TOPICAL FIRE REPORT SERIES Volume 14, Issue 1 / March 2013

Civilian Fire Injuries in Residential Buildings (2009–2011)

These topical reports are designed to explore facets of the U.S. fire problem as depicted through data collected in the U.S. Fire Administration's National Fire Incident Reporting System. Each topical report briefly addresses the nature of the specific fire or fire-related topic, highlights important findings from the data, and may suggest other resources to consider for further information. Also included are recent examples of fire incidents that demonstrate some of the issues addressed in the report or that put the report topic in context.

Findings

- Seventy-six percent of all civilian fire injuries occurred as a result of fires in residential buildings.
- Residential building fires resulting in injuries occurred most frequently in the late afternoon and early evening hours.
- January had the highest incidence of residential building fires resulting in injuries (11 percent).
- "Cooking" (30 percent) was the primary cause for residential building fires that resulted in injuries.
- Thirty-four percent of civilian fire injuries in residential buildings resulted from trying to control a fire followed by attempting to escape (25 percent).
- Seventy-nine percent of injuries resulting from residential building fires involved smoke inhalation and thermal burns.
- The leading human factor contributing to injuries in residential building fires was being "asleep" (56 percent).
- Bedrooms (35 percent) were the leading specific location where civilian injuries occurred in residential building fires.

Fires can strike anywhere — in structures, buildings, automobiles and the outdoors. Fires that affect our homes are often the most tragic and the most preventable. While the loss of our possessions can be upsetting, the physical injuries and psychological impact that fires inflict are often far more devastating. It is a sad fact, but each year, over 70 percent of all civilian fire injuries occur as a result of fires in residential buildings — our homes.[1, 2] Between 2009 and 2011, civilian fire injuries in residential buildings accounted for 76 percent of all fire injuries. This topical fire report focuses on the characteristics of these injuries.

Civilian fire injuries, by definition, involve people not on active duty with a firefighting organization who are injured as a result of a fire.[3] These injuries generally occur from activities of fire control, escaping from the dangers of the fire or sleeping. Fires resulting in injuries are those fires where one or more injuries occur.

Annually from 2009 to 2011, an estimated 13,250 civilian fire injuries resulted from an estimated 8,100 residential building fires resulting in injuries and 360,900 residential building fires.[4, 5] In fact, every 40 minutes someone is injured in a residential building fire.

The National Fire Incident Reporting System data are used for the analyses presented throughout the report. For the purpose of this report, the term "residential building fires resulting in injuries" is synonymous with "residential fires resulting in injuries" and "residential building fires" is synonymous with "residential fires." The term "residential fires resulting in injuries" is used throughout the body of this report; the findings, tables, charts, headings and endnotes reflect the full category, "residential building fires resulting in injuries."

Civilian Injury Rates for Residential Building Fires

Not all fires produce injuries. When civilian fire injuries are averaged over all residential fires, the overall injury rate was three civilian injuries per 100 residential fires (Table 1).[6] Residential fires that result in injuries, however, had 130 injuries for every 100 fires. Of the residential fires resulting in injuries, 82 percent resulted in one civilian injury, 12 percent resulted in two civilian injuries, and 6 percent resulted in three or more civilian injuries.

Table 1. Civilian Injury Rates for Residential Building Fires per 100 Fires (2009–2011)

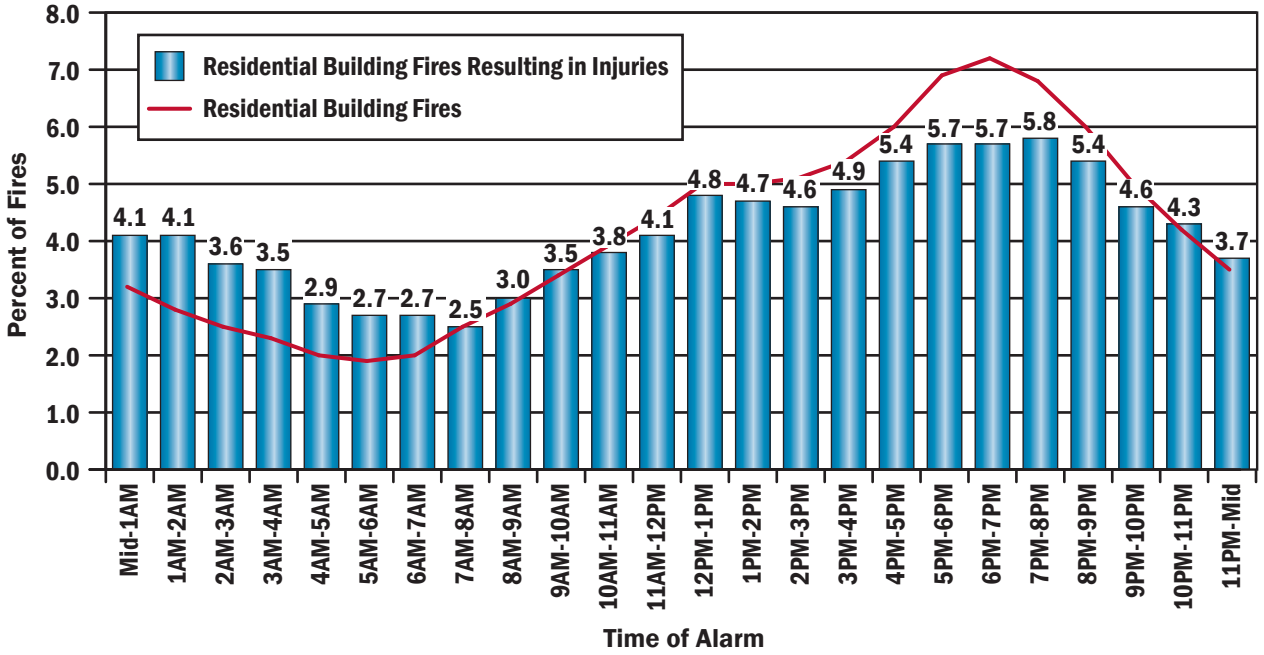
Injuries per 100 Injury-Producing Residential Building Fires	Injuries per 100 Residential Building Fires
129.6	2.9

Source: NFIRS 5.0 data.

When Residential Building Fires Resulting in Injuries Occur

Residential fires resulting in injuries follow a daily pattern. In addition, unlike fatal residential fires which occur more frequently in the late night and early morning hours,[7] residential fires resulting in injuries follow a similar pattern as to all residential fires. As shown in Figure 1, residential fires resulting in injuries occurred most frequently in the late afternoon and early evening hours when many people are expected to be cooking dinner.[8] Seventeen percent of the civilian fire injuries occurred between 5 and 8 p.m. Cooking fires, discussed later in the section "Causes of Residential Building Fires Resulting in Injuries," was the primary cause (30 percent) for residential fires that resulted in injuries. In general, injuries then decreased to the lowest point of the day, between 7 and 8 a.m. Injuries then steadily increased during the daytime hours until reaching the daily peak.

