

# **HOME COOKING FIRE PATTERNS AND TRENDS**

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## **Abstract**

In 2003, cooking equipment was involved in 118,700 reported home structure fires, the largest share for any major cause. Of these fires, 75,300 were reported as fires confined to a cooking vessel (meaning the interior of a cooking device or appliance).

In 2003, cooking equipment structure fires in homes resulted in 250 civilian deaths, 3,880 civilian injuries, and \$512 million in direct property damage.

Most home cooking fires involve the range, and this is also true for losses in home cooking fires. The leading factor in home cooking fires is equipment unattended (one-third of home cooking structure fires, excluding confined fires, and two-fifths of associated civilian deaths), followed by combustibles too close to heat source and unintentionally turning on or not turning off the device.

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## Executive Summary

In 2003, cooking equipment was involved in 118,700 reported home structure fires, the largest share for any major cause. Of these fires, 75,300 were reported as fires confined to a cooking vessel (meaning the interior of a cooking device or appliance). The apparent increase in home cooking fires in recent years is entirely due to confined fires, many of which would probably have been coded as something other than fire prior to 1999.

In addition to the 118,700 home structure fires involving cooking equipment, there were an estimated 3,700 reported outdoor home grill fires in 2003.

In 2003, cooking equipment structure fires in homes resulted in 250 civilian deaths, 3,880 civilian injuries, and \$512 million in direct property damage. Cooking also ranks first among major causes in number of home civilian fire injuries.

Most home cooking fires involve the range, and this is also true for losses in home cooking fires. The leading factor in home cooking fires is equipment unattended (one-third of home cooking structure fires, excluding confined fires, and two-fifths of associated civilian deaths), followed by combustibles too close to heat source and unintentionally turning on or not turning off the device.

Portable cooking or warming devices rank third among cooking device groups, behind ranges and ovens, in number of home cooking fires (and second in associated civilian deaths). The majority of these fires specifically involve toasters, toaster ovens, or counter-top broilers. Food warmers and hot plates account for most of the deaths in this category.

Microwave ovens stand out for the number of scald burn injuries reported to hospital emergency rooms but not for thermal burns reported to hospital emergency rooms or for civilian fire deaths and injuries, all of which are dominated by ranges.

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## Overview

“Cooking” refers to food preparation through the application of heat. Cooking equipment therefore does not include all food processing equipment. For example, electric can openers and food processors are excluded. In a typical home, most if not all cooking and other food processing equipment is stored and used in the kitchen (with grills as a notable exception), but cooking-related fires need not occur in the kitchen, and kitchen fires need not involve cooking or other food processing equipment. A “confined” cooking fire is a fire wholly confined to the interior of a piece of cooking equipment; for example, fire remains inside the oven, microwave oven, toaster, toaster oven, or, most frequently, pan on the stove.

**In 2003, cooking equipment was involved in an estimated 118,700 reported home structure fires, the largest share for any major cause.**

Of these fires, 75,300 were reported as confined cooking fires. (See Tables 1-2.) The “confined fire” option is a feature of NFIRS Version 5.0, which was first used in 1999. (See the appendix for overview of the National Fire Incident Reporting System (NFIRS) and its use in national estimates of fire statistics.) Analysis of detailed patterns of home cooking fires is largely limited to the 43,400 fires for which details were solicited, if not always provided. Nearly half of the confined cooking fires are probably fires that would previously have been coded as something other than fire (e.g., smoke scare) but are now coded accurately as fires because of the reduced paperwork requirements for documenting confined fires. The other half probably would have been coded as fires under previous coding rules.

Roughly 10% of the confined cooking fires include specific equipment information. This is considered sufficient to estimate how much they would add to the estimates. Here are the leading devices coded as 1999-2003 confined cooking fires:

### Percent by Device for 1999-2003 Confined Cooking Fires

Device	Fires	Civilian Injuries	Direct Property Damage
Range or stovetop, including oven	53%	75%	53%
Oven or rotisserie	23%	5%	9%
Heating stove	10%	10%	18%
Microwave oven	5%	2%	3%
Toaster or toaster oven	3%	1%	4%
Grill	1%	1%	1%
Wok, frying pan, or skillet	1%	3%	3%
Deep fryer	1%	2%	1%

Note the large share for heating stoves. This suggests several possibilities. There may be significant use of heating stoves as a heated surface for cooking. There may be frequent miscoding, as by someone who intends to code a cookstove but fails to notice that the only device with “stove” in its name is a heating stove. None of the very few deaths associated with confined fires had device coded. Based on this analysis, the tables exclude reported home confined cooking fires and associated losses when they were attributed to devices that are not cooking equipment.

In addition to the 118,700 home structure fires involving cooking equipment, there were an estimated 3,700 outdoor home grill fires in 2003.

**In 2003, cooking equipment structure fires in homes resulted in an estimated 250 civilian deaths, 3,880 civilian injuries, and \$512 million in direct property damage.**

Cooking also ranks first in number of civilian fire injuries. Home cooking fires have been increasing sharply, but it is impossible to know what the trend would be if statistics could be adjusted for confined fires that would have been coded as non-fires without the simplified reporting available with confined fires.

The last four years have included the three lowest totals for civilian deaths due to home cooking fires in structures in the 24 years studied. The last three years have had the three lowest totals for civilian injuries due to home cooking fires in structures in the 24 years studied. (See Tables 2-5.)

In addition to the structure fire losses, the 3,700 estimated outdoor home grill fires in 2003 caused an estimated 12 civilian fire injuries and \$0.15 million dollars in direct property damage. There were no reported deaths in these fires.

Home cooking fires relative to population are comparable in Canada to those in the U.S., given that the population of Canada is roughly one-ninth that of the U.S. and that Canada's statistics include all buildings, not just homes. Per capita rates of cooking fires are lower in Canada in recent years, because the numbers have declined more in Canada. However, per capita rates of cooking fire deaths are higher in Canada. (See Table 1B.)

Home cooking fires in the United Kingdom (U.K.) are comparable to those in the U.S. in the early 1990s, given that the population of the U.K. is roughly one-fourth that of the U.S. Increasing trends in the U.K. are complicated by their changes in definition in 1994, which expanded the scope of incidents and casualties included. However, home cooking fire injuries were higher per capita in the U.K. in the early 1990s before the changes were made. (See Table 1C.)

Cooking fires in Japan are much fewer, relative to population, than in the U.S. (There is some largely offsetting mismatching of categories. Japan's statistics include all structures, not just homes, but exclude cooking equipment other than the range.) The population ratio is roughly 2-to-1 for U.S.-to-Japan, but the cooking fire ratio is roughly 20-to-1, dropping to 3-to-1 for civilian deaths and 8-to-1 for property damage. (See Table 1D.)

**Nearly all home cooking fires occur in the kitchen, but there are a substantial number of kitchen fires that do not involve cooking.**

The non-cooking kitchen fires are mostly the kinds of fires that can occur in any room – e.g., heating, intentional, electrical distribution, child-playing – as opposed to fires involving other equipment used in food preparation, storage, or disposal, such as food processors or refrigerators. (See Table 6.)

**Most home cooking fires (66% in 2003) involve the range and this is also true for losses in those fires.**

Tables 2-5 show the breakdown by type of cooking equipment for home cooking fires and associated losses from 1980 to 2003.

Beginning in 1999, NFIRS Version 5.0 provides additional detail that, by 2003, the majority of participating fire departments were using. Here is an overview of the new vs. old equipment categories.

<b>Type of Equipment-NFIRS Version 5.0</b>	<b>Type of Equipment-NFIRS Version 4.1</b>
600. Unclassified kitchen or cooking equipment. In 2003, cooking equipment accounted for 95-100% of all fires and fire casualties coded directly in NFIRS 5.0 as specific cooking or other food processing or handling equipment. Therefore, there is little error involved in assigning all the code 600 fires to cooking equipment.	20 or 29. Unknown-type or unclassified cooking equipment. Data from 1994-1998 are used in the analysis in this report to split fires coded 600 into counterparts to the old 20 and 29.
631. Coffee maker or teapot	25. Portable cooking or warming device
632. Food warmer or hot plate	25. Portable cooking or warming device
633. Kettle	25. Portable cooking or warming device
634. Popcorn popper	25. Portable cooking or warming device
635. Pressure cooker or canner	25. Portable cooking or warming device
636. Slow cooker	25. Portable cooking or warming device
637. Toaster, toaster oven, or countertop broiler	25. Portable cooking or warming device
638. Waffle iron or griddle	25. Portable cooking or warming device
639. Wok, frying pan or skillet	25. Portable cooking or warming device
641. Breadmaking machine	25. Portable cooking or warming device
642. Deep fryer	24. Deep fat fryer
643. Grill, hibachi, or barbecue	26. Open-fired grill
644. Microwave oven	29. These devices could have been coded in up to four places in Version 4.1. Therefore, they are grouped with unclassified cooking equipment for calculation.
645. Oven or rotisserie	22. Fixed, stationary oven, including rotisserie
646. Range with or without an oven or cooking surface, including counter-mounted stove.	21. Fixed, stationary surface unit, including stove
647. Steam table or warming drawer/table	23. Fixed, stationary food warming appliance
654. Grease hood or duct exhaust fan	27. Grease hood or duct
Incident type 113. Structure fire involving contents of cooking vessel with no fire extension beyond vessel.	New code, could correspond to any code in old 20-29 series.

In this report, estimates by type of device are made after mapping the Version 5.0 device groups into Version 4.1 groups, as indicated in the second column. Analyses for a specific device group

are calculated using percents based on only Version 5.0 data. In the next edition of this report, estimates by type of device will be based on the Version 5.0 data as well.

The following types of equipment, involved in food preparation but not cooking, are now distinguishable in NFIRS Version 5.0.

- Blender, juicer, food processor, or mixer
- Coffee grinder
- Can opener
- Knife
- Knife sharpener
- Dishwater
- Freezer separate from refrigerator
- Garbage disposer
- Ice maker separate from refrigerator
- Refrigerator or refrigerator/freezer

### **Frying dominates U.K. and New Zealand home cooking fires, followed by boiling.**

U.K. statistics track fires involving “chip or fat pan fires.” “Chips” are what Americans call French fries and the French call “pommes frites,” literally fried potatoes. In the U.K. in 2003, chip or fat pan fires constituted 30% of home cooking fires, 40% of home cooking fire deaths, and 51% of home cooking fire injuries, with all shares representing declines from most previous years.\*

A special study of kitchen fires in the Bay-Waikato fire region of New Zealand was conducted by Key Research and Marketing, Ltd., and published in October 1998. The study examined 70 incidents involving fire department response from the first half of 1997. Based on 51 incidents where the manner of cooking was specified, the study found 65% frying (35% shallow, 29% deep), 35% boiling, 8% baking, 6% roasting, 4% grilling, and 2% toasting. (Multiple answers were allowed, which is why the percentages add to more than 100%.)

### **Cooking fires also account for 12,344,000 unreported home fires per year, or 55.3% of all unreported fires.\*\***

That represents an average of more than one kitchen cooking fire for every eight occupied housing units per year, a high rate of potentially hazardous situations. (Other kitchen fires added another 4,710,000 fires, or 21.1% of the total, leaving only 23.6% of all unreported fires occurring outside the kitchen.)

The overwhelming majority of these unreported kitchen cooking fires involved no dollar damage at all, as they stopped with the cooking materials that were first ignited, and only 5.2% of these fires caused someone an injury or illness such as headache or dizziness. Nevertheless, these small percentages translate into 642,000 cases of injury or illness per year, or roughly 165 times the number of injuries in home cooking fires that were reported in 2003. (The estimated total

\*Analysis of data from Office of the Deputy Prime Minister, *Fire Statistics – United Kingdom*, 2004, Tables 2-3 and 10-11.

