2019 Fireworks Annual Report

Fireworks-Related Deaths, Emergency Department-Treated Injuries, and Enforcement Activities During 2019

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Executive Summary

This report provides the results of U.S. Consumer Product Safety Commission (CPSC) staff's analysis of data on non-occupational, fireworks-related deaths and injuries during calendar year 2019. The report also summarizes CPSC staff's enforcement activities during fiscal year 2019.[1]

Staff obtained information on fireworks-related deaths from news clippings and other sources in CPSC's Consumer Product Safety Risk Management System (CPSRMS). Staff estimated fireworks-related injuries treated in hospital emergency departments using data from CPSC's National Electronic Injury Surveillance System (NEISS). CPSC staff conducted a special study of non-occupational, fireworks-related injuries between June 21, 2019 and July 21, 2019. The special study included collecting and analyzing more detailed incident information, such as the type of injury, the fireworks involved, the characteristics of the victim, and the incident scenario. About 73 percent of the estimated annual fireworks-related, emergency department-treated injuries for 2019 occurred during that period.

Highlights of the report:

Deaths and Injuries

- CPSC staff received reports of 12 non-occupational, fireworks-related deaths during 2019. Seven of the deaths were associated with misuse of fireworks, 2 deaths were associated with fireworks device malfunction (late ignition), and 3 incidents were associated with unknown circumstances. Reporting of fireworks-related deaths for 2019 is not complete, and the number of deaths in 2019 should be considered a minimum.
- Fireworks were involved with an estimated 10,000 injuries treated in U.S. hospital emergency departments during calendar year 2019 (95 percent confidence interval 7,100 – 12,900). The estimated rate of fireworks-related, emergency department-treated injuries in the United States is 3.1 per 100,000 individuals.
- There is not a statistically significant trend in estimated emergency department-treated, fireworks-related injuries from 2004-2019.
- An estimated 7,300 fireworks-related injuries (or 73 percent of the total estimated fireworks-related injuries in 2019) were treated in U.S. hospital emergency departments during the 1-month special study period between June 21, 2019 and July 21, 2019 (95 percent confidence interval 4,700-9,900).

Results from the 2019 Special Study

- Of the 7,300 estimated fireworks-related injuries sustained, 66 percent were to males and 34 percent were to females.
- Children younger than 15 years of age accounted for 36 percent of the estimated fireworks-related injuries. Similar to last year, nearly half of the estimated emergency department-treated, fireworks-related injuries were to individuals younger than 20 years of age.

[1] Fiscal year 2019 refers to the period of October 1, 2018 through September 30, 2019.

- Children 0 to 4 years of age had the highest estimated rate of emergency department-treated, fireworks-related injuries (5.3 injuries per 100,000 people). Older teens, 15 to 19 years of age, had the second highest estimated rate (4.4 injuries per 100,000 people).
- There were an estimated 900 emergency department-treated injuries associated with sparklers and 400 with bottle rockets.
- There were an estimated 800 emergency department-treated injuries associated with firecrackers. Of these, an estimated 24 percent were associated with small firecrackers, 16 percent with large firecrackers, 3 percent with illegal firecrackers, and the remaining 57 percent were associated with firecrackers of an unspecified size.
- The parts of the body most often injured were hands and fingers (an estimated 30 percent); legs (an estimated 23 percent); eyes (an estimated 15 percent); head, face, and ears (an estimated 15 percent); and arms (an estimated 10 percent).
- Fifty-eight percent of the emergency department-treated injuries were burns. Burns were the most common injury to hands, fingers, arms, and legs.
- Approximately 87 percent of the victims were treated at a hospital emergency department and then released. An estimated 12 percent of patients were treated and transferred to another hospital, or admitted to the hospital.
- CPSC staff conducted telephone follow-up investigations on a selected sample of fireworks-related injuries reported in NEISS during the special study period to clarify information about the incident scenario or fireworks type. A review of data from the 9 completed follow-up investigations showed that most injuries were associated with misuse or malfunctions of fireworks. Most victims recovered or were expected to recover completely. However, there were victims who reported that their injuries may be long term.

Enforcement Activities

During fiscal year 2019, CPSC's Office of Compliance and Field Operations continued to work closely with other federal agencies to conduct surveillance on imported fireworks and to enforce the provisions of the Federal Hazardous Substances Act (FHSA)[2] and regulations under the FHSA.

The Compliance and Field Operations staff, in cooperation with U.S. Customs and Border Protection (CBP), continued to conduct surveillance on imported shipments of consumer fireworks. With assistance from CBP, CPSC staff selectively sampled and tested shipments of imported fireworks in fiscal year 2019, to determine compliance with the FHSA requirements. Approximately 43 percent of the selected and tested shipments were found to contain fireworks that were noncompliant. These violative fireworks devices had an estimated import value of $349,000. The most frequent violations were overloaded report compositions and fuse violations, comprising approximately 45 and 44 percent of all violations in fiscal year 2019,[3] respectively. CPSC staff requested corrective actions on these noncompliant fireworks, and in most cases, firms voluntarily destroyed the noncompliant fireworks.

[2] 15 U.S.C. §§ 1261-1278.
[3] These percentages are not mutually exclusive.

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1. Introduction

This report describes injuries and deaths associated with fireworks devices, as well as kits and components used to manufacture illegal fireworks, during the calendar year 2019. Reports for earlier years in this series can be found at: https://cpsc.gov/Research--Statistics/Fuel-Lighters-and-Fireworks1.

This report is organized into seven sections. Section 1 describes the data and statistical methods used in this analysis. Section 2 summarizes the 2019 fireworks-related incidents that resulted in deaths. Section 3 provides an annual estimate of fireworks-related, emergency department-treated injuries in the United States for 2019, and compares that estimate to previous years. Section 4 analyzes emergency department-treated, fireworks-related injuries during the month around July 4, 2019. Section 5 summarizes the telephone in-depth investigations of a subsample of the injuries that occurred during that period. Section 6 describes enforcement activities of CPSC's Office of Compliance and Field Operations during fiscal year 2019. The report concludes with a summary of the findings in Section 7. Appendix A is a table depicting the relationship between fireworks-related injuries and fireworks imports between 2004 and 2019. Appendix B provides details on the completed telephone investigations.

Sources of Information

Information on non-occupational, fireworks-related deaths during 2019 was obtained from CPSC's CPSRMS. CPSRMS combines the data from CPSC's Injury or Potential Injury Incident File (IPII), Death Certificate File (DTHS), and In-Depth Investigation File (INDP) into one incident database. Entries in IPII come from a variety of sources, such as newspaper articles, consumer complaints, lawyer referrals, medical examiners, and other government agencies. CPSC staff from the Office of Compliance and Field Operations conducted in-depth investigations of the deaths to determine the types of fireworks involved in the incidents and the circumstances that led to the fatal injuries.

Because the data in IPII are based on voluntary reports, and because it can take more than 2 years to receive all of the death certificates from the various states to complete the DTHS, neither data source can be considered complete for 2018 or 2019 fireworks-related deaths at the time this report was prepared. Consequently, the number of deaths should be considered a minimum. Staff updates the total number of deaths for previous years when new reports are received. Total deaths for prior years may not coincide with the number in reports for earlier years because of these updates.

The source of information on non-occupational, emergency department-treated fireworks-related injuries is CPSC's NEISS. NEISS is a probability sample of the U.S. hospitals with emergency departments.[4] Injury information is taken from the emergency department record. This information includes the victim's age and sex, the place where the injury occurred, the emergency department diagnosis, the body part injured, and the consumer product(s) associated with the injury. The information is supplemented by a narrative of 140 to 400 characters[5] in length and that often contains a brief description of how the injury occurred.

To supplement the information available in the NEISS record, CPSC staff conducts a special study of fireworks-related injuries every year during the month around July 4. Staff focuses its efforts on fireworks incidents during this period because, in most years, about two-thirds to three-quarters of the

[4] For a description of NEISS, including the revised sampling frame, see Schroeder and Ault (2001). Procedures used for variance and confidence interval calculations and adjustments for the sampling frame change that occurred in 1997 are found in Marker, Lo, Brick, and Davis (1999). SAS® statistical software for trend and confidence interval estimation is documented in Schroeder (2000). SAS® is a product of the SAS Institute, Inc. Cary, NC.

