

2012 INDIANA FIREWORK-RELATED INJURY REPORT

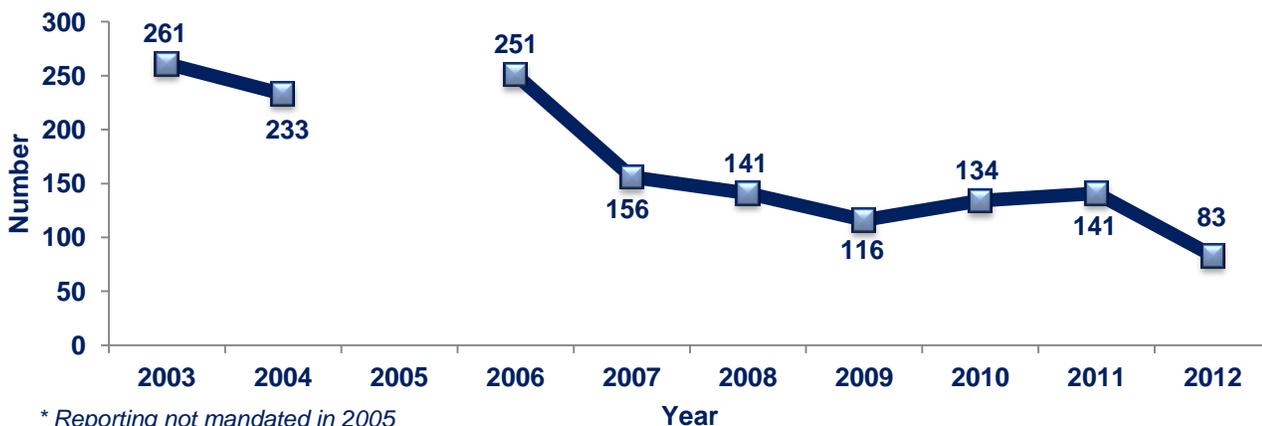
October 2012



2012 FIREWORK-RELATED INJURY REPORT

Due to the passage of state legislation, the Indiana State Department of Health (ISDH) received reports about injuries resulting from fireworks and/or pyrotechnics during 2003 and 2004. However, no reporting occurred in 2005 due to the expiration of the law. With the enactment of Public Law 187 and Indiana Code 35-47-7-7 in 2006, reporting of firework-related injuries was reinstated with identical reporting requirements to those in the previous statute. All hospitals, medical facilities and private medical practices are mandated by law to report all firework injuries and deaths to ISDH; however, this law is not actively enforced and it is estimated that the number of injury reports received is an underestimation of the true burden of fireworks injuries. This report presents firework-related injury data compiled from submitted fireworks injury forms for the 2012 reporting cycle (September 13, 2011–September 12, 2012).

Figure 1. Firework-related injuries by reporting cycle year, Indiana, 2003–2012*



2012 Highlights

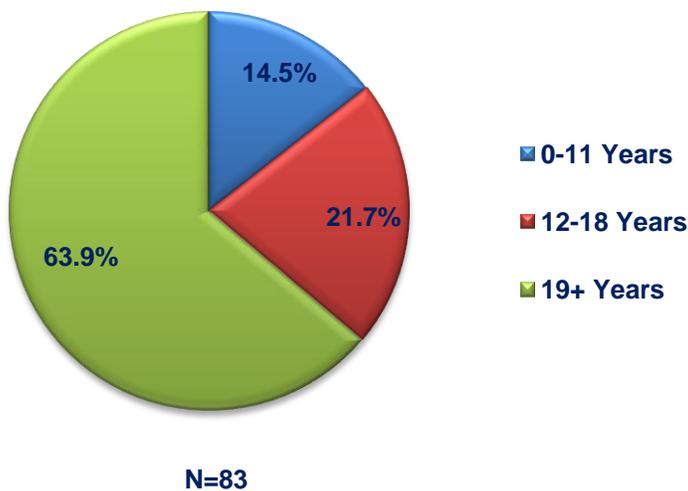
- ❑ There were 83 unduplicated cases of firework-related injuries reported to ISDH.
- ❑ Of reported injuries, there was one amputation of an individual's leg and one death.
- ❑ Thirty-six percent of all reported firework-related injuries involved children and adolescents (individuals 18 years of age and under).
- ❑ Half of firework-related injuries were burns of the hand and/or fingers.
- ❑ Nearly 25 percent of injured persons were hospitalized or transferred to another hospital for treatment.
- ❑ Eye injuries accounted for 12.8 percent of the total number of injuries; almost all (92.9 percent) of the people with eye injuries did not have or use eye protection.
- ❑ Nearly half of the injuries were caused by firecrackers, rockets and aerials.
- ❑ Malfunction and mishandling of fireworks accounted for 55.4 percent of reported fireworks injury mechanisms.
- ❑ Firework use on private property accounted for 61.4 percent of reported injury cases.
- ❑ Figure 1 shows the number of reported firework-related injuries from 2003 to 2004 and 2006 to 2012.
- ❑ Overall, there was a significant decrease in the number of fireworks-related injuries reported during 2012. Widespread use of local fireworks bans in response to the extreme drought during summer 2012 was likely responsible for much of this decrease.

