-----------|---------------|
| Trapped by fire/smoke – vertical openings   | 3          | 1.9%          | 1         | 5.9%          |
| Trapped by fire/smoke – horizontal openings | 6          | 3.8%          | 4         | 23.5%         |
| High flame spread of combustible surfaces   | 3          | 1.9%          | 2         | 11.8%         |
| Building collapse                           | 0          | 0.0%          | 0         | 0.0%          |
| Falling debris                              | 2          | 1.3%          | 0         | 0.0%          |
| Explosion                                   | 4          | 2.5%          | 0         | 0.0%          |
| Exit locked/obstructed                      | 1          | 0.6%          | 0         | 0.0%          |
| Outdoor fire                                | 0          | 0.0%          | 0         | 0.0%          |
| Unknown                                     | 84         | 53.5%         | 9         | 52.9%         |
| Unclassified                                | 54         | 34.4%         | 1         | 5.9%          |
| <b>TOTAL</b>                                | <b>157</b> | <b>100.0%</b> | <b>17</b> | <b>100.0%</b> |

# Appendix 1: Fire Reporting 2014 to 2018

**Appendix Table 1.** All BC fires (2014-2018) by fire department type and incident type, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths

| FIRE DEPARTMENT TYPE | INCIDENT TYPE  | 2014-18 FIRES | % FIRES | ANNUAL RATE | # INJURIES | INJURY/ 1,000 FIRES | # DEATHS | DEATH/ 1,000 FIRES |
|----------------------|----------------|---------------|---------|-------------|------------|---------------------|----------|--------------------|
| CAREER               | All fires      | 17,552        | 52.5%   | 3,510.4     | 503        | 28.7                | 41       | 3.8                |
|                      | Structure fire | 7,174         | 21.4%   | 1,434.8     | 439        | 61.2                | 36       | 5.0                |
|                      | Vehicle fire   | 1,844         | 5.5%    | 368.8       | 34         | 18.4                | 3        | 1.6                |
|                      | Outdoor fire   | 8,518         | 25.5%   | 1,703.6     | 20         | 2.3                 | 0        | 0.0                |
|                      | Person fire    | 16            | 0.0%    | 3.2         | 10         | 625.0               | 2        | 125.0              |
| COMPOSITE            | All fires      | 14,244        | 42.6%   | 2,848.8     | 462        | 32.4                | 57       | 3.8                |
|                      | Structure fire | 6,327         | 18.9%   | 1,265.4     | 406        | 64.2                | 43       | 6.8                |
|                      | Vehicle fire   | 3,360         | 10.0%   | 672.0       | 28         | 8.3                 | 7        | 2.1                |
|                      | Outdoor fire   | 4,529         | 13.5%   | 905.8       | 16         | 3.5                 | 0        | 0.0                |
|                      | Person fire    | 28            | 0.1%    | 5.6         | 12         | 428.6               | 7        | 250.0              |
| VOLUNTEER            | All fires      | 1,329         | 4.0%    | 265.8       | 40         | 30.1                | 22       | 3.8                |
|                      | Structure fire | 853           | 2.6%    | 170.6       | 36         | 42.2                | 18       | 21.1               |
|                      | Vehicle fire   | 265           | 0.8%    | 53.0        | 3          | 11.3                | 4        | 15.1               |
|                      | Outdoor fire   | 211           | 0.6%    | 42.2        | 1          | 4.7                 | 0        | 0.0                |
|                      | Person fire    | 0             | 0.0%    | 0.0         | 0          | Undefined           | 0        | Undefined          |
| OTHER                | All fires      | 321           | 1.0%    | 64.2        | 14         | 43.6                | 1        | 3.1                |
|                      | Structure fire | 131           | 0.4%    | 26.2        | 12         | 91.6                | 1        | 7.6                |
|                      | Vehicle fire   | 159           | 0.5%    | 31.8        | 2          | 12.6                | 0        | 0.0                |
|                      | Outdoor fire   | 31            | 0.1%    | 6.2         | 0          | 0.0                 | 0        | 0.0                |
|                      | Person fire    | 0             | 0.0%    | 0.0         | 0          | Undefined           | 0        | Undefined          |
| TOTAL                | All fires      | 33,446        | 100.0%  | 6,689.2     | 1,019      | 30.5                | 121      | 3.6                |
|                      | Structure fire | 14,485        | 43.3%   | 2,897.0     | 893        | 61.6                | 98       | 6.8                |
|                      | Vehicle fire   | 5,628         | 16.8%   | 1,125.6     | 67         | 11.9                | 14       | 2.5                |
|                      | Outdoor fire   | 13,289        | 39.7%   | 2,657.8     | 37         | 2.8                 | 0        | 0.0                |
|                      | Person fire    | 44            | 0.1%    | 8.8         | 22         | 500.0               | 9        | 204.5              |

