

# Uncontrolled Burn

## Dimming the Spark of Illegal Fireworks in San Francisco



*Photo by Peter Spencer on Pexels*

May 28, 2024



**CITY AND COUNTY OF SAN FRANCISCO**

2023–2024 CIVIL GRAND JURY

## About the San Francisco Civil Grand Jury

The San Francisco Civil Grand Jury (the “Jury”) is a government oversight panel of volunteers who serve for one year. Each Jury determines which local government entities within San Francisco it will investigate. Private citizens also may submit written complaints to the Jury, for investigation at the Jury’s discretion. The Jury cannot investigate disputes between private parties, criminal activity, or activities outside its jurisdiction, which is the government of the City and County of San Francisco and any other local governments within city limits.

In reports made available to the public, the Jury documents findings and recommendations based on its investigations. Reports do not generally identify individuals by name, and disclosure of the specific identity of anyone interviewed by the Jury is prohibited.

The San Francisco Civil Grand Jury consists of 19 city residents impaneled by a Superior Court Judge. By state law, a person is eligible for Civil Grand Jury service if the person is a U.S. citizen, 18 years of age or older, of ordinary intelligence and good character, and has a working knowledge of the English language.

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# Summary

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Throughout the year, although most noticeably around the July 4th holiday, thousands of explosions from illegal fireworks occur in the neighborhoods and skies above the city. Yet with the exception of permitted public displays by licensed firework companies, **all forms of fireworks are illegal to possess or discharge within the City and County of San Francisco.**

Fireworks traumatize pets, children, autistic residents, dementia patients, veterans and others with PTSD, as well as wildlife. They pollute the environment, start fires, and cause injuries ranging from permanent burn scars and hearing loss to death (which unfortunately happened this past New Year's Eve on Treasure Island).<sup>1</sup> Yet, notwithstanding these dangerous consequences, many city residents continue to possess and discharge fireworks in their neighborhoods and in various public locations.

Curbing this behavior is a major challenge for San Francisco but it is not alone. Communities across the country struggle to address the illegal use of fireworks, and have found that cross-functional department cooperation is necessary to control this dangerous and sometimes deadly neighborhood nuisance.

This report documents illegal fireworks activity, the harms, the challenges, the laws, and ideas for improvements. To guide these efforts, the report recommends the creation of an Illegal Fireworks Working Group, headed by the Department of Emergency Management, to assist law enforcement efforts, support interdepartmental cooperation, gather better metrics, and implement a public education campaign to inform and engage the citizenry. This will foster a safer, less toxic, and less traumatic environment for the residents, their children and pets, and the wildlife of San Francisco.

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<sup>1</sup> DiFelicianantonio, Chase. 2024. "[Person dies on Treasure Island after New Year's fireworks incident, reports say.](#)" *San Francisco Chronicle*.

## Contents

<b>Background</b> .....	<b>1</b>
Predicting the Boom: When and Where to Expect Illegal Fireworks.....	1
Quieting the Boom: Reporting Illegal Fireworks to the City.....	3
From Boom to Burden: Ten Affected City Departments.....	7
San Francisco Fire Department Pre-Planning for Illegal Firework Activity.....	8
Harms from the Boom: The Devastating Impact to the City.....	8
Mental Trauma.....	8
Trauma for Pets.....	9
Trauma for Children.....	10
Trauma for Autistic Children and Adults.....	11
Trauma for Dementia Patients.....	12
Trauma for Veterans and Those with PTSD.....	12
Trauma for Wildlife.....	13
Pollution from Fireworks.....	14
Damage from Illegal Fireworks.....	15
Injuries from Fireworks.....	17
Beyond the Ban: The Obstacles to Eliminating Illegal Fireworks.....	19
Seen as a Lower Priority Problem.....	19
Limited Resources.....	19
Difficulty Dealing with Explosives.....	20
Lack of Coordinated Messaging, Education and Community Engagement.....	20
Only a Single Official Metric is Being Gathered and None are Being Tracked.....	20
Fireworks Fines: Avoiding Legal Trouble with Fireworks.....	21
Overview of Federal, State and City Fireworks Laws.....	21
New CA Fireworks Law—CA Assembly Bill 1403.....	22
The Penalties and Fines.....	24
Dimming the Spark: Innovative Solutions to Illegal Fireworks.....	25
San Francisco Operation Kaboom.....	25
Greener Alternatives to Fireworks.....	25
Creation of Fireworks Task Forces In Counties and Cities Across the Country.....	26
Recent California Counties Civil Grand Jury Reports on Illegal Fireworks.....	27
<b>Analysis</b> .....	<b>28</b>
Detonating the Data: An Analysis of Illegal Fireworks.....	28
Very Significant Numbers of San Franciscans are Traumatized by Fireworks.....	28
The Need for Better Coordination.....	29
The Need for Better Metrics.....	31

The Need for Better Crime Prevention.....	33
The Need for Behavioral Change.....	35
The Need for Better Public Education.....	36
The Need for Better Community Engagement.....	38
The Need for Understanding the Law by City Government and the Public.....	39
The Need to Learn from Previous Experiences and Other Municipalities.....	39
<b>Findings and Recommendations.....</b>	<b>41</b>
Finding 1: Lack of Coordination for Combating Illegal Fireworks.....	41
Finding 2: Conflicting Messaging for Reporting Illegal Fireworks.....	42
Finding 3: The City’s Public Education and Engagement is Inadequate.....	43
Finding 4: The City Fails to Control Deployment of Illegal Fireworks.....	43
Finding 5: The City Fails to Gather and Monitor Illegal Fireworks Metrics.....	44
<b>Required and Requested Responses.....</b>	<b>46</b>
<b>Methodology.....</b>	<b>47</b>
<b>Glossary and Abbreviations.....</b>	<b>48</b>
<b>Bibliography.....</b>	<b>51</b>
<b>Appendix A: San Francisco Firework Data.....</b>	<b>61</b>
Data from 311 Calls.....	61
Data from Law Enforcement Dispatched Calls for Service: Closed.....	63
Data from Police Department Incident Reports: 2018 to Present.....	69
Data from Fire Incidents.....	76
<b>Appendix B: Data Calculations.....</b>	<b>86</b>
SF Households with Pets Harmed.....	86
SF Children Under 5 Harmed.....	88
SF Autistic Residents Harmed.....	89
SF Residents with Dementia Harmed.....	91
SF Veterans and Residents Suffering from PTSD Harmed.....	92
<b>Appendix C: Federal, State and Local Laws.....</b>	<b>94</b>
<b>Appendix D: CA State Bill AB1403.....</b>	<b>99</b>
<b>Appendix E: Fireworks Task Force References.....</b>	<b>107</b>
Task Forces in California.....	107
Task Forces Across the United States.....	108
<b>Appendix F: Distinguishing Fireworks from Gunshots.....</b>	<b>110</b>

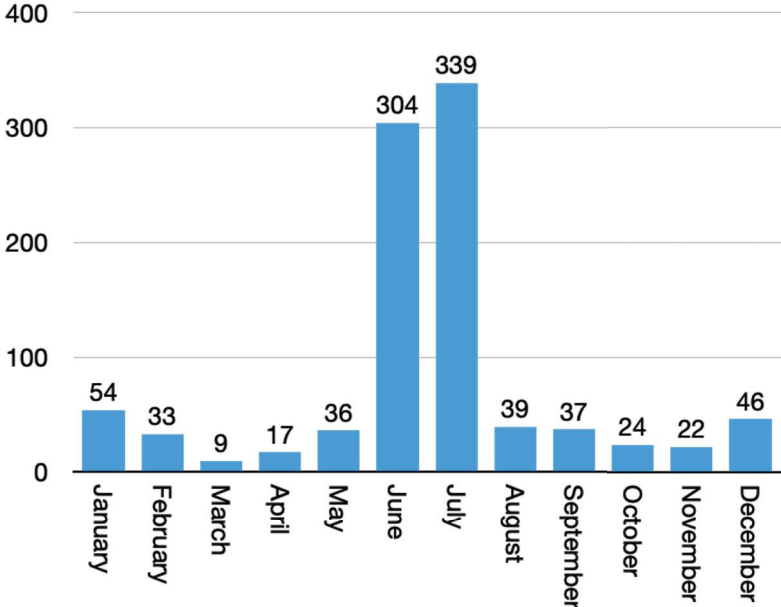
# Background

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The San Francisco night sky is filled with thousands of illegal fireworks and booming explosions that rock the city on July 4th each year.<sup>2</sup> This activity envelops the entire city and continues in some neighborhoods well into the early morning hours of July 5th. This is not just a July 4th issue but occurs in the neighborhoods to a lesser extent during the other holidays as well as spontaneously.

## Predicting the Boom: When and Where to Expect Illegal Fireworks

Figure 1: Dispatched Fireworks Calls By Month from 2018-2023



The July 4th holiday and its surrounding weeks are times when neighborhoods throughout the city experience the window rattling effects of a higher than normal volume of explosions. The witnesses interviewed for this report who were knowledgeable about fireworks in San Francisco all agreed that illegal fireworks are mainly viewed as a July 4th problem but are in fact a

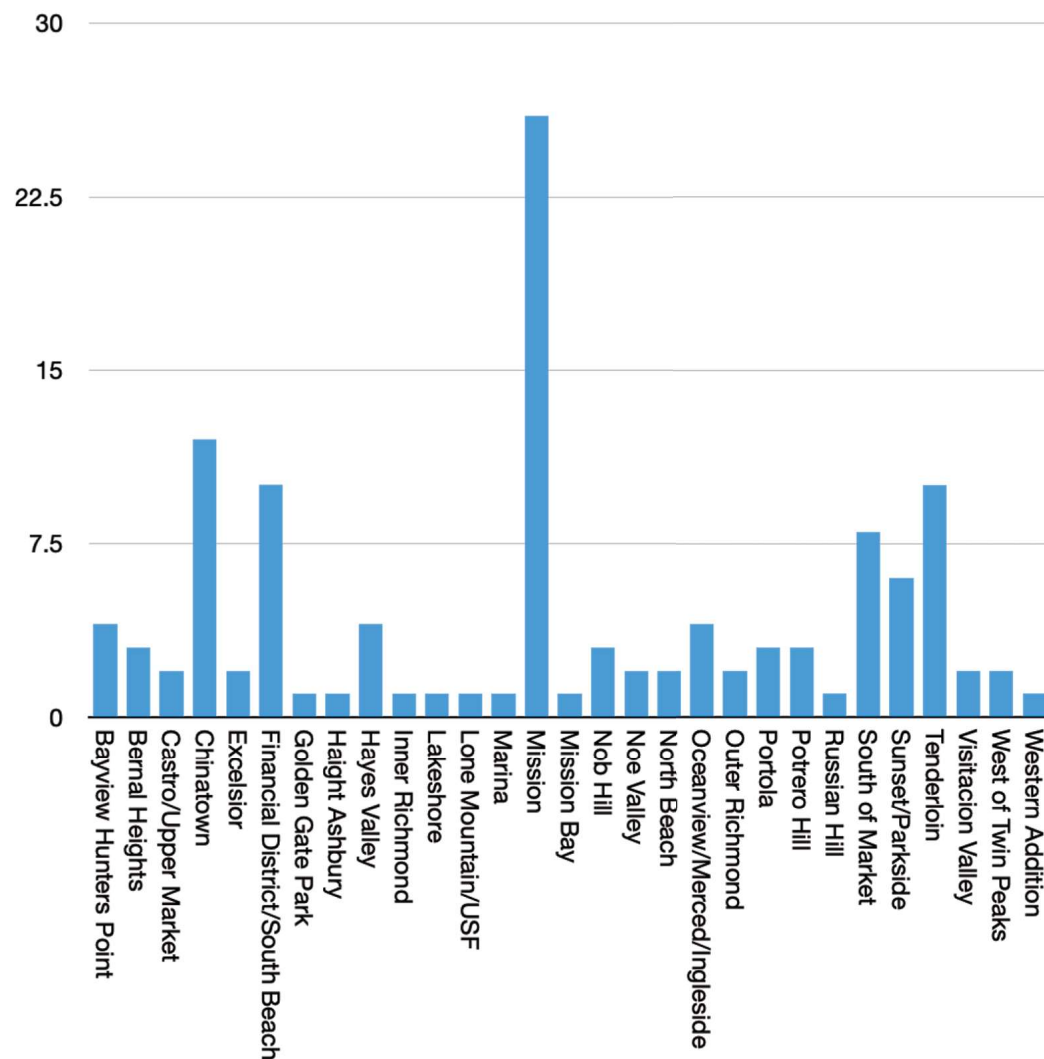
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<sup>2</sup> Gentile, Dan. 2023. "[San Francisco erupts with illegal street fireworks for July Fourth.](#)" SFGATE.

constant activity that must be dealt with throughout the year. All of the firework call entries represented in Figure 1 originate from the public via calls to the 911 call center.<sup>3</sup>

All neighborhoods across the city experience illegal fireworks, however, the Mission District has over double the number of fireworks-related police incidents when compared to other neighborhoods from 2018-2023.<sup>4</sup>

**Figure 2: Police Fireworks Incidents By Neighborhood from 2018-2023**



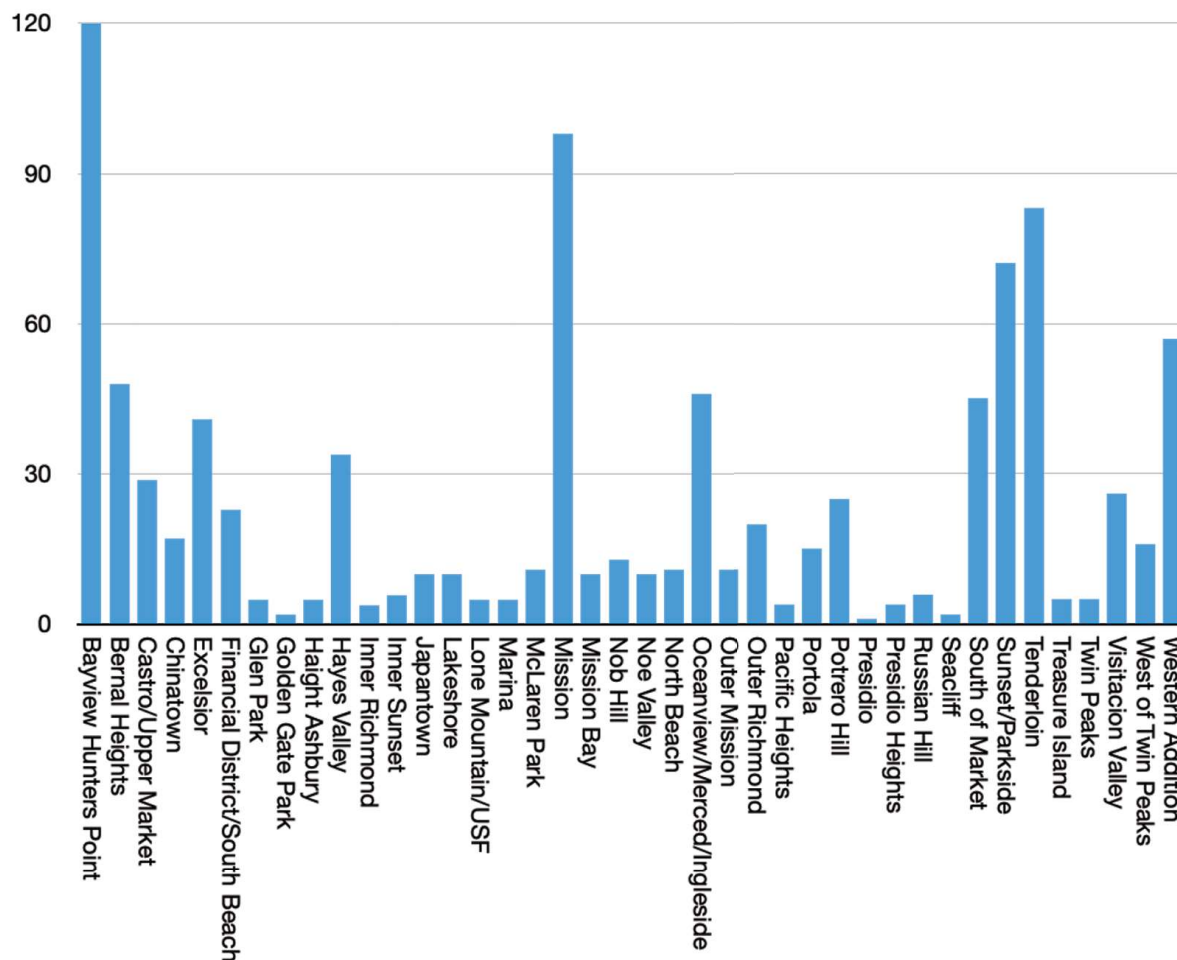
Other top neighborhoods for fireworks related police incidents include Chinatown, the Financial District/South Beach, South of Market, Sunset Parkside, and the Tenderloin.

<sup>3</sup> DataSF. 2021. "[Law Enforcement Dispatched Calls for Service - DataSF | Dataset Explainers.](#)" *GitBook*.

<sup>4</sup> *Police Department Incident Reports: 2018 to Present*, accessible through the DataSF web interface.

The Mission is one of five neighborhoods generating a significant number of calls to the 911 call center, second only to the Bayview Hunters Point neighborhood.<sup>5</sup>

Figure 3: Dispatched Fireworks Calls by Neighborhood from 2018-2023



In terms of police districts, the Mission District had 25% of the police incidents related to fireworks from 2018-2023. The Central District handled 18%, the Taraval District handled 11% and the Tenderloin District handled 10% of the police incidents.<sup>6</sup>

## Quieting the Boom: Reporting Illegal Fireworks to the City

Illegal fireworks related issues can be reported to the city via:

<sup>5</sup> *Law Enforcement Dispatched Calls for Service: 2018 to Present*, accessible through the DataSF web interface.

<sup>6</sup> See [Figure 13: Police Fireworks Incidents By Police District from 2018-2023](#) in [Appendix A](#).



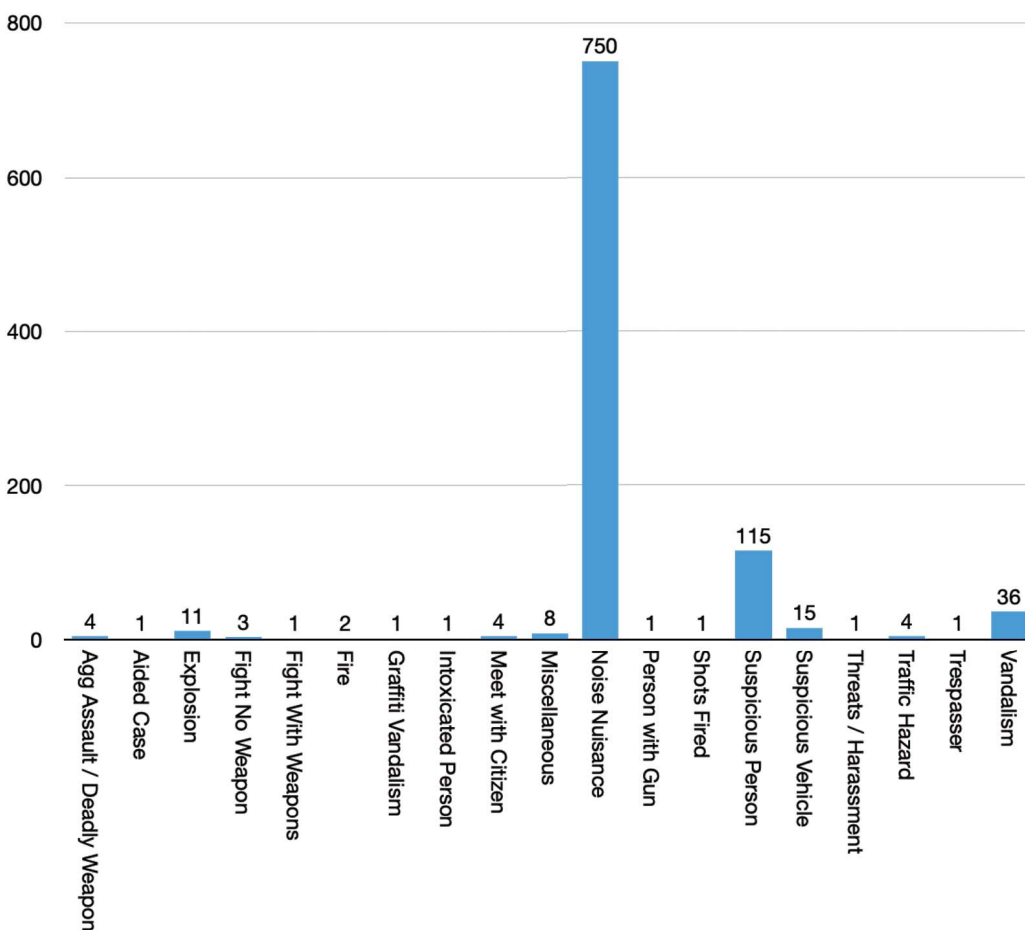
- Department of Emergency Management's 911 Call Center, which handles calls from 911, emergency number 415-553-8090, and non-emergency number 415-553-0123.
- City Administrator's 311 Customer Service Center, handling calls from 311 and 415-701-2311, and requests from:
  - Web: 311 Online Services, <https://www.sf.gov/topics/311-online-services>
  - Social Media:
    - X/Twitter: @SF311, <https://twitter.com/SF311>
    - Facebook: SF311, <https://www.facebook.com/SF311>
    - Mobile App: SF311, <https://www.sf.gov/sf311-mobile-app>
- San Francisco Police Department's Online Reporting System at <https://www.sanfranciscopolice.org/get-service/police-reports>, or
  - In person with a police officer at the nearest station
  - Anonymous Tips for reporting sales or possession: <https://www.sanfranciscopolice.org/contact-and-directory/anonymous-tip-lines>
  - Online, enter a tip at: <https://www.citizenobserver.com/cov6/app/webTipForm.html?id=4909>
- San Francisco Fire Department: Report a Fire Safety Concern online at: <https://sf-fire.org/report-fire-safety-concerns-complaints>

The types of illegal fireworks related issues reported to the city are:

- Injuries from fireworks requiring assistance
- Fireworks being used as weapons
- Fires started from fireworks
- Illegal fireworks being deployed at a given location
- Illegal fireworks being sold
- Possession of illegal fireworks
- Clean-up request of fireworks trash
- Noise complaint about illegal fireworks

Noise complaints are the predominant reason for fireworks-related calls to the city.<sup>7</sup> The overwhelming majority of calls with fireworks reported to the 911 call center have the call description set to “Noise Nuisance.” The “Suspicious Person” call description is a very distant second, followed by “Vandalism”, “Suspicious Vehicle” and “Explosion”. Many noise complaints from the 311 web and mobile app are also registered in the 311 Cases dataset. The 311 customer service center also gets calls for the Department of Public Works and the Recreation and Park Department to provide clean-up for the piles of fireworks trash left on the city streets and in the parks.

Figure 4: Dispatched Fireworks Calls by Description from 2018-2023

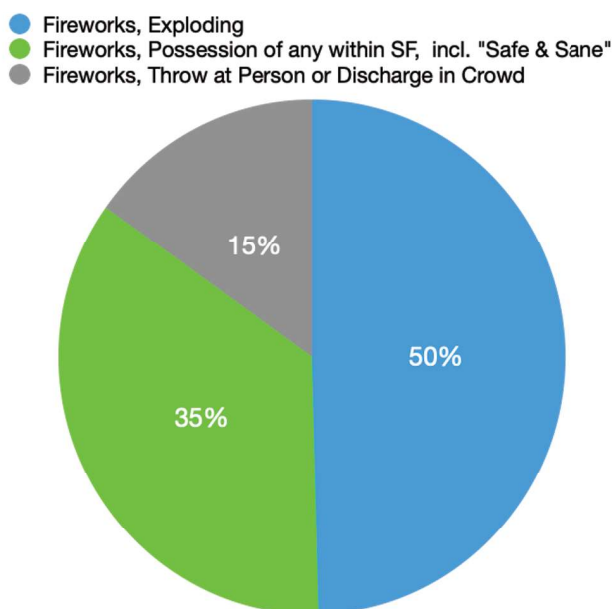


One of the most disturbing aspects of illegal fireworks is an emerging trend in recent years of fireworks being used as weapons.

<sup>7</sup> *Law Enforcement Dispatched Calls for Service: 2018 to Present*, accessible through the DataSF web interface.

We learned from interviews that in June of 2022, during the parade celebrating the Warriors winning the NBA Championship, multiple police officers had their hearing badly affected by explosives being detonated near them. Only a few weeks later on the night of July 4th, fireworks were used as weapons against the police in the Mission.<sup>8</sup> On July 8th of 2023, fireworks were used once again in a crowd and towards police in an event known as the Dolores Hill Bomb.<sup>9</sup> Most recently in February of 2024, fireworks were used to set a driverless Waymo car on fire.<sup>10</sup>

**Figure 5: SFPD Fireworks Incidents by Description from 2018-2023**



Over 15% of the recorded police fireworks-related incidents from 2018 through 2023 had a description of *"Fireworks, Throw At Person or Discharge In Crowd."*<sup>11</sup>

We learned from interviews that the police are seeing more fireworks activity in gatherings than has been observed in the past. As a result of this emerging weaponization of fireworks, police officers being dispatched to these events are now being issued eye protection and contemplate being issued ear protection in the future.

<sup>8</sup> SFPD Mission Station. 2022. ["SFPD Mission officers responded to a large crowd & fire at 24th/Harrison."](https://twitter.com/SFPDMissionStation) *twitter.com*.

<sup>9</sup> Jones, Dustin. 2023. ["Police arrest 32 adults, cite 81 minors at 'hill bomb' San Francisco skate event."](https://www.npr.org/2023/07/08/1181111111) *NPR*.

<sup>10</sup> Jin, Hyunjoo, Mariana Sandoval, and Abhirup Roy. 2024. ["Crowd sets Waymo self-driving vehicle ablaze in San Francisco."](https://www.reuters.com/technology/crowd-sets-waymo-self-driving-vehicle-ablaze-san-francisco-2024-02-02/) *Reuters*.

<sup>11</sup> Corresponds to [Table 7: Police Fireworks Incidents By Description from 2018-2023](#) in [Appendix A](#); see also *Police Department Incident Reports: 2018 to Present*, accessible through the DataSF web interface.

## From Boom to Burden: Ten Affected City Departments

The following are the city departments that are impacted by illegal fireworks:

- Fire Department:
  - Extinguishes fires
  - Provides emergency aid and transport for injuries
  - Investigates causes of fires
  - Messages and educates the public
- Police Department:
  - Stops ongoing illegal activity such as
    - Sales of illegal fireworks
    - Possession of illegal fireworks
    - Deployment of illegal fireworks
  - Works with state and federal agencies on interdiction
  - Bomb Squad: Handles disposal
  - Arson Task Force: Investigates fires
  - Messages and educates the public
- Department of Emergency Services:
  - Handles incoming calls and dispatches help
  - Messages and educates the public
- City Administrator: Handles 311 calls and transfers issues to appropriate agency
- Department of Public Works: Handles clean-up
- Department of Public Health: Provides care for the injured and traumatized
- Recreation and Park Department: Protects city parks from illegal activity
- Department of Animal Care and Control: Cares for lost pets and injured wildlife
- Environment Department: Handles pollution issues
- District Attorney: Handles prosecutions

## San Francisco Fire Department Pre-Planning for Illegal Firework Activity

We understand from interviews that each year before the July 4th holiday, the San Francisco Fire Department (SFFD) works to get property owners to clear their properties of all high grasses or weeds in order to reduce the possibility of the property catching fire from a stray firework.

