Cooking Fires in Residential Buildings (2008–2010)

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 (USFA's) National Fire Incident Reporting System (NFIRS). 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

- On average, an estimated 164,500 cooking fires in residential buildings occur each year in the United States.
- Cooking was, by far, the leading cause of all residential building fires and injuries.
- Residential building cooking fires occurred mainly in the evening hours from 4 to 9 p.m., peaking from 5 to 8 p.m., accounting for 26 percent of the fires.
- Residential building cooking fires peaked in November at 10 percent and declined to the lowest point during the summer months from June to August.
- Confined fires, those fires involving the contents of a cooking vessel without fire extension beyond the vessel, accounted for 94 percent of residential building cooking fires.
- Oil, fat and grease (51 percent) were the leading types of material ignited in nonconfined cooking fires in residential buildings.

From 2008 to 2010, an estimated average of 164,500 cooking fires in residential buildings occurred in the United States each year and resulted in an estimated annual average of 110 deaths, 3,525 injuries, and $309 million in property loss.[1,2,3] The term **cooking fires** includes those fires that were caused by stoves, ovens, fixed and portable warming units, deep fat fryers, and open grills, as well as those fires that are confined to the cooking vessel.[4]

From 2008 to 2010, cooking was, by far, the leading cause of all residential building fires and accounted for 45 percent of all residential building fires responded to by fire departments across the nation.[5] Additionally, cooking was the leading cause of all residential building fire injuries. Annual estimates of residential building cooking fires and their associated losses for 2008 to 2010 are presented in Table 1.[6]

Table 1. National Estimates of Residential Building Cooking Fires and Losses by Year (2008–2010)

Year	Residential Building Cooking Fires	Residential Building Cooking Fire Deaths	Residential Building Cooking Fire Injuries	Residential Building Cooking Fire Dollar Loss
2008	162,600	85	3,475	$296,300,000
2009	164,900	105	3,350	$313,000,000
2010	166,000	140	3,750	$316,800,000

Sources: NFIRS 5.0, residential structure fire-loss estimates from the National Fire Protection Association's annual surveys of fire loss, and U.S. Fire Administration's residential building fire-loss estimates.
Notes: 1. Fires are rounded to the nearest 100, deaths to the nearest 5, injuries to the nearest 25, and loss to the nearest hundred thousand dollars.
2. The 2008 and 2009 dollar-loss values were adjusted to their equivalent 2010 dollar-loss values to account for inflation.

This topical report addresses the characteristics of residential building cooking fires reported to the National Fire Incident Reporting System (NFIRS) from 2008 to 2010. For the purpose of this report, the term "residential cooking fires" is synonymous with "residential building cooking fires," as residential cooking fires commonly mean those fires caused by cooking that occur in buildings. "Residential cooking fires" is used throughout the body of this report; the findings, tables, charts, headings and footnotes reflect the full category, "residential building cooking fires."

Type of Fire

Building fires are divided into two classes of severity in NFIRS: "confined fires," which are fires confined to certain types of equipment or objects, and "nonconfined fires," which are not. Confined building fires are small fire incidents that are more limited in extent, staying within pots, fireplaces or certain other noncombustible containers.[7] Confined fires rarely result in serious injury or large content losses and are expected to have no significant accompanying property losses due to flame damage.[8] Ninety-four percent of residential cooking fires were confined fires as shown in Table 2. By comparison, from 2008 to 2010, 49 percent of all residential building fires were confined fires.[9]

Table 2. Residential Building Cooking Fires by Type of Incident (2008–2010)

Incident Type	Percent
Nonconfined fires	6.0
Confined fires	94.0
Total	100.0

Source: NFIRS 5.0.

Loss Measures

Table 3 presents losses, averaged over the three-year period from 2008 to 2010, for residential cooking fires and all other residential building fires (i.e., excluding cooking fires) reported to NFIRS.[10] The average loss of fatalities, injuries and dollar loss for residential cooking fires was less than those for all other residential building fires. This most likely is attributed to the fact that 94 percent of residential cooking fires are confined fires that result in little or no loss. As can be expected, the average losses associated with nonconfined residential cooking fires were notably high since nonconfined fires generally are large fires resulting in serious injury and large content losses.

Table 3. Loss Measures for Residential Building Cooking Fires (Three-year average, 2008–2010)

Measure	Residential Building Cooking Fires	**Confined** Residential Building Cooking Fires	**Nonconfined** Residential Building Cooking Fires	Residential Building Fires (Excluding Cooking Fires)
Average Loss:				
Fatalities/1,000 Fires	0.3	0.0	5.6	6.2
Injuries/1,000 Fires	15.9	10.8	95.7	35.0
Dollar Loss/Fire	$1,140	$180	$16,160	$21,330

Source: NFIRS 5.0.

Notes:
1. No deaths in confined fires were reported to NFIRS during 2008-2010; the resulting loss of 0.0 fatalities per 1,000 fires reflects only data reported to NFIRS.
2. Average loss for fatalities and injuries is computed per 1,000 fires; average dollar loss is computed ***per fire*** and is rounded to the nearest $10.
3. When calculating the average dollar loss per fire for 2008-2010, the 2008 and 2009 dollar-loss values were adjusted to their equivalent 2010 dollar-loss values to account for inflation.
4. The category "Residential Building Fires (Excluding Cooking Fires)" does not include fires of unknown cause.