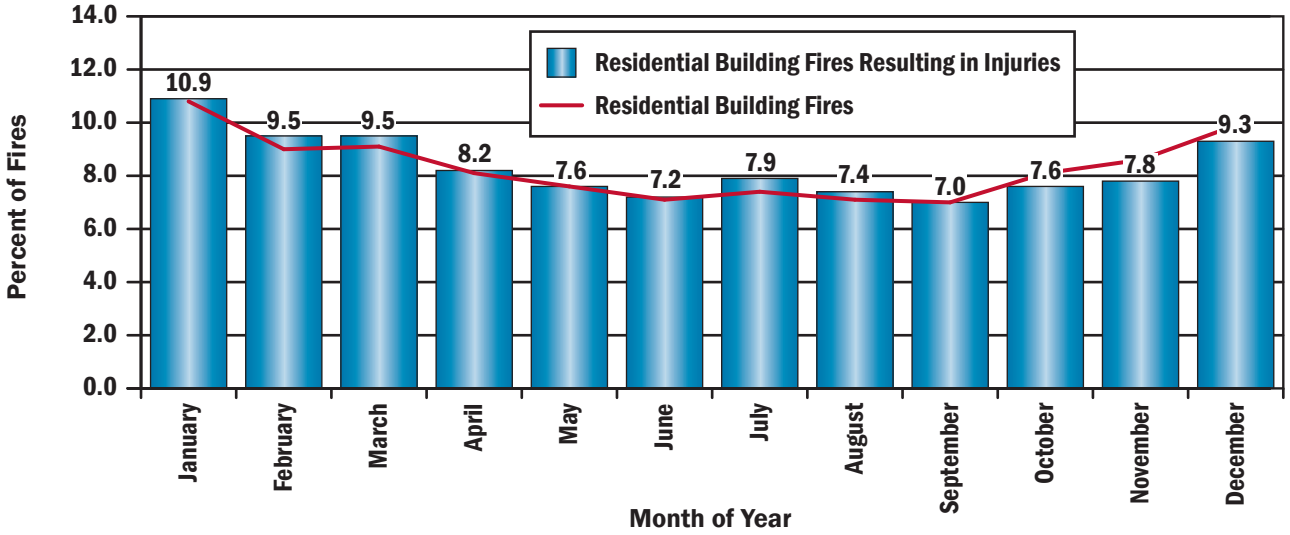
Figure 1. Time of Day of Occurrence for Residential Building Fires Resulting in Injuries (2009–2011)



Source: NFIRS 5.0 data.
Note: Total does not add up to 100 percent due to rounding.

Residential fires resulting in injuries also follow a similar yearly pattern as to that of all residential fires. In addition, residential fires resulting in injuries tended to follow a seasonal trend with more injuries taking place during the colder months than the warmer months (Figure 2). Overall, January produced the most residential fires resulting in injuries (11 percent). September had the least amount of residential fires resulting in injuries (7 percent). This drop may be explained by a decrease in residential heating fires and their associated injuries during the warmer months.[9]

Figure 2. Residential Building Fires Resulting in Injuries by Month (2009–2011)

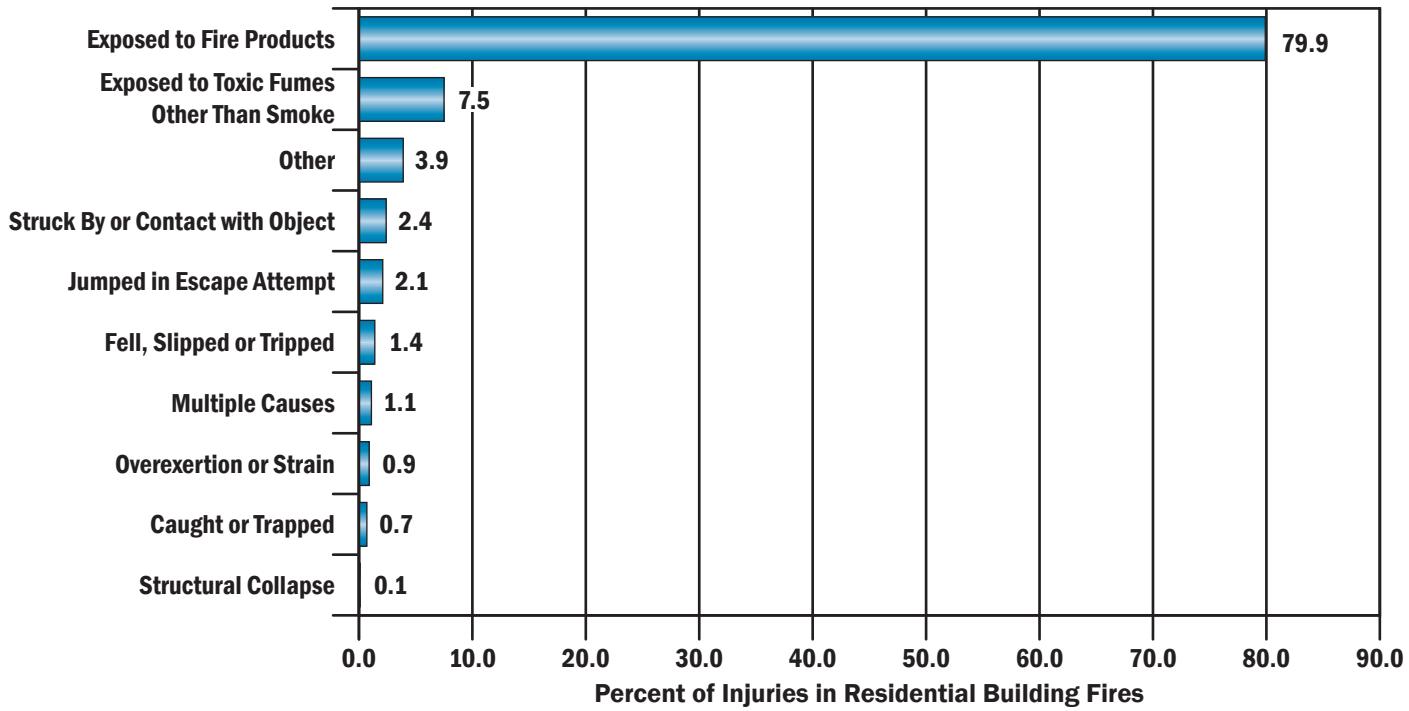


Source: NFIRS 5.0 data.
Note: Total does not add up to 100 percent due to rounding.

Cause of Injury

The predominant cause of injury, by far, involved exposure to fire products (80 percent), such as flame, heat, smoke or gas (Figure 3). The next two leading causes were exposure to toxic fumes other than smoke (8 percent) and other unspecified causes (4 percent).

