

BRITISH COLUMBIA

Office of the Fire Commissioner

Annual Report
2022





Fire-Risk Reduction in BC Communities

Office of the Fire Commissioner

2022 Annual Report

HONOURABLE MIKE FARNWORTH

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DEAR HONOURABLE MIKE FARNWORTH,

I have the honour of submitting the Office of the Fire Commissioner's 2022 annual report, Fire-Risk Reduction in BC Communities.

It is a compilation of:

- The Office of the Fire Commissioner's (OFC) 2022 activities
- The OFC's direction for 2023
- An analysis of the fire reporting data submitted to the OFC between January 1, 2022 and December 31, 2022.

The statistics and trends identified in the report inform and guide local government fire services' effective allocation of personnel and resources to reduce the number of fire-related injuries and deaths. Understanding the metrics of areas in communities at greatest risk of fire informs the OFC's and the fire services fire prevention efforts, specifically public education and associated treatments, such as the installation of smoke alarms.

The OFC plays a critical role in the Province's public safety system. The OFC will continue to work towards strategic and operational excellence in all aspects of its diverse service delivery mandate to protect the public and firefighters.

Yours truly,

Brian Godlonton
Fire Commissioner



Office of the Fire Commissioner

2022 in Review and the Year Ahead

FOCUS—PREVENTION The Office of the Fire Commissioner's (OFC) mandate is to minimize the loss of life, injury, and damage to property from fire by administering and enforcing British Columbia's fire safety legislation. The OFC leads provincial fire prevention and fire reporting programs, promotes fire safety awareness, and establishes minimum training standards for fire services personnel. The OFC also provides structure fire expertise and coordinates fire services during emergencies.

The OFC's mission is to reduce the number of fires and the risk of fire-related injuries and deaths. Since 2018, there has been an increasing number of fire-related injuries and deaths, particularly in the youth and older adult populations. Between 2018 and 2022, there were 1005 reported fire-related injuries and 257 reported fire-related deaths. The number of reported fire-related deaths has increased each year—from 28 in 2018 to 86 in 2022; a 207 percent increase. Reducing fire-risk in communities is key to reversing that trend.

Fire prevention is the cornerstone for reducing fire-risk. In 2022, the OFC focused on the following three areas of fire prevention.

➤ **DATA:** Complete and accurate data, data systems, and data analysis contribute to evidence-based decision-making which guides the OFC and fire services in the effective allocation of personnel and resources. The OFC has been working with fire services to ensure that fire reports are accurate and submitted according to the requirements in the Fire Services Act.

➤ **EDUCATION:** Increasing the public's knowledge about fire safety is fundamental to reducing the risk of fires, injuries, and deaths. To be effective, this information needs to include treatments such as the installation of smoke alarms and the development and exercising of fire plans. To meet this objective, the OFC is building additional fire prevention public education capacity and programs.

➤ **ENGAGEMENT:** The OFC's collaboration with community fire services; provincial, national, and international partners; and the public is essential for gathering and analysing fire incident data, communicating that information, and acting on that information. Engagement includes supporting and working with fire services and the public in-community, collaborating with multiple agencies on issues such as encampments, and meeting with the fire services and national partners on education campaigns and programs.

Effective fire prevention is dependent upon changing public behaviour and fire services executing their responsibilities. This outcome is achieved through knowledge-sharing and incentives, designing safe buildings, and compliance and enforcement. For example, Table 10 enumerates the positive protective effects of sprinklers and smoke alarms. When a fire breaks out, these protective systems result in the fewest deaths and injuries.

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2022 Highlights

Over the past year, the OFC continued to progress its mandate in the five areas below. Those areas support three areas of fire prevention: data, education, and engagement.

ORGANIZATIONAL EFFECTIVENESS

The OFC hired a dedicated Fire Service Training Specialist, that enables the OFC to support community fire services. In addition, all regional Fire Services Advisor (FSA) positions have been filled to actively support community fire services across the province. FSA responsibilities include: providing expert advice, guidance, and support to fire services and Local Assistants to the Fire Commissioner (LAFCs) on fire investigations, inspection best practices, fire incident reporting, training, and the administration of the Fire Services Act and the British Columbia Fire Code. The responsibilities also include enforcement, when required, through provincial fire orders.

The OFC continues to action the priorities identified in the OFC's 2021 Annual Report, including assessing current and future staff responsibilities, capacity, workflow process improvements, and future resource requirements. The OFC is also in the process of updating its strategic plan. The OFC's current activities will align with the OFC's strategic plan objectives.

FIRE SERVICES TRAINING SUPPORT


In September 2022, the OFC published the British Columbia Firefighter Minimum Training Standards (Training Standards),

which is essential for ensuring the skills and safety of firefighters in the field. The manual, policy, and curriculum can be obtained through the OFC's website. In fall 2022, the OFC facilitated six training webinars. More than 450 fire services personnel and local government staff participated in the sessions and more people continue to view the YouTube video. Additional training webinars will be offered in spring 2023.

In 2022, the Province contributed approximately \$6M to the Community Emergency Preparedness Fund (CEPF) Volunteer and Composite Fire Departments Equipment and Training funding stream which supported the release of the Training Standards. That, or a similar, funding stream will once again be open to local governments, First Nations, legally incorporated society-run fire departments, and improvement districts in 2023 and 2024.

FIRE REPORTING AND DATA

The OFC has been actively working with fire departments, through training and regular communication, to increase fire department fire reporting. Under the Fire Services Act, fire services are required to investigate fires and submit fire reports in a format and by the means approved by the fire commissioner. Reports are currently submitted through the fire incident reporting system (FIRES). The OFC supports fire reporting efforts through direct, firsthand assistance to fire departments, education about the importance of reliable and consistent data, and technological improvements



to FIRES. Fire department reporting has increased substantially over the last five years—from 191 departments in 2018 to 273 departments in 2022; a 43 percent increase. Like 2021, in 2022, one hundred percent of known fire related deaths were reported. The OFC has recently concluded consultations with key partners to update codes in the FIRES reporting system to capture rechargeable battery-related fires.

PUBLIC EDUCATION AND ENGAGEMENT

There are currently four key annual opportunities the OFC leads or participates in to increase awareness of fire prevention and fire life safety: Fire Prevention Week, Burn Awareness Week, Emergency Preparedness Week, and Carbon Monoxide Awareness Week. In addition to these campaigns, the OFC's public education work includes creating social media messages, developing education resources and programs, collaborating on other awareness campaigns, and participating in media interviews. These efforts are key to educating people how to take steps to keep themselves and their loved ones safe and raising the OFC's profile as a leader in fire safety.

Planning is underway on how best to reach historically underserved populations, including Indigenous communities and Elders and seniors. In 2023, the OFC and the BC Injury Research and Prevention Unit will co-lead a smoke alarm campaign to address the increasing trend in the number of fires where there was no working smoke alarm.

The Fire Services Advisors are the OFC's in-community connection with local government fire services. They engage at the local level to actively encourage and support fire prevention public education efforts.

PARTNERSHIP DEVELOPMENT

The OFC continues to maintain ongoing engagement with its fire service partners and government ministries and agencies. There are six key projects and efforts that demonstrate the OFC's commitment to collaborative working relationships: 1) the Community Fire-Risk Reduction Dashboard; 2) Wildland Urban Interface (WUI) fire coordination; 3) a Coroners Service agreement; 4) a First Nations Emergency Services Society (FNESS) Letter of Understanding (LOU 5) encampments coordination; and 6) Council of Canadian Fire Marshalls and Fire Commissioners (CCFMFC) Public Education Committee collaboration.