Property Use

Table 4 presents the percentage distribution of residential cooking fires by property use (i.e., one- and two-family residential buildings, multifamily residential buildings, and other residential buildings).[11] Cooking fires were almost evenly distributed between one- and two-family residences and multifamily residences. Multifamily dwellings accounted for 46 percent of residential cooking fires and one- and two-family residences accounted for an additional 45 percent of residential cooking fires. By contrast, one- and two-family residences represented 66 percent of all residential building fires, and multifamily dwellings accounted for 28 percent of residential fires for the same period.[12]

Table 4. Residential Building Cooking Fires by Property Use (2008–2010)

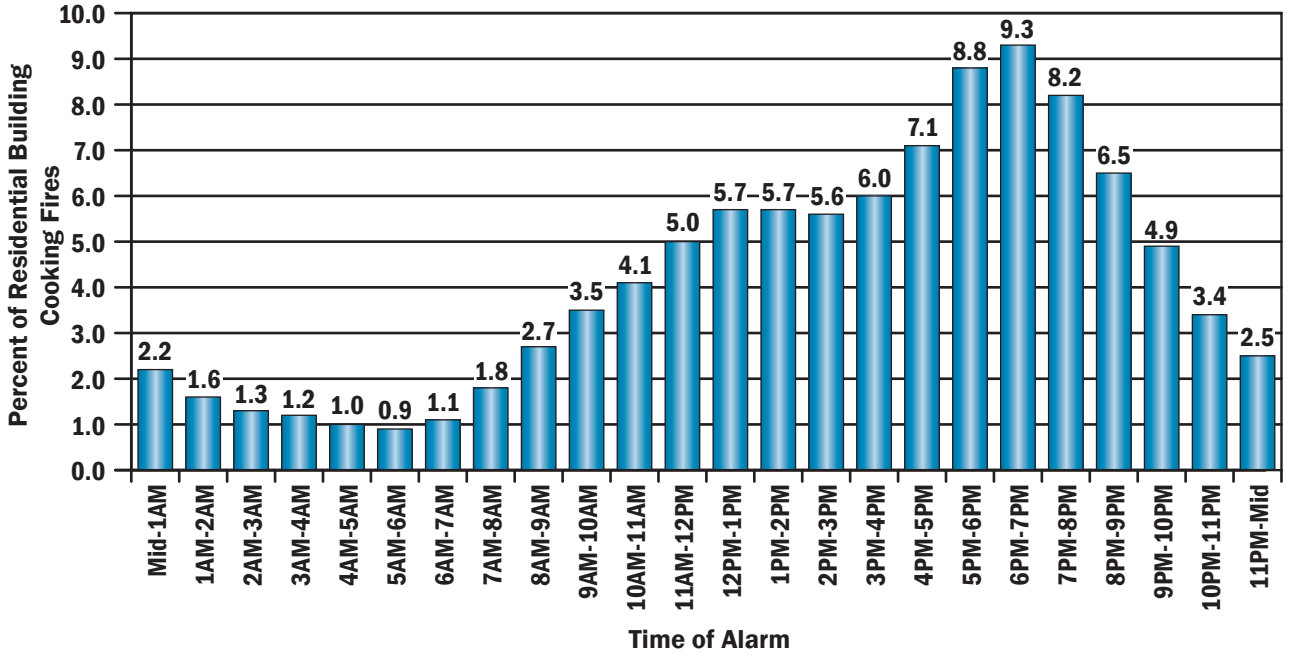
Property Use	Percent of Fires
Multifamily residential buildings	46.3
One- and two-family residential buildings	45.4
Other residential buildings	2.5
Dormitory-type residences	1.9
Boarding/Rooming houses	1.4
Hotels and motels	1.1
Residential board and care, excludes nursing homes	1.0
Barracks	0.3
Sorority and fraternity houses	0.1
Total	100.0

Source: NFIRS 5.0.

When Residential Building Cooking Fires Occur

As shown in Figure 1, residential cooking fires occurred mainly in the evening hours, 4 to 9 p.m., peaking from 5 to 8 p.m. when many people are preparing the evening meal.[13] This three-hour peak period accounted for 26 percent of the fires. Residential cooking fires declined throughout the night and early morning and reached their lowest point during the morning hours from 4 to 6 a.m. Fires then steadily increased and plateaued over the lunch hours from noon to 2 p.m. The five-hour evening period from 4 to 9 p.m. accounted for 40 percent of all residential cooking fires, and the two-hour morning period from 4 to 6 a.m. accounted for nearly 2 percent. Small confined cooking fires dominated the alarm profile and produced the pronounced peaks and valleys; the number of larger, nonconfined fires, grouped by time of alarm, was only slightly less variable.