Figure 3. Cause of Injury for Residential Building Fires (2009–2011)



Source: NFIRS 5.0 data.
Note: Percentages computed for only those injuries where causes were noted.

Primary Symptoms of Civilian Fire Injuries

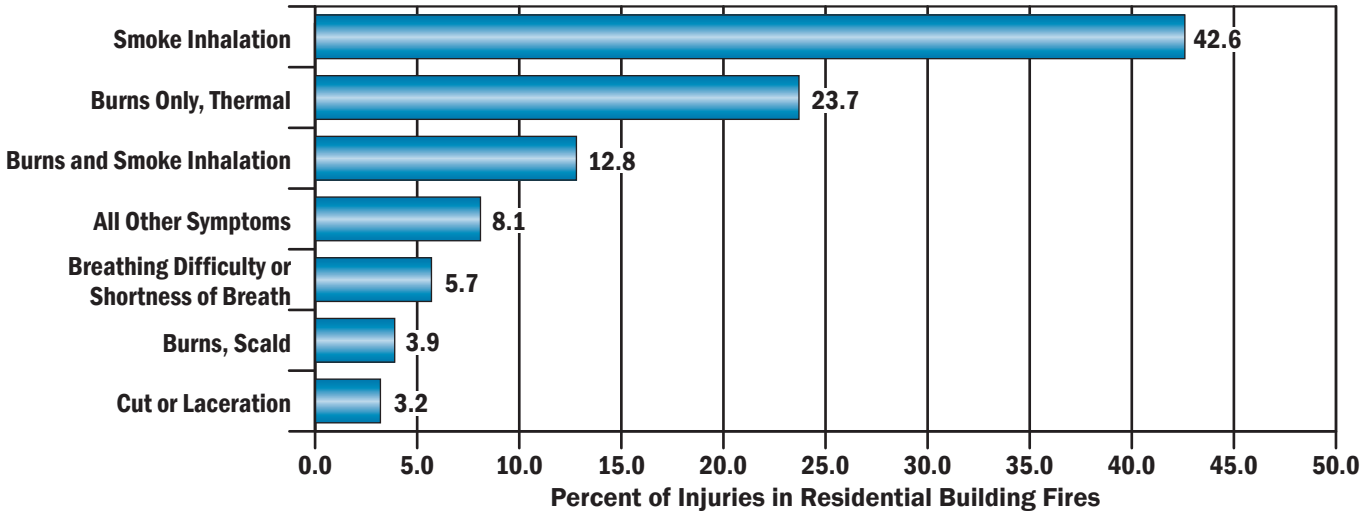
Seventy-nine percent of injuries resulting from residential fires involved smoke inhalation and thermal burns (Figure 4). Smoke inhalation alone accounted for 43 percent of residential fire injuries. Thermal burns (as opposed to scalds or chemical or electrical burns) accounted for another 24 percent, and burns combined with smoke inhalation accounted for an additional 13 percent.[10] The specific type of injury, difficulty breathing, only accounted for 6 percent of injuries. Scalds (4 percent) and cuts or lacerations (3 percent) were even a smaller proportion of civilian fire injuries.

Thermal burns are caused by contact with flames, hot liquids, hot surfaces and other sources of high heat. Seventy-two percent of thermal burns to the body were on the upper and lower extremities (58 percent and 14 percent, respectively).

Seventy-two percent of smoke inhalation injuries were internal injuries, which is particularly critical as it can lead to lung damage. The inflammation and damage caused by smoke inhalation to delicate breathing sacs in the lungs actually grows worse in the hours after the incident. A chest X-ray can look clear and oxygen levels in the blood may appear normal in the first few hours after a fire. A day or two later, however, the victim can suddenly take a turn for the worse as the lungs become unable to exchange oxygen properly.[11]

Based on the severity of the injury, most civilian fire injuries in residential fires were minor (59 percent). Only 13 percent of these injuries were considered serious or life threatening. Also of interest, 43 percent of reported civilian fire injuries required transportation to emergency facilities.

Figure 4. Primary Symptoms of Civilian Fire Injuries in Residential Buildings (2009–2011)

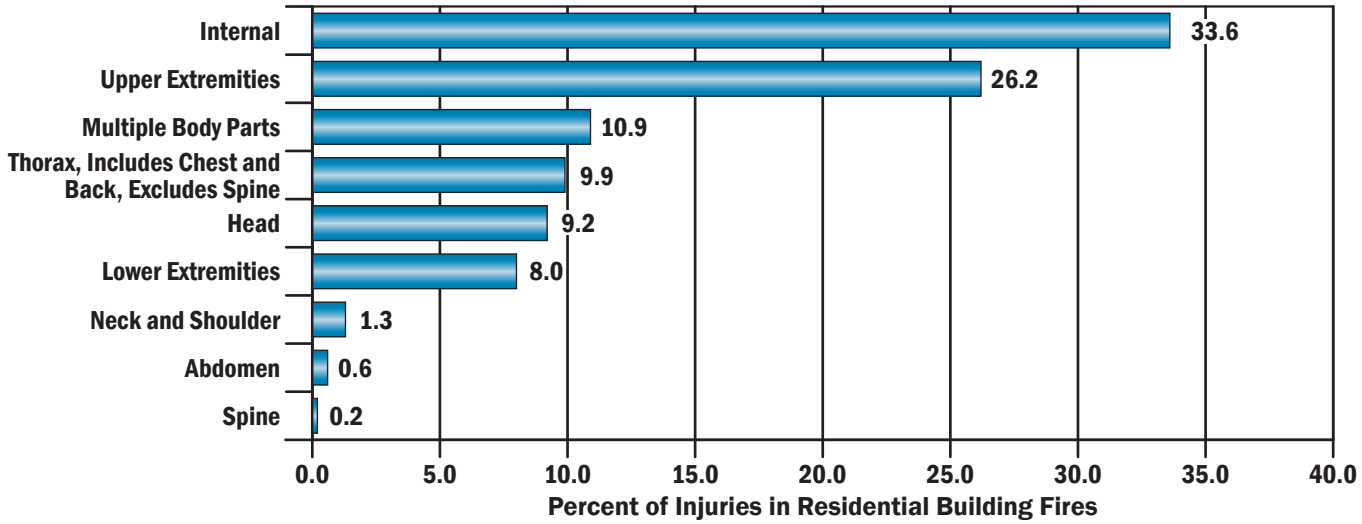


Source: NFIRS 5.0 data.
Note: Percentages computed for only those injuries where symptoms were noted.

Areas of the Body Affected

The body parts affected the most by injury (Figure 5) included both internal (34 percent) and the upper extremities (26 percent). As discussed, the types of injuries that affected most areas of the body consisted of smoke inhalation, thermal burns or a combination of both.

