SEATTLE FIRE DEPARTMENT

Community Risk Assessment

2024

Contributions and Acknowledgements

The Seattle Fire Department (SFD) would like to sincerely thank the following individuals and organizations that have provided input, feedback, data analysis, and assistance in drafting this Community Risk Assessment (CRA).

The Fire Marshal's Office/Fire Prevention Division is coordinating this effort under the Seattle Fire Marshal, Assistant Chief Timothy J. Munnis. The study's lead author is Dan Flores, who heads SFD's Community Risk Reduction and Performance Team and serves as the Fire Marshal's Office Language Access Advocate. Other key contributions have been made by Karen A. Grove, Fire Prevention Director; Theresa Ngo, Management Systems Analyst; and Assistant Fire Marshals Debra Sutey, Deputy Chief, and John Harmon, Deputy Chief.

SFD's Public Affairs Division is a key partner in this effort and leads SFD's community education and outreach including our path-breaking Community Fire Safety Advocate (CFSA) program. We are grateful to Kim Schmanke, SFD Public Affairs Director, and her entire team for their effective outreach.

Key institutional support from the **Washington State Fire Marshal's Office** (SFMO) is gratefully acknowledged, including multiple trainings and the initial CRA template which Seattle has used. **Vision 20/20** helped fund and facilitate the Washington State program being led by the SFMO.

SFD has also benefitted from program development guidance from Craig Honold and Karen Berard-Reed from the **National Fire Protection Administration** (NFPA). NFPA makes major contributions to the work of local jurisdictions and SFD is grateful for the organization. We have also benefitted tremendously from the affordable and innovative Community Risk Assessment Insight Generator (CRAIG 1300) produced by **mySidewalk** in conjunction with NFPA.

Mayor Bruce Harrell and Public Safety Committee Chair Robert "Bob" Kettle have led the City in smart and important investments in firefighter staffing as well as alternative response programs to sustain SFD's ability to respond to our community immediately and effectively, in the face of increasing calls and incident volumes.

Harold D. Scoggins, the Chief of the Seattle Fire Department, has championed SFD's transformation into a data-driven organization that centers compassion and excellence in our mission. His leadership and support for this Community Risk Assessment is gratefully acknowledged.

Table of Contents

Project Overview

This Community Risk Assessment (CRA) for the Seattle Fire Department (SFD) evaluates the risk from natural and human-caused sources to the city of Seattle. This report uses data from multiple sources including demographics from the U.S. Census Bureau, fire incidents reported through the National Fire Incident Reporting System (NFIRS), and historic data to assess basic levels of risk to the community. This project provides an avenue to gain a greater understanding of the risks that impact those who visit, work, or live in Seattle.

The sections of this basic risk assessment include organizational history & information, community profile, demographics, incident response data, natural disasters, unique & special hazards, and critical infrastructure. It concludes with a summary of the risks discovered.

The Seattle Fire Department's Community Risk Assessment is a working document and will undergo additions and revisions over time. With each revision, SFD will use data to drive and share a better understanding of risks in our community and connect them to the scope of fire and emergency services provided in Seattle. This CRA document is not meant to identify and examine every risk in the community. But rather, the overarching intent of this basic CRA is to drive discussion on risk mitigation strategies and make data-driven and research-based decisions on how to best address community risk in Seattle with the resources available. Empowered with this data, this document serves as a starting point for Community Risk Reduction (CRR) planning and implementation.

Although this is our first official Community Risk Assessment, SFD has performed community risk assessments and reduction programs for several years. SFD monitors incident volumes and response times to measure our performance and make recommendations to elected officials regarding our staffing levels and response capabilities. Our annual building inspection program is guided by risk-based areas of emphasis each year. We provide free fire safety inspections for all commercial, multi-family residential, and industrial buildings throughout the City, achieving almost 20,000 prevention inspections a year. SFD has used funding from the City and FEMA grants to provide essential public education services in multiple languages. SFD also pioneered the Community Fire Safety Advocates (CFSA) program almost two decades ago. The CFSA program hires trusted community leaders who join SFD employees in outreach and education events dedicated toward our Seattle's immigrant communities. The CFSA's help SFD deliver public outreach in a culturally and linguistically appropriate manner.

In 2022, the Seattle Fire Marshal directed staff to develop a formal Community Risk Reduction program based on NFPA 1300 standards to aggregate and extend SFD's efforts. The Seattle Fire Prevention Division partnered with a third-party vendor to design a Community Risk Assessment Insight Generator (CRAIG 1300) online dashboard. This dashboard combines SFD's incident and response data with a wealth of demographic and infrastructure information available from the United States Census Bureau. As of 2024, SFD now has more information than we have ever had about the communities we serve. This information will be a powerful tool

allowing us to develop and offer truly risk-based programs that are tailored to the actual needs of Seattle residents and businesses.

This data will be vital to SFD's commitment to providing excellent service to all people in our city. The CRAIG 1300 dashboard provides insights not only into *where* incidents are occurring, but also *who* they are impacting. It is important to SFD to understand the risks experienced by the people we serve, and whether this varies based on their age, ability, income, race, religion, or primary language spoken. Our first CRA presents initial results of this effort. Seattle Fire will continue to refine the data to prioritize and implement strategies to help mitigate those risks in the coming years. This effort will also involve stakeholder outreach and engagement, so that SFD can learn from the people we serve as well as the data.

SFD's goal is to respond to emergencies and to help prevent and mitigate the impact of these incidents in our community. Seattle's first Community Risk Assessment represents an important first step in planning for community risk reduction in Seattle.

More detailed information about demographics, buildings, and incidents is available on our website: https://dashboards.mysidewalk.com/seattle-fire-department-craig-plus-o/welcome.

Section 1: Organizational History & Information

The Seattle Fire Department (SFD) was established by Seattle Ordinance No. 1212 on October 17, 1889. The services provided by the Seattle Fire Department include:

- Critical fire suppression and emergency medical care
- Technical teams, including technical and heavy rescue, dive rescue, tunnel rescue, marine fire response, and hazardous materials (HazMat) response
- Fire prevention and public education
- Fire investigation
- Mutual aid response to neighboring jurisdictions

> The mission of the Seattle Fire Department is to save lives and protect property through emergency medical service, fire and rescue response and fire prevention. We respond immediately when any member of our community needs help with professional, effective and compassionate service.

The Seattle Fire Department has 33 fire stations located within five battalions throughout the city. SFD deploys engine companies, ladder companies, and aid and medic units to mitigate loss of life and property resulting from fires, medical emergencies, and other disasters. The Department has units for hazardous materials responses, marine responses, and high-angle and confined-space rescues. In addition, SFD provides leadership and members to several disaster response teams: Puget Sound Urban Search and Rescue, Metropolitan Medical Response System, and wildland fire fighting. SFD's fire prevention efforts include fire code

enforcement, inspections and plan reviews of fire and life safety systems in buildings, public education programs, regulation of hazardous materials storage and processes, and regulation of public assemblies. As of 2024, the department has roughly 80 civilian personnel and 1,000 uniformed personnel, including roughly 900 firefighter-EMTs and 60 firefighter-paramedics.

The Seattle Fire Department is the first and only fire department in Washington to receive a Protection Class 1 rating from the Washington State Ratings Bureau—the highest possible rating that measures a department's effectiveness and commitment to providing the highest standard of public safety. This places Seattle Fire in the top 1% of fire departments in the nation. WSRB serves Washington residents as the non-profit independent insurance rating agency for fire departments, fire districts, and regional fire authorities within the state. With the new rating, SFD has joined approximately 460 other fire districts nationwide with a Class 1 rating.

Table 1: List of Seattle Fire Stations

Station 2	2320 4th Ave	**Station 26**	800 S Cloverdale St
Station 3	Dock 3, 1735 W Thurman St	**Station 27**	1000 S Myrtle St
Station 5	925 Alaskan Way	**Station 28**	5968 Rainier Ave S
Station 6	405 Martin Luther King Jr Way S	**Station 29**	2139 Ferry Ave SW
Station 8	110 Lee St	**Station 30**	2931 S Mount Baker Blvd
Station 9	3829 Linden Ave N	**Station 31**	1319 N Northgate Way
Station 10	400 S Washington St	**Station 32**	3715 SW Alaska St
Station 11	1514 SW Holden St	**Station 33**	9645 Renton Ave S
Station 13	3601 Beacon Ave S	**Station 34**	633 32nd Ave E
Station 14	3224 4th Ave S	**Station 35**	8729 15th Ave NW
Station 16	6846 Oswego Pl NE	**Station 36**	3600 23rd Ave SW
Station 17	1050 NE 50th St	**Station 37**	7700 35th Ave SW
Station 18	1521 NW Market St	**Station 38**	4004 NE 55th St
Station 20	2800 15th Ave W	**Station 39**	2800 NE 127th St
Station 21	7304 Greenwood Ave N	**Station 40**	9401 35th Ave NE
Station 22	401 N 130th St	**Station 41**	2416 34th Ave W
Station 25	1300 E Pine St		

Map 1: Seattle Fire Department Battalions and Stations

STATION, MAP AND APPARATUS PROFILE

- 33 Fire Stations
- Medic One at Harborview Medical Center
- 32 Engines
- 12 Ladder Trucks
  * (One ladder truck is part of the Rescue 1 Unit)
- 5 Aid Units (Basic Life Support)
- 2 Peak-time Aid Units
- 8 Medic Units (Advanced Life Support)
- 1 Health One Unit
- 2 Air Trucks
- 2 Hose Wagons
- 4 Fire Boats
- Additional specialized apparatus

Battalion 4

24 E24 A31
39 E39 L5
31
40 E40
35 E35 M31
21 E21
16 E16
Battalion 6
18 E18 L8 M18 B4
17 E17 L9 M17 B6 E31
38 E38
FB Chief Seattle 03
09 E9
20 E20
22 E22
Battalion 2
41 E41
34 E34
08 E8 L6
02 E2 L4 A2 A4
25 E25 L10 A25 B2
HEALTH1 FIU PIO DEP1 SAFT2
HMC M1 M10 M44
HQ
10 E10 L1 A5 A10
06 E6 L3
E5 FB Leschi 05
29 E29
14 A14 R1
13 E13 B5
30 E30
36 E36
32 E32 L11 M32 B7
Battalion 5
28 E28 L12 M28
Battalion 7
27 E27
37 E37 L13
11 E11
26 E26 M26
33 E33

Section 2: Community Profile

Population

Seattle is located in the Puget Sound region of western Washington and is part of King County. The city has a total area of 143 square miles (369 km²), of which 84 square miles (217 km²) is land and 59 square miles (152 km²) is water. As of the 2020 U.S. census, the total population of Seattle was roughly 726,000, an increase of 20% over 2010 figures. Seattle's population growth rate is higher than the state rate of 15% and much higher than the national rate of 7% during the same period. The growth in Seattle's population is one cause of the increase in medical and fire suppression services provided by SFD. The growing demand for SFD services is an important challenge facing the department and will be explored later in this report.