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Demographics

- The median age of persons with a firework-related injury was 23 years old. The average age of all injured persons was 26.4 years old; ages ranged from two to 64 years old.
- Thirty-six percent of those injured were 18 years of age or younger (Figure 2).
- Of reported injuries, 86.7 percent involved males while 13.3 percent involved females. Across all age groups, males reported more firework-related injuries than females (Figure 3).
- Nearly eighty percent (77.1 percent) of persons injured were white, 15.7 percent were black or African American and 2.4 percent were multiracial (Figure 4). Race was unknown or unreported in 4.8 percent of the injury reports.
- Thirty-five percent of the injury reports did not record ethnicity. Of those who reported ethnicity, Hispanic ethnicity was reported in 7.4 percent of the cases.

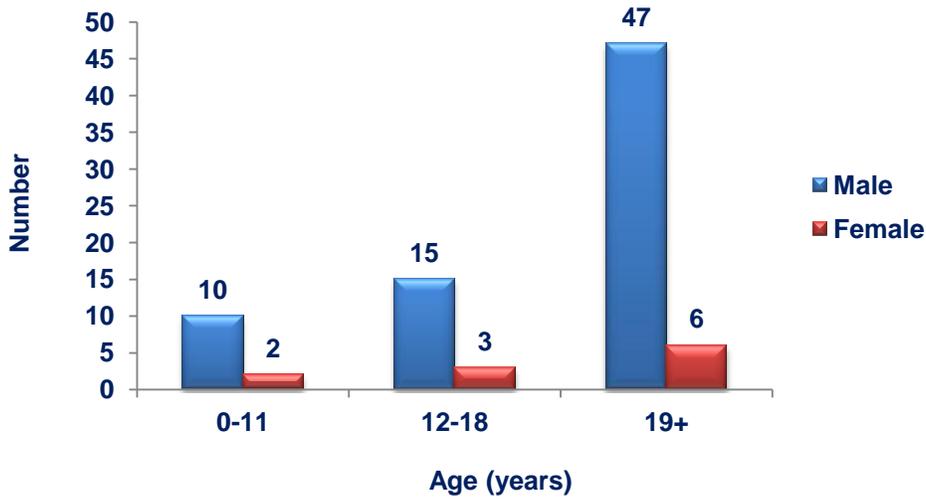
Figure 2. Firework-related injuries by age group, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.
Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