\*\*Audits & Surveys, Inc., *1984 National Sample Survey of Unreported Residential Fires: Final Technical Report*, Prepared for U.S. Consumer Product Safety Commission, Contract No. C-83-1239, Princeton, NJ: Audits & Surveys, Inc., June 13, 1985.

direct property damage for unreported home cooking fires probably adds less than 50% to the total for home cooking fires reported to U.S. fire departments.) This underscores the fact that injuries are the principal reason for concern with home cooking fires.

In 2002-2003, England and Wales (i.e., the United Kingdom excluding Scotland and Northern Ireland) had an estimated 201,000 cooking fires, including those reported and unreported to fire authorities.\* These represented 54% of the total estimated fires, a percentage that is very similar to the 1984 U.S. results. Because England and Wales report about 85% of U.K. fires each year, the 201,000 cooking fires in England and Wales are about eight times the number of cooking fires reported to fire authorities. By contrast, the U.S. estimate was more than 100 times the total reported to fire departments. The difference is probably attributable to the U.K. use of a 12-month recall period and the U.S. use of a one-month/recall period, which is much more in line with the limits of reliable recall.

### **Special studies have provided additional information on range fires and possible technological strategies to reduce them:**

- By a two-to-one margin, most fire ignitions were estimated to have occurred in the first 15 minutes of cooking.\*\* There was some variation by type of cooking, with boiling having a much lower percentage of ignitions early in the cooking period. The cook was outside the kitchen for six of seven fires studied.\*\*
- The risk of a range fire was lowest in households with incomes at or above the national median, but risk differed little based on the education level of the head of household.\*\*
- A good indication of incipient fire is the temperature on the bottom of the pan, which suggests the use of thermocouples as the detection technology for a new control technology. Gas sensors looked promising in the first two phases, conducted by NIST, but the third phase, conducted by CPSC, found gas sensor responses were too variable and occurred too close in time to fire ignition to be used for control technology without improvement. Smoke particulate detectors fared worst of all in all phases.\*\*\*

A study of 55 New Zealand home cooking fires provides additional insight into the variety of circumstances that lead cooking to be unattended.\*\*\*\*

- Some fires were unattended because the person engaged in cooking was in another room. These were the reasons:

\* Office of the Deputy Prime Minister, *Fires in the Home: Findings from the 2002/3 British Crime Survey*, February 2004, pp. 9, 11.

\*\* Linda Smith, Ron Monticone, and Brenda Gillum, *Range Fires*, U.S. Consumer Product Safety Commission, Hazard Analysis Division, Bethesda, MD, 1999, pp. 34, 36, and 40.

\*\*\* Eric L. Johnsson, *Study of Technology for Detecting Pre-Ignition Conditions of Cooking-Related Fires Associated with Electric and Gas Ranges and Cooktops, Final Report*, NISTIR 5950, National Institute Standards and Technology, Building and Fire Research Laboratory, Gaithersburg, MD, January 1998; and *Study of Technology for Detecting Pre-Ignition Conditions of Cooking Related Fires Associated with Electric and Gas Ranges: Phase III*, U.S. Consumer Product Safety Commission, Directorates for Laboratory Sciences and Engineering Sciences, Washington, DC, February 23, 1998.

\*\*\*\* "New Zealand Fire Service, Bay-Waikito Fire Region, Kitchen Fire Research – Summary of Findings," Key Research & Marketing, Ltd., 20 October 1998.

- Forgot something was cooking
  - Distracted by children
  - Distracted by other adults
  - Distracted by television
  - Distracted by unexpected phone calls
  - Distracted by unexpected visitors
  - Did not realize they had turned a cooking appliance on
  - Went to take a bath with a roast in the oven
  - Went to bed not realizing crumbs were smoldering in the toaster
  - Left to stoke a fire
- Some fires were unattended because the person engaged in cooking was outside the building but still on the property. These were the reasons:
    - Distracted by other people in the house
    - Distracted by an animal
    - Forgot something was cooking
    - Thought they had turned the cooking device off
  - Some fires were unattended because the person engaged in cooking was completely off the property. These were the reasons:
    - Forgot something was cooking
    - Inadvertently turned a cooking device back on
    - Forgot to turn the heat down as intended
    - Left a crock pot that suffered an electrical failure
    - Left insufficient liquid in a pressure cooker

Other steps that the authors of the New Zealand study concluded might reduce the risks associated with unattended cooking include (a) regular cleaning of cooking equipment so that there are no cooking materials, food items, or grease on or around cooking equipment; (b) making sure not to overfill pots so as to reduce the risk of boil-over; (c) heating materials at the indicated temperature settings rather than at higher settings, which may cook food faster but may add to the risk if cooking is left unattended; and (d) making sure combustibles of all kinds – rags and pot holders, curtain, bags, etc. – are kept well away from cooking surfaces.

The leading factor contributing to ignition for home cooking fires is equipment unattended, which is cited for one-third of home cooking fires. Equipment unattended accounted for 34% of home cooking fires in 1999-2003 (excluding fires reported as confined fires) and for one-third of associated civilian injuries and direct property damage, as well as two-fifths (42%) of associated civilian deaths. All these percentages are substantially lower than were seen before the advent of NFIRS Version 5.0. One possibility is that some of the fires previously coded as unattended are now being coded under unattended person in the new data element for human factor contributing to ignition; some of the switched case may involve unattended people (e.g., children or older adults in need of supervision or monitoring), but some may involve unattended equipment.

The next leading factors for home cooking fires are heat source too close to combustibles and unintentionally turned on or not turned off, which combine for one-fifth of home smoking fire. As noted

earlier, some special studies have pointed to unintentionally not turning off cooking equipment as a circumstance involved in unattended cooking.

Playing with fire accounts for less than 1% of home cooking fires but for 10% of associated civilian deaths.

Using the equipment for purposes other than those it is intended for also accounted for less than 1% of home cooking fires but for 5% of associated civilian deaths.

Various types of mechanical or electrical failures combined for 10-15% of home cooking fires. And two codes that might be related to failure to keep areas clean – abandoned or discarded material, failure to clean – combine for just under 10% of home cooking fires.

**Cooking materials were the leading item first ignited in home structure fires in 1999-2002.**

They accounted for 91,400 reported home structure fires per year (25% of the total), and associated losses of 140 civilian deaths (5% of the total) and 3,600 civilian injuries per year (23% of the total).\*

**Clothing ignitions are a type of fire in which even the unreported fires can involve serious consequences.**

Ranges accounted for 30% of 1999-2002 home structure fire deaths beginning with ignition of clothing on a person, or 36 deaths a year.\* Cooking equipment also accounted for 20% of 1999-2002 home structure fire injuries beginning with ignition of clothing on a person, or 30 injuries a year. Clothing precautions are needed around any cooking equipment with exposed hot surfaces, with or without open flame.

**For home cooking fires where activity when injured was known, 55% of 1999-2003 non-fatal home cooking fire injuries occurred while firefighting.**

The firefighting share of civilian injuries was much higher for home cooking fires than for other fires. Only 11% of 1999-2003 non-fatal injuries in home fires other than cooking fires occurred while firefighting, compared to the 55% firefighting share for home cooking fires. Also, 11% of fatal injuries in home cooking fires occurred while firefighting, compared to 1% of all other fatal home fire injuries.

Cooking fires stand out as a type of fire where civilian firefighting is common (as shown by the 200-to-1 ratio of unreported to reported fires, a far higher ratio than for any other type of fire). The high percentage of cooking fire injuries occurring while victims are attempting to fight the fire points to a need for more education on how and when to safely fight cooking fires.

**In 1950, households cooking with gas outnumbered those cooking with electricity by 4-to-1, but by 2003, households cooking with electricity outnumbered those cooking with gas by 3-to-2.**

Over the same period, cooking with other fuels (e.g., wood or coal) declined from one-fourth of households to nearly zero. (See Table 7.)

\* Kimberly D. Rohr, *Products First Ignited in U.S. Home Fires*, Quincy, MA: NFPA Fire Analysis & Research Division, April 2005.

**Electric ranges or stoves have a higher risk of fire incidents, civilian injuries, and direct property damage (but not civilian deaths), relative to the number of households using electricity for cooking, than gas ranges or stoves.**

In 1999-2003, the risk of fire per million households was 47% higher for electric stoves. (See Table 8.) The risk of civilian injury due to fire was 118% higher in electric stoves. The risk of property damage due to fire was 133% higher in electric stoves. The risk of fire deaths for gas stoves was 15% higher.

**The risks associated with fires are not significantly changed by the inclusion of electrocution deaths or non-fire carbon monoxide deaths, except for some small appliances.**

Electrocution deaths have been estimated by the U.S. Consumer Product Safety Commission\* for 1995-2002, excluding 1999 when no report was issued. In 2002, electric ranges and range hoods were combined in an undifferentiated “other” category.

**Estimated Electrocution Deaths**

Year	Microwave oven	Electric-powered range	Range hood
1995	10	0	0
1996	12	0	0
1997	4	0	0
1998	12	4	0
1999	NA	NA	NA
2000	7	0	2
2001	3	2	2
2002	4	NA	NA
Average	7.4	1.0	0.7

NA = Not available

Non-fire carbon monoxide deaths are shown in Table 9. Electrocution deaths are roughly equal to home fire deaths for microwave ovens in 1999-2003. Range hood electrocution deaths average as much as or more than range hood home fire deaths. And charcoal grill non-fire carbon monoxide deaths dwarf the fire deaths for these devices. With these exceptions, these non-fire deaths are negligible compared to the fire deaths for all other cooking equipment.

**Non-fire burns are an important concern in safe cooking.**

The slow cool-down of electrical cooking devices creates a risk. Another risk is overheated food, a situation that can easily occur when using microwave ovens, where even a few extra seconds can make a large difference in the heat of the food or drink. Cooking equipment is involved in thousands of thermal burns (principally contact burns) and thousands of scald burns reported to hospital emergency rooms. Cookware and tableware are associated with thousands more thermal or scald burn injuries, principally scalds. Overall, one-third of scald burns and one-third of

\* Risana T. Chowdhury, 2002 *Electrocutions Associated With Consumer Products*, U.S. Consumer Product Safety Commission, <http://www.cpsc.gov>, Table 2, and earlier reports in series, available on same website.

thermal burns involve cooking equipment, cookware, or tableware. One out of 11 anoxia injuries involve gas-fueled cooking equipment, adding up to thousands more injuries. Some may be fire-related, but some are caused by the gas itself.

To provide further context on the relative severity of these injuries reported to hospital emergency rooms, one of every 25 injuries reported to hospital emergency rooms in 2004 led to hospitalization, compared to only one of every 47 scald burns and only one in every 33 thermal burns. One of every 18 anoxia injuries led to hospitalization.

It is important to set cooking times carefully and to test the heat of cooked food and hot drinks before consuming them, especially if they are being prepared for more vulnerable people, like infants. And when removing the cover from a container just after microwaving food in it, keep your face and hands clear of the path of any escaping steam. Also, keep pot handles turned in to avoid spills and possible scalds. Keep children and pets away from cooking areas.

**Proper use of cooking equipment also means knowing when *not* to use the equipment.**

An example would be the use of stoves or ovens to heat the kitchen or even a home. There have been anecdotal accounts of such misuse, which poses a fire risk, although no estimate of the frequency of fires from such causes is possible at present. Suffice it to say that cooking equipment should be used only for cooking and only in accordance with the instructions provided by the manufacturers.