The SFFD deploys mini-pumper fire equipment on the night of July 4th to “hotspot” areas where they believe the potential is greatest for a fire getting started, such as where the grass was high or not cleared, or historically problematic locations. These measures help to prevent fires and to contain those that do occur before they involve significant personal injuries or property damage. Fire Department officials have indicated it is likely that not all of the fires which are quickly extinguished by the pre-deployed equipment are recorded in the metrics captured in the fire incidents dataset.

## Harms from the Boom: The Devastating Impact to the City

Most people are familiar with the fact that fireworks can cause horrific physical injuries and start costly and deadly fires but fewer are aware of the suffering, fear and mental trauma that the explosions cause. Even fewer realize the impact fireworks have on the environment through pollution of the air, water and land.

### Mental Trauma

Many San Francisco families are impacted by the mental trauma suffered by their pets and loved ones from the explosive noise of fireworks. The groups most affected by the explosions include pets, children, autistic residents, dementia patients, veterans and those with PTSD, and wildlife.

On the New Year’s Eve and July 4th holidays and their accompanying weekends, these explosions can last well into the early morning hours. For this reason, many families choose to flee the city around these dates while other affected households attempt to drown out the explosive booms by hunkering down with their traumatized loved ones in an interior room and playing calming music or videos.

An SFGate article reporting on nonstop fireworks from June 24, 2020 is still very relevant today:

*"I'm losing my mind," said SF resident J. Barry. "We're in South Bernal and it's been super challenging for us. We rescued a dog at the start of quarantine, and she's obviously not responding well to all of this, nor are our 4- and 6-year-old children. The M80s or M1000s are nothing short of heart stopping. One went off last night at 2:30 a.m. and shook our house, windows, ceiling fans. Our family of four was all up for about two hours trying to calm down. So we are all a mess today."<sup>12</sup>*

## Trauma for Pets



*Photo by Matthew Foulds on Unsplash*

"Dogs with noise phobias show symptoms including panting, pacing and hiding. They are often so frightened they try and escape and can sustain injuries in the process. Because of this, fearful dogs can be a danger to themselves."<sup>13</sup>

**Almost half of responding owners reported that their dog showed at least one behavioral sign typical of fear when**

**exposed to noises such as fireworks,** thunder and gunshots, even though only a quarter had reported their dog as 'fearful' of noises.<sup>14</sup>

Similarly, "the loud noises and flashes of fireworks can cause cats to panic, bolting around in search of a safe place. A thirty-minute fireworks show may seem short to us, but for a frightened cat, it can feel like a much longer stretch of disorientation."<sup>15</sup>

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<sup>12</sup> Graff, Amy. 2020. "["I'm losing my mind': Bay Area residents report nonstop fireworks."](#) SFGATE.

<sup>13</sup> The University of Sydney. 2020. "[Dogs, thunderstorms and fireworks: the fear is real."](#) *The University of Sydney*.

<sup>14</sup> Blackwell, Emily J., John W. Bradshaw, and Rachel A. Casey. 2013. "[Fear responses to noises in domestic dogs: Prevalence, risk factors and co-occurrence with other fear related behaviour."](#) *Applied Animal Behaviour Science* 145, no. 1-2 (April): 15-25. 10.1016/j.applanim.2012.12.004.

<sup>15</sup> Church, Larissa. 2021. "[Cats and Fireworks."](#) *Cat Town*.

Another paper cites that “over 50% of owners report that their cat is either ‘very scared’ or ‘extremely scared’ during fireworks exposure.”<sup>16</sup>

“Rabbits, guinea pigs, hamsters, gerbils, mice, ferrets and birds are also easily frightened and all need to be treated with special care when fireworks are being let off.”<sup>17</sup>



Photo by Marko Blazevic on Unsplash

Animal control officials across the country see a 30–60% increase in lost pets each year between July fourth and sixth; July fifth is traditionally one of the busiest days of the year for animal shelters.<sup>18</sup> Discussions with

local animal organizations verified that each year around the July 4th holiday the San Francisco SPCA sees a 20% increase in requests for anti-anxiety medications for pets and SF Animal Care and Control sees an increase in lost pets.

## Trauma for Children

Unexpected, explosive booms from fireworks can be especially frightening to children, especially toddlers and babies, who are sensitive to loud noises. The children with sound sensitivities have normal, not supernormal hearing. The loud noises will cause babies to cry and fuss while toddlers tend to cover their ears or bury their head in a parent’s lap.<sup>19</sup> In fact, being too close to exploding fireworks can cause immediate damage to their hearing.<sup>20</sup>



Photo by Meruyert Gonullu on Pexels

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<sup>16</sup> Furgala, Nicole M., Carly M. Moody, Hannah E. Flint, Shannon Gowland, and Lee Niel. 2022. “[Veterinary background noise elicits fear responses in cats while freely moving in a confined space and during an examination.](#)” *Behavioural Processes* 201 (September).

<sup>17</sup> Stallard, Claire, and Róisín Bolger. 2022. “[Fireworks and Pets.](#)” *Blue Cross.*

<sup>18</sup> McReynolds, Tony. 2018. “[Fireworks aren’t fun for everyone.](#)” *AAHA - American Animal Hospital Association.*

<sup>19</sup> Torbay and South Devon NHS Foundation Trust. 1990. “[Sound sensitivity in children.](#)” *Torbay and South Devon NHS Foundation Trust.*

<sup>20</sup> Balk, Sophie J. 2023. “[How Noise Affects Children.](#)” *HealthyChildren.org.*

“Phonophobia, also known as sonophobia, ligyrophobia, and acousticophobia, is a specific phobia consisting of the persistent fear of loud noises. People with phonophobia do not have a hearing disorder but are afraid of loud noises, which are especially frightening when they occur unexpectedly.

Phonophobia is a common trait in highly sensitive people and highly sensitive children, **with one study showing that around 10% of school-aged children have phonophobia.**<sup>21</sup>

## Trauma for Autistic Children and Adults



Photo by Mikhail Nilov on Pexels

A very common symptom of autism is extreme sensitivity to noise. Children with autism will often hear noises long before their non-autistic counterparts. Even everyday noises can cause insufferable pain, paranoia, screaming fits and feelings of anxiousness. Panic brought on by fireworks can cause autistic children to leave their homes and get lost and even to suffer serious accidents.<sup>22</sup>

Parents of autistic children report that it is the unanticipated, illegal fireworks set off throughout the night which cause the most anxiety and are most problematic for them as it can take hours to get the child back to a “baseline” where they feel safe again.<sup>23</sup>

The latest nationwide statistics from Autism Speaks reveal that **1 in 36 children and 1 in 45 adults have some form of autism.**<sup>24</sup> According to this rate of autism, research data gathered on Decreased Sound Tolerance (DST) in individuals with autism, and calculations done for this

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<sup>21</sup> Shapiro, Leslie. 2023. “[Phonophobia: Understanding the Fear of Loud Noises.](#)” *Choosing Therapy*.

<sup>22</sup> Valentinuzzi, Max E. 2018. “[Fireworks, Autism, and Animals: What 'Fun' Noises Do to Sensitive Humans and Our Beloved Pets \[Retrospectroscope\].](#)” *IEEE Pulse* 9, no. 5 (September): 37-39. 10.1109/MPUL.2018.2856961.

<sup>23</sup> Turner, Niki. 2020. “[Children, veterans and family pets can suffer because of fireworks.](#)” *The Herald Times*.

<sup>24</sup> Autism Speaks. 2024. “[Autism Statistics and Facts.](#)” *Autism Speaks*.



report, there would be approximately 20,000 residents of San Francisco County with some form of autism and **around 10,000 who will experience Decreased Sound Tolerance sometime in their life and therefore likely to be affected by fireworks.**<sup>25</sup>

### Trauma for Dementia Patients

Fireworks can be upsetting and disorienting for someone with dementia. Even indoors, the noise from the explosions of outside fireworks can be very agitating for someone living with dementia and cause them to suffer anxiety and fear.<sup>26</sup>

Caretakers of family members with dementia report that their loved ones get very scared by the fireworks, believing that they are gunshots, and can become overstimulated, confused and agitated.<sup>27</sup>



*Photo by Mario Wallner on Pexels*

### Trauma for Veterans and Those with PTSD



*Photo by RDNE Stock Project on Pexels*

The loud explosions from fireworks can be traumatic to many veterans and others suffering from Post-Traumatic Stress Disorder (PTSD). While many people associate PTSD with veterans, it is very common in the civilian population as well. Illegal fireworks, which are loud, unexpected noises in the night are a common trigger, bringing up thoughts, feelings or memories of a traumatic event.

<sup>25</sup> Please refer to [Appendix B: SF Autistic Residents Harmed](#) for how this value was calculated.

<sup>26</sup> Jordan, Greg. 2023. "[Experts: Fireworks, large crowds can be distressing for dementia patients.](#)" *Bluefield Daily Telegraph*.

<sup>27</sup> Aguilar, Amanda. 2022. "[How fireworks impact people with Alzheimer's, dementia.](#)" *ABC30*.

PTSD can disrupt sleep and increase stress levels dramatically in those suffering from it.<sup>28</sup> Illegal fireworks can go on for many hours which can exacerbate the suffering of those with PTSD and initiate full-blown panic attacks.<sup>29</sup>

The Bay Area is home to a large veteran population and for those suffering from PTSD, the unpredictability of fireworks can trigger it. This can make it hard for them to focus their attention, and can cause flashbacks to traumatic events. It can make them easily angered or reactive to perceived threats.<sup>30</sup>

### Trauma for Wildlife

Few San Francisco residents realize that the city's wildlife, such as coyotes, racoons, birds, squirrels, frogs and fish, can suffer serious consequences from the deployment of fireworks. Birds can become so frightened that they fly off en masse into the night sky in such a panic that they fly into objects or out to sea so far that they cannot return safely.



Photo By Eclipse Chasers on Pexels

Researchers believe that millions of birds are impacted by fireworks but due to the activity happening at night, it is difficult to study and get accurate information about the impact on wildlife.<sup>31</sup>

San Francisco is home to a wide variety of wildlife including many species of bird. In fact, San Francisco's official animal is a bird, the wild parrot.<sup>32</sup> It also has an official bird as well, which is the California Quail.<sup>33</sup>

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<sup>28</sup> Mallard, Chris, and Abbey Anderson. 2020. "[The Overlooked Effects of Fireworks.](#)" *Penn Medicine*.

<sup>29</sup> Glaser, Chery. 2021. "[July 4 fireworks could trigger trauma and pain for people with mental health challenges.](#)" *KCRW*.

<sup>30</sup> High, Joseph. 2020. "[Bay Area residents experiencing mental distress in wake of illegal fireworks.](#)" *Golden Gate Xpress*.

<sup>31</sup> Coulter, Kendra. 2023. "[Summer fireworks can traumatize pets and cause wildlife to flee.](#)" *The Conversation*.

<sup>32</sup> San Francisco Administrative Code Section 1.5-5.

<sup>33</sup> San Francisco Administrative Code Section 1.5-3.

## Pollution from Fireworks

Fireworks contaminate the air, water and soil with toxic chemicals and microplastics, with devastating effects upon exposed people and animals. This defiling of the air, water and soil has both short and long term impacts on the environment.



Photo by Etienne Girardet on Unsplash

### Pollution of the Air

Fireworks can cause air visibility to decrease by as much as 92%, increase atmospheric heat content, and elevate surface air temperatures. The carbon dioxide, carbon monoxide, nitrogen, sulfur dioxide, and particulate matter emitted by fireworks contribute to climate change and harm air quality for animals and humans.<sup>34</sup>

Modern fireworks emit lead, copper, and other toxins. The metals and chemicals which give fireworks their various colors, are also harmful to human cells and animal lungs. In one research study, harmful levels of lead were found in 2 of the 12 types of fireworks analyzed and 5 types were found to significantly increase oxidation in human tissue which if left unchecked can damage or even kill cells.<sup>35</sup>

In recent years, China, which has a strong cultural attachment to fireworks, has started to enforce limits and bans on fireworks in many of its largest cities (e.g. Shanghai, Guangzhou and Beijing) due to their deployments causing air pollution with concentrations of highly-toxic PM2.5 particulates.<sup>36</sup>

### Pollution of the Water and Land

While the after-smog from fireworks is very visible, the pollution to the water and land is sometimes less apparent. Perchlorate is a chemical used in fireworks to help shoot them into

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<sup>34</sup> Han, Jessica. 2023. "[The Environmental Impact of Fireworks.](#)" *Earth.Org.*

<sup>35</sup> NYU Langone Health. 2020. "[Common Fireworks Release Lead, Copper & Other Toxic Metals into the Air.](#)" *NYU Langone Health.*

<sup>36</sup> Hao, Feng. 2016. "[Shanghai's firework ban ensures quieter start to New Year.](#)" *China Dialogue.*

the night sky. In large amounts it has also been found to affect the functioning of the thyroid gland. When fireworks explode, this chemical settles in the soil and water and remains in the environment for very long periods of time. It is absorbed by plant life and can affect the development of fish in water bodies that it pollutes.<sup>37</sup> Interviews with persons knowledgeable about fireworks and perchlorate confirm that it is one of the problematic pollutants from fireworks that makes disposal of confiscated fireworks difficult and expensive.

Firework debris also contaminates the soil and water with microplastics. Measurements of microplastics in the River of Thames in England indicated a 1000% increase after a New Year's Eve fireworks show.<sup>38</sup>

Fireworks also contribute to acid rain. The particulate matter, sulfur dioxide, and nitric oxide from the fireworks can linger in the air for long periods of time, be transported over different areas and when mixed with oxygen, water, and other chemicals, acid rain can develop. Acid rain is harmful to both aquatic and forested ecosystems.<sup>39</sup>

As the chemicals in fireworks are harmful to the environment, this makes the disposal of confiscated fireworks and the cleanup of fireworks trash more difficult than one might imagine. Interviews with public employees knowledgeable about pollution engendered by fireworks indicate that there are only a few places in the country that will take and dispose of confiscated fireworks, and the process is costly. The Office of the State Fire Marshal of California collects all confiscated fireworks from across the state and is responsible for handling their safe disposal.

## Damage from Illegal Fireworks

On April 15, 1986 an entire city block in the Bayview district of San Francisco was destroyed by a massive explosion and fire originating in the Bayview Industrial Park. When the smoke cleared, 8 people were dead, at least 20 were injured, operators of dozens of shops lost their businesses and around \$10 million in damages was sustained. The original explosion shook the ground for several miles and was followed by two smaller blasts. The fire burned out of control for over 4 hours. The business at the heart of the explosion was supposedly a company that made forms for computer printouts, however, that was all a fabrication. In reality, the business was operating

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<sup>37</sup> Han, Jessica. 2023. "[The Environmental Impact of Fireworks.](#)" *Earth.Org.*

<sup>38</sup> Han, "[The Environmental Impact of Fireworks.](#)"

<sup>39</sup> Han, "[The Environmental Impact of Fireworks.](#)"

an illegal, underground, fireworks factory producing M-80 and 'barrel bomb' fireworks. The fireworks were being made and sold for recreational use.<sup>40</sup>

This isn't an isolated event. On May 16, 1998 a house full of illegal fireworks<sup>41</sup> caused an explosion and fire that ripped through a Sunset District home, injuring at least 17 people including 6 children, leveling the three-story residence, blowing out windows for blocks and shattering windshields of passing cars.<sup>42</sup>

*The blast at 8:05 p.m. triggered a four-alarm fire that destroyed the two houses on either side of the residence and knocked the home at 1450 19th Ave. off its foundation, leaving it crumpled at a 45-degree angle and looking as if it had been through a major earthquake.*<sup>43</sup>

In addition to the dangers posed by the manufacturing and storing of illegal fireworks, the SFFD must always be vigilant against fires started by fireworks. The city contains many wooded areas, fields, and vulnerable houses and buildings.<sup>44</sup> Interviews with public employees knowledgeable about fires caused by fireworks, along with analysis of fire statistics, indicate that many of the firework fires start in grass fields, however there are building fires that occur as well. For the years 2018-2023 there was a total of \$555,900 in property loss and \$35,200 in content loss<sup>45</sup> from firework fires as reported by the San Francisco Fire Department and captured in the DataSF *Fire Incidents* dataset.<sup>46</sup>

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<sup>40</sup> UPI Archives. 1986. "[Illegal fireworks plant sparked fire.](#)" *UPI* (San Francisco), April 10, 1986.

<sup>41</sup> Derbeken, Jaxon V. 1998. "[Sifting Through Rubble / Illegal fireworks could have been cause of S.F. blast.](#)" *SFGate*.

<sup>42</sup> Delgado, Ray, Bruce Adams, John Koopman, and Anastasia Hendrix. 1998. "[Blast levels Sunset home; 17 injured by debris, fire.](#)" *SFGATE*.

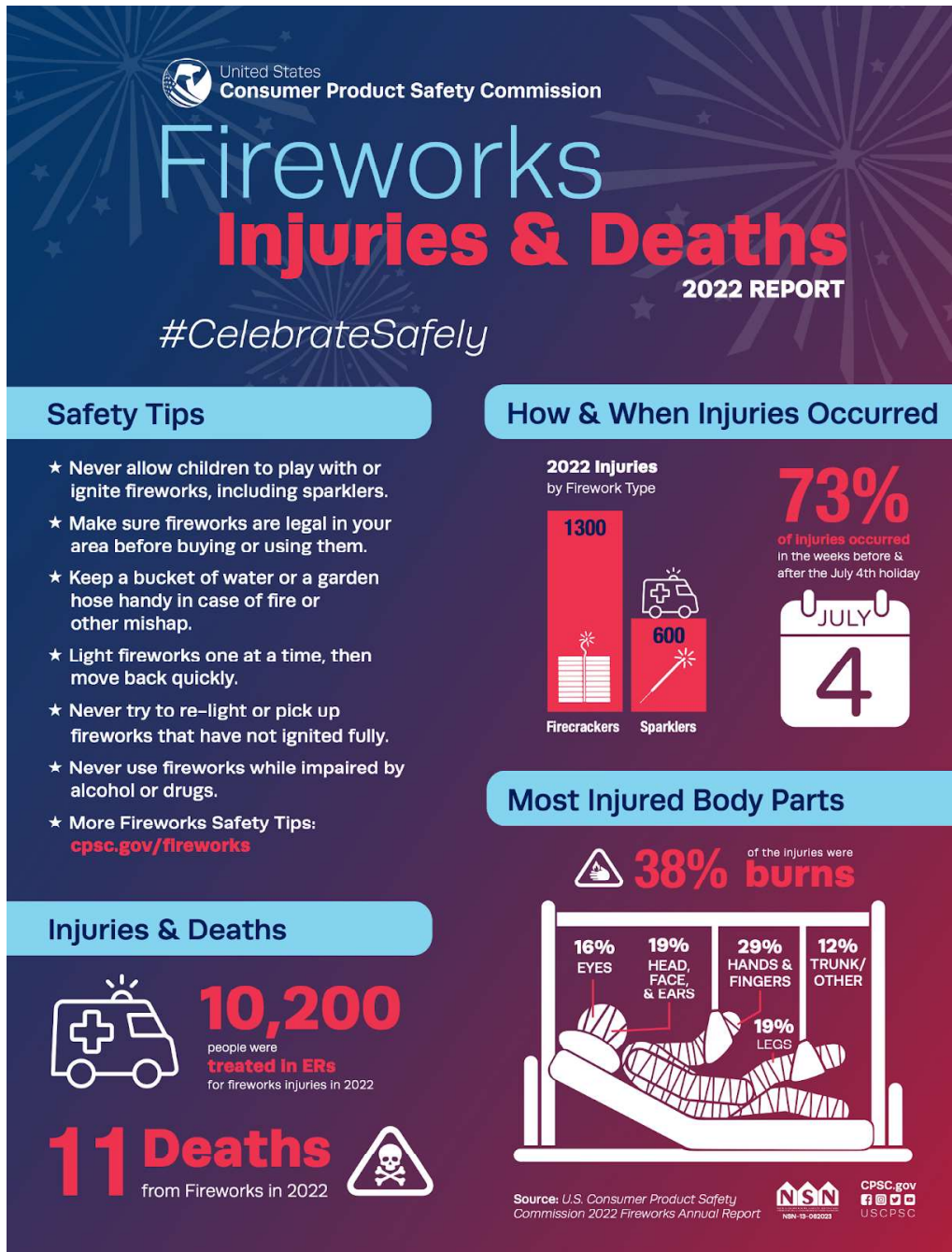
<sup>43</sup> Delgado et al., "[Blast levels Sunset home](#)", *SFGATE*.

<sup>44</sup> See [Figure 19: Fireworks Fires By Property Use from 2018-2023](#) in [Appendix A](#).

<sup>45</sup> See [Content Loss \(NFIRS\) in the Glossary and Abbreviations](#).

<sup>46</sup> See [Table 10: Additional Information Fires Started by Fireworks from 2018-2023](#) in [Appendix A](#).

## Injuries from Fireworks



The federal Consumer Product Safety Commission (CPSC) gathers the national statistics on fireworks injuries as seen in the previous graphic. The latest statistics are from 2022. While the majority of the injuries (73%) occur in the weeks before and after July 4th, tragically, an 18 year

old, while celebrating the new year for 2024, was killed in a fireworks related accident on Treasure Island.<sup>47</sup>

Each year, persons not only from San Francisco but visitors to the city experience serious injuries:

*According to a spokesperson, General Hospital saw six people with “fireworks-related injuries” between July 1 and July 4, with burns and “blast injuries” to hands and eyes. “One patient is in critical condition,” they wrote in an email, “and four are in serious condition with one patient discharged.”<sup>48</sup>*

The incidence of firework-related injuries has risen over the past decade. Injuries remain most common among adolescents and young adults.

*In addition, significant injuries requiring hospitalization occur most often during aerial and illegal firework use. Further targeted sale restrictions, distribution, and manufacturing regulations for high-risk fireworks are required to reduce the incidence of significant injury.<sup>49</sup>*

Many people underestimate the dangers to their personal safety when setting off fireworks. In addition to the actual loss of life (11 US deaths, according to the 2022 CPSC statistics) and the fingers, toes and limbs permanently injured or needing amputation (48% from the 2022 CPSC statistics), sparklers, which seem innocent and safe for children, burn hot enough (about 2000 degrees fahrenheit) to melt some metals and can cause permanent scars and disfigurement.<sup>50</sup>

Other dangers from fireworks that many don't think about include the potential permanent damage to one's hearing<sup>51</sup> or eyesight.<sup>52</sup>

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<sup>47</sup> KTVU.com. 2024. [“Teen identified in fatal Treasure Island fireworks accident.”](#) KTVU.

<sup>48</sup> Jones, Griffin, and Joe R. Barros. 2023. [“Fingers lost, M80s swept: Fourth on 24th 'better than last year.'”](#) Mission Local.

<sup>49</sup> Winiki, Nolan M., Ian Waldrop, Jesus V. Orosco Jr., Daniel Novak, and Nicholas W. Sheets. 2024. [“The epidemiology of firework-related injuries in the US, 2012–2022.”](#) Springer Nature / Injury Epidemiology.

<sup>50</sup> ChemicalSafetyFacts.org. 2023. [“Fireworks and Sparklers: The Chemistry of Fireworks and Pyrotechnic Colors.”](#) Chemical Safety Facts.

<sup>51</sup> CDC. 2020. [“July is Fireworks Safety Month! Take care to protect your hearing. | Hearing Loss | NCEH | CDC.”](#) Centers for Disease Control and Prevention.

<sup>52</sup> Gudgel, Dan. 2023. [“Fireworks Eye Safety.”](#) American Academy of Ophthalmology.

## Beyond the Ban: The Obstacles to Eliminating Illegal Fireworks

There are many impediments to reducing illegal firework activity. Some of them are:

- Seen as a Lower Priority Problem
- Limited Enforcement Resources
- Difficulty Dealing with Explosives
- Lack of Coordinated Messaging, Education and Community Engagement
- Official Metrics are not Being Gathered or Tracked



*Photo by Samantha Sophia on Unsplash*

### Seen as a Lower Priority Problem

A consistent theme that emerged from our interviews with knowledgeable employees in departments impacted by illegal fireworks is that there is definitely a problem in the city with illegal fireworks but it is low in priority on the list of the many problems that must be dealt with as part of their jobs. Another consistent comment was that since the issue does not generate large volumes of complaints throughout the year, and only becomes overwhelming around July 4th, taking further action about fireworks is not prioritized.

### Limited Resources

During the evening of the 4th of July holiday when many illegal fireworks are being discharged all over the city, some police officers from each of the stations are assigned to downtown to handle the crowds watching the public fireworks display. Even having extra officers on duty during this time can still leave stations in the city with smaller staffs, especially on a busy night. Also, on the evening of July 4th when most of the illegal firework activity is occurring, much holiday celebration and drinking leads to additional accidents, fights and criminal activity which are handled as higher priority incidents than the illegal fireworks use itself.



## Difficulty Dealing with Explosives

Another issue consistently mentioned is the time consuming process that is required of patrol officers when they are dealing with illegal fireworks. Much of the firework material being confiscated is of such a nature that it requires the patrol officers to stay with it until the bomb squad arrives and it can be properly disposed of. This takes the officers “off the street” for long periods of time and keeps them from stopping other illegal activity.

## Lack of Coordinated Messaging, Education and Community Engagement

Still another issue raised repeatedly in interviews is that there is currently little to no coordination among the departments to work together on developing common educational programs, community engagements or targeted messaging campaigns on the topic of illegal fireworks.

## Only a Single Official Metric is Being Gathered and None are Being Tracked

Through interviews we also learned that there are no official metrics being tracked by the city about illegal fireworks. The only official metric being gathered is the *Heat Source* field in the Fire Incident dataset. This dataset is published by the San Francisco Fire Department and follows the codes and guidelines set forth by the National Fire Incident Reporting System (NFIRS). The Heat Source field has an entry code *54 Fireworks* which is used to indicate fires started by fireworks.

## Fireworks Fines: Avoiding Legal Trouble with Fireworks

### Overview of Federal, State and City Fireworks Laws



Photo by Sora Shimazaki on Pexels

Fireworks are regulated and licensed at the federal, state and local levels. The federal government classifies devices as either display fireworks (used by professionals in public shows) or consumer fireworks (sold to the public). The various states can then further limit or ban which federally approved type of consumer fireworks are legal within their jurisdiction. Finally, localities such as counties, towns and cities can further restrict or ban which consumer fireworks are permitted within their boundaries.

The state of California limits consumer fireworks to those that mostly stay on the ground or are handheld and are non-explosive. These fireworks are classified as ‘Safe and Sane’ and include categories such as sparklers, spinners, fountains, wheels, cones, handheld, smoke items, novelty items and assortments. The California Office of the State Fire Marshal (OSFM) is responsible for the regulation, licensing and disposal of all firework related issues in the state of California. It determines which consumer fireworks are legal within the state and publishes a list of the approved products.<sup>53</sup>

**The City and County of San Francisco bans all private fireworks within its jurisdiction.** Public displays of fireworks are permitted but in accordance with state law must be performed by licensed, pyrotechnic companies and operators. In San Francisco, these shows require

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<sup>53</sup> Rodrigo, Olivia. 2023. "[State Approved Safe & Sane Fireworks.](#)" CA Office of the State Fire Marshal.

pre-approval by the San Francisco Fire Marshal and San Francisco Chief of Police.<sup>54</sup> Such displays are typically launched from offshore barges and are deployed only by people highly skilled, experienced, and licensed in handling fireworks.