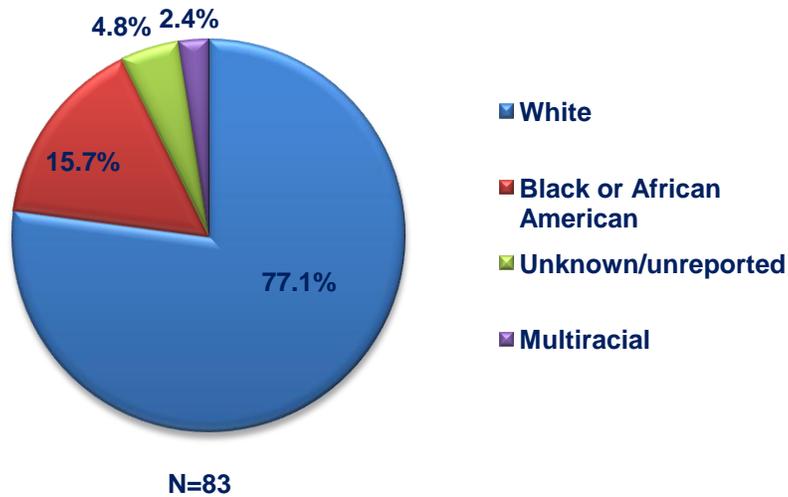
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Figure 3. Firework-related injuries by age and sex, Indiana, 2012*



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Figure 4. Firework-related injuries by race, Indiana, 2012*



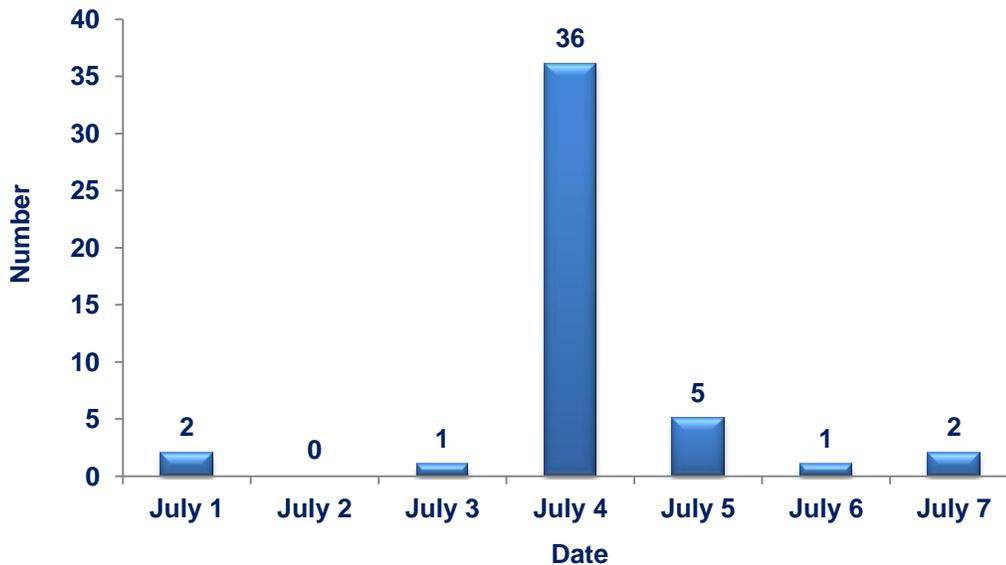
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Date and Time of Injuries

- Four fireworks injuries were reported from September 13, 2011 to December 31, 2011.
- In 2012, 25 injuries were reported in the first half of the year (January – June).
- Nearly 60 percent of all reported injuries in 2012 occurred from July 1–7 (Figure 5); 43.4 percent of all fireworks injuries occurred on July 4.
- Seven cases in 2012 occurred from July 8 to September 12.
- Sixty-one percent of all injuries occurred between 8 p.m. and midnight (this includes six reports that only indicated “p.m.” with no exact time and assumes the injury occurred in the evening) with 73.3 percent of reported injuries occurring between 9–11 p.m. (Figure 6).