Table 2: Seattle at a Glance

Area (sq. mi.)	142.5	Total Buildings	222,989
Population	755,078	*Residential*	94%
% of Population Below Poverty	10%	*Commercial/Industrial*	5%
Population Density per Sq. Mi.	8,999	*Other*	1%
Critical Facilities/Infrastructure	3,098	*High-Rises (≥ 75 ft)*	524
Median Home Value	$767,500	Building Density per Sq. Mi.	2,658

Income, Poverty, and Housing Affordability

Seattle is a city with growing income disparity. The technology sector in particular has attracted high wage jobs, while other sectors pay considerably less. The 2021 median household income in Seattle is $105,000 and has grown by 75% since 2010. The median income is ~28% higher than the state median of $82,000 and ~53% higher than the national median of $69,000.

People experiencing poverty or living without shelter may have vulnerabilities that require additional care and services from their local fire agency. In Seattle, our poverty levels and housing affordability levels are similar to national average. However, Seattle is experiencing a housing crisis due to a shortage of housing, and one important trend for Seattle Fire is the increasing number of services provided to vulnerable populations.

Table 3: Poverty in Seattle

People Below Poverty Level	Families Below Poverty Level
10% Seattle, WA	**5%** Seattle, WA
10% Washington	**6%** Washington
13% United States of America	**9%** United States of America

Table 4: Housing Affordability Challenges in Seattle

Homeowners Spending 30% or More on Housing Costs	Renters Spending 30% or More on Housing Costs
23% Seattle, WA	**43%** Seattle, WA
24% Washington	**46%** Washington
22% United States of America	**46%** United States of America

Buildings: Characteristics, Inspections and Maintenance

Seattle has roughly 200,000 buildings, of which roughly 80% are one- and two-family residential dwellings, and roughly 20% are multifamily, commercial, or industrial buildings.

Table 5: Building Inventory in Seattle

Total Properties **222,989** properties Seattle, WA	**Building Median Year Built** **1956** year Seattle, WA
3,302,788 properties Washington	**1978** year Washington
152,814,399 properties United States of America	**1968** year United States of America

Chart 1: Housing Units in Seattle by Year Built
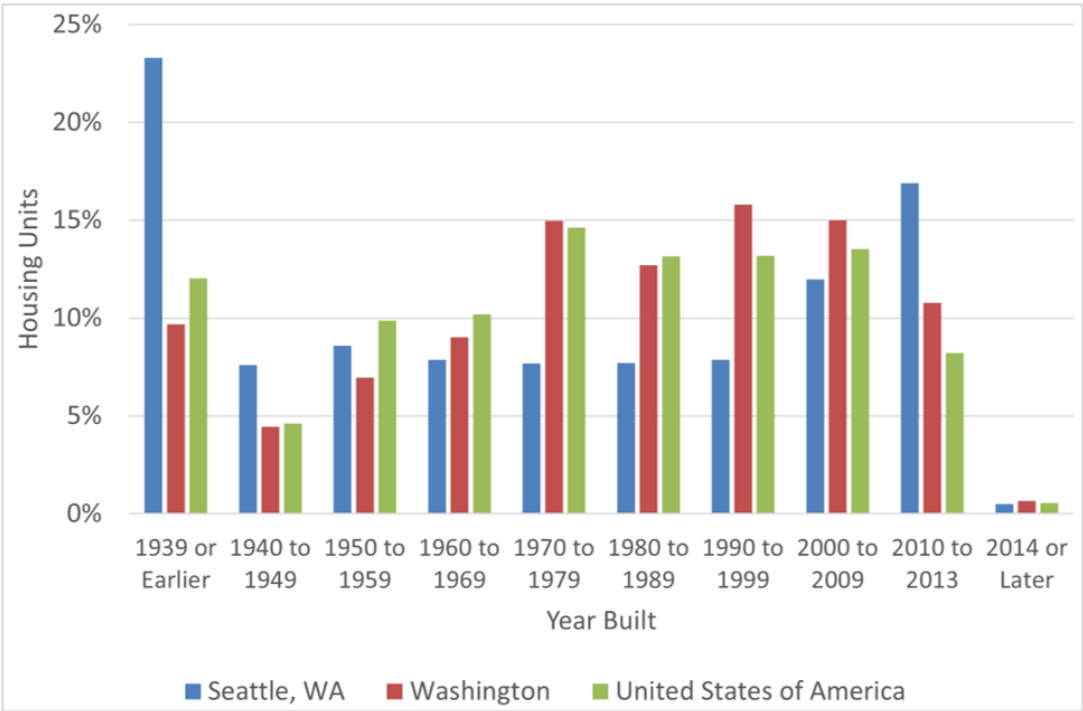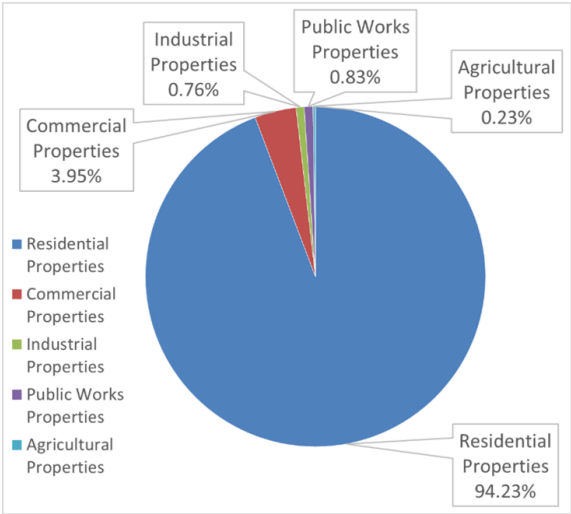

Chart 2: Property Types in Seattle

The Fire Code requires larger buildings to have fire alarms, sprinklers and other fire protection systems. These systems are required by code to be maintained regularly and repaired. The Seattle Fire Department tracks repairs. Currently over 4,000 of our 27,000 fire protection systems in Seattle, or 15%, are deficient and require repairs. Another 7,000 systems, or over one-fourth of all systems, are past due for code-required inspections and maintenance. Since 2017, the Seattle Fire Department has used a third-party vendor that makes it possible for us to notify every property owner of their code obligations with respect to system testing and repairs. When building owners fail to take action, after education and notification, SFD then commences enforcement. The education then enforcement approach has helped drive compliance rates higher, however we only have funding for one inspector for this program which has limited our ability to achieve even higher compliance as of 2023.

Section 3: Demographic Profile

Race and Ethnicity

Seattle is a vibrant city with a diverse population. The three most common ethnic groups in Seattle are White residents at 62% of the total population, Asian residents at 16%, and Hispanic or Latino residents at 7%.

Over 19% of the residents of Seattle are foreign born and roughly 1 in 5 people speak a language other than English at home. The most common non-English languages spoken at home by Seattle residents include Chinese; Spanish; Amharic, Somali, or other Afro-Asiatic languages; Vietnamese; Tagalog; and Korean.

Chart 3: Racial Identity in Seattle
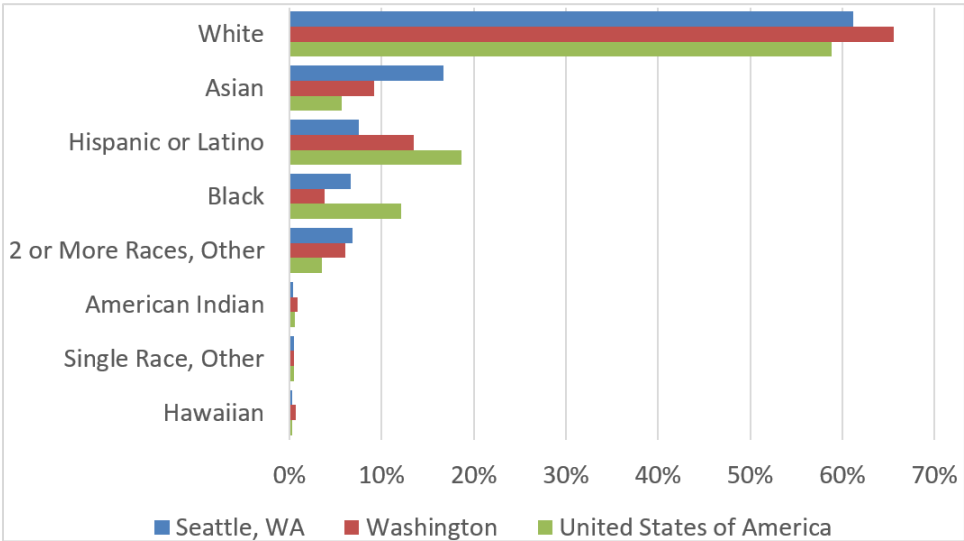
Age, Education, and Employment

On average, Seattle is slightly younger than the nation. Seattle residents also have a higher degree of education attainment. Seattle has a slightly lower unemployment rate than the nation. More detailed information is available on our website: https://dashboards.mysidewalk.com/seattle-fire-department-craig-plus-o/welcome.

As SFD works to understand the vulnerabilities in our community and deliver programs to meet our communities' needs, we are aware of our dependent populations including young people and the elderly. In particular, the youngest and oldest in our community may face mobility challenges. With age comes reduced hearing and eyesight. These factors may increase the risk of the being hurt or killed in a fire.

Table 7: People Living with a Disability

People Living With a Disability
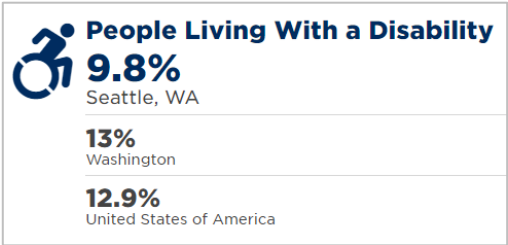**9.8%**
Seattle, WA

13%
Washington

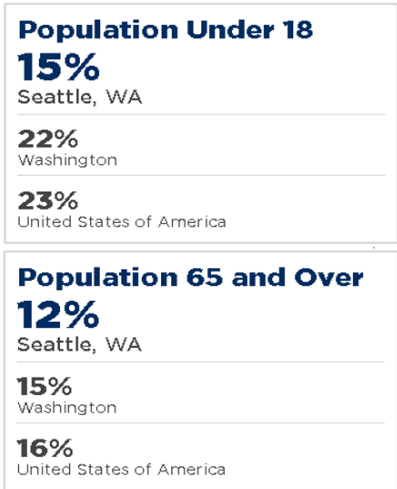**12.9%**
United States of America

In Seattle, almost one in ten people is living with a disability. Many people with disabilities are also elderly. Disabilities can be temporary or permanent, apparent or hidden. Some categories of disabilities include mobility, visual, hearing, speech, and cognitive. It is important to consider how risk differs for people with disabilities, and how these disabilities could impact an individual's ability to identify and respond in an emergency. The Seattle Fire Department is committed to providing a high standard of care and reducing risk for all our residents.