Some people wrongly assume that a big part of the problem with so many fireworks being launched into the San Francisco sky or causing the window-rattling explosions is neighboring cities such as Pacifica, permitting the sale of the California approved “Safe and Sane” fireworks. However, one can see from the type of fireworks permitted for sale and use in some California cities that these sorts of fireworks are not the kind that launch into the air or could make such loud explosions. The San Francisco firework explosions booming around the city are more likely from fireworks that are illegal in California but which are for sale in the neighboring state of Nevada.<sup>55</sup>

See [Appendix C](#) for more detailed information on the federal, state and local agencies and the laws and regulations which deal with fireworks.

### **New CA Fireworks Law—CA Assembly Bill 1403**

California Assembly Bill 1403 was approved by the Governor and filed with the Secretary of State on October 7, 2023. It is a law about fireworks that has already impacted and will potentially impact California counties over the next few years, updating and amending sections of the California Health and Safety Code about fireworks.

The law has two main components. The first component is directed at the Office of the State Fire Marshal (OSFM) and tasks it to identify improved metrics for tracking fireworks, gather data about fireworks, and then make a report to the Legislature about education, training and enforcement for local agencies including a cost analysis. The second component updates the fines for possessing and discharging illegal fireworks. Most of the fines are doubled from their previous ranges.

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<sup>54</sup>San Francisco Police Code. 2023. “[SEC. 1290. DISCHARGE OF FIREWORKS PROHIBITED.](#)” *American Legal Publishing.*

<sup>55</sup> Sriskandarajah, Ike. 2017. “[Fireworks spark up a black market economy.](#)” Marketplace.

The updated fines and penalties will be discussed in the next section. Some highlights from the new law which may end up impacting San Francisco in the future follow (bolding was done for this report):

- On or before **July 1, 2024**, the State Fire Marshal shall **identify and evaluate methods to capture more detailed data** relating to fires, damages, and injuries caused by both dangerous fireworks and safe and sane fireworks.
- On or before **January 1, 2025**, the State Fire Marshal shall collect and **analyze data relating to fires, damages, seizures, arrests, administrative citations, and fireworks disposal issues** caused by the sale and use of both dangerous illegal fireworks and safe and sane fireworks.
- On or before **January 1, 2025**, the State Fire Marshal shall provide to the appropriate policy and budget committees of the respective houses of the Legislature **a workload analysis of resources** needed to further assist in **the training of local fire and law enforcement personnel** regarding all the following:
  - (A) **The seizure, collection, transportation, and storage of seized fireworks.**
  - (B) **The enforcement of statewide programs concerning illegal and dangerous fireworks.**
  - (C) **Prosecution related to seized fireworks.**
  - (D) **Investigations of illegal and dangerous fireworks.**
- Subject to an **appropriation by the Legislature**, the State Fire Marshal shall **train local fire and law enforcement personnel** on the requirements of this chapter.
  - The State Fire Marshal shall, **in consultation with relevant state and local public agencies**, the fireworks industry, and other relevant stakeholders, develop, publish, and provide **necessary guidance and training to local agencies that seize, collect, transport, store, and treat seized fireworks.**

See [Appendix D](#) for the full text of the law.

## The Penalties and Fines

Pursuant to CA AB 1403, the fines for illegal fireworks doubled as of January 1, 2024.

Most firework violations in California are misdemeanors and the punishment upon conviction includes:

- A fine of between \$1,000 to \$2,000, and/or
- Imprisonment in the county jail for up to one year



Photo by Alexander Mills on Unsplash

Possessing *large* amounts of dangerous fireworks can result in:

- Fines of up to \$100,000 and/or
- Up to three years in a California state prison

Additionally, parents of willful violators are held liable for any damage or injuries caused by their children using illegal fireworks.

## Dimming the Spark: Innovative Solutions to Illegal Fireworks

### San Francisco Operation Kaboom

Operation Kaboom was an interdepartmental strike team brought together in 2019 to curb illegal firework usage in the Ingleside Police District. It consisted of members from the San Francisco Police Department (SFPD), the San Francisco Fire Department (SFFD), the San Francisco Bomb Squad, the Department of Public Works (DPW), and the Department of Emergency Management (DEM). The operation involved two police cars, a police pickup truck, a fire engine and a DPW street sweeper.

Residents in the Ingleside neighborhood were instructed to report firework activity with an exact location and the dispatchers were trained on how to prioritize and route these specific calls to the strike team. The following objectives were achieved:

- 500 pounds of illegal fireworks were seized
- Several spot fires were extinguished before becoming larger
- Public awareness of the issue of illegal fireworks was increased
- Community hotspots where illegal fireworks were commonly deployed were identified
- Appreciation for being responsive to calls and taking action was received from the public

### Greener Alternatives to Fireworks

Some Canadian cities replaced fireworks with special effects pyrotechnic displays, which are quieter and have a lower altitude, in order to protect wildlife. Colorful and illuminated silent firework displays without the traditional loud bang are used in the town of Collecchio in Italy to help reduce stress on local wild animals, a great and more environmentally friendly alternative.<sup>56</sup>

Other options include drone displays similar to the one presented at the Opening Ceremony of the 2020 Tokyo Olympics, and laser spectacles which reduce the risk of wildfires and do not increase air pollution. Salt Lake City in Utah has been using lasers during the Fourth of July holiday to reduce environmental damage while still providing the same level of spectacle as fireworks.<sup>57</sup>

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<sup>56</sup> Han, Jessica. 2023. "[The Environmental Impact of Fireworks.](#)" Earth.Org.

<sup>57</sup> Han, "[The Environmental Impact of Fireworks.](#)"

## Creation of Fireworks Task Forces In Counties and Cities Across the Country

Numerous counties and cities have created illegal fireworks task forces to address this difficult issue.

These task forces vary in their approaches and missions but they all bring together members of different departments and organizations to address the problem. Here are some of the actions coming out of these task forces:

- Create interdepartmental teams to come up with solutions
- Increase public education and communication
- Involve the community
- Increase fines and penalties
- Increase staffing on problem nights like 4th of July
- Identify, capture and publish metrics on fireworks
- Institute buy and bust programs which buy illegal fireworks and arrest the sellers to discover their suppliers
- Cooperate and work with federal and state agencies on interdiction
- Implement social ordinances which allow fines to be sent out to property owners when visual evidence of fireworks being set off on their property is collected
- Implement changes to the laws to help public safety officials with more legal tools for curbing illegal fireworks usage
- Implement amnesty and buy back programs for illegal fireworks
- Use technology such as audio detection systems, cameras and drones to detect illegal fireworks deployments
- Create mascots for education around firework safety and dangers

Some of the examples of California task forces that were discovered for this report with the year that they were first seen noted in parenthesis. This is not an exhaustive list.<sup>58</sup>

- East Palo Alto and Menlo Park in San Mateo County (2021)
- Temple City in LA County (2021)
- City of Moreno Valley in Riverside County (2021)

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<sup>58</sup> See [Task Forces in California](#) in [Appendix E](#).

- Sacramento County (2018)
- San Bernardino County (2017)
- San Joaquin County (2017)
- Kern County (2015)

Task Forces also exist across the United States, for example:<sup>59</sup>

- State of Hawaii (2023)
- Washington DC (2022)
- Boston, MA (2020)
- Providence, RI (2020)
- Pittsburgh, PA (2020)
- Bend, OR (2019)
- Clark County/Las Vegas, NV (2018)
- Happy Valley, OR (2012)
- Milwaukee, WI (2006)
- New York City, NY (1995)

### Recent California Counties Civil Grand Jury Reports on Illegal Fireworks

- 2023-2024 Kern County Civil Grand Jury Report entitled “The Kern County Fire Department - The Effects of Illegal Fireworks”<sup>60</sup>
- 2022-2023 Monterey County Civil Grand Jury Report entitled “City of Seaside: The Real Cost of Fireworks”<sup>61</sup>

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<sup>59</sup> See [Task Forces Across the United States](#) in [Appendix E](#).

<sup>60</sup> 2023-2024 Kern County Grand Jury. 2024. [“The Kern County Fire Department - The Effects of Illegal Fireworks.”](#) Kern County.

<sup>61</sup> 2022-2023 Monterey County Civil Grand Jury. 2023. [“City of Seaside: The Real Cost of Fireworks.”](#) County of Monterey.



# Analysis

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## Detonating the Data: An Analysis of Illegal Fireworks

### Very Significant Numbers of San Franciscans are Traumatized by Fireworks

While it is probably impossible to know with certainty whether the estimates made in this report about the number of San Francisco households and residents traumatized by illegal fireworks are precisely accurate, we have concluded that the estimates are reasonably accurate. One thing is very clear - there are a very large number of people, pets and wildlife in San Francisco being impacted on a regular basis by illegal firework activity throughout the city. To summarize the findings on those potentially impacted by illegal fireworks:

- **Pets:** Around 100,000 San Francisco households, about one in four, have a pet frightened by illegal fireworks.<sup>62</sup>
- **Children:** Over 3,500 San Francisco children under the age of 5 are likely frightened or bothered by illegal fireworks.<sup>63</sup>
- **Autistic residents:** An estimated 20,000 San Francisco residents have some form of autism and at some point in their lives around 10,000 will exhibit Decreased Sound Tolerance (DST) and therefore likely to be impacted by illegal fireworks.<sup>64</sup>
- **Dementia patients:** An estimated 12,500 San Francisco residents have some level of dementia and will potentially be agitated by fireworks.<sup>65</sup>

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<sup>62</sup> See Appendix B: [SF Households with Pets Harmed](#) for how this value was calculated.

<sup>63</sup> See Appendix B: [SF Children Under 5 Harmed](#) for how this value was calculated.

<sup>64</sup> See Appendix B: [SF Autistic Residents Harmed](#) for how this value was calculated.

<sup>65</sup> See Appendix B: [SF Residents with Dementia Harmed](#) for how this value was calculated.

- **Veterans and others suffering from PTSD:** In any given year, an estimated 2,500 San Francisco combat veterans and 37,700 San Francisco adults suffering from PTSD are potentially triggered by the explosions from illegal fireworks.<sup>66</sup>

## The Need for Better Coordination

### A Lack of Any Formal Coordination on Illegal Fireworks

We have concluded from numerous interviews that currently there is little to no coordination between departments on how they deal with the issue. What small amount of inter-departmental cooperation that may exist is informal and inconsistent. Coordination is made difficult because no official metrics are being tracked by the multiple departments who receive complaints.

### An Experienced Leader—The Department of Emergency Management (DEM)

The Department of Emergency Management has experience planning and coordinating safety, health, and service departments to handle problems and emergencies which require interdepartmental efforts and cooperation. DEM also is very experienced at working with outside state and federal agencies.

The Division of Emergency Communications within DEM is responsible for dispatching all emergency and non-emergency calls for the Police and Fire Departments. As such, they already constantly deal with illegal fireworks issues and play a central role as both the public interface and the internal communications to the safety personnel. The additional activity to better track and manage illegal fireworks activity can be accomplished with minimal burden and cost for DEM. For these reasons, the Department of Emergency Management would be the ideal candidate for leading any coordinated effort to address the illegal fireworks issue.

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<sup>66</sup> See Appendix B: [SF Veterans and Residents Suffering from PTSD Harmed](#) for how this value was calculated.

## Conflicting Messaging on Reporting

One glaring example of the need for better coordination is the current conflicting messaging to the public on how they should be interacting with the city in regards to illegal firework activity.

The messaging on using 911 is clear: it should only be used for emergencies such as when someone has been injured or there is imminent danger to life or property.

The messaging on reporting someone shooting off fireworks in your neighborhood is less clear and often contradictory.

- The San Francisco Police Department (SFPD) and SFSafe (non-profit funded primarily by SFPD to do crime prevention) asks the public to call the non-emergency number, 415-553-0123.
- The Department of Emergency Management (DEM) and San Francisco Fire Department (SFFD) asks the public to call 311.
- Some of the messaging asks that you only call if you can give an address or intersection and a description of the person setting off the fireworks while others don't mention any requirements for calling at all.
- There is some messaging on how the public should make noise complaints but that is contradictory as well. There is also no mechanism for the public to register the volume of activity or the level of their displeasure. This would likely best be handled in a web or mobile app which 311 currently supports, however, 311 currently does not believe it has been tasked with handling any fireworks related calls other than calls for clean-up.
- Examples of messaging for the public to call 553-0123:
  - SFPD: <https://www.sanfranciscopolice.org/independence-day-safety-tips>
  - SFSafe: <https://twitter.com/SFSAFE/status/1676305087226867718>
- Examples of messaging for the public to call 311:
  - DEM: [https://twitter.com/SF\\_emergency/status/1676313954090647552](https://twitter.com/SF_emergency/status/1676313954090647552)
  - DEM: [https://twitter.com/SF\\_emergency/status/1756790602262319587](https://twitter.com/SF_emergency/status/1756790602262319587)
  - DEM: [https://twitter.com/SF\\_emergency/status/1756790423694274988](https://twitter.com/SF_emergency/status/1756790423694274988)
  - SFFD: <https://sf-fire.org/safety-resources-and-information/fireworks-safety>

As the public is more familiar with the 311 number than the non-emergency number, 415-553-0123, and the 311 system has more methods for reporting complaints such as from the web and its mobile app, it seems better suited for receiving, documenting and reporting general noise complaints about illegal fireworks.

A call about seeing the deployment of fireworks with a location and a description of the individuals engaging in the activity is the reporting of a crime, which should be made to the non-emergency number, 415-553-0123. But if the deployment was in a crowd or going off close to residences and creating an imminent danger, 911 should be contacted because this may be an emergency. The simplest messaging would have all non-emergency calls about illegal fireworks going to 311, and then having the calls about specific deployments forwarded to the non-emergency number.

The details about reporting illegal fireworks activity has many subtleties. The officials working in the various departments dealing with this issue are the subject matter experts best positioned to define the policies which are the most optimal within the given dispatch and software systems in use. Nevertheless, a solution requires these experts to meet, coordinate and develop a solution that provides robust, consistent and clear messaging to the public on the preferred way to contact the city about non-emergency reporting of illegal firework activity.

## The Need for Better Metrics

To better understand a problem and be able to determine if it is getting better or worse, one needs to identify impactful and representative data that can be collected, measured and have targeted goals set.

### Existing Fireworks Data and Potential Improvements

Fireworks information from the datasets currently in use, 311 Cases Data, Law Enforcement Dispatched Calls for Service: Closed Data, Police Incident Data and Fire Incident Data, are presented in [Appendix A](#) of this report. While the DataSF web portal makes some good information readily available, data on fireworks is informally described and not always easily distinguished from other activity. Potential improvements include:

- Update the current datasets to have specific fixed codes or unique categories for illegal fireworks instead of relying on free-form description or notes fields which make it harder to generate reports or distinguish fireworks-related calls or incidents from other types of calls or incidents.
- Ensure that fire, law enforcement, and health officials report and log all data about fireworks fires, citations, arrests, injuries and property damages. Some of the fires being started by fireworks are not being captured in the current metrics being gathered, and those metrics do not include information about injuries caused.
  - It was learned in interviews that it was likely that not all the fireworks fires being extinguished by the pre-deployed mini-pumpers on July 4th are being captured in the Fire Incidents DataSF dataset. For example, public statements from the SFFD about there being 108 firework fires on the night of July 4, 2020<sup>67</sup> did not match the six Fire Incidents logged in the DataSF dataset for that same time period.<sup>68</sup>
- Collect and annually publish the following metrics related to fireworks:
  - Number and types of injuries caused by fireworks
  - Number of calls for fires started by fireworks
  - Number of fires started by fireworks
  - Number of calls for firework specific noise complaints
  - Number of calls for police to stop active deployments of fireworks
  - Number of citations issued
  - Number of fines issued and dollar amount of fines collected
  - Number of arrests made
  - Number of prosecutions and convictions
  - Amount (in pounds) of illegal fireworks confiscated
  - Number of community meetings and educational talks held on the topic
  - Amount (in dollars) of property damage caused by illegal fireworks
  - Amount (in dollars) of content loss caused by illegal fireworks

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<sup>67</sup> Barnard, Cornell. 2020. "[‘We had M-80s shot over our heads,’ SF firefighters respond to hundreds of fires caused by illegal July 4th fireworks.](#)" *KGO ABC7 News*.

<sup>68</sup> There were only [6 fires recorded in the Fire Incidents | DataSF dataset](#) from 07-04-2020 3:00 pm to 07-05-2020 11:00am where the Heat Source code was 50 (Explosive, fireworks, other) or 54 (Fireworks).

## The Performance Program Team in the Controller's Office

San Francisco is fortunate to have a dedicated team of professionals who work on collecting and reporting performance results across departments and service areas. In November 2003, San Francisco voters passed Proposition C. It mandated the Controller's Office to monitor the level and effectiveness of services the city provided. This Program was created to achieve this objective.

On its website the Performance Team describes itself in the following manner:

*The Performance Program Team in the Controller's Office works collaboratively with City departments to collect and report performance results. These performance data help evaluate the effectiveness of the full range of public services provided by the City and County of San Francisco. In short, we work with City departments to:*

- *Track performance data using a centralized database*
- *Make performance data accessible to the public*
- *Promote the use of data to inform decision-making*
- *Develop meaningful performance measures*
- *Support their performance management efforts<sup>69</sup>*

This team publishes an annual report which provides performance data for each of the city's departments. It also publishes scorecards which provide timely information on the efficiency and effectiveness of San Francisco Government across nine highlighted service areas that are of greatest interest to the public. Two of these service areas which are impacted by illegal fireworks are Public Safety and Public Health. This team is well positioned to work with the various departments impacted by illegal fireworks to create meaningful metrics to track and report on through scorecards and their annual report.

## The Need for Better Crime Prevention

One common theme that is prevalent in local news reporting and in information we gathered in interviews for this report is that there is an issue on July 4th with large gatherings of people in certain neighborhoods such as the Mission, where fireworks are indiscriminately and

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<sup>69</sup> San Francisco Controller's Office. 2023. "[San Francisco Performance Program | San Francisco.](#)" *SF.gov.*

dangerously deployed from within the crowds and in the streets. Many of the individuals in these groups are under the influence of drugs or alcohol which tends to become worse as the night wears on. Fireworks are set off very close to individuals in the crowds and to local residences. Many times sideshows and fights accompany these gatherings. These events also leave behind lots of toxic debris in the neighborhood streets.

This is not a situation that a few police officers can handle on their own. Unfortunately, the presence of officers can quickly turn a celebratory environment into a combative one. This past 4th of July in the Mission, it was reported that a large contingent of officers in riot gear gathered and waited until after midnight (July 5th) to break up a large gathering at 25th and Harrison Streets.<sup>70</sup> While it is likely not the case, this appears to give the impression that the illegal activity is fine as long as it occurs on the 4th of July. It must be made clear to everyone in the Bay Area and beyond that San Francisco is not a place where one can come to discharge fireworks in its parks and streets without consequence on any day of the year.

Many of the locations, like certain areas in the Mission, where these large gatherings occur can be anticipated as they are common “hotspots” every year. Some preventative measures that might be taken are:

- Widely publicizing that activities such as deploying fireworks in the streets of San Francisco won't be tolerated and such activities could lead to large fines or arrest.
- Using street closures and other traffic measures to keep crowds out of the historically problematic areas.
- Pre-deploying officers to the areas to keep crowds out of the streets and stopping any firework activity before it gets started.
- Publicizing citation and arrest counts that are made each year in the press to reinforce the message that there are potential consequences.

Police officers are trained to use their discretion to ensure the safest resolutions to situations. Sometimes this may mean allowing some illegal activity without citations or arrests in furtherance of the goal of peacefully ending the activity and dispersing a crowd. Law

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<sup>70</sup> Kukura, Joe. 2023. "[Mission District Fireworks Mayhem Leads To Late-Night Riot-Gear Police Skirmish.](#)" *SFist*.

enforcement is a very challenging profession. Preventing situations which require enforcement should always be the goal.

## The Need for Behavioral Change

### Why Do So Many Engage In This Illegal Activity?

There are many and varied reasons why someone engages in acquiring and discharging illegal fireworks. An understanding of the “why” is key to formulating effective strategies for obtaining better control over illegal fireworks and creating behavioral changes. Understanding the reasons for someone’s behavior also makes it easier to engage with them on the topic and also to create educational materials and campaigns to persuade them to change.

### Culture and Tradition

Certain cultures and religions have traditions that involve fireworks. “Traditionally, Chinese people believed that fireworks could ward off evil spirits and because of this, they are a major custom around public holidays, weddings, funerals, and other traditional ceremonies.”<sup>71</sup>

In Mexico, saints are honored with firework displays and in some indigenous communities the fireworks have become part of their religious ceremonies, believing that the fireworks can amplify their prayers.<sup>72</sup>

The United States has a long history and tradition of celebrating its Independence Day, July 4th, with extravagant firework displays across the country. Many people have July 4th family traditions of setting off fireworks after a day of barbecuing on the grill. The activity is seen as fun and patriotic.

There has also become a tradition of celebrating major events and sports teams victories with fireworks. San Francisco has enjoyed several of these championships and looks forward to many more.

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<sup>71</sup> Tropical Hainan. 2022. [“The history of fireworks and their traditional uses in China.”](#) *Tropical Hainan*.

<sup>72</sup> Agren, David. 2017. [“Despite accidents, Mexicans continue to honor saints with fireworks.”](#) *Crux Now*.



## Availability

There has been an explosive growth of consumer fireworks available in the national marketplace. “Data from the American Pyrotechnics Association finds that the consumer fireworks industry has seen its annual revenue grow from \$407 million in 2000 to \$2.3 billion in 2022.”<sup>73</sup> Even though all fireworks are illegal in San Francisco except when specifically authorized for a public display by licensed operators, there are millions of legal consumer fireworks being produced with inevitably some of them making their way into the city.

Fireworks that are illegal in California such as firecrackers and those that explode in the sky can also be obtained in the multi-million dollar black market. Many of these black market fireworks come from neighboring states such as Nevada where they are legal or from illegal criminal rings which smuggle them in from foreign nations such as China.<sup>74</sup>

## Ignorance

Many people are likely unaware that all fireworks are illegal in San Francisco except those used in sanctioned public displays by licensed professionals. They may not know the potential for being arrested or how large the fines can be. They may also not be aware of the potential dangers of using the illegal fireworks or the many other harms to others and to the environment that have been mentioned previously in this report.

## The Need for Better Public Education

### Difficulty Educating the Public

The world is more connected than ever. There are hundreds of ways that people now get their news and information. This creates a fragmented media market where it can be difficult and expensive to get attention for any messaging that one is trying to achieve. This impacts the ability of San Francisco officials trying to use the media to educate its citizens about the dangers and harms caused by illegal fireworks.

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<sup>73</sup> Rosalsky, Greg, Darian Woods, Julia Ritchie, and Julia Ritchey. 2023. “[The Explosive Growth Of The Fireworks Market : Planet Money.](#)” *NPR*.

<sup>74</sup> Sernoffsky, Evan. 2021. “[High-profile Bay Area illegal fireworks busts expose multi-million dollar black market.](#)” *KTVU*.

In a multicultural city such as San Francisco, having multi-lingual messaging is also very important for the widest possible reach. Unfortunately, in an analysis of X/Twitter posts by city departments, all but one of the fireworks messages discovered were in English. The one exception was a July 4, 2023 tweet in Spanish from the @SFFDPIO account about recommendations to protect your pets from the stress generated by fireworks.

Examples of some ideas for improving public education would be:

- Create public education messaging campaigns tailored to the various groups that are likely engaging in the illegal activity. For example, younger people may be more responsive to education about the environmental damages or the pain and suffering of others. Another example might be those people who are ignorant of the laws may be deterred by the fines and penalties that can be incurred.
- Identify the most effective forms of media:
  - Which social media platforms to use.
  - Whether or not to use social media influencers or famous people to amplify the message.
  - What forms of media to use for effective messaging.
- Public Information Officers (PIOs) or communication professionals from the various departments impacted by illegal fireworks such as Police, Fire, Emergency Management, City Administrator, Public Health, Recreation and Park, Animal Care and Control, etc. should meet at least once a year to plan and coordinate messaging campaigns, public education, and public engagement on the topic of illegal fireworks.

As previously discussed, the wide variety of behavioral reasons why people use illegal fireworks require different public education and messaging.

### **The Need for Better Education on the Dangers and Harms of Fireworks**

Nearly all of the current messaging on the harms of illegal fireworks focuses on potential injuries and starting fires. There is occasionally some mention of pets and veterans with PTSD being affected but rarely anything about how children or those with dementia or autism are impacted. The harms to wildlife and the pollution of the environment is almost never mentioned

in any messaging and this is regrettable as these are topics that tend to resonate well with San Franciscans.

While the knowledge of how these explosions cause trauma and pollution might not persuade everyone to stop or curb their activity, one hopes that it might make some think twice about it and change their behavior.

## The Need for Better Community Engagement

The dedicated employees and departments of San Francisco cannot solve this problem alone. The public must also participate. The city can help to facilitate this involvement but at the end of the day it will require residents to roll up their sleeves and help.

Some ideas for improvements in this area include:

- Engage and educate the residents of San Francisco so that they know how to:
  - Report a tip about the sale, storage or planned deployment of illegal fireworks so that it can be promptly investigated.
  - Register noise complaints and have this information aggregated and published so the public can see their concerns are being heard and are being measured.
  - Report illegal firework activity that is in progress at a location.
- Engage existing community groups such as the Neighborhood Empowerment Network (NEN), Neighborhood Emergency Response Team (NERT), ALERT (Auxiliary Law Enforcement Response Team) and other local neighborhood associations to help.
  - They could be ambassadors for helping to educate the public about the dangers and harms of illegal fireworks.
  - They could work within the communities to get neighbors talking to neighbors about the topic.
  - They can get out the message of “see something, say something” and have information on how to report things.
  - They can help with organizing community events and discussions.

- Work with influencers on social media platforms such as Facebook, Twitter/X, Instagram, Mastodon, NextDoor, etc. to monitor complaints and get feedback from the community.
- Leverage existing community outreach programs in the SF Fire Department to educate and engage the community on the topic of illegal fireworks.
- Work with community leaders in the neighborhoods to help with education and identifying hot spots.
- Create an amnesty program for turning in illegal fireworks.

The widespread use of illegal fireworks is no longer just a phenomenon of our social life that we must just get used to. It is an expanding problem which requires further and systematic assessment, broad-based education, and work towards curtailment to protect the health and safety of all of our residents.

### **The Need for Understanding the Law by City Government and the Public**

It became clear throughout our investigation that many in the public and even in city government do not know the existing laws and penalties surrounding illegal fireworks. Making the public more aware of these laws and penalties could be done through better education campaigns and community engagement.

There is also a lack of awareness of the new fireworks law, CA Assembly Bill 1403 and how it might impact the city of San Francisco in terms of gathering better metrics, imposing larger fines and penalties or providing better training on the issue of illegal fireworks. These are all items that the city should be addressing regardless of potential future requirements imposed on them by the State of California.

### **The Need to Learn from Previous Experiences and Other Municipalities**

Although it was short-lived, Operation Kaboom demonstrated that when departments are able to work together they can curb some of the illegal firework activity and make a difference. It also showed that the public is eager and appreciative of even small efforts made to address the issue.

The city of San Francisco can learn a lot from the other cities, counties and states which are dealing with this issue. As demonstrated by Operation Kaboom and by task forces set up by other localities, there are beneficial actions that can be taken by the city and the public. In most cases, it is just a matter of willingness on the part of the city to make the effort by:

- Creating a structure for interdepartmental coordination and cooperation
- Providing the necessary resources from the various departments
- Expanding community engagement
- Implementing better public education
- Increasing crime prevention
- Improving enforcement
- Exploring greener alternatives such as silent fireworks or drone and laser shows

While it may seem unlikely that firework shows would one day be replaced by drone or laser shows, with increasing education and recognition of the harms and dangers of fireworks, and the ever-increasing technological advances and cost reductions of such innovative displays, such replacement may be an excellent solution for curbing the many harms of illegal fireworks in the not-so-distant future.