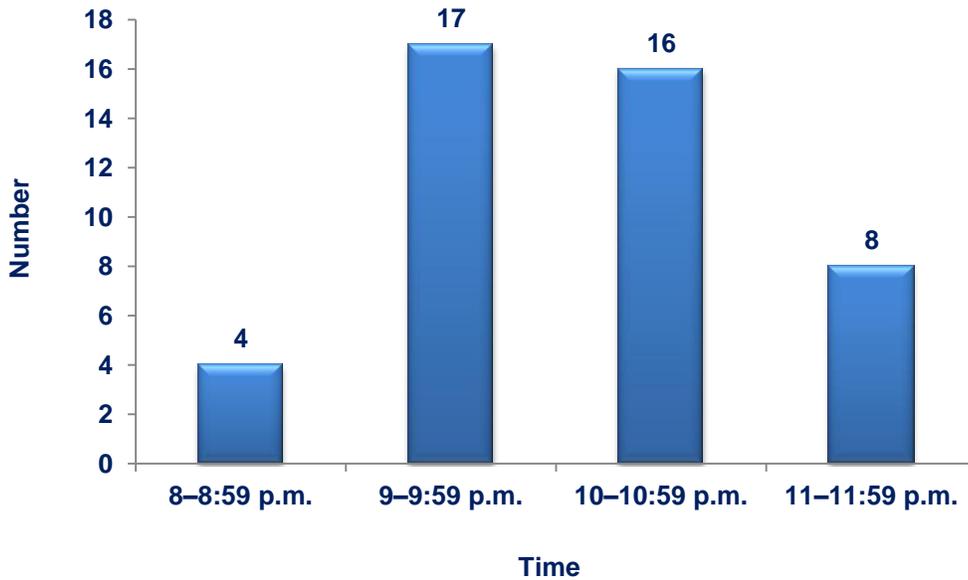
Figure 5. Firework-related injuries by date, July 1–July 7, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.
Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

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Figure 6. Most frequent times when firework injuries occurred, Indiana, 2012*



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Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

Type of Fireworks Involved in Injuries

- The 83 reported individuals were injured by 85 fireworks, as two individuals were injured by more than one type of firework.
- Rockets, firecrackers and aerial devices accounted for nearly half (47.1%, 40/85) of the types of fireworks most cited as causing injury (Table 1).
- Thirty-nine percent of other types of fireworks injuries involved mortars, which are tube-shaped devices used as launching mechanisms for shells in aerial fireworks displays.
- Malfunction and mishandling of fireworks accounted for over half (55.4 percent) of reported problems causing injury (Figure 7).

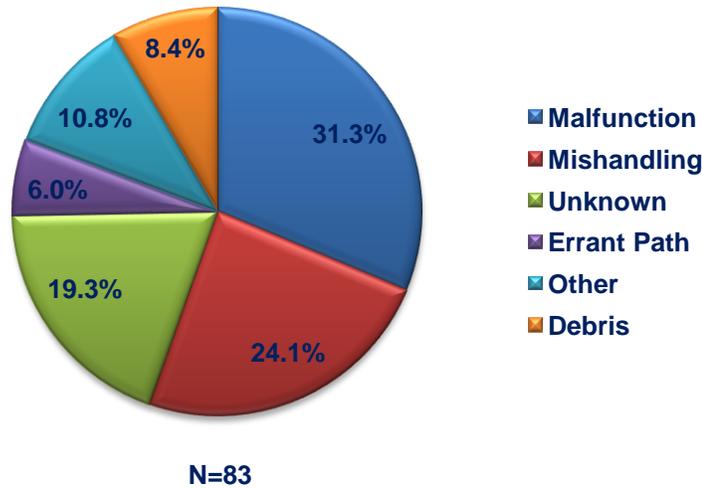
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Table 1: Frequency and Percent of Firework Type Involved in Injury, Indiana, 2012*

Firework Type	Frequency	Percent
Other	18	21.2%
Firecrackers	16	18.8%
Rockets	12	14.1%
Aerial	12	14.1%
Unknown	12	14.1%
Sparklers	12	14.1%
Lighting Gunpowder	1	1.2%
Homemade fireworks	1	1.2%
Pyrotechnics	1	1.2%
Twisters	0	0.0%
Total	85	100%

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 Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