[5] The maximum available number of characters changed from 142 to 400 characters on January 1, 2019.

annual injuries occur then. During this period, hospital emergency-department staff shows patients pictures of different types of fireworks to help them identify the type of fireworks device associated with their injuries. The type of fireworks involved in the incident are then included in the NEISS narrative. In 2019, the special study period lasted from June 21 to July 21.

After reading the incident case records, including the narrative descriptions of the fireworks device and the incident scenario, CPSC staff may assign a case for additional telephone investigation. Staff usually selects cases that involve the most serious injuries and/or hospital admissions. Serious injuries include: eye injuries, finger and hand amputations, and head injuries. Cases also may be assigned to obtain more information about the incident than what is reported in the NEISS narrative. In most years, phone interviewers can collect information for one-fifth to one-half of the cases assigned. Information on the final status of the telephone interviews conducted during the 2019 special study is in Section 5 and Appendix B of this report.

In the telephone investigations, information is requested directly from the victim (or the victim's parent, if the victim is a minor) about the type of fireworks involved, where the fireworks were obtained, how the injury occurred, and the medical treatment and prognosis. When the fireworks device reported in the telephone investigation is different from what is reported in the NEISS emergency department record, the device reported in the telephone investigation is used in the data for this report.

As a result of this investigative process, three different levels of information may be available about a fireworks-related injury case. For cases that occur before or after the July 4 special study period, the NEISS record is almost always the only source of information. Many NEISS records collected outside the special study period do not specify the type of fireworks involved in the incident. Additional information is typically available during the special study period because the NEISS records collected by the emergency departments usually contain the type of fireworks and additional details on the incident scenario. Finally, the most information is available for the subset of the special study cases where staff conducted telephone investigations. These different levels of information about injuries correspond to these different analyses in the report:

- Estimated national number of fireworks-related, emergency department-treated injuries

  This estimate is made using NEISS cases for the entire year, from records where fireworks were specified as one of the consumer products involved. For cases outside the special study period, as noted above, there is usually no information on the fireworks type, and limited information is available on the incident scenario. Consequently, there is not enough information to determine the role played by the fireworks in the incident. Thus, the annual injury estimate may include a small number of cases in which the fireworks device was not lit, or no attempt was made to light the device. Calculating the annual estimates without removing these cases makes the estimates comparable to previous years.

- Detailed analyses of injury patterns

  The tables are based on the special study period only, and they describe fireworks type, body part injured, diagnosis, age and sex of injured people, and other relevant information. Fireworks-type information is taken from the telephone investigation or the NEISS comment field when there was no telephone investigation. When computing estimates for the special study period, CPSC staff does not include cases in which the fireworks device was not lit, or no attempt was made to light the device.

- Information from telephone investigations

Individual case injury descriptions and medical prognosis information from the telephone investigations are provided in Appendix B. These summaries also exclude cases in which the fireworks device was not lit, or no attempt was made to light the device. These cases represent a sample of some of the most serious fireworks-related injuries and may not represent the typical emergency department-treated, fireworks-related injuries.

Statistical methods

Injuries reported by hospitals in the NEISS sample were weighted by the NEISS probability-based sampling weights to develop an estimate of total U.S. emergency department-treated, fireworks-related injuries for the year and for the special study month around July 4. Confidence intervals were estimated, and other statistics were calculated using computer programs that were written to take into account the sampling design.[6] Estimated injuries are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are shown with an asterisk (*). Percentages are calculated from the actual estimates. Percentages may not add to subtotals or to the total in the tables or figures, due to rounding.

This report also contains a number of detailed tables about fireworks-related injuries during the special study period. National estimates in these tables were also made using the sampling weights. To avoid cluttering the tables, confidence intervals are not included. Because the estimates are based on subsets of data, they have larger relative sampling errors (*i.e.*, larger coefficients of variation) than the annual injury estimate or the special study injury estimate. Therefore, interpretation and comparison of these estimates with each other, or with estimates from prior years, should be made with caution. For example, when comparing subsets of the data–such as between injuries associated with two different types of fireworks, or between two different age groups–it is difficult to determine how much of the difference between estimates is associated with sampling variability and how much is attributed to real differences in national injury totals.

[6] See Schroeder (2000).

2. Fireworks-Related Deaths for 2019

CPSC has reports of 12 non-occupational, fireworks-related deaths that occurred during 2019.[7] Reporting of fireworks-related deaths for 2019 is not complete, and the number of deaths in 2019 should be considered a minimum. Brief descriptions of the incidents, using wording taken from the incident reports, follow:

- On July 4, 2019, a 15-year-old male was found bleeding in his driveway after neighbors heard an explosion around 7:30 pm. The victim was alone at home when the incident occurred. Responding officers reported that the incident appeared as though the victim was lighting a homemade firework device when it detonated. Metal fragments were found in the victim's neck and chest. The victim was transported to the hospital where he was declared dead. The resulting autopsy report attributed the cause of death to an improvised explosive device with fireworks.

- A 45-year-old male died after a 1.4G canister-style fireworks device struck him in the chest on June 7, 2019. While intoxicated with alcohol, the victim initially placed the fireworks device on his head and lit the fuse. The firework fell forward and detonated, hitting the victim in the chest. The device caused a penetrating arterial mortal wound to the victim, and the victim died at the scene of the incident.

- A 28-year-old male was killed in a fireworks incident outside a friend's residence on June 30, 2019. The victim was visiting friends when the incident occurred, and the friend was unaware of any fireworks that the victim had in his possession. The individual was seen smoking outside the residence, and the friend heard two explosions in rapid succession. When she ran outside, she found the victim with a severe chest wound and a nearby detonated aerial shell fireworks device. The victim was taken, via ambulance, to the local hospital for surgery. However, the victim died from his injuries. Upon police investigation, the firework was blown out near the base of the device, as well as the top of the device.

- A 36-year-old male died from fireworks-related injuries sustained from an incident that occurred while lighting fireworks in a parking lot on July 4, 2019. According to a news report, the victim placed a mortar shell inside a PVC pipe; this was unverified by the EMS or medical reports. An ambulance was called in response to an event where a fireworks device reportedly exploded in the victim's face. The victim was found in a yard in cardiac arrest, while a large crowd of more than 100 people were celebrating the fourth of July and setting off large fireworks devices. The victim received a large wound to his right eye and had to be moved into the ambulance due to the combative nature of the crowd. The ambulance took the victim to the hospital where he was pronounced dead. The medical examination indicated that the victim suffered burns all over his face and head, along with multiple fractures to the bones of his face and skull. The cause of death was explosive injuries to the head.

- A 32-year-old male died after a lit roman candle hit him in the chest and face on July 4, 2019. The victim reportedly was holding the lit firework device in the air when it exploded and struck the victim in the face. When paramedics arrived on the scene, the victim was in cardiac arrest; bystanders indicated that the firework hit the victim in the face. Paramedics found first-degree burns on the victim's right forearm, biceps, a quarter-sized burn on his chest, and a dime-sized

[7] CPSC staff excluded incidents that are indirectly related to fireworks. For instance, staff excluded incidents in which fireworks started fires, which led to deaths, based on the logic that the fire was directly responsible for the deaths.

burn on his right cheek. The victim was transported to the hospital and was declared dead. The medical report attributed the cause of death to the blast injury due to the firework explosion.

- On July 2, 2019, a 61-year-old male died as a result of a firework explosion to his chest. The victim had been lighting fireworks for the neighborhood children all day when he lit a large mortar firework facing the wrong way. A witness stated that he told the victim not to light the firework, but when he did, the firework went off and the victim fell backwards. The victim had been drinking alcohol earlier in the day, and several empty alcohol containers were found at the scene. The police report indicated that the firework hit him in his chest and that the victim died instantly.

- On July 4, 2019, a 48-year-old male was struck in the chest upon detonating a damaged artillery shell firework that the victim was holding close to his chest. A witness and her boyfriend were in possession of a damaged firework and handed it to the victim after explaining the device was leaking black powder. The victim inserted the damaged firework into a cardboard firework artillery tube that he was holding and lit the firework's fuse. The firework launched out of the bottom of the tube, instead of the top of the tube, as intended, and the artillery shell struck the victim in the chest. The victim aggressively patted his shirt where he had been hit, and shortly fell over and became unresponsive. The witness called emergency services, and the victim was taken to the hospital and pronounced dead. X-rays showed that the explosion and debris from the explosion had damaged the victim's heart. The official cause of death was intrathoracic trauma due to firework detonation.