**Table 1. Home Cooking Structure Fire Problem, by Year**

**A. U.S.A., 1980-2003 (Numbers in parentheses exclude fires reported as confined fires.)**

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)			
							As Reported		In 2003 Dollars	
1980	136,200		420		4,500		\$208		\$466	
1981	141,900		450		4,650		\$669*		\$1,351*	
1982	125,700		410		5,020		\$360*		\$684*	
1983	114,400		390		5,030		\$285		\$526	
1984	112,700		410		4,350		\$314		\$555	
1985	115,000		370		4,330		\$294		\$502	
1986	113,700		400		4,390		\$319		\$536	
1987	110,100		330		4,810		\$318		\$515	
1988	110,800		370		5,120		\$374		\$581	
1989	103,800		370		4,770		\$368		\$546	
1990	104,500		340		5,230		\$388		\$546	
1991	105,900		270		5,290		\$505**		\$682**	
1992	112,600		270		5,180		\$363		\$476	
1993	111,100		330		5,660		\$452		\$575	
1994	102,700		290		4,770		\$501*		\$621*	
1995	97,400		280		4,740		\$358		\$432	
1996	99,500		370		4,810		\$414		\$486	
1997	102,100		270		5,020		\$448		\$513	
1998	94,000		400		4,660		\$419		\$473	
1999	96,800	(93,300)	330	(330)	4,180	(4,140)	\$538	(\$536)	\$594	(\$592)
2000	93,700	(81,800)	220	(220)	4,500	(4,340)	\$565	(\$557)	\$604	(\$595)
2001	106,800	(69,300)	360	(360)	4,180	(3,510)	\$452	(\$442)	\$469	(\$459)
2002	111,200	(57,700)	170	(170)	3,850	(3,010)	\$489	(\$477)	\$499	(\$488)
2003	118,700	(43,400)	250	(250)	3,880	(2,940)	\$512	(\$495)	\$512	(\$495)

\* The 1981, 1982, and 1994 totals are inflated by one miscoded fire each, respectively, a stove fire, an unclassified cooking equipment fire, and an oven fire.

\*\* All direct property damage figures for 1991 are inflated by the Oakland, California firestorm (October 1991), a fire in a wildland/urban interface area that destroyed more than 2,800 homes and accounted for \$1.5 billion dollars in direct property damage. The inflated figures result from national estimates procedure difficulties.

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten and direct property damage to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. After 1998, fires include increasing number of confined cooking fires, many of which might not have been coded as fires prior to 1999. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 1. Home Cooking Fire Problem (Continued)**

**B. Canada, 1990-1999, not limited to homes**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)		
				In Canadian Dollars	In U.S. Dollars	In 2003 U.S. Dollars
1990	10,800	63	801	\$139	\$119	\$168
1991	10,900	54	753	\$116	\$102	\$137
1992	10,400	48	997	\$121	\$100	\$132
1993	9,400	88	741	\$99	\$76	\$97
1994	9,800	63	871	\$100	\$73	\$91
1995	9,400	55	805	\$107	\$78	\$94
1996	8,800	51	781	\$104	\$76	\$89
1997	7,300	64	666	\$111	\$80	\$92
1998	7,900	39	642	\$92	\$62	\$70
1999	8,200	57	555	\$122	\$82	\$90

**C. United Kingdom, 1990-2004, dwellings (corresponds to U.S. homes)**

Year	Fires	Civilian Deaths	Civilian Injuries
1990	24,500	60	3,760
1991	25,400	70	4,320
1992	25,800	70	4,350
1993	27,000	50	4,680
1994	28,200	70	5,610
1995	29,700	80	5,820
1996	31,400	90	6,490
1997	33,200	90	7,230
1998	33,200	80	7,240
1999	34,000	90	7,060
2000	34,300	70	6,680
2001	31,200	80	6,330
2002	29,300	70	6,110
2003	28,800	90	5,760
2004	27,600	60	5,500

Note: Statistics include a proportional share of fires with undetermined cause. U.K. damage statistics are not available. Japanese injury statistics are not available. U.K. statistics in and after 1994 include some incidents (e.g., heat or smoke damage only) that were not included previously and are not included in other countries' statistics.

Source: Council of Canadian Fire Marshals and Fire Commissioners, *Annual Report – Fire Losses in Canada*, published and forthcoming; Office of the Deputy Prime Minister, *Fire Statistics – United Kingdom, 2004*, Tables 3 and 11 foreign exchange rates from OECD and U.S. Department of Commerce at <http://www.ita.doc.gov/industry/otea/usfth/aggregate/H04T34.html>, accessed July 5, 2006; consumer price index used to adjust for inflation.

**Table 1. Home Cooking Fire Problem (Continued)**

**D. Japan, 1990-2003, Kitchen range in any structure**

Year	Fires	Civilian Deaths	Direct Property Damage (in Millions)		
			In Japanese Yen	In U.S. Dollars	In 2003 U.S. Dollars
1990	6,600	72	10,546	\$73	\$103
1991	6,100	76	11,201	\$83	\$112
1992	5,700	80	10,919	\$86	\$113
1993	5,700	80	10,560	\$95	\$121
1994	5,600	80	9,813	\$96	\$120
1995	5,500	106	10,066	\$107	\$130
1996	5,800	85	10,376	\$95	\$113
1997	5,800	84	11,035	\$91	\$105
1998	5,500	72	8,474	\$65	\$73
1999	5,400	72	8,432	\$74	\$82
2000	5,600	75	8,705	\$81	\$87
2001	5,900	63	8,408	\$69	\$72
2002	5,900	71	8,954	\$71	\$73
2003	5,800	80	7,319	\$63	\$63

Note: Statistics include a proportional share of fires with undetermined cause. U.K. damage statistics are not available. Japanese injury statistics are not available. U.K. statistics in and after 1994 include some incidents (e.g., heat or smoke damage only) that were not included previously and are not included in other countries' statistics.

Source: Analysis of Japanese experience data by Dr. Ai Sekizawa, NRIFD; foreign exchange rates from OECD and U.S. Department of Commerce at <http://www.ita.doc.gov/industry/otea/usfth/aggregate/H04T34.html>, accessed July 5, 2006; consumer price index used to adjust for inflation.

**Table 2. U.S. Home Cooking Structure Fires, by Type of Equipment**  
(Numbers in *italics* exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1980</b>		<b>1981</b>		<b>1982</b>		<b>1983</b>		<b>1984</b>		<b>1985</b>	
Range	103,000	(76%)	106,500	(75%)	94,800	(75%)	87,200	(76%)	85,500	(76%)	89,000	(77%)
Oven or rotisserie	19,100	(14%)	20,800	(15%)	17,300	(14%)	15,100	(13%)	14,700	(13%)	14,000	(12%)
Portable cooking or warming unit	5,900	(4%)	6,000	(4%)	5,400	(4%)	4,900	(4%)	5,200	(5%)	4,800	(4%)
Grill	2,200	(2%)	2,300	(2%)	2,000	(2%)	1,800	(2%)	2,100	(2%)	2,200	(2%)
Grease hood or duct	1,600	(1%)	1,700	(1%)	1,900	(1%)	1,600	(1%)	1,700	(1%)	1,500	(1%)
Deep fat fryer	1,500	(1%)	1,500	(1%)	1,400	(1%)	1,100	(1%)	1,000	(1%)	1,000	(1%)
Fixed food warmer	800	(1%)	800	(1%)	800	(1%)	700	(1%)	700	(1%)	700	(1%)
Unclassified	2,000	(1%)	2,300	(2%)	2,200	(2%)	2,000	(2%)	1,800	(2%)	1,700	(1%)
<b>Total</b>	<b>136,200</b>	<b>(100%)</b>	<b>141,900</b>	<b>(100%)</b>	<b>125,700</b>	<b>(100%)</b>	<b>114,400</b>	<b>(100%)</b>	<b>112,700</b>	<b>(100%)</b>	<b>115,000</b>	<b>(100%)</b>
<b>Equipment</b>	<b>1986</b>		<b>1987</b>		<b>1988</b>		<b>1989</b>		<b>1990</b>		<b>1991</b>	
Range	88,100	(78%)	85,700	(78%)	86,300	(78%)	80,400	(78%)	80,400	(77%)	81,200	(77%)
Oven or rotisserie	14,000	(12%)	13,300	(12%)	13,200	(12%)	12,300	(12%)	13,200	(13%)	13,500	(13%)
Portable cooking or warming unit	4,500	(4%)	4,300	(4%)	4,400	(4%)	4,200	(4%)	4,200	(4%)	4,500	(4%)
Grill	2,200	(2%)	2,100	(2%)	2,400	(2%)	2,000	(2%)	2,200	(2%)	1,900	(2%)
Grease hood or duct	1,600	(1%)	1,400	(1%)	1,400	(1%)	1,400	(1%)	1,200	(1%)	1,400	(1%)
Deep fat fryer	800	(1%)	800	(1%)	700	(1%)	600	(1%)	700	(1%)	600	(1%)
Fixed food warmer	600	(1%)	700	(1%)	700	(1%)	700	(1%)	700	(1%)	800	(1%)
Unclassified	1,700	(2%)	1,800	(2%)	1,800	(2%)	1,700	(2%)	1,900	(2%)	2,000	(2%)
<b>Total</b>	<b>113,700</b>	<b>(100%)</b>	<b>110,100</b>	<b>(100%)</b>	<b>110,800</b>	<b>(100%)</b>	<b>103,800</b>	<b>(100%)</b>	<b>104,500</b>	<b>(100%)</b>	<b>105,900</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 2. Home Cooking Fires, by Type of Equipment (Continued)**  
(Numbers in italics exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1992</b>		<b>1993</b>		<b>1994</b>		<b>1995</b>		<b>1996</b>		<b>1997</b>	
Range	85,700	(76%)	84,700	(76%)	77,200	(75%)	72,400	(74%)	72,900	(73%)	74,500	(73%)
Oven or rotisserie	14,900	(13%)	14,800	(13%)	14,500	(14%)	14,400	(15%)	15,700	(16%)	16,600	(16%)
Portable cooking or warming unit	4,500	(4%)	4,400	(4%)	4,200	(4%)	3,900	(4%)	3,800	(4%)	3,900	(4%)
Grill	2,000	(2%)	1,900	(2%)	1,900	(2%)	1,800	(2%)	1,700	(2%)	1,800	(2%)
Grease hood or duct	1,500	(1%)	1,400	(1%)	1,200	(1%)	1,100	(1%)	1,200	(1%)	1,300	(1%)
Deep fat fryer	600	(1%)	600	(1%)	500	(1%)	500	(1%)	500	(1%)	500	(1%)
Fixed food warmer	1,000	(1%)	900	(1%)	900	(1%)	900	(1%)	900	(1%)	900	(1%)
Unclassified	2,200	(2%)	2,400	(2%)	2,200	(2%)	2,400	(2%)	2,700	(3%)	2,600	(3%)
<b>Total</b>	<b>112,600</b>	<b>(100%)</b>	<b>111,100</b>	<b>(100%)</b>	<b>102,700</b>	<b>(100%)</b>	<b>97,400</b>	<b>(100%)</b>	<b>99,500</b>	<b>(100%)</b>	<b>102,100</b>	<b>(100%)</b>

<b>Equipment</b>	<b>1998</b>		<b>1999</b>		<b>1999</b> <i>Without Confined Fires</i>		<b>2000</b>		<b>2000</b> <i>Without Confined Fires</i>	
Range	67,800	(72%)	68,300	(71%)	<i>67,000</i>	<i>(72%)</i>	64,900	(69%)	<i>57,800</i>	<i>(71%)</i>
Oven or rotisserie	16,300	(17%)	17,700	(18%)	<i>16,100</i>	<i>(17%)</i>	17,500	(19%)	<i>14,700</i>	<i>(18%)</i>
Portable cooking or warming unit	3,500	(4%)	3,500	(4%)	<i>3,300</i>	<i>(4%)</i>	4,100	(4%)	<i>3,100</i>	<i>(4%)</i>
Grill	1,600	(2%)	1,800	(2%)	<i>1,700</i>	<i>(2%)</i>	1,500	(2%)	<i>1,300</i>	<i>(2%)</i>
Grease hood or duct	1,100	(1%)	1,100	(1%)	<i>1,100</i>	<i>(1%)</i>	1,000	(1%)	<i>1,000</i>	<i>(1%)</i>
Deep fat fryer	500	(1%)	500	(1%)	<i>500</i>	<i>(1%)</i>	700	(1%)	<i>500</i>	<i>(1%)</i>
Fixed food warmer	900	(1%)	800	(1%)	<i>800</i>	<i>(1%)</i>	700	(1%)	<i>700</i>	<i>(1%)</i>
Unclassified	2,400	(3%)	3,100	(3%)	<i>2,800</i>	<i>(3%)</i>	3,300	(4%)	<i>2,800</i>	<i>(3%)</i>
<b>Total</b>	<b>94,000</b>	<b>(100%)</b>	<b>96,800</b>	<b>(100%)</b>	<b><i>93,300</i></b>	<b><i>(100%)</i></b>	<b>93,700</b>	<b>(100%)</b>	<b><i>81,800</i></b>	<b><i>(100%)</i></b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 2. Home Cooking Fires, by Type of Equipment (Continued)**  
**(Numbers in italics exclude fires reported as confined fires.)**