Section 4: Incident Response Data

Seattle uses incident response data from the National Fire Incident Reporting System (NFIRS), which is a federal standard that categorizes incidents based on their cause and origin, as well as the National Emergency Medical Services Information System (NEMSIS), which is the national system used to collect, store, and share emergency medical response data. Understanding our incident data is the first step in combining incident data with community data and characteristics to develop a Community Risk Reduction program. This will help us identify areas for prevention and become better able to predict and mitigate incidents.

In Seattle, the majority of incident responses involve emergency medical services or false alarms rather than actual fires. For 2019-2023, EMS accounted for 79% of total incidents, followed by false alarms at 9%, and then fire incidents at 5%.

**Table 6: The Young and the Old in Our Community**

Population Under 18
15%
Seattle, WA

22%
Washington

23%
United States of America

Population 65 and Over
12%
Seattle, WA

15%
Washington

16%
United States of America

Table 8: SFD Responses by Incident Categories (2019-2023)

Incident Category	2019	2020	2021	2022	2023	5-Yr Total	2023 Total%	2023 Non-EMS%
1-Fire	**2,408**	**2,836**	**4,796**	**5,237**	**5,387**	**20,664**	**5%**	**25%**
Structure Fires incl. Confined Fires	*618*	*678*	*988*	*1,342*	*1,277*	*4,903*	*1%*	*6%*
Vehicle Fires	*217*	*211*	*276*	*277*	*252*	*1,233*	*0%*	*1%*
Natural Vegetation: Brush, Grass, Wildland	*243*	*194*	*374*	*355*	*487*	*1,653*	*0%*	*2%*
Outdoor Rubbish: Dumpster, Trash, Waste	*1,039*	*1,485*	*2,755*	*2,974*	*3,061*	*11,314*	*3%*	*14%*
Outside Equipment & Storage	*20*	*21*	*33*	*37*	*33*	*144*	*0%*	*0%*
Cultivated Vegetation: Crops, Timber	*0*	*0*	*8*	*3*	*1*	*12*	*0%*	*0%*
Fire, Other	*271*	*247*	*362*	*249*	*276*	*1,405*	*0%*	*1%*
2-Overpressure Rupture, Explosion, Overheat (No Fire)	**274**	**227**	**250**	**188**	**179**	**1,118**	**0%**	**1%**
3-Emergency Medical Services (EMS)	**72,890**	**61,717**	**68,564**	**78,842**	**82,743**	**364,756**	**79%**	**N/A**
4-HazMat	**886**	**630**	**936**	**941**	**1,072**	**4,465**	**1%**	**5%**
5-Service Calls	**2,404**	**2,225**	**3,009**	**3,529**	**3,243**	**14,410**	**3%**	**15%**
6-Good Intent Calls	**2,753**	**2,108**	**2,404**	**2,360**	**2,607**	**12,232**	**3%**	**12%**
7-False Alarms	**6,856**	**5,267**	**7,042**	**8,162**	**8,896**	**36,223**	**9%**	**41%**
8-Natural Disaster or Severe Weather	**7**	**7**	**13**	**5**	**1**	**33**	**0%**	**0%**
9-Special Incident	**175**	**182**	**281**	**211**	**186**	**1,035**	**0%**	**1%**
Grand Total	**88,653**	**75,199**	**87,295**	**99,475**	**104,087**	**454,936**	**100%**	**100%**

As the table shows, SFD's incident response services provided to the community have increased quickly over the five-year period. For example, fire incidents increased by 124%, from 2,408 fire responses in 2019 to 5,387 in 2023. The increase in suppression and medical services required by our community puts pressure on SFD's response times. SFD has been supported by the elected officials in increasing our on-duty staffing levels to help maintain our response times over the past several budget cycles. This

Chart 4: SFD Responses by Incident Categories (2019-2023)

investment in right-sizing our staffing and apparatus counts has helped mitigate the risk to our community but is not yet complete. SFD will continue to monitor our response times and NFPA standards of cover and work with elected officials to maintain the services required in our community.
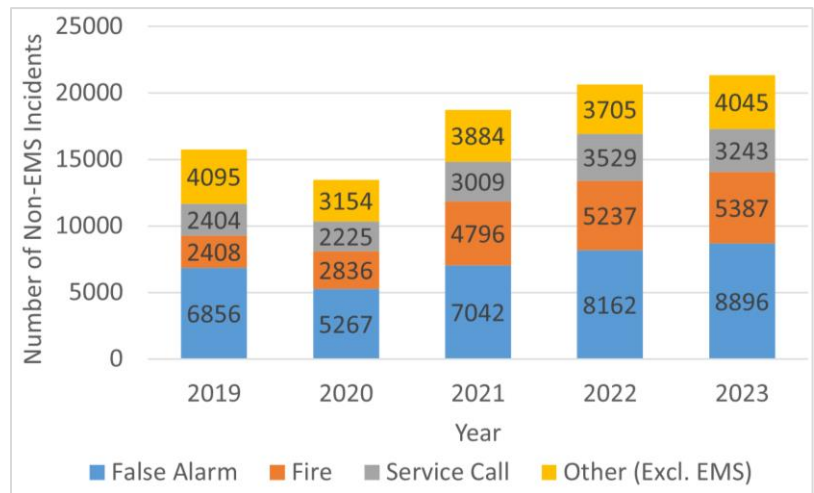
Fire Incidents

In this report, when we talk about **fire incidents**, we are referring to incidents in the NFIRS 100 series (NFIRS incident type category 1), as shown in the table above. Fire incidents exclude medical responses and false alarms. Fire responses are further categorized as structure fires, vehicle fires, and outdoor fires. **Structure fires** include building fires as well as fires involving sheds, bus shelters, mobile homes, piers, bridges, and other structures (NFIRS incident type codes 110-129). See also Appendix 1 for more information about the NFIRS definitions related to structure fires.

Of the top fire incidents reported in Seattle for 2019-2023, nearly 74% involved some variation of outdoor rubbish or trash fires, 14% involved cooking fires, 7% involved building fires, and 5% involved vehicle fires. These numbers have trended upward over the past 5 years. Comparing all fire incidents from 2023 against 2019, vehicle fires went up by 12% and building fires went up by 40%, whereas cooking fires went up by 117% and combined outdoor rubbish fires went up by 157%. This large increase in outdoor fires is putting a burden on SFD's Operations crews

Table 9: SFD's Top Fire Incidents by Incident Type (2019-2023)

Incident Type	2019	2020	2021	2022	2023	Total
151-Outside rubbish, trash or waste fire	465	645	1,395	1,655	1,688	5,848
150-Outside rubbish fire, other	415	631	1,059	918	1,029	4,052
113-Cooking fire, confined to container	312	321	496	668	677	2,474

154-Dumpster or other outside trash receptacle fire	153	196	288	384	320	1,341
111-Building fires	196	218	284	315	275	1,288
131-Passenger vehicle fire	157	168	195	199	176	895
160-Special outside fire, other	146	141	203	138	128	756
140-Natural vegetation fire, other	121	92	170	145	208	736
142-Brush, or brush and grass mixture fire	95	80	150	155	215	695

Emergency Medical Incidents

In Seattle, the majority of our emergency medical responses are categorized as lower acuity in nature. A **low acuity** response is one that does not present an immediate danger to life, health, or property. Examples of low acuity medical responses include calls related to minor pain or flu-like symptoms.

From 2019 to 2023, low acuity responses in Seattle increased by 59%. Units responding to low acuity calls are committed to that incident, and are therefore unavailable for fires, rescues, or more serious medical emergencies. Our Mobile Integrated Health (MIH) program aims to reduce the burden of these responses from our Operations division to improve their readiness and availability, while providing exceptional care to citizens in need.

Table 10: SFD's EMS Patient Acuity (2019-2023)

Patient Acuity	2019	2020	2021	2022	2023	Grand Total
Non-Acute/Routine	N/A	N/A	N/A	N/A	799	799
Lower Acuity/Other	28,822	32,698	35,777	43,830	45,854	186,981
Emergent	30,309	29,653	33,787	35,001	35,991	164,741
Critical	3,560	5,282	5,705	5,977	5,392	25,916
Deceased	691	869	1,078	1,214	1,207	5,059
Grand Total	63,382	68,502	76,347	86,022	89,243	383,496

When responding to an emergency medical incident, the **primary impression** is a brief statement describing the symptom, problem, or condition that is the reason for a medical call. In Seattle, the top primary impressions of EMS patients include injury, generalized weakness, shortness of breath, altered mental status, and overdose. Since 2019, overdoses due to opioids have increased by over 500%.

Table 11: SFD's Top Primary Impression of EMS Patients (2023)

Primary Impression	2019	2023	% Change
Injury	3,879	10,449	169%
Generalized Weakness	5,682	9,542	68%
No Complaints or Injury/Illness Noted	4,738	6,145	30%
Shortness of Breath	2,372	4,168	76%
Altered Mental Status	2,349	4,154	77%

Overdose - Fentanyl and Other Opioids	582	3,804	554%
Abdominal Pain	2,375	3,310	39%
Injury of Head	2,260	3,275	45%
Chest Pain / Discomfort	531	3,207	504%
Pain (Non-Traumatic)	1,709	2,823	65%
Alcohol Use	3,750	2,661	-29%
Anxiety Reaction/Emotional Upset	1,062	1,755	65%
Syncope / Fainting	1,590	1,492	-6%
Dizziness	1,362	1,411	4%
Substance Abuse	1,487	1,135	-24%
Behavioral/Psychiatric Episode	1,053	1,055	0.1%

Structure Fires

Although structure fires may not be as common as outdoor fires in Seattle, they pose a greater risk of injury, death, and property loss, particularly in residential structures. In Seattle, the overall number of structure fires is trending up over the past five years.

Chart 5: Residential and Non-Residential Structure Fires in Seattle (2019-2023)
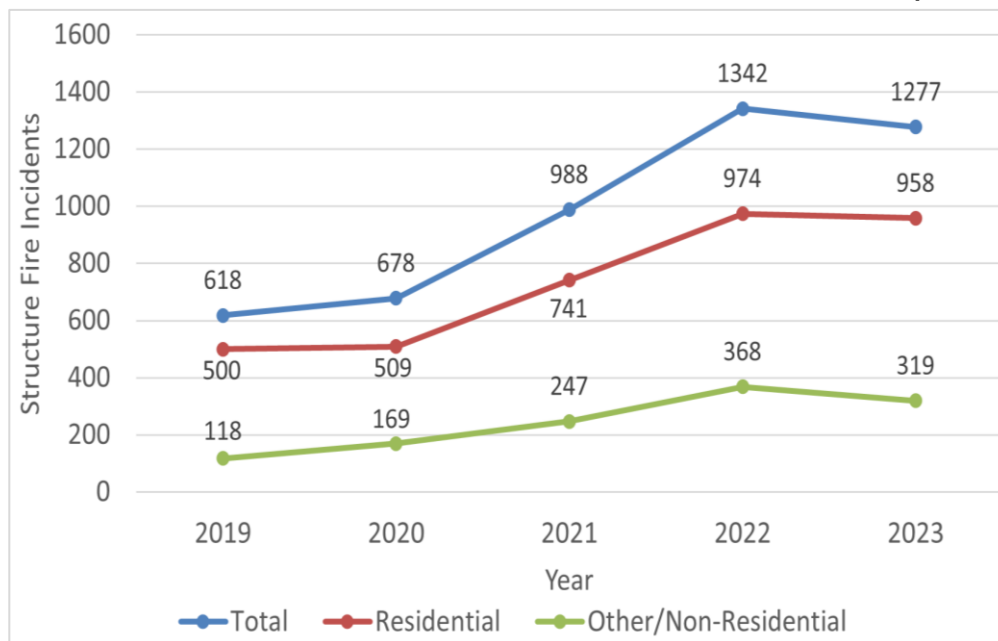
Residential Structure Fire Trends, Causes, and Injuries

Fires in residential buildings account for the large majority of structure fires. From 2019 to 2023, roughly 75% of fire incidents in structures involved some type of single- or multi-family dwelling, boarding house, or dormitory. The prevalence of fire incidents in residential buildings is relevant for our community risk assessment in Seattle. Data further show that residential occupancies

are far more likely to involve fire incidents that may result in injury or death. One reason residential fires are more deadly is that people sleep in residences. Another reason is that most one- and two-family residential structures do not have fire sprinklers, so fires that occur in these buildings are much more likely to become larger and more dangerous.