Community Fire-Risk Reduction Dashboard:

The OFC has partnered with Statistics Canada, the Canadian Centre for Justice and Community Safety Statistics to develop an interactive community fire-risk reduction dashboard. Fire incident data is mapped with demographic and fire risk factors comprising, census attributes, residential fire rates, deaths, injuries, and smoke alarm function at the time of a fire. The dashboard is available to all community fire services in the province. (See Appendix A.)

Wildland-Urban Interface (WUI) Coordination:

The OFC will continue work with BC Wildfire Service and the Fire Chiefs' Association of BC and to ensure a safe, efficient, and coordinated response to wildland urban interface fire incidents.

Coroners Service: The OFC and the Coroners Service agreement to work together to ensure consistent and accurate reporting of fire-related deaths.

First Nations Emergency Services Society (FNESS)

Letter of Understanding (LOU): The Ministry of Emergency Management and Climate Readiness and BC Wildfire Service drafted an LOU with FNESS, effective April 17, 2023, to strengthen collaborative approaches to emergency management and wildfire management. In 2023, the OFC would sign on as a party to the LOU, if mutually agreed upon by all signatories. The OFC's goal in pursuing an LOU with FNESS is to further support collaborative approaches to fire-related initiatives.

Encampments Coordination: The OFC is working with the cross-ministry Strategic Fire Prevention Group to enhance fire safety and prevention in encampments of people experiencing homelessness. Fire life safety equipment, including fire retardant tarps, fire extinguishers, fire blankets, hand and foot warmers, and carbon monoxide monitors will be distributed to 23 communities between January and April 2023. The Working Group will develop additional community fire safety resources in 2023.

Council of Canadian Fire Marshalls and Fire Commissioners (CCFMFC) Public Education Committee collaboration: The OFC is working with provinces and territories to develop public education programs.

The OFC continues to position itself to effectively support, coordinate, and work with community fire services and provincial agencies on an ongoing basis and during emergency incidents and extreme emergency events.

2023 ONGOING COMMITMENTS AND FUTURE DIRECTION

In 2023, consistent with the theme of continuous improvement, the OFC will continue to build its capacity to effectively deliver its mandate through:

- Organizational effectiveness will be improved through an updated strategic plan.
- Program improvement opportunities identified will continue to be actioned.
- The FSAs will provide ongoing guidance and support to fire services in their regions; support for the implementation of the Training Standards will continue; the OFC will continue to build new and strengthen existing relationships with its fire services partners informally and through formal arrangements and agreements.
- There will continue to be an increase in fire reporting, based on current trends, which will support the OFC's commitment to evidence-based decision-making. Fire data for rechargeable (e.g., lithium-ion) batteries will be captured through fire reporting codes developed in 2022.
- The OFC is prepared to stand up a provincial fire service as referenced in the Emergency Program Management Regulation.
- The Fire Service Awards program will expedite fire services' requests and reduce the backlog. Most of the supply chain issues have been resolved. Fire Service Awards submissions are expected to increase significantly over the next decade.

- The OFC will also dedicate significant effort toward evidence-based fire prevention efforts and public education, including its social media presence and a smoke alarm campaign.

2023 will be another challenging year, particularly given the number of reported fire-related injuries and deaths in the first quarter. The OFC will continue to work with its partners and seek opportunities for improving fire safety across the province. To stay current, prepared, and adaptable the OFC conducts regular environmental scans across the province and nationally. The OFC will continue to monitor and address the following emerging areas:

- **Climate change:** The potential for urban neighbourhood fires is increasing. The OFC will continue to work with FireSmart, the BC Building Codes and Standards Branch, and its fire services partners to address this issue.
- **Changing demographics:** The province has an increasing population, an aging demographic, and an increasing immigrant population. The OFC will continue to address such changes and associated vulnerabilities by supporting education and prevention efforts using tools, such as the Community Fire-Risk Reduction dashboard.
- **Changes in the built environment:** Population increases, and the subsequent housing demand is resulting in the construction of more multi-unit complexes. Fires in large residential complexes can have a significant socio-economic impact on community businesses and the local governments responsible for housing affected residents.

- **Volunteer fire services training, retention, and recruitment:** This has been an ongoing challenge and the OFC has initiated work to assess the extent of the challenge and potential options.
- **Encampments:** The unhoused population is increasing in many communities, as are the number of encampment fires. In 2022, there were 398 fires, 5 injuries, and 2 deaths. The OFC will continue to work with fire services to accurately report and record encampment-related fires.
- **Electrical-related structure fires:** Over the last 10 years there have been 21 deaths and 174 injuries due to electrical distribution and other electrical fires with 7 of those deaths occurring in 2022. Rechargeable battery fires are an emerging issue. Fire prevention education will be part of reversing this trend.

1 Between 2012 and 2022 apartment fires increased from 472 to 623 (31 percent increase).



Executive Summary

FIRE STATISTICS

The 2022 Office of the Fire Commissioner (OFC) Annual Report includes an analysis of fire statistics submitted between January 1, 2022 and December 31, 2022 to the OFC by fire services across the province. The data and tables have been extracted from the Fire Inventory Reporting Evaluation System (FIRES).. This information will guide the OFC's work in 2023.

2022 FIRE STATISTICS AND TRENDS

NATIONAL: The OFC, in partnership with Statistics Canada and Canadian Council of Fire Marshals and Fire Commissions (CCFMFC) conducted a retrospective analysis of fire-related deaths entered into the Canadian Corner and Medical Examiner database (CCMED) between 2011 and 2020. This analysis revealed that there was an average of 220 fire-related deaths in Canada annually. Most of the deaths (81 percent), were unintentional, 15 percent were suicides and homicides, and 4 percent were undetermined. Of the unintentional fire-related deaths, 92 percent occurred in a residence; over 39 percent of those deaths were 65 years or older; and the majority of those who died were male. At least one of the following risk factors was present for those deaths: cigarettes or smoking materials; alcohol, cannabis or illicit drugs; and the absence of a working smoke alarm.

PROVINCIAL: The OFC has been reviewing the 2022 fire statistics for British Columbia and the trends continue to be as concerning as the national trends described above.

- In 2022, there were 86 fire related deaths—a 46 percent increase from 2021.
- In 2021, there were 59 fire-related deaths—a 5 percent increase from the previous year.
- Between 2019 and 2020, fire-related deaths in British Columbia rose from 28 to 56—a 100 percent increase.
- Between 2018 and 2022, there has been a 207% percent increase in fire-related deaths.

The leading causes for structure fires continue to be smoking materials (match, lighter, etc.), cooking equipment, electrical, heating, smoking, and appliances. Most fire-related deaths and injuries occur in people's homes. The number of fires where there was no working smoke alarm also continues to be concerning. In 2022, only 45 percent of fires had a working smoke alarm. It is imperative that fire services continue to increase public education efforts, particularly home fire safety programs for the youth and the elderly, who according to the OFC's data, are most at risk. Working smoke alarms remain the most effective measure for preventing fire injuries and death. In 2023, the OFC will be embarking on a campaign to increase public awareness of the importance of working smoke alarms.

Factors contributing to the increasing trend in fire-related injuries and deaths in the province include:

- Demographic shifts—increase in population, aging population, and immigration.
- Increase in homelessness—increase in the number of encampments in many communities.
- Changes in land use—increased development and population density in rural areas.
- Changing technology—Increased use of rechargeable (e.g., lithium-ion) battery powered consumer products and improper charging of those devices within homes.
- COVID-19—More people are working from home and at home for longer periods, resulting from an extension of COVID work-at-home arrangements.