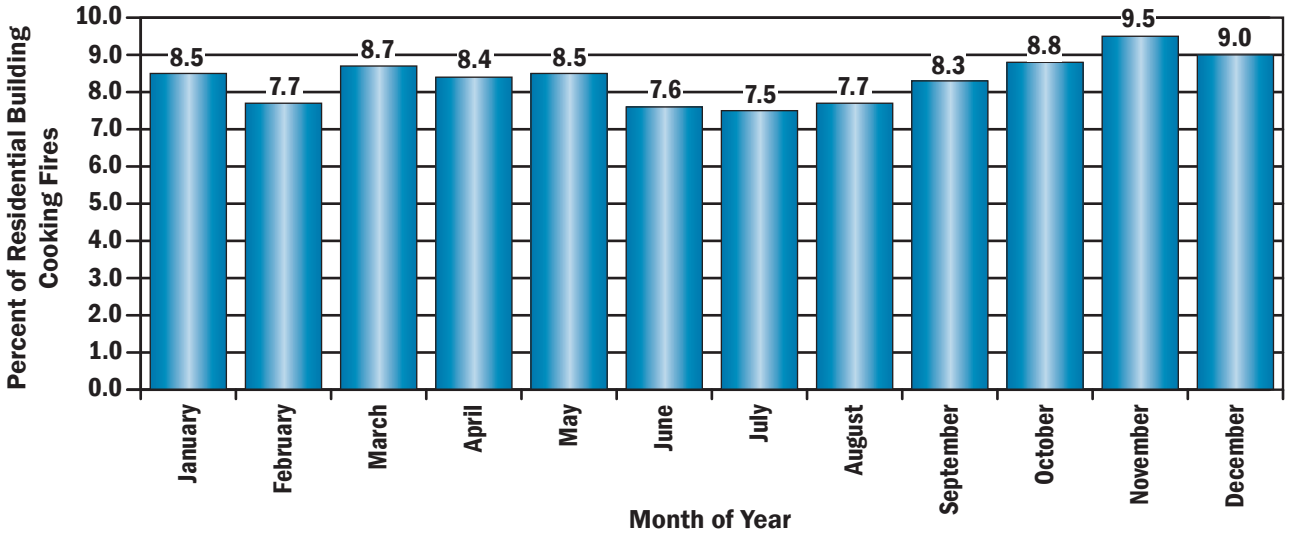
Figure 1. Residential Building Cooking Fires by Time of Alarm (2008–2010)



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

As expected, residential cooking fires were most prevalent during the months of major holidays, when the cooking of large holiday meals is most common (Figure 2). The incidence of cooking fires peaked in November at 10 percent. On average, the greatest number of residential cooking fires occurred on Thanksgiving Day, Christmas Eve and Christmas Day, respectively. Fire incidence declined to the lowest point during the summer months from June to August, corresponding to the assumption that there are decreased cooking activities in residential buildings during the summer. Generally, both confined and nonconfined residential cooking fires followed this overall pattern of winter peaks and summer lows.

Figure 2. Residential Building Cooking Fires by Month (2008-2010)

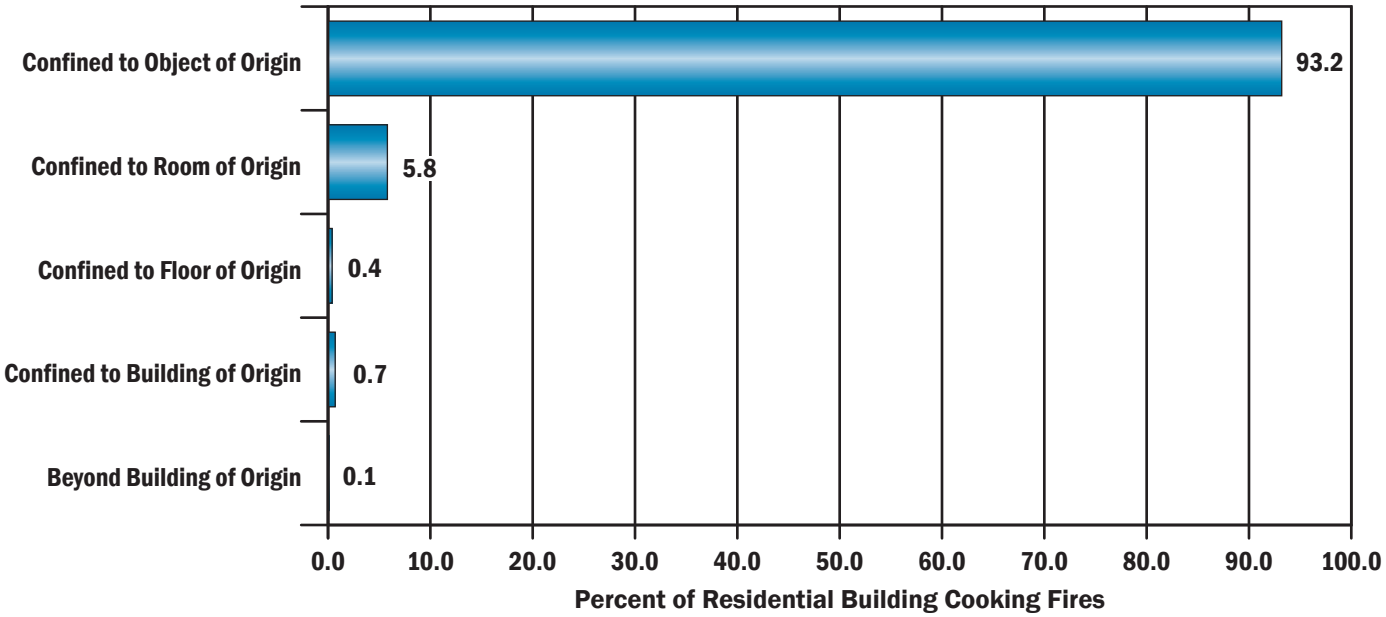


Source: NFIRS 5.0.
Note: Total does not add to 100 percent due to rounding.