**Appendix Table 2. All BC fires (2014-2018) by OFC region, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths**

| FIRE BY OFC REGION | 2014-18 FIRES | % FIRES       | ANNUAL RATE    | # INJURIES   | INJURY/ 1,000 FIRES | # DEATHS   | DEATH/ 1,000 FIRES |
|--------------------|---------------|---------------|----------------|--------------|---------------------|------------|--------------------|
| Lower Mainland     | 21,510        | 64.3%         | 4,302.0        | 710          | 33.0                | 62         | 2.9                |
| Vancouver Island   | 5,054         | 15.1%         | 1,010.8        | 148          | 29.3                | 27         | 5.3                |
| Thompson Okanagan  | 3,139         | 9.4%          | 627.8          | 29           | 9.2                 | 17         | 5.4                |
| South East         | 602           | 1.8%          | 120.4          | 27           | 44.9                | 1          | 1.7                |
| Northern           | 2,508         | 7.5%          | 501.6          | 86           | 34.3                | 11         | 4.4                |
| Regional districts | 633           | 1.9%          | 126.6          | 19           | 30.0                | 3          | 4.7                |
| <b>TOTAL</b>       | <b>33,446</b> | <b>100.0%</b> | <b>6,689.2</b> | <b>1,019</b> | <b>30.5</b>         | <b>121</b> | <b>3.6</b>         |

**Appendix Table 3. All BC fires (2014-2018) by method of fire control, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths**

| METHOD OF FIRE CONTROL (GROUPED)                    | METHOD OF FIRE CONTROL SUB-CATEGORIES (FIRE DEPARTMENT INVOLVEMENT ONLY) | 2014-18 FIRES | % FIRES       | ANNUAL RATE    | # INJURIES   | INJURY/ 1,000 FIRES | # DEATHS   | DEATH/ 1,000 FIRES |
|---|--|---------------|---------------|----------------|--------------|---------------------|------------|--------------------|
| Hand held extinguisher                              |  | 5,547         | 16.6%         | 1,109.4        | 144          | 26.0                | 3          | 0.5                |
| Standpipe and hose systems                          |  | 226           | 0.7%          | 45.2           | 3            | 13.3                | 1          | 4.4                |
| Makeshift fire fighting aids                        |  | 4,205         | 12.6%         | 841.0          | 143          | 34.0                | 1          | 0.2                |
| Fire Department – water application                 | <b>All fires</b>   | <b>16,288</b> | <b>48.7%</b>  | <b>3,257.6</b> | <b>498</b>   | <b>30.6</b>         | <b>97</b>  | <b>6.0</b>         |
|   | 25mm (1") or less hose   | 1,476         | 4.4%          | 295.2          | 11           | 7.5                 | 1          | 0.7                |
|   | 38/42mm (1 1/2"/1 3/4") hose – 1 hand line                               | 9,172         | 27.4%         | 1,834.4        | 222          | 24.2                | 29         | 3.2                |
|   | 65/70mm (2 1/2"/3") hose – 1 hand line                                   | 188           | 0.6%          | 37.6           | 0            | 0.0                 | 1          | 5.3                |
|   | 38/42mm (1 1/2"/1 3/4") hose – 2 or more hand lines                      | 3,324         | 9.9%          | 664.8          | 175          | 52.6                | 46         | 13.8               |
|   | 65/70mm (2 1/2"/3") hose – 2 or more hand lines                          | 375           | 1.1%          | 75.0           | 23           | 61.3                | 4          | 10.7               |
|   | Combo: 38/42/65/77mm or larger hand lines                                | 646           | 1.9%          | 129.2          | 40           | 61.9                | 11         | 17.0               |
|   | Portable/fixed water deluge/master stream set                            | 302           | 0.9%          | 60.4           | 10           | 33.1                | 3          | 9.9                |
|   | Unclassified   | 805           | 2.4%          | 161.0          | 17           | 21.1                | 2          | 2.5                |
| Fire Department – other than water                  | <b>All fires</b>   | <b>1,209</b>  | <b>3.6%</b>   | <b>241.8</b>   | <b>29</b>    | <b>24.0</b>         | <b>8</b>   | <b>6.6</b>         |
|   | Dry chemical – under 450kg   | 40            | 0.1%          | 8.0            | 0            | 0.0                 | 0          | 0.0                |
|   | Dry chemical – 450kg and over  | 2             | 0.0%          | 0.4            | 0            | 0.0                 | 0          | 0.0                |
|   | Combination foam-dry chemical  | 11            | 0.0%          | 2.2            | 0            | 0.0                 | 0          | 0.0                |
|   | Compressed air foam systems  | 457           | 1.4%          | 91.4           | 11           | 24.1                | 6          | 13.1               |
|   | Crash-fire foam vehicle – using hand lines                               | 74            | 0.2%          | 14.8           | 1            | 13.5                | 0          | 0.0                |
|   | Crash-fire foam vehicle – using monitor                                  | 1             | 0.0%          | 0.2            | 0            | 0.0                 | 0          | 0.0                |
|   | Pumper – foam hand lines only  | 395           | 1.2%          | 79.0           | 8            | 20.3                | 2          | 5.1                |
|   | Unclassified   | 229           | 0.7%          | 45.8           | 9            | 39.3                | 0          | 0.0                |
| Sprinkler protection                                |  | 564           | 1.7%          | 112.8          | 49           | 86.9                | 3          | 5.3                |
| Fixed system other than sprinklers                  |  | 191           | 0.6%          | 38.2           | 3            | 15.7                | 0          | 0.0                |
| Burned out  |  | 3,669         | 11.0%         | 733.8          | 101          | 27.5                | 6          | 1.6                |
| Miscellaneous method of fire control/extinguishment |  | 192           | 0.6%          | 38.2           | 224.6        | 35                  | 31.2       | 0                  |
| Cannot be determined                                |  | 100           | 0.3%          | 20.0           | 84.8         | 14                  | 33.0       | 2                  |
| <b>GRAND TOTAL</b>                                  |  | <b>33,446</b> | <b>100.0%</b> | <b>6,689.2</b> | <b>1,019</b> | <b>30.5</b>         | <b>121</b> | <b>3.6</b>         |