NUMBER OF FIRES AND DISTRIBUTION

- In 2022, there were **9,087** fires resulting in 212 injuries and 86 deaths. Of these:
- **4,631** (51 percent) were outdoor fires (12 injuries and 1 death)
- **3,287** (36 percent) were structure fires (161 injuries and 52 deaths)
- **1,364** (13 percent) were vehicle fires (13 injuries and 27 deaths)
- **43** (0.5 percent) were person fires (26 injuries and 6 deaths)

2 Disclaimer: This report is based on data entered in to FIRES as of February 15, 2023. Data in FIRES is “live”. As a result, the outcome of any additional data analysis after February 15, 2023, may differ with that in this report.

Of the **9,087** reported fires:

- 62 percent were from the Lower Mainland region
- 14 percent were from Thompson Okanagan region
- 10 percent were from Vancouver Island region
- 9 percent were from Northern BC region
- 4 percent were from the Southeast region
- 1 percent were from other agencies acting on behalf of the Office of the Fire Commissioner



Fires Reporting System Areas

STRUCTURE FIRE-RELATED INJURIES, DEATHS, AND CAUSES

Of all reported fires in 2022, structure fires resulted in the greatest number of injuries and deaths. Most structure fires were residential.

There were 2,433 residential structure fires (76 percent of structure fires). Residential structure fires resulted in 143 injuries (89 percent of total) and 49 deaths (94 percent of total). The most frequent causes of residential structure fires were smoker's materials and open flames. Smoker's materials and open flames resulted in 655 fires, 36 injuries, and 6 deaths. Cooking equipment was the second most frequent cause of residential structure fires resulting in 599 fires, 34 injuries, and 3 deaths.

FIRE SAFETY SYSTEM EFFECTIVENESS

Fire safety system effectiveness was evaluated based on the presence or absence of fire safety systems such as smoke alarms and sprinkler systems:

- Injury rates were significantly higher in structures with a working smoke alarm and no sprinkler protection than when there was no working smoke alarm. This is likely because residents attempted to control the fires themselves when the alarms were activated. However, death rates were lower in structures with working smoke alarms than in structures without a working smoke alarm.
- Death rates were significantly lower whenever fires occurred in structures with sprinkler protection.
- The presence of smoke alarms and/or sprinkler protection significantly reduced the dependence on the fire department to control the fires.

- The presence of smoke alarms and/or sprinkler protection significantly reduced the extent to which fires spread beyond the room of origin.

A working smoke alarm and sprinkler systems create the greatest opportunity for surviving a fire.

FIRE DEMOGRAPHICS

In British Columbia, each year for the last five years, of those people who died in a fire, 35 percent were over the age of 65 and 11 percent were over the age of 80. These numbers will likely increase as according to 2021 census, those over 65 years represented 19 percent of the Canadian population and those over 80 years of age represented 5 percent of the Canadian population. Fire services need to provide more services and targeted public education programs to protect our aging population.

FIRE PREVENTION AND EDUCATION

It is evident from the 2022 fire data and the current fire-related death trends in British Columbia that fire services need to increase community awareness about fire risk-reduction.

For example, according to fire research, having working smoke alarms would reduce the risk of fire deaths by 50 percent. As previously stated, in 2022, only 45 percent of reported structure fires had a working smoke alarm. This indicates a significant public safety education opportunity for the fire services to increase fire prevention education campaigns and programs to promote the importance of working smoke alarms.



FIRE FACTS

Below highlights areas that would benefit, or continue to benefit, from coordinated provincial efforts, fire prevention education programs, and targeted interventions:

- **Electrical-related structure fires:** In 2022, 7 people died, and 25 people were injured due to fires originating an electrical-related fire. In addition, fires associated with rechargeable batteries are increasing. New 2023 fire reporting codes for rechargeable battery fires will allow for the collection of more specific data. Previously, rechargeable battery fires may have been categorized as electrical-related fires. Forty-nine fires started from extension cords and power bars resulting in 7 injuries. One potential reason could be users not adhering to manufacturer instructions or best practices.
- **Drugs, alcohol, and medication:** Suspected impairment, sleep and the suspected use of alcohol, drugs or medication resulted in 8 deaths and 32 injuries.
- **Candles:** Candles remain one of the leading causes in fires with 94 incidents in 2022, resulting in 10 injuries, 2 deaths.
- **Encampments:** 398 fires occurred on properties within encampments. 58 were structure fires; 9 were vehicle fires; 331 were outdoor fires.
- **Vehicles:** Eight fires occurred in vehicles used as a residence in an encampment of persons experiencing homelessness.

3 Statistics Canada. Table 98-10-0027-01 Age (in single years), average age and median age and gender: Canada and forward sortation areas ©

Fire Statistics in 2022

In 2022, 9,087 of fires were reported to the OFC, including 212 fire-related injuries and 86 fire-related deaths.

REPORTING ENTITIES

► **TABLE 1** shows that structure fires and outdoor fires accounted for 86 percent of the total fire events, with vehicle fires accounting for 13 percent. Career fire departments (58 percent) and composite departments (36 percent) reported the majority of the total fire events. There were 23 injuries and 10 deaths per 1,000 fires in 2022.

Table 1. All BC fires (2022) by fire department type and incident type

FIRE DEPARTMENT TYPE	INCIDENT TYPE	2022 TOTAL	% FIRES	# INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	DEATH RATE PER 1,000 FIRES
CAREER	<i>All fires</i>	5,302	58.3%	108	20.4	23	4.3
	Structure fire	1,711	18.8%	84	49.1	20	11.7
	Vehicle fire	387	4.3%	2	5.2	1	2.6
	Outdoor fire	3,178	35.0%	5	1.6	0	0.0
	Person fire	26	0.3%	17	653.8	2	76.9
COMPOSITE	<i>All fires</i>	3,235	35.6%	84	26.0	33	10.2
	Structure fire	1,206	13.3%	60	49.8	16	13.3
	Vehicle fire	693	7.6%	10	14.4	12	17.3
	Outdoor fire	1,322	14.5%	7	5.3	1	0.8
	Person fire	14	0.2%	7	500.0	4	285.7
VOLUNTEER	<i>All fires</i>	485	5.3%	14	28.9	25	51.5
	Structure fire	243	2.7%	11	45.3	14	57.6
	Vehicle fire	114	1.3%	1	8.8	11	96.5
	Outdoor fire	125	1.4%	0	0.0	0	0.0
	Person fire	3	0.0%	2	666.7	0	0.0
OTHER	<i>All fires</i>	65	0.7%	6	92.3	5	76.9
	Structure fire	33	0.4%	6	181.8	2	60.6
	Vehicle fire	26	0.3%	0	0.0	3	115.4
	Outdoor fire	6	0.1%	0	0.0	0	0.0
	Person fire	0	0.0%	0	Undefined	0	Undefined
TOTAL	<i>All fires</i>	9,087	100.0%	212	23.3	86	9.5
	Structure fire	3,193	35.1%	161	50.4	52	16.3
	Vehicle fire	1,220	13.4%	13	10.7	27	22.1
	Outdoor fire	4,631	51.0%	12	2.6	1	0.2
	Person fire	43	0.5%	26	604.7	6	139.5

4 Does not include wildfires or interface fires. There may be a difference between the OFC's and the Coroners Service's fire fatality data due to definitions and criteria. This report provides preliminary data on fire-related incidents and fatalities. The findings should be interpreted with caution as they do not take a coroner's investigative findings into consideration. The OFC and the Coroners Service are working to reconcile their data sets.

➤ **TABLE 2** shows just under 60 percent of 2021 fire reports originated from the Lower Mainland (accounting for 120 injuries and 20 deaths).