Fire Spread in Residential Building Cooking Fires

Ninety-three percent of residential cooking fires were confined to the object of origin (Figure 3). An overwhelming majority of these fires were coded as confined fires in NFIRS — 99 percent of residential cooking fires confined to the object of origin were coded as confined fires. Relatively few fires, 1 percent, extended beyond the room of origin.

Figure 3. Extent of Fire Spread in Residential Building Cooking Fires (2008-2010)



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

Confined Fires

NFIRS allows abbreviated reporting for confined fires and many reporting details of these fires are not required, nor are they reported (not all fires confined to the object of origin are counted as confined fires).[14] Confined residential cooking fires accounted for a large majority (94 percent) of residential cooking fire incidents and dominated the time of alarm profile. The numbers of confined fires were greatest during the hours of 5 to 8 p.m. when they accounted for 94 percent of all residential cooking fires that occurred during this period. Confined residential cooking fires peaked in November, generally declined through May, and were lowest during the summer months of June through August.

Nonconfined Fires

The next sections of this topical report address nonconfined residential cooking fires, the larger and more serious fires, where more detailed fire data are available as they are required to be reported in NFIRS.

Where Nonconfined Residential Building Cooking Fires Start (Area of Fire Origin)

As would be expected, one area in the home — the cooking area or kitchen — accounted for nearly all (94 percent) nonconfined residential cooking fires. Most of the remaining fires occurred in outside areas adjoining residential buildings such as balconies, porches, patios and garages (Table 5).

Note that these areas of origin do not include areas associated with confined residential cooking fires. As cooking is the leading cause of all residential fires at 45 percent, it is not surprising that kitchens are the leading area of fire origin. The percentages are not identical between cooking and kitchen fires because some cooking fires start outside the kitchen, some areas of origin for cooking fires are not reported (as is the case in most confined cooking fires), and some kitchen fires are not due to cooking. In fact, only 27 percent of nonconfined residential fires that start in the kitchen are cooking fires. Other unspecified, unintentional or careless actions account for 20 percent of kitchen fires, and nonheat-producing equipment that malfunctions or fails also accounts for an additional 20 percent of kitchen fires.[15]

Table 5. Leading Areas of Fire Origin in Nonconfined Residential Building Cooking Fires (2008–2010)

Area of Origin	Percent of Nonconfined Residential Building Cooking Fires (Unknowns Apportioned)
Cooking area, kitchen	94.4
Exterior balcony, unenclosed porch	1.1
Courtyard, patio, terrace. Includes screened-in porches	0.6
Vehicle storage area: garage, carport	0.6
Exterior wall surface	0.5

Source: NFIRS 5.0.

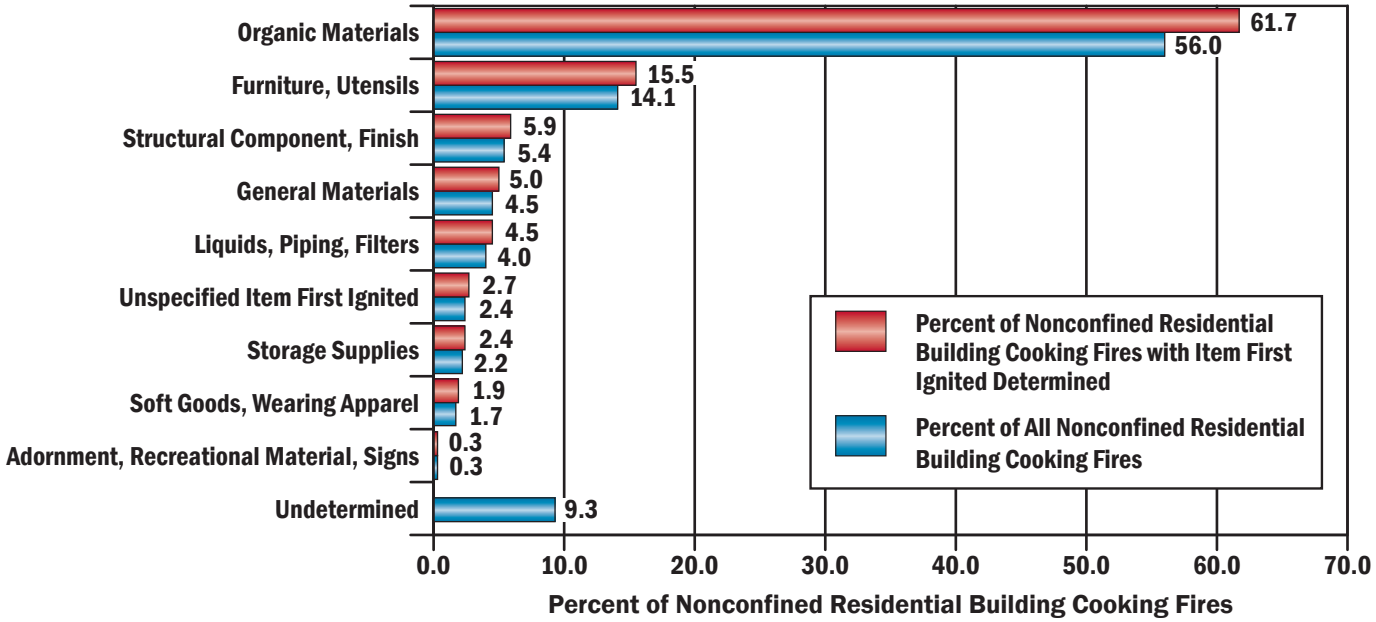
What Ignites First in Nonconfined Residential Building Cooking Fires

Sixty-two percent of the items first ignited in nonconfined residential cooking fires fell under the "organic materials" category (Figure 4). This category includes cooking materials comprising edible materials for man or animal. The second leading category was "furniture, utensils," a category that includes items such as appliance housings or casings and household utensils, including kitchen and cleaning utensils. "Furniture, utensils" accounted for 16 percent of nonconfined residential cooking fires. At 6 percent, "structural component, finish" was the third leading category of items first ignited.