**Appendix Table 4.** All BC structure fires (2014-2018) by property complex, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths

| PROPERTY COMPLEX GROUP    | PROPERTY COMPLEX SUB-GROUP   | 2014-18 FIRES | % FIRES       | ANNUAL RATE   | # INJURED  | % INJURIES   | INJURY/1,000 FIRES | # DEATHS  | % DEATHS     | DEATH/1,000 FIRES |
|---------------------------|--|---------------|---------------|---------------|------------|--------------|--------------------|-----------|--------------|-------------------|
| Assembly use              | <i>(Total for whole group)</i>   | <b>772</b>    | <b>5.3%</b>   | <b>154.4</b>  | <b>8</b>   | <b>0.9%</b>  | <b>10.4</b>        | <b>0</b>  | <b>0.0%</b>  | <b>0.0</b>        |
|                           | Amusement park, exhibition & fair ground, stadium                                  | 6             | 0.0%          | 1.2           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Auditorium, theatre, arena, cultural centre  | 38            | 0.3%          | 7.6           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Church, funeral home   | 52            | 0.4%          | 10.4          | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Educational institution (non-residential)  | 204           | 1.4%          | 40.8          | 4          | 0.4%         | 19.6               | 0         | 0.0%         | 0.0               |
|                           | Food or beverage establishment   | 374           | 2.6%          | 74.8          | 4          | 0.4%         | 10.7               | 0         | 0.0%         | 0.0               |
|                           | Recreation, sports facility, sports club, social club                              | 98            | 0.7%          | 19.6          | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
| Institutional use         | <i>(Total for whole group)</i>   | <b>167</b>    | <b>1.2%</b>   | <b>33.4</b>   | <b>12</b>  | <b>1.3%</b>  | <b>71.9</b>        | <b>0</b>  | <b>0.0%</b>  | <b>0.0</b>        |
|                           | Hospital, medical centre, clinic, sanatorium                                       | 66            | 0.5%          | 13.2          | 2          | 0.2%         | 30.3               | 0         | 0.0%         | 0.0               |
|                           | Licensed care facility   | 82            | 0.6%          | 16.4          | 9          | 1.0%         | 109.8              | 0         | 0.0%         | 0.0               |
|                           | Prison, penitentiary, jail, detention centre, correctional facility, reformatory   | 19            | 0.1%          | 3.8           | 1          | 0.1%         | 52.6               | 0         | 0.0%         | 0.0               |
| Residential use           | <i>(Total for whole group)</i>   | <b>11,164</b> | <b>77.1%</b>  | <b>2232.8</b> | <b>806</b> | <b>90.3%</b> | <b>72.2</b>        | <b>94</b> | <b>95.9%</b> | <b>8.4</b>        |
|                           | Camp site/RV park  | 35            | 0.2%          | 7.0           | 5          | 0.6%         | 142.9              | 2         | 2.0%         | 57.1              |
|                           | Educational institution (residential)  | 22            | 0.2%          | 4.4           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Hotel, motel, lodge, hostel, boarding house, dormitory                             | 606           | 4.2%          | 121.2         | 35         | 3.9%         | 57.8               | 2         | 2.0%         | 3.3               |
|                           | Residential – row, garden, town housing, condominium                               | 1,036         | 7.1%          | 207.2         | 76         | 8.5%         | 73.4               | 5         | 5.1%         | 4.8               |
|                           | Residential – single detached  | 5,856         | 40.4%         | 1171.2        | 390        | 43.7%        | 66.6               | 56        | 57.1%        | 9.6               |
|                           | Residential – apartment  | 2,572         | 17.8%         | 514.4         | 213        | 23.9%        | 82.8               | 9         | 9.2%         | 3.5               |
|                           | Residential – duplex, 3-plex, 4-plex   | 522           | 3.6%          | 104.4         | 50         | 5.6%         | 95.8               | 6         | 6.1%         | 11.5              |
|                           | Residential – mobile home/trailer park   | 357           | 2.5%          | 71.4          | 27         | 3.0%         | 75.6               | 13        | 13.3%        | 36.4              |
|                           | Residential – with business/mercantile, up to 3 stories                            | 158           | 1.1%          | 31.6          | 10         | 1.1%         | 63.3               | 1         | 1.0%         | 6.3               |
| Business use              | Office building  | 206           | 1.4%          | 41.2          | 1          | 0.1%         | 4.9                | 2         | 2.0%         | 9.7               |
| Commercial/mercantile use | <i>(Total for whole group)</i>   | <b>655</b>    | <b>4.5%</b>   | <b>131.0</b>  | <b>12</b>  | <b>1.3%</b>  | <b>18.3</b>        | <b>1</b>  | <b>1.0%</b>  | <b>1.5</b>        |
|                           | Commercial centre including fuel dispensing (may include restaurant, stores, etc.) | 139           | 1.0%          | 27.8          | 4          | 0.4%         | 28.8               | 0         | 0.0%         | 0.0               |
|                           | Commercial centre, shopping centre, strip mall                                     | 344           | 2.4%          | 68.8          | 5          | 0.6%         | 14.5               | 0         | 0.0%         | 0.0               |
|                           | Department store, variety store  | 109           | 0.7%          | 21.8          | 3          | 0.3%         | 27.5               | 1         | 1.0%         | 9.2               |
|                           | Service station with storage in back lot (includes fuel dispensing)                | 37            | 0.3%          | 7.4           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Strip mall including fuel dispensing   | 26            | 0.2%          | 5.2           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
| Manufacturing use         | Industrial manufacturing   | 560           | 3.9%          | 112.0         | 30         | 3.4%         | 53.6               | 1         | 1.0%         | 1.8               |
| Storage use               | <i>(Total for whole group)</i>   | <b>66</b>     | <b>100.0%</b> | <b>13.2</b>   | <b>3</b>   | <b>0.3%</b>  | <b>45.5</b>        | <b>0</b>  | <b>0.0%</b>  | <b>0.0</b>        |
|                           | Grain elevator   | 18            | 27.1%         | 3.6           | 1          | 0.1%         | 55.6               | 0         | 0.0%         | 0.0               |
|                           | Industrial storage facility, bulk storage tanks                                    | 48            | 72.9%         | 9.6           | 2          | 0.2%         | 41.7               | 0         | 0.0%         | 0.0               |
| Other special use         | <i>(Total for whole group)</i>   | <b>874</b>    | <b>6.1%</b>   | <b>174.8</b>  | <b>21</b>  | <b>2.4%</b>  | <b>24.0</b>        | <b>0</b>  | <b>0.0%</b>  | <b>0.0</b>        |
|                           | Air transportation use, air terminal, airport                                      | 15            | 0.1%          | 3.0           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Building/structure unclassified (describe)   | 505           | 3.5%          | 101.0         | 14         | 1.6%         | 27.7               | 0         | 0.0%         | 0.0               |
|                           | Bus terminal   | 1             | 0.0%          | 0.2           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |
|                           | Car park   | 22            | 0.2%          | 4.4           | 0          | 0.0%         | 0.0                | 0         | 0.0%         | 0.0               |