- A 19-year-old male was mortally injured by an unknown fireworks device at an incident at a large apartment complex on July 4, 2019. Emergency responders were already present on the scene for an unrelated incident when they noticed that large fireworks were being used in an unsafe manner. The rescue personnel were then informed that a young man was unconscious from a fireworks blast. The victim was found with significant trauma to his left hand and had no pulse. After CPR, he was transported to a hospital where he was pronounced dead.

- On July 3, 2019, a 53-year-old male was pronounced dead after an incident at his home. The death certificate indicates that the cause of death was due to firework blast injuries to the victim's head; authorities indicated that the blast was caused by a commercial-grade firework. No further information is available.

- A 53-year-old male died after he was struck in the head by a firework on July 22, 2019. The victim had been lighting fireworks in a canister that was half buried. Surveillance video shows that one of the fireworks did not detonate when the victim first lit the device. When the victim approached and inspected the canister, the firework detonated and struck him in the head. An agent from the Bureau of Alcohol, Tobacco, Firearms, and Explosives stated, upon investigation, that the fireworks device was likely of commercial grade. The fireworks device was destroyed during the incident.

- On July 4, 2019, a 21-year-old male was critically injured when lighting mortar-type fireworks on the rooftop of an apartment complex. The victim and his brother were setting off fireworks when the victim grabbed a fireworks device and lifted it over his head to launch the firework while manually elevated. The firework ignited and exploded while the victim was holding the firework;

the victim fell to the ground. The victim's brother ran to the victim and observed that the victim's head was bleeding. He removed his shirt and tied it around the victim's head to stop the bleeding. The victim's brother asked nearby witnesses to call an ambulance; the ambulance arrived and took the victim to the hospital where the victim died 5 days later.

- On July 4, 2019, a 29-year-old male was killed by a firework that he was holding over his head when it exploded. Bystanders stated that the victim had been holding a firecracker, but no other information about the incident is known. An ambulance was called in response to the incident, where responders found the victim in a supine position. The victim was missing a large section of his right hand between his thumb and first finger, and had a circular entry wound on his forehead approximately 2-3 centimeters in diameter. The victim also had an apparent exit wound on the back of his head. The ambulance took the victim to the hospital where he died of his injuries.

Including the 12 deaths described above, CPSC staff has reports of 126 fireworks-related deaths between 2004 and 2019, for an average of 7.9 deaths per year.[8]

[8] See previous reports in this series (*e.g.*, the report for 2018: Tu and Ng (2018)). In the most recent 3 years, there were 5 deaths in 2016, 10 deaths in 2017, and 5 deaths in 2018. The data from 2016 to 2018 have been updated based on new incident reports received by CPSC staff during 2019, and may differ from previous reports.

3. National Injury Estimates for 2019

Table 1 and Figure 1 present the estimated number of non-occupational, fireworks-related injuries treated in U.S. hospital emergency departments between 2004 and 2019.

Table 1. Estimated Fireworks-Related, Emergency Department-Treated Injuries: 2004-2019

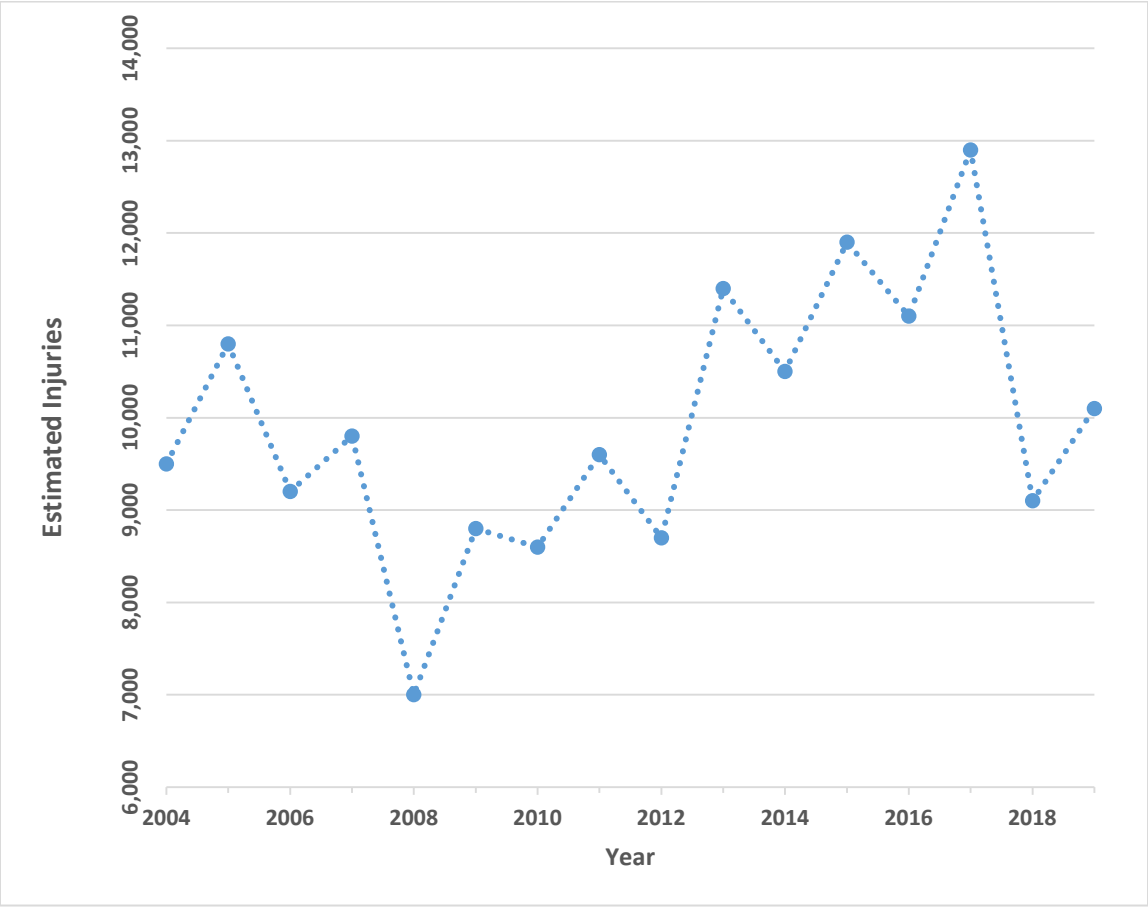
Year	Estimated Injuries	Injuries per 100,000 People
2019	10,000	3.0
2018	9,100	2.8
2017	12,900	4.0
2016	11,100	3.4
2015	11,900	3.7
2014	10,500	3.3
2013	11,400	3.6
2012	8,700	2.8
2011	9,600	3.1
2010	8,600	2.8
2009	8,800	2.9
2008	7,000	2.3
2007	9,800	3.3
2006	9,200	3.1
2005	10,800	3.7
2004	9,500	3.3

Source: NEISS, U.S. Consumer Product Safety Commission. Population Estimates for 2010 to 2019 are from Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2019 (NST-EST2019-01). U.S. Census Bureau. Population Division. Release Date: December 2019. Population estimates for 2004 to 2009 are from Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2009 (NST-EST2009-01). Population Division, U.S. Census Bureau.

There is not a statistically significant trend in the fireworks-related injury estimates from 2004 to2019.[9] In calendar year 2019, there were an estimated 10,000 fireworks-related, emergency department-treated injuries (95 percent confidence interval 7,100-12,900). There were an estimated 9,100 injuries in 2018. The difference between the injury estimates for 2018 and 2019 is not statistically significant (p-value = 0.05).

[9] For details on the method to test a trend that incorporates the sampling design, see Schroeder (2000) and Marker et al. (1999).

Figure 1. Estimated Fireworks-Related, Emergency Department-Treated Injuries
2004-2019



Source: NEISS, U.S. Consumer Product Safety Commission.

Appendix A contains a table showing estimated fireworks-related, emergency department-treated injuries and fireworks imports between 2004 and 2019.