Table 2. All BC fires (2021) by region.

FIRE BY REGION	2021 TOTAL	% FIRES	# INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	DEATH RATE PER 1,000 FIRES
Lower Mainland	5,644	62.1%	126	22.3	28	5.0
Vancouver Island	888	9.8%	29	32.7	11	12.4
Thompson Okanagan	1,244	13.7%	25	20.1	18	14.5
South East	358	3.9%	12	33.5	11	30.7
Northern	832	9.2%	15	18.0	7	8.4
Regional districts and other associations	121	1.3%	5	41.3	11	90.9
TOTAL	9,087	100.0%	212	23.3	86	9.5

9,087 fires were reported to the OFC in 2022.
Of the total fire events in BC:



Structure Fires



Outdoor Fires



Vehicle Fires

accounted for
86%

accounted for
13%



METHOD OF FIRE CONTROL

► **TABLE 3** indicates that fire departments controlled 50 percent of fires through water application (40 percent of these events requiring one hand line or less), handheld extinguishers (20 percent), and other firefighting aids (12 percent). Eleven percent of fires burned out without intervention.

Table 3. All BC fires (2022) by method of fire control.

METHOD OF FIRE CONTROL (GROUPED)	METHOD OF FIRE CONTROL SUB-CATEGORIES (FIRE DEPARTMENT INVOLVEMENT ONLY)	2022 TOTAL	% FIRES	# INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	DEATH RATE PER 1,000 FIRES
Hand held extinguisher		1,819	20.0%	17	9.3	4	2.2
Standpipe and hose systems		68	0.7%	1	14.7	0	0.0
Makeshift fire fighting aids		1,058	11.6%	26	24.6	4	3.8
Fire Department – water application	All fires	4,546	50.0%	125	27.5	65	14.3
	25mm (1") or less hose	357	3.9%	3	8.4	1	2.8
	38mm or 42mm (1 1/2" or 1 3/4") hose – 1 hand line	2,666	29.3%	46	17.3	15	5.6
	65mm or 70mm (2 1/2" or 3") hose – 1 hand line	64	0.7%	2	31.3	1	15.6
	38mm or 42mm (1 1/2" or 1 3/4") hose – 2 or more hand lines	918	10.1%	59	64.3	40	43.6
	65mm or 70mm (2 1/2" or 3") hose – 2 or more hand lines	86	0.9%	2	23.3	2	23.3
	Combinations of 38/42mm, 65mm, 77mm, or larger hand lines	114	1.3%	7	61.4	3	43.6
	Portable/fixed water deluge/master stream set	88	1.0%	3	34.1	2	22.7
	Unclassified	253	2.8%	3	11.9	1	4.0
Fire Department – other than water	All fires	123	1.4%	1	8.1	0	0.0
	Dry chemical – under 450kg	5	0.1%	0	0.0	0	0.0
	Dry chemical – 450kg and over	0	0.0%	0	Undefined	0	Undefined
	Combination foam-dry chemical	0	0.0%	0	Undefined	0	Undefined
	Compressed air foam systems	35	0.4%	1	28.6	0	0.0
	Crash-fire foam vehicle – using hand lines	10	0.1%	0	0.0	0	0.0
	Crash-fire foam vehicle – using monitor	1	0.0%	0	0.0	0	0.0
	Pumper – foam hand lines only, via educator/injector	18	0.2%	0	0.0	0	0.0
	Unclassified	54	0.6%	0	0.0	0	0.0
Sprinkler protection		152	1.7%	13	85.5	2	13.2
Fixed system other than sprinklers		43	0.5%	0	0.0	1	23.3
Burned out		993	10.9%	27	27.2	8	8.1
Miscellaneous method of fire control/extinguishment		180	2.0%	1	5.6	0	0.0
Cannot be determined		105	1.2%	1	9.5	2	19.0
TOTAL		9,087	100.0%	212	23.3	86	9.5



STRUCTURE FIRES BY PROPERTY COMPLEX TYPE

➤ **TABLE 4** shows the properties associated with the 3,193 reported structure fires. They account for 161 injuries and 52 deaths. Residential structure fires account for 76 percent of all structure fires and resulted in 89 percent of injuries and 49 percent of deaths.

Table 4. All BC structure fires (2022) by property complex.

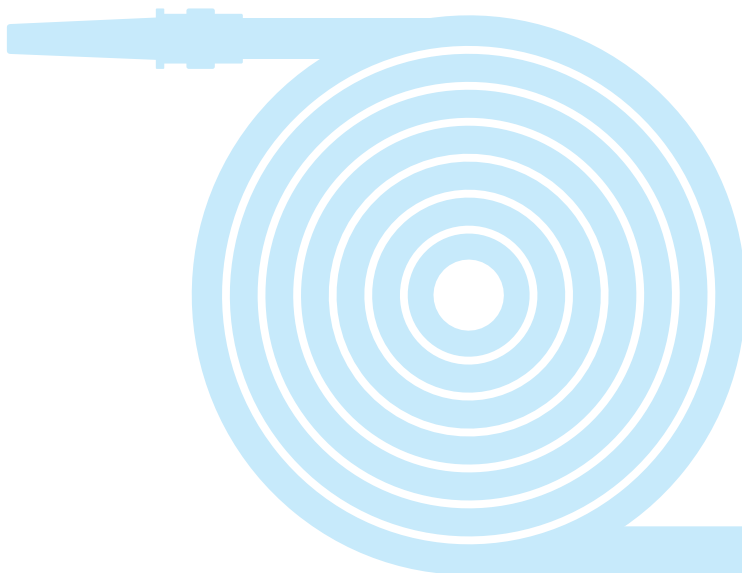
PROPERTY COMPLEX GROUP	PROPERTY COMPLEX SUB-GROUP	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES
ASSEMBLY USE	<i>(Total for whole group)</i>	150	4.7%	2	1.2%	13.3	1	1.9%	6.7
	Amusement park, exhibition & fair ground, stadium	2	0.1%	0	0.0%	0.0	0	0.0%	0.0
	Auditorium, theatre, arena, cultural centre	12	0.4%	0	0.0%	0.0	0	0.0%	0.0
	Church, funeral home	13	0.4%	0	0.0%	0.0	0	0.0%	0.0
	Educational institution (non-residential)	39	1.2%	2	1.2%	51.3	0	0.0%	0.0
	Food or beverage establishment	62	1.8%	0	0.0%	0.0	0	0.0%	0.0
	Recreation, sports facility, sports club, social club	19	0.5%	0	0.0%	0.0	0	0.0%	0.0
INSTITUTIONAL USE	<i>(Total for whole group)</i>	45	1.4%	2	1.2%	44.4	0	0.0%	0.0
	Hospital, medical centre, clinic, sanatorium	19	0.6%	0	0.0%	0.0	0	0.0%	0.0
	Licensed care facility	23	0.7%	1	0.6%	43.5	0	0.0%	0.0
	Prison, penitentiary, jail, detention centre, correctional facility, reformatory	3	0.1%	1	0.6%	333.3	0	0.0%	0.0
RESIDENTIAL USE	<i>(Total for whole group)</i>	2,433	76.2%	143	88.8%	58.8	49	94.2%	20.1
	Camp site/RV park	79	2.5%	6	3.7%	75.9	2	3.8%	25.3
	Educational institution (residential)	2	0.1%	0	0.0%	0.0	0	0.0%	0.0
	Hotel, motel, lodge, hostel, boarding house, dormitory	253	7.9%	15	9.3%	59.3	5	9.6%	19.8
	Residential – row, garden, town housing, condominium	198	6.2%	15	9.3%	75.8	3	5.8%	15.2
	Residential - single detached	1,076	33.7%	66	41.0%	61.3	21	40.4%	19.5
	Residential - apartment	623	19.5%	31	19.3%	49.8	8	15.4%	12.8
	Residential - duplex, 3-plex, 4-plex	73	2.3%	5	3.1%	68.5	1	1.9%	13.7
	Residential - mobile home/trailer park	97	3.0%	4	2.5%	41.2	6	11.5%	61.9
	Residential - with business/mercantile, up to 3 storeys	32	1.0%	1	0.6%	31.3	3	5.8%	93.8
BUSINESS USE	Office building	51	1.6%	4	2.5%	78.4	0	0.0%	0.0