<b>Equipment</b>	<b>2001</b>		<i>2001 Without Confined Fires</i>		<b>2002</b>		<i>2002 Without Confined Fires</i>		<b>2003</b>		<i>2003 Without Confined Fires</i>	
Range	69,200	(65%)	<i>47,900</i>	<i>(69%)</i>	73,800	(66%)	<i>41,300</i>	<i>(72%)</i>	78,900	(66%)	<i>31,300</i>	<i>(72%)</i>
Oven or rotisserie	23,500	(22%)	<i>12,500</i>	<i>(18%)</i>	22,300	(20%)	<i>8,600</i>	<i>(15%)</i>	23,600	(20%)	<i>6,700</i>	<i>(15%)</i>
Portable cooking or warming unit	5,200	(5%)	<i>2,700</i>	<i>(4%)</i>	4,700	(4%)	<i>2,200</i>	<i>(4%)</i>	6,100	(5%)	<i>1,600</i>	<i>(4%)</i>
Grill	1,600	(2%)	<i>1,100</i>	<i>(2%)</i>	2,100	(2%)	<i>1,100</i>	<i>(2%)</i>	1,700	(1%)	<i>700</i>	<i>(2%)</i>
Grease hood or duct	1,200	(1%)	<i>1,000</i>	<i>(1%)</i>	1,100	(1%)	<i>800</i>	<i>(1%)</i>	900	(1%)	<i>500</i>	<i>(1%)</i>
Deep fat fryer	800	(1%)	<i>600</i>	<i>(1%)</i>	1,000	(1%)	<i>600</i>	<i>(1%)</i>	900	(1%)	<i>400</i>	<i>(1%)</i>
Fixed food warmer	600	(1%)	<i>600</i>	<i>(1%)</i>	400	(0%)	<i>400</i>	<i>(1%)</i>	300	(0%)	<i>300</i>	<i>(1%)</i>
Unclassified	4,600	(4%)	<i>2,900</i>	<i>(4%)</i>	5,800	(5%)	<i>2,700</i>	<i>(5%)</i>	6,400	(5%)	<i>1,900</i>	<i>(4%)</i>
<b>Total</b>	<b>106,800</b>	<b>(100%)</b>	<i><b>69,300</b></i>	<i><b>(100%)</b></i>	<b>111,200</b>	<b>(100%)</b>	<i><b>57,700</b></i>	<i><b>(100%)</b></i>	<b>118,700</b>	<b>(100%)</b>	<i><b>43,400</b></i>	<i><b>(100%)</b></i>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 3. U.S. Home Cooking Structure Fire Civilian Deaths, by Type of Equipment**  
(Numbers in *italics* exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1980</b>		<b>1981</b>		<b>1982</b>		<b>1983</b>		<b>1984</b>		<b>1985</b>	
Range	310	(75%)	350	(78%)	310	(75%)	320	(84%)	350	(87%)	300	(81%)
Portable cooking or warming unit	40	(10%)	40	(10%)	20	(6%)	40	(9%)	30	(7%)	30	(9%)
Oven or rotisserie	30	(7%)	20	(4%)	30	(7%)	10	(2%)	10	(3%)	10	(2%)
Grill	30	(7%)	10	(3%)	10	(2%)	0	(1%)	0	(1%)	10	(2%)
Deep fat fryer	0	(0%)	10	(3%)	20	(5%)	10	(2%)	0	(0%)	10	(3%)
Fixed food warmer	0	(0%)	0	(0%)	0	(0%)	0	(1%)	0	(1%)	10	(2%)
Grease hood or duct	0	(0%)	0	(0%)	0	(1%)	0	(0%)	0	(0%)	0	(0%)
Unclassified	0	(0%)	10	(3%)	20	(5%)	0	(0%)	10	(1%)	10	(2%)
<b>Total</b>	<b>420</b>	<b>(100%)</b>	<b>450</b>	<b>(100%)</b>	<b>410</b>	<b>(100%)</b>	<b>390</b>	<b>(100%)</b>	<b>410</b>	<b>(100%)</b>	<b>370</b>	<b>(100%)</b>
<b>Equipment</b>	<b>1986</b>		<b>1987</b>		<b>1988</b>		<b>1989</b>		<b>1990</b>		<b>1991</b>	
Range	310	(77%)	300	(91%)	300	(82%)	280	(75%)	290	(86%)	240	(88%)
Portable cooking or warming unit	50	(12%)	10	(3%)	30	(9%)	50	(14%)	20	(7%)	10	(3%)
Oven or rotisserie	10	(3%)	10	(4%)	20	(7%)	10	(3%)	10	(3%)	0	(1%)
Grill	0	(1%)	0	(1%)	0	(1%)	10	(2%)	10	(3%)	10	(2%)
Deep fat fryer	10	(3%)	0	(1%)	0	(0%)	0	(1%)	0	(1%)	10	(2%)
Fixed food warmer	0	(1%)	0	(0%)	0	(1%)	10	(2%)	0	(0%)	0	(1%)
Grease hood or duct	0	(0%)	0	(0%)	0	(0%)	0	(0%)	0	(1%)	0	(0%)
Unclassified	10	(3%)	0	(0%)	0	(1%)	10	(3%)	0	(0%)	10	(3%)
<b>Total</b>	<b>400</b>	<b>(100%)</b>	<b>330</b>	<b>(100%)</b>	<b>370</b>	<b>(100%)</b>	<b>370</b>	<b>(100%)</b>	<b>340</b>	<b>(100%)</b>	<b>270</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Civilian deaths are estimated to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 3. U.S. Home Cooking Structure Fire Civilian Deaths, by Type of Equipment (Continued)**  
(Numbers in italics exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1992</b>		<b>1993</b>		<b>1994</b>		<b>1995</b>		<b>1996</b>		<b>1997</b>	
Range	220	(84%)	270	(79%)	210	(72%)	210	(76%)	280	(76%)	240	(87%)
Portable cooking or warming unit	10	(4%)	20	(6%)	40	(12%)	30	(9%)	30	(9%)	10	(5%)
Oven or rotisserie	10	(4%)	30	(8%)	20	(7%)	30	(10%)	40	(11%)	10	(5%)
Grill	10	(4%)	0	(1%)	0	(1%)	0	(0%)	0	(1%)	0	(0%)
Deep fat fryer	0	(0%)	0	(0%)	20	(6%)	0	(1%)	0	(0%)	0	(0%)
Fixed food warmer	10	(4%)	10	(2%)	0	(0%)	0	(1%)	0	(1%)	0	(0%)
Grease hood or duct	0	(0%)	0	(0%)	0	(0%)	0	(0%)	0	(0%)	0	(0%)
Unclassified	0	(0%)	10	(4%)	10	(2%)	10	(3%)	10	(2%)	10	(3%)
<b>Total</b>	<b>270</b>	<b>(100%)</b>	<b>330</b>	<b>(100%)</b>	<b>290</b>	<b>(100%)</b>	<b>280</b>	<b>(100%)</b>	<b>370</b>	<b>(100%)</b>	<b>270</b>	<b>(100%)</b>

<b>Equipment</b>	<b>1998</b>		<b>1999</b>		<i>1999 Without Confined Fires</i>		<b>2000</b>		<i>2000 Without Confined Fires</i>		
Range	320	(82%)		290	(88%)	290	(88%)	160	(73%)	160	(73%)
Portable cooking or warming unit	40	(11%)		10	(4%)	10	(4%)	10	(5%)	10	(5%)
Oven or rotisserie	20	(5%)		0	(1%)	0	(1%)	10	(5%)	10	(5%)
Grill	0	(1%)		0	(1%)	0	(1%)	10	(5%)	10	(5%)
Deep fat fryer	0	(0%)		0	(0%)	0	(0%)	0	(0%)	0	(0%)
Fixed food warmer	0	(0%)		0	(1%)	0	(1%)	10	(3%)	10	(3%)
Grease hood or duct	0	(0%)		0	(1%)	0	(1%)	0	(0%)	0	(0%)
Unclassified	0	(1%)		10	(2%)	10	(2%)	20	(8%)	20	(8%)
<b>Total</b>	<b>400</b>	<b>(100%)</b>		<b>330</b>	<b>(100%)</b>	<b>330</b>	<b>(100%)</b>	<b>220</b>	<b>(100%)</b>	<b>220</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Civilian deaths are estimated to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 3. U.S. Home Cooking Structure Fire Civilian Deaths, by Type of Equipment (Continued)**  
 (Numbers in italics exclude fires reported as confined fires.)