4. Injury Estimates for the 2019 Special Study: Detailed Analysis of Injury Patterns

The injury analysis in this section presents the results of the 2019 special study of fireworks-related injuries treated in hospital emergency departments between June 21, 2019 and July 21, 2019. During this period, there were an estimated 7,300 fireworks-related injuries (95 percent confidence interval 4,700-9,900), accounting for 73 percent of the total estimated fireworks-related injuries for the year, which is not statistically different from the estimated 5,600 fireworks-related injuries in the 2018 special study period (p-value = 0.19).

The remainder of this section provides the estimated fireworks-related, emergency department-treated injuries from this period, broken down by fireworks device type, victims' demographics, injury diagnosis, and body parts injured.

Fireworks Device Types and Estimated Injuries

Table 2 shows the estimated number and percent of emergency department-treated injuries by type of fireworks device during the special study period of June 21, 2019 to July 21, 2019.

Table 2. Estimated Fireworks-Related, Emergency Department-Treated Injuries by Device Type
June 21–July 21, 2019

Fireworks Device Type	Estimated Injuries	Percent
Total	**7,300**	**100**
All Firecrackers	**800**	**11%**
Small	200	3%
Large	100	2%
Illegal	*	*
Unspecified	500	6%
All Rockets	**500**	**6%**
Missiles	100	1%
Bottle Rockets	400	5%
Other Devices	**1,600**	**24%**
Multiple Tube	*	*
Reloadable	200	2%
Roman Candles	400	6%
Novelties	200	3%
Sparklers	900	12%
Homemade/Altered	**100**	**1%**
Public Display	**200**	**2%**
Unknown	**4,100**	**56%**

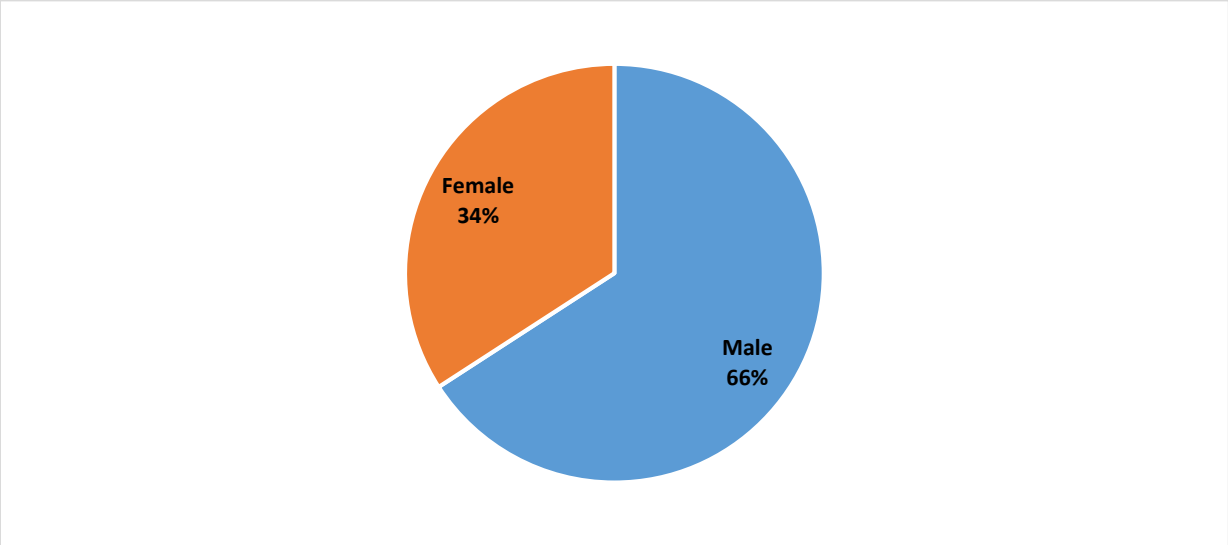
Source: NEISS, U.S. Consumer Product Safety Commission. Based on 187 NEISS emergency department-reported injuries between June 21, 2019 and July 21, 2019, and supplemented by 9 completed In-Depth Investigations. Fireworks types are obtained from the in-depth investigation, when available; otherwise, fireworks types are identified from information in victims' reports to emergency department staff that were contained in the NEISS narrative. Illegal firecrackers include M-80s, M-1000s, Quarter Sticks, and other firecrackers that are banned under CPSC's FHSA regulations (16 C.F.R. § 1500.17 (Banned hazardous substances)). Fireworks that may be illegal under state and local regulations are not listed as illegal, unless they violate the CPSC's FHSA regulations. Estimates are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are denoted with an asterisk (*). Estimates may not sum to subtotal or total due to rounding. Percentages are calculated from the actual estimates, and they may not add to subtotals or the total due to rounding.

Although public display fireworks are not associated with a large number of injuries, the larger load in these devices makes them involved disproportionately in serious injuries. Unknown fireworks devices were associated with the most injuries during the 2019 special study period. Illegal fireworks devices and multiple tube devices each were involved in less than 1 percent of the total estimated injuries during the 2019 special study period.

Gender and Age of Injured Persons

Males experienced an estimated 3 fireworks-related, emergency department-treated injuries per 100,000 individuals during the special study period. Females had 1.5 injuries per 100,000 people. Figure 2 shows the distribution of estimated fireworks-related injuries by gender.

Figure 2. Estimated Injuries by Gender

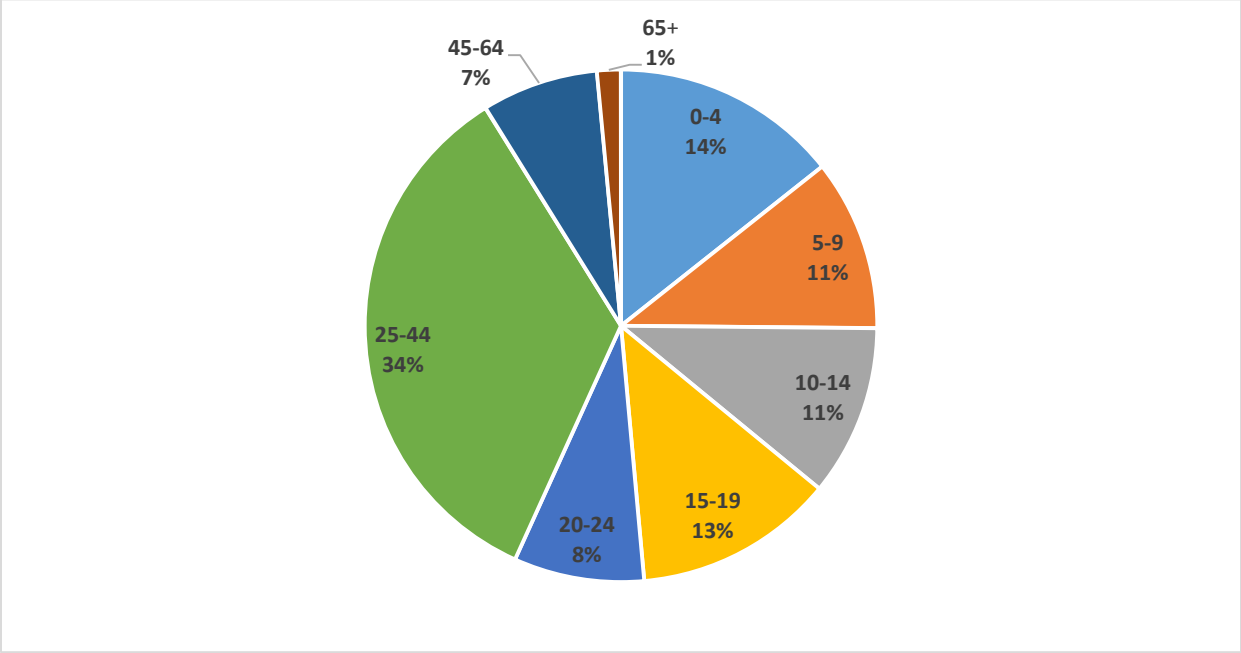


Source: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019.

Children under 5 years of age experienced an estimated 1,100 injuries (14 percent of all fireworks-related injuries during the special study period), as shown in Figure 3 and Table 3. Children in the 5- to 14-year-old age group experienced an estimated 1,600 injuries. Breaking down that age group further, children 5 to 9 years of age had an estimated 800 injuries, and children 10 to 14 years of age accounted for 800 injuries.[10]

[10] The percentages are calculated from actual injury estimates, and age subcategory percentages may not sum to the category percentage due to rounding.