Table 12: Civilian Injuries and Deaths Due to Structure Fires, by Property Type (2019-2023)

Property Use Type	# of Fires	# of Civilian Deaths	# of Civilian Injuries
0 – Other	63	3	0
1 – Assemblies	109	2	0
2 – Educational	37	0	0
3 – Health Care, Detention, Correction	51	0	0
4 – Residential	3,682	20	61
5 – Mercantile or Business	230	0	0
6 – Industrial, Utility, Agriculture	7	0	0
7 – Manufacturing	21	0	0
8 – Storage	78	1	1
9 – Outside or Special	620	7	9

It is important to understand the causes of residential fires, given the number of fires occurring in these structures. SFD's data shows that the leading cause of residential structure fires in Seattle involved cooking (including stoves, ovens, fryers, and grills).

Chart 6: Leading Causes of Residential Structure Fires in Seattle (2019-2023)
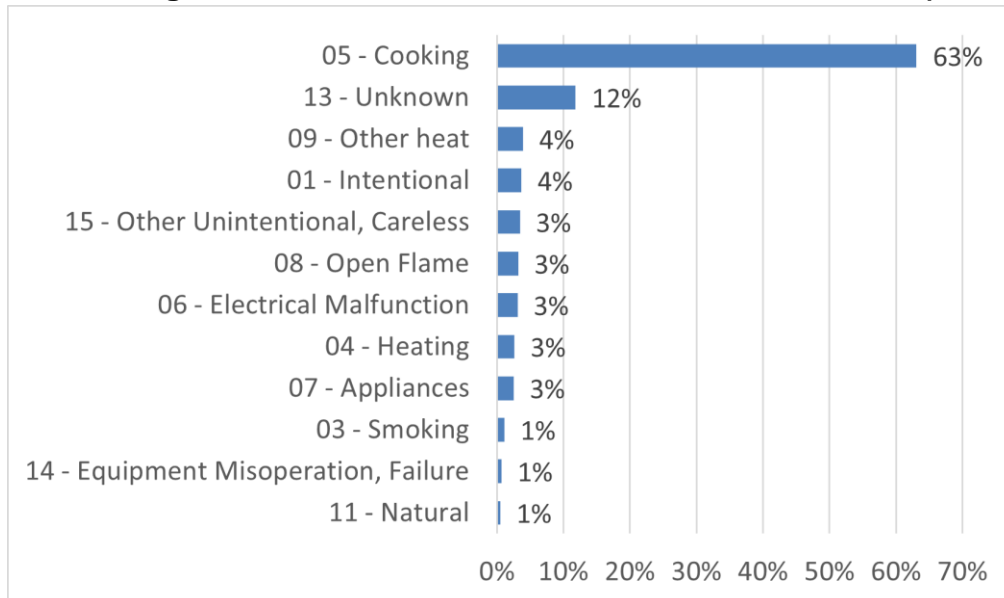
In terms of fires that result in injuries, cooking again appears at the top of the list, followed by misused or improperly discarded materials, open flame (including candles, lighters, matches, etc.), and other heat sources (including fireworks, sparks, or explosives).

This data provides important information that SFD will consider in our community risk reduction program. See also Appendix 2 for more information about the NFIRS definitions and data related to fire causes.

Non-Residential/Commercial Structure Fire Trends, Causes, and Injuries

Fires in commercial and non-residential buildings in Seattle account for roughly 25% of structure fires, as seen in Chart 5 above. Although this category has fewer overall fires, fires in high-rise offices, warehouses, and stadiums or shopping malls have the potential to cause significant property loss and loss of life.

Cooking is among the leading causes of commercial structure fires. Other top causes of fires in commercial structures include intentional ignition (arson), and other heat sources including fireworks, sparks, or explosives. This finding is consistent with fire data from throughout the United States and underscores the importance of prevention efforts related to cooking fires. SFD's Community Risk Reduction program will build on the work the department is already doing to address cooking fires, including services provided in multiple languages. In addition, SFD's Fire Marshal's Office will use this data to evaluate programmatic focus on testing and maintenance of kitchen hoods.

Chart 7: Leading Causes of Commercial Structure Fires in Seattle (2019-2023)
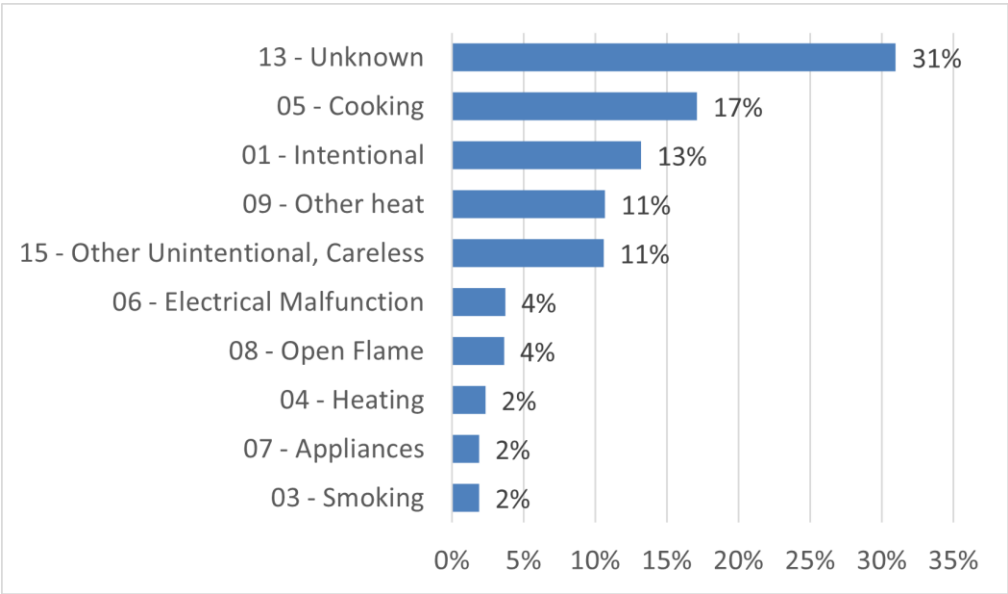
Section 5: Neighborhoods, Communities, and Service

SFD has guided the CRA process to focus on the residents we serve. Our goal is to fully understand how we are meeting their needs, and what steps we can take to promote effectiveness and service to everyone. In this section of the report, we share some of the rich findings from this effort. More data and results can be found in our website: https://dashboards.mysidewalk.com/seattle-fire-department-craig-plus-o/welcome.

Location – Which Neighborhoods are Most Affected by Overdoses?

In Seattle, emergency responses to overdoses have grown considerably over the last five years. The following heatmap shows where these incidents have occurred, which are heavily concentrated in the downtown core. Areas that experienced the greatest number of overdose responses in mid to late 2023 include Belltown, the Central Business District, Pioneer Square, and the International District.

**Map 2: Overdose Responses,
Downtown Seattle Area (July 2023-January 2024)**
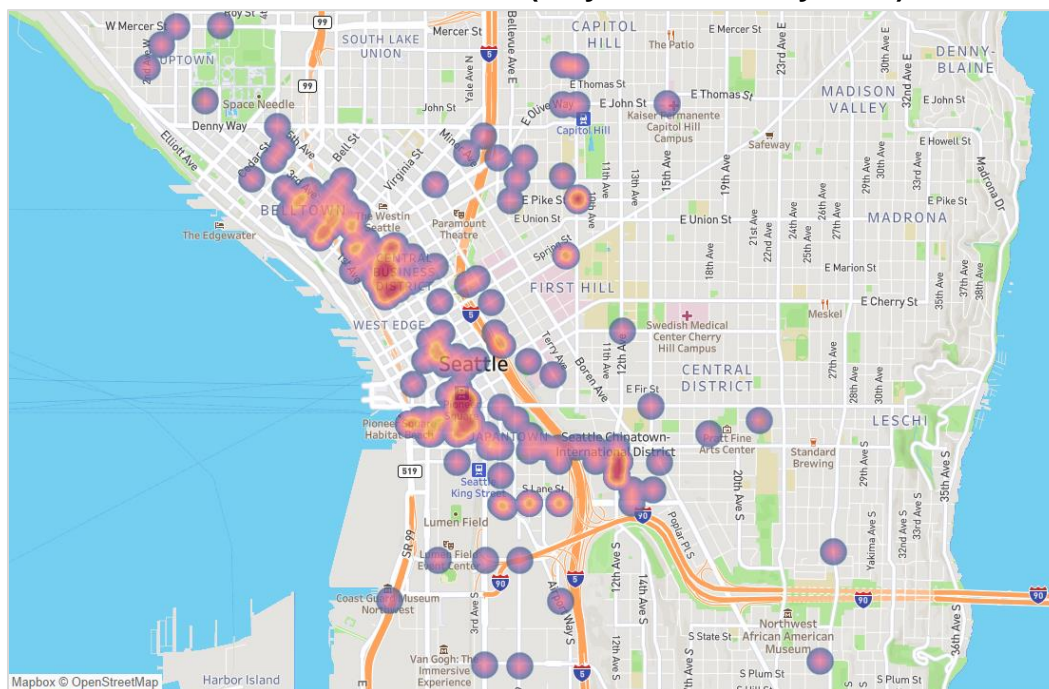
Location – Which Neighborhoods are Most Affected by Residential Fires?

Given the number of injuries that occur in residential fires, SFD also analyzed which neighborhoods are most exposed to residential fires.