Figure 7. Cause of firework-related injury, Indiana, 2012*



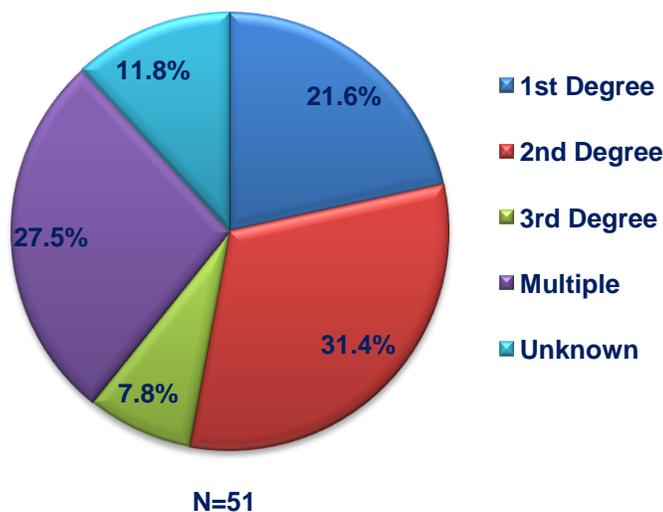
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Type of Injuries

- In 2012, a total of 102 fireworks injuries occurred among 83 individuals.
- Fifty-one burn injuries were reported:
 - 11 were first-degree burns
 - 16 were second-degree burns
 - 4 were third-degree burns
 - 14 were multiple degree burns
 - 6 did not indicate degree of burn (Figure 8)
- Other types of injuries included contusions/lacerations/abrasions (18.6 percent), puncture wounds (7.8 percent), penetrating foreign body/missiles (6.9 percent), sprains/fractures (3.9 percent) and other injuries (12.8 percent). (Figure 9).
- One case involved an amputation of the individual's leg and one case resulted in death.

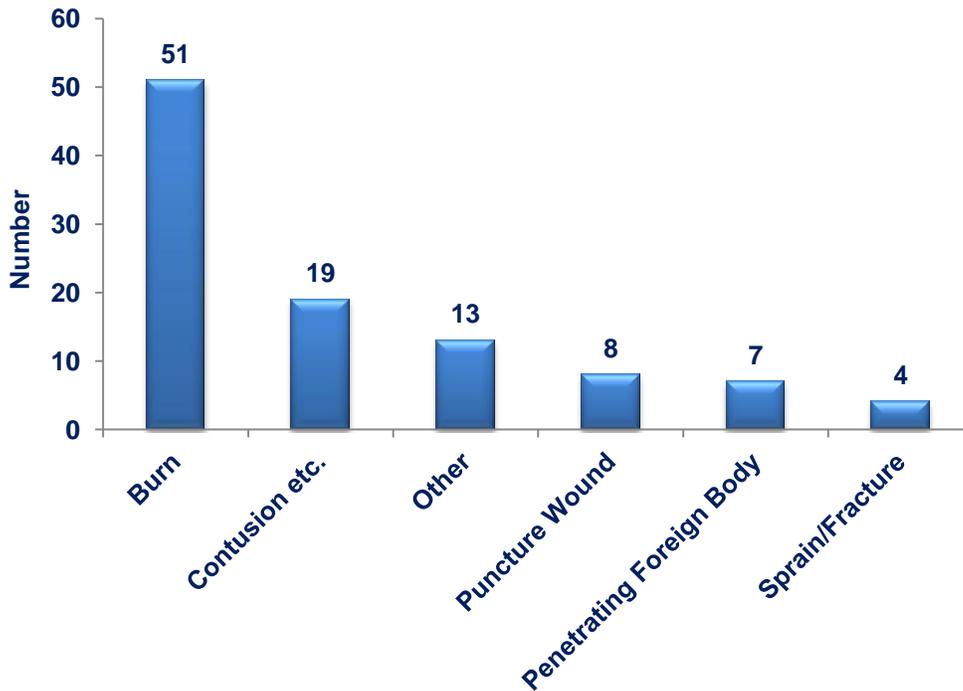
Figure 8. Degree of burn experienced from firework-related injury, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.
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Figure 9. Type of firework-related injury, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.
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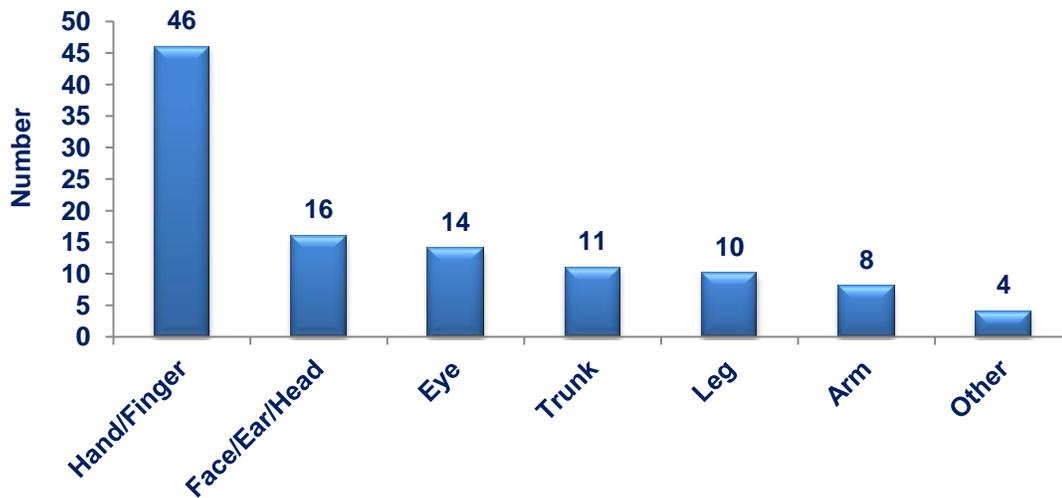
Body Part Injured