TABLE 4 CONTINUED ON NEXT PAGE

PROPERTY COMPLEX GROUP	PROPERTY COMPLEX SUB-GROUP	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES
COMMERCIAL/ MERCANTILE USE	<i>(Total for whole group)</i>	174	5.4%	2	1.2%	11.5	0	0.0%	0.0
	Commercial centre including fuel dispensing (may include restaurant, stores, etc.)	34	1.1%	0	0.0%	0.0	0	0.0%	0.0
	Commercial centre, shopping centre, strip mall	91	2.8%	1	0.6%	11.0	0	0.0%	0.0
	Department store, variety store	37	1.2%	0	0.0%	0.0	0	0.0%	0.0
	Service station with storage in back lot (includes fuel dispensing)	7	0.2%	1	0.6%	142.9	0	0.0%	0.0
	Strip mall including fuel dispensing	5	0.2%	0	0.0%	0.0	0	0.0%	0.0
MANUFACTURING USE	Industrial manufacturing	85	2.7%	2	1.2%	23.5	0	0.0%	0.0
STORAGE USE	<i>(Total for whole group)</i>	12	0.4%	1	0.6%	83.3	0	0.0%	0.0
	Grain elevator	2	0.1%	0	0.0%	0.0	0	0.0%	0.0
	Industrial storage facility, bulk storage tanks	10	0.3%	1	0.6%	100.0	0	0.0%	0.0
OTHER SPECIAL USE	<i>(Total for whole group)</i>	225	7.0%	4	2.5%	17.8	2	3.8%	8.9
	Air transportation use, air terminal, airport	2	0.1%	0	0.0%	0.0	0	0.0%	0.0
	Building/structure unclassified (describe)	107	3.4%	2	1.2%	18.7	2	3.8%	18.7
	Bus terminal	2	0.1%	0	0.0%	0.0	0	0.0%	0
	Car park	25	0.8%	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	36	1.1%	1	0.6%	27.8	0	0.0%	0.0
	Harbour, waterfront property, marine terminal	4	0.1%	1	0.6%	250.0	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)	21	0.7%	0	0.0%	0.0	0	0.0%	0.0
	Railway terminal, yard (excludes subway)	2	0.1%	0	0.0%	0.0	0	0.0%	0.0
	Utility	22	0.7%	0	0.0%	0.0	0	0.0%	0.0
UNKNOWN	Cannot be determined	18	0.6%	1	0.6%	55.6	0	0.0%	0.0
TOTAL		3,193	100.0%	161	100.0%	50.4	52	100.0%	16.3



76% of all structure fires in 2022
were **residential structures** and
lead to **89%** of injuries and **94%**
of all structure fire related deaths.





RESIDENTIAL STRUCTURE FIRES

► **TABLE 5** shows the room of fire origin for the 2,433 residential structure fires reported in 2022 (resulting in 143 injuries and 49 deaths). Kitchens accounted for just under one-quarter of fires (22 percent of injuries and 4 deaths), bedrooms accounted for 17 percent of fires (31 percent of injuries and 25 percent of the deaths), and living rooms accounted for 8 percent of fires (11 percent of injuries and 45 percent of deaths).

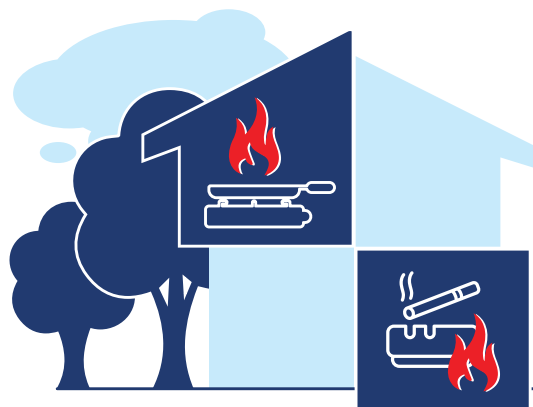
Table 5. All BC residential structure fires (2022) by room of fire origin.

ROOM OF ORIGIN GROUPED	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES	# EXTENDED BEYOND ROOM OF ORIGIN	% EXTENDED BEYOND ROOM OF ORIGIN
Bathroom	61	2.5%	1	0.7%	16.4	0	0.0%	0.0	5	8.2%
Bedroom	418	17.2%	44	30.8%	105.3	12	24.5%	28.7	56	13.4%
Office	8	0.3%	1	0.7%	125.0	0	0.0%	0.0	0	0.0%
Closet	11	0.5%	0	0.0%	0.0	0	0.0%	0.0	0	0.0%
Assembly area – other	27	1.1%	0	0.0%	0.0	1	2.0%	37.0	12	44.4%
Laundry room	59	2.4%	0	0.0%	0.0	0	0.0%	0.0	3	5.1%
Hallways and means of egress	59	2.4%	1	0.7%	16.9	0	0.0%	0.0	10	16.9%
Living room	194	8.0%	15	10.5%	77.3	22	44.9%	113.4	58	29.9%
Function area – unclassified	12	0.5%	1	0.7%	83.3	0	0.0%	0.0	6	50.0%
Foyer	16	0.7%	1	0.7%	62.5	0	0.0%	0.0	2	12.5%
Kitchen	579	23.8%	31	21.7%	53.5	4	8.2%	6.9	50	8.6%
Dining area	18	0.7%	2	1.4%	111.1	1	2.0%	55.6	5	27.8%
Porch	99	4.1%	7	4.9%	70.7	0	0.0%	0.0	37	37.4%
Balcony	99	4.1%	5	3.5%	50.5	0	0.0%	0.0	37	37.4%
Storage area	58	2.4%	5	3.5%	86.2	0	0.0%	0.0	39	67.2%
Garage	104	4.3%	8	5.6%	76.9	0	0.0%	0.0	46	44.2%
Outside area – other	119	4.9%	2	1.4%	16.8	1	2.0%	8.4	50	42.0%
Utility and equipment and furnace room	55	2.3%	1	0.7%	18.2	0	0.0%	0.0	15	27.3%
Trash area	24	1.0%	0	0.0%	0.0	0	0.0%	0.0	8	33.3%
Chimney, flue pipe, gas vent	51	2.1%	1	0.7%	19.6	0	0.0%	0.0	9	17.6%
Service facilities	14	0.6%	0	0.0%	0.0	0	0.0%	0.0	4	28.6%
Crawl space	19	0.8%	2	1.4%	105.3	0	0.0%	0.0	9	47.4%
Structural area – other	180	7.4%	9	6.3%	50.0	0	0.0%	0.0	90	50.0%
All other areas	149	6.1%	6	4.2%	40.3	8	16.3%	53.7	111	74.5%
TOTAL	2,433	100.0%	143	100.0%	58.8	49	100.0%	20.1	662	27.2%

► **TABLE 6** shows the source of ignition for residential structure fires. Twenty-seven percent of fires resulted from smoker's materials and open flames (25 percent of injuries and 6 deaths, with the source of ignition shown in the table. Nearly 25 percent of fires were caused by cooking equipment (24 percent of injuries and 3 deaths). In 21 percent of cases the source of ignition could not be determined.