Many Seattleites experience a very low risk of fire with well less than 1 person per 1,000 experiencing a residential fire in 2023. In our highest risk neighborhoods, 23 out of every 1,000 people experienced a residential fire in 2023.
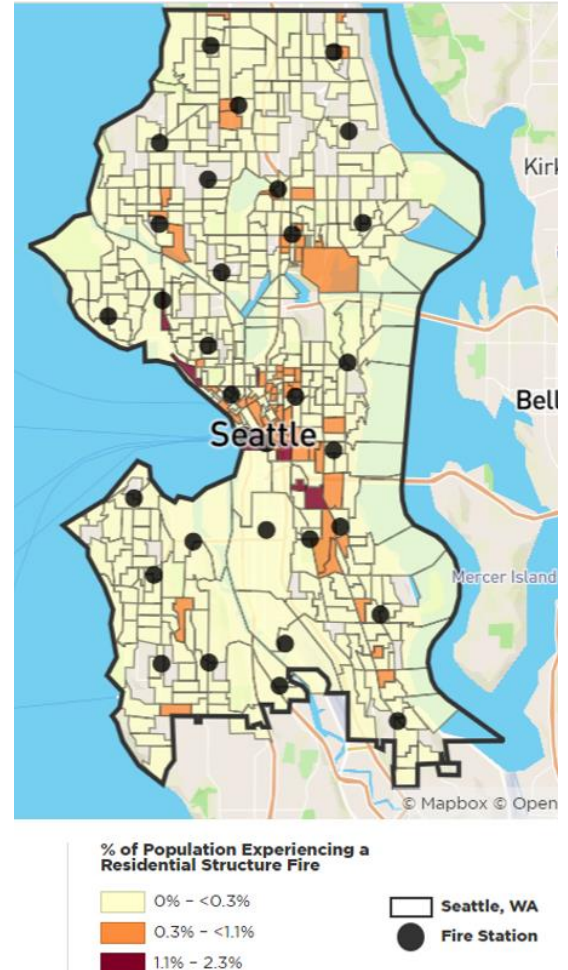
Neighborhoods that experience the greatest number of residential fires per capita include Pioneer Square, the International District, North Beacon Hill, South Lake Union, West Uptown, and Interbay—all of which experienced at least 11 residential fires per 1,000 people in 2023. This map provides useful information to help guide SFD's community risk reduction education in the coming year.

Which Communities are Most Affected by Fire?

To explore the intersection of fire risk and demographics, SFD analyzed two variables at a time, such as (1) fire incidents and (2) language spoken. The results are depicted in the following maps using gradations of color from light to deep, indicating how much both variables intersect. If you have not used "bi-variate" maps like this before, we encourage you to consult the legend at the bottom of each map while reviewing the data.

The map below overlays residential home fires with areas that have a greater proportion of people who identify as non-white. Areas with the deepest or strongest hues show where a greater number of racially diverse residents live (the aqua/blue hues, based on Census Bureau data) and where there is a higher incidence of residential fires per capita (the magenta/pink hues, using SFD's incident data). Areas with deeper or stronger indigo/purple hues show where there may be a high correlation between residential fires and racial diversity. Given the color differentiation in the map, we can identify areas where racially diverse communities experience disproportionate fire risk. These neighborhoods include the International District, North Beacon Hill, Rainier Vista, and Kenwood.

Map 3: Fire Frequency in Seattle Neighborhoods, Residential Fires Only (2023)

% of Population Experiencing a Residential Structure Fire

- 0% – <0.3%
- 0.3% – <1.1%
- 1.1% – 2.3%

- Seattle, WA
- Fire Station

Map 4: Home Fires and Racial Variation (2021-2023)
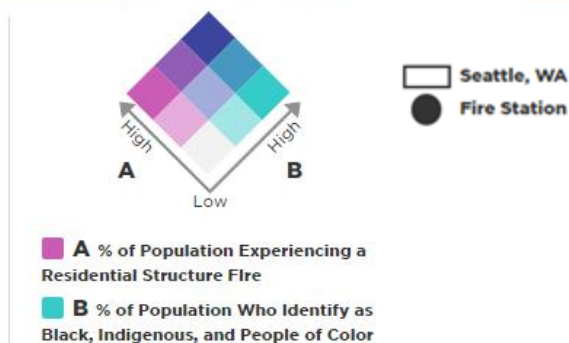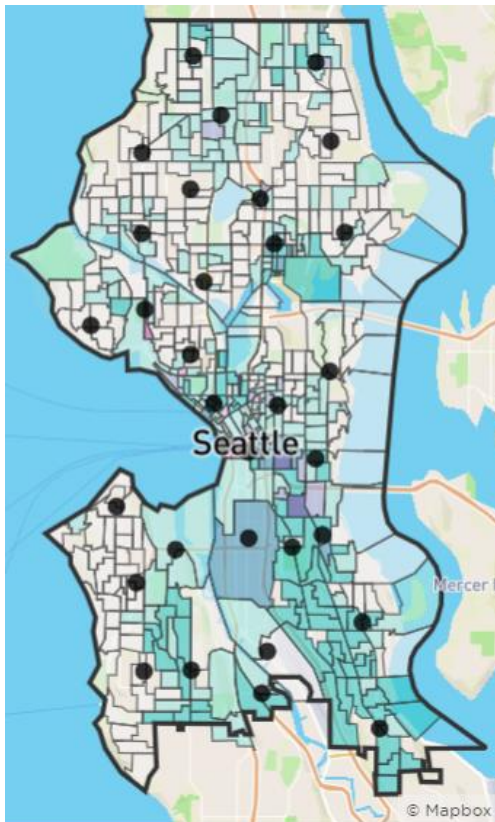
Map 5: Home Fires and Language Variation (2021-2023)

A % of Population Experiencing a Residential Structure Fire

B % of Population Who Identify as Black, Indigenous, and People of Color

Seattle, WA
Fire Station

A % of Population Experiencing a Residential Structure Fire

B % of Population with Limited English Proficiency
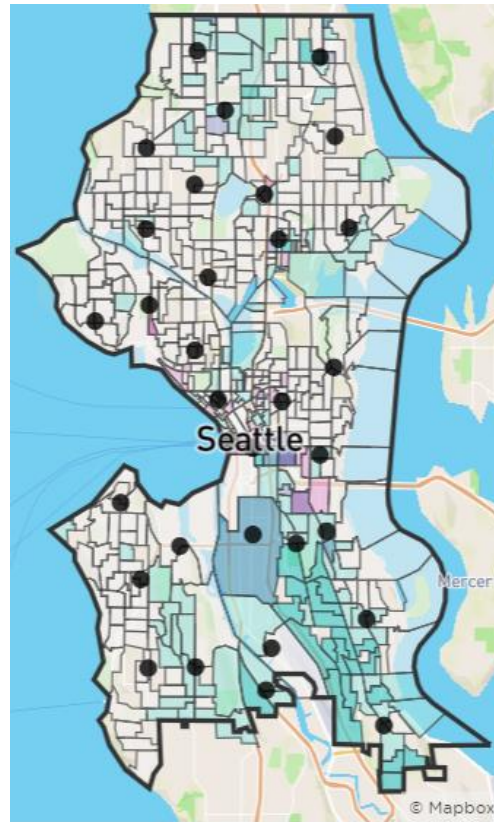
Map 4 shows that no predominantly white neighborhoods experience high or medium high residential fire risk. In contrast, in neighborhoods where more people identify as Black, Indigenous or People of Color, we do find than average residential fire risks.

Map 5 shows that some of our highest risk fire neighborhoods are also in neighborhoods with the highest proportion of the population whose primary language is not English. In the map below, areas with the deepest or strongest hues show where a greater number of language diverse people live, and where there is a higher incidence of residential fires per capita. Areas with deeper or stronger indigo/purple hues show where there may be a high correlation between residential fires and a population with a high percentage of people whose primary language is not English. These neighborhoods include the International District, Rainier Vista, and Kenwood.

The same pattern can also be seen in residential cooking fires, as explored more in Appendix 3. In fact, cooking fires are one of the greatest risk sources for these populations.

SFD's public affairs and education division has fire prevention material on cooking fires available in multiple languages on our website, and sponsors home fire safety events for immigrant communities. The data in this CRA indicates additional outreach and emphasis remains valuable.

Income and Poverty

SFD also analyzed data to assess how much vulnerability our community faces as a result of income disparities. The map below overlays residential home fires with median household income. If the map were a consistent color, this would indicate that poorer people are not disproportionately impacted by fires. However, in fact the map has a variety of colors, and areas that have low income and high fire rates are shown as pinker tones. SFD will use this information to inform our prevention programs and provide additional support to people experiencing vulnerabilities that are associated with insufficient income.

Preventable Alarms

In Seattle, false or preventable alarms account for 41% of overall fire-related responses, or over 8,000 calls each year. Seconds count when dealing with fire, and because SFD does not know if the situation is a real emergency or a false alarm, we send a fire engine and sometimes a ladder truck to each fire alarm call to 9-1-1. This enormous count of false alarms drains SFD's resources. It means that our fire engines and ladder trucks may be deployed to a false alarm and unavailable when a Seattle resident has a true medical or fire emergency, which can cause greater fire damage or mean the difference between life or death if resuscitation is delayed after a medical emergency.

Map 6: Home Fires and Income Disparities (2021-2023)

A % of Population Experiencing a Residential Structure Fire

B Median Household Income
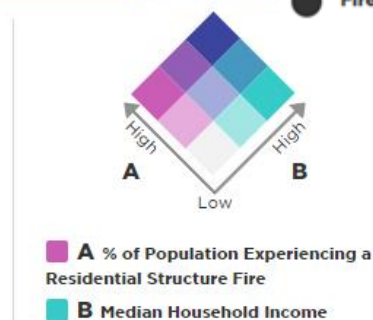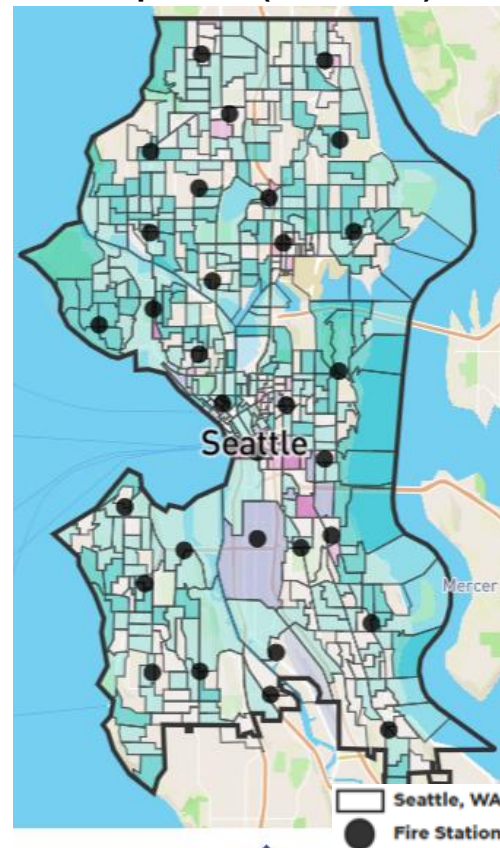
Table 13: SFD Preventable Alarms by Category (2023)

Alarm Category	% of Alarms	# of Alarms
Malfunction Sources	27.7%	2464
Malicious Sources	10.2%	910
Unintentional Sources	62.1%	5522
Grand Total	100.0%	8896

Map 7: False Alarm Incidents of All Types (2023)

% of Population Experiencing a Preventable Fire Alarm

- 0% – <1.2%
- 1.2% – <3.2%
- 3.2% – <7.8%
- 7.8% – 13.8%

☐ Seattle, WA
● Fire Station

When Seattle residents live or work in buildings that experience frequent preventable alarms, SFD has observed that people may stop evacuating when alarms sound. This is a dangerous situation putting residents at risk when a real emergency occurs. SFD introduced a preventable alarm citation program in 2020 however despite citations, the number of false alarm calls continues to grow each year. Additional effort is required to address this concerning trend in false alarms.