Figure 5. Part of Body Injured in Residential Building Fires (2009–2011)

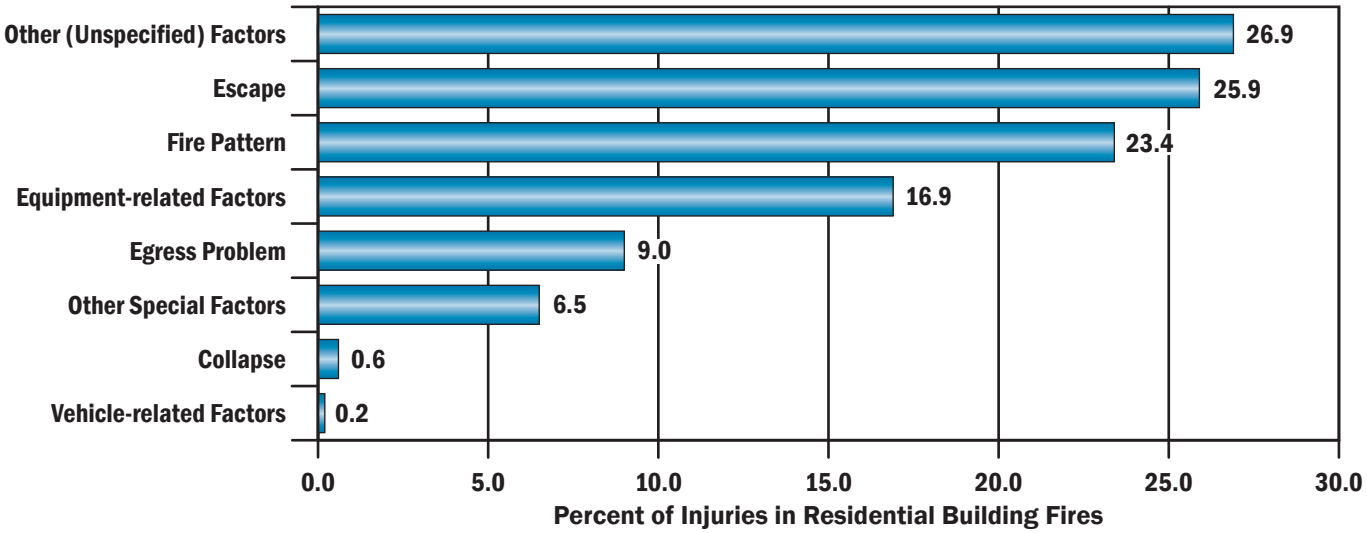


Source: NFIRS 5.0 data.
Notes: 1. Percentages computed for only those injuries where part of body injured was noted.
2. Total does not add up to 100 percent due to rounding.

Factors Contributing to Civilian Fire Injuries

The most notable factors contributing to civilian injuries (outside of "other factors") (Figure 6) involved escape (26 percent), fire pattern (23 percent), and equipment-related factors (17 percent). Escape factors include unfamiliarity with exits; excessive travel distance to the nearest clear exit; a choice of an inappropriate exit route; re-entering the building; and clothing catching on fire while escaping. Fire pattern factors involve such situations where exits are blocked by smoke and flame; vision is blocked or impaired by smoke; and civilians are trapped above or below the fire. Equipment-related problems include such factors as the improper use of cooking or heating equipment and the use of unvented heating equipment.

Figure 6. Factors Contributing to Civilian Fire Injuries in Residential Buildings (2009–2011)



Source: NFIRS 5.0 data.
Notes: 1. Includes incidents where factors contributing to injury were specified.
2. As multiple factors contributing to injury may be noted for each injury, the total sums to more than 100 percent.

Human Factors Contributing to Civilian Fire Injuries

Human factors also play an important role in residential fire injuries. The leading human factor contributing to injuries was being "asleep" (56 percent). This is not unexpected as the largest number of injuries occurred in bedrooms (35 percent). "Possibly impaired by alcohol" (17 percent) was the second leading human factor contributing to injuries. This was followed by "unattended or unsupervised" individuals (11 percent) and "people with physical disabilities" (also 11 percent) (Table 2).

Table 2. Human Factors Contributing to Civilian Fire Injuries in Residential Buildings (2009–2011)

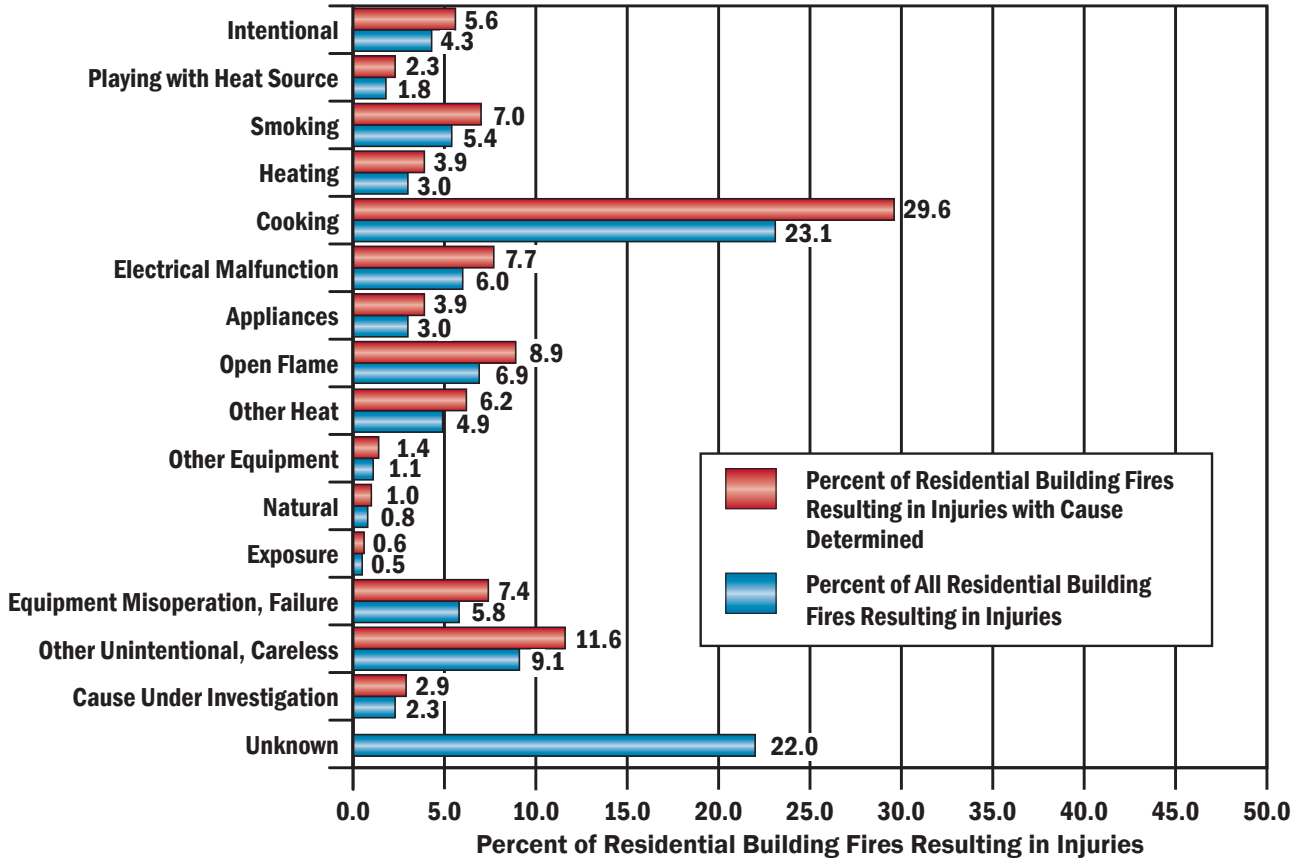
Human Factors Contributing to Injury	Percent of Fire Injuries in Residential Buildings (Unknowns Apportioned)
Asleep	55.6
Possibly impaired by alcohol	16.8
Unattended or unsupervised person	11.2
Physical disabilities	10.9
Possibly impaired by other drug or chemical	7.8
Possible intellectual disabilities	7.2
Unconscious	5.3
Physically restrained	0.5