Cooking materials (61 percent), appliance housing or casing (6 percent), cabinetry (5 percent), and household utensils (4 percent) were the specific items most often first ignited in nonconfined residential cooking fires.

Specifically, oil, fat and grease were the leading types of material ignited in nonconfined residential cooking fires (51 percent). This is not surprising as oil and grease are highly flammable and can splatter or spill during cooking. Foods or starches (11 percent) and plastics (11 percent) such as appliance casings or cooking utensils were the next most common materials ignited.

Figure 4. Item First Ignited in Nonconfined Residential Building Cooking Fires by Major Category (2008–2010)



Source: NFIRS 5.0.
Note: Totals do not add to 100 percent due to rounding.

Equipment Involved in Ignition of Nonconfined Residential Building Cooking Fires

Three types of equipment played a leading role in the ignition of 87 percent of nonconfined residential cooking fires. These leading types of equipment involved in ignition of nonconfined residential cooking fires, as shown in Table 6, were ranges or kitchen stoves (74 percent), ovens including rotisseries (7 percent), and heating stoves (6 percent).[16] Of interest, microwave ovens were involved in igniting only 4 percent of nonconfined residential cooking fires.

Table 6. Leading Equipment Involved in Ignition of Nonconfined Residential Building Cooking Fires (2008–2010)

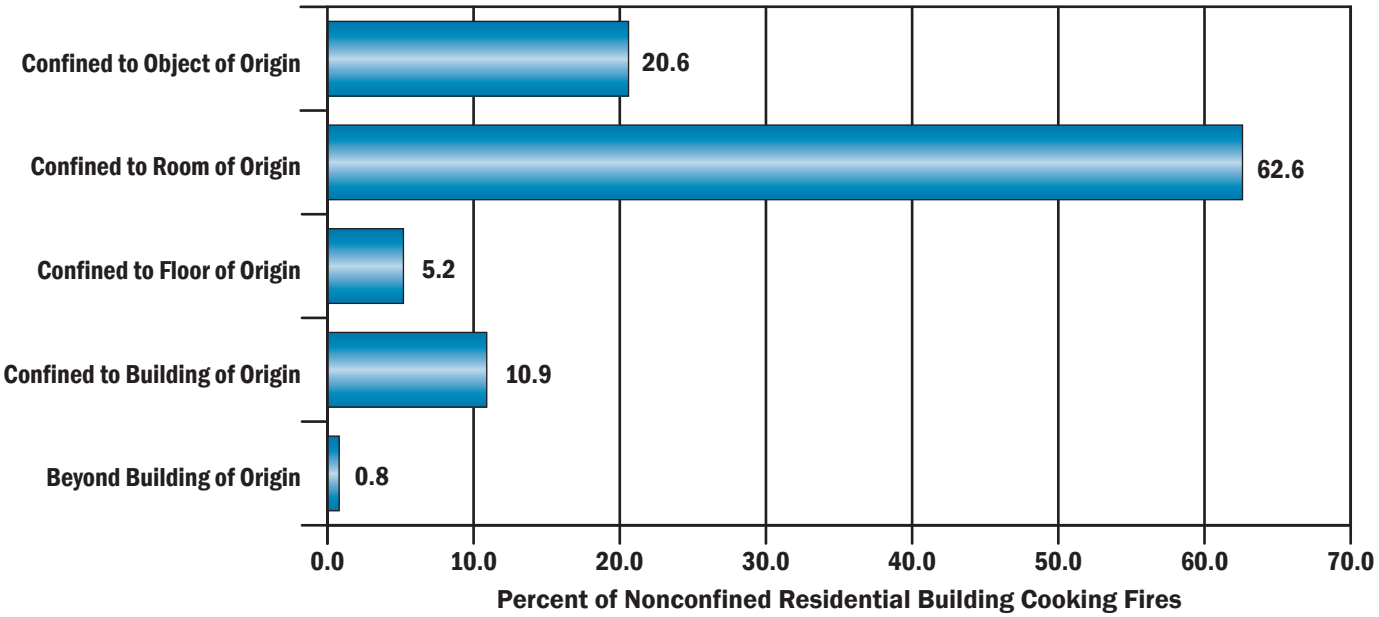
Equipment Involved in Ignition	Percent of Nonconfined Residential Building Cooking Fires
Range or kitchen stove	73.5
Oven, rotisserie	7.1
Heating stove	6.3

Source: NFIRS 5.0.

Fire Spread in Nonconfined Residential Building Cooking Fires

The majority of nonconfined residential cooking fires, 83 percent, were limited to the object or room of fire origin (Figure 5). The fire spread profile for nonconfined residential cooking fires was much different than the fire spread profile for all nonconfined residential fires with only 53 percent of nonconfined residential fires being confined to the room or object of origin.[17]

Figure 5. Extent of Fire Spread in Nonconfined Residential Building Cooking Fires (2008–2010)



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

Factors Contributing to Ignition in Nonconfined Residential Building Cooking Fires

Table 7 shows the categories of factors contributing to ignition for nonconfined residential cooking fires. "Operational deficiency" was the leading category contributing to the ignition of nonconfined residential cooking fires (60 percent). "Misuse of material or product" was the second leading category in 28 percent of residential cooking fires and "electrical failure, malfunction" was the third leading category in 7 percent of the fires. These three categories played a role in 95 percent of nonconfined residential cooking fires.