- In 2012, of the 83 total cases, 16.9 percent of individuals experienced injuries to multiple body parts.
 - Over half (62.4 percent) of the injuries involved the hand, finger, eye or arm.
 - 14.7 percent of injuries involved the face, ear or head.
 - 10.1 percent of injuries involved the trunk.
 - 9.2 percent of injuries involved the leg.
 - Other body parts injured included the neck, back and buttock (3.7 percent). (Figure 10)

- Of the 14 individuals who had eye injuries, nearly all of those injured (92.9 percent) did not have or use eye protection (i.e. glasses or contact lenses). Eyeglasses were present in 7.1 percent) of the cases, while contact lenses were used by none of those who experienced an eye injury.

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Figure 10. Body part affected by firework-related injury, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.

Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

Source of Care and Injury Outcomes

- The majority (83.1 percent) of people injured by fireworks sought care at an emergency department or urgent care center. Of the remaining cases, 13.3 percent received care from a provider office (i.e. pediatrician, optometrist); in three of the cases, the facility or provider was not identified.
- Seventy-one percent of those seeking treatment were evaluated and released to go home. However, 24.1 percent were admitted to the hospital or transferred to another hospital. One record did not provide information regarding the patient's outcome.

Additional Information

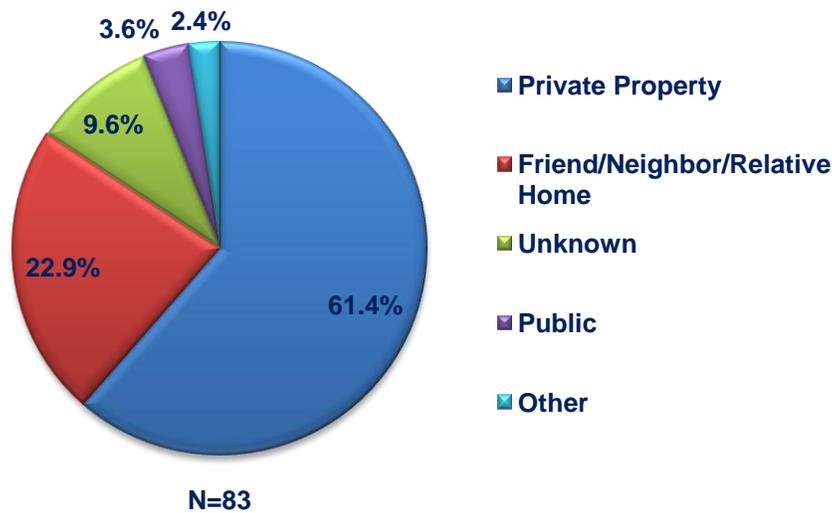
- Geographical location
 - Sixty-two percent of people were injured at a private home, yard or property.
 - Twenty-three percent were injured at someone else's home, yard or property.
 - Public property was noted as the site for 3.6 percent of injury occurrences.
 - Two people were injured at other, unspecified locations.
 - Injury location information was unknown for eight people. (Figure 11)
- Of all injury cases, one person was indicated as a bystander.