Equipment	2001		<i>2001 Without Confined Fires</i>		2002		<i>2002 Without Confined Fires</i>		2003		<i>2003 Without Confined Fires</i>	
	Range	300	(83%)	<i>300</i>	<i>(83%)</i>	150	(87%)	<i>150</i>	<i>(87%)</i>	200	(78%)	<i>200</i>
Portable cooking or warming unit	30	(8%)	<i>30</i>	<i>(8%)</i>	10	(6%)	<i>10</i>	<i>(6%)</i>	20	(7%)	<i>20</i>	<i>(7%)</i>
Oven or rotisserie	20	(5%)	<i>20</i>	<i>(5%)</i>	10	(3%)	<i>10</i>	<i>(3%)</i>	10	(4%)	<i>10</i>	<i>(4%)</i>
Grill	0	(0%)	<i>0</i>	<i>(0%)</i>	10	(3%)	<i>10</i>	<i>(3%)</i>	10	(4%)	<i>10</i>	<i>(4%)</i>
Deep fat fryer	10	(2%)	<i>10</i>	<i>(2%)</i>	0	(0%)	<i>0</i>	<i>(0%)</i>	10	(2%)	<i>10</i>	<i>(2%)</i>
Fixed food warmer	0	(0%)	<i>0</i>	<i>(0%)</i>	0	(0%)	<i>0</i>	<i>(0%)</i>	0	(0%)	<i>0</i>	<i>(0%)</i>
Grease hood or duct	0	(0%)	<i>0</i>	<i>(0%)</i>	0	(0%)	<i>0</i>	<i>(0%)</i>	0	(0%)	<i>0</i>	<i>(0%)</i>
Unclassified	10	(3%)	<i>10</i>	<i>(3%)</i>	0	(1%)	<i>0</i>	<i>(1%)</i>	10	(4%)	<i>10</i>	<i>(4%)</i>
Total	360	(100%)	<i>360</i>	<i>(100%)</i>	170	(100%)	<i>170</i>	<i>(100%)</i>	250	(100%)	<i>250</i>	<i>(100%)</i>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Civilian deaths are estimated to nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 4. U.S. Home Cooking Structure Fire Civilian Injuries, by Type of Equipment**  
(Numbers in italics exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1980</b>		<b>1981</b>		<b>1982</b>		<b>1983</b>		<b>1984</b>		<b>1985</b>	
Range	3,770	(84%)	3,870	(83%)	4,170	(83%)	4,320	(86%)	3,680	(85%)	3,610	(83%)
Oven or rotisserie	230	(5%)	300	(6%)	370	(7%)	250	(5%)	270	(6%)	330	(8%)
Portable cooking or warming unit	130	(3%)	160	(3%)	150	(3%)	150	(3%)	150	(4%)	190	(4%)
Deep fat fryer	150	(3%)	110	(2%)	140	(3%)	80	(2%)	50	(1%)	50	(1%)
Grill	80	(2%)	90	(2%)	80	(2%)	110	(2%)	70	(2%)	70	(2%)
Grease hood or duct	30	(1%)	30	(1%)	20	(0%)	20	(0%)	30	(1%)	20	(0%)
Fixed food warmer	20	(0%)	30	(1%)	20	(0%)	20	(0%)	20	(1%)	10	(0%)
Unclassified	100	(2%)	90	(2%)	80	(2%)	80	(2%)	80	(2%)	50	(1%)
<b>Total</b>	<b>4,500</b>	<b>(100%)</b>	<b>4,650</b>	<b>(100%)</b>	<b>5,020</b>	<b>(100%)</b>	<b>5,030</b>	<b>(100%)</b>	<b>4,350</b>	<b>(100%)</b>	<b>4,330</b>	<b>(100%)</b>
<b>Equipment</b>	<b>1986</b>		<b>1987</b>		<b>1988</b>		<b>1989</b>		<b>1990</b>		<b>1991</b>	
Range	3,680	(84%)	4,150	(86%)	4,310	(84%)	4,100	(86%)	4,360	(83%)	4,470	(85%)
Oven or rotisserie	280	(6%)	250	(5%)	340	(7%)	270	(6%)	430	(8%)	350	(7%)
Portable cooking or warming unit	150	(3%)	140	(3%)	150	(3%)	140	(3%)	140	(3%)	170	(3%)
Deep fat fryer	60	(1%)	60	(1%)	70	(1%)	50	(1%)	50	(1%)	30	(1%)
Grill	80	(2%)	60	(1%)	110	(2%)	60	(1%)	100	(2%)	90	(2%)
Grease hood or duct	20	(0%)	50	(1%)	50	(1%)	50	(1%)	20	(0%)	50	(1%)
Fixed food warmer	30	(1%)	10	(0%)	20	(0%)	10	(0%)	10	(0%)	20	(0%)
Unclassified	90	(2%)	80	(2%)	70	(1%)	100	(2%)	100	(2%)	110	(2%)
<b>Total</b>	<b>4,390</b>	<b>(100%)</b>	<b>4,810</b>	<b>(100%)</b>	<b>5,120</b>	<b>(100%)</b>	<b>4,770</b>	<b>(100%)</b>	<b>5,230</b>	<b>(100%)</b>	<b>5,290</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Civilian injuries are estimated to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 4. U.S. Home Cooking Structure Fire Civilian Injuries, by Type of Equipment (Continued)**  
(Numbers in italics exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1992</b>		<b>1993</b>		<b>1994</b>		<b>1995</b>		<b>1996</b>		<b>1997</b>	
Range	4,280	(83%)	4,770	(84%)	3,880	(81%)	3,780	(80%)	3,810	(79%)	4,010	(80%)
Oven or rotisserie	420	(8%)	460	(8%)	450	(9%)	450	(10%)	540	(11%)	510	(10%)
Portable cooking or warming unit	170	(3%)	120	(2%)	160	(3%)	170	(4%)	140	(3%)	170	(3%)
Deep fat fryer	50	(1%)	60	(1%)	30	(1%)	40	(1%)	30	(1%)	40	(1%)
Grill	80	(2%)	70	(1%)	80	(2%)	60	(1%)	100	(2%)	70	(1%)
Grease hood or duct	40	(1%)	50	(1%)	40	(1%)	40	(1%)	30	(1%)	30	(1%)
Fixed food warmer	40	(1%)	20	(0%)	20	(0%)	50	(1%)	30	(1%)	50	(1%)
Unclassified	110	(2%)	120	(2%)	120	(2%)	140	(3%)	130	(3%)	140	(3%)
<b>Total</b>	<b>5,180</b>	<b>(100%)</b>	<b>5,660</b>	<b>(100%)</b>	<b>4,770</b>	<b>(100%)</b>	<b>4,740</b>	<b>(100%)</b>	<b>4,810</b>	<b>(100%)</b>	<b>5,020</b>	<b>(100%)</b>

<b>Equipment</b>	<b>1998</b>		<b>1999</b>		<b>1999 Without Confined Fires</b>		<b>2000</b>		<b>2000 Without Confined Fires</b>	
Range	3,700	(80%)	3,380	(81%)	3,350	(81%)	3,660	(81%)	3,510	(81%)
Oven or rotisserie	490	(11%)	430	(10%)	410	(10%)	410	(9%)	410	(9%)
Portable cooking or warming unit	180	(4%)	110	(3%)	110	(3%)	70	(2%)	60	(1%)
Deep fat fryer	30	(1%)	50	(1%)	50	(1%)	50	(1%)	50	(1%)
Grill	80	(2%)	40	(1%)	40	(1%)	80	(2%)	80	(2%)
Grease hood or duct	30	(1%)	10	(0%)	10	(0%)	40	(1%)	40	(1%)
Fixed food warmer	30	(1%)	30	(1%)	30	(1%)	30	(1%)	30	(1%)
Unclassified	100	(2%)	140	(3%)	140	(3%)	160	(4%)	160	(4%)
<b>Total</b>	<b>4,660</b>	<b>(100%)</b>	<b>4,180</b>	<b>(100%)</b>	<b>4,140</b>	<b>(100%)</b>	<b>4,500</b>	<b>(100%)</b>	<b>4,340</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Civilian injuries are estimated to the nearest hundred nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 4. U.S. Home Cooking Structure Fire Civilian Injuries, by Type of Equipment (Continued)**  
 (Numbers in italics exclude fires reported as confined fires.)

Equipment	2001		<i>2001</i>		2002		<i>2002</i>		2003		<i>2003</i>	
			<i>Without Confined</i>	<i>Fires</i>			<i>Without Confined</i>	<i>Fires</i>			<i>Without Confined</i>	<i>Fires</i>
Range	3,280	(78%)	<i>2,670</i>	<i>(76%)</i>	3,060	(79%)	<i>2,340</i>	<i>(78%)</i>	3,030	(78%)	<i>2,320</i>	<i>(79%)</i>
Oven or rotisserie	470	(11%)	<i>440</i>	<i>(13%)</i>	310	(8%)	<i>290</i>	<i>(10%)</i>	380	(10%)	<i>290</i>	<i>(10%)</i>
Portable cooking or warming unit	120	(3%)	<i>90</i>	<i>(2%)</i>	120	(3%)	<i>100</i>	<i>(3%)</i>	140	(4%)	<i>90</i>	<i>(3%)</i>
Deep fat fryer	60	(1%)	<i>60</i>	<i>(2%)</i>	60	(2%)	<i>20</i>	<i>(1%)</i>	60	(2%)	<i>30</i>	<i>(1%)</i>
Grill	60	(1%)	<i>60</i>	<i>(2%)</i>	50	(1%)	<i>50</i>	<i>(2%)</i>	60	(1%)	<i>40</i>	<i>(1%)</i>
Grease hood or duct	30	(1%)	<i>30</i>	<i>(1%)</i>	50	(1%)	<i>30</i>	<i>(1%)</i>	40	(1%)	<i>40</i>	<i>(1%)</i>
Fixed food warmer	20	(0%)	<i>20</i>	<i>(1%)</i>	20	(1%)	<i>20</i>	<i>(1%)</i>	10	(0%)	<i>10</i>	<i>(0%)</i>
Unclassified	140	(3%)	<i>140</i>	<i>(4%)</i>	170	(4%)	<i>150</i>	<i>(5%)</i>	160	(4%)	<i>130</i>	<i>(4%)</i>
Total	4,180	(100%)	<i>3,510</i>	<i>(100%)</i>	3,850	(100%)	<i>3,010</i>	<i>(100%)</i>	3,880	(100%)	<i>2,940</i>	<i>(100%)</i>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Civilian injuries are estimated to the nearest ten. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 5. U.S. Home Cooking Structure Fire Direct Property Damage (in Millions of Dollars), by Type of Equipment**  
(Numbers in italics exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1980</b>		<b>1981</b>		<b>1982</b>		<b>1983</b>		<b>1984</b>		<b>1985</b>	
Range	\$154	(74%)	\$612*	(91%)	\$186	(52%)	\$220	(78%)	\$238	(78%)	\$224	(76%)
Oven or rotisserie	\$12	(6%)	\$11	(2%)	\$13	(4%)	\$11	(4%)	\$18	(6%)	\$16	(5%)
Grill	\$8	(4%)	\$11	(2%)	\$12	(3%)	\$12	(4%)	\$14	(4%)	\$15	(5%)
Portable cooking or warming unit	\$15	(7%)	\$15	(2%)	\$19	(5%)	\$18	(6%)	\$22	(7%)	\$18	(6%)
Deep fat fryer	\$5	(2%)	\$5	(1%)	\$7	(2%)	\$5	(2%)	\$4	(1%)	\$6	(2%)
Grease hood or duct	\$4	(2%)	\$5	(1%)	\$4	(1%)	\$6	(2%)	\$5	(1%)	\$5	(2%)
Fixed food warmer	\$5	(2%)	\$6	(1%)	\$3	(1%)	\$5	(2%)	\$7	(2%)	\$3	(1%)
Unclassified	\$6	(3%)	\$4	(1%)	\$114*	(32%)	\$5	(2%)	\$7	(2%)	\$6	(2%)
<b>Total</b>	<b>\$208</b>	<b>(100%)</b>	<b>\$669*</b>	<b>(100%)</b>	<b>\$360*</b>	<b>(100%)</b>	<b>\$285</b>	<b>(100%)</b>	<b>\$314</b>	<b>(100%)</b>	<b>\$294</b>	<b>(100%)</b>
<b>Equipment</b>	<b>1986</b>		<b>1987</b>		<b>1988</b>		<b>1989</b>		<b>1990</b>		<b>1991*</b>	
Range	\$243	(76%)	\$244	(77%)	\$269	(72%)	\$273	(74%)	\$289	(75%)	\$378	(75%)
Oven or rotisserie	\$19	(6%)	\$21	(7%)	\$23	(6%)	\$22	(6%)	\$18	(5%)	\$26	(5%)
Grill	\$14	(5%)	\$15	(5%)	\$30	(8%)	\$16	(4%)	\$20	(5%)	\$29	(6%)
Portable cooking or warming units	\$21	(7%)	\$21	(7%)	\$23	(6%)	\$30	(8%)	\$31	(8%)	\$34	(7%)
Deep fat fryer	\$5	(2%)	\$4	(1%)	\$8	(2%)	\$6	(2%)	\$7	(2%)	\$7	(1%)
Grease hood or duct	\$5	(2%)	\$3	(1%)	\$9	(2%)	\$4	(1%)	\$6	(2%)	\$9	(2%)
Fixed food warmer	\$4	(1%)	\$3	(1%)	\$5	(1%)	\$10	(3%)	\$5	(1%)	\$8	(2%)
Unclassified	\$8	(2%)	\$8	(2%)	\$7	(2%)	\$6	(2%)	\$13	(3%)	\$15	(3%)
<b>Total</b>	<b>\$319</b>	<b>(100%)</b>	<b>\$318</b>	<b>(100%)</b>	<b>\$374</b>	<b>(100%)</b>	<b>\$368</b>	<b>(100%)</b>	<b>\$388</b>	<b>(100%)</b>	<b>\$505</b>	<b>(100%)</b>

\* The 1981 stove fire total and 1982 unclassified cooking equipment total are each inflated by one miscoded fire. All direct property damage figures for 1991 are inflated by the Oakland, California firestorm (October 1991), a fire in a wildland/urban interface area that destroyed more than 2,800 homes and accounted for \$1.5 billion dollars in direct property damage. The inflated figures result from national estimates procedure difficulties.