# Findings and Recommendations

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The Jury made the following findings and recommendations in regard to the use of illegal fireworks in the City and County of San Francisco.

## Finding 1: Lack of Coordination for Combating Illegal Fireworks

*The Jury finds:* Because the city fails to coordinate its actions among affected departments to stop the usage of illegal fireworks, and lacks a comprehensive and aggressive strategy for combating them, the residents, pets, wildlife and environment of San Francisco are harmed and often endangered.

**Recommendation 1.1** By October 1, 2024, the Mayor’s Office shall create an Illegal Fireworks Working Group.

**Recommendation 1.2** The Working Group shall include representatives from the SF Fire Department (SFFD), the SF Police Department (SFPD), the Division of Emergency Communication in the Department of Emergency Management (DEM), the Performance Program Team in the Controller’s Office, and the 311 Customer Service Center (311) in the City Administrator’s Office. In addition, representatives from other departments impacted by illegal fireworks such as, but not limited to, the Department of Public Works, Department of Public Health, Recreation and Park Department, Department of Animal Care and Control, Environment Department and the District Attorney, may be invited to join as well.

**Recommendation 1.3** The Working Group shall be chaired and led by the representative from DEM.

**Recommendation 1.4** The Working Group shall publish a report on illegal fireworks to the Mayor’s Office and the heads of the principally impacted departments including SFPD, SFFD, DEM, the City Administrator’s Office (311) and the Controller’s Office (Performance Program team) no later than two months after each July 4th which contains data from the identified metrics, reports on educational efforts and community engagements, identifies any improvements made by departments, and makes recommendations for improving the city’s efforts to address the illegal fireworks problem.

**Recommendation 1.5** The Working Group shall hold a public meeting on the report on illegal fireworks no earlier than 10 days and no later than 30 days after the report is published. This meeting shall discuss the results of the report and gather input from the public.

**Recommendation 1.6** Commencing in 2025, the Working Group shall meet at least three times per calendar year, preferably two to three months prior to the major holidays of 4th of July and New Year’s day plus a meeting to plan and prepare its annual report.

**Recommendation 1.7** The Working Group shall aid in the coordination and implementation of any recommendations and training that arise from CA Assembly Bill 1403.

## **Finding 2: Conflicting Messaging for Reporting Illegal Fireworks**

*The Jury finds:* The conflicting public messaging on the reporting of illegal fireworks activity needs to be addressed so the public has clear and consistent instructions on how to report illegal fireworks activity.

**Recommendation 2** The Working Group, or if the City fails to implement such Group then another separate collaboration between the DEM, 311, Fire, and Police departments, shall develop and aid in the implementation of public messaging that provides robust, consistent and clear instructions to the public on the preferred way to contact the city about reporting of illegal fireworks the issues and the information to be provided when making reports. Such public messaging shall be designed and published by March 31, 2025.

## Finding 3: The City's Public Education and Engagement is Inadequate

*The Jury finds:* Due to the lack of a coordinated effort and strategy for public education and engagement of the neighborhood communities about the scope and breadth of fireworks hazards, illegal firework usage continues to cause harm to people, pets, wildlife and the environment.

**Recommendation 3.1** The Working Group, or if the City fails to implement such Group then another separate collaboration between at least the DEM, Fire, and Police departments, shall develop and facilitate the publication and distribution of educational materials on the dangers to self, harms to others and the environment, and the laws and penalties associated with illegal fireworks. Such information shall be designed and published by May 1, 2025.

**Recommendation 3.2** The Working Group, or if the City fails to implement such Group then another separate collaboration between at least the DEM, Fire, and Police departments, shall identify and implement public engagement opportunities with community leaders to enlist their aid in educating their fellow residents about the illegal fireworks issue and encouraging them to “say something when they see something”.

## Finding 4: The City Fails to Control Deployment of Illegal Fireworks

*The Jury finds:* The city's failure to control the deployment of illegal fireworks and the public's presence at known hotspots where illegal fireworks activity regularly occurs results in dangerous situations which have the potential for injury and fire.

**Recommendation 4.1** The Working Group or if the City fails to implement such Group then another separate collaboration between at least the DEM, Fire, and Police departments, shall identify and implement strategies to prevent large gatherings at known hotspots where illegal fireworks are deployed around known problematic holidays and events. Information concerning what strategies have been employed shall be included in the Working Group's annual report.



**Recommendation 4.2** The Working Group, or if the city fails to implement such Group then another separate collaboration between at least the DEM, Fire, and Police departments, shall research and monitor solutions implemented by other municipalities and analyze past efforts within the city, such as Operation Kaboom.

**Recommendation 4.3** The Working Group, or if the city fails to implement such Group then another separate collaboration between at least the DEM, Fire, and Police departments, shall publish recommendations in its Annual Report based on its research of other municipalities to determine what approaches would likely be effective to reduce illegal fireworks usage in the city's hotspots as well as the neighborhoods.

## **Finding 5: The City Fails to Gather and Monitor Illegal Fireworks Metrics**

*The Jury finds:* The city's failure to identify, gather and monitor official metrics on the occurrence of illegal fireworks blocks understanding of the nature and importance of the issue to the city's residents, pets and the environment.

**Recommendation 5.1** By December 1, 2024, the Controller's Office shall instruct its Performance Program Team to identify meaningful illegal fireworks data and require impacted departments in public health and public safety to collect it. "Meaningful data" would include such items as the number and types of injuries caused by fireworks, the number of calls for fires started by fireworks, the number of fires started by fireworks, the number of calls for firework specific noise complaints, the number of calls for police to stop active deployments of fireworks, the number of citations issued, the number of fines issued, the number of arrests made, the number of prosecutions and convictions, the number of community meetings held on the topic, the number of educational talks given on the topic, the amount (in pounds) of illegal fireworks confiscated, the amount (in dollars) in fines collected, and the amount (in dollars) of property damage caused by illegal fireworks, and the amount (in dollars) of content loss caused by illegal fireworks.

**Recommendation 5.2** The Performance Program Team shall collaborate with the relevant departments to identify and collect those metrics which matter most to the public and which can reasonably be collected.

**Recommendation 5.3** The Performance Program team shall include those metrics which provide citizens and policymakers with information relevant to illegal fireworks in their Annual Performance Report.

# Required and Requested Responses

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Pursuant to California Penal Code §933, the Jury requires responses to the findings and recommendations shown in *Table 1* within 60 calendar days.

**Table 1: Required responses**

Respondent	Findings	Recommendations
Mayor	F1, F2, F3, F4, F5	R1.1, R1.2, R1.3, R1.4, R1.5, R1.6, R1.7, R2, R3.1, R3.2, R4.1, R4.2, R4.3, R5.1, R5.2, R5.3

The Jury requests responses to the findings and recommendations shown in *Table 2* within 60 calendar days.

**Table 2: Requested responses**

Respondent	Findings	Recommendations
Department of Emergency Management	F1, F2, F3, F4	R1.2, R1.3, R1.4, R1.5, R1.6, R1.7, R2, R3.1, R3.2, R4.1, R4.2, R4.3
Fire Department	F1, F2, F3, F4	R1.2, R1.4, R2, R3.1, R3.2, R4.1, R4.2, R4.3
Police Department	F1, F2, F3, F4	R1.2, R1.4, R2, R3.1, R3.2, R4.1, R4.2, R4.3
Office of the City Administrator (311 Customer Service Center)	F1, F2	R1.2, R1.4, R2
Office of the Controller (Performance Program Team)	F1, F5	R1.2, R1.4, R5.1, R5.2, R5.3

# Methodology

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To prepare this report, the Jury conducted personal interviews, and reviewed current federal, state and local laws, reports and data from city offices, scientific research, news reports, and social media postings, as detailed more specifically below.

The Jury interviewed a total of 17 witnesses, primarily employees from a number of city departments and agencies that are involved in some way with addressing the illegal fireworks problem, as well as a few witnesses from outside of city government knowledgeable about fireworks-related issues.

The Jury also reviewed and analyzed:

- All safety data from DataSF relating to fireworks
- The federal, state and San Francisco laws regarding fireworks and explosive devices
- Scientific research and news reports on the impact of fireworks on pets, children, dementia patients, people with autism, veterans and people with PTSD and wildlife
- Scientific research and news reports on the environmental pollution caused by fireworks
- Government statistics and news reports on injuries and fires caused by fireworks
- News reports on the actions other counties and cities are taking in response to illegal fireworks
- Local, state and nationwide reporting on illegal firework activity
- X/Twitter postings done in 2023 by San Francisco residents in regards to illegal fireworks
- Educational X/Twitter media postings done in 2023 by city departments in regards to illegal fireworks
- Current and previous city programs and operations related to illegal fireworks
- Past and present California Civil Grand Jury reports from other counties on illegal fireworks

# Glossary and Abbreviations

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- APPA** The American Pet Products Association is a not-for-profit industry association founded in 1958 and headquartered in Stamford, Connecticut. The APPA represents more than 1,000 pet product manufacturers, importers of pet products, and suppliers of products for non-pet livestock as well.
- ATF** The Bureau of Alcohol, Tobacco, Firearms and Explosives, commonly referred to as the ATF, is a domestic law enforcement agency within the United States Department of Justice. Its responsibilities include the investigation and prevention of federal offenses involving the unlawful use, manufacture, and possession of firearms and explosives; acts of arson and bombings; and illegal trafficking and tax evasion of alcohol and tobacco products.
- AVMA** The American Veterinary Medical Association, founded in 1863, is a not-for-profit association representing more than 99,500 veterinarians in the US. The AVMA provides information resources, continuing education opportunities, publications, and discounts on personal and professional products, programs, and services.
- CPSC** The United States Consumer Product Safety Commission is an independent agency of the United States government. The CPSC seeks to promote the safety of consumer products by addressing "unreasonable risks" of injury; developing uniform safety standards; and conducting research into product-related illness and injury.

<b>Content Loss (NFIRS)</b>	Content value and loss can be documented separately from property value and loss if there is no damage to the exterior or structure of the property but rather the interior of the property. For example, a stove may be damaged in a cooking fire without damage to the house. <sup>75</sup>
<b>DataSF</b>	Official open data program for the City and County of San Francisco which includes the open data portal product containing hundreds of city datasets for use by developers, analysts, residents, and more.
<b>DEM</b>	The San Francisco Department of Emergency Management (SFDEM or DEM) manages and prepares for everyday and not-so-everyday emergencies. Their dispatchers answer 911 emergency calls and calls from the SFPD non-emergency number 553-0123.
<b>M80</b>	The original M80 was a military simulator that was sold as a firecracker. It contained two grams of flash powder and was responsible for hundreds of serious injuries due to its powerful blast.
<b>NHS</b>	National Health Service. Publicly funded healthcare system in England.
<b>NFIRS</b>	The National Fire Incident Reporting System (NFIRS) is a voluntary reporting standard that fire departments use to uniformly report on the full range of their activities, from fire to emergency medical services to severe weather and natural disasters. <sup>76</sup>
<b>OSFM</b>	Office of the State Fire Marshal. The California organization responsible for licensing and regulating fireworks in the state.

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<sup>75</sup> U.S. Fire Administration. 2023. "[NFIRSGram: Documenting confined structure fires.](#)" U.S. Fire Administration.

<sup>76</sup> U.S. Fire Administration. 2024. "[About NFIRS.](#)" FEMA.

<b>PM2.5</b>	PM stands for particulate matter (also called particle pollution): the term for a mixture of solid particles and liquid droplets found in the air. PM2.5 are fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller. This is 30 times smaller than the diameter of a human hair.
<b>Safe and Sane Fireworks</b>	Legal term that usually identifies fireworks that do not fly or explode.
<b>SFSafe</b>	A nonprofit 501(c)(3) corporation mostly funded by the SFPD that acts as a crime prevention component of the police department.
<b>Social Hosting Ordinances</b>	Laws that allow fines against property owners that either use or allow the use of illegal fireworks on their property.

# Bibliography

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## Government Documents

2023-2024 Kern County Grand Jury. 2024. "The Kern County Fire Department - The Effects of Illegal Fireworks." *Kern County*.

<https://www.kerncounty.com/home/showpublisheddocument/13417/638434145079100000>.

2022-2023 Monterey County Civil Grand Jury. 2023. "City of Seaside: The Real Cost of Fireworks." *County of Monterey*.

<https://www.monterey.courts.ca.gov/system/files/general/city-seaside-real-cost-fireworks-report.pdf>.

Bureau of Alcohol, Tobacco, Firearms and Explosives. 2022. "Fireworks | Bureau of Alcohol, Tobacco, Firearms and Explosives." *ATF*.

<https://www.atf.gov/explosives/fireworks>.

CAL FIRE. 2023. "Fireworks Safety." *Ready for Wildfire*.

<https://www.readyforwildfire.org/more/fireworks-safety/>.

CA Office of the State Fire Marshal. 2023. "Fireworks | OSFM." *Office of the State Fire Marshal*.

<https://osfm.fire.ca.gov/what-we-do/fire-engineering-and-investigations/fireworks>.

CDC. 2020. "July is Fireworks Safety Month! Take care to protect your hearing. | Hearing Loss | NCEH | CDC." *Centers for Disease Control and Prevention*.

[https://www.cdc.gov/nceh/hearing\\_loss/toolkit/firework\\_safety.html](https://www.cdc.gov/nceh/hearing_loss/toolkit/firework_safety.html).



DataSF. 2021. "Law Enforcement Dispatched Calls for Service - DataSF | Dataset Explainers." *GitBook*.  
<https://datasf.gitbook.io/datasf-dataset-explainers/law-enforcement-dispatched-calls-for-service>.

San Francisco Controller's Office. 2023. "San Francisco Performance Program | San Francisco." *SF.gov*. <https://www.sf.gov/san-francisco-performance-program>.

San Francisco Police Code. 2023. "SEC. 1290. DISCHARGE OF FIREWORKS PROHIBITED." *American Legal Publishing*.  
[https://codelibrary.amlegal.com/codes/san\\_francisco/latest/sf\\_police/0-0-0-5547](https://codelibrary.amlegal.com/codes/san_francisco/latest/sf_police/0-0-0-5547).

SFGov.org. 2024. "Response Time | City Performance Scorecards." *City and County of San Francisco*.  
<https://sfgov.org/scorecards/public-safety/police-response-serious-incidents>.

SFPD Mission Station. 2022. "SFPD Mission officers responded to a large crowd & fire at 24th/Harrison." *twitter.com*.  
<https://twitter.com/SFPDMission/status/1544345395962163200>.

State of California. 2023. "California Assembly Bill 1403." *LegiScan*.  
<https://legiscan.com/CA/text/AB1403/2023>.

State of California. 2024. "Health and Safety Code, Division 11: Explosives, Part 2: Fireworks and Pyrotechnic Devices, Chapter 8: Penalties." *California Legislative Information*.  
[https://leginfo.ca.gov/faces/codes\\_displayText.xhtml?lawCode=HSC&division=11.&title=&part=2.&chapter=8](https://leginfo.ca.gov/faces/codes_displayText.xhtml?lawCode=HSC&division=11.&title=&part=2.&chapter=8).

US Census Bureau. 2020. "QuickFacts: San Francisco city, California; San Francisco County, California." *US Census Bureau*.

<https://www.census.gov/quickfacts/fact/table/sanfranciscocitycalifornia,sanfranciscocountycalifornia>.

US Consumer Product Safety Commission. 2013. "Fireworks Business Guidance | CPSC.gov." *Consumer Product Safety Commission*.

<https://www.cpsc.gov/Business--Manufacturing/Business-Education/Business-Guidance/Fireworks>.

US Department of Veterans Affairs. 2023. "How Common is PTSD in Adults? - PTSD: National Center for PTSD." *National Center for PTSD*.

[https://www.ptsd.va.gov/understand/common/common\\_adults.asp](https://www.ptsd.va.gov/understand/common/common_adults.asp).

US Department of Veterans Affairs. 2023. "How Common is PTSD in Veterans? - PTSD: National Center for PTSD." *National Center for PTSD*.

[https://www.ptsd.va.gov/understand/common/common\\_veterans.asp](https://www.ptsd.va.gov/understand/common/common_veterans.asp).

U.S. Fire Administration. n.d. "About NFIRS." *U.S. Fire Administration*.

<https://www.usfa.fema.gov/nfirs/about/>.

## News and Research Articles

Agren, David. 2017. "Despite accidents, Mexicans continue to honor saints with fireworks." *Crux Now*.

<https://cruxnow.com/global-church/2017/03/despite-accidents-mexicans-continue-honor-saints-fireworks>.

Aguilar, Amanda. 2022. "How fireworks impact people with Alzheimer's, dementia."

*ABC30*. <https://abc30.com/fireworks-dementia-alzheimers/12017660/>.

Alzheimer's Foundation of America (AFA). 2023. "Creating a Dementia-Friendly 4th of July: The "Dos and Don'ts."" *Alzheimer's Foundation of America*.

<https://alzfdn.org/creating-a-dementia-friendly-4th-of-july-the-dos-and-donts/>.

American Pet Products Association. n.d. "Pet Industry Market Size, Trends & Ownership Statistics." *American Pet Products Association*.

<https://www.americanpetproducts.org/news/News-Public-Relations/pet-industry-market-size-trends-ownership-statistics>.

American Pyrotechnics Association. 2022. "CA Consumer Fireworks." *California Consumer Fireworks*.

<https://www.americanpyro.com/assets/docs/StateConsumerLaws/CA%20Consumer22.pdf>.

American Veterinary Medical Association. n.d. "U.S. pet ownership statistics." *American Veterinary Medical Association*.

<https://www.avma.org/resources-tools/reports-statistics/us-pet-ownership-statistics>.

Autism Speaks. 2024. "Autism Statistics and Facts." *Autism Speaks*.

<https://www.autismspeaks.org/autism-statistics-asd>.

Balk, Sophie J. 2023. "How Noise Affects Children." *HealthyChildren.org*.

<https://www.healthychildren.org/English/safety-prevention/all-around/Pages/how-noise-affects-your-child.aspx>.

Barmann, Jay. 2022. "SFPD Says 12 Officers Injured Amid Hostile July 4th Crowd In Mission." *SFist*.

<https://sfist.com/2022/07/05/sfpd-says-12-officers-injured-amid-hostile-july-4th-crowd-in-mission/>.

Barnard, Cornell. 2020. "'We had M-80s shot over our heads,' SF firefighters respond to hundreds of fires caused by illegal July 4th fireworks." *KGO ABC7 News*.

<https://abc7news.com/fourth-of-july-fireworks-fire-bay-area-fires-caused-by-in-sffd/6300901/>.

Bay City News. 2020. "SFFD Battle 100 Fires Over Holiday, Almost All Caused By Fireworks." *NBC Bay Area*.

<https://www.nbcbayarea.com/news/local/san-francisco/sffd-battle-100-fires-over-holiday-almost-all-caused-by-fireworks/2320818/>.

Blackwell, Emily J., John W. Bradshaw, and Rachel A. Casey. 2013. "Fear responses to noises in domestic dogs: Prevalence, risk factors and co-occurrence with other fear related behaviour." *Applied Animal Behaviour Science* 145, no. 1-2 (April): 15-25.

<https://doi.org/10.1016/j.applanim.2012.12.004>.

ChemicalSafetyFacts.org. 2023. "Fireworks and Sparklers: The Chemistry of Fireworks and Pyrotechnic Colors." *Chemical Safety Facts*.

<https://www.chemicalsafetyfacts.org/health-and-safety/the-bright-history-of-chemistry-and-fireworks/>.

Church, Larissa. 2021. "Cats and Fireworks." *Cat Town*.

<https://www.cattownoakland.org/cat-town-blog/2021/07/cats-and-fireworks>.

Coulter, Kendra. 2023. "Summer fireworks can traumatize pets and cause wildlife to flee." *The Conversation*.

<https://theconversation.com/summer-fireworks-can-traumatize-pets-and-cause-wildlife-to-flee-206556>.

Delgado, Ray, Bruce Adams, John Koopman, and Anastasia Hendrix. 1998. "Blast levels Sunset home; 17 injured by debris, fire." *SFGATE*.

<https://www.sfgate.com/news/article/Blast-levels-Sunset-home-17-injured-by-debris-3089292.php>.

Derbeken, Jaxon V. 1998. "Sifting Through Rubble / Illegal fireworks could have been cause of S.F. blast." *SFGate*.

<https://www.sfgate.com/news/article/Sifting-Through-Rubble-Illegal-fireworks-could-3005799.php>.

DiFelicantonio, Chase. 2024. "Person dies on Treasure Island after New Year's fireworks incident, reports say." *San Francisco Chronicle*.

<https://www.sfchronicle.com/sf/article/person-dies-treasure-island-fireworks-incident-18583854.php>.

Furgala, Nicole M., Carly M. Moody, Hannah E. Flint, Shannon Gowland, and Lee Niel. 2022. "Veterinary background noise elicits fear responses in cats while freely moving in a confined space and during an examination." *Behavioural Processes* 201 (September).

<https://doi.org/10.1016/j.beproc.2022.104712>.

Gentile, Dan. 2023. "San Francisco erupts with illegal street fireworks for July Fourth." *SFGATE*.

<https://www.sfgate.com/local/article/san-francisco-illegal-street-fireworks-18185394.php>.

Glaser, Chery. 2021. "July 4 fireworks could trigger trauma and pain for people with mental health challenges." *KCRW*.

<https://www.kcrw.com/news/shows/kcrw-features/fireworks-trauma-ptsd-mental-health>

.

Graff, Amy. 2020. "I'm losing my mind': Bay Area residents report nonstop fireworks." *SFGATE*.

<https://www.sfgate.com/bayarea/article/fireworks-San-Francisco-Oakland-Richmond-15359941.php>.

Gudgel, Dan. 2023. "Fireworks Eye Safety." *American Academy of Ophthalmology*.

<https://www.aao.org/eye-health/tips-prevention/injuries-fireworks-eye-safety>.

Han, Jessica. 2023. "The Environmental Impact of Fireworks." *Earth.Org*.

<https://earth.org/environmental-impact-of-fireworks/>.

Hao, Feng. 2016. "Shanghai's firework ban ensures quieter start to New Year." *China Dialogue*.

<https://chinadialogue.net/en/pollution/8585-shanghai-s-firework-ban-ensures-quieter-start-to-new-year/>.

Haye, Sidra, Johanna Thunell, Geoffrey Joyce, Patricia Ferido, Bryan Tysinger, Mireille Jacobson, and Julie Zissimopoulos. 2023. "Estimates of diagnosed dementia prevalence and incidence among diverse beneficiaries in traditional Medicare and Medicare Advantage." *Alzheimer's Association's Diagnosis, Assessment & Disease Monitoring* 15, no. 3 (August). <https://doi.org/10.1002/dad2.12472>.

High, Joseph. 2020. "Bay Area residents experiencing mental distress in wake of illegal fireworks." *Golden Gate Xpress*.  
<https://goldengatexpress.org/93118/city/bay-area-residents-are-experiencing-mental-distress-in-wake-of-illegal-fireworks/>.

Jin, Hyunjoo, Mariana Sandoval, and Abhirup Roy. 2024. "Crowd sets Waymo self-driving vehicle ablaze in San Francisco." *Reuters*.  
<https://www.reuters.com/world/us/crowd-sets-waymo-self-driving-car-ablaze-san-francisco-2024-02-11/>.

Jones, Dustin. 2023. "Police arrest 32 adults, cite 81 minors at 'hill bomb' San Francisco skate event." *NPR*.  
<https://www.npr.org/2023/07/10/1186814601/hill-bomb-san-francisco-dolores-park>.

Jones, Griffin, and Joe R. Barros. 2023. "Fingers lost, M80s swept: Fourth on 24th 'better than last year.'" *Mission Local*.  
<https://missionlocal.org/2023/07/fingers-lost-m80s-swept-fourth-july-mission/>.

JORDAN, GREG, and Greg Jordan. 2023. "Experts: Fireworks, large crowds can be distressing for dementia patients." *Bluefield Daily Telegraph* (Bluefield), July 1, 2023.  
[https://www.bdtonline.com/news/experts-fireworks-large-crowds-can-be-distressing-for-dementia-patients/article\\_e77e683c-169e-11ee-a0c9-6f6129690046.html](https://www.bdtonline.com/news/experts-fireworks-large-crowds-can-be-distressing-for-dementia-patients/article_e77e683c-169e-11ee-a0c9-6f6129690046.html).

KTVU.com. 2024. "Teen identified in fatal Treasure Island fireworks accident." *KTVU*.  
<https://www.ktvu.com/news/18-year-old-killed-in-treasure-island-fireworks-explosion-identified>.

Kukura, Joe. 2023. "Mission District Fireworks Mayhem Leads To Late-Night Riot-Gear Police Skirmish." *SFist*.

<https://sfist.com/2023/07/05/mission-district-fireworks-mayhem-leads-to-late-night-riot-gear-police-skirmish/>.

Lindsay, Mickell. 2023. "The Amazing Supply Chain of July 4th Fireworks." *All Things Supply Chain*.

<https://www.allthingsupplychain.com/the-amazing-supply-chain-of-fireworks/>.

Mallard, Chris, and Abbey Anderson. 2020. "The Overlooked Effects of Fireworks." *Penn Medicine*.

<https://www.pennmedicine.org/news/news-blog/2020/july/the-overlooked-effects-of-fireworks>.

McReynolds, Tony. 2018. "Fireworks aren't fun for everyone." *AAHA - American Animal Hospital Association*.

<https://www.aaha.org/publications/newstat/articles/fireworks-arent-fun-for-everyone/>.

NBC Bay Area. 2023. "Tens of thousands watch legal and illegal fireworks across Bay Area." *YouTube*. <https://www.youtube.com/watch?v=CDpIEUGMpv8&t=2s>.

NYU Langone Health. 2020. "Common Fireworks Release Lead, Copper & Other Toxic Metals into the Air." *NYU Langone Health*.

<https://nyulangone.org/news/common-fireworks-release-lead-copper-other-toxic-metals-air>.

Parker, Kim, Ruth Igielnik, Amanda Barroso, and Anothy Cilluffo. 2019. "How veterans feel about deployment and combat." *Pew Research Center*.

<https://www.pewresearch.org/social-trends/2019/09/10/deployment-combat-and-their-consequences/>.

Pew Research Center. 2023. "About half of U.S. pet owners say their pets are as much a part of their family as a human member" *pewresearch.org*.

<https://www.pewresearch.org/short-reads/2023/07/07/about-half-us-of-pet-owners-say-their-pets-are-as-much-a-part-of-their-family-as-a-human-member/>.

Riemer, Stefanie. 6. "Not a one-way road—Severity, progression and prevention of firework fears in dogs." *PLOS*.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0218150>.

Rodrigo, Olivia. 2023. "State Approved Safe & Sane Fireworks." *CA Office of the State Fire Marshal*.

<https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/fire-engineering-and-investigations/fireworks/fireworks/final-for-posting-2023-safe-and-sane-book-6-23-23.pdf>.

Rosalsky, Greg, Darian Woods, Julia Ritchie, and Julia Ritchey. 2023. "The Explosive Growth Of The Fireworks Market : Planet Money." *NPR*.

<https://www.npr.org/sections/money/2023/07/04/1184798951/the-explosive-growth-of-the-fireworks-market>.

Sernoffsky, Evan. 2021. "High-profile Bay Area illegal fireworks busts expose multi-million dollar black market." *KTVU*.

<https://www.ktvu.com/news/high-profile-bay-area-illegal-fireworks-busts-expose-multi-million-dollar-black-market>.

Shapiro, Leslie. 2023. "Phonophobia: Understanding the Fear of Loud Noises." *Choosing Therapy*. <https://www.choosingtherapy.com/phonophobia/>.