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- Alcohol use
 - Nearly eighty percent of all reports did not provide information on alcohol consumption.
 - Alcohol use was reported in 10.8 percent of cases with 89 percent of those cases reporting alcohol use within three hours of injury.
 - None of those using alcohol were under 21 years of age. (Figure 12)

- Adult supervision
 - Among those injured who were 18 years of age or less, 56.7 percent were injured while in the presence of an adult.
 - Twenty-three percent had no adult supervision.
 - Information regarding adult supervision was not reported in six of the cases. (Figure 13)

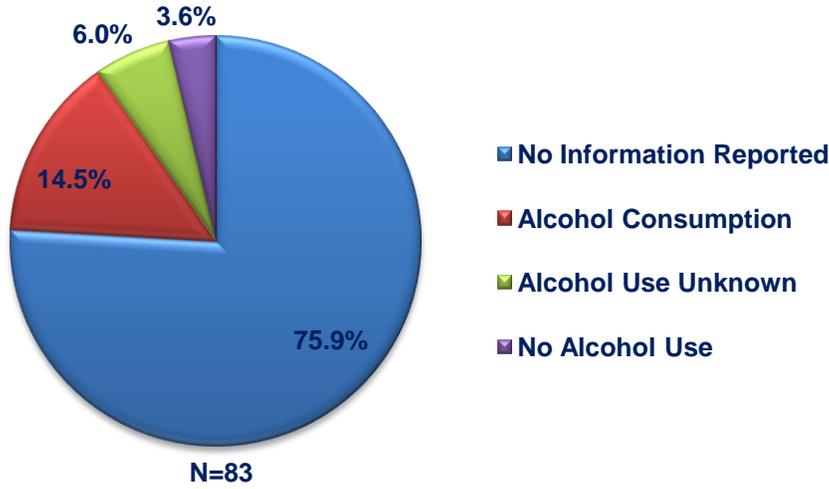
Figure 11. Location of firework-related injury, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.
Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

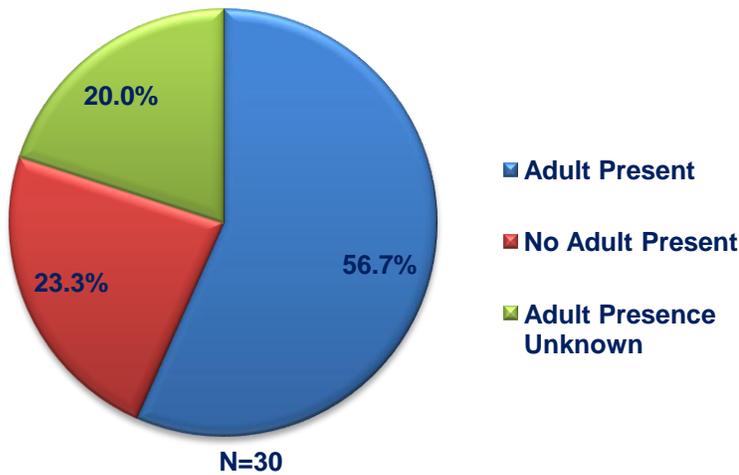
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Figure 12. Alcohol use of those injured by fireworks, Indiana, 2012*



* 2012 reporting cycle includes cases from September 13, 2011–September 12, 2012.
Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

Figure 13: Adult supervision of individuals 18 years of age or younger, Indiana, 2012*



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Source: Indiana State Department of Health, Division of Trauma and Injury Prevention

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Summary of Firework-Related Injuries for 2012

While the ages of those injured ranged from two to 64 years old, children and adolescents comprised 36.1 percent of reported cases. Males (86.7 percent) were injured more often than females (13.3 percent). Over three-quarters (77.1 percent) of the individuals were white, 15.7 percent were black and two people were multiracial. Race was unknown or unreported for four individuals.