Source: NFIRS 5.0 data.
Notes: 1. Includes only incidents where human factors that contributed to the injury were specified.
2. Multiple human factors contributing to the fire injury may be noted for each incident; total will exceed 100 percent.

Causes of Residential Building Fires Resulting in Injuries

"Cooking" (30 percent) was the primary cause for residential fires that result in injuries.[12] "Other unintentional, careless" actions (12 percent) and "open flame" (9 percent) were the next leading causes. "Other unintentional, careless" actions include misuse of material or product, abandoned or discarded materials or products, and heat source too close to combustibles. "Open flame" includes torches, candles, matches, lighters, embers and the like. These two causes were followed by "electrical malfunction" (8 percent), "equipment misoperation, failure" (7 percent), and "smoking" (also 7 percent) (Figure 7).

Figure 7. Cause of Residential Building Fires Resulting in Injuries (2009–2011)



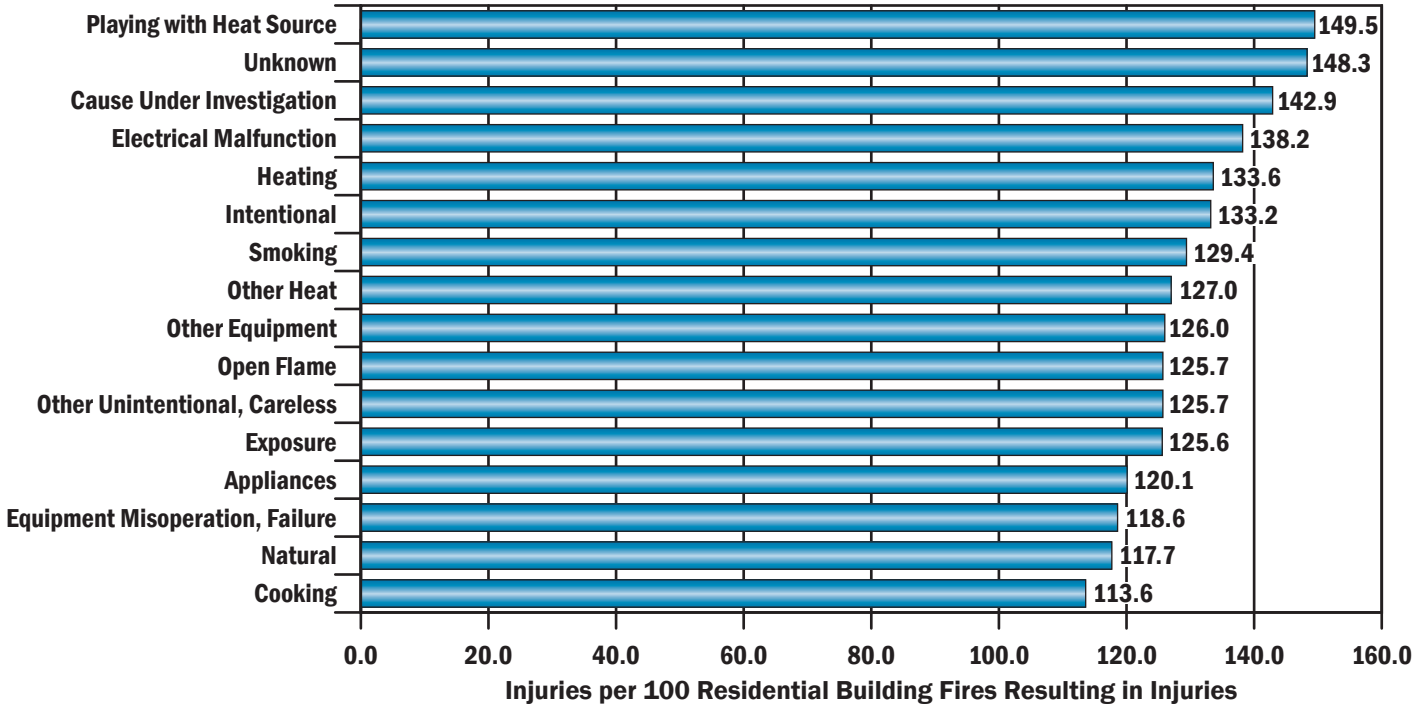
Source: NFIRS 5.0 data.

Note: Causes are listed in order of the U.S. Fire Administration Structure Fire Cause Hierarchy for ease of comparison of fire causes across different aspects of the fire problem. Fires are assigned to one of 16 cause groupings using a hierarchy of definitions, approximately as shown in the chart above. A fire is included in the highest category into which it fits. If it does not fit the top category, then the second one is considered, and if not that one, the third and so on. For example, if the fire is judged to be intentionally set and a match was used to ignite it, it is classified as intentional and not open flame because intentional is higher in the hierarchy.

Cause of Injuries per 100 Residential Building Fires Resulting in Injuries

Fires caused by playing with a heat source produced the largest number of injuries per 100 residential fires resulting in injuries — 150 injuries per 100 residential fires resulting in injuries (Figure 8). The least number of injuries — 114 injuries per 100 residential fires resulting in injuries — was caused by cooking fires.