Careless cooking activities are typically responsible for cooking fires. When a factor was noted as contributing to the ignition of the fire, unattended equipment, such as people leaving food on the stove or in the oven and forgetting about it, accounted for 43 percent of nonconfined residential cooking fires. Unattended equipment was, by far, the leading specific factor contributing to ignition and was nearly four times greater than the second leading specific factor, heat source too close to combustibles (12 percent).

Table 7. Factors Contributing to Ignition for Nonconfined Residential Building Cooking Fires by Major Category (Where Factors Contributing to Ignition Specified, 2008–2010)

Factor Contributing to Ignition Category	Percent of Nonconfined Residential Building Cooking Fires (Unknowns Apportioned)
Operational deficiency	60.3
Misuse of material or product	28.4
Electrical failure, malfunction	6.6
Mechanical failure, malfunction	5.1
Other factors contributing to ignition	4.3
Fire spread or control	0.9
Design, manufacture, installation deficiency	0.5
Natural condition	0.3

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

Suppression/Alerting Systems in Residential Building Cooking Fires

Technologies to detect and extinguish fires have been a major contributor in the drop in fire fatalities and injuries over the past 30 years. Smoke alarms are now present in the majority of residential buildings. In addition, the use of residential sprinklers is widely supported by the fire service and is gaining support within residential communities.

Smoke alarm data are available for both confined and nonconfined fires, although for confined fires, the data are very limited in scope. As different levels of data are collected on smoke alarms in confined and nonconfined fires, the analyses are performed separately. Note that the data presented in Tables 8 to 10 are the raw counts from the NFIRS data set and are not scaled to national estimates of smoke alarms in residential cooking fires. In addition, NFIRS does not allow for the determination of the type of smoke alarm (i.e., photoelectric or ionization) or the location of the smoke alarm with respect to the area of fire origin.

Smoke Alarms in Nonconfined Residential Building Cooking Fires

Smoke alarms were present in 66 percent of nonconfined residential cooking fires (Table 8). In 16 percent of nonconfined residential cooking fires, there were no smoke alarms present. In another 18 percent of these fires, firefighters were unable to determine if a smoke alarm was present. Thus, smoke alarms were potentially missing in between 16 and 34 percent of these fires with the ability to spread and possibly result in fatalities.

Table 8. Presence of Smoke Alarms in Nonconfined Residential Building Cooking Fires (2008-2010)

Presence of Smoke Alarms	Percent
Present	66.2
None present	15.5
Undetermined	18.4
Total	100.0

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

While only 2 percent of all nonconfined residential cooking fires occurred in residential buildings that are **not** currently or routinely occupied, these occupancies — buildings under construction, undergoing major renovation, vacant and the like — are unlikely to have alerting and suppression systems that are in place and, if in place, that operate. In fact, only 32 percent of all nonconfined cooking fires in unoccupied residential buildings were reported as having smoke alarms that operated. As a result, the detailed smoke alarm analyses in the next section focus on nonconfined cooking fires in occupied residential buildings only.

Smoke Alarms in Nonconfined Cooking Fires in Occupied Residential Buildings

Smoke alarms were reported as present in 66 percent of nonconfined cooking fires in occupied residential buildings (Table 9). In 15 percent of nonconfined cooking fires in occupied residential buildings, there were no smoke alarms present. In another 18 percent of these fires, firefighters were unable to determine if a smoke alarm was present; unfortunately, in 18 percent of the fires where the presence of a smoke alarm was undetermined, either the flames involved the building of origin or spread beyond it. Since the fires were so large and destructive, it is unlikely the presence of a smoke alarm could be determined.

When smoke alarms were present (66 percent) and the alarm operational status is considered, the percentage of smoke alarms reported as present consisted of:

—Smoke alarms present and operated — 45 percent.

—Present but did not operate — 14 percent (alarm failed to operate, 10 percent; fire too small, 5 percent).[18]

—Present, but operational status unknown — 7 percent.

When the subset of incidents where smoke alarms were reported as present are analyzed separately and as a whole, smoke alarms were reported to have operated in 68 percent of the incidents. Smoke alarms failed to operate in 14 percent of the incidents, and in another 7 percent, the fire was too small to activate the alarm. The operational status of the alarm was undetermined in 10 percent of these incidents.[19]

Table 9. NFIRS Smoke Alarm Data for Nonconfined Cooking Fires in Occupied Residential Buildings (2008–2010)

Presence of Smoke Alarms	Smoke Alarm Operational Status	Smoke Alarm Effectiveness	Count	Percent
Present	Fire too small to activate smoke alarm		786	4.7
	Smoke alarm operated	Smoke alarm alerted occupants, occupants responded	5,929	35.2
		Smoke alarm alerted occupants, occupants failed to respond	233	1.4
		No occupants	680	4.0
		Smoke alarm failed to alert occupants	141	0.8
		Undetermined	636	3.8
	Smoke alarm failed to operate		1,619	9.6
	Undetermined		1,160	6.9
None present			2,575	15.3
Undetermined			3,075	18.3
Total incidents			16,834	100.0

Source: NFIRS 5.0.
Note: The data presented in this table are raw data counts from the NFIRS data set. They do not represent national estimates of smoke alarms in nonconfined residential building cooking fires. They are presented for informational purposes.