Sriskandarajah, Ike. 2017. "Fireworks spark up a black market economy." *Marketplace*.

<https://www.marketplace.org/2014/07/04/fireworks-spark-black-market-economy/>.

Stallard, Claire, and Róisín Bolger. 2022. "Fireworks and Pets." *Blue Cross*.

<https://www.bluecross.org.uk/advice/pets/wellbeing-and-care/fireworks-and-pets>.

Torbay and South Devon NHS Foundation Trust. 1990. "Sound sensitivity in children." *Torbay and South Devon NHS Foundation Trust*.

<https://www.torbayandsouthdevon.nhs.uk/uploads/25390.pdf>.



- Tropical Hainan. 2022. "The history of fireworks and their traditional uses in China." *Tropical Hainan*.  
<https://www.tropicalhainan.com/the-history-of-fireworks-and-their-traditional-uses-in-china/>.
- Turner, Niki. 2020. "Children, veterans and family pets can suffer because of fireworks." *The Herald Times*.  
<https://www.theheraldtimes.com/children-veterans-and-family-pets-can-suffer-because-of-fireworks/rio-blanco-county/>.
- The University of Sydney. 2020. "Dogs, thunderstorms and fireworks: the fear is real." *The University of Sydney*.  
<https://www.sydney.edu.au/news-opinion/news/2020/06/30/dogs-thunderstorms-and-fireworks-the-fear-is-real.html>.
- UPI Archives. 1986. "Illegal fireworks plant sparked fire." *UPI* (San Francisco), April 10, 1986.  
<https://www.upi.com/Archives/1986/04/10/Illegal-fireworks-plant-sparked-fire/2521513493200/>.
- Valentinuzzi, Max E. 2018. "Fireworks, Autism, and Animals: What 'Fun' Noises Do to Sensitive Humans and Our Beloved Pets [Retrospectroscope]." *IEEE Pulse* 9, no. 5 (September): 37-39. <https://doi.org/10.1109/MPUL.2018.2856961>.
- Williams, Zachary J., Jason L. He, Carissa J. Cascio, and Tiffany G. Woynaroski. 2021. "A review of decreased sound tolerance in autism: Definitions, phenomenology, and potential mechanisms." *Neuroscience & Biobehavioral Reviews* 121, no. February 2021 (February): 1-17. <https://doi.org/10.1016/j.neubiorev.2020.11.030>.
- Winiki, Nolan M., Ian Waldrop, Jesus V. Orosco Jr., Daniel Novak, and Nicholas W. Sheets. 2024. "The epidemiology of firework-related injuries in the US, 2012–2022." *Springer Nature / Injury Epidemiology*.  
<https://link.springer.com/article/10.1186/s40621-023-00446-5>.

# Appendix A: San Francisco Firework Data

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The tables, graphs and charts in this appendix reflect data gathered from the public datasets made available by the City and County of San Francisco through its DataSF web interface<sup>77</sup>. The datasets used in gathering this data are:

- 311 Calls
- Law Enforcement Dispatched Calls for Service: Closed
- Police Department Incident Reports: 2018 to Present
- Fire Incidents.

## Data from 311 Calls

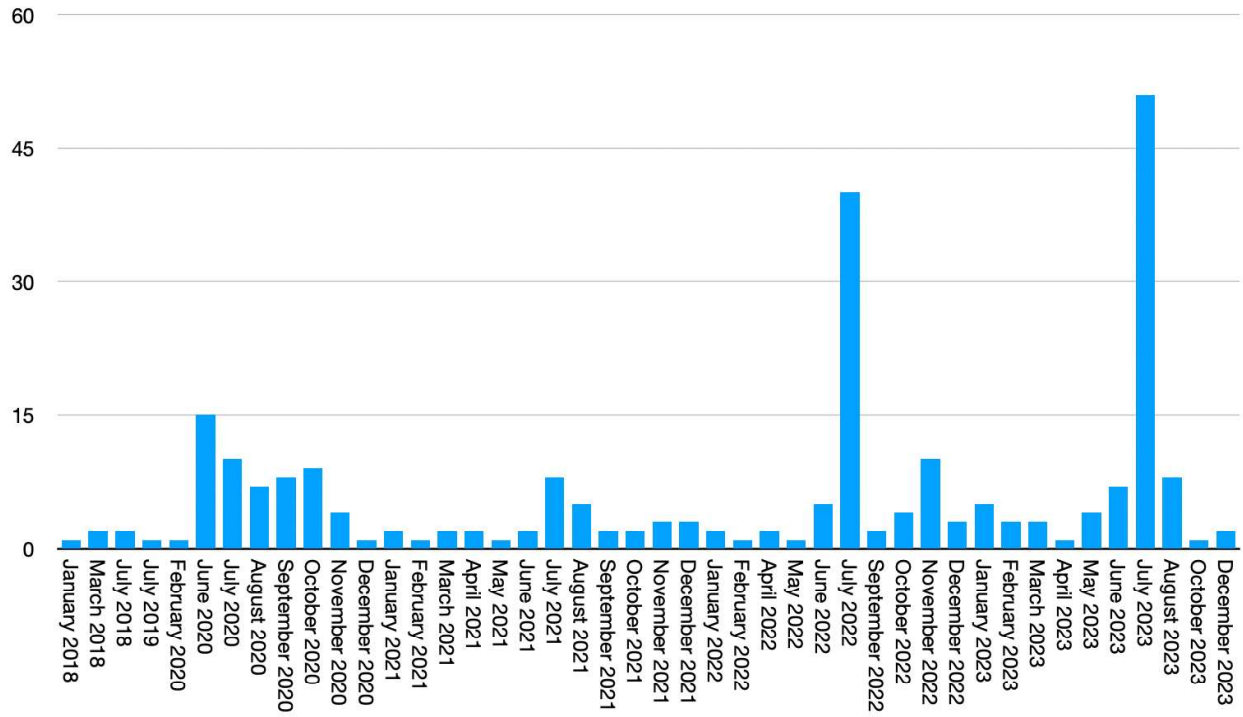
This data comes from the 311 Customer Service Center of the City Administrator’s Office. The fireworks related service requests consist mainly of noise complaints but requests for parks and trash cleanup are seen as well. The requests mostly come from the submissions to the web and the mobile app since phone calls which are transferred to the non-emergency number are not logged.

Fireworks related calls were identified with a generic search for the term “firework” in any field and the “Opened” field was used to limit searches to given time periods. Noise specific graphs were filtered using the “Category” field where the configured value was “Noise Report”.

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<sup>77</sup> City and County of San Francisco. 2024. [“San Francisco Open Data.”](#) DataSF.

Figure 6: 311 Fireworks Noise Calls By Month from 2018-2023



2018-2023 311 Fireworks Noise Calls By Month/Year

## Data from Law Enforcement Dispatched Calls for Service: Closed

This data comes from the Department of Emergency Management (DEM). The fireworks related calls include all calls for service which generate a record in the Department of Emergency Management's Computer Aided Dispatch (CAD) System, and typically have a law enforcement unit dispatched to the location. Calls originate from the public via calls to the 911 call center (from dialing 9-1-1 within the city, the direct emergency number 415-553-8090 or the non-emergency number 415-553-0123) or from law enforcement officers in the field upon viewing an incident.

Fireworks related calls were identified with a generic search for the term "firework" in any field and the "received\_datetime" field was used to limit searches to given time periods.

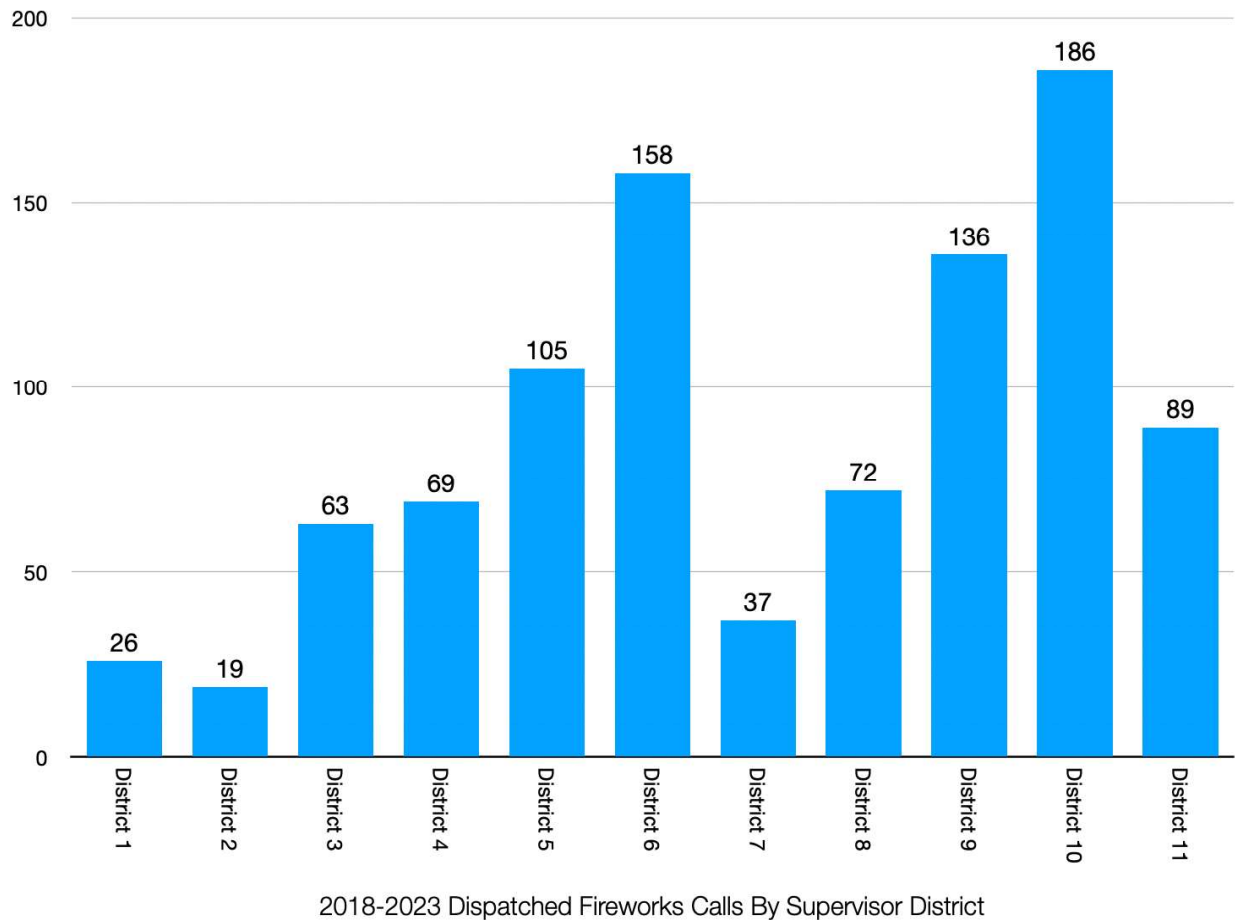
**Table 3: Dispatched Fireworks Calls By Year With Holiday Periods**

Year	Full Year Count	New Years Count <sup>78</sup>	July 4th Count <sup>79</sup>
2023	105	12	50
2022	116	9	47
2021	156	20	53
2020	330	7	185
2019	96	7	50
2018	157	7	93
<b>Totals</b>	<b>960</b>	<b>62</b>	<b>478</b>

<sup>78</sup> 12:00 am on December 18th of previous year through 11:59 pm on January 14th.

<sup>79</sup> 12:00 am on June 20th through 11:59 pm on July 18th.

Figure 7: Dispatched Fireworks Calls by Supervisor District from 2018-2023<sup>80</sup>



<sup>80</sup> Note: Boundaries of the Supervisorial districts were adjusted in 2022.

Figure 8: Dispatched Fireworks Calls by Police District from 2018-2023

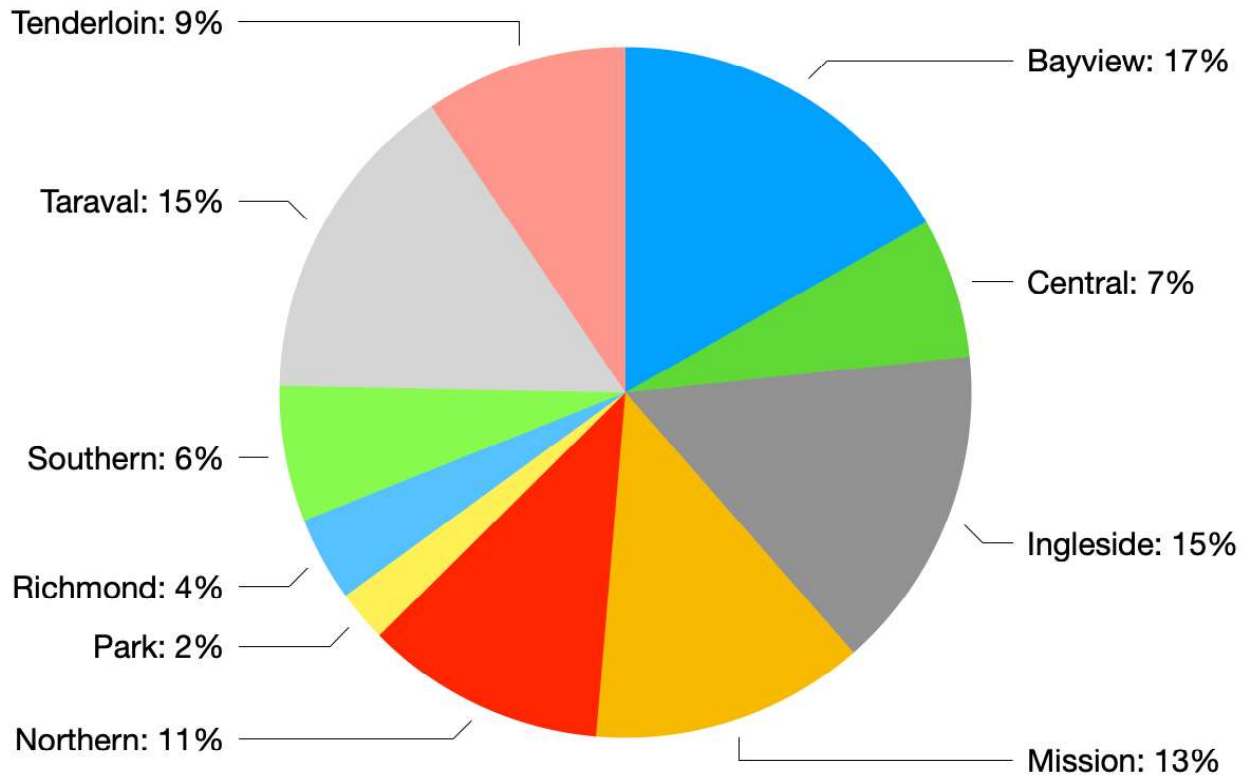


Figure 9: Dispatched Fireworks Calls by Priority from 2018-2023

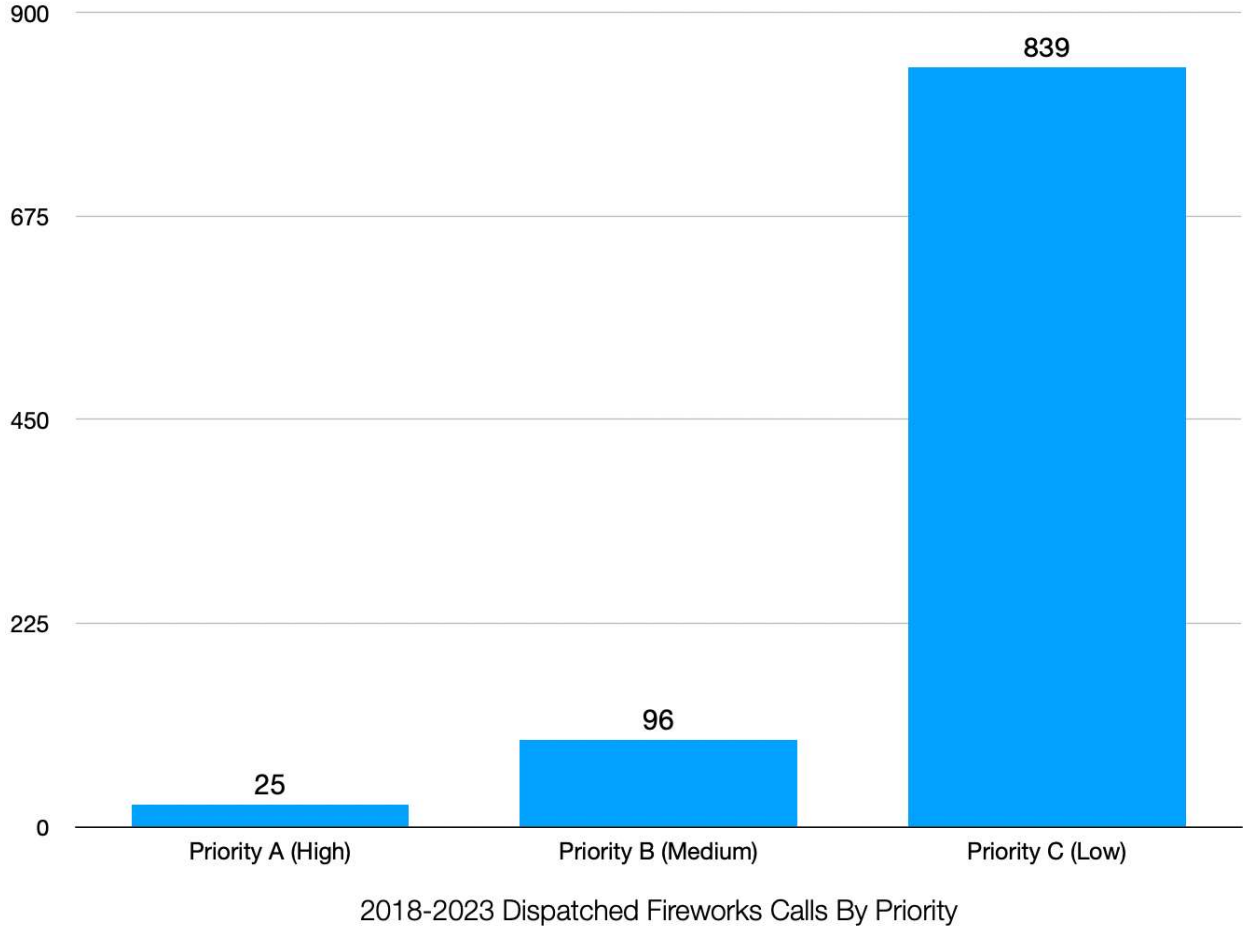
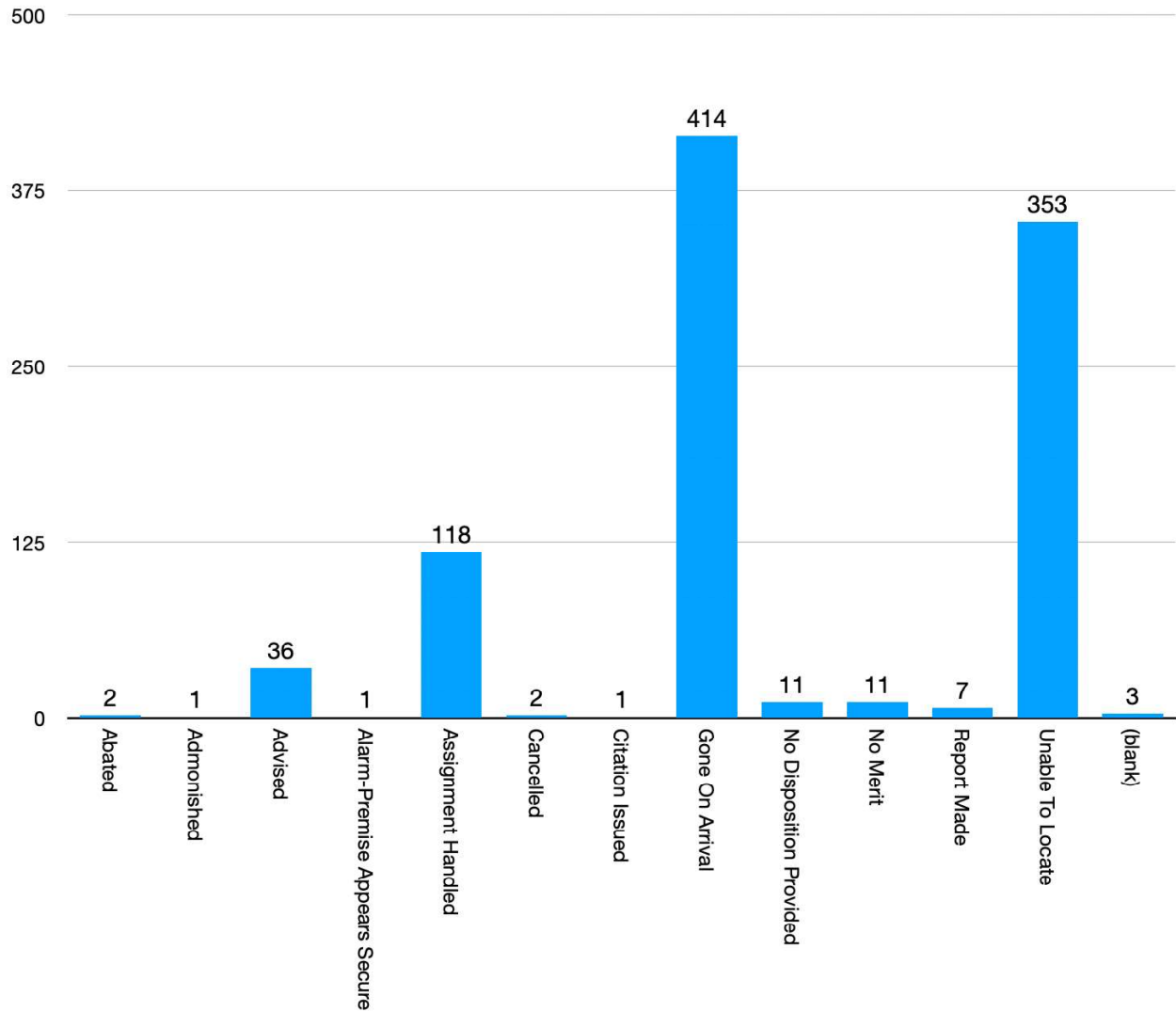


Figure 10: Dispatched Fireworks Calls by Disposition from 2018-2023



2018-2023 Dispatched Fireworks Calls By Disposition



**Table 4: Additional Information for Dispatched Fireworks Calls from 2018-2023**

Information	Median	Average	Summary
On View - A Police Initiated Call	No	No	All values were No, so all calls were from 911
Sensitive Call	False	False	All values were False, so no calls were sensitive
Police Department Incident Ids	-	-	Only 8 out of 960 had values provided
Agency	police	police	955 out of 960 were "police", 5 were "other"
Call Type - Final Same As Original	True	True	Only 36 of 960 were different
Receive to Dispatch Time	41m 1s	1h 23m 9s	Max: 14h 5m 38s
Dispatch to On Scene Time	57s	6m 58s	Max: 7h 29m 33s
On Scene To Close Time	54s	6m 41s	Max: 22h 19m 50s

## Data from Police Department Incident Reports: 2018 to Present

This data comes from the San Francisco Police Department (SFPD). The fireworks related incidents are filed by officers or self-reported by members of the public using SFPD’s online reporting system.

Fireworks related incidents were identified with a generic search for the term “firework” in any field and the “Incident Datetime” field was used to limit searches to given time periods.

**Table 5: Police Firework Incidents By Year With Holiday Periods**

Year	Full Year Count	New Years Count <sup>81</sup>	July 4th Count <sup>82</sup>
2023	23	0	14
2022	18	0	1
2021	21	3	10
2020	21	1	12
2019	20	1	5
2018	16	0	9
<b>Totals</b>	<b>119</b>	<b>5</b>	<b>51</b>

<sup>81</sup> 12:00 am on December 18th of previous year through 11:59 pm on January 14th.

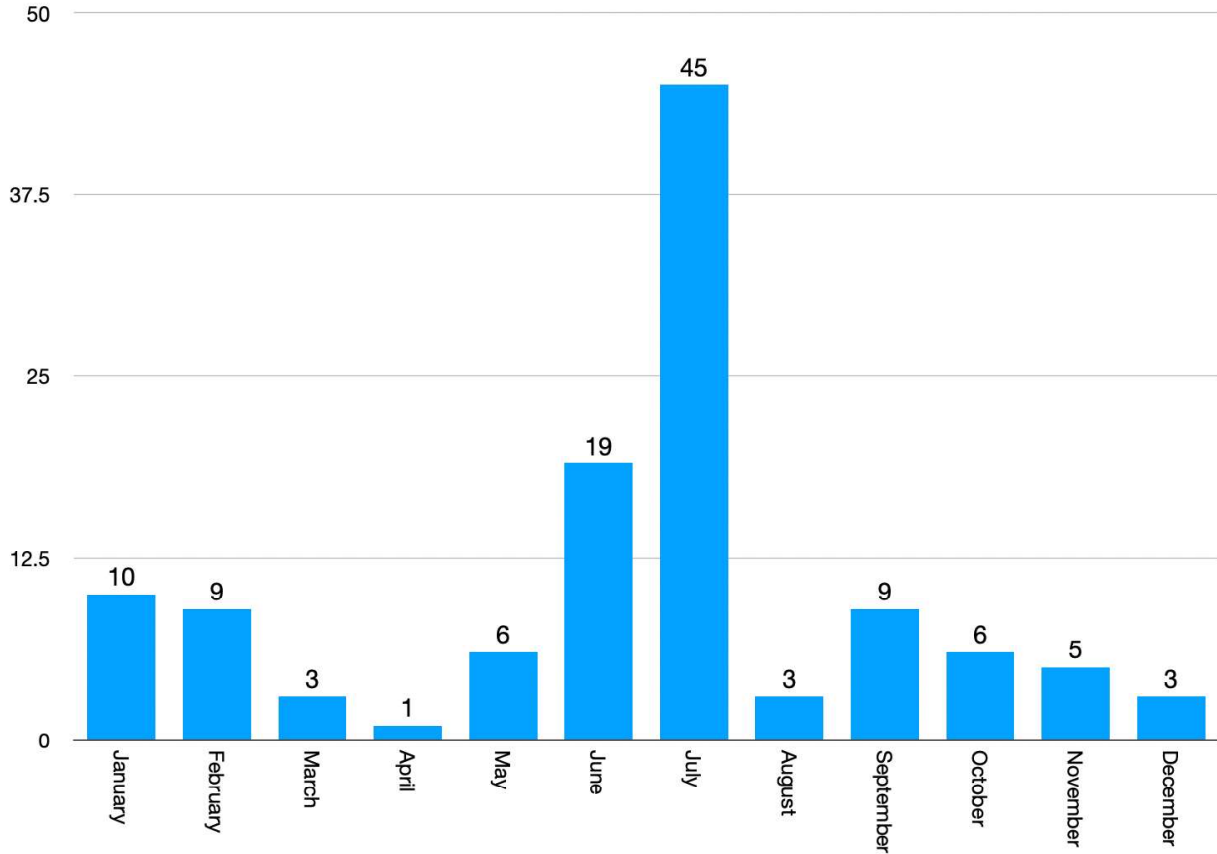
<sup>82</sup> 12:00 am on June 20th through 11:59 pm on July 18th.