Figure 8. Cause of Civilian Fire Injuries per 100 Residential Building Fires Resulting in Injuries (2009–2011)

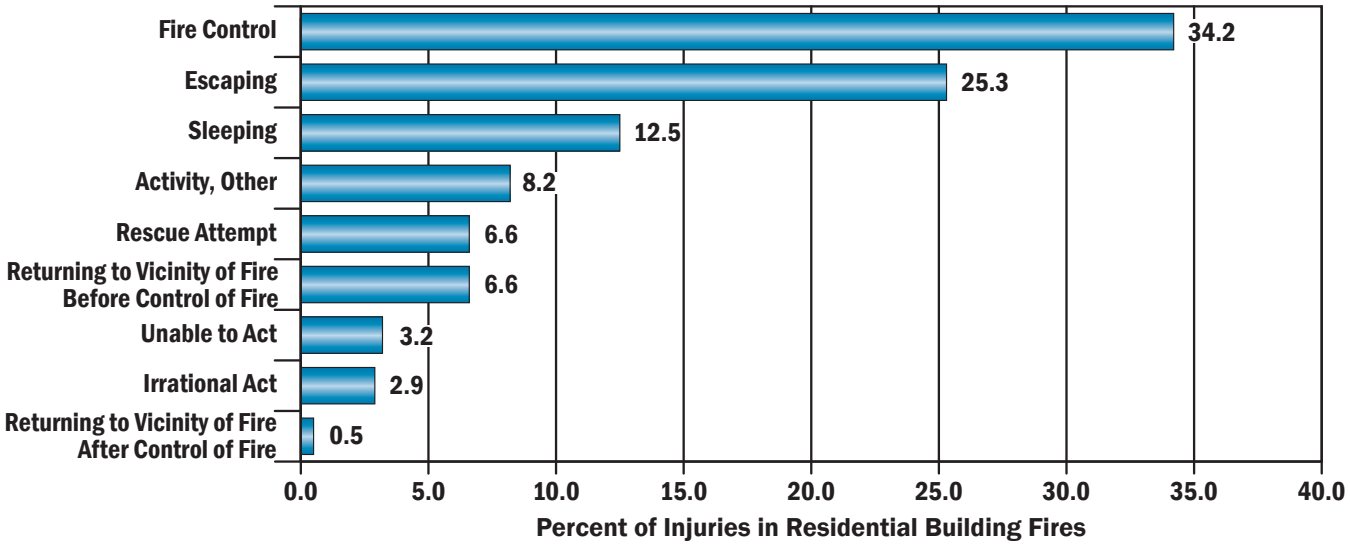


Source: NFIRS 5.0 data.

Civilian Activity When Injured

Most civilian fire injuries occurred when the victim was attempting to control the fire (34 percent), followed by attempting to escape (25 percent) and sleeping (13 percent) as shown in Figure 9. The USFA recommends leaving fighting a fire to trained firefighters. In addition, USFA recommends efforts be focused on following a preset escape plan. To escape a fire, many civilians make the mistake and flee through the area where the fire is located. The area of a fire has tremendous heat, smoke and a toxic atmosphere that can render a person unconscious. As a result, it is imperative that an escape plan be prepared and practiced. With a well-thought-out plan and multiple escape options, the chances of survival and escaping without injuries greatly increase. In addition, it has been proven that people cannot wake up from the smell of fire while sleeping. Therefore, it is also vital that smoke alarms are installed in homes to alert sleeping people to the presence of fire.[13]

Figure 9. Civilian Activity when Injured in Residential Building Fires (2009–2011)



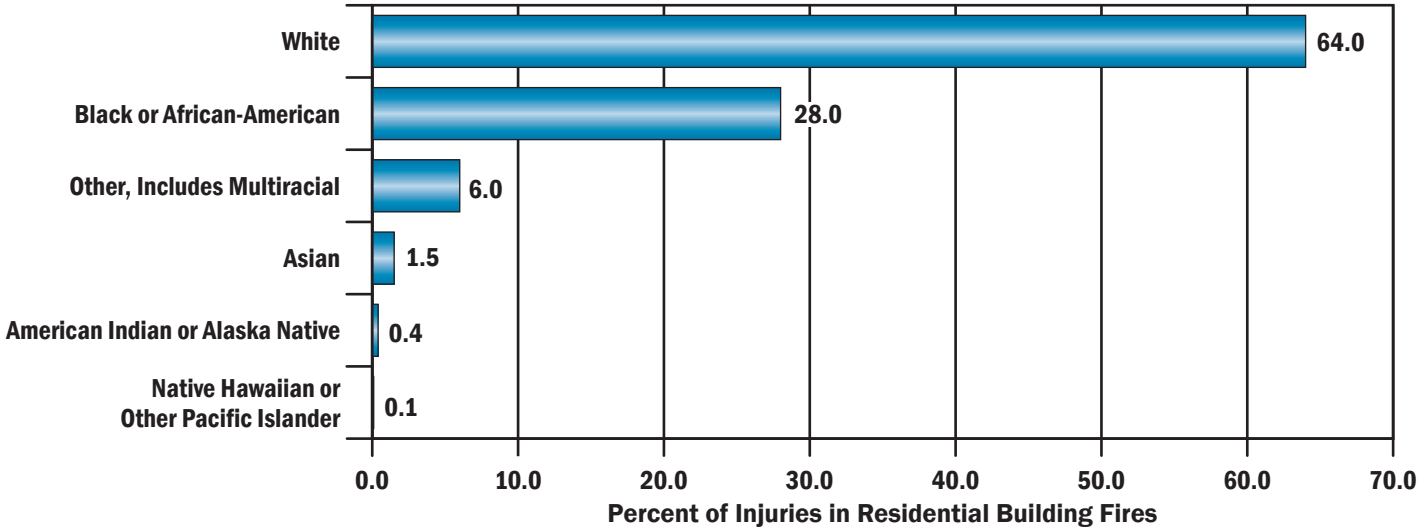
Source: NFIRS 5.0 data.
Note: Percentages computed for only those injuries where activity information was available.

Gender, Race and Ethnicity of Civilian Fire Injuries

Males accounted for 53 percent of injuries and females accounted for 47 percent of the injuries. Civilian fire injuries sorted by race showed that Whites were injured 64 percent of the time followed by Blacks or African-Americans (28 percent), other, including multiracial (6 percent), Asians (2 percent), American Indians or Alaska Natives (less than 1 percent), and Native Hawaiians or other Pacific Islanders (also less than 1 percent) (Figure 10).

The ethnicity element shows that non-Hispanics or non-Latinos were injured 87 percent of the time compared to Hispanics or Latinos (13 percent).

Figure 10. Civilian Fire Injuries in Residential Buildings by Race (2009–2011)



Source: NFIRS 5.0 data.
Note: Percentages computed for only those injuries where race information was available.