Table 6. All BC residential structure fires (2022) by source of ignition.

SOURCE OF IGNITION GROUPED	SOURCE SUB-CATEGORY (SMOKER'S MATERIAL ONLY)	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES
Cooking equipment		599	24.6%	34	23.8%	56.8	3	6.1%	5.0
Heating equipment		183	7.5%	7	4.9%	38.3	2	4.1%	10.9
Appliances & equipment		116	4.8%	4	2.8%	34.5	2	4.1%	17.2
Electrical distribution equipment		180	7.4%	21	14.7%	116.7	7	14.3%	38.9
Other electrical equipment		69	2.8%	2	1.4%	29.0	0	0.0%	0.0
Smoker's material and open flame	(Total for whole group)	655	26.9%	36	25.2%	55.0	6	12.2%	9.2
	Cigarette, pipe, or cigar	149	6.1%	8	5.6%	53.7	1	2.0%	6.7
	Ashtray	19	0.8%	0	0.0%	0.0	0	0.0%	0.0
	Lighter or match	278	11.4%	15	10.5%	54.0	2	4.1%	7.2
	Lamp/lantern – non-electric	3	0.1%	0	0.0%	0.0	0	0.0%	0.0
	Candle	68	2.8%	5	3.5%	73.5	2	4.1%	29.4
	Cutting torch/welding equipment	2	0.1%	1	0.7%	500.0	0	0.0%	0.0
	Hot ashes/embers (non-smoking)	21	0.9%	0	0.0%	0.0	0	0.0%	0.0
	Torch (non-cutting/welding)	39	1.6%	4	2.8%	102.6	1	2.0%	25.6
	Unclassified/cannot be determined	76	3.1%	3	2.1%	39.5	0	0.0%	0.0
Exposure		72	3.0%	0	0.0%	0.0	0	0.0%	0.0
Miscellaneous igniting object		49	2.0%	4	2.8%	81.6	0	0.0%	0.0
Cannot be determined		510	21.0%	35	24.5%	68.6	29	59.2%	56.9
TOTAL		2,433	100.0%	143	100.0%	58.8	49	100.0%	20.1



One-quarter **(25%)** of fires were caused by **cooking equipment**.

An additional **27%** resulted from **smoker's materials** and **open flames**.

6 PC3100-PC3900 throughout the report when referring to residential-use structure fires.

➤ **TABLE 7** shows human failing (e.g., asleep, distracted, impaired) was responsible for 40 percent of fires resulting in 47 percent of injuries and 27 percent of deaths. Other major acts/omissions were mechanical/electrical failure/malfunction (14 percent of fires, 14 percent of injuries, and 14 percent of deaths) and incendiary fires (12 percent fires, eight percent injuries, and four deaths). The act or omission involved could not be determined in 18 percent of fires.

Table 7. All BC residential structure fires (2022) by act or omission.

ACT OR OMISSION GROUPED	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES
Incendiary fires	292	12.0%	11	7.7%	37.7	4	8.2%	13.7
Misuse of source of ignition	146	6.0%	9	6.3%	61.6	2	4.1%	13.7
Misuse of material ignited	101	4.8%	4	2.8%	34.5	0	0.0%	0.0
Mechanical/electrical failure/malfunction	336	13.8%	20	14.0%	59.5	7	14.3%	20.8
Construction, design, or installation deficiency	30	1.2%	3	2.1%	100.0	0	0.0%	0.0
Misuse of equipment	76	3.1%	2	1.4%	26.3	0	0.0%	0.0
Human failing	969	39.8%	67	46.9%	69.1	13	26.5%	13.4
Vehicle accident	2	0.1%	0	0.0%	0.0	0	0.0%	0.0
Miscellaneous act or omission	18	0.7%	0	0.0%	0.0	0	0.0%	0.0
Cannot be determined	438	18.0%	25	17.5%	57.1	23	46.9%	52.5
Not applicable	10	0.4%	2	1.4%	200.0	0	0.0%	0.0
TOTAL	2,433	100.0%	143	100.0%	58.8	49	100.0%	20.1

➤ **TABLE 8** shows that just over one third (46 percent) of fires originated on the ground floor of the building (48 percent injuries and 55 percent deaths) and 18 percent commenced on the second storey (22 percent injuries and 20 percent deaths).

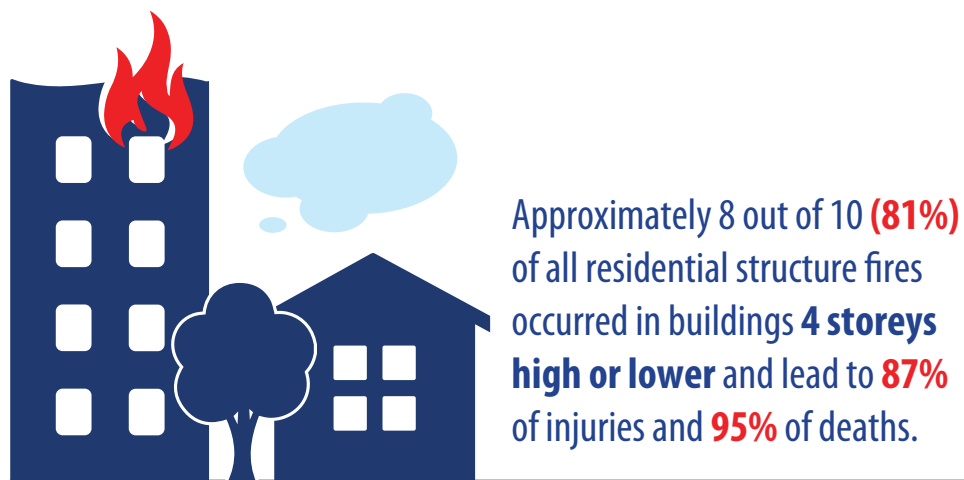
Table 8. All BC residential structure fires (2022) by level of fire origin.

LEVEL OF ORIGIN GROUPED	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES
Basement, sub-basement	191	7.9%	11	7.7%	57.6	4	8.2%	20.9
Ground floor, grade level or grade to 3m	1,107	45.5%	68	47.6%	61.4	27	55.1%	24.4
Second storey or over 3m to 6m above grade	433	17.8%	32	22.4%	73.9	10	20.4%	23.1
3rd Storey or over 6m to 9m (20ft to 30ft) above grade	184	7.6%	11	7.7%	59.8	2	4.1%	10.9
4th to 12th storey (inclusive) or over 9m to 36m (30ft to 120ft) above grade	234	9.6%	11	7.7%	47.0	2	4.1%	8.5
Over 12 Storey or over 36m (120ft)	29	1.2%	1	0.7%	34.5	0	0.0%	0.0
Crawl space, under structure	14	0.6%	1	0.7%	71.4	0	0.0%	0.0
Mezzanine (any floor)	1	0.0%	0	0.0%	0.0	0	0.0%	0.0
Roof level (includes concealed roof space, attic)	69	2.8%	5	3.5%	72.5	0	0.0%	0.0
Exposure fire	90	3.7%	0	0.0%	0.0	0	0.0%	0.0
Cannot be determined	81	3.3%	3	2.1%	37.0	4	8.2%	49.4
TOTAL	2,433	100.0%	143	100.0%	58.8	49	100.0%	20.1

► **TABLE 9** shows that approximately eight out of ten (81 percent) of all residential structure fires occurred in buildings four storeys high or lower (83 percent of injuries and 88 percent of deaths).