Figure 3. Percentage of Injuries by Age Group



Source: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019.

The detailed breakdown by age and gender is shown in Table 3. The concentration of injuries among males and people under 25 years of age has been typical of fireworks-related injuries for many years.

Table 3. Estimated Fireworks-Related, Emergency Department-Treated Injuries by Age and Gender
June 21July 21, 2019

Age Group	Total	Per 100,000 People	Male	Female
Total	7,300	2.2	4,800	2,500
0-4	1,100	5.3	600	500
5-14	1,600	3.9	1,000	600
5-9	800	3.9	300	500
10-14	800	3.8	700	100
15-24	1,500	3.6	1,200	300
15-19	900	4.4	600	300
20-24	600	2.8	600	*
25-44	2,500	2.9	1,700	800
45-64	500	0.6	300	300
65+	100	0.2	100	*

Sources: NEISS, U.S. Consumer Product Safety Commission. NC-EST2019-AGESEX-RES: Annual Estimates of the Resident Population by Single Year of Age and Sex for the United States: April 1, 2010 to July 1, 2019. U.S. Census Bureau, Population Division. Release Date: June 2019. Based on the special study between June 21, 2019 and July 21, 2019. The oldest victim was 71 years of age. Estimates are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are denoted with an asterisk (*). Age subcategory estimates may not sum to the category total due to rounding.

When considering injury rates (number of injuries per 100,000 people), children and young adults had higher estimated rates of injury than the other age groups during the 2019 special study period. Children ages 0 to 4 years had the highest estimated injury rate at 5.3 per 100,000 population. This was followed by 4.4 injuries per 100,000 people from older teens 15 to 19 years of age, and 3.9 injuries per 100,000 people from children ages 5 to 9 years.

Age and Gender of the Injured Persons by Type of Fireworks Device

Table 4 shows the ages of those injured by the type of fireworks device associated with the injury. For children under 5 years of age, unknown fireworks devices accounted for 48 percent of the total estimated injuries for that specific age group.[11]

No clear relationship between age and fireworks type is suggested by the data in Table 4. It is worth noting that the number of estimated injuries does not completely represent the usage pattern because victims are often injured by fireworks used by other people. This is especially true for rockets

[11] The percentages are calculated from the actual injury estimates.

and aerial shells (*e.g.*, multiple-tube and reloadable devices), which can injure people located some distance away from where the fireworks are launched.

Table 4. Estimated Fireworks-Related, Emergency Department-Treated Injuries by Device Type and Age Group
June 21–July 21, 2019

		Age Group					
Fireworks Type	**Total**	**0-4**	**5-14**	**15-24**	**25-44**	**45-64**	**65+**
Total	7,300	1,100	1,600	1,500	2,500	500	100
All Firecrackers	800	100	100	100	500	*	100
Small	200	*	*	*	200	*	*
Large	100	*	*	*	*	*	100
Illegal	*	*	*	*	*	*	*
Unspecified	500	100	*	100	200	*	*
All Rockets	500	*	100	100	100	100	*
Missiles	100	*	*	*	*	100	*
Bottle Rockets	400	*	100	100	100	*	*
Other Devices	1,700	500	500	100	500	100	*
Multiple Tube	*	*	*	*	*	*	*
Reloadable	200	*	*	*	100	100	*
Roman Candles	400	100	100	100	100	*	*
Novelties	200	*	100	*	100	*	*
Sparklers	900	500	200	*	200	*	*
Homemade/Altered	100	*	*	100	*	*	*
Public Display	200	*	100	*	*	100	*
Unknown	4,100	400	1,200	800	1400	300	100

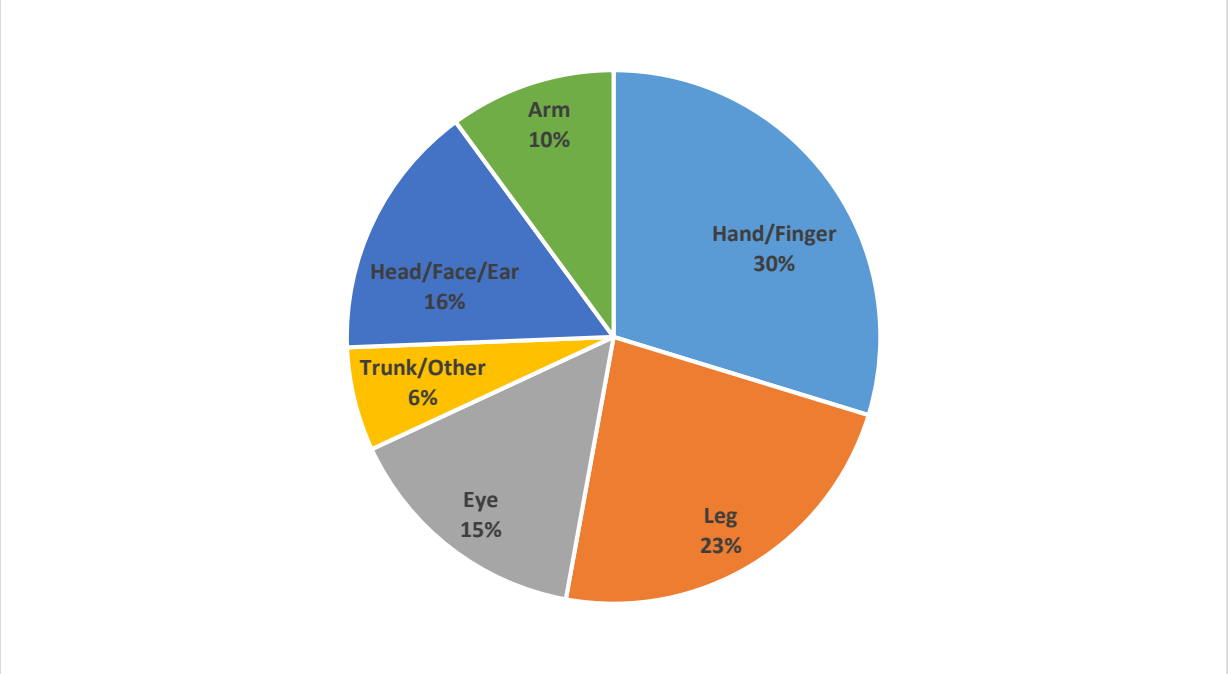
Sources: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019. Estimates are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are denoted with an asterisk (*). Age subcategory estimates may not sum to the category total due to rounding.

As shown previously in Figure 2, males accounted for 66 percent of the estimated fireworks-related injuries, and females comprised 34 percent. Males accounted for all of the estimated injuries from large and illegal firecrackers, multiple tube devices, and public displays. In addition, males were associated with a majority of the estimated injuries involving bottle rockets, roman candles, sparklers, and unknown fireworks device types. Females were associated with a majority of injuries from unspecified size firecrackers.

Body Region Injured and Injury Diagnosis

Figure 4 presents the distribution of estimated emergency department-treated injuries by the specific parts of the body injured. Hands and fingers were associated with an estimated 2,200 injuries. These were followed by an estimated 1,700 leg injuries; 1,100 head/face/ear region injuries; 1,100 eye injuries; 700 arm injuries; and 500 trunk/other injuries.