Resources for reducing false or preventable alarms can be found on the Seattle Fire Department website: https://www.seattle.gov/fire/business-services/current-fire-prevention-initiatives/preventable-alarms-initiative.

Preventable Alarms by Neighborhood, Language and Income

The following maps help illustrate where false or preventable alarm incidents are occurring in Seattle. In 2023, the highest concentration of preventable alarms involved neighborhoods encompassing the downtown core, South Lake Union, the International District, Georgetown, Bitter Lake, and North Beacon Hill. There was also a high incidence of false alarms per capita (roughly 4.5-6.5%) in surrounding suburban areas such as the University District, Rainier Vista, Haller Lake, Holly Park, and Interbay.

When overlaying false alarms with language, there are some areas of overlap, suggesting that there may be some correlation between preventable alarms and neighborhoods where a higher proportion of residents have a primary language that is not English. Regions with higher rates of preventable alarms and language diversity are represented by the shades of purple tones. Areas of emphasis include SODO, the International District, Rainier Vista, Holly Park, and Bitter Lake.

This analysis will help SFD make risk-based decisions to guide our 2025 program development and outreach efforts. This is an important outcome of our CRA and promotes effectiveness and service to everyone.

Map 8: False Alarms and Language Variation (2023)
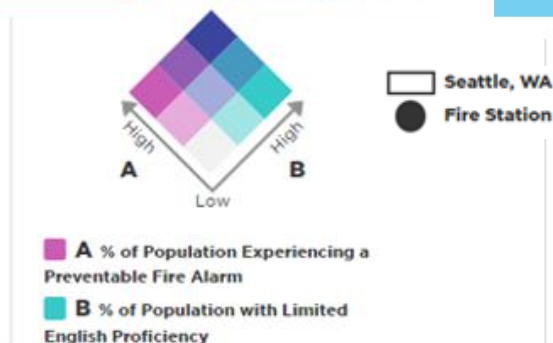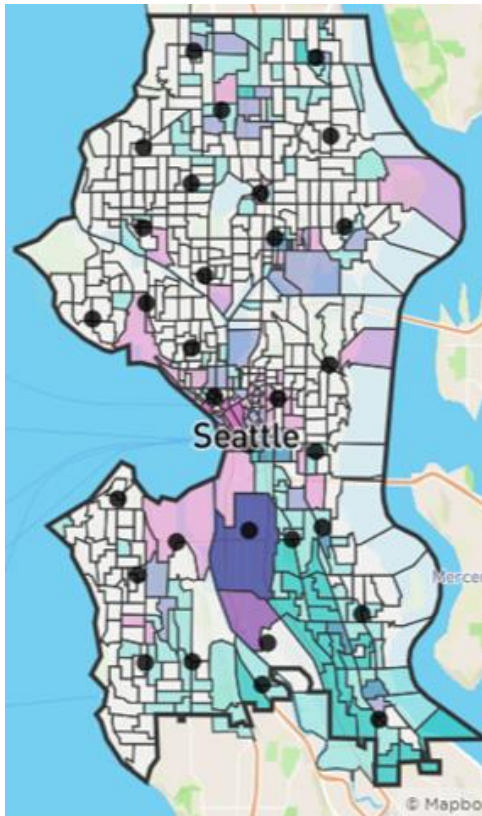
Map 9: False Alarms and Income Disparities (2021-2023)
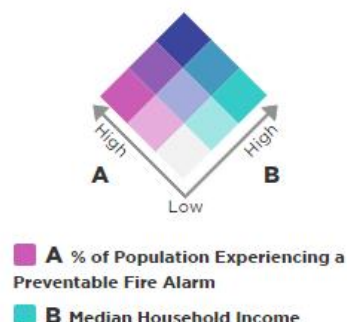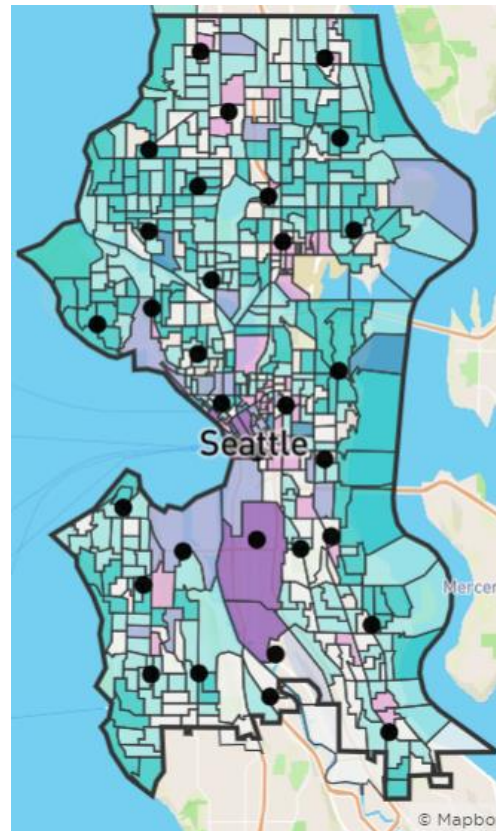
Section 6: Other Community Hazards and Vulnerabilities

Weather, Geography, and Natural Disasters

Although the Seattle Fire Department cannot prevent weather events or natural disasters, it is important for us to be aware of our greatest risks in these categories. This knowledge serves as a foundation for emergency preparedness planning to help ensure our response readiness.

Earthquakes are the most serious natural hazard facing Seattle. Unlike other potentially catastrophic hazards, Seattle has had and will continue to experience powerful earthquakes. About 15% of Seattle's total area is soil that is prone to ground failure in earthquakes. The Duwamish Valley, Interbay, and Rainier Valley are vulnerable to ground failure and shaking because of the liquefiable soils in these areas. Seattle also has over 1,100 unreinforced masonry buildings (URMs) that are prone to collapse in earthquakes, and these older brick buildings tend to be concentrated in areas expected to experience the strongest ground motion during earthquakes.

Downtown Seattle actually sits on top of the original city. It was rebuilt on top of 20' high walled tunnels following The Great Fire of 1889. The abandoned subterranean city now exists under present-day Seattle. As a result, whenever units are dispatched to an address in the historic part of downtown Seattle, certain streets are not strong enough for heavier apparatus to park at the curb lane, so first responders must be alerted to park in the center lane instead. This area is also expected to be more vulnerable in an earthquake.

Tsunamis, which are very large waves often caused by an undersea earthquake, generated in the Pacific Ocean off Washington's coast will not have as great of an effect in Seattle as they will on the Pacific Coast, but low-lying areas may experience flooding, and strong currents will likely be present in Puget Sound for hours after the earthquake.

Seiches, another type of very large wave generally occurring in lakes, have occurred multiple times in Seattle, however the frequency with which they cause extensive damage is low. Large seiches are a danger to the I-90 and SR-520 floating bridges and could strain anchoring cables. (The SR-520 bridge is designed to take about 12-feet of upward motion and 8-feet of downward motion from a seiche.)

Washington State is home to five **active volcanoes** located in the Cascade Range, east of Seattle: Mt. Baker, Glacier Peak, Mt. Rainier, Mt. Adams and Mt. St. Helens. Washington and California are the only states in the lower 48 to experience a major volcanic eruption in the past 150 years.

Seattle is among the cities with the highest **heat sensitivity** in the United States. Seattle's typically mild summers result in a population that is less acclimatized to extreme heat, so health effects associated with heat begin in Seattle at lower temperatures than many other places. Many Seattle homes and businesses also lack cooling systems, increasing vulnerability to excessive heat. The appendices contain additional charts illustrating weather conditions in Seattle.

Western Washington is very prone to **flooding**; however Seattle's flood profile is different from the rest of the state. Seattle has three distinct flooding hazards: riverine, coastal, and urban flooding. Urban and riverine flooding are most common, however widespread flooding is not currently a frequent event in Seattle.

Seattle has steep hills, wet winters, and geology that is prone to **landslides**. Landslides occur frequently, especially in the winter and early spring. The most common landslides in Seattle are shallow (less than 6 – 10 feet deep), fast moving (up to 60 km per hour) slides that occur on undeveloped slopes. Due to Seattle's steep topography, some streets are too steep to keep open during snow and ice events.

Seattle is surrounded by **bodies of water**, to the west by Puget Sound, and to the east by Lake Washington. Seattle is bisected by the Lake Washington Ship Canal and the Montlake Cut. In an emergency, if some or all of the bridges that cross this water are damaged, the north and the south sections of the city may become two separate sections of the city. SFD resources will not be able to move from north to south or back, and crews in each part of the city will have to operate self-sufficiently.

As a highly urbanized city, Seattle is not particularly impacted by **wildfire** risk. SFD participates in wildland deployments when wildfires occur in Washington State or elsewhere in the nation, including recently in wildfires during the summer of 2023 in the western United States, and in the fire recovery efforts in Maui.

To help mitigate risks from weather events and natural disasters, SFD participates actively in City and regional preparedness efforts. Information is shared from federal agencies throughout the City in advance of emergencies. The City's Emergency Operations Center, when activated, is staffed 24 hours a day by representatives from Fire, Police, as well as our public utilities and City Light, the building department, and the Mayor's Office. Emergency planning and community preparedness is an ongoing City priority. SFD will incorporate these risks into future Community Risk Reduction planning.

Given its proximity to bodies of water, the Seattle Fire Department is staffed 24/7 with a fireboat crew ready to respond on one of four fireboats depending on the location and nature of emergency. Station 5, on Seattle's Waterfront, is home to the 108-foot Fireboat Leschi and 50-foot Fireboat 2. Station 3, at Fisherman's Terminal in Ballard, is home to the 97-foot Fireboat Chief Seattle and 50-foot Fireboat 1. The Fireboats are prepared to respond to:

- Ship Fires
- Marina Fires
- Water Rescues
- Other water-related emergencies

In 2024, SFD added a pair of rescue watercrafts to grow our response capability, allowing first responders to quickly reach people in water or vessels in distress. When responding to a freshwater incident, these watercrafts get dispatched along with members of SFD's rescue swimmer program.

Other Hazards and Considerations

Seattle has experienced a large increase in 9-1-1 calls related to overdoses, opioid use disorders, and behavioral health crises. Many of these calls also relate to shortages in housing, treatment options and hospital beds. These shortages have become more severe in Seattle in the last five years. The Seattle Fire Department has a role at the forefront of responding to these new challenges. Our on-duty fire fighters are handling more calls than previously imagined. Our busiest aid unit, Aid 25, responded to 6,693 calls in 2023. This is over 18 calls per day, which is almost one per hour, which is far outside the expected call load for a single unit.