**Table 6: Police Fireworks Incidents Per Supervisor District<sup>83</sup>**

District	Neighborhoods	2018-2023	2023
1	Inner Richmond, Central Richmond, Outer Richmond, Vista del Mar, Seacliff, Lake District, Presidio Terrace, Lone Mountain, Golden Gate Park, Lincoln Park, and the University of San Francisco	4	0
2	Marina, Cow Hollow, Pacific Heights, Presidio Heights, Jordan Park, Laurel Heights, Presidio, Lower Pacific Heights, Cathedral Hill, and part of Russian Hill	0	0
3	North Beach, <b>Chinatown</b> , Telegraph Hill, North Waterfront, <b>Financial District</b> , Nob Hill, Union Square, Maiden Lane, and part of Russian Hill	27	7
4	<b>Central Sunset, Outer Sunset, Parkside</b> , Outer Parkside, Pine Lake Park, Lakeshore, Merced Manor, and the Farallon Islands	6	0
5	Haight Ashbury, Lower Haight, Fillmore, Western Addition, North Panhandle, Japantown, Hayes Valley, <b>Tenderloin</b> , and Civic Center	17	4
6	Mid-Market, Rincon Hill/East Cut, <b>South of Market</b> , South Beach, Mission Bay, Treasure Island, Yerba Buena Island, and Alcatraz	11	3
7	Inner Parkside, Golden Gate Heights, Inner Sunset, Parnassus Heights, Clarendon Heights, part of Twin Peaks, West Portal, Forest Knolls, Midtown Terrace, Forest Hill, Miraloma Park, Sunnyside, Sherwood Forest, Westwood Highlands, Westwood Park, St. Francis Wood, Monterey Heights, Mt. Davidson, Balboa Terrace, Ingleside Terraces, Stonestown, Lakeside, Parkmerced, Lake Merced, City College, San Francisco State, part of Ashbury Heights, and part of UCSF Parnassus Heights	3	1
8	The Castro, Noe Valley, Diamond Heights, Glen Park, Corona Heights, Eureka Valley, Dolores Heights, Mission Dolores, Duboce Triangle, Buena Vista Park, Cole Valley, Ashbury Heights, and part of Twin Peaks	6	1
9	<b>Mission District</b> , Bernal Heights, and the Portola	27	5
10	Potrero Hill, Central Waterfront, Dogpatch, Bayview-Hunters Point, Bayview Heights, India Basin, Silver Terrace, Candlestick Point, Visitacion Valley, Little Hollywood, Sunnydale, and McLaren Park	12	1
11	Excelsior, Ingleside, Oceanview, Merced Heights, Ingleside Heights, Mission Terrace, Outer Mission, Cayuga, and Crocker Amazon	6	1

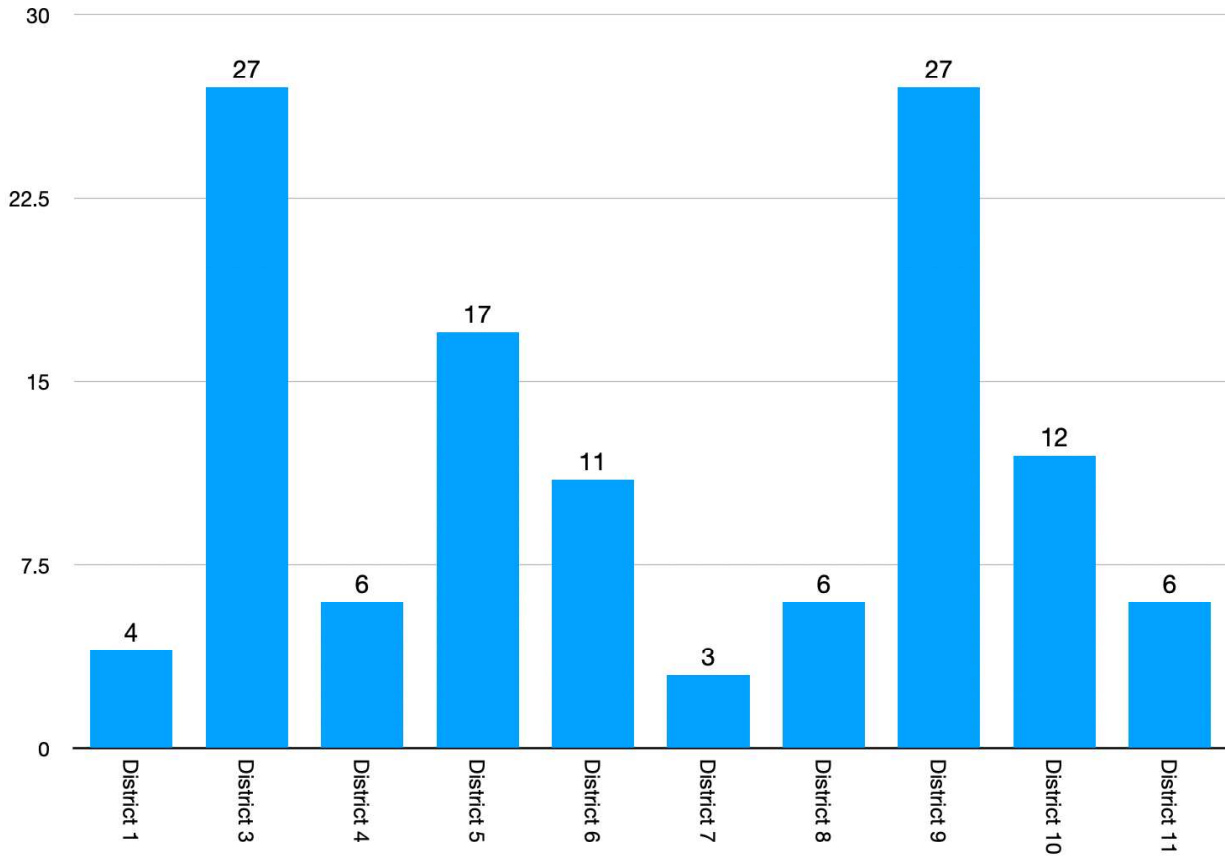
<sup>83</sup> Note: Boundaries of the Supervisorial districts were adjusted in 2022.

Figure 11: Police Fireworks Incidents By Month from 2018-2023



2018-2023 Police Fireworks Incidents By Month

Figure 12: Police Fireworks Incidents By Supervisor District from 2018-2023<sup>84</sup>



2018-2023 Police Fireworks Incidents By Supervisor District

<sup>84</sup> Note: Boundaries of the Supervisorial districts were adjusted in 2022.

Figure 13: Police Fireworks Incidents By Police District from 2018-2023

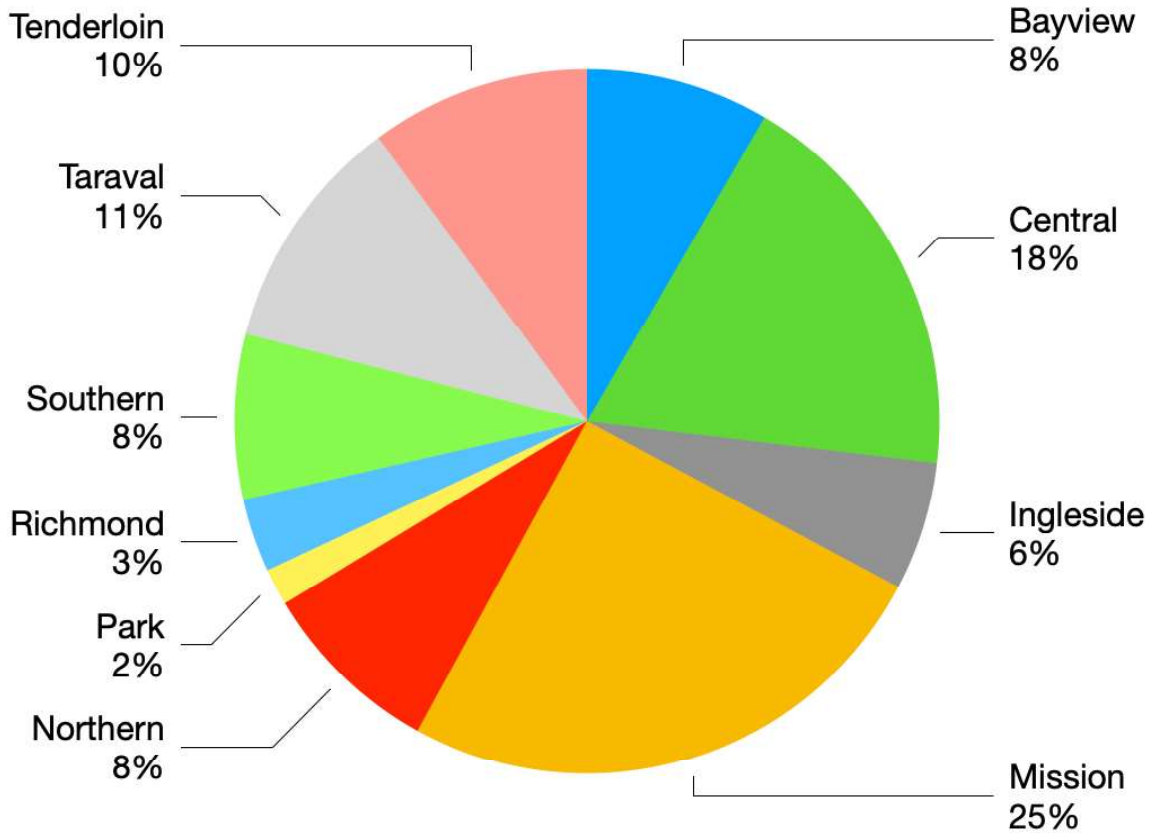


Table 7: Police Fireworks Incidents By Description from 2018-2023

Incident Description	Fireworks, Exploding		Fireworks, Possession of any within SF, incl. "Safe & Sane"		Fireworks, Throw at Person or Discharge in Crowd		Grand Total	
	Incident Description (Count All)	Incident Description (Count All)	Incident Description (Count All)	Incident Description (Count All)	Incident Description (Count All)	Incident Description (Count All)	Incident Description (Count All)	Incident Description (Count All)
2018	7	43.75%	6	37.50%	3	18.75%	16	100.00%
2019	4	20.00%	10	50.00%	6	30.00%	20	100.00%
2020	10	47.62%	9	42.86%	2	9.52%	21	100.00%
2021	11	52.38%	9	42.86%	1	4.76%	21	100.00%
2022	13	72.22%	3	16.67%	2	11.11%	18	100.00%
2023	14	60.87%	5	21.74%	4	17.39%	23	100.00%
<b>Grand Total</b>	<b>59</b>	<b>49.58%</b>	<b>42</b>	<b>35.29%</b>	<b>18</b>	<b>15.13%</b>	<b>119</b>	<b>100.00%</b>

**Table 8: Police Fireworks Incidents By Resolution from 2018-2023**

<b>Resolution</b>	<b>Cite or Arrest Adult</b>		<b>Open or Active</b>		<b>Unfounded</b>		<b>Grand Total</b>	
<b>Incident Year</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>	<b>Resolution (Count All)</b>
<b>2018</b>	5	31.25%	11	68.75%			16	100.00%
<b>2019</b>	10	50.00%	10	50.00%			20	100.00%
<b>2020</b>	6	28.57%	15	71.43%			21	100.00%
<b>2021</b>	9	42.86%	12	57.14%			21	100.00%
<b>2022</b>	1	5.56%	17	94.44%			18	100.00%
<b>2023</b>	6	26.09%	16	69.57%	1	4.35%	23	100.00%
<b>Grand Total</b>	<b>37</b>	<b>31.09%</b>	<b>81</b>	<b>68.07%</b>	<b>1</b>	<b>0.84%</b>	<b>119</b>	<b>100.00%</b>



## Data from Fire Incidents

This data comes from the San Francisco Fire Department (SFFD). The fireworks related incidents include a summary of each (non-medical) incident to which the SF Fire Department responded. Many of the fields in this dataset adhere to the National Fire Incident Reporting System (NFIRS) standards. The NFIRS is a voluntary reporting standard that fire departments use to uniformly report on the full range of their activities, from fire to emergency medical services to severe weather and natural disasters.<sup>85</sup>

Fireworks related fire incidents were identified by querying the dataset for records where the “Heat Source” field was set to “54 Fireworks” and the “Alarm DtTm” field was used to limit searches to given time periods.

**Table 9: Fires Started by Fireworks By Year With Holiday Periods**

Year	Full Year Count	New Years Count <sup>86</sup>	July 4th Count <sup>87</sup>
2023	7	0	5
2022	6	0	3
2021	12	0	11
2020	26	0	23
2019	14	0	12
2018	6	0	4
<b>Totals</b>	<b>71</b>	<b>0</b>	<b>58</b>

<sup>85</sup> U.S. Fire Administration. n.d. [“About NFIRS.”](#) U.S. Fire Administration.

<sup>86</sup> 12:00 am on December 18th of previous year through 11:59 pm on January 14th.

<sup>87</sup> 12:00 am on June 20th through 11:59 pm on July 18th.

Figure 14: Fireworks Fires By Month from 2018-2023

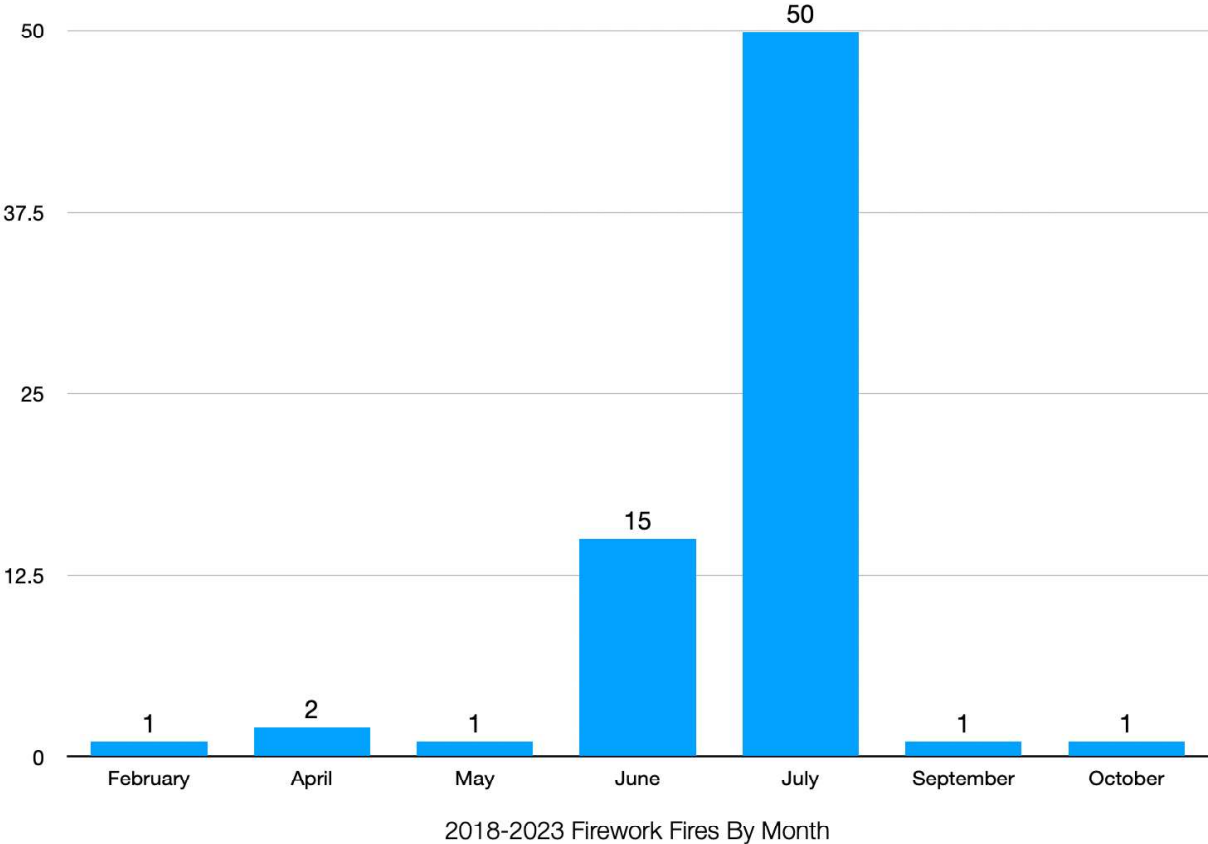


Figure 15: Fireworks Fires By Item Ignited from 2018-2023

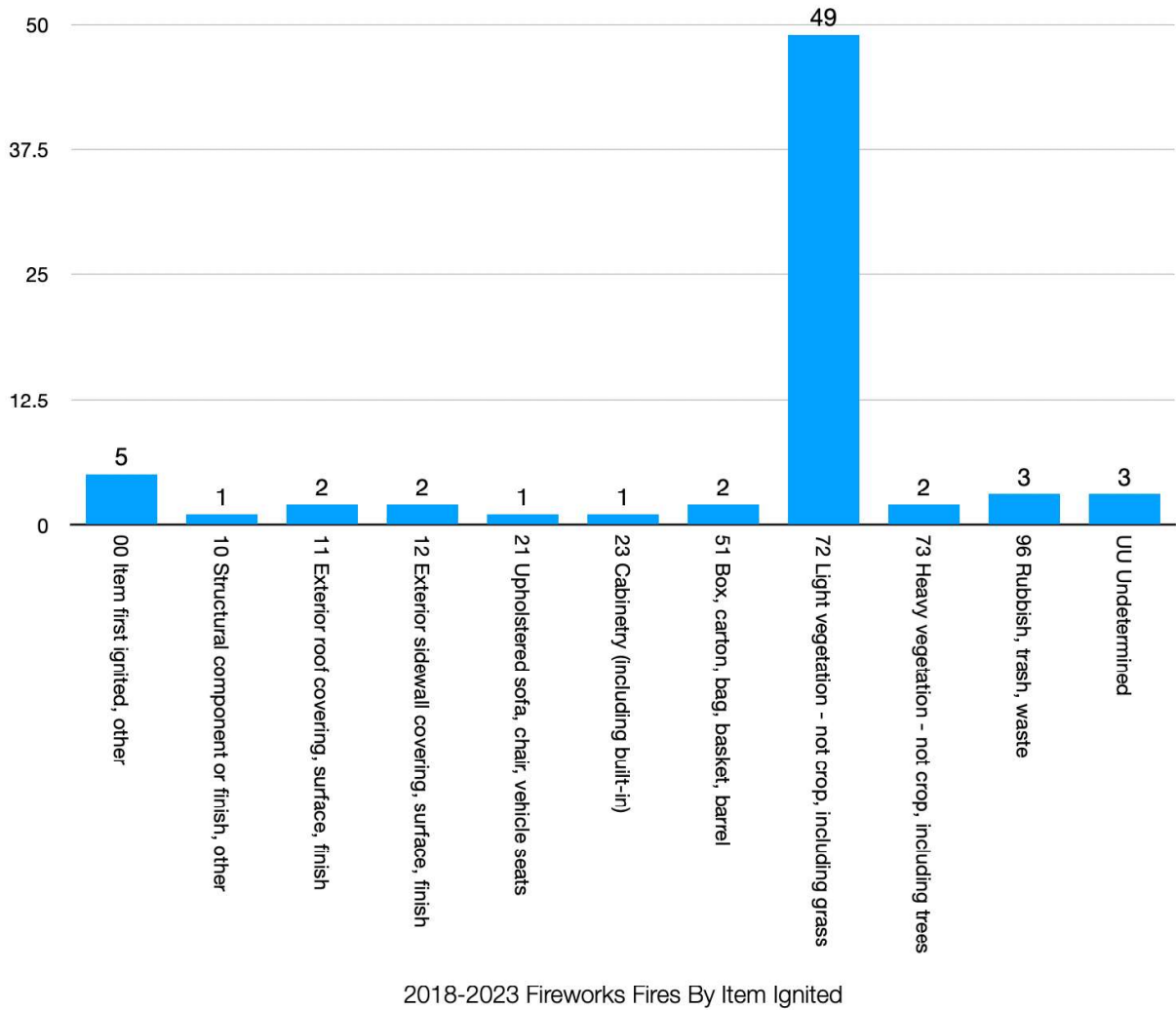
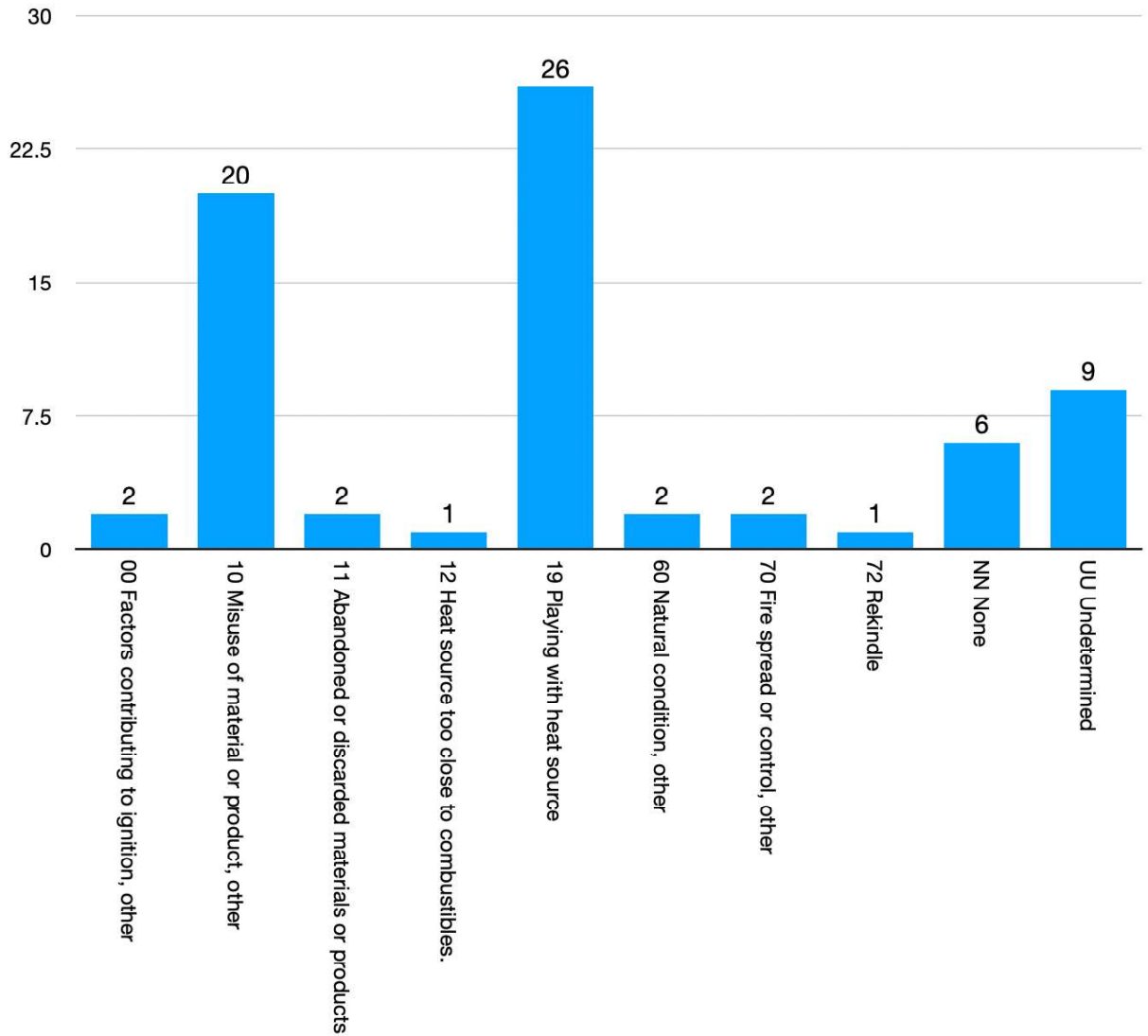