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Damage is estimated to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Property damage has not been adjusted for inflation. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 5. U.S. Home Cooking Structure Fire Direct Property Damage (in Millions of Dollars), by Type of Equipment (Continued)**  
(Numbers in italics exclude fires reported as confined fires.)

<b>Equipment</b>	<b>1992</b>		<b>1993</b>		<b>1994</b>		<b>1995</b>		<b>1996</b>		<b>1997</b>	
Range	\$258	(71%)	\$343	(76%)	\$260	(52%)	\$248	(69%)	\$292	(71%)	\$304	(68%)
Oven or rotisserie	\$31	(9%)	\$34	(8%)	\$173*	(35%)	\$32	(9%)	\$35	(9%)	\$39	(9%)
Grill	\$33	(9%)	\$18	(4%)	\$17	(3%)	\$24	(7%)	\$23	(6%)	\$35	(8%)
Portable cooking or warming units	\$18	(5%)	\$23	(5%)	\$23	(5%)	\$26	(7%)	\$35	(8%)	\$36	(8%)
Deep fat fryer	\$3	(1%)	\$6	(1%)	\$5	(1%)	\$5	(1%)	\$4	(1%)	\$5	(1%)
Grease hood or duct	\$5	(1%)	\$8	(2%)	\$7	(1%)	\$5	(1%)	\$4	(1%)	\$9	(2%)
Fixed food warmer	\$7	(2%)	\$6	(1%)	\$4	(1%)	\$3	(1%)	\$3	(1%)	\$4	(1%)
Unclassified	\$8	(2%)	\$12	(3%)	\$12	(2%)	\$15	(4%)	\$17	(4%)	\$17	(4%)
<b>Total</b>	<b>\$363</b>	<b>(100%)</b>	<b>\$452</b>	<b>(100%)</b>	<b>\$501*</b>	<b>(100%)</b>	<b>\$358</b>	<b>(100%)</b>	<b>\$414</b>	<b>(100%)</b>	<b>\$448</b>	<b>(100%)</b>

<b>Equipment</b>	<b>1998</b>		<b>1999</b>		<b>1999 Without Confined Fires</b>		<b>2000</b>		<b>2000 Without Confined Fires</b>		
Range	\$288	(69%)		\$358	(67%)	\$357	(67%)	\$381	(67%)	\$376	(67%)
Oven or rotisserie	\$36	(9%)		\$44	(8%)	\$44	(8%)	\$43	(8%)	\$40	(7%)
Grill	\$42	(10%)		\$36	(7%)	\$36	(7%)	\$43	(8%)	\$43	(8%)
Portable cooking or warming unit	\$24	(6%)		\$48	(9%)	\$48	(9%)	\$39	(7%)	\$38	(7%)
Deep fat fryer	\$6	(1%)		\$7	(1%)	\$7	(1%)	\$12	(2%)	\$12	(2%)
Grease hood or duct	\$4	(1%)		\$6	(1%)	\$6	(1%)	\$6	(1%)	\$6	(1%)
Fixed food warmer	\$4	(1%)		\$5	(1%)	\$5	(1%)	\$4	(1%)	\$4	(1%)
Unclassified	\$15	(3%)		\$34	(6%)	\$34	(6%)	\$38	(7%)	\$38	(7%)
<b>Total</b>	<b>\$419</b>	<b>(100%)</b>		<b>\$538</b>	<b>(100%)</b>	<b>\$536</b>	<b>(100%)</b>	<b>\$565</b>	<b>(100%)</b>	<b>\$557</b>	<b>(100%)</b>

\*The 1994 oven fire total is inflated by one miscoded fire.

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Damage is estimated to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Property damage has not been adjusted for inflation. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 5. U.S. Home Cooking Structure Fire Direct Property Damage (in Millions of Dollars), by Type of Equipment (Continued)**  
**(Numbers in italics exclude fires reported as confined fires.)**

Equipment	2001		<i>2001 Without Confined Fires</i>		2002		<i>2002 Without Confined Fires</i>		2003		<i>2003 Without Confined Fires</i>	
	Range	\$304	(67%)	\$299	<i>(68%)</i>	\$327	(67%)	\$317	<i>(67%)</i>	\$335	(65%)	\$321
Oven or rotisserie	\$36	(8%)	\$34	<i>(8%)</i>	\$46	(9%)	\$45	<i>(9%)</i>	\$54	(11%)	\$53	<i>(11%)</i>
Grill	\$22	(5%)	\$22	<i>(5%)</i>	\$30	(6%)	\$29	<i>(6%)</i>	\$36	(7%)	\$36	<i>(7%)</i>
Portable cooking or warming unit	\$38	(8%)	\$35	<i>(8%)</i>	\$37	(8%)	\$37	<i>(8%)</i>	\$33	(6%)	\$32	<i>(6%)</i>
Deep fat fryer	\$13	(3%)	\$13	<i>(3%)</i>	\$13	(3%)	\$13	<i>(3%)</i>	\$14	(3%)	\$14	<i>(3%)</i>
Grease hood or duct	\$9	(2%)	\$9	<i>(2%)</i>	\$4	(1%)	\$4	<i>(1%)</i>	\$3	(1%)	\$3	<i>(1%)</i>
Fixed food warmer	\$6	(1%)	\$6	<i>(1%)</i>	\$2	(0%)	\$2	<i>(0%)</i>	\$3	(1%)	\$3	<i>(1%)</i>
Unclassified	\$24	(5%)	\$24	<i>(5%)</i>	\$31	(6%)	\$30	<i>(6%)</i>	\$34	(7%)	\$33	<i>(7%)</i>
Total	\$452	(100%)	\$442	<i>(100%)</i>	\$489	(100%)	\$477	<i>(100%)</i>	\$512	(100%)	\$495	<i>(100%)</i>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Damage is estimated to the nearest million dollars. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, with allocations done separately for fires reported as confined fires. Property damage has not been adjusted for inflation. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 6. U.S. Home Structure Fires Involving Cooking and/or Kitchen, by Year**

<b>Year</b>	<b>Kitchen</b>	<b>Cooking</b>	<b>Cooking and Kitchen</b>	<b>Cooking and Not Kitchen</b>	<b>Kitchen and Not Cooking</b>
1980	167,200	136,200	130,300	5,800	36,800
1981	169,300	141,900	135,900	6,000	33,400
1982	152,300	125,700	119,900	5,800	32,400
1983	144,500	114,400	109,300	5,200	35,300
1984	143,000	112,700	106,800	5,800	36,200
1985	147,500	115,000	109,700	5,300	37,800
1986	146,400	113,700	108,500	5,200	37,900
1987	143,100	110,100	105,100	5,000	38,000
1988	142,100	110,800	105,600	5,200	36,500
1989	135,500	103,800	99,200	4,600	36,300
1990	133,700	104,500	99,700	4,800	34,000
1991	136,100	105,900	101,300	4,500	34,800
1992	143,500	112,600	107,900	4,700	35,600
1993	141,300	111,100	106,500	4,600	34,800
1994	133,100	102,700	98,300	4,400	34,800
1995	124,300	97,400	93,300	4,100	31,000
1996	128,000	99,500	95,400	4,100	32,600
1997	127,300	102,100	97,900	4,200	29,400
1998	118,200	94,000	89,800	4,200	28,400
1999	120,600	96,800	92,300	4,500	28,200
2000	116,900	93,700	89,800	3,900	27,100
2001	128,600	106,800	102,100	4,700	26,600
2002	137,600	111,200	106,700	4,500	30,900
2003	150,100	118,700	115,700	3,000	34,400

Cooking = (Cooking and Kitchen) + (Cooking and Not Kitchen)

Kitchen = (Cooking and Kitchen) + (Kitchen and Not Cooking)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred. Figures reflect a proportional share of home fires with equipment involved in ignition or area of origin unknown, as appropriate. Based on analysis of the small fraction of confined cooking fires with equipment involved or area of origin reported all of these fires are allocated to kitchens. Not all confined fires are allocated to cooking equipment, because a much larger fraction (11% on average) is reported as involving equipment other than cooking equipment. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Table 7. Trends in U.S. Use of Cooking Power Sources  
(Percentage of Households)**

<b>Fuel or Power</b>	<b>1950</b>	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1985</b>	<b>1987</b>	<b>1991</b>	<b>1993</b>	<b>1995</b>	<b>1997</b>	<b>1999</b>	<b>2001</b>	<b>2003</b>
Gas	59.6	63.7	57.6	47.2	43.7	42.4	40.9	40.1	40.1	40.3	39.9	39.7	40.3
Electricity	15.0	30.8	40.6	52.1	55.5	56.8	58.2	59.0	59.0	59.1	59.6	59.9	59.4
Other fuel	25.2	4.9	1.4	0.5	0.3	0.4	0.5	0.5	0.6	0.1	0.1	0.1	0.1
None	0.3	0.5	0.3	0.2	0.5	0.4	0.4	0.4	0.3	0.5	0.4	0.3	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Sums may not equal totals because of rounding error. Gas includes utility, bottled, tank and LP-gas.

Source: U.S. Bureau of the Census, *Census of Housing, 1960*, Vol. 1; *1970 and 1980*, Vol. 1; Current Housing Reports, Series H-150-87, American Housing Survey; *1990 Census of Housing, Detailed Housing Characteristics*, Series CH-2; and *Statistical Abstract of the United States*, 1994, 1997, 1999, 2001, 2003, and 2006 editions, Tables 1222, 1205, 1221, 962, 975, and 961, respectively.

**Table 8. Comparative Risks of Gas Versus Electric Stoves**

**A. Input Data**

Power	Average of 1999, 2001, and 2003 U.S. Households Using a Range With This Power (in Millions)	Annual Average of 1999-2003 U.S. Home Structure Fires <u>Involving Range or Stove With This Power</u>			
		Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage ( in Millions)
Gas	42.0	15,100	90	660	\$72
Electricity	62.7	33,100	120	2,140	\$253

Note: Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten, and direct property damage to the nearest million dollars. Direct property damage has not been adjusted for inflation. 1999 and 2003 usage are weighted by 1.5 each and 2001 usage is weighted by 2.0.

Source: Table 961, *Statistical Abstract of the United States 2006*, Washington: U.S. Department of Commerce, 2006; Tables 2-5 of this report.

**B. Comparative U.S. Risk Relative to Usage**

Power	Fires per Million Households	Civilian Deaths per Million Households	Civilian Injuries per Million Households	Direct Property Damage per Household
Gas	359	2.2	15.6	\$1.73
Electricity	528	1.9	34.1	\$4.03

Source: Calculations based on Table 8A.

**Table 9. U.S. Non-Fire Carbon Monoxide Deaths Involving Home Cooking Equipment**

<b>Device</b>	<b>1980</b>	<b>1981</b>	<b>1982</b>	<b>1983</b>	<b>1984</b>	<b>1985</b>	<b>1986</b>	<b>1987</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>
Gas-fueled range, stove or oven	11	25	4	24	28	31	23	23	5	22	10
Charcoal grill	18	18	14	39	38	49	21	20	29	30	21

<b>Device</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Gas-fueled range, stove or oven	14	13	6	9	5	15	5	3	6	11	10	3
Charcoal grill	25	27	27	15	14	19	23	16	17	8	12	10

<b>Device</b>	<b>1998-2002 Average</b>
Gas-fueled range, stove or oven	7
Charcoal grill	13

Note: Gas-fueled grills had averaged less than one death a year through 1991 but are no longer listed separately.

Source: Debra S. Ascone and Natalie E. Marcy, "Non-Fire Carbon Monoxide Deaths Associated with the Use of Consumer Products," U.S. Consumer Product Safety Commission, July 12, 2005, Table 1, <http://www.cpsc.gov>. Additional information from previous reports in this series.