Smoke Alarms in Confined Residential Building Cooking Fires

Less information about smoke alarm status is collected for confined fires, but the data still give important insights about the effectiveness of alerting occupants in these types of fires. It is especially important to look at the limited information provided for these fires since a large majority (94 percent) of residential cooking fires were confined fires. The analyses presented here do not differentiate between occupied and unoccupied residential buildings, as this data detail is not required when reporting confined fires in NFIRS; however, an assumption may be made that confined fires are fires in occupied housing as these types of fires are unlikely to be reported in residential buildings that are not occupied.

Smoke alarms alerted occupants in 52 percent of confined residential cooking fires (Table 10). Occupants were not alerted by the smoke alarm in 14 percent of the confined fires.[20] In 33 percent of these confined fires, the smoke alarm effectiveness was unknown.

Table 10. NFIRS Smoke Alarm Data for Confined Residential Building Cooking Fires (2008–2010)

Smoke Alarm Effectiveness	Count	Percent
Smoke alarm alerted occupants	140,796	52.3
Smoke alarm did not alert occupants	38,431	14.3
Unknown	89,921	33.4
Total incidents	269,148	100.0

Source: NFIRS 5.0.
Note: The data presented in this table are raw data counts from the NFIRS data set. They do not represent national estimates of smoke alarms in confined residential building cooking fires. They are presented for informational purposes.

Automatic Extinguishment Systems in Nonconfined Residential Building Cooking Fires

Automatic extinguishing system (AES) data are available for both confined and nonconfined fires, although for confined fires, the data are also very limited in scope. In confined residential building fires, an AES was present in 1 percent of reported incidents.[21,22] In addition, the analyses presented here do not differentiate between occupied and unoccupied housing, as extremely few reported fires in unoccupied housing have AESs present (occupied housing accounted for 98 percent of reported nonconfined residential cooking incidents with full AESs).

Full or partial AESs were present in only 7 percent of nonconfined residential cooking fires (Table 11). While the use of residential sprinklers is widely supported by the fire service and is gaining support within residential communities, the lack of AESs is not unexpected as they are not yet widely installed. In fact, only 3 percent of **all** nonconfined residential building fires had AESs present.[23]

Table 11. NFIRS Automatic Extinguishing System Data for Nonconfined Residential Building Cooking Fires (2008–2010)

AES Presence	Count	Percent
AES present	1,081	6.3
Partial system present	43	0.3
AES not present	15,578	90.9
Unknown	437	2.5
Total incidents	17,139	100.0

Source: NFIRS 5.0.

Note: The data presented in this table are raw data counts from the NFIRS data set. They do not represent national estimates of AESs in nonconfined residential building cooking fires. They are presented for informational purposes.

Examples

The following are recent examples of residential cooking fires reported by the media:

—October 2012: A man suffered first- and second-degree burns over 9 percent of his body in a cooking fire at his Billings, Mont., apartment. The Billings Fire Department responded to the small fire incident at about 2 p.m. The home's occupant was cooking and the food caught on fire. The man's injuries were not life-threatening. The fire, declared accidental, caused about $1,000 in damage to the building.[24]

—October 2012: A Mine Hill Township, N.J., residence suffered major damage when a kitchen fire extended from the stove to a wall behind it before spreading to other parts of the home. The fire ignited on a stovetop about 4:40 p.m. when a resident was defrosting a chicken. More than two dozen firefighters from six departments battled the blaze. The fire was under control in less than an hour; however, firefighters remained on scene until after 7 p.m., looking for hotspots that might flare up. The occupant and her dog were uninjured in the fire which was still under investigation.[25]

—October 2012: A Hueytown, Ala., woman's death in a house fire was ruled accidental after her body was discovered in a bedroom of the home. The fire started as a result of food left cooking on the stove. The woman's boyfriend returned home that morning and found a small fire had burned itself out in the kitchen. The Jefferson County Coroner said it appeared that the victim died from smoke inhalation.[26]

NFIRS Data Specifications for Residential Building Cooking Fires

Data for this report were extracted from the NFIRS annual Public Data Release (PDR) files for 2008, 2009 and 2010. Only Version 5.0 data were extracted.

Residential building cooking fires are defined as:

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

—Incident Types 111, 113, 118, 120-123:[27]

Incident Type	Description
111	Building fire
113	Cooking fire, confined to container
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

Notes: 1. Incident Types 113 and 118 do not specify if the structure is a building.
2. Incident Type 112 was included in data analyses prior to 2008 as previous analyses showed that Incident Types 111 and 112 were used interchangeably. As of 2008, Incident Type 112 is excluded.

—Property use 400 to 464:

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 and 118:
—1 – Enclosed building.
—2 – Fixed portable or mobile structure.
—Structure Type not specified (null entry).

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

—The U.S. Fire Administration (USFA) Structure Fire Cause Methodology was used to determine residential building cooking fire incidents.[28]

—Heating fire incidents involving heating stoves and food were believed to be cooking fires. As a result, fires with equipment involved in ignition code 124 (stove, heating) and item first ignited code 76 (cooking materials; includes edible materials for man or animal; excludes cooking utensils) were included in this analysis.