Table 9. All BC residential structure fires (2022) by building height.

BUILDING HEIGHT GROUPED	# FIRES	% FIRES	# INJURED	% INJURIES	INJURY RATE PER 1,000 FIRES	# DEATHS	% DEATHS	DEATH RATE PER 1,000 FIRES
One storey above grade	639	26.3%	33	23.1%	51.6	20	40.8%	31.3
Two storeys above grade	803	33.0%	51	35.7%	63.5	11	22.4%	13.7
Three storeys above grade	309	12.7%	25	17.5%	80.9	8	16.3%	25.9
Four storeys above grade	226	9.3%	11	7.7%	48.7	4	8.2%	17.7
5 or 6 storeys above grade	151	6.2%	10	7.0%	66.2	1	2.0%	6.6
7 to 12 storeys above grade	133	5.5%	3	2.1%	22.6	1	2.0%	7.5
Thirteen storeys and over above grade	115	4.7%	9	6.3%	78.3	2	4.1%	17.4
Cannot be determined	57	2.3%	1	0.7%	17.5	2	4.1%	35.1
TOTAL	2,433	100.0%	143	100.0%	58.8	49	100.0%	20.1





INFLUENCE OF LIFE SAFETY SYSTEMS ON RESIDENTIAL FIRE OUTCOMES

➤ **TABLE 10** looks at the fire outcomes for residential use structure fires. Smoke alarm status represents those fires that had an alarm activated ('yes') or no confirmed working smoke alarm installed ('no'). Similarly, sprinkler status represents those fires that had confirmed 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 or for sprinkler protection. Where appropriate, 95 percent confidence intervals are included to show the estimated range around each rate and percentage.

Table 10. All BC residential structure fires (2022) by life safety system.

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	511 21%	20 14%	39.1 22.0	56.3	2 4%	3.9 3.9	3.9	9.2% 7.9%	0.5%	1.8% 1.2%	2.3%
No	Yes	159 7%	10 7%	62.9 23.9	101.9	3 6%	18.9 18.9	18.9	23.3% 19.9%	26.6%	14.3% 11.1%	16.6%
Yes	No	596 24%	41 29%	68.8 47.7	89.8	8 16%	13.4 13.4	13.4	40.4% 38.4%	42.4%	22.5% 20.8%	24.2%
No	No	1,167 48%	72 50%	61.7 47.4	75.9	36 73%	30.8 30.8	30.8	60.0% 58.5%	61.4%	42.6% 41.1%	44.0%
TOTAL		2,751 100%	118 100%	42.9 35.2	50.6	36 100%	13.1 13.1	13.1	36.2% 35.3%	37.1%	33.0% 32.1%	33.9%

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.
- The presence of smoke alarms and/or sprinkler protection significantly reduced the extent to which fires spread beyond the room of origin.



FIRE CASUALTIES: 5-YEAR TRENDS

From 2018 to 2022 there were 1,005 fire-related injuries reported to the OFC. During the same time, there was a total of 257 fire-related deaths reported.

► **TABLE 11** shows the annual casualties for all fires reported to the OFC. The average injury rate per 1,000 fires over this time was 25.3 and the average death rate was 6.5. The injury rate for fire/police was 1.7 and there were no fatalities for first responders in this data.

Table 11. All fire casualties and police/fire casualties (2018-2022).

YEAR	# FIRES	ALL CASUALTIES						FIRE/POLICE			
		# INJURIES	% INJURIES	INJURY RATE	# DEATHS	% DEATHS	DEATH RATE	# INJURIES	INJURY RATE	# DEATHS	DEATH RATE
2018	6,844	206	20.5%	30.1	28	10.9%	4.1	20	2.9	0	0.0
2019	7,003	206	20.5%	29.4	28	10.9%	4.0	10	1.4	0	0.0
2020	7,313	183	18.2%	25.0	56	21.8%	7.7	12	1.6	0	0.0
2021	9,406	198	19.7%	21.1	59	23.0%	6.3	11	1.2	0	0.0
2022	9,087	212	21.1%	23.3	86	33.5%	9.5	15	1.7	0	0.0
TOTAL	39,653	1,005	100.0%	25.3	257	100.0%	6.5	68	1.7	0	0.0

► **TABLE 12** shows all injuries and police/fire injuries by injury seriousness for all fires reported to the OFC between 2018 and 2022. The average rate for minor injuries over this time was 11.3 per 1,000 fires, with corresponding rates of 9.4 for light injuries and 4.7 for serious injuries. The rates for fire/police injuries were lower and the rate of serious injuries for this group was 0.2 per 1,000 fires.

Table 12. All fire casualties and police/fire casualties (2018-2022) by injury seriousness.

YEAR	# FIRES	ALL CASUALTIES						FIRE/POLICE					
		# MINOR INJURIES	RATE MINOR INJURIES	# LIGHT INJURIES	RATE LIGHT INJURIES	# SERIOUS INJURIES	RATE SERIOUS INJURIES	# MINOR INJURIES	RATE MINOR INJURIES	# LIGHT INJURIES	RATE LIGHT INJURIES	# SERIOUS INJURIES	RATE SERIOUS INJURIES
2018	6,844	97	14.2	79	11.5	30	4.4	12	1.8	7	1.0	1	0.1
2019	7,003	89	12.7	79	11.3	38	5.4	6	0.9	3	1.0	1	0.1
2020	7,313	82	11.2	77	10.5	24	3.3	5	0.7	7	1.0	0	0.0
2021	9,406	96	10.2	64	6.8	38	4.0	5	0.5	5	0.5	1	0.1
2022	9,087	84	9.2	73	8.0	55	6.1	10	1.1	2	0.2	3	0.3
TOTAL	39,653	448	11.3	372	9.4	185	4.7	38	1.0	24	0.6	6	0.2

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 2018 and 2022. Fifty-two percent of injuries and 28 percent 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. Those 80 and over were 2.5 times greater in terms of the death to Canadian population ratio.

Table 13. All fire casualties (2018-2022) by age group.

AGE GROUP	ALL FIRES				CORRECTED (REMOVING UNKNOWN)		% POPULATION	DEATH: POPULATION RATIO
	# INJURIES	% INJURIES	# DEATHS	% DEATHS	% INJURIES	% DEATHS		
Under five	15	1.5%	1	0.4%	3.1%	0.5%	4.95%	0.1
5 to 9	7	0.7%	2	0.8%	1.5%	1.1%	5.55%	0.2
10 to 14	4	0.4%	2	0.8%	0.8%	1.1%	5.75%	0.2
15 to 19	11	1.1%	2	0.8%	2.3%	1.1%	5.44%	0.2
20 to 24	19	1.9%	9	3.5%	4.0%	4.9%	5.95%	0.8
25 to 29	37	3.7%	6	2.3%	7.7%	3.2%	6.55%	0.5
30 to 34	55	5.5%	13	5.1%	11.4%	7.0%	6.81%	1.0
35 to 39	42	4.2%	13	5.1%	8.7%	7.0%	6.79%	1.0
40 to 44	52	5.2%	13	5.1%	10.8%	7.0%	6.49%	1.1
45 to 49	35	3.5%	6	2.3%	7.3%	3.2%	6.23%	0.5
50 to 54	52	5.2%	16	6.2%	10.8%	8.6%	6.40%	1.4
55 to 59	38	3.8%	15	5.8%	7.9%	8.1%	7.16%	1.1
60 to 64	36	3.6%	22	8.6%	7.5%	11.9%	6.95%	1.7
65 to 69	30	3.0%	22	8.6%	6.2%	11.9%	5.98%	2.0
70 to 74	17	1.7%	13	5.1%	3.5%	7.0%	4.99%	1.4
75 to 79	9	0.9%	9	3.5%	1.9%	4.9%	3.41%	1.4
80 and over	27	2.9%	26	9.3%	6.0%	11.9%	4.60%	2.6
Unknown	524	52.1%	72	28.0%				
TOTAL	1,005	100.0%	257	100.0%				

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



FIRE-RELATED CASUALTIES: 2022 CASUALTY BEHAVIOUR

The following tables detail the information recorded about the fire-related casualties resulting from structure fires reported to the OFC in 2022 (resulting in 143 injuries and 49 deaths).