| PROPERTY COMPLEX GROUP | PROPERTY COMPLEX SUB-GROUP                                    | 2014-18 FIRES | % FIRES       | ANNUAL RATE  | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|------------------------|---|---------------|---------------|--------------|------------|---------------|---------------------|-----------|---------------|--------------------|
|                        | Communications  | 2             | 0.0%          | 0.4          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Farm or agricultural use                                      | 187           | 1.3%          | 37.4         | 4          | 0.4%          | 21.4                | 0         | 0.0%          | 0.0                |
|                        | Harbour, waterfront property, marine terminal                 | 25            | 0.2%          | 5.0          | 1          | 0.1%          | 40.0                | 0         | 0.0%          | 0.0                |
|                        | Laboratory  | 9             | 0.1%          | 1.8          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Military base   | 2             | 0.0%          | 0.4          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Mine  | 1             | 0.0%          | 0.2          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Nucleonic complex   | 1             | 0.0%          | 0.2          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Parks (federal, provincial or city) (includes historic sites) | 35            | 0.2%          | 7.0          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Railway terminal, yard (excludes subway)                      | 11            | 0.1%          | 2.2          | 1          | 0.1%          | 90.9                | 0         | 0.0%          | 0.0                |
|                        | Subway  | 1             | 0.0%          | 0.2          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
|                        | Utility   | 57            | 0.4%          | 11.4         | 1          | 0.1%          | 17.5                | 0         | 0.0%          | 0.0                |
| Unknown                | Cannot be determined  | 21            | 0.1%          | 4.2          | 0          | 0.0%          | 0.0                 | 0         | 0.0%          | 0.0                |
| <b>TOTAL</b>           |   | <b>14,485</b> | <b>199.5%</b> | <b>2,897</b> | <b>893</b> | <b>100.0%</b> | <b>61.6</b>         | <b>98</b> | <b>100.0%</b> | <b>6.8</b>         |

**Appendix Table 5.** All BC residential structure fires (2014-2018) by room of fire origin, showing percentage of fires (annual rate), number/rate of injuries, number/rate of deaths, and number/rate of fires that extended beyond the room of origin