## Profiles of Home Cooking Devices

The following sections provide a profile of fire experience for each of the leading home cooking devices. Gas-fueled and electric-powered ranges/stoves and ovens are addressed separately. Gas-fueled and solid-fueled (charcoal) grills are addressed separately and are analyzed in terms of both structure and outdoor fires, reflecting the way in which they are normally used. (Any fire involving the structure, as well as any fire originating in or on the structure, is supposed to be coded as a structure fire.) The other home cooking devices are nearly all electric-powered and involve too few fires to justify separate analysis of devices by type of fuel or power.

Devices are listed in order of appearance on this table:

### Annual Average of 1999-2003 Home Cooking Fires, by Major Device Structure Fires (Including Fires Reported as Confined Fires) Reported to U.S. Fire Departments

Device	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Range or stovetop	71,000	221	3,280	\$341
Gas	21,200	94	740	\$74
Electric	48,600	122	2,490	\$258
Other	1,200	6	50	\$9
Oven or rotisserie	20,900	10	400	\$44
Gas	7,000	1	110	\$13
Electric	13,700	9	290	\$31
Other	300	0	0	\$0
Portable cooking or warming device	4,700	16	110	\$39
Unclassified device	4,600	9	160	\$32
Microwave oven	3,800	5	80	\$9
Grill	1,700	7	60	\$33
Gas	1,000	2	40	\$21
Charcoal	500	1	10	\$7
Other	200	4	10	\$6
Grease hood or duct	1,100	1	30	\$6
Deep fryer	800	2	60	\$12
Fixed food warming device	600	2	20	\$4
<b>Total</b>	<b>105,400</b>	<b>269</b>	<b>4,120</b>	<b>\$511</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Property damage has not been adjusted for inflation. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device.

Source: NFIRS and NFPA survey.

## Gas Ranges

**In 2003, an estimated 19,500 reported U.S. home structure fires involving gas-fueled ranges (including stovetops) resulted in 100 civilian deaths, 530 civilian injuries, and \$66 million in direct property damage.**

All loss measures are down from the 1980s even if estimated confined fires are included, but recent trends are less clear. The percentage of households using gas ranges declined from 47.2% to 40.3% from 1980 to 2003, while the percentage of households using electric ranges increased from 52.1% to 59.4%.

**Less than 1% of households cook with something other than gas or electricity.**

If the fires and losses reported as involving liquid- or solid-fueled ranges were partly or wholly miscodings, they still would not significantly change the estimated fire problem for gas ranges.

**One-quarter of fires involving gas ranges occur because the range is left unattended.**

The next two leading causes were heat source too close to combustibles (15% of fires) and leak or break (13% of fires.) Other leading causes of gas range fires include several other examples of poor supervision of cooking activities, including abandoning materials and unintentionally turning the range on or (more likely) not turning the range off after use. (The latter may be another way of describing unattended.) The leading cause of fire deaths involving gas ranges is children or others playing with fire.

**Two-fifths of gas range fires begin with ignition of cooking materials.**

Accelerants or other flammable or combustible gases or liquids accounted for 16% of the fires, 15% of the deaths, 22% of the injuries, and 9% of the property loss. Clothing was the first item ignited for one in 12 fire deaths involving gas ranges.

**One-third of emergency room injuries involving gas ranges were thermal burns.**

One-seventh of these injuries were anoxia, and one-eighth were scald burns.

**Gas ranges have a comparable risk of fire death, relative to usage, to electric ranges, but a lower risk of fire, fire injury, and property damage due to fire.**

The risk of fire death was higher for gas ranges than for electric ranges by 15% in 1999-2003. The risk of fire was lower by 32% in 1999-2003. The risk of fire injury was lower by 54% in 1999-2003. The risk of property damage due to fire was lower by 57% in 1999-2003. All these calculations are losses per million households cooking with gas vs. electricity and so take account of the fact that roughly one-third fewer households cook with gas than with electricity.

These comparisons would not significantly change if oven fires were added, except for deaths. With oven fires, the risk of fire would be lower for gas ranges by 30%, the risk of fire injury would be lower by 53%, and the risk of fire damage to property would be lower by 55%. The risk of fire death would still be higher but by only 8%.

Electrocution deaths (none for gas ranges vs. 1.0 per year for electric ranges) and non-fire carbon monoxide deaths (7.5 per year in 1998-2002 for gas ranges or ovens vs. none for electric ranges) would change the risk comparison so that gas ranges (with oven fires and non-fire carbon monoxide deaths included) have a higher risk of fire death than electric ranges (with oven fires

and non-fire electrocution deaths included) by about 16%, roughly the same as the 15% difference before ovens, non-fire carbon monoxide, and electrocution deaths were factored in. Deaths due to gas explosions with no after-fire are even more rare and do not significantly affect the risk.

### **Safety Tips**

- The leading cause of cooking fires is unattended equipment. Stay in the kitchen when you are frying, grilling, broiling or boiling food. If you must leave the kitchen for a short period of time, turn off the stove. If you are simmering, baking, or roasting food, check it regularly, remain in the home while food is cooking, and use a timer to remind you that something is cooking.
- Keep cooking equipment clear of items that could burn, including spilled cooking materials, rags, towels, low-hanging curtains or drapes, and grease build-up on walls or cabinets. Avoid wearing loose clothing or dangling sleeves, which can catch fire if it comes in contact with a flame or hot cooking element. Avoid reaching over active burners to access items behind them, including other burners and stored items on stovetop or counters or in cabinets.
- If your clothes catch fire, stop, drop and roll until the fire is out. Cool the burn with cool water for 3-5 minutes.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39”) away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.
- Be sure the stove is installed in accordance with *NFPA 54, National Fuel Gas Code*, which addresses clearances, installation, and maintenance. Read and follow manufacturer’s instructions, particularly with regard to installation, maintenance, and operation. Liquefied-petroleum (LP)-gas-fueled devices with self-contained fuel supplies are prohibited for home use by NFPA codes.
- Be particularly careful with flammable or combustible liquids near potential heat sources, such as hot stove surface burners or pilot lights, which are heat sources even when the stove is not in use.
- Install a carbon monoxide alarm to detect dangerous build-ups of unvented carbon monoxide from fueled cooking equipment or other sources.
- Use oven mitts or other protection for hands when moving hot food from ovens, microwave ovens, or stovetops. Never use a wet oven mitt or potholder as there is a risk of scald burns.

- Always keep an oven mitt and pot lid (fitted to the pot or pan you are using) nearby when you are cooking. If a small grease fire starts in the pot or pan, smother the flames by carefully sliding the lid over the pan, using the oven mitt to shield yourself if the lid itself becomes hot. Then turn off the burner. To keep the fire from restarting with fresh oxygen, keep the lid in place until the pot or pan is completely cool.
- Never cook when you are drowsy or if you have consumed alcohol or medication that can make you sleepy.
- In September 1997, CPSC urged consumers to have qualified professionals inspect any older flexible connectors, made of uncoated brass, for cracking, breaking hazard.\* These connectors are used between gas supply pipes and home appliances, typically ranges, ovens, or clothes dryers.

\* CPSC Urges Consumers to Have Flexible Gas Connectors Checked,” *News from CPSC*, Release #97-187, September 8, 1997.

**Home Fires Involving Gas Ranges, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires.)

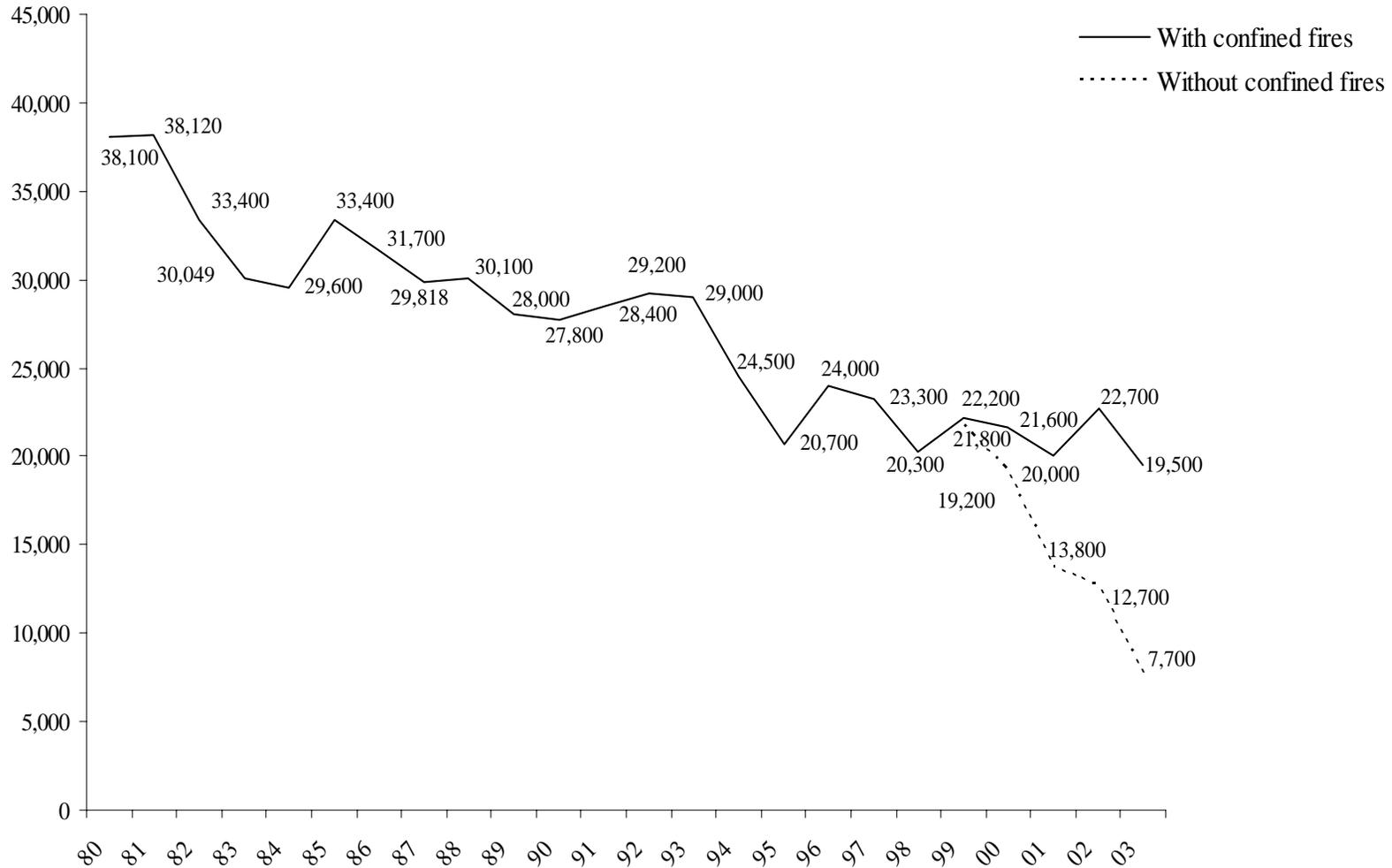
<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>	<b>Direct Property Damage (in Millions of 2003 Dollars)</b>
1980	38,100	230	1,260	\$45	\$101
1981	38,200	180	1,270	\$516*	\$1,041*
1982	33,400	190	1,430	\$67	\$128
1983	30,000	200	1,410	\$69	\$127
1984	29,600	190	1,230	\$66	\$117
1985	33,400	120	1,220	\$68	\$116
1986	31,700	150	1,080	\$72	\$121
1987	29,800	140	1,230	\$77	\$125
1988	30,100	170	1,310	\$96	\$149
1989	28,000	180	1,220	\$72	\$108
1990	27,800	140	1,260	\$82	\$115
1991	28,400	130	1,340	\$111	\$150
1992	29,200	110	1,210	\$77	\$101
1993	29,000	90	1,210	\$82	\$104
1994	24,500	130	990	\$69	\$86
1995	20,700	130	900	\$61	\$73
1996	24,000	160	970	\$82	\$97
1997	23,300	130	930	\$73	\$84
1998	20,300	180	780	\$67	\$75
1999	22,200 (21,800)	120 (120)	860 (850)	\$79 (\$79)	\$88 (\$87)
2000	21,600 (19,200)	100 (100)	1,120 (1,080)	\$93 (\$91)	\$99 (\$98)
2001	20,000 (13,800)	100 (100)	560 (460)	\$63 (\$62)	\$66 (\$65)
2002	22,700 (12,700)	50 (50)	640 (490)	\$68 (\$66)	\$70 (\$68)
2003	19,500 (7,700)	100 (100)	530 (400)	\$66 (\$63)	\$66 (\$63)

\*The 1981 total is inflated by one fire with the loss amount miscoded.