➤ **TABLE 14** shows the conditions of casualties from 2022 residential structure fires. Almost one-quarter of injuries (28 percent) were unknown/unclassified and 43 percent were awake with no impairment at the time of injury. Almost 55 percent of deaths were unknown/unclassified, and one-fifth (22 percent) were asleep at the time of the fire.

Table 14. All structure fire casualties (2022) by condition of casualty.

CONDITION OF CASUALTY	# INJURIES	% INJURIES	# DEATHS	% DEATHS
Awake or no physical/mental impairment	62	43.4%	4	8.2%
Too young to react to fire emergency	1	0.7%	1	2.0%
Asleep at time of fire	18	12.6%	11	22.4%
Bedridden or other physical disability	2	1.4%	3	6.1%
Mental disability	3	2.1%	0	0.0%
Impairment by alcohol, drugs, or medication	17	11.9%	3	6.1%
Under restraint or detention	0	0.0%	0	0.0%
Unknown	34	23.8%	23	46.9%
Unclassified	6	4.2%	4	8.2%
TOTAL	143	100.0%	49	100.0%

➤ **TABLE 15** shows the actions of casualties from 2022 residential structure fires. Over one-fifth of injuries (23 percent) were unknown/unclassified, and 22 percent voluntarily entered/remained in the fire area, and 37 percent were injured while attempting to escape. More than half of deaths (61 percent) were unknown/unclassified, and 22 percent died attempting to escape.

Table 15. All structure fire casualties (2022) by action of casualty.

ACTION OF CASUALTY	# INJURIES	% INJURIES	# DEATHS	% DEATHS
Injured while attempting to escape	48	33.6%	11	22.4%
Over-exertion, heart attack	1	0.7%	0	0.0%
Voluntarily entered/remained - rescue	3	2.1%	1	2.0%
Voluntarily entered/remained - fire fighting	32	22.4%	0	0.0%
Voluntarily entered/remained - save property	8	5.6%	0	0.0%
Loss of judgement/panic	7	4.9%	2	4.1%
Received delayed warning	0	0.0%	0	0.0%
Did not act	11	7.7%	5	10.2%
Unknown	19	13.3%	27	55.1%
Unclassified	14	9.8%	3	6.1%
TOTAL	143	100.0%	49	100.0%

► **TABLE 16** shows the cause of injuries residential structure fires. Nearly half (45 percent) of deaths resulted from smoke inhalation and 34 percent resulted from burns. Almost 35 percent of deaths were unknown/unclassified.

Table 16. *All structure fire casualties (2022) by cause of injury.*

CAUSE OF INJURY	# INJURIES	% INJURIES	# DEATHS	% DEATHS
Smoke inhalation	68	47.6%	22	44.9%
Burns - fire/flames	48	33.6%	8	16.3%
Burns - hot substances	10	7.0%	0	0.0%
Struck by objects/persons	0	0.0%	0	0.0%
Falls	5	3.5%	1	2.0%
Explosives	4	2.8%	1	2.0%
Electrical current	0	0.0%	0	0.0%
Unknown	3	2.1%	16	32.7%
Unclassified	5	3.5%	1	2.0%
TOTAL	143	100.0%	49	100.0%

► **TABLE 17** shows the cause of failure to escape from residential structure fires. Over 78 percent of injuries and 67 percent of deaths were classified as unknown/unclassified with respect to the cause of failure to escape. A further 12 percent of deaths were classified as trapped by fire/smoke.

Table 17. *All structure fire casualties (2022) by cause of failure to escape.*

CAUSE OF FAILURE TO ESCAPE	# INJURIES	% INJURIES	# DEATHS	% DEATHS
Trapped by fire/smoke - vertical openings	7	4.9%	3	6.1%
Trapped by fire/smoke - horizontal openings	6	4.2%	6	12.2%
High flame spread of combustible surfaces	6	4.2%	6	12.2%
Building collapse	0	0.0%	0	0.0%
Falling debris	0	0.0%	0	0.0%
Explosion	11	7.7%	1	2.0%
Exit locked/obstructed	1	0.7%	1	2.3%
Outdoor fire	0	0.0%	0	0.0%
Unknown	68	47.6%	22	44.9%
Unclassified	44	30.8%	11	22.4%
TOTAL	143	100.0%	49	100.0%

Appendix A:

Community Fire-Risk Reduction Dashboard

DATA VISUALIZATION INITIATIVE BETWEEN STATISTICS CANADA AND THE PROVINCE OF BRITISH COLUMBIA'S OFFICE OF THE FIRE COMMISSIONER (OFBC)

Canada's Geospatial Explorer—Community Fire-Risk Reduction Dashboard

According to Statistics Canada, between 2005 to 2015, 72 to 75 percent of fires in Canada occurred in residences, accounting for 87 percent of reported fire-related deaths. In British Columbia, in 2022, 76 percent of fires occurred in residences, resulting in 89 percent of fire-related injuries and 94 percent of fire-related deaths. In British Columbia, in 2022, only 45 percent of the structure fires reported to the OFC had a working smoke alarm. Evidence shows that when a fire breaks out, a functioning smoke alarm can reduce the risk of death by up to 50 percent. More effort is needed from all levels of government, fire service organizations, and other stakeholders to improve this statistic and further reduce injuries and save lives.

Fire prevention research has linked specific social characteristics and increased fire risk. Educating populations within high fire-risk areas about fire safety and ensuring the presence of working smoke alarms has resulted in a dramatic decrease in fires; the OFC encourages community fire services to use community population data to inform and focus their public fire prevention education strategies.

Research has also shown that fires occur non-randomly and are disproportionately associated within specific locations and populations. Populations and locations can now be identified by integrating fire incident data and locations (i.e., dissemination areas, or neighbourhoods) with other social domain data (e.g., census, housing, income, health-related, justice, etc.). In the past, this approach was only available

to fire services with access to data management and geospatial analytics expertise.

Today, the Province, in collaboration with Statistics Canada, is leveraging Statistics Canada's new Geospatial Data Visualization platform (Community Fire-Risk Reduction Dashboard), its expertise in data curation and analysis, and its legislative authority to collect fire data. The primary objective of this project is to gather data from across various social domains to inform evidence-based policy and program interventions for those most at risk of fire-related injuries or death.

The Community Fire Risk Reduction Dashboard uses data from the National Fire Information Database (NFID), the Canadian Index of Multiple Deprivation (CIMD), as well as data from the 2016 Census. The Dashboard is intended to be used by fire service professionals to help identify fire-risk in neighbourhoods within communities. Selected population demographics are linked with fire incidents to form a severity composite index to aid fire services in effectively applying proven fire prevention treatments, including fire prevention education, to reduce fire-risk in communities. The Dashboard provides the OFC with new tools to help identify and apply targeted fire safety education, such as ensuring working smoke alarms are present in homes, to those who need it most. There will be fewer fire-related injuries and deaths.