Table 14: SFD's Emergency Response Totals (2019-2023)

	2019	2020	2021	2022	2023
Call Volume	169,153	165,846	186,571	202,344	206,482
Total Responses	91,716	80,316	93,233	106,453	111,319
EMS	72,980	61,717	68,564	78,808	82,743
Fire	18,088	18,094	24,255	27,180	28,107
Other	648	505	414	465	469
On-Duty Staffing*	210	216	216	216	216
Population	753,291	740,565	731,757	749,134	755,078

*Does not include peak-time staffing of 2 additional daytime aid cars, 12 hours each day.

The increase is affecting SFD's ability to meet national response time standards. NFPA 1710 Section 4.1.2.1 establishes specific response times for various services, and Section 4.1.2.4 requires departments to work to achieve these response times for at least 90% of the calls. As can be seen in the table below, SFD is not able to meet the 90% target for turnout time or travel time for first arrival to fire, basic life support or advanced life support calls. We are experiencing the greatest challenge in responding to the large growth of medical calls, particularly advanced life support calls, where our performance has declined from meeting the target 86% of the time (compared to 90% target) in 2019 to just 78% of the time (compared to the 90% target) in 2023.

Table 15: SFD's Emergency Response Times (2019-2023)

	2019	2020	2021	2022	2023
Fire Response					
Fire Turnout Time Within 80 Seconds*	59%	55%	58%	60%	67%
First Engine Arrival Within 4 Minutes*	75%	78%	75%	76%	77%
First Full Alarm Arrival Within 8 Minutes*	94%	92%	91%	95%	99%
EMS Response					
EMS Turnout Time Within 60 Seconds*	57%	48%	59%	55%	57%
First BLS Unit Arrival Within 4 Minutes*	76%	73%	73%	75%	74%
First ALS Unit Arrival Within 8 Minutes*	86%	81%	81%	82%	78%

*Goal is 90% of the time.

SFD is taking steps to address these risks to our overall response readiness by developing innovative alternative response models. SFD introduced a Mobile Integrated Health (MIH) program less than 10 years ago, which is a dedicated team of firefighter/EMTs and a civilian case manager who handle lower-priority calls, so that engine and ladder companies remain available to respond to higher-acuity emergencies. In 2023, the program handled nearly 3,000 calls, of which 835 were flagged for further outreach and case management, with an additional 1,064 referred for other services such as fall prevention and care coordination. In the face of the ongoing fentanyl crisis, SFD introduced a new Post-Overdose Response Team, or HEALTH99, with a small cadre of case managers and firefighters. This team saved dozens of lives in its first year and has been funded to continue serving the residents of Seattle. In 2022, SFD partnered with American Medical Response (AMR) to launch the Seattle Fire Nurse Navigation Program, in which some area 911 calls with non-emergent injuries or illnesses are routed to a Washington state licensed nurse. The nurse assesses a caller's symptoms and refers them to the most appropriate medical care that could include a virtual visit with a board-certified physician, self-care, or transport to a local healthcare provider, including clinics, urgent care centers, or if needed, a hospital emergency department.

The fire code requires many buildings to have fire protection systems like sprinklers and alarms. We know that in Seattle, roughly one-fourth of these systems are past due for inspections and maintenance, and over 4,000 systems (or 15%) are deficient and require repairs. It is a risk that so many of our buildings have fire protection systems that are not being inspected and repaired as required. It is the responsibility of building owners to maintain these systems, and SFD has limited staff dedicated to enforcement. The Seattle Fire Department performs annual building inspections for commercial, industrial and multifamily buildings. These inspections are performed by on-duty firefighters. The simultaneous growth in the number of buildings in Seattle, as well as a growth in the number of medical calls our firefighters respond to, means that our inspectors are being stretched thin. SFD's ability to sustain its inspection program effectiveness is an important element of the success of our CRR program.

As one of the largest and oldest cities on the West Coast, Seattle also has a range of buildings that present unusual risks. This includes [unreinforced masonry buildings](#) that are particularly susceptible to earthquakes, roughly 500 high-rise buildings in which thousands of occupants may be located well above the reach of SFD's aerial ladders, and derelict and vacant buildings. SFD works with support from the Mayor and Council to prevent and abate these risks, including through a new [high-rise building](#) inspection program introduced in 2017, and a [dangerous building program](#) developed in 2024.

Seattle also has a vibrant economy with a large port, manufacturing base, and high tech/biotech sectors. As a result of the economic composition of our economy, SFD staffs [permitting](#) and prevention programs, as well as pre-planning and response readiness, for a wide range of hazard processes, materials and occupancies. Since the pandemic, Seattle is experiencing less voluntary compliance with permitting requirements, and it is likely that a growing number of

businesses are operating without required permits. Permitting is an important risk prevention approach.

In June 2023, the Seattle Fire Department and Seattle City Light unveiled the Energy Response Unit, ENERGY1, the nation's most capable apparatus for fighting electrical fires in substations and underground vaults. The unit includes 44 firefighters specifically trained to fight energy-related fires, a rig with 11,000 pounds of carbon dioxide, and 600 feet of hose line. The collaboration among both agencies exemplifies the One Seattle Plan, working together to minimize the impact of fire-related power outages for residents and businesses throughout the city.

The growth in service calls, and the complexity of the city's buildings and economy, present risks and challenges to our mission. SFD will continue to focus on specialty programs and innovative service delivery, in partnership with our Mayor and Council, to best reduce risks and serve all residents, communities and businesses in Seattle.

Section 7: Critical Infrastructure

Critical infrastructure is defined as the body of systems, networks, and assets that are so essential that their continued operation is required to ensure the security of a given nation, its economy, and the public's health and/or safety. Damage to this infrastructure would have a debilitating effect. Critical infrastructure assets in Seattle include:

Table 16: Critical Infrastructure in Seattle and the Region

Airports	3
Cell Towers	2,231
Electric Substations	16
Fire Stations	33
Government Offices (Downtown)	17
Hazardous Waste Facilities	2
Hospitals	11
Microwave Service Towers	777
Military Bases	1
Police Precincts	5
Seaports	1
Water/Wastewater Treatment Facilities	1

In Seattle during emergencies, City departments including SFD staff the Emergency Operations Center (EOC). When activated, the EOC provides real time coordination across City departments to provide the best coordinate responses to weather events, natural disasters, social unrest, and terrorist events. This is an important element of risk mitigation in Seattle.

Section 8: Risk Assessment

In this CRA, we have used the following methodology to assess risk.

- Identify who and what we protect.
- Identify fire and non-fire hazards.
- Consider the probability of occurrence for each hazard.
- Consider the probable consequence severity of a hazard occurrence on the community.
- Consider the probable consequence severity on the department's overall response capacity.
- Determine the overall risk for each hazard based on probability of occurrence in combination with probable consequence severity.

Our assessment of the hazards likely to impact the City leads to the following conclusions:

1. Seattle Fire Department serves a very diverse urban population with densities of neighborhoods ranging from less than 5,000 to more than 40,000 people per square mile over a widely varied urban environment.
2. The risks experienced by Seattle residents vary depending on where they live and what demographic groups they belong to.
3. The City has the largest inventory of residential and non-residential buildings in Washington to protect.
4. The Fire Department's staffing, apparatus, and stations have not grown as fast as our calls for service and incidents, which is placing stress on our medical, suppression and prevention services and reducing our ability to meet national standards for turnout and travel time, particularly with respect to our medical calls.
5. The City's risk for hazards related to emergency services provided by the Department range from **Low** to **High** as summarized in the following table.

Table 17: Seattle Community Risk Assessment and Mitigations

Risk	Prob-ability	Com-munity Impact	Dept Impact	Risk Score	Possible Mitigation Strategies
Fire Related					
Single Family Home Fires	M/L	M	M	M	Pub Ed, CFSA, Add'l Support to Diverse N'hoods w/Higher Risks
Multi-Family Residential Fires	M	H	M/H	M/H	Pub Ed, CFSA, STET, Training SOGs, Bldg Insp Program, Pre-planning
Commercial Fires	L	M	H	H	Pub Ed, Permitting, Training SOGs, STET, Pre-planning, Bldg Insp Program
Cooking Fires	M/H	M	M	M/H	Pub Ed, CFSA, Add'l Support to Diverse N'hoods w/Higher Risks, STET

Risk	Prob-ability	Com-munity Impact	Dept Impact	Risk Score	Possible Mitigation Strategies
Outdoor Fires	M/H	L	L	M/L	Support City Initiatives to Address Housing & Behavioral Health
Wildland	L	L	L	L	Participate in WUI Code Development
False Alarms	H	M/L	H	M/H	Citations, Enforcement, Plan Review Guidance, Outreach to MF Housing Providers w/Most False Alarms
Medical Emergency Related					
Overdose Calls	M	M/H	M	M/H	Health 1, Health 99, Increase Treatment Beds, Bupe for EMTs
Behavioral Crisis	M	M/H	M/H	M/H	CARES, Health 1
Active Shooter	M/L	MH	M/H	H	
Mass Casualty	L	H	H	H	SOGs, Mutual Aid
Other Risks					
Impact from Increasing Call Volumes	H	M/H	H	H	Budget for NFPA 1710 Standards of Cover, Nuisance Alarm Program, Low Acuity Prgm/Mobile Int Health
Special Hazards Incident	L	H	M/H	M/H	Permitting, Pre-planning
Earthquake/ Bldg Collapse	L	H	H	H	EOC Coordination, Dept Pre-planning, URM Retrofits
New Energy Tech (EV/ESS)	M	M	M	M	Department Training, Legislative Advocacy

Section 9: Summary and Conclusions

SFD performed its first community risk assessment by identifying and analyzing community risks, consistent with NFPA 1300. The purpose of this effort is to evaluate our city's risks as part of the development and implementation of our community risk reduction program. The community risk assessment included a review of the following data types: demographic, building stock, public safety response agencies, hazards, incident history, injuries and fatalities, critical infrastructure systems. The assessment looked at this data for the city as a whole, with further exploration to understand how these factors specifically impact our communities of color and language diverse populations. The study also categorized risks based on their probability and impact.

For the Seattle Fire Department, our greatest fire risks include fires in multi-family residential housing, fires caused by cooking, and commercial fires. Preventable fire alarms also rose higher on the list of risks, due to the large number of these calls, and the impact it has on our operations to over 7,000 false alarms annually – these are runs that we go on, that take us out

of service for real emergencies. Our greatest risks in the medical emergency category include the high number of overdose calls and calls generated by behavioral crises caused by a constellation of mental health challenges, lack of housing, and addiction. Other items that rise high in the risk assessment are events with low frequency but very high impact when they occur, including mass casualty events, weapons of mass destruction, and earthquakes.

SFD leadership and program managers are incorporating the results of this Community Risk Assessment into planning for 2025 and beyond.