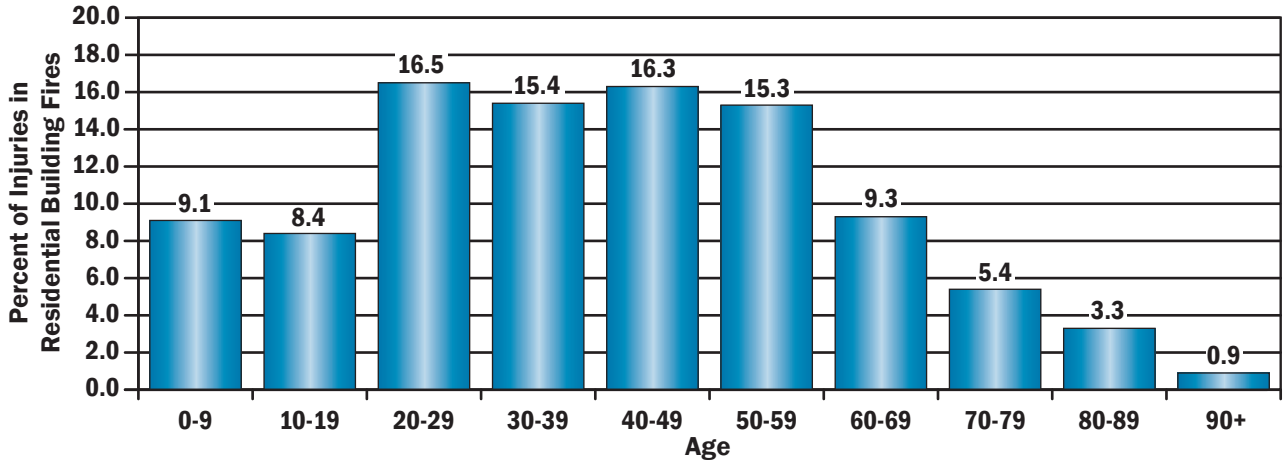
Age of Civilians Injured and Activity While Injured

Forty-eight percent of civilians injured in residential fires were between the ages of 20 and 49 (Figure 11). An additional 18 percent of those with injuries were less than 20 years old. Adults ages 50 and over accounted for 34 percent of those with injuries.

The first reaction of civilians of all ages is to try to control or escape the fire (Table 3). At the time of injury, for those aged 10-89, trying to control the fire and escaping were the two leading activities that resulted in injuries. Those aged 10-69 primarily got injured trying to control the fire (38 percent) followed by trying to escape the fire (23 percent). Those aged 70-89 primarily got injured trying to escape the fire (33 percent) followed by trying to control the fire (23 percent).

For children aged 0-9 and older adults aged 90 and over, escaping and sleeping were the two leading activities that resulted in injuries. Those aged 0-9 primarily got injured trying to escape the fire (37 percent) followed by when sleeping (26 percent). Those aged 90 and over also got injured primarily when trying to escape the fire (34 percent) followed by when sleeping (18 percent). The young and the very old are less likely to be as mobile or ready to act in a fire situation. Infants, young children and older adults may require special provisions in a fire or emergency situation. Thus, it is not surprising that those in these two age groups are less likely to attempt to control the fire. Overall, activity at the time of the injury was reported for 60 percent of the injuries.

Figure 11. Civilian Fire Injuries in Residential Buildings by Age Group (2009–2011)



Source: NFIRS 5.0 data.
Notes: 1. Percentages computed for only those injuries where age was valid.
2. Total does not add up to 100 percent due to rounding.

Table 3. Leading Activities Resulting in Civilian Fire Injuries in Residential Buildings by Age Group (Percent of Injuries Where Age and Activity Reported, 2009–2011)

Age Group	Fire Control	Escaping	Sleeping
0-9	9.3	37.1	26.0
10-19	34.6	33.0	10.0
20-29	39.8	22.0	10.0
30-39	40.2	21.7	9.7
40-49	40.1	20.9	10.3
50-59	34.7	23.2	13.7
60-69	31.2	25.4	14.8
70-79	24.2	31.0	14.5
80-89	22.2	36.9	11.9
90+	16.7	34.3	17.6
Overall	34.2	25.3	12.5

Source: NFIRS 5.0 data.
Note: Percentages computed only for those injuries where age was valid and activity was reported.

Specific Location of Fire Injury

Bedrooms (35 percent) were the leading specific location where civilian injuries occurred in residential building fires. Cooking areas, kitchens (11 percent) and common rooms such as a den, family room, living room, or lounge (9 percent) were the next leading specific locations.

While not a specific room in the home, egress areas accounted for 17 percent of injuries. Exits such as corridors, stairways and doors can get filled with smoke, fire or extreme heat making escape routes treacherous.

Examples

The following recent examples illustrate fire scenarios in which civilian fire injuries have occurred:

—January 2013: A young boy was sent to the hospital for treatment of severe burns following an early afternoon fire in northern Smith County, Texas. When the Red Springs Fire Department arrived at the scene, the home was fully engulfed with smoke that could be seen for miles. As a result, backup was called. A total of five departments battled the fire, which took about an hour and a half to contain. Officials say the cause of the fire was spilled gas in the garage ignited by a match dropped by the young boy who was injured.[14]

—January 2013: An 80-year-old woman was seriously injured in a fire at her Odessa, Texas, home. A space heater reportedly caused fibers of a chair to start smoldering. As firefighters entered the home, the air that entered with them caused the chair to burst into flames. The injured woman was taken to the hospital for treatment, but her dog died in the fire. The home reportedly did not have any working smoke alarms.[15]

—January 2013: A man in his 60s suffered smoke inhalation and internal burns when his home in Dillon, S.C., caught fire. Firefighters rescued the man from the fire and found him in serious condition. Dillon County Emergency Medical Services transported the man to the hospital where he was later flown to the Augusta Burn Center in Georgia. The fire reportedly started from a shortage in a power surge electrical meter connector.[16]

—January 2013: One adult and three children were injured after they jumped from an upper window of a North Toledo, Ohio, home as the two-story residence burned. While the fire is still under investigation, officials believe it started by a 4-year-old playing with matches. The child apparently dropped a lit match on either a couch or mattress and then ran upstairs to hide while the fire spread rapidly through the home. The Toledo Fire Department remained on-scene for about two hours. A damage estimate to the home which was built in 1915 was not available.[17]

Escape Planning for Residential Buildings

Everyone should know how to escape from his or her residence. As previously discussed, USFA recommends leaving fighting a fire to trained firefighters. In addition, USFA recommends that efforts be focused on following a preset escape plan.

A home filled with smoke is a very dangerous situation. Smoke blocks vision and the toxic gases can cause dizziness, disorientation and ultimately death. Under these conditions, one can easily become lost or trapped in the home. Unfamiliarity with exits, excessive distance to the nearest exit, or an inappropriate choice of exit can hinder a crucial escape. Many civilian fatalities and injuries occur as the victim is trying to escape. With a well-thought-out plan and multiple escape options, the chances of survival and escaping without injury greatly increase.

The first step in an escape plan is to make sure smoke alarms are installed on every level of the home and are in good working order. Plan and practice at least two escape routes for every room and have procedures in place for those who require additional help such as infants, older adults, and individuals with disabilities. For more information on preparing and practicing a fire escape plan, visit http://www.usfa.fema.gov/campaigns/smokealarms/escapeplans/index.shtm.