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] National estimates are based on 2008-2010 native version 5.0 data from the National Fire Incident Reporting System (NFIRS) and residential structure fire loss estimates from the National Fire Protection Association's (NFPA) annual surveys of fire loss, and the U.S. Fire Administration's (USFA's) residential buildings fire-loss estimates. Fires are rounded to the nearest 100, deaths to the nearest 5, injuries to the nearest 25, and loss to the nearest million dollars.

[2] In 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.

[3] The term "residential buildings" includes what are commonly referred to as "homes," whether they are one- or two-family dwellings or multifamily buildings. It also includes manufactured housing, hotels and motels, residential hotels, dormitories, assisted living facilities, and halfway houses — residences for formerly institutionalized individuals (patients with mental disabilities, drug addicts, or those formerly incarcerated) that are designed to facilitate their readjustment to private life. The term "residential buildings" does not include institutions such as prisons, nursing homes, juvenile care facilities, or hospitals, even though people may reside in these facilities for short or long periods of time.

[4] For purposes of this analysis, residential building cooking fires are defined as those residential buildings (defined above) for which the cause of the fire was determined to be cooking. However, for the confined fire portion of residential building fires, only those with Incident Types 113 and 118 were included; all other confined fire types were excluded.

[5] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[6] "2010 Residential Building Cooking Fire Trends," USFA Fire Estimate Summary Series, http://www.usfa.fema.gov/downloads/pdf/statistics/res_bldg_cooking_fire_trends.pdf (released December 2011).

[7] In NFIRS, confined fires are defined by Incident Type codes 113-118.

[8] NFIRS distinguishes between "content" and "property" loss. Content loss includes loss to the contents of a structure due to damage by fire, smoke, water and overhaul. Property loss includes losses to the structure itself or to the property itself. Total loss is the sum of the content loss and the property loss. For confined fires, the expectation is that the fire did not spread beyond the container, and hence, there was no property damage (damage to the structure itself) from the flames. There could be, however, property damage as a result of smoke, water and overhaul.

[9] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[10] The average fire death and fire injury loss rates computed from the national estimates do not agree with average fire death and fire injury loss rates computed from NFIRS data alone. The fire death rate computed from national estimates is (1,000*(110/164,500)) = 0.7 deaths per 1,000 residential building cooking fires, and the fire injury rate is (1,000*(3,525/164,500)) = 21.4 injuries per 1,000 residential building cooking fires.

[11] "One- and two-family residential buildings" include detached dwellings, manufactured homes, mobile homes not in transit, and duplexes. "Multifamily residential buildings" include apartments, townhouses, rowhouses, condominiums and other tenement properties. "Other residential buildings" include boarding/rooming houses, hotel/motels, residential board and care facilities, dormitory-type residences, sorority/fraternity houses, and barracks.

[12] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[13] 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.

[14] As noted previously, confined building fires are small fire incidents that are limited in scope, confined to noncombustible containers, rarely result in serious injury or large content losses, and are expected to have no significant accompanying property losses due to flame damage. In NFIRS, confined fires are defined by Incident Type codes 113-118.

[15] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[16] In NFIRS, the term "heating stove" refers to heating equipment and is generally classified as a heating cause; however, for some cooking fire incidents, it was determined that the Equipment Involved in Ignition data element was coded erroneously as a "heating stove" rather than a "range or kitchen stove." For all of these incidents, the Item First Ignited data element was coded as cooking materials. Additionally, 99 percent of the "heating stove" fires occurred in the kitchen.

[17] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[18] Total does not add to 14 percent due to rounding.

[19] Total does not add to 100 percent due to rounding.

[20] In confined fires, the entry "smoke alarm did not alert occupants" can mean: no smoke alarm was present, the smoke alarm was present but did not operate, the smoke alarm was present and operated but the occupant was already aware of the fire, or there were no occupants present at the time of the fire.

[21] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[22] As confined fires codes are designed to capture fires contained to noncombustible containers, it is not recommended to code a fire incident as a small, low- or no-loss confined fire incident if the automatic extinguishing system operated and contained the fire as a result. The preferred method is to code the fire as a standard fire incident with fire spread confined to the object of origin and provide the relevant information on AES presence and operation.

[23] "Residential Building Fires (2008-2010)," USFA, April 2012, Volume 13, Issue 2, http://www.usfa.fema.gov/downloads/pdf/statistics/v13i2.pdf.

[24] "Man suffers burns in cooking fire," billingsgazette.com, October 18, 2012, http://billingsgazette.com/news/local/man-suffers-burns-in-cooking-fire/article_cd7e579d-3bfd-5f57-a09b-24af3b6407fd.html (accessed October 19, 2012).

[25] "Mine Hill woman, dog escape blaze," dailyrecord.com, October 19, 2012, http://dailyrecord.com/apps/pbcs.dll/article?AID=2012310180039 (accessed November 6, 2012).

[26] Brianne Britzius, "Hueytown fire-related death ruled accidental," myfoxal.com, October 18, 2012, http://www.myfoxal.com/story/19858441/hueytown-fire-related-death-ruled-accidental (accessed October 22, 2012).

[27] Incident Types: 114, 115, 116 and 117 were excluded because, by definition, these Incident Types are not cooking fires.

[28] The USFA Structure Fire Cause Methodology is designed for structure fires of which buildings are a subset. The cause definitions can be found at http://www.usfa.fema.gov/fireservice/nfirs/tools/fire_cause_category_matrix.shtm.