Figure 16: Fireworks Fires By Ignition Factor from 2018-2023



2018-2023 Fireworks Fires By Ignition Factor

Figure 17: Fireworks Fires By Ignition Cause from 2018-2023

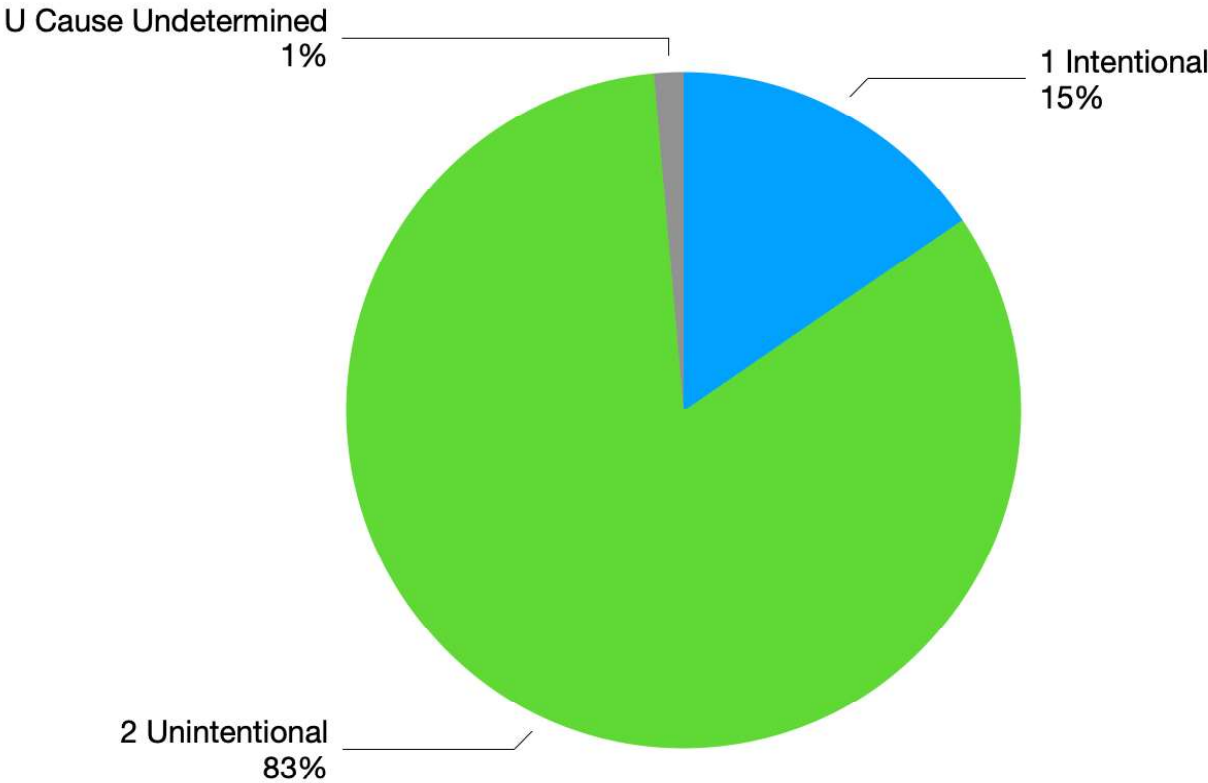
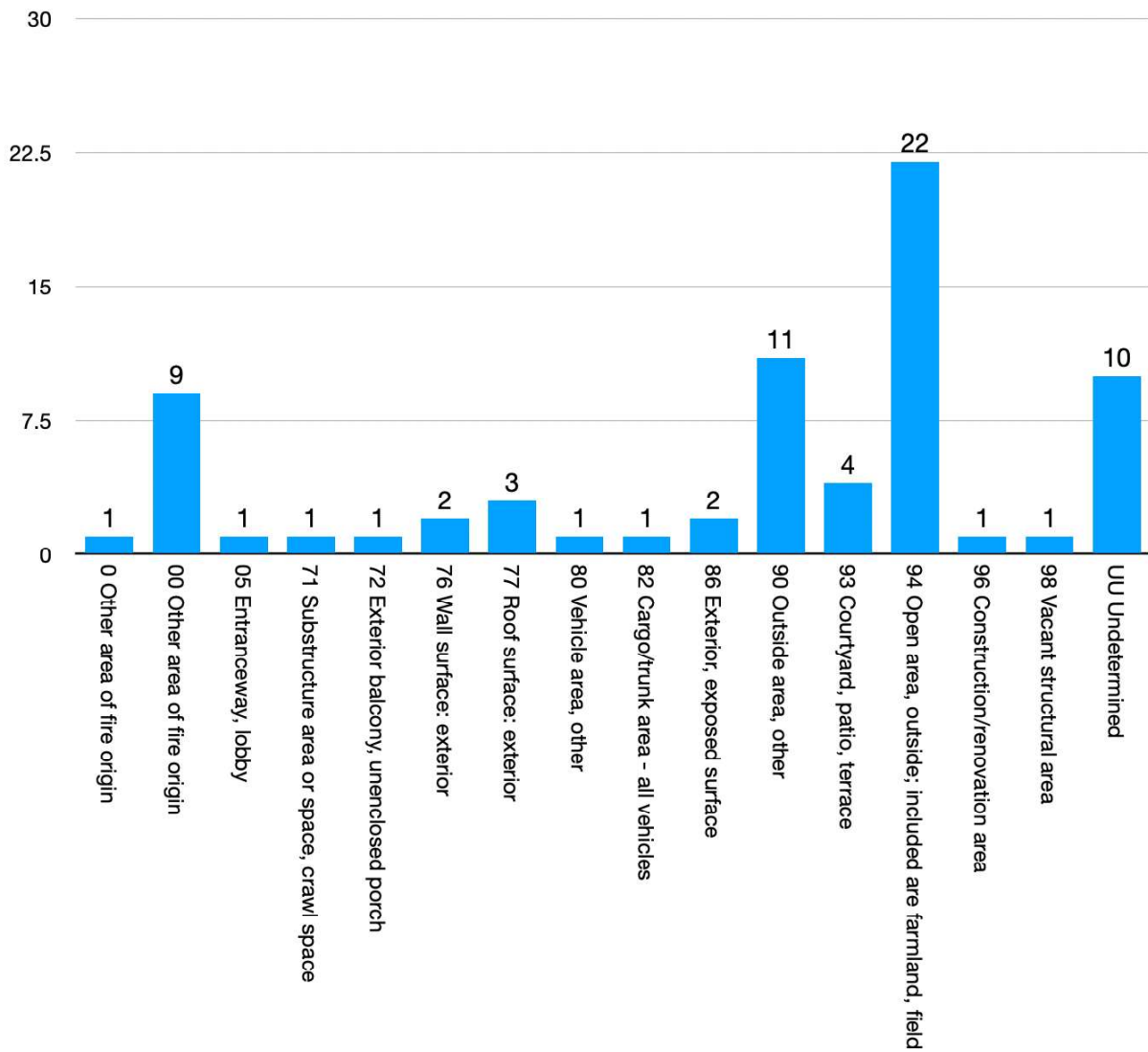
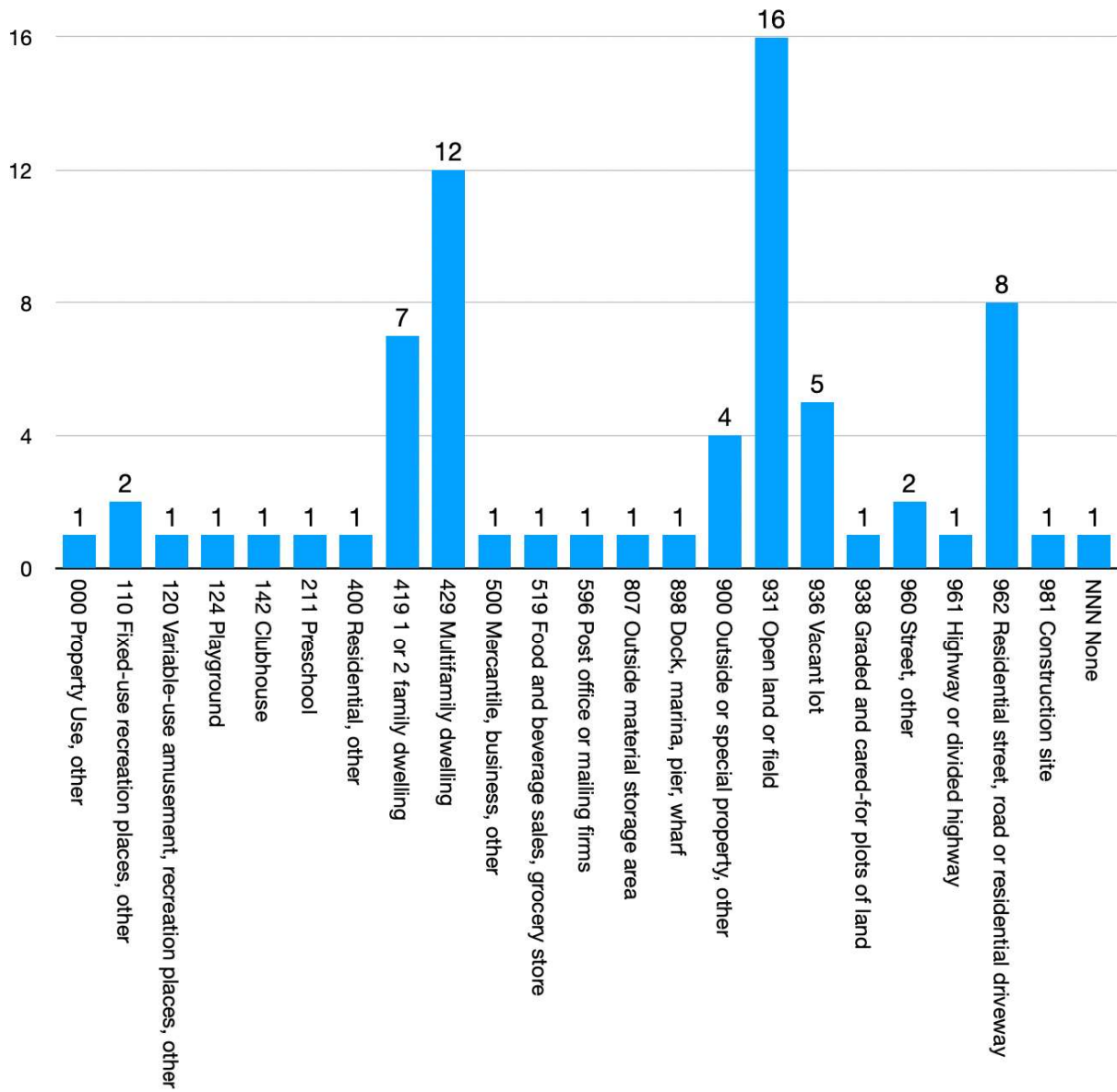


Figure 18: Fireworks Fires By Area of Origin from 2018-2023



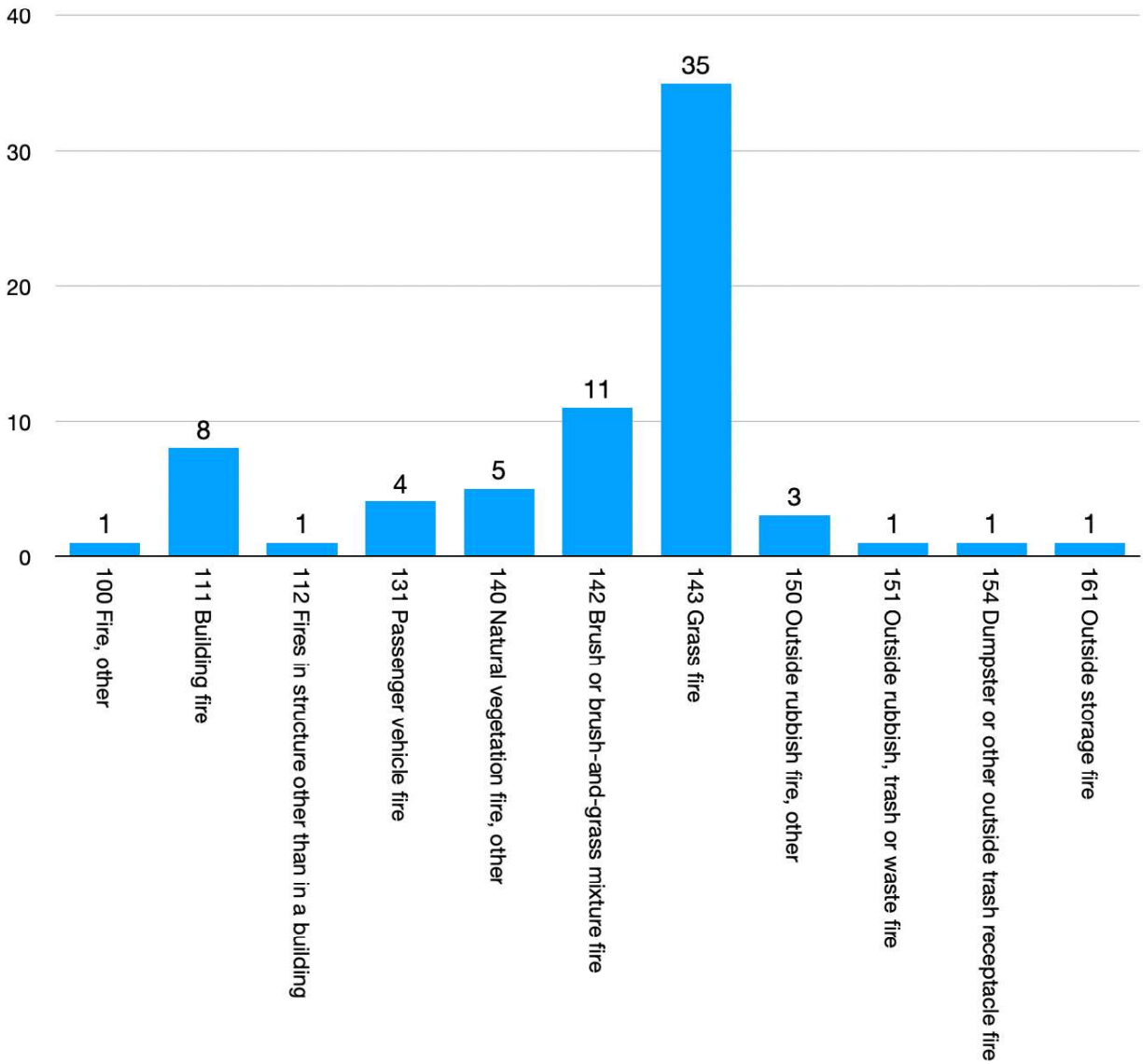
2018-2023 Fireworks Fires By Area of Origin

Figure 19: Fireworks Fires By Property Use from 2018-2023



2018-2023 Fireworks Fires By Property Use

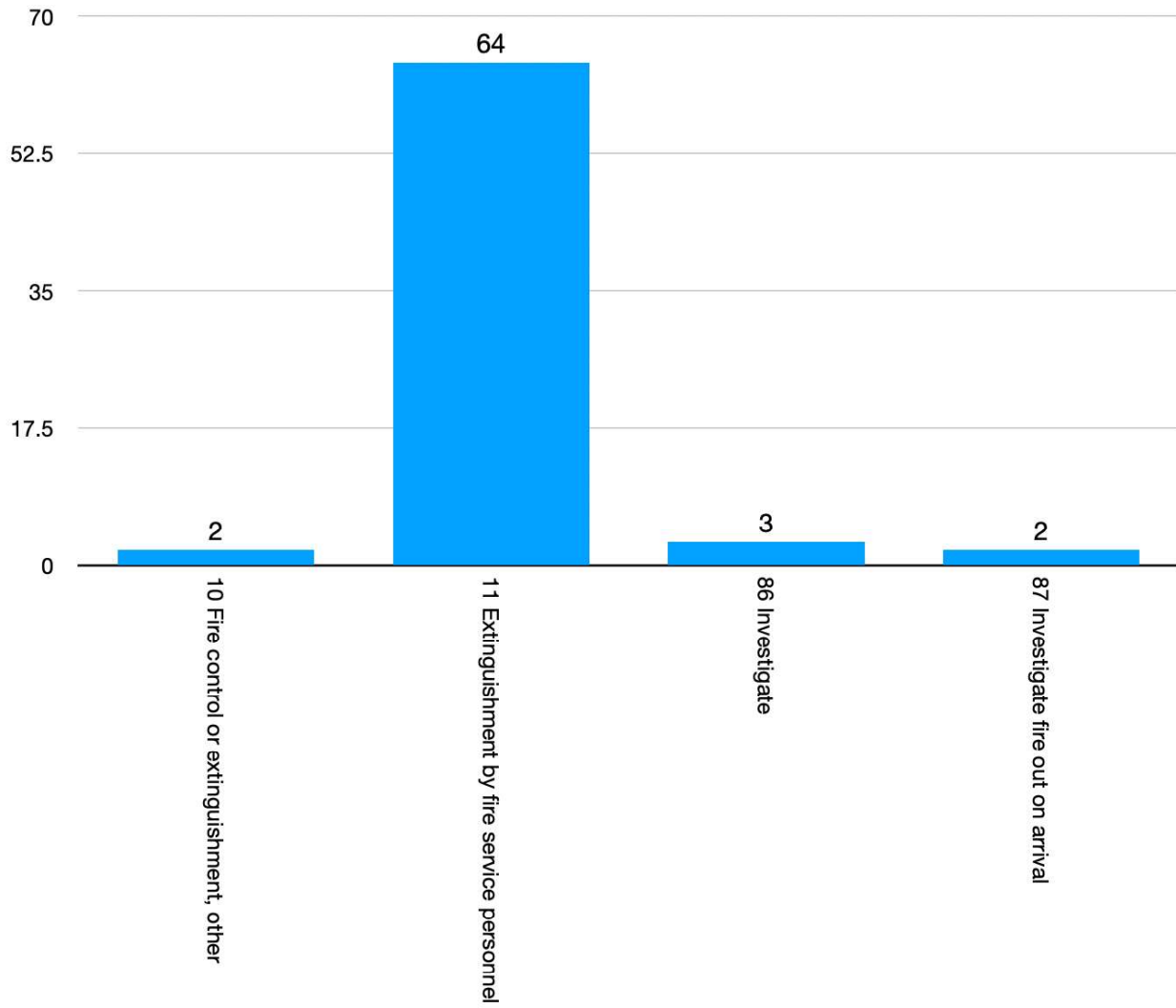
Figure 20: Fireworks Fires By Primary Situation from 2018-2023



2018-2023 Fireworks Fires By Primary Situation



Figure 21: Fireworks Fires By Action Taken from 2018-2023



2018-2023 Fireworks Fires By Action Taken

**Table 10: Additional Information Fires Started by Fireworks from 2018-2023**

Information	Median	Average	Summary
Alarm Number	1	1	All values were 1
Civilian Injuries	0	0	All values were 0
Fire Injuries	0	0	All values were 0
Content Loss	\$0.00	\$495.77	\$35,200 Total
Property Loss	\$0.00	\$37,060.00	\$555,900 Total
EMS Units	0	0.30	21 Total
EMS Personnel	0	0.51	36 Total
Suppression Units	3	3.69	262 Total
Suppression Personnel	10	13.28	943 Total
Other Units	0	0.25	18 Total
Other Personnel	0	0.44	31 Total
Response Time	5m 22s	6m 1s	Max: 1h 5m 54s

# Appendix B: Data Calculations

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## SF Households with Pets Harmed

**Around 100,000 San Francisco households, about one in four, have a pet frightened by illegal fireworks.**

1. From the latest US Census Bureau data (2018-2022) there are **360,842 San Francisco households**.<sup>88</sup>
2. From data sourced from the American Veterinary Medical Association's 2022 Pet Ownership and Demographic Sourcebook, **44.6% of US households have a dog** as a pet and **26.0% of US households have a cat** as a pet.<sup>89</sup>
3. According to the 2023-2024 American Pet Products Association National Pet Owners Survey, **66% of U.S. households own a pet**, which equates to 86.9 million households.<sup>90</sup>
4. A survey conducted by Pew Research found that **24% of pet households had both dogs and cats**, while **4% had neither dogs nor cats**.<sup>91</sup>
5. From a research article in the Applied Animal Behaviour Science journal, **50% of dogs are fearful of fireworks**.<sup>92</sup>
6. From a research article in the Behavioural Processes journal, **50% of cats are fearful of fireworks**.<sup>93</sup>

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<sup>88</sup> US Census Bureau. 2020. "[QuickFacts: San Francisco city, California; San Francisco County, California.](#)" *US Census Bureau*.

<sup>89</sup> American Veterinary Medical Association. n.d. "[U.S. pet ownership statistics.](#)" *American Veterinary Medical Association*.

<sup>90</sup> American Pet Products Association. n.d. "[Pet Industry Market Size, Trends & Ownership Statistics.](#)" *American Pet Products Association*.

<sup>91</sup> Pew Research Center. 2023. "[About half of U.S. pet owners say their pets are as much a part of their family as a human member](#)" *pewresearch.org*.

<sup>92</sup> Blackwell, Emily J., John W. Bradshaw, and Rachel A. Casey. 2013. "[Fear responses to noises in domestic dogs: Prevalence, risk factors and co-occurrence with other fear related behaviour.](#)" *Applied Animal Behaviour Science* 145, no. 1-2 (April): 15-25.

<sup>93</sup> Furgala, Nicole M., Carly M. Moody, Hannah E. Flint, Shannon Gowland, and Lee Niel. 2022. "[Veterinary background noise elicits fear responses in cats while freely moving in a confined space and during an examination.](#)" *Behavioural Processes* 201 (September).

**7. 160,936 SF households have dogs**

- Total SF households \* Percentage of US households with dogs = SF households with dogs
- $360,842 * 44.6\% = 160,936$
- Note: This likely overestimates the households with dogs as the US percentage is likely higher than the percentage for cities

**8. 93,819 SF households have cats**

- Total SF households \* Percentage of US households with cats = SF households with cats
- $360,842 * 26.0\% = 93,819$
- Note: This likely overestimates the households with cats as the US percentage is likely higher than the percentage for cities

**9. 238,156 SF households have pets**

- Total SF households \* Percentage of US households with pets = SF households with pets
- $360,842 * 66.0\% = 238,156$

**10. 57,157 SF households have both dogs and cats**

- SF households with pets \* Percentage of US households with dogs & cats = SF households with dogs & cats
- $238,156 * 24.0\% = 57,157$

**11. 197,598 SF households have dogs, cats or both**

- SF dog households + SF cat households - SF dog+cat households = SF households with dogs, cats or both
- $160,936 + 93,819 - 57,157 = 197,598$

**12. 51.9% of SF households have dogs, cats or both**

- $(\text{SF households with dogs, cats or both} / \text{Total SF households}) * 100 =$   
Percentage of SF households with dogs, cats or both
- $(197,598 / 380,842) * 100 = 51.9\%$

**13. Around 100,000 SF households have at least one dog or cat fearful of fireworks**

- SF households with dogs, cats or both \* Percentage of dogs and cats fearful of fireworks = SF households with at least one dog or cat fearful of fireworks
- $197,598 * 50\% = 98,799$

- Note 1: The fact that 50% of both dogs and cats are fearful of fireworks allows this single percentage to be used for the combination
- Note 2: The 98,799 is an underestimation since households with more than 1 dog or cat would have more than a 50% chance of having at least one pet fearful of fireworks, so rounding up to 100,000 is not unreasonable

#### 14. **More than 25% of SF households have a pet frightened by fireworks**

- SF household percentage with dogs, cats or both \* Percentage of dogs and cats fearful of fireworks = Percentage of SF households with a pet (dog or cat) frightened by fireworks
- $51.9\% * 50\% = 25.95\%$

## SF Children Under 5 Harmed

**Over 3,500 San Francisco children under the age of 5 are likely frightened by illegal fireworks.**

1. From the latest US Census Bureau data (April 1, 2020) the **population of San Francisco is 873,965.**<sup>94</sup>
2. From the latest US Census Bureau data, **13.7% of San Francisco County residents are under 18 years of age.**<sup>95</sup>
3. From the latest US Census Bureau data, **4.1% of San Francisco County residents are under 5 years of age.**<sup>96</sup>
4. From a Choosing Therapy medically reviewed article, **10% of school-aged children (under 18) have fear of loud noises.**<sup>97</sup>
5. There are **35,832 San Francisco children under the age of 5**
  - Total SF population \* Percentage of SF population which are under 5 = SF children under 5
  - $873,965 * 4.1\% = 35,832$
6. **At least 3,583 San Francisco children under 5 are frightened by fireworks**

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<sup>94</sup> US Census Bureau. 2020. "[QuickFacts: San Francisco city, California; San Francisco County, California.](#)" US Census Bureau.

<sup>95</sup> US Census Bureau. 2020. "[QuickFacts: San Francisco.](#)"

<sup>96</sup> US Census Bureau. 2020. "[QuickFacts: San Francisco.](#)"

<sup>97</sup> Shapiro, Leslie. 2023. "[Phonophobia: Understanding the Fear of Loud Noises.](#)" *Choosing Therapy.*

- SF children under 5 \* Percentage of children with fear of loud noises = Number of SF children under 5 frightened by fireworks
- 35,832 \* 10% = 3,583

## SF Autistic Residents Harmed

**An estimated 20,000 San Francisco residents have some form of autism and at some point in their lives around 10,000 will exhibit Decreased Sound Tolerance (DST) and therefore likely to be impacted by illegal fireworks.**

1. From the latest US Census Bureau data (April 1, 2020) the **population of San Francisco is 873,965**.<sup>98</sup>
2. From the latest US Census Bureau data, **13.7% of San Francisco County residents are under 18 years of age**.<sup>99</sup>
3. Autism Speaks reports that **1 in 36 children** in the U.S. have autism.<sup>100</sup>
4. Autism Speaks reports that **1 in 45 adults** in the U.S. have autism.<sup>101</sup>
5. A journal article in Neuroscience & Biobehavioral Reviews reports that “Atypical behavioral responses to environmental sounds are common in autistic children and adults, with **50–70% of this population exhibiting decreased sound tolerance (DST)** at some point in their lives”.<sup>102</sup>
6. **86.3%** of San Francisco County residents are **over 18** years of age.
  - Total SF population percentage - Percentage of SF population which are under 18 = Percentage of SF residents over 18
  - 100% - 13.7% = 86.3%
7. **119,733 children under 18 years** of age in San Francisco County
  - Total SF population \* Percentage of SF population which are under 18 = Number of SF residents under 18 (children)

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<sup>98</sup> US Census Bureau. 2020. “[QuickFacts: San Francisco](#).”

<sup>99</sup> US Census Bureau. 2020. “[QuickFacts: San Francisco](#).”

<sup>100</sup> Autism Speaks. 2024. “[Autism Statistics and Facts](#).” Autism Speaks.

<sup>101</sup> Autism Speaks. 2024. “[Autism Statistics and Facts](#).” Autism Speaks.

<sup>102</sup> Williams, Zachary J., Jason L. He, Carissa J. Cascio, and Tiffany G. Woynaroski. 2021. “[A review of decreased sound tolerance in autism: Definitions, phenomenology, and potential mechanisms](#).” *Neuroscience & Biobehavioral Reviews* 121, no. February 2021 (February): 1-17.

- $873,965 * 13.7\% = 119,733$
- 8. **754,232 adults** in San Francisco County
  - Total SF population \* Percentage of SF population which are over 18 = Number of SF residents over 18 (adults)
  - $873,965 * 86.3\% = 754,232$
- 9. **3,326 autistic children** in San Francisco County
  - Number of SF children \* Autism rate for children = Number of autistic children in SF County
  - $119,733 * (1/36) = 3326$
- 10. **16,760 autistic adults** in SF County
  - Number of SF adults \* Autism rate for adults = Number of autistic adults in SF County
  - $754,232 * (1/45) = 16,760$
- 11. **20,086 autistic residents** in SF County
  - Number of SF autistic children + number autistic adults = Number of autistic residents
  - $3,326 + 16,760 = 20,086$
- 12. **10,043 autistic residents** in SF County will exhibit Decreased Sound Tolerance (DST) at some point in their lives and are therefore likely to be **impacted by illegal fireworks**
  - Number of SF autistic residents \* Percentage experiencing DST = Number with DST
  - $20,086 * 50\% = 10,043$
  - Note: This is a conservative estimate since the lower value of the range of percentages (50%-70%) of those with autism who experience DST was chosen

## SF Residents with Dementia Harmed

**An estimated 12,500 San Francisco residents have some level of dementia and will potentially be agitated by fireworks.**

1. From the latest US Census Bureau data (April 1, 2020) the **population of San Francisco is 873,965.**<sup>103</sup>
2. From the latest US Census Bureau data, **18.2%** of San Francisco County residents are **65 years old and over**<sup>104</sup>
3. From a research article in the Alzheimer's Association's Diagnosis, Assessment & Disease Monitoring journal, "**Diagnosed dementia prevalence** and incidence for the entire Medicare population was **7.9%** (95% CI: 7.91 to 7.93) and 2.8% (95% CI: 2.77 to 2.78)."<sup>105</sup>
4. From an Alzheimer's Foundation of America (AFA) press release, "**Fireworks and loud explosions can agitate someone living with dementia.**"<sup>106</sup>
5. **159,061 residents of Medicare age (65 and over)** in San Francisco County
  - Total SF Population \* Percentage over 65 = Number of SF residents over 65
  - $873,965 * 18.2\% = 159,061$
6. **12,565 residents who are 65 and older with some form of dementia** in San Francisco County
  - Number of SF residents 65 and over \* Percentage 65 and over with dementia = Number of SF residents 65 and over with dementia
  - $159,061 * 7.9\% = 12,565$
7. **An estimated 12,500 San Francisco residents have some level of dementia and will potentially be agitated by fireworks.**
  - Note: this underestimates the number of dementia patients as it doesn't take into account residents under 65 who are experiencing dementia

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<sup>103</sup> US Census Bureau. 2020. "[QuickFacts: San Francisco.](#)"

<sup>104</sup> US Census Bureau. 2020. "[QuickFacts: San Francisco.](#)"

<sup>105</sup> Haye, Sidra, Johanna Thunell, Geoffrey Joyce, Patricia Ferido, Bryan Tysinger, Mireille Jacobson, and Julie Zissimopoulos. 2023. "[Estimates of diagnosed dementia prevalence and incidence among diverse beneficiaries in traditional Medicare and Medicare Advantage.](#)" *Alzheimer's Association's Diagnosis, Assessment & Disease Monitoring* 15, no. 3 (August).