SFD will promote cross-division collaboration between our public educators, operations, fire alarm center, and fire prevention to support the following strategies:

- Fire prevention and education, particularly at home, and particularly related to our highest cause of fire: cooking. Efforts will include oversight of range hood maintenance in commercial and large residential buildings, and renter and homeowner education. Public education will be provided in culturally and linguistically appropriate ways including through SFD's Community Fire Safety Advocate (CFSA) program and through our language access advocates.
- Focused fire prevention efforts in communities that experience the most risk of fire.
- Nuisance alarm reduction efforts, including enforcement through our citation program, and collaboration with the agencies that manage our largest collection of nuisance alarm-transmitting properties.
- Continued emphasis on training to include high-risk, low probability events; and continued close collaboration with the City's Office of Emergency Management.
- Programs to mitigate risk of the large growth in medical call volume, including: continuing to leverage the nurse navigation line to handle some calls without dispatching an engine or ladder; mobile integrated health and alternative response; overdose prevention and intervention; and support for City and State efforts to establish post-overdose stabilization facilities, additional treatment beds, and other solutions for the behavioral health crises caused by effects of addiction, mental illness and the housing shortage on our community.
- SFD will also continue to prioritize support for our firefighters' health, including proper PPE for new hazards, and more options for peer support and mental health support.

Although this report represents SFD's first NFPA 1300 Community Risk Assessment, SFD has a long history of using data to evaluate risks and develop targeted programs, including the development of our Mobile Integrated Health program, our overdose response teams, our citation program, high-rise inspection program, and community fire safety advocate program, to name just some risk reduction initiatives. The Seattle Fire Department is grateful to Mayor Bruce Harrell and the Seattle City Council, including Public Safety Committee Chair Robert Kettle, for their continued support in policy, budget, and legislative arenas. Their support has been instrumental in supporting SFD's ability to deliver on our mission: "To save lives and protect property through emergency medical service, fire and rescue response and fire prevention. We

respond immediately when any member of our community needs help with professional, effective and compassionate service."

Appendices

Appendix 1: Structure Fires – Definitions from NFIRS

According to the National Fire Protection Association (NFPA), a "structure fire" is any fire that occurs in or on a building or other structure, even if the structure itself was not damaged. Mobile properties used as fixed structures, such as manufactured homes and portable buildings, are considered structures. Examples of structure fires include, but are not limited to, fires involving buildings (such as houses, apartments, offices, stores, restaurants, schools, churches, theaters, etc.), indoor cooking, chimneys, trash bins, sheds, barns, fences, bus stops, shelters, tents, piers, bridges, tunnels, utility vaults, mobile homes, campers/RVs, and portable restrooms. The table below provides the full range of incident types that are included in the "structure fire" category.

STRUCTURE FIRE GROUP	
NFIRS Incident Code	Description
110	Structure Fire - Other (Conversion Only)
111	Building Fire
112	Fire in Structure Other Than in a Building
113	Cooking Fire, Confined to Container
114	Chimney or Flue Fire, Confined to Chimney or Flue
115	Incinerator Overload or Malfunction, Fire Confined
116	Fuel Burner/Boiler Malfunction, Fire Confined
117	Commercial Compactor Fire, Confined to Rubbish
118	Trash or Rubbish Fire, Contained

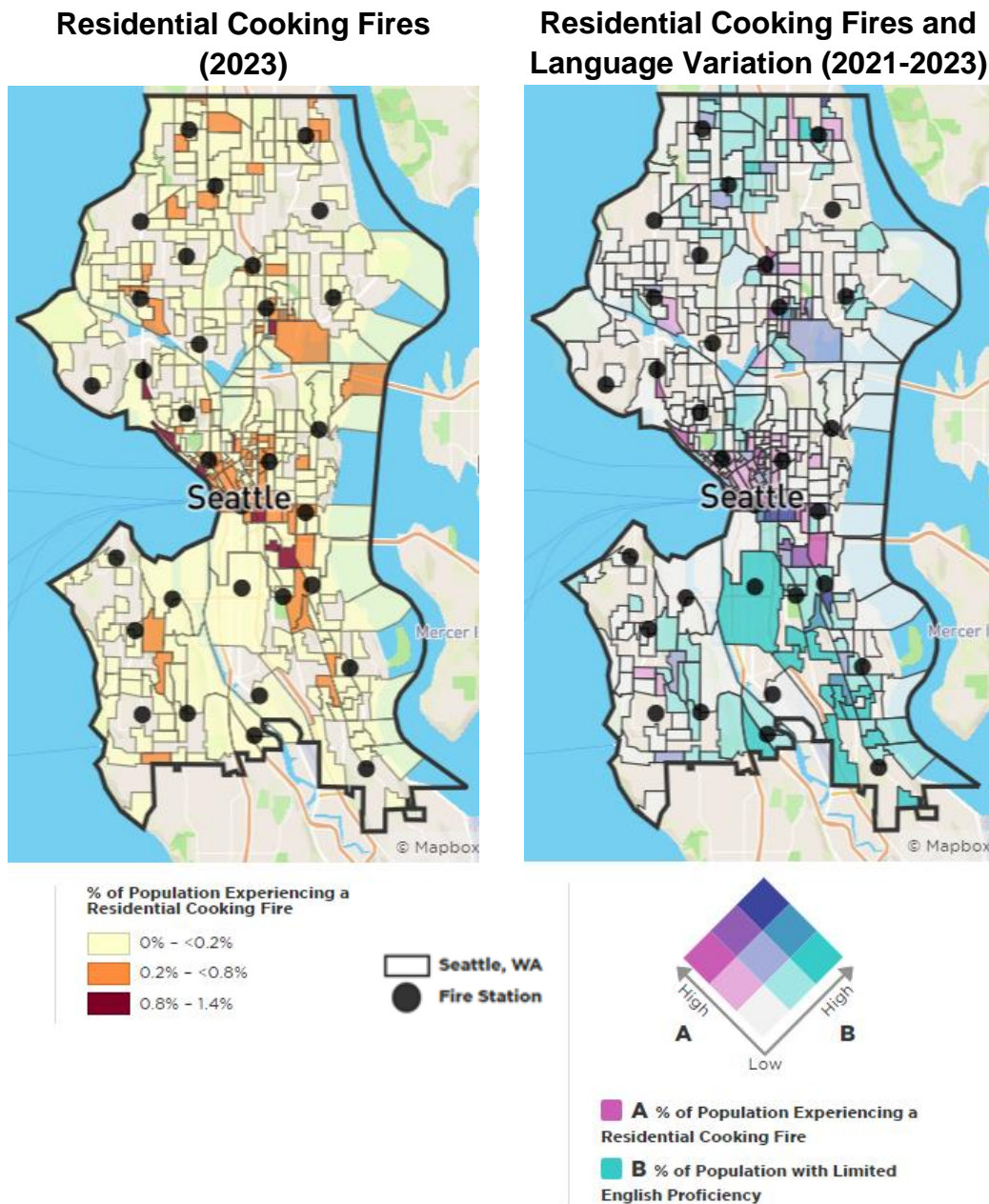| FIRE IN MOBILE PROPERTY USED AS A FIXED STRUCTURE GROUP	
NFIRS Incident Code	Description
120	Fire in Mobile Property Used as a Fixed Structure - Other
121	Fire in Mobile Home Used as Fixed Residence
122	Fire in Motor Home, Camper, Recreational Vehicle
123	Fire in Portable Building, Fixed Location

Appendix 2: Fire Causes and Definitions from NFIRS

Fire Cause Categories and Descriptions

Cause Category	Code	Definition
Exposure	12	Caused by heat spreading from another hostile fire.
Intentional	01	Cause of ignition is intentional, or fire is deliberately set.
Cause Under Investigation	16	Cause is under investigation, and a valid NFIRS Arson Module is present.
Playing with Heat Source	02	Includes all fires caused by individuals playing with any materials contained in the categories below as well as fires where the factors contributing to ignition include playing with heat source. Children playing with fire are included in this category.
Natural	11	Caused by the sun's heat, spontaneous ignition, chemicals, lightning, static discharge, high winds, storms, high water including floods, earthquakes, volcanic action, and animals.
Other Heat	09	Includes fireworks, explosives, flame/torch used for lighting, heat or spark from friction, molten material, hot material, heat from hot or smoldering objects.
Smoking	03	Cigarettes, cigars, pipes, and heat from undetermined smoking materials.
Heating	04	Includes confined chimney or flue fire, fire confined to fuel burner/boiler malfunction, central heating, fixed and portable local heating units, fireplaces and chimneys, furnaces, boilers, water heaters as source of heat.
Cooking	05	Includes confined cooking fires, stoves, ovens, fixed and portable warming units, deep fat fryers, open grills as source of heat.
Appliances	07	Includes televisions, radios, video equipment, phonographs, dryers, washing machines, dishwashers, garbage disposals, vacuum cleaners, hand tools, electric blankets, irons, hairdryers, electric razors, can openers, dehumidifiers, heat pumps, water cooling devices, air conditioners, freezers and refrigeration equipment as source of heat.
Electrical Malfunction	06	Includes electrical distribution, wiring, transformers, meter boxes, power switching gear, outlets, cords, plugs, surge protectors, electric fences, lighting fixtures, electrical arcing as source of heat.
Other Equipment	10	Includes special equipment (radar, x-ray, computer, telephone, transmitters, vending machine, office machine, pumps, printing press, gardening tools, or agricultural equipment), processing equipment (furnace, kiln, other industrial machines), service, maintenance equipment (incinerator, elevator), separate motor or generator, vehicle in a structure, unspecified equipment.
Open Flame, Spark (heat from)	08	Includes torches, candles, matches, lighters, open fire, ember, ash, rekindled fire, backfire from internal combustion engine as source of heat.
Other Unintentional, Careless	15	Includes misuse of material or product, abandoned or discarded materials or products, heat source too close to combustibles, other unintentional (mechanical failure/malfunction, backfire).
Equipment Misoperation, Failure	14	Includes equipment operation deficiency, equipment malfunction.
Unknown	13	Cause of fire undetermined or not reported.

Appendix 3: Extending the Analysis: Language Variation and Cooking Fires

Cooking fires are the leading cause of residential home fires. In 2023, the highest concentration of residential cooking fires involved neighborhoods surrounding Pioneer Square, the International District, North Beacon Hill/Mount Baker, West Uptown, and Green Lake.

Residential Cooking Fires (2023)

Residential Cooking Fires and Language Variation (2021-2023)

% of Population Experiencing a Residential Cooking Fire

- 0% – <0.2%
- 0.2% – <0.8%
- 0.8% – 1.4%

Seattle, WA
Fire Station

A % of Population Experiencing a Residential Cooking Fire

B % of Population with Limited English Proficiency

When overlaying residential cooking fires with language variation, again, there are areas of overlap, suggesting that there may also be some correlation between cooking fires and language diversity (represented by the shades of purple tones). Areas of emphasis include the International District, Rainier Vista, and Kenwood.

Appendix 4: Average Climate in Seattle

Average climate data is based on reporting from over 4,000 weather stations. Read more:
http://www.city-data.com/city/Seattle-Washington.html