| ROOM OF ORIGIN GROUPED           | 2014-18 FIRES | % FIRES       | ANNUAL RATE    | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES | # EXTENDED BEYOND ROOM OF ORIGIN | % EXTENDED BEYOND ROOM OF ORIGIN |
|----------------------------------|---------------|---------------|----------------|------------|---------------|---------------------|-----------|---------------|--------------------|----------------------------------|----------------------------------|
| Bathroom                         | 250           | 2.2%          | 50.0           | 24         | 3.0%          | 96.0                | 3         | 3.2%          | 12.0               | 45                               | 18.0%                            |
| Bedroom                          | 1,050         | 9.4%          | 210.0          | 160        | 19.9%         | 152.4               | 26        | 27.7%         | 24.8               | 250                              | 23.8%                            |
| Office                           | 30            | 0.3%          | 6.0            |            | 0.0%          | 0.0                 |           | 0.0%          | 0.0                | 8                                | 26.7%                            |
| Closet                           | 41            | 0.4%          | 8.2            | 3          | 0.4%          | 73.2                | 0         | 0.0%          | 0.0                | 9                                | 22.0%                            |
| Assembly area – other            | 91            | 0.8%          | 18.2           | 2          | 0.2%          | 22.0                | 0         | 0.0%          | 0.0                | 40                               | 44.0%                            |
| Laundry room                     | 367           | 3.3%          | 73.4           | 16         | 2.0%          | 43.6                | 1         | 1.1%          | 2.7                | 54                               | 14.7%                            |
| Hallways and means of egress     | 256           | 2.3%          | 51.2           | 3          | 0.4%          | 11.7                | 2         | 2.1%          | 7.8                | 40                               | 15.6%                            |
| Living room                      | 784           | 7.0%          | 156.8          | 84         | 10.4%         | 107.1               | 24        | 25.5%         | 30.6               | 253                              | 32.3%                            |
| Function area – unclassified     | 42            | 0.4%          | 8.4            | 2          | 0.2%          | 47.6                | 0         | 0.0%          | 0.0                | 13                               | 31.0%                            |
| Foyer                            | 60            | 0.5%          | 12.0           | 4          | 0.5%          | 66.7                | 1         | 1.1%          | 16.7               | 25                               | 41.7%                            |
| Kitchen                          | 3,739         | 33.4%         | 747.8          | 321        | 39.8%         | 85.9                | 10        | 10.6%         | 2.7                | 320                              | 8.6%                             |
| Dining area                      | 73            | 0.7%          | 14.6           | 11         | 1.4%          | 150.7               | 0         | 0.0%          | 0.0                | 8                                | 11.0%                            |
| Porch                            | 554           | 5.0%          | 110.8          | 27         | 3.3%          | 48.7                | 3         | 3.2%          | 5.4                | 167                              | 30.1%                            |
| Balcony                          | 344           | 3.1%          | 68.8           | 22         | 2.7%          | 64.0                | 2         | 2.1%          | 5.8                | 140                              | 40.7%                            |
| Storage area                     | 225           | 2.0%          | 45.0           | 14         | 1.7%          | 62.2                | 2         | 2.1%          | 8.9                | 137                              | 60.9%                            |
| Garage                           | 459           | 4.1%          | 91.8           | 27         | 3.3%          | 58.8                | 3         | 3.2%          | 6.5                | 220                              | 47.9%                            |
| Outside area – other             | 417           | 3.8%          | 83.4           | 8          | 1.0%          | 19.2                | 0         | 0.0%          | 0.0                | 241                              | 57.8%                            |
| Utility, equipment, furnace room | 320           | 2.9%          | 64.0           | 13         | 1.6%          | 40.6                | 1         | 1.1%          | 3.1                | 65                               | 20.3%                            |
| Trash area                       | 96            | 0.9%          | 19.2           | 3          | 0.4%          | 31.3                | 1         | 1.1%          | 10.4               | 38                               | 39.6%                            |
| Chimney, flue pipe, gas vent     | 314           | 2.8%          | 62.8           | 4          | 0.5%          | 12.7                | 0         | 0.0%          | 0.0                | 29                               | 9.2%                             |
| Service facilities               | 62            | 0.6%          | 12.4           | 5          | 0.6%          | 80.6                | 0         | 0.0%          | 0.0                | 5                                | 8.1%                             |
| Crawl space                      | 63            | 0.6%          | 12.6           | 9          | 1.1%          | 142.9               | 1         | 1.1%          | 15.9               | 33                               | 52.4%                            |
| Structural area – other          | 978           | 8.8%          | 195.6          | 27         | 3.3%          | 27.6                | 3         | 3.2%          | 3.1                | 399                              | 40.8%                            |
| All other areas                  | 549           | 4.9%          | 109.8          | 17         | 2.1%          | 31.0                | 11        | 11.7%         | 20.0               | 382                              | 69.6%                            |
| <b>TOTAL</b>                     | <b>11,164</b> | <b>100.0%</b> | <b>2,232.8</b> | <b>806</b> | <b>100.0%</b> | <b>72.2</b>         | <b>94</b> | <b>100.0%</b> | <b>8.4</b>         | <b>2,921</b>                     | <b>26.2%</b>                     |



**Appendix Table 6.** All BC residential structure fires (2014-2018) by source of ignition, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths

| SOURCE OF IGNITION GROUPED        | SOURCE SUB-CATEGORY (SMOKER'S MATERIAL ONLY) | 2014-18 FIRES | % FIRES       | ANNUAL RATE    | # INJURED  | % INJURIES    | INJURY/1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/1,000 FIRES |
|-----------------------------------|--|---------------|---------------|----------------|------------|---------------|--------------------|-----------|---------------|-------------------|
| Cooking equipment                 |  | 3,736         | 33.4%         | 747.2          | 320        | 39.7%         | 85.7               | 5         | 5.3%          | 1.3               |
| Heating equipment                 |  | 975           | 8.7%          | 195.0          | 46         | 5.7%          | 47.2               | 8         | 8.5%          | 8.2               |
| Appliances & equipment            |  | 94            | 559           | 5.0%           | 111.8      | 52            | 6.5%               | 93.0      | 2             | 2.1%              |
| Electrical distribution equipment |  | 145           | 664           | 5.9%           | 132.8      | 39            | 4.8%               | 58.7      | 4             | 4.3%              |
| Other electrical equipment        |  | 77            | 421           | 3.8%           | 84.2       | 24            | 3.0%               | 57.0      | 3             | 3.2%              |
| Smoker's material and open flame  | <b>(Total for whole group)</b>               | <b>2,071</b>  | <b>18.5%</b>  | <b>414.2</b>   | <b>195</b> | <b>24.2%</b>  | <b>94.2</b>        | <b>34</b> | <b>36.2%</b>  | <b>16.4</b>       |
|                                   | Cigarette, pipe, or cigar                    | 0             | 0.0%          | 0.0            | 0          | 7.6%          | 93.8               | 8         | 8.5%          | 12.3              |
|                                   | Ashtray                                      | 0             | 0.0%          | 0.0            | 0          | 0.5%          | 65.6               | 1         | 1.1%          | 16.4              |
|                                   | Lighter or match                             | 0             | 0.0%          | 0.0            | 0          | 4.1%          | 54.4               | 12        | 12.8%         | 19.8              |
|                                   | Lamp/lantern – non-electric                  | 0             | 0.0%          | 0.0            | 0          | 0.1%          | 1000.0             | 0         | 0.0%          | 0.0               |
|                                   | Candle                                       | 0             | 0.0%          | 0.0            | 0          | 7.3%          | 258.8              | 3         | 3.2%          | 13.2              |
|                                   | Cutting torch/welding equipment              | 0             | 0.0%          | 0.0            | 0          | 0.0%          | 0.0                | 1         | 1.1%          | 38.5              |
|                                   | Hot ashes/embers (non-smoking)               | 0             | 0.0%          | 0.0            | 0          | 1.0%          | 72.7               | 1         | 1.1%          | 9.1               |
|                                   | Torch (non-cutting/welding)                  | 0             | 0.0%          | 0.0            | 0          | 1.5%          | 84.5               | 0         | 0.0%          | 0.0               |
|                                   | Unclassified/cannot be determined            | 0             | 0.0%          | 0.0            | 0          | 2.1%          | 69.1               | 8         | 8.5%          | 32.5              |
| Exposure                          |  | 349           | 3.1%          | 69.8           | 0          | 0.0%          | 0.0                | 1         | 1.1%          | 2.9               |
| Miscellaneous igniting object     |  | 297           | 2.7%          | 59.4           | 11         | 1.4%          | 37.0               | 1         | 1.1%          | 3.4               |
| Cannot be determined              |  | 2,092         | 18.8%         | 418.4          | 119        | 14.8%         | 56.9               | 36        | 38.3%         | 17.2              |
| <b>TOTAL</b>                      |  | <b>11,164</b> | <b>100.0%</b> | <b>2,232.8</b> | <b>806</b> | <b>100.0%</b> | <b>72.2</b>        | <b>94</b> | <b>100.0%</b> | <b>8.4</b>        |

**Appendix Table 7.** All BC residential structure fires (2014-2018) by act or omission, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths

| ACT OR OMISSION GROUPED                         | # FIRES       | % FIRES       | ANNUAL RATE    | # INJURED  | % INJURIES    | INJURY/1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/1,000 FIRES |
|---|---------------|---------------|----------------|------------|---------------|--------------------|-----------|---------------|-------------------|
| Incendiary fires                                | 1,082         | 9.7%          | 216.4          | 30         | 3.7%          | 27.7               | 11        | 11.7%         | 10.2              |
| Misuse of source of ignition                    | 781           | 7.0%          | 156.2          | 56         | 6.9%          | 71.7               | 10        | 10.6%         | 12.8              |
| Misuse of material ignited                      | 644           | 5.7%          | 128.8          | 74         | 9.2%          | 114.9              | 3         | 3.2%          | 4.7               |
| Mechanical/electrical failure/malfunction       | 1,276         | 11.4%         | 255.2          | 70         | 8.7%          | 54.9               | 7         | 7.4%          | 5.5               |
| Construction, design or installation deficiency | 222           | 2.0%          | 44.4           | 8          | 1.0%          | 36.0               | 0         | 0.0%          | 0.0               |
| Misuse of equipment                             | 493           | 4.4%          | 98.6           | 10         | 1.2%          | 20.3               | 0         | 0.0%          | 0.0               |
| Human failing                                   | 4,634         | 41.5%         | 926.8          | 428        | 53.1%         | 92.4               | 27        | 28.7%         | 5.8               |
| Vehicle accident                                | 8             | 0.1%          | 1.6            | 0          | 0.0%          | 0.0                | 0         | 0.0%          | 0.0               |
| Miscellaneous act or omission                   | 50            | 0.4%          | 10.0           | 13         | 1.6%          | 260.0              | 2         | 2.1%          | 40.0              |
| Cannot be determined                            | 1,879         | 16.9%         | 375.8          | 114        | 14.1%         | 60.7               | 34        | 36.2%         | 18.1              |
| Not applicable                                  | 95            | 0.8%          | 19.0           | 3          | 0.4%          | 31.6               | 0         | 0.0%          | 0.0               |
| <b>TOTAL</b>                                    | <b>11,164</b> | <b>100.0%</b> | <b>2,232.8</b> | <b>806</b> | <b>100.0%</b> | <b>72.2</b>        | <b>94</b> | <b>100.0%</b> | <b>8.4</b>        |

**Appendix Table 8.** All BC residential structure fires (2014-2018) by level of fire origin, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths

| LEVEL OF ORIGIN GROUPED                           | # FIRES       | % FIRES       | ANNUAL RATE    | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|---|---------------|---------------|----------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| Basement, sub-basement                            | 942           | 8.4%          | 188.4          | 80         | 9.9%          | 84.9                | 9         | 9.6%          | 9.6                |
| Ground floor, grade level or grade to 3m          | 5,221         | 46.7%         | 1,044.2        | 430        | 53.3%         | 82.4                | 60        | 63.8%         | 11.5               |
| 2nd storey or over 3-6m above grade               | 2,057         | 18.4%         | 411.4          | 162        | 20.1%         | 78.8                | 17        | 18.1%         | 8.3                |
| 3rd storey or over 6-9m (20-30ft) above grade     | 665           | 6.0%          | 133.0          | 49         | 6.1%          | 73.7                | 4         | 4.3%          | 6.0                |
| 4-12 storey or over 9-36m (30-120ft) above grade  | 684           | 6.2%          | 136.8          | 54         | 6.7%          | 78.9                | 3         | 3.2%          | 4.4                |
| Over 12 storey or over 36m (120ft)                | 129           | 1.2%          | 25.8           | 5          | 0.6%          | 38.8                | 0         | 0.0%          | 0.0                |
| Crawl space, under structure                      | 78            | 0.7%          | 15.6           | 3          | 0.4%          | 38.5                | 0         | 0.0%          | 0.0                |
| Mezzanine (any floor)                             | 136           | 1.2%          | 27.2           | 6          | 0.7%          | 44.1                | 0         | 0.0%          | 0.0                |
| Roof level (includes concealed roof space, attic) | 400           | 3.6%          | 80.0           | 7          | 0.9%          | 17.5                | 0         | 0.0%          | 0.0                |
| Exposure fire                                     | 350           | 3.1%          | 70.0           | 2          | 0.2%          | 5.7                 | 0         | 0.0%          | 0.0                |
| Cannot be determined                              | 502           | 4.5%          | 100.4          | 8          | 1.0%          | 15.9                | 1         | 1.1%          | 2.0                |
| <b>TOTAL</b>                                      | <b>11,164</b> | <b>100.0%</b> | <b>2,232.8</b> | <b>806</b> | <b>100.0%</b> | <b>72.2</b>         | <b>94</b> | <b>100.0%</b> | <b>8.4</b>         |

**Appendix Table 9.** All BC residential structure fires (2014-2018) by building height, showing percentage of fires (annual rate), number/rate of injuries, and number/rate of deaths

| BUILDING HEIGHT GROUPED         | # FIRES       | % FIRES       | ANNUAL RATE    | # INJURED  | % INJURIES    | INJURY/ 1,000 FIRES | # DEATHS  | % DEATHS      | DEATH/ 1,000 FIRES |
|---------------------------------|---------------|---------------|----------------|------------|---------------|---------------------|-----------|---------------|--------------------|
| 1 storey above grade            | 2,821         | 25.3%         | 564.2          | 182        | 22.6%         | 64.5                | 41        | 43.6%         | 14.5               |
| 2 storeys above grade           | 4,479         | 40.1%         | 895.8          | 335        | 41.6%         | 74.8                | 35        | 37.2%         | 7.8                |
| 3 storeys above grade           | 1,590         | 14.2%         | 318.0          | 140        | 17.4%         | 88.1                | 12        | 12.8%         | 7.5                |
| 4 storeys above grade           | 819           | 7.3%          | 163.8          | 72         | 8.9%          | 87.9                | 1         | 1.1%          | 1.2                |
| 5 or 6 storeys above grade      | 329           | 2.9%          | 65.8           | 13         | 1.6%          | 39.5                | 0         | 0.0%          | 0.0                |
| 7 to 12 storeys above grade     | 451           | 4.0%          | 90.2           | 19         | 2.4%          | 42.1                | 2         | 2.1%          | 4.4                |
| 13 storeys and over above grade | 411           | 3.7%          | 82.2           | 37         | 4.6%          | 90.0                | 2         | 2.1%          | 4.9                |
| Cannot be determined            | 264           | 2.4%          | 52.8           | 8          | 1.0%          | 30.3                | 1         | 1.1%          | 3.8                |
| <b>TOTAL</b>                    | <b>11,164</b> | <b>100.0%</b> | <b>2,232.8</b> | <b>806</b> | <b>100.0%</b> | <b>72.2</b>         | <b>94</b> | <b>100.0%</b> | <b>8.4</b>         |

**Appendix Table 10.** All BC residential structure fires (2014-2018) by life safety system, showing number/percentage of fires, number/rate of injuries (with 95% confidence intervals, CI), number/rate of deaths (with 95% CI), fire department control (% 95% CI), and extended beyond room of origin (% 95% CI)

| SMOKE ALARM  | SPRINKLER | FIRES (% TOTAL)      | INJURIES (% TOTAL) | INJURY RATE (95% CI)    | DEATHS (% TOTAL) | DEATH RATE (95% CI)   | % FIRE DEPARTMENT EXTINGUISH (95% CI) | % BEYOND ROOM OF ORIGIN (95% CI) |
|--------------|-----------|----------------------|--------------------|-------------------------|------------------|-----------------------|---------------------------------------|----------------------------------|
| Yes          | Yes       | 1,003 (9%)           | 75 (9%)            | 74.8 (57.9 91.7)        | 4 (4%)           | 4.0 (0.1 7.9)         | 14.0% (12.9% 15.1%)                   | 3.7% (3.1% 4.3%)                 |
| No           | Yes       | 37 (0%)              | 6 (1%)             | 162.2 (32.4 291.9)      | 0 (0%)           | 0.0 (0.0 0.0)         | 21.6% (14.9% 28.4%)                   | 13.5% (7.9% 19.1%)               |
| Yes          | No        | 2,693 (24%)          | 301 (37%)          | 111.8 (99.1 124.4)      | 23 (24%)         | 8.5 (5.1 12.0)        | 48.8% (47.8% 49.7%)                   | 29.4% (28.5% 30.3%)              |
| No           | No        | 1,373 (12%)          | 86 (11%)           | 62.6 (49.4 75.9)        | 21 (22%)         | 15.3 (8.8 21.8)       | 71.0% (69.8% 72.2%)                   | 52.1% (50.8% 53.5%)              |
| Other        | Other     | 6,058 (54%)          | 338 (42%)          | 55.8 (49.8 61.7)        | 46 (49%)         | 7.6 (5.4 9.8)         | 39.7% (39.1% 40.4%)                   | 24.6% (24.0% 25.1%)              |
| <b>TOTAL</b> |           | <b>11,164 (100%)</b> | <b>806 (100%)</b>  | <b>72.2 (67.2 77.2)</b> | <b>94 (100%)</b> | <b>8.4 (6.7 10.1)</b> | <b>43.4% (42.9% 43.8%)</b>            | <b>27.2% (26.8% 27.6%)</b>       |