Figure 4. Body Regions Injured

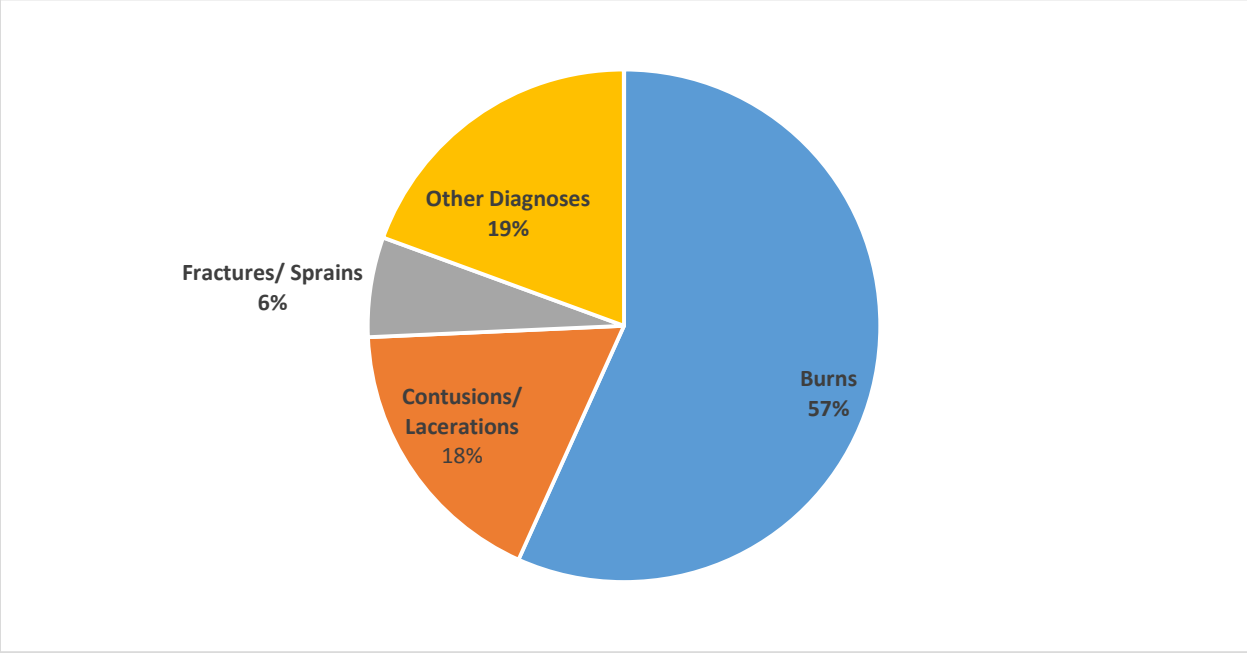


Source: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019. Arm includes NEISS codes for upper arm, elbow, lower arm, shoulder, and wrist. Head/Face/Ear regions include eyelid, eye area, nose, neck, and mouth but not the eyeball. Leg includes upper leg, knee, lower leg, ankle, foot, and toe. Trunk/other regions includes chest, abdomen, pubic region, "all parts of body," internal, and "25-50 percent of body."

Figure 5 shows the diagnoses of the estimated injuries associated with fireworks devices. Burns, with 4,200 estimated injuries were the most frequent injury diagnosis. Contusions and lacerations were associated with 1,300 estimated injuries and fractures and sprains were associated with 500 estimated injuries. The remaining 1,400 estimated injuries were attributed to other diagnoses.[12]

[12] Estimated injuries may not sum to the total due to rounding. Percentages are calculated from the actual injury estimates.

Figure 5. Types of Injuries



Source: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019. Fractures and sprains also include dislocations. "Other diagnoses" include all other injury categories. Percentages may not sum to 100 due to rounding

As shown in Table 5, burns accounted for most of the injuries to hands/fingers and legs, more than half of the estimated injuries to arms, and half of the estimated injuries to the head/face/ear regions. Contusions and lacerations were the most frequent injuries to eyes, which included foreign bodies in the eye.

Table 5. Estimated Fireworks-Related, Emergency Department-Treated Injuries by Body Region and Diagnosis
June 21 – July 21, 2019

		Diagnosis			
Body Region	**Total**	**Burns**	**Contusions/ Lacerations**	**Fractures/ Sprains**	**Other Diagnoses**
Total	7,300	4,200	1,300	500	1,400
Arm	700	400	*	200	100
Eye	1,100	200	500	*	400
Head/Face/Ear	1,100	600	300	*	300
Hand/Finger	2,200	1,500	200	100	300
Leg	1,700	1,300	200	100	100
Trunk/Other	500	200	100	*	200

Source: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019. Fractures and sprains also include dislocations. "Other diagnoses" include all other injury categories. Estimates are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are denoted with an asterisk (*). Estimated injuries may not sum to subtotals or totals due to rounding.

Types of Fireworks Devices and Body Region Injured

Table 6 presents estimated injuries by the type of fireworks device and body region injured.

Table 6. Estimated Fireworks-Related, Emergency Department-Treated Injuries by Type of Fireworks Device and Body Region Injured
June 21–July 21, 2019

		Region of the Body Injured					
Fireworks Type	Total	Arm	Eye	Head/Face/Ear	Hand/Finger	Leg	Trunk/Other
Total	7,300	700	1,100	1,100	2,200	1,700	500
All Firecrackers	800	100	*	100	300	300	*
Small	200	*	*	*	100	100	*
Large	100	*	*	100	100	*	*
Illegal	*	*	*	*	*	*	*
Unspecified	500	100	*	*	200	200	*
All Rockets	500	100	100	*	100	100	100
Missiles	100	*	*	*	*	*	100
Bottle Rockets	400	100	100	*	100	100	*
Other Devices	1,700	100	200	300	900	300	100
Multiple Tube	*	*	*	*	*	*	*
Reloadable	200	*	*	*	200	*	*
Roman Candles	400	*	100	*	200	100	100
Novelties	200	*	*	*	100	100	*
Sparklers	900	100	100	300	400	100	*
Homemade/Altered	100	*	*	100	*	*	*
Public Display	200	*	100	100	*	*	*
Unknown	4,100	500	800	600	900	1,100	300

Source: NEISS, U.S. Consumer Product Safety Commission. Based on the special study between June 21, 2019 and July 21, 2019. Estimates are rounded to the nearest 100 injuries. Estimates of fewer than 50 injuries are denoted with an asterisk (*). Estimated injuries may not sum to subtotals or totals due to rounding.

The majority of injuries resulted from fireworks devices of an unknown type; this uncertainty results from victims' (or parent/guardians') inability to identify the firework device that injured them, when asked.

Hospital Treatment

An estimated 87 percent of the victims of fireworks-related injuries in the special study period were treated at the hospital emergency department and then released; about 9 percent of the victims were admitted to the hospital. Approximately 3 percent of the victims were treated and then transferred to

another hospital. The remaining 1 percent of victims had other dispositions (*i.e.*, left the hospital without being seen or were held for observation).[13] The percentage of victims that were treated and-released for fireworks-related injuries was lower than the percentage of injuries associated with all consumer products in 2019, and the percentages of the treated and transferred or admitted were higher for the fireworks-related injuries in the special study period than those for all consumer products.[14]

[13] The percentages are calculated from actual injury estimates and may not sum to 100 due to rounding.
[14] For all injuries associated with consumer products in 2019, 87 percent of patients were treated and released; 9 percent were admitted to the hospital; 1 percent of patients were transferred to other hospitals; and 2 percent had other dispositions, including left hospital without being seen, held for observation, or dead on arrival. Comparisons are calculated using actual injury estimates and difference may not appear due to rounding.

5. Telephone Investigations of Fireworks-Related Injuries

CPSC staff conducted telephone in-depth investigations of a sample of fireworks incidents that occurred during the 1-month special study period surrounding the 4th of July holiday (June 21, 2019 to July 21, 2019). Completed telephone investigations provided more detail about incidents and injuries than the emergency department information summarized in the narrative in the NEISS record. During the telephone interview, respondents were asked how the injury occurred (hazard pattern); what medical care they received following the emergency-department treatment; and what long-term effects, if any, resulted from their injury. Respondents were also asked detailed questions about the fireworks involved in the incident, including their type, markings, and where they were obtained.

Cases were selected for telephone investigations based on the information provided in the NEISS narrative and coded information in the NEISS records. The selection criteria included: (1) unusual hazard patterns, (2) severity of the injury, and (3) lack of clear information in the narrative about the type of fireworks associated with the injury. For these reasons, and because many victims did not respond, the telephone investigation cases cannot be considered typical of fireworks-related injuries.

From the 187 emergency department-treated, fireworks-related injuries during the special study period, staff selected 113 cases for telephone investigations, of which 9 were completed and determined to be in scope, and 104 were incomplete. Table 7 shows the final status of these investigations, including the reasons why some investigations were incomplete.

Table 7. Final Status of Telephone Investigations

Final Case Status	Number of Cases	Percent
Total Assigned	113	100
Completed Investigation	9	8
In Scope	9	8
Incomplete Investigation	104	92
Failed to Reach Patient	46	41
Victim Refused To Cooperate	25	22
Victim Name Not Provided by Hospital	32	28
Incident Purge[15]	1	1

Short descriptions of the 9 completed in-scope cases are found in Appendix B. The cases are organized in order of emergency department disposition, with Admitted (to the hospital) first, followed by Treated and Released, and Left without Being Seen by a Doctor. Within dispositions, cases are in order of increasing age of the victim.