NFIRS Data Specifications for Civilian Fire Injuries in Residential Buildings

Data for this report were extracted from the NFIRS annual Public Data Release files for 2009, 2010 and 2011. Only version 5.0 data were extracted.

Civilian fire injuries in residential building fires are defined using:

—Aid Types 3 (mutual aid given) and 4 (automatic aid given) are excluded to avoid double counting of incidents.

—Incident Types 111–123 (excluding Incident Type 112):

Incident Type	Description
111	Building fire
113	Cooking fire, confined to container
114	Chimney or flue fire, confined to chimney or flue
115	Incinerator overload or malfunction, fire confined
116	Fuel burner/boiler malfunction, fire confined
117	Commercial compactor fire, confined to rubbish
118	Trash or rubbish fire, contained
120	Fire in mobile property used as a fixed structure, other
121	Fire in mobile home used as fixed residence
122	Fire in motor home, camper, recreational vehicle
123	Fire in portable building, fixed location

Note: Incident Types 113–118 do not specify if the structure is a building.

—Property Use series 400 which consists of the following:

Property Use	Description
400	Residential, other
419	One- or two-family dwelling
429	Multifamily dwelling
439	Boarding/Rooming house, residential hotels
449	Hotel/Motel, commercial
459	Residential board and care
460	Dormitory-type residence, other
462	Sorority house, fraternity house
464	Barracks, dormitory

—Structure Type:

—For Incident Types 113–118:

1—Enclosed building,

2—Fixed portable or mobile structure, and

Structure Type not specified (null entry).

—For Incident Types 111 and 120–123:
1—Enclosed building, and
2—Fixed portable or mobile structure.

—Civilian casualty severity: 1 (minor), 2 (moderate), 3 (severe), 4 (life threatening), and U (undetermined).

—Other civilian injuries: greater than 0.

The analyses contained in this report reflect the current methodologies used by the USFA. The USFA is committed to providing the best and most current information on the United States fire problem and continually examines its data and methodology to fulfill this goal. Because of this commitment, data collection strategies and methodological changes are possible and do occur. As a result, analyses and estimates of the fire problem may change slightly over time. Previous analyses and estimates on specific issues (or similar issues) may have used different methodologies or data definitions and may not be directly comparable to the current ones.

To request additional information or to comment on this report, visit http://apps.usfa.fema.gov/feedback/

Notes:

[1]In the NFIRS, Version 5.0, a structure is a constructed item of which a building is one type. In previous versions of NFIRS, the term "residential structure" commonly referred to buildings where people live. To coincide with this concept, the definition of a residential structure fire for NFIRS 5.0 has, therefore, changed to include only those fires where the NFIRS 5.0 Structure Type is 1 or 2 (enclosed building and fixed portable or mobile structure) with a residential property use. Such fires are referred to as "residential buildings" to distinguish these buildings from other structures on residential properties that may include fences, sheds and other uninhabitable structures. In addition, confined fire incidents that have a residential property use but do not have a structure type specified are presumed to be buildings. Nonconfined fire incidents that have a residential property use without a structure type specified are considered to be invalid incidents (structure type is a required field) and are not included.

[2]Based on analysis of residential building fire injuries since 2003, the first year residential building estimates are available, (http://www.usfa.fema.gov/statistics/estimates/index.shtm) and the National Fire Protection Association annual estimate of fire injuries (http://www.nfpa.org/itemDetail.asp?categoryID=953&itemID=23033&URL=Research/Fire%20statistics/The%20U.S.%20fire%20problem). The consistency of the percentage of residential building fire injuries leads analysts to believe this proportion has most likely been stable for some time.

[3]Civilians also include emergency personnel who are not members of the fire department, such as police officers or utility workers.

[4]NFIRS 5.0 contains both converted NFIRS 4.1 data and native NFIRS 5.0 data. This topical report includes only native 5.0 data and excludes Incident Type 110 since it is a 4.1 conversion code.

[5]National estimates are based on 2009–2011 native version 5.0 data from NFIRS, residential structure fire loss estimates from the NFPA's annual surveys of fire loss, and the USFA's residential building fire loss estimates: http://www.usfa.fema.gov/statistics/estimates/index.shtm. Fires are rounded to the nearest 100 and injuries to the nearest 25.

[6]The average fire injury rates computed from national estimates do not agree with average injury rates computed from NFIRS data alone. The fire injury rate for fires with injuries computed from national estimates is (100*(13,250/8,100))=163.6 injuries per 100 injury-producing residential building fires. The fire injury rate for all residential building fires computed from national estimates is (100*(13,250/360,900))=3.7 injuries per 100 residential building fires.

[7]"Civilian Fire Fatalities in Residential Buildings (2008–2010)," USFA, Vol. 13, Issue 1, February 2012, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i1.pdf.

[8]For the purposes of this report, the time of the fire alarm is used as an approximation for the general time the fire started. However, in NFIRS, it is the time the fire was reported to the fire department.

[9]"Heating Fires in Residential Buildings (2008–2010)," USFA, Vol. 13, Issue 8, September 2012, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i8.pdf.

[10]Total does not add up to 79 percent due to rounding.

[11] "Doctors: smoke inhalation victim can seem fine, go into lung failure suddenly," Sheryl Ubelacker, EMS Responder, (Toronto, Canada), http://www.emsworld.com/news/10341024/doctors-smoke-inhalation-victim-can-seem-fine-go-into-lung-failure-suddenly.

[12] The USFA Structure Fire Cause Methodology was used to determine the cause of residential building fires resulting in injuries: http://www.usfa.fema.gov/fireservice/nfirs/tools/fire_cause_category_matrix.shtm.

[13] "Scents will not rouse us from slumber, says new Brown University Study," Science Daily, May 2004, (Providence, RI), http://www.sciencedaily.com/releases/2004/05/040518075747.htm.

[14] Brett Collar and Shaley Sanders, "One Person Injured, Home Heavily Damaged in Saturday Fire," www.kltv.com, January 14, 2013, http://www.kltv.com/story/20570933/crews-on-the-scene-of-house-fire-in-northern-smith-county (accessed January 16, 2013).

[15] Karl Rundgren, "Elderly Odessa Woman Critically Injured in House Fire," permianbasin360.com, January 10, 2013, http://permianbasin360.com/fulltext?nxd_id=243152 (accessed January 16, 2013).

[16] Tonya Brown, "Man Injured in House Fire," www.carolinalive.com, January 8, 2013, http://www.carolinalive.com/news/story.aspx?id=845182 (accessed January 16, 2013).

[17] "Four People Injured, Jumped from Upper Window in North Toledo House Fire," www.toledoblade.com, January 5, 2013, http://www.toledoblade.com/Police-Fire/2013/01/04/Toledo-firefighters-respond-to-North-Toledo-fire.html (accessed January 16, 2013).