<sup>106</sup> Alzheimer's Foundation of America (AFA). 2023. "[Creating a Dementia-Friendly 4th of July: The 'Dos and Don'ts.'](#)" *Alzheimer's Foundation of America.*



## SF Veterans and Residents Suffering from PTSD Harmed

**Veterans and others suffering from PTSD: In any given year, an estimated 2,500 San Francisco combat veterans and 37,700 San Francisco adults suffering from PTSD are potentially triggered by the explosions from illegal fireworks.**

1. From the latest US Census Bureau data (April 1, 2020) the **population of San Francisco is 873,965.**<sup>107</sup>
2. From the latest US Census Bureau data, **13.7% of San Francisco County residents are under 18 years of age.**<sup>108</sup>
3. From the latest US Census Bureau data, **20,019 residents** in San Francisco County are **veterans.**<sup>109</sup>
4. The US Department of Veterans Affairs reports that about **5 out of every 100 adults (or 5%)** in the U.S. has PTSD **in any given year.**<sup>110</sup>
5. The US Department of Veterans Affairs reports that<sup>111</sup>
  - PTSD is slightly **more common among Veterans** than civilians.
  - At some point **in their life, 7 out of every 100 Veterans (or 7%)** will have PTSD.
  - In the **general population, 6 out of every 100 adults (or 6%)** will have PTSD **in their lifetime.**
  - PTSD is also more common among female Veterans (13 out of 100, or 13%) versus male Veterans (6 out of 100, or 6%).
  - We are learning more about transgender Veterans and those who do not identify as male or female (non-binary).
6. In terms of **fireworks, individuals with PTSD**, as well as **any combat veteran regardless of their PTSD status**, are more **likely to be triggered** or respond to this kind of stimuli. So we have a loud, unexpected noise, often under the cover of darkness.<sup>112</sup>
7. A Pew Research Center article on veterans reports<sup>113</sup>
  - “About **three-in-ten veterans (29%) had combat experience** at some point in their military career. The share is markedly higher among veterans who served after

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<sup>107</sup> US Census Bureau. 2020. “[QuickFacts: San Francisco.](#)”

<sup>108</sup> US Census Bureau. 2020. “[QuickFacts: San Francisco.](#)”

<sup>109</sup> US Census Bureau. 2020. “[QuickFacts: San Francisco.](#)”

<sup>110</sup> US Department of Veterans Affairs. 2023. “[How Common is PTSD in Adults? - PTSD: National Center for PTSD.](#)” *National Center for PTSD.*

<sup>111</sup> US Department of Veterans Affairs. 2023. “[How Common is PTSD in Veterans?](#)”

9/11. Roughly half of post-9/11 veterans (49%) have had combat experience, compared with 24% of veterans who served only before 9/11.”

- “Combat veterans are also especially likely to report having PTS. Fully **44% of combat veterans say they believe they have suffered from PTS** as a result of their military experience, compared with 8% of non-combat veterans.”

8. **86.3%** of San Francisco County residents are **over 18** years of age.

- Total SF population percentage - Percentage of SF population which are under 18 = Percentage of SF residents over 18
- $100\% - 13.7\% = 86.3\%$

9. **754,232 adults** in San Francisco County

- Total SF population \* Percentage of SF population which are over 18 = Number of SF residents over 18
- $873,965 * 86.3\% = 754,232$

10. **37,711 adults** in San Francisco County with **PTSD**

- Number of adults in SF \* PTSD rate in any year = Number adults in SF with PTSD
- $754,232 * 5\% = 37,711$

11. **5,805 combat veterans** in San Francisco County

- SF veterans \* Percentage of vets with combat experience = SF veterans with combat experience
- $20,019 * 29\% = 5,805$

12. **2,554 combat veterans with PTSD** in San Francisco County

- Number of SF combat vets \* PTSD rate for combat vets = Number of SF combat vets with PTSD
- $5,805 * 44\% = 2,554$

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<sup>112</sup> Mallard, Chris, and Abbey Anderson. 2020. “[The Overlooked Effects of Fireworks.](#)” *Penn Medicine*.

<sup>113</sup> Parker, Kim, Ruth Igielnik, Amanda Barroso, and Anothy Cilluffo. 2019. “[How veterans feel about deployment and combat.](#)” *Pew Research Center*.

# Appendix C: Federal, State and Local Laws

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## Federal Law



“The **US Bureau of Alcohol, Tobacco, Firearms and Explosives or ATF** is responsible for regulating explosives, including **display fireworks**, to prevent the mishandling and illegal use of explosive materials. ATF’s regulatory enforcement and investigative programs work closely with industry members to ensure the proper storage and safeguarding of these items. Display fireworks are the large fireworks used in shows, generally under the supervision of a trained pyrotechnician.”<sup>114</sup>



“The **U.S. Consumer Product Safety Commission (CPSC)** has issued mandatory safety regulations for fireworks devices. The CPSC enforces its fireworks regulations under the Federal Hazardous Substances Act (FHSA), 15 U.S.C. §1261. It is a violation of Federal law to import, distribute or sell fireworks that violate CPSC regulations.”<sup>115</sup> Any fireworks that exceed the limits defined by the CPSC are not considered **consumer fireworks** and are regulated by the ATF or are prohibited.

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<sup>114</sup> Bureau of Alcohol, Tobacco, Firearms and Explosives. 2022. [“Fireworks | Bureau of Alcohol, Tobacco, Firearms and Explosives.”](#) ATF.

<sup>115</sup> US Consumer Product Safety Commission. 2013. [“Fireworks Business Guidance | CPSC.gov.”](#) Consumer Product Safety Commission.

## State Laws

"Today, consumer fireworks are legal for purchase in 49 states. Only Massachusetts completely bans the sale of all fireworks. In Hawaii, Nevada, and Wyoming, fireworks are regulated at the county level. Fifteen states only allow the sale and use of non-aerial and non-explosive fireworks which includes novelties, fountains, sparklers, and a few others. The legal term 'Safe and Sane' usually means fireworks that do not fly or explode."<sup>116</sup>

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<sup>116</sup> Lindsay, Mickell. 2023. "[The Amazing Supply Chain of July 4th Fireworks.](#)" *All Things Supply Chain*.

## California Law



### CA Consumer Fireworks<sup>117</sup>

#### Specifically Permitted

Permit required for: Per APA Std. 87-1, Ground and handheld sparkling devices, cylindrical and cone fountains, wheel and ground spinners, and illuminating torches. Fireworks for sale must be tested and appear on the approved list issued annually by the State Fire Marshal's office. Permitted all year: Snap Caps and Bang Snaps.

#### Specifically Prohibited

Sky rockets, bottle rockets, roman candles, aerial shells, firecrackers, other fireworks that explode, go into the air, or move on the ground in an uncontrollable manner and all other devices not appearing on SFM annual approved list.

#### Selling period

12 noon on June 28 through 12 noon on July 6. Local authorities have the right to further restrict "sales" and "use."

#### Age to purchase

16 years of age or older.

#### Licensing Required

Manufacturer \$1,500, Wholesaler \$1,500, Retailer \$50, Distributor \$750

#### Authority

State Fire Marshal  
1131 "S" Street Sacramento, CA 95811  
P.O. Box 944246 Sacramento, CA 94244-2460  
Phone: (916) 445-8373  
<http://osfm.fire.ca.gov/>

#### Law Number

Cal. Health & Safety Code §§ 12500 - 12728; Cal. Code Regs. tit. 19 §§975 - 1053; Cal. Dept. of Forestry & Fire Protection, 2015 State Approved Safe & Sane Fireworks.

#### Statute(s)

[Health & Safety Code 12500-12728](#)

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<sup>117</sup> American Pyrotechnics Association. 2022. "[CA Consumer Fireworks](#)." *California Consumer Fireworks*.

## California Office of the State Fire Marshal



“California's Fireworks Law, passed in 1938, established the Office of the State Fire Marshal (SFM) as the only fireworks classification authority in California. Fireworks are classified through laboratory analysis, field examinations and test firing of items. As part of the program, SFM requires the licensing of all pyrotechnic operators, fireworks manufacturers, importer-exporters, wholesalers, retailers, and public display companies. Pyrotechnic operators who discharge fireworks at public displays or launch high powered and experimental rockets, must also pass a written examination and provide proof of experience.

The State's Explosives Law authorizes the California State Fire Marshal to adopt regulations for the safe use, handling, storage and transportation of explosives. Under those regulations local law enforcement agencies track the location of storage magazines within their jurisdictions through a permit process.”<sup>118</sup>

From the CAL FIRE website on firework safety:

- *California has zero tolerance for the sale and use of illegal fireworks. Illegal fireworks include:*
  - *Sky rockets*
  - *Bottle rockets*
  - *Roman candles*
  - *Aerial shells*
  - *Firecrackers*
  - *Other fireworks that explode, go into the air, or move on the ground in an uncontrollable manner*
- *It is illegal to sell, transport, or use fireworks that do not carry the “Safe and Sane” seal, as well as possess or use fireworks in a community where they are not permitted.*
- *Parents are liable for any damage or injuries caused by their children using fireworks.*<sup>119</sup>

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<sup>118</sup> CA Office of the State Fire Marshal. 2023. “[Fireworks | OSFM.](#)” *Office of the State Fire Marshal.*

<sup>119</sup> CAL FIRE. 2023. “[Fireworks Safety.](#)” *Ready for Wildfire.*

## San Francisco Law



### San Francisco Police Code

SEC. 1290. Discharge Of Fireworks Prohibited.

No person or persons, firm, company, corporation or association shall fire or discharge any fireworks of any kind or description within the limits of the City and County of San Francisco.

Provided, however, that public displays of fireworks may be given with the joint written consent of the Fire Marshal and the Chief of Police.

# Appendix D: CA State Bill AB1403<sup>120</sup>

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## Assembly Bill No. 1403

### CHAPTER 368

An act to amend Sections 12529, 12556, 12700, and 12702 of, and to add Sections 12635.5 and 12726.1 to, the Health and Safety Code, relating to fireworks.

[ Approved by Governor October 07, 2023. Filed with Secretary of State October 07, 2023. ]

### LEGISLATIVE COUNSEL'S DIGEST

AB 1403, Garcia. Public safety: fireworks: enforcement: funding.

(1) The State Fireworks Law requires the State Fire Marshal to adopt regulations relating to fireworks as may be necessary for the protection of life and property, and requires the State Fire Marshal to appoint deputies and employees as may be required to carry out the provisions of that law. Existing law requires the State Fire Marshal to classify all fireworks and pyrotechnic devices and prohibits any fireworks or pyrotechnic devices from being imported, sold, or offered for sale before the fireworks or devices have been examined and classified by the State Fire Marshal. Existing law authorizes the State Fire Marshal to issue licenses related to fireworks and pyrotechnic devices, including a wholesaler's license. Existing law makes it unlawful for a person to violate the State Fireworks Law or the regulations issued pursuant thereto, and to possess a specified amount of dangerous fireworks without a valid permit, punishable by a fine or by imprisonment, as specified.

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<sup>120</sup> State of California. 2023. "[California Assembly Bill 1403](#)." *LegiScan*.



This bill would increase the amounts of the fines to be imposed for violating the State Fireworks Law or related regulation, would increase the amount of certain fines for possessing specified amounts of dangerous fireworks, and would increase the amount of certain fines for selling, giving, or delivering dangerous fireworks to any person under 18 years of age.

(2) The State Fireworks Law defines “safe and sane fireworks” to mean any fireworks that do not come within the definition of dangerous fireworks or exempt fireworks, as those terms are defined.

This bill would redefine “safe and sane fireworks” to instead mean any fireworks that have been approved by the United State Consumer Product Safety Commission and that have been carefully examined and tested by the State Fire Marshal and determined by the State Fire Marshal to meet and comply with specified regulations.

(3) The State Fireworks Law requires the State Fire Marshal, on or before July 1, 2008, to identify and evaluate methods to capture more detailed data relating to fires, damages, and injuries caused by both dangerous fireworks and safe and sane fireworks.

This bill would move up the date by which the State Fire Marshal is required to identify and evaluate methods to capture the data described above to July 1, 2024. The bill would require, on or before January 1, 2025, the State Fire Marshal to collect and analyze data relating to fires, damages, seizures, arrests, administrative citations, and fireworks disposal issues caused by the sale and use of both dangerous illegal fireworks and safe and sane fireworks, as provided. The bill would require, on or before January 1, 2025, the State Fire Marshal to provide to the appropriate policy and budget committees of the respective houses of the Legislature a workload analysis of resources needed to further assist in the training of local fire and law enforcement personnel regarding specified topics.

(4) The State Fireworks Law authorizes the retail sale of safe and sane fireworks from June 28 to July 6, annually, pursuant to a license issued by the State Fire Marshal, unless otherwise prohibited or regulated by law or ordinance.

This bill would authorize a charter city, city, county, fire protection district, or city and county that adopts an ordinance or resolution authorizing the sale of safe and sane fireworks to require each applicant receiving a permit to pay a fee to the charter city, city, county, fire protection

district, or city and county of a pro rata portion of the actual and reasonable costs incurred by the charter city, city, county, fire protection district, or city and county for, among other things, processing and issuing fireworks permits, inspection of fireworks stands, public awareness and education campaigns regarding the safe and responsible use of safe and sane fireworks, and related fire operation and suppression efforts, as specified. The bill would specify that the pro rata portion of those costs shall be based on a percentage of the permittee's sales and use tax return for the applicable permit period, not to exceed 7% of the gross sales of the fireworks sold in the charter city, city, county, fire protection district, or city and county, except that a cost recovery ordinance or resolution in effect on or before January 1, 2024, would be authorized to supersede that provision.

(5) The State Fireworks Law requires any dangerous fireworks seized be managed by the State Fire Marshal in the manner prescribed by the State Fire Marshal, as provided.

This bill would require the State Fire Marshal to, in consultation with relevant state and local public agencies, the fireworks industry, and other relevant stakeholders, develop, publish, and provide necessary guidance and training to local agencies that seize, collect, transport, store, and treat seized fireworks, as provided. The bill would require the State Fire Marshal to train local fire and law enforcement personnel on fireworks enforcement, as provided.

### **Digest Key**

Vote: majority Appropriation: no Fiscal Committee: yes Local Program: no

### **Bill Text**

#### **THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:**

**SECTION 1.** Section 12529 of the Health and Safety Code is amended to read:

**12529.** "Safe and sane fireworks" means any fireworks that have been approved by the United States Consumer Product Safety Commission and that have been carefully examined and tested by the State Fire Marshal and determined by the State Fire Marshal that the fireworks meet and are in compliance with the general and specific standards for design, construction, performance, and labeling for safe and sane fireworks, as set forth in Chapter 6 (commencing

with Section 979) of Division 1 of Title 19 of the California Code of Regulations, as it reads on July 1, 2023.

**SEC. 2.** Section 12556 of the Health and Safety Code is amended to read:

**12556.** (a) In addition to the obligations described in Section 13110.5, on or before July 1, 2024, the State Fire Marshal shall identify and evaluate methods to capture more detailed data relating to fires, damages, and injuries caused by both dangerous fireworks and safe and sane fireworks. These evaluation methods shall include a cost analysis related to capturing and reporting the data and shall meet or exceed the specificity, detail, and reliability of the data captured under the former California Fire Incident Reporting System (CFIRS). The State Fire Marshal shall furnish a copy of these evaluation methods to any interested person upon request.

(b) On or before January 1, 2025, the State Fire Marshal shall collect and analyze data relating to fires, damages, seizures, arrests, administrative citations, and fireworks disposal issues caused by the sale and use of both dangerous illegal fireworks and safe and sane fireworks. The State Fire Marshal shall collect data pursuant to a methodology developed in consultation with the State Fire Marshal's General Fireworks Advisory Committee.

(c) (1) On or before January 1, 2025, the State Fire Marshal shall provide to the appropriate policy and budget committees of the respective houses of the Legislature a workload analysis of resources needed to further assist in the training of local fire and law enforcement personnel regarding all the following:

- (A) The seizure, collection, transportation, and storage of seized fireworks.
- (B) The enforcement of statewide programs concerning illegal and dangerous fireworks.
- (C) Prosecution related to seized fireworks.
- (D) Investigations of illegal and dangerous fireworks.

(2) The requirement for submitting a report imposed under paragraph (1) is inoperative on January 1, 2028, pursuant to Section 10231.5 of the Government Code.

**SEC. 3.** Section 12635.5 is added to the Health and Safety Code, to read:

12635.5. (a) A charter city, city, county, fire protection district, or city and county that adopts an ordinance or resolution pursuant to Section 12599 may, through adoption of an ordinance or resolution by the governing body, require each applicant receiving a permit to pay a fee to the charter city, city, county, fire protection district, or city and county of a pro rata portion of the actual and reasonable costs the charter city, city, county, fire protection district, or city and county incurs that is related to any of the following:

(1) Processing and issuing permits.

(2) Inspection of fireworks stands.

(3) Public education and awareness campaigns regarding the safe and responsible use of safe and sane fireworks, and the dangers and risks posed by the use of illegal fireworks.

(4) Enforcing the provisions of the code of the charter city, city, county, fire protection district, or city and county with respect to the sale and use of safe and sane fireworks, including extra personnel time and cleanup of the fireworks trash and debris. "Extra personnel time" means employee or contracted employee time that the charter city, city, county, fire protection district, or city and county would not otherwise incur but for the sale and use of safe and sane fireworks.

(5) Fire operation and suppression efforts that are directly related to safe and sane fireworks.

(b) The pro rata share of the costs shall be specified in the ordinance or resolution and calculated using gross sales as shown on each permittee's sales and use tax return for the applicable period. The pro rata share of costs shall not exceed 7 percent of the gross sales of the fireworks sold in the charter city, city, county, fire protection district, or city and county during the applicable period. A cost recovery ordinance or resolution in effect on or before January 1, 2024, may supersede this subdivision.

**SEC. 4.** Section 12700 of the Health and Safety Code is amended to read:

**12700.** (a) Except as provided in Section 12702 and subdivision (b), a person who violates any provision of this part, or any regulations issued pursuant to this part, is guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than one thousand dollars (\$1,000) or more than two thousand dollars (\$2,000), or by imprisonment in the county jail for not exceeding one year, or by both that fine and imprisonment.

(b) A person who violates any provision of this part, or any regulations issued pursuant to this part, by possessing dangerous fireworks shall be subject to the following:

(1) A person who possesses a gross weight, including packaging, of less than 25 pounds of unaltered dangerous fireworks, as defined in Section 12505, is guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than one thousand dollars (\$1,000) or more than two thousand dollars (\$2,000), or by imprisonment in the county jail for not exceeding one year, or both that fine and imprisonment. Upon a second or subsequent conviction, a person shall be punished by a fine of not less than two thousand dollars (\$2,000), or by imprisonment in a county jail not exceeding one year or by both that fine and imprisonment.

(2) A person who possesses a gross weight, including packaging, of not less than 25 pounds or more than 100 pounds of unaltered dangerous fireworks, as defined in Section 12505, is guilty of a public offense, and upon conviction shall be punished by imprisonment in a county jail for not more than one year, or by a fine of not less than two thousand dollars (\$2,000) or more than ten thousand dollars (\$10,000), or by both that fine and imprisonment.

(3) A person who possesses a gross weight, including packaging, of not less than 100 pounds or more than 5,000 pounds of unaltered dangerous fireworks, as defined in Section 12505, is guilty of a public offense, and upon conviction shall be punished by imprisonment pursuant to subdivision (h) of Section 1170 of the Penal Code or a county jail for not more than one year, or by a fine of not less than ten thousand dollars (\$10,000) or more than twenty thousand dollars (\$20,000), or by both that fine and imprisonment.

(4) A person who possesses a gross weight, including packaging, of more than 5,000 pounds of unaltered dangerous fireworks, as defined in Section 12505, is guilty of a public offense, and upon conviction shall be punished by imprisonment pursuant to subdivision (h)

of Section 1170 of the Penal Code, or a county jail for not more than one year, or by a fine of not less than twenty thousand dollars (\$20,000) or more than one hundred thousand dollars (\$100,000), or by both that fine and imprisonment.

(c) Subdivision (b) shall not apply to a person who holds and is operating within the scope of a valid license as described in Section 12516 or valid permit as described in Section 12522.

**SEC. 5.** Section 12702 of the Health and Safety Code is amended to read:

**12702.** Notwithstanding Section 12700:

(a) A person who violates this part by selling, giving, or delivering any dangerous fireworks to any person under 18 years of age is guilty of a misdemeanor and upon a first conviction shall be punished as prescribed in subdivision (b) of Section 12700.

(b) Upon a second or subsequent conviction of the offense, the person shall be punished by an additional fine of ten thousand dollars (\$10,000), or by imprisonment in a county jail for up to one year or by both that fine and imprisonment. The person shall not be granted probation and the execution of the sentence imposed upon the person shall not be suspended by the court.

**SEC. 6.** Section 12726.1 is added to the Health and Safety Code, to read:

**12726.1.** (a) Subject to an appropriation by the Legislature, the State Fire Marshal shall train local fire and law enforcement personnel on the requirements of this chapter.

(b) The State Fire Marshal shall, in consultation with relevant state and local public agencies, the fireworks industry, and other relevant stakeholders, develop, publish, and provide necessary guidance and training to local agencies that seize, collect, transport, store, and treat seized fireworks. This training and education may include, but is not limited to, the following specific areas:

(1) Standards for the transportation, storage, and handling of fireworks and pyrotechnic articles in accordance with Chapter 6 (commencing with Section 979) of Division 1 of Title 19 of the California Code of Regulations and the National Fire Protection Association 1124: Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles of 2013.

(2) Recognition of explosive materials and isolation procedures in accordance with Chapter 10 (commencing with Section 1550) of Division 1 of Title 19 of the California Code of Regulations and the National Fire Protection Association 495: Explosive Materials Code of 2013.

(3) Recognition of commercial, consumer, and illegal fireworks in accordance with Chapter 6 (commencing with Section 979) of Division 1 of Title 19 of the California Code of Regulations and the National Fire Protection Association 1124: Code for the Manufacture, Transportation, Storage, and Retail Sales of Fireworks and Pyrotechnic Articles of 2013.

# Appendix E: Fireworks Task Force References

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## Task Forces in California

- East Palo Alto and Menlo Park in San Mateo County (2021)
  - Dremann, Sue. 2021. "New task force cracks down on illegal fireworks in East Palo Alto, Menlo Park." *Palo Alto Online*.  
<https://www.paloaltoonline.com/news/2021/05/29/east-palo-alto-menlo-park-crack-down-on-illegal-fireworks/>.
- Temple City in LA County (2021)
  - Temple City Manager's Office. 2021. "Temple City Announces Crackdown on Illegal Fireworks." *City of Temple City*.  
[https://www.ci.temple-city.ca.us/DocumentCenter/View/16403/News-Release\\_Fireworks-061721](https://www.ci.temple-city.ca.us/DocumentCenter/View/16403/News-Release_Fireworks-061721).
- City of Moreno Valley in Riverside County (2021)
  - City of Moreno Valley. 2021. "Fireworks." *Moreno Valley Website*.  
<https://www.moval.org/fireworks/>.
- Sacramento County (2018)
  - Sacramento Public Information Officer. 2019. "Fireworks Mitigation Task Force returns to keep Sacramento 'safe and sane' - City Express." *Sacramento City Express*.  
<https://sacramentocityexpress.com/2019/06/03/fireworks-mitigation-task-force-returns-to-keep-sacramento-safe-and-sane/>.
- San Bernardino County (2017)
  - Saunders, Doug. 2017. "16 tons of illegal fireworks seized coming into San Bernardino County." *The Sun*.  
<https://www.sbsun.com/2017/07/03/16-tons-of-illegal-fireworks-seized-coming-into-san-bernardino-county/>.



- San Joaquin County (2017)
  - Langley, Michael E. 2017. "Illegal fireworks crackdown." *Tracy Press*.  
[https://www.ttownmedia.com/tracy\\_press/news/illegal-fireworks-crackdown/article\\_16047bb6-5156-11e7-8d06-8326445dd0ea.html](https://www.ttownmedia.com/tracy_press/news/illegal-fireworks-crackdown/article_16047bb6-5156-11e7-8d06-8326445dd0ea.html).
- Kern County (2015)
  - 23ABC News | KERO. 2015. "Kern County starts special task force for fireworks." *YouTube*. <https://youtu.be/2Q4g7xMYKd4?si=dmf7bAh9N09b16nP>.

## Task Forces Across the United States

- State of Hawaii (2023)
  - Christophel, Nathan. 2023. "Illegal Fireworks Task Force in Hawai'i: What should be its priority?" *Big Island Now*.  
<https://bigislandnow.com/2023/07/09/illegal-fireworks-task-force-who-needs-it/>.
- Washington DC (2022)
  - District of Columbia. 2022. "Mayor Bowser Announces Public Safety Preparations Ahead of July Fourth Weekend." *Executive Office of the Mayor*.  
<https://mayor.dc.gov/release/mayor-bowser-announces-public-safety-preparations-ahead-july-fourth-weekend>.
- Boston, MA (2020)
  - City of Boston MA. 2020. "New Task Force to Address Illegal Fireworks." *Boston's Mayor Office*.  
<https://www.boston.gov/news/new-task-force-address-illegal-fireworks>.
- Providence, RI (2020)
  - GoLocalProv News Team. 2020. "NEW: Task Force Created to Curb Illegal Fireworks in Providence." *GoLocalProv*.  
<https://www.golocalprov.com/news/new-task-force-created-to-curb-illegal-fireworks-in-providence>.
- Pittsburgh, PA (2020)
  - City of Pittsburgh PA. 2020. "City Press Releases." *Welcome to the City of Pittsburgh - City Press Releases*.  
<https://pittsburghpa.gov/press-releases/press-releases/4096>.

- Bend, OR (2019)
  - Spurr, Kyle. 2019. "Officials working to curb illegal fireworks in Bend." *The Bulletin*. [https://www.bendbulletin.com/localstate/officials-working-to-curb-illegal-fireworks-in-bend/article\\_b1d4de32-a92f-525c-b1fb-71dafac5bbc5.html](https://www.bendbulletin.com/localstate/officials-working-to-curb-illegal-fireworks-in-bend/article_b1d4de32-a92f-525c-b1fb-71dafac5bbc5.html).
- Clark County/Las Vegas, NV (2018)
  - Solis, Jennifer. 2019. "Citations for illegal fireworks still few and far between." *Nevada Current*. <https://nevadacurrent.com/briefs/citations-for-illegal-fireworks-still-few-and-far-between/>.
- Happy Valley, OR (2012)
  - Bella, Rick. 2012. "Happy Valley launching special task force to crack down on illegal fireworks." *The Oregonian/OregonLive*. [https://www.oregonlive.com/happy-valley/2012/06/happy\\_valley\\_launching\\_special.html](https://www.oregonlive.com/happy-valley/2012/06/happy_valley_launching_special.html).
- Milwaukee, WI (2006)
  - Milwaukee Common Council. 2020. "Fireworks Ban." *City of Milwaukee*. <https://city.milwaukee.gov/CommonCouncil/Initiatives/Sparky>.
- New York City, NY (1995)
  - Craig, Edward J. 2000. "Snuffing Out Illegal Fireworks." *City Journal*. <https://www.city-journal.org/article/snuffing-out-illegal-fireworks>.

# Appendix F: Distinguishing Fireworks from Gunshots

If you've made it this far, you deserve some additional, interesting firework information that wasn't included in the report.

From a July 5, 2022 article in USA Today on the topic:

*Experts say there are ways to tell whether a "bang" or a "boom" is a threat or a fireworks display.*

*"Fireworks, especially nowadays, are getting more complicated," said John Goodpaster, associate director of Indiana University-Purdue University Indianapolis' Forensic and Investigative Sciences program. "They have crackling effects and all sorts of other stuff that would make the sound of a firework pretty distinguishable from a firearm."*

*You should listen for the following characteristics, Goodpaster said:*

- Crackling
- A sporadic rhythm
- A whistle before the pop
- A sizzle

## **What do fireworks sound like?**

*Modern fireworks are designed to include flashy sound effects in addition to explosive bangs. So if you hear multiple crackling or sizzling sounds, those are most likely fireworks, Goodpaster said.*

## **What does a gunshot sound like?**

*The sound of gunfire is "a single sound" caused by the explosion of powder making a bullet blast out of the gun's barrel, Goodpaster said.*

*Gunfire will sound like "one blast per pull of a trigger," he said, so "you're not going to get a cacophony of different sounds."<sup>121</sup>*

In interviews with police officials it was also learned that a gunshot is going to sound more crisp, whereas an M80 or firecracker is going to sound more like a boom with an echo.

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<sup>121</sup> Thornton, Claire. 2022. "[Gunshot vs. fireworks sounds: How to hear the difference.](#)" USA Today.