[15] NEISS assignments are typically purged for one of three reasons: the record is a duplicate, the incident was a fatality, or the interview request was a duplicate.

Summary Statistics

Of the 9 completed in-scope cases, 6 involved males, and 3 involved females. There were three victims age 0 to 4 years old; four victims age 5 to 14 years old; and two victims age 15 to 24 years old. As for emergency department dispositions, three victims were admitted to the hospital, and six victims were treated and released.

The type of fireworks devices involved in four of the incidents was unspecified. Sparklers, reloadable aerial shells,[16] illegal, multiple tube devices, and homemade fireworks devices were all associated with one incident each.

Note that the distribution of the types of fireworks and the emergency department dispositions differ from the special study data in Section 4. These differences reflect the focus in the telephone investigations on more serious injuries and incomplete NEISS records. Note also that only 8 percent of the victims selected for the telephone interviews responded.

Hazard Patterns

The hazard patterns described below are based on the incident descriptions obtained during the telephone investigations and summarized in Appendix B. When an incident had two or more hazard patterns, staff selected the hazard pattern most likely to have caused the injury. Hazard patterns are presented in Table 8, below, and a detailed description of the incidents follows Table 8. Case numbers refer to the case numbers shown in Appendix B.

Table 8. Hazard Patterns as Described in Telephone Investigations for Fireworks-Related Injuries

Hazard Pattern	Number of Cases	Percent of Total
Total Cases	9	100%
Malfunction	3	33%
Errant flight path	1	11%
Late ignition	1	11%
Tip-over	1	11%
Misuse	6	67%
Pointing lit firework at someone	1	11%
Setting fireworks improperly	2	22%
Throwing lit fireworks at someone	3	33%

[16] The category “aerial shells” includes multiple tube, reloadable mortars and rockets, but excludes bottle rockets.

Malfunction (3 victims, 33 percent of total)

Errant Flight Path

- Case 3: A 22-year-old male victim was carrying a firework onto an open area when someone else lit a firework that became unbalanced. The unbalanced firework fired towards the victim and hit him and set the firework in the victim's hand on fire. The victim shielded himself with his left hand, and the firework burned his eyes, face, lips, chest, and left hand. The firework cracked the bones in his left hand in seven places.

Late Ignition

- Case 8: A 13-year-old female was cleaning up fireworks when she picked up a firework that was still lit. The firework exploded and caught the victim's t-shirt on fire; the victim patted the flames out and suffered third-degree burns.

Tip-over

- Case 6: A 4-year-old male was in an open field when a group of older children set off a firework. The firework tipped over, started shooting, and hit the victim. The firework burned through his clothes, and the victim suffered from second-degree burns on his left thigh and down the back of his leg.

Misuse (6 victims, 67 percent of total)

Pointing Lit Firework at Someone

- Case 5: A 3-year-old victim was twirling a sparkler that his mother lit for him. He suffered second-degree burns on his chin, neck, and hand.

Setting Fireworks Improperly

- Case 7: A 5-year-old male was sitting with his mother watching fireworks on their street. A firework was lit and was knocked over by another child who was running away from the firework. The firework went off and injured the victim's right ring finger.
- Case 9: A 16-year-old male was with his friends who created a homemade firework out of sparklers and fireworks ("sparkler bomb"). The victim and his friends went down the street and the victim lit a part of the firework that he thought was a fuse. The victim realized that he lit a firework instead of a fuse and turned away when the "sparkler bomb" exploded. The victim was burned on his cheek, neck, calf, and foot.

Long Term Consequences of Fireworks-Related Injuries

Respondents were asked if there were any long-term consequences of their injuries. Seven of the nine victims (78 percent of the total) experienced or expected complete recovery, with no long-term consequences. However, two victims described their expected long-term adverse consequences:

- Case 2: A thrown mortar-type firework hit the victim and damaged two of his fingers. The victim's fingertips were amputated, and he will not be able to fully grasp items with his left hand as a result of the injury.
- Case 3: A firework launched into the victim's hand and cracked several bones. As a result, the victim received pins in his right thumb and has limited movement (60 to 70 percent) with that finger.

Where Fireworks Were Obtained

Of the 9 telephone survey respondents, 4 knew where the fireworks were obtained. One respondent reported the fireworks came from a friend, three respondents reported that they obtained fireworks at a fireworks stand/tent.

Three of the 9 respondents did not know the source of the fireworks. This is typically the case when the respondent did not purchase the firework that caused injury. The two remaining respondents were unavailable for questions about the source of the fireworks involved in the incident.

6. Enforcement Activities

During fiscal year 2019, CPSC's Office of Compliance and Field Operations continued to work closely with other federal agencies to conduct surveillance on imported fireworks and to enforce the provisions of the FHSA and CPSC's FHSA regulations.

The Compliance and Field Operations staff, in cooperation with CBP, continues to conduct surveillance on imported shipments of consumer fireworks. With assistance from CBP, CPSC staff selectively sampled and tested shipments of imported fireworks in fiscal year 2019, to determine compliance with the FHSA and regulatory requirements. Approximately 43 percent of the selected and tested shipments were found to contain fireworks that were noncompliant. These violative fireworks devices had an estimated import value of $349,000. The most frequent violations were due to overloaded report compositions and fuse violations, comprising approximately 45 and 44 percent of all violations in fiscal year 2019, respectively. CPSC staff requested corrective actions on these noncompliant fireworks, and in most cases, firms voluntarily destroyed the noncompliant fireworks.

7. Summary

In calendar year 2019, there were 12 reported, non-occupational fireworks-related deaths. However, reporting for 2019 may not be complete at this time. There were an estimated 10,000 fireworks-related, emergency department-treated injuries for calendar year 2019.

During the 1-month special study period from June 21, 2019 to July 21, 2019, there were an estimated 7,300 emergency department-treated, fireworks-related injuries. Children under 15 years of age experienced about 36 percent of the estimated injuries, and males of all ages experienced 66 percent of the estimated injuries.

Additionally, similar to results from previous special study periods, 58 percent of the estimated injuries during the special study period involved burns. Burns were the most frequent injury to hands, fingers, legs, arms, and the head/face/ear region. The parts of the body most often injured were hands and fingers (an estimated 30 percent of the injuries); followed by legs (23 percent); eyes (15 percent); head, face and ears (15 percent); arms (10 percent); and trunk (6 percent). Most of the estimated injuries (87 percent) were treated-and-released. An estimated 12 percent were treated and transferred to another hospital or admitted to the hospital where the emergency department was located.

Among the different types of fireworks, sparklers were involved in 12 percent of the estimated injuries during the special study period. Firecrackers, as a whole, were involved in 11 percent; roman candles, as well as rocket-type devices were associated with 6 percent each. Novelties were associated with 3 percent of injuries; public displays and reloadable tube devices were each associated with 2 percent of injuries. Homemade or altered fireworks were associated with 1 percent of injuries, and multiple tube devices were associated with less than one-half of 1 percent of injuries. The majority of fireworks-related injuries, 56 percent, were associated with unknown firework device types.

A review of data from telephone follow-up investigations showed that the typical causes of injuries were as follows: misuse of fireworks; errant flight paths, late ignition, and tip-overs. At the time of the telephone investigation, which was conducted typically 1 to 2 months after the injury, most victims had recovered from their injuries. Two of the 9 respondents interviewed reported that the injuries might be long term.

Finally, in fiscal year 2019, CPSC staff continued to actively monitor import shipments of fireworks and products in the marketplace. CPSC staff worked with CBP to sample imported fireworks. Compliance staff conducted inspections at fireworks retailers to collect samples for analysis and testing for compliance with mandatory requirements.

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Appendix A

Fireworks-Related Injuries and Imported Fireworks

Table 9 reports the total estimated number of injuries per 100,000 pounds of imported fireworks. Table 9 shows an average of 237.3 million pounds of fireworks were imported each year between 2004 and 2019, with a standard deviation of 31.9 million pounds. Between 2004 and 2007, the number of imports rose from 229.2 to a peak of 275.1 million pounds in 2005. From 2008 to 2014, the number of imports were relatively steady with modest changes for some years. In 2015, fireworks imports reached their highest level since 2005, with an estimated 279.5 million pounds. Since 2015, the imports have remained relatively high compared to the 2008 to 2014 period.