Over half (62.4 percent) of the injuries involved the hands, fingers, eyes or arms. Burns were the most common type of injury. The majority (83.1 percent) of people injured by fireworks sought care at an emergency department or urgent care center, with the remaining cases (16.9 percent) seeking medical care from another type of provider. Of those seeking medical care, 71.1 percent were evaluated and released to go home. However, 24.1 percent were admitted to the hospital or transferred to another hospital. One case involved an amputation of the individual's leg and one case resulted in death.

For the 83 cases of firework-related injuries, 56.6 percent occurred between July 1 and July 7 with 43.4 percent of injuries taking place on July 4. Over half (61.4 percent) of injuries occurred on private property. Firecrackers, rockets and aerials (47.1 percent) were cited most often as being involved in firework injuries. The cause of injury was most commonly malfunction and mishandling (55.4 percent) of fireworks.

Fireworks/Burn Bans

During the summer of 2012, a severe drought prompted Indiana county officials to restrict outdoor burning activities or issue "burn bans". In addition to burn bans, local ordinances can prohibit the use of fireworks when unique environmental conditions, such as droughts, occur and increase the likelihood of fires caused by fireworks.

A total of 61 Indiana counties and two cities/towns had some form of a fireworks ban during the summer of 2012. Counties had different levels of regulation with bans in effect for varying lengths of time. The widespread use of these local fireworks bans in response to the extreme drought was likely responsible for much of the decrease seen in firework-related injury reports.

This report was prepared by Julie Wirthwein, MPH, Indiana State Department of Health, Epidemiology Resource Center. Data entry provided by Trish Manuel, Indiana State Department of Health, Epidemiology Resource Center.

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APPENDIX

Firework-Related Injury Year Comparisons

The Indiana State Department of Health began receiving firework injury reports in 2003 after the collection of this information was mandated by law. After two years, the law expired and no reports were collected in 2005. In 2006, the law was reinstated with requirements identical to the previous law. Table 2 shows the comparison of firework-related injuries for the years in which reporting was mandated (2003, 2004, 2006, 2007, 2008, 2009, 2010, 2011 and 2012).

Table 2. Comparison of firework-related injuries, Indiana, 2003-2004 and 2006-2011

Year	2003	2004	2006	2007	2008	2009	2010	2011	2012
Number of cases reported	261	233	251	156	141	116	134	141	83
Demographics									
Median Age	18	18	17	20	21	19	20	21	23
Age Range (in years)	0-74	0-72	0-67	0-70	0-70	0-81	1-69	0-65	2-64
Children/Adolescents	53%	52%	55%	48%	50%	50%	47%	42%	36%
Males	73%	76%	70%	67%	70%	72%	75%	72%	87%
Females	27%	24%	30%	33%	30%	28%	25%	28%	13%
White	84%	87%	82%	87%	73%	82%	73%	84%	77%
Black or African American	10%	8%	13%	7%	14%	7%	16%	12%	16%
Injury Type									
Burns	76%	67%	73%	69%	65%	61%	62%	55%	50%
Body Part Injured									
Hand	34%	32%	36%	41%	33%	37%	27%	31%	42%
Eye	17%	25%	29%	24%	21%	16%	17%	18%	13%
No Eye Protection	82%	88%	97%	92%	76%	91%	91%	93%	93%
Injury Circumstances									
Injured on Private Property	83%	89%	86%	83%	87%	84%	79%	67%	61%
Children Injured with Adults Present	60%	50%	64%	61%	62%	41%	57%	87%	57%
Hospitalized or Transferred to a Hospital	3%	6%	11%	8%	9%	10%	14%	12%	24%
Died	0%	0%	0%	0%	1%	0%	0%	0%	1%
Fireworks Circumstances									
Injuries from Sparklers, Rockets, and Firecrackers	63%	64%	57%	52%	53%	52%	51%	51%	47%
Injuries from Mishandling Fireworks	27%	23%	29%	30%	28%	24%	23%	26%	24%
Errant Path or Malfunctioning Fireworks	21%	37%	41%	35%	40%	41%	43%	43%	37%

Source: Indiana State Department of Health, Division of Trauma and Injury Prevention