**Appendix Table 11.** All structure fire casualties (2014-2018) by condition of casualty, showing number/% of injuries/deaths

| CONDITION OF CASUALTY                       | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|---|------------|---------------|-----------|---------------|
| Awake or no physical/mental impairment      | 387        | 48.0%         | 13        | 13.8%         |
| Too young to react to fire emergency        | 4          | 0.5%          | 1         | 1.1%          |
| Asleep at time of fire                      | 144        | 17.9%         | 20        | 21.3%         |
| Bedridden or other physical disability      | 14         | 1.7%          | 5         | 5.3%          |
| Mental disability                           | 6          | 0.7%          | 0         | 0.0%          |
| Impairment by alcohol, drugs, or medication | 48         | 6.0%          | 6         | 6.4%          |
| Under restraint or detention                | 0          | 0.0%          | 0         | 0.0%          |
| Unknown                                     | 138        | 17.1%         | 38        | 40.4%         |
| Unclassified                                | 65         | 8.1%          | 11        | 11.7%         |
| <b>TOTAL</b>                                | <b>806</b> | <b>100.0%</b> | <b>94</b> | <b>100.0%</b> |

**Appendix Table 12.** All structure fire casualties (2014-2018) by action of casualty, showing number/% of injuries/deaths

| ACTION OF CASUALTY                           | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|--|------------|---------------|-----------|---------------|
| Injured while attempting to escape           | 171        | 21.2%         | 12        | 12.8%         |
| Over-exertion, heart attack                  | 4          | 0.5%          | 0         | 0.0%          |
| Voluntarily entered/remained – rescue        | 34         | 4.2%          | 1         | 1.1%          |
| Voluntarily entered/remained – fire fighting | 220        | 27.3%         | 2         | 2.1%          |
| Voluntarily entered/remained – save property | 53         | 6.6%          | 2         | 2.1%          |
| Loss of judgement/panic                      | 60         | 7.4%          | 7         | 7.4%          |
| Received delayed warning                     | 14         | 1.7%          | 2         | 2.1%          |
| Did not act                                  | 52         | 6.5%          | 16        | 17.0%         |
| Unknown                                      | 78         | 9.7%          | 15        | 16.0%         |
| Unclassified                                 | 120        | 14.9%         | 37        | 39.4%         |
| <b>TOTAL</b>                                 | <b>806</b> | <b>100.0%</b> | <b>94</b> | <b>100.0%</b> |

**Appendix Table 13.** All structure fire casualties (2014-2018) by cause of injury, showing number/% of injuries/deaths

| CAUSE OF INJURY           | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|---------------------------|------------|---------------|-----------|---------------|
| Smoke inhalation          | 397        | 49.3%         | 45        | 47.9%         |
| Burns – fire/flames       | 200        | 24.8%         | 19        | 20.2%         |
| Burns – hot substances    | 80         | 9.9%          | 2         | 2.1%          |
| Struck by objects/persons | 10         | 1.2%          | 1         | 1.1%          |
| Falls                     | 22         | 2.7%          | 1         | 1.1%          |
| Explosives                | 3          | 0.4%          | 0         | 0.0%          |
| Electrical current        | 1          | 0.1%          | 0         | 0.0%          |
| Unknown                   | 47         | 5.8%          | 4         | 4.3%          |
| Unclassified              | 46         | 5.7%          | 22        | 23.4%         |
| <b>TOTAL</b>              | <b>806</b> | <b>100.0%</b> | <b>94</b> | <b>100.0%</b> |

**Appendix Table 14.** All structure fire casualties (2014-2018) by cause of failure to escape, showing number/% of injuries/deaths

| CAUSE OF FAILURE TO ESCAPE                  | # INJURIES | % INJURIES    | # DEATHS  | % DEATHS      |
|---|------------|---------------|-----------|---------------|
| Trapped by fire/smoke – vertical openings   | 46         | 5.7%          | 5         | 5.3%          |
| Trapped by fire/smoke – horizontal openings | 22         | 2.7%          | 17        | 18.1%         |
| High flame spread of combustible surfaces   | 24         | 3.0%          | 9         | 9.6%          |
| Building collapse                           | 0          | 0.0%          | 0         | 0.0%          |
| Falling debris                              | 2          | 0.2%          | 0         | 0.0%          |
| Explosion                                   | 18         | 2.2%          | 2         | 2.1%          |
| Exit locked/obstructed                      | 4          | 0.5%          | 1         | 1.1%          |
| Outdoor fire                                | 6          | 0.7%          | 0         | 0.0%          |
| Unknown                                     | 348        | 43.2%         | 43        | 45.7%         |
| Unclassified                                | 336        | 41.7%         | 17        | 18.1%         |
| <b>TOTAL</b>                                | <b>806</b> | <b>100.0%</b> | <b>94</b> | <b>100.0%</b> |



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