As for the number of estimated emergency department-treated fireworks-related injuries, 2018, with 9,100 injuries, had the lowest since 2013. The highest three annual estimated fireworks-related injuries were 12,900 in 2017, 11,900 in 2015, and 11,400 in 2013.

As shown in Table 9 below, the estimated number of injuries per 100,000 pounds of fireworks imported was 3.9 in 2019, which, with the exception of 2018, was the lowest since 2009. The highest three estimated number of injuries per 100,000 pounds of fireworks were 6.3 injuries in 2013, 5.2 injuries in 2017, and 4.8 injuries in 2014. For the other years, that number ranged between 3.4 injuries and 4.4 injuries per 100,000 pounds of fireworks imported.

Table 9. Estimated Fireworks-Related Injuries and Estimated Fireworks Imported into the United States 2004-2019

Year	Estimated Injuries	Estimated Fireworks Imports (millions of pounds)[¥]	Injuries Per 100,000 Pounds of Fireworks Imported
2019	10,000	255.8	3.9
2018	9,100	278.1	3.3
2017	12,900	247.0	5.2
2016	11,100	262.3	4.2
2015	11,900	279.5	4.3
2014	10,500	219.6	4.8
2013	11,400	180.2	6.3
2012	8,700	201.0	4.3
2011	9,600	228.1	4.2
2010	8,600	199.6	4.3
2009	8,800	200.2	4.4
2008	7,000	208.3	3.4
2007	9,800	260.1	3.8
2006	9,200	272.1	3.4
2005	10,800	275.1	3.9
2004	9,500	230.0	4.1

Source: Injuries from NEISS, U.S. Consumer Product Safety Commission. See Table 1 for further details. Estimated fireworks imports data from the U.S. International Trade Commission (ITC), using Harmonized Tariff Schedule (HTS code 3604.10). Imports include consumer fireworks (1.4G HTS codes 3604.10.90.10 and 3604.10.90.50) and display fireworks (1.3G HTS code 3604.10.10.00). Display fireworks were about 6.8 percent of the total imports in 2019. In addition to imported fireworks used in the United States, there is also a small amount of fireworks manufactured in the United States for domestic consumption; the data for these fireworks is not available from ITC and is not shown in this table.

[¥]Fireworks imports data were downloaded from the ITC website in March 2020. Fireworks imports data subject to change by ITC. These changes have typically been minor.

Table 9 should be interpreted with caution. First, while there may be a relationship between the number of fireworks devices and estimated injuries resulting from fireworks, the number of imported fireworks is not available. Table 9 uses the total import weight as an approximation for the number of fireworks devices.

Second, the total import weight over-represents heavy devices and under-represents light devices. A heavy device may not be more dangerous than a light device because a firework's weight includes things other than just the amount of explosive material.

In addition, international trade statistics do not provide weight by fireworks device types. It is not possible to associate injuries with the weight of different types of imported fireworks. As shown in Table 2 earlier in this report, different fireworks devices are associated with different numbers of injuries. Thus, the decrease in injuries per 100,000 pounds between 2004 and 2008, may be due to different mixtures of types of fireworks imported over time or an overall decrease in injuries among all types of fireworks. Similarly, the increase in injuries per 100,000 pounds in 2013, may have resulted from different fireworks

mixtures, a decrease in importation of fireworks, or just statistical variation. The data do not provide enough information to determine the relative contribution of these factors.

Appendix B

Completed Telephone Investigations

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident	Medical Treatment and Prognosis
1	9	Female	Thermal Burns	Face	Admit	Illegal	The victim was outside with her sister finishing their sparklers when their mother just got home. The neighbor came over with a cherry bomb, told them it was a smoke bomb, and then threw it at them. The sister threw it back to him, and he returned it to them again. The cherry bomb went off, hitting both the victim and her sister in the face.	The victim had the skin burned off of her face, and her eyebrows were also burned off. She could not open her eyes, had a cut lip, gashes on her throat and chin, and burns on her chest. She suffered second-degree burns and consulted with a surgeon to see if a skin graft would be necessary; Her eyes were flushed for 4 hours.
2	9	Male	Amputation	Finger	Admit	Reloadable Aerial Shells	The victim was outside with his friends at the park where people were lighting mortar-type fireworks and throwing them. The victim was hit by one of the fireworks and lost the fingernail-sized tips on two of his fingers.	The victim was admitted to the hospital for 4 to 5 days and released with a follow-up visit to remove stitches and cast. He was not fully recovered at the time of the interview, and will not be able to properly grasp and hold items because of his injuries.
3	22	Male	Fracture	Finger	Admit	Unspecified	The victim was at a casino that was holding a public fireworks display. He was carrying a firework in his right hand and walking in the open area that was not level in front of the casino when he saw a firework get unbalanced and point towards him. He saw light coming towards him and used his left hand to cover his face. The sparks from the firework that hit him caught the firework in his right hand on fire.	The victim had scratches and burns to his face, chest and hands as well as several cracked bones in his hands. He was admitted to the hospital for 3 days. After being released from the hospital, he is limited to 60%-70% usage/movement in his right thumb because of the pins inserted in his finger.
4	11 months	Female	Thermal Burns	Wrist	Treat and Release	Unspecified	The victim was sitting on her father's lap next to a wall at a park where there was going to be a public fireworks display. Some people started throwing fireworks before the display started, and one firework bounced off the wall and landed on the victim and her father. The victim started to cry and would not stop, so the father left and dropped the victim off at a female friend's home.	The victim's mother picked up the victim late at night to take her home. She was unaware of the incident, but saw that the victim's dress was burned and that the victim had a purple blistered area on her left wrist.

Completed Telephone Investigations (Cont.)

Case	Age	Sex	Diagnosis	Body Part	Disposition	Fireworks Type	Incident	Medical Treatment and Prognosis
5	3	Male	Thermal Burns	Face	Treat and Release	Sparklers	The victim was playing with a sparkler that his mother had lit for him. He twirled it around and burned himself.	The victim ended up with second-degree burns. He had a dime-size burn under his chin, burns on his neck, and spark burns on his hand. He was treated and released with a full recovery within a week. The victim has scarring on his chin and neck.
6	4	Male	Thermal Burns	Upper Leg	Treat and Release	Unspecified	The victim was at an open field park with his mother where people were setting off fireworks. The victim had been playing with sparklers. A group of older children came to the area where the victim was and set off a firework that tipped over and started shooting everywhere. The firework burned through the victim's clothes.	The victim was treated at the hospital for second-degree burns that went from the back of the victim's left thigh to the back part of his lower leg. He was treated and released after dressings, and had a full recovery.
7	5	Male	Thermal Burns	Finger	Treat and Release	Multiple Tube Devices	The victim was sitting with his mother in the back of a van watching fireworks on their street. About 15 feet from where they were sitting, a firework was lit. The person who lit the firework walked away from the firework. Another child saw the firework and accidentally knocked it over when running away. The firework tipped over and went off. When the firework went off, the victim flinched and yelled because he was burned on his right hand ring finger. The victim and mother ran to rinse his hand and to take him to the emergency room.	The emergency room provided antibiotic cream and care instructions. After 10 days of treatment with antibiotic cream he was fully healed without any long-term effects.
8	13	Female	Thermal Burns	Upper Trunk	Treat and Release	Unspecified	The victim was cleaning up fireworks and picked one up that was still lit. The firework exploded. The victim's t-shirt caught fire, and she ran to another location screaming and tried to pat the flames out.	The victim received third-degree burns. Recovery is expected to take a year.
9	16	Male	Thermal Burns	Face	Treat and Release	Homemade/ Altered	The victim was at his friend's house with a group of mutual friends. One of the victim's friends had put together a "sparkler bomb" made up of various fireworks and sparklers. The group went down the street away from the house so they would not be seen by parents. The victim lit what he thought was the fuse and quickly realized that what he lit was not burning like a fuse. The victim quickly stood up and turned away when the bomb exploded. The firework burned through the back of his calf and on his foot, and through the victim's shirt and shoes.	The victim was treated for several burns, and received a star-shaped burn on the back of his calf and on his foot. Recovery took about a week.