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

### U.S. Home Structure Fires Involving Gas Ranges, 1980-2003



Source: NFIRS and NFPA survey.

Note: Oven statistics are provided for comparison, because ovens are often included in ranges.

**Home Fires Involving Gas Ranges, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Cause</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unintentional	12,300	(82%)	90	(100%)	610	(93%)	\$65	(89%)
Failure of equipment or heat source	2,300	(15%)	0	(0%)	30	(4%)	\$5	(8%)
Intentional	200	(2%)	0	(0%)	10	(1%)	\$1	(2%)
Unclassified cause	200	(1%)	0	(0%)	20	(3%)	\$1	(1%)
Act of nature	0	(0%)	0	(0%)	0	(0%)	\$0	(0%)
<b>Total without confined fires</b>	<b>15,100</b>	<b>(100%)</b>	<b>90</b>	<b>(100%)</b>	<b>660</b>	<b>(100%)</b>	<b>\$72</b>	<b>(100%)</b>

<b>Factor Contributing to Ignition</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Equipment unattended	4,000	(26%)	20	(21%)	210	(31%)	\$29	(40%)
Heat source too close to combustibles	2,200	(15%)	20	(23%)	140	(21%)	\$9	(12%)
Leak or break	1,900	(13%)	10	(15%)	50	(7%)	\$4	(6%)
Unintentionally turned on or not turned off	1,600	(10%)	10	(7%)	30	(4%)	\$16	(22%)
Unclassified misuse of material or product	1,100	(7%)	0	(0%)	90	(14%)	\$6	(9%)
Abandoned or discarded material	900	(6%)	10	(7%)	30	(5%)	\$2	(3%)
Unclassified factor	700	(5%)	0	(0%)	20	(3%)	\$2	(3%)
Unclassified mechanical failure or malfunction	500	(3%)	0	(0%)	10	(1%)	\$2	(3%)
Failure to clean	500	(3%)	0	(0%)	0	(0%)	\$0	(0%)
Playing with heat source	300	(2%)	40	(40%)	10	(2%)	\$2	(2%)
Unclassified operational deficiency	300	(2%)	0	(0%)	0	(0%)	\$1	(2%)
Improper container or storage	200	(1%)	0	(0%)	10	(1%)	\$0	(0%)
Flammable liquid or gas spilled	200	(1%)	0	(0%)	20	(2%)	\$0	(0%)
Equipment used for not intended purpose	200	(1%)	0	(0%)	20	(3%)	\$1	(1%)
Equipment not being operated properly	200	(1%)	0	(0%)	20	(3%)	\$1	(2%)
Worn out	200	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Other known factor	900	(6%)	0	(0%)	40	(7%)	\$3	(5%)
<b>Total factor-contributing entries</b>	<b>15,900</b>	<b>(106%)</b>	<b>110</b>	<b>(114%)</b>	<b>690</b>	<b>(105%)</b>	<b>\$82</b>	<b>(113%)</b>
<b>Total fires without confined fires</b>	<b>15,100</b>	<b>(100%)</b>	<b>90</b>	<b>(100%)</b>	<b>660</b>	<b>(100%)</b>	<b>\$72</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Ranges, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	3,000	(20%)	30	(33%)	140	(22%)	\$18	(25%)
Asleep	900	(6%)	20	(20%)	100	(15%)	\$8	(11%)
Age was a factor	500	(3%)	30	(28%)	20	(3%)	\$3	(5%)
Possibly impaired by alcohol or drugs	500	(3%)	30	(27%)	40	(6%)	\$4	(6%)
Possibly mentally disabled	200	(1%)	0	(5%)	30	(5%)	\$1	(1%)
Physically disabled	100	(0%)	0	(0%)	10	(1%)	\$0	(0%)
Multiple persons involved	100	(0%)	0	(0%)	10	(2%)	\$1	(1%)
None	9,300	(62%)	30	(30%)	350	(53%)	\$38	(52%)
Not reported	1,000	(7%)	0	(5%)	10	(1%)	\$4	(5%)
<b>Total human-factor entries</b>	<b>15,600</b>	<b>(103%)</b>	<b>140</b>	<b>(148%)</b>	<b>710</b>	<b>(108%)</b>	<b>\$76</b>	<b>(105%)</b>
<b>Total fires without confined fires</b>	<b>15,100</b>	<b>(100%)</b>	<b>90</b>	<b>(100%)</b>	<b>660</b>	<b>(100%)</b>	<b>\$72</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Ranges, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Cooking materials	6,400	(42%)	30	(31%)	290	(44%)	\$31	(42%)
Flammable or combustible liquid or gas	2,400	(16%)	10	(15%)	140	(22%)	\$6	(9%)
Household utensils	800	(6%)	0	(0%)	30	(5%)	\$5	(6%)
Interior wall covering	800	(5%)	0	(0%)	10	(2%)	\$5	(7%)
Unclassified item	700	(5%)	0	(0%)	30	(4%)	\$3	(5%)
Cabinetry	700	(4%)	20	(23%)	10	(1%)	\$6	(9%)
Appliance housing	600	(4%)	0	(0%)	40	(6%)	\$3	(4%)
Box or bag	300	(2%)	0	(0%)	0	(0%)	\$2	(3%)
Unclassified soft goods or clothing	200	(1%)	10	(7%)	10	(2%)	\$0	(1%)
Clothing	200	(1%)	10	(8%)	20	(3%)	\$1	(1%)
Papers	200	(1%)	0	(0%)	10	(2%)	\$1	(1%)
Unclassified furniture	100	(1%)	0	(0%)	10	(1%)	\$2	(2%)
Curtains or blinds	100	(1%)	0	(0%)	10	(1%)	\$3	(4%)
Unclassified structural component or finish	100	(1%)	0	(0%)	0	(0%)	\$2	(2%)
Linen other than bedding	100	(1%)	0	(0%)	10	(2%)	\$0	(0%)
Multiple items	100	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Electrical wire or cable insulation	100	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Ceiling covering	100	(1%)	10	(9%)	10	(1%)	\$0	(1%)
Other known item	800	(5%)	10	(8%)	20	(3%)	\$2	(3%)
Total without confined fires	15,100	(100%)	90	(100%)	660	(100%)	\$72	(100%)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown, the indicated equipment and with type of cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Gas Ranges, 2004**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Thermal burn	6,000	36%
Anoxia	2,300	14%
Scald burn	2,100	12%
Other diagnosis	6,500	38%
Total	16,800	100%

Notes: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Figures include proportional allocation of injuries from ranges with unknown power. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Source: NEISS estimate by CPSC.

## Electric Ranges

**In 2003, an estimated 58,200 reported U.S. home structure fires involving electric-powered ranges resulted in 100 civilian deaths, 2,490 civilian injuries, and \$266 million in direct property damage.**

Trends are down if estimated confined fires are excluded and for civilian deaths and direct property damage even if estimated confined fires are included. If estimated confined fires are included, total electric range fires and injuries are up to levels not seen since the early 1980s, but it is likely that some of these fires would have been reported as non-fire incidents in the pre-1999 coding. The percentage of households using electric ranges increased from 52.1% to 59.4% from 1980 to 2003, while the percentage of households using gas ranges declined from 47.2% to 40.3%.

**Less than 1% of households cook with something other than gas or electricity.**

If the fires and losses reported as involving liquid- or solid-fueled ranges were partly or wholly miscodings, they still would not significantly change the estimated fire problem for electric ranges.

**One-half of fires involving electric ranges occur because the range is left unattended.**

This is also the cause for two-thirds of related fire deaths. One-eighth of fires involve equipment unintentionally turned on or not turned off, and one-tenth involve heat source too close to combustibles.

**Three-fifths of electric range fires begin with ignition of cooking materials.**

Other leading items first ignited include household utensils, appliance housings, and cabinetry.

**Three-fourths of emergency room injuries involving electric ranges were thermal burns.**

**Electric ranges have a risk of fire death, relative to usage, that is less than that for gas ranges, but a higher risk of fire, fire injury, and property damage due to fire.**

The risk of fire death was lower for electric ranges than for gas ranges by 13% in 1999-2003. The risk of fire was higher by 47% in 1999-2003. The risk of fire injury was higher by 118% (more than double) in 1999-2003. The risk of direct property damage was higher by 133% (more than double) in 1999-2003. All these calculations are losses per million households cooking with electricity vs. gas and so take account of the fact that roughly one-third fewer households cook with gas than with electricity.

These comparisons would not significantly change if oven fires were added, except for deaths. With oven fires, the risk of fire would be higher for electric ranges by 43%, the risk of fire injury would be higher by 113%, and the risk of fire damage to property would be higher by 123%. The risk of fire death would still be lower but by only 8%.

Electrocution deaths (0.7 per year for electric ranges vs. none for gas ranges) and non-fire carbon monoxide deaths (none in 1999-2002 for electric ranges vs. 7.5 per year in 1999-2002 for gas ranges) would change the risk comparison so that electric ranges (with oven fires and non-fire electrocution deaths included) still have a lower risk of fire death than gas ranges (with oven fires and non-fire carbon monoxide deaths included) by about 14%. Deaths due to gas

explosions with no after-fire are even more rare, and even if all were attributed to gas ranges, they would not significantly affect the risk. Carbon monoxide is not an issue with electric ranges because they do not burn fuel.

### **Safety Tips**

- The leading cause of cooking fires is unattended equipment. Stay in the kitchen when you are frying, grilling, broiling or boiling food. If you must leave the kitchen for a short period of time, turn off the stove. If you are simmering, baking, or roasting food, check it regularly, remain in the home while food is cooking, and use a timer to remind you that something is cooking.
- Keep cooking equipment clear of items that would burn, including spilled cooking materials, rags, towels, low-hanging curtains or drapes, and grease build-up on walls or cabinets. Avoid wearing loose clothing or dangling sleeves, which can catch fire if it comes in contact with a flame or hot cooking element. Avoid reaching over active burners to access items behind them, including other burners and stored items on stovetop or counters or in cabinets.
- If your clothes catch fire, stop, drop and roll until the fire is out. Cool the burner with cool water for 3-5 minutes.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39”) away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.
- Be sure the stove is installed in accordance with NFPA’s *National Electrical Code*®. Read and follow manufacturer’s instructions, particularly with regard to, installation, maintenance, and operation.
- Be particularly careful with flammable or combustible liquids such as cooking oil near potential heat sources, such as hot stove surface burners or pilot lights, which are heat sources even when the stove is not in use.
- Use oven mitts or other protection for hands when moving hot food from ovens, microwave ovens, or stovetops. Never use a wet oven mitt or potholder as there is a risk of scald burns.
- Always keep an oven mitt and pot lid (fitted to the pot or pan you are using) nearby when you are cooking. If a small grease fire starts in the pot or pan, smother the flames by carefully sliding the lid over the pan, using the oven mitt to shield yourself if the lid itself becomes hot. Then turn off the burner. To keep the fire from restarting with fresh oxygen, keep the lid in place until the pot or pan is completely cool.

- Never cook when you are drowsy or if you have consumed alcohol or medication that can make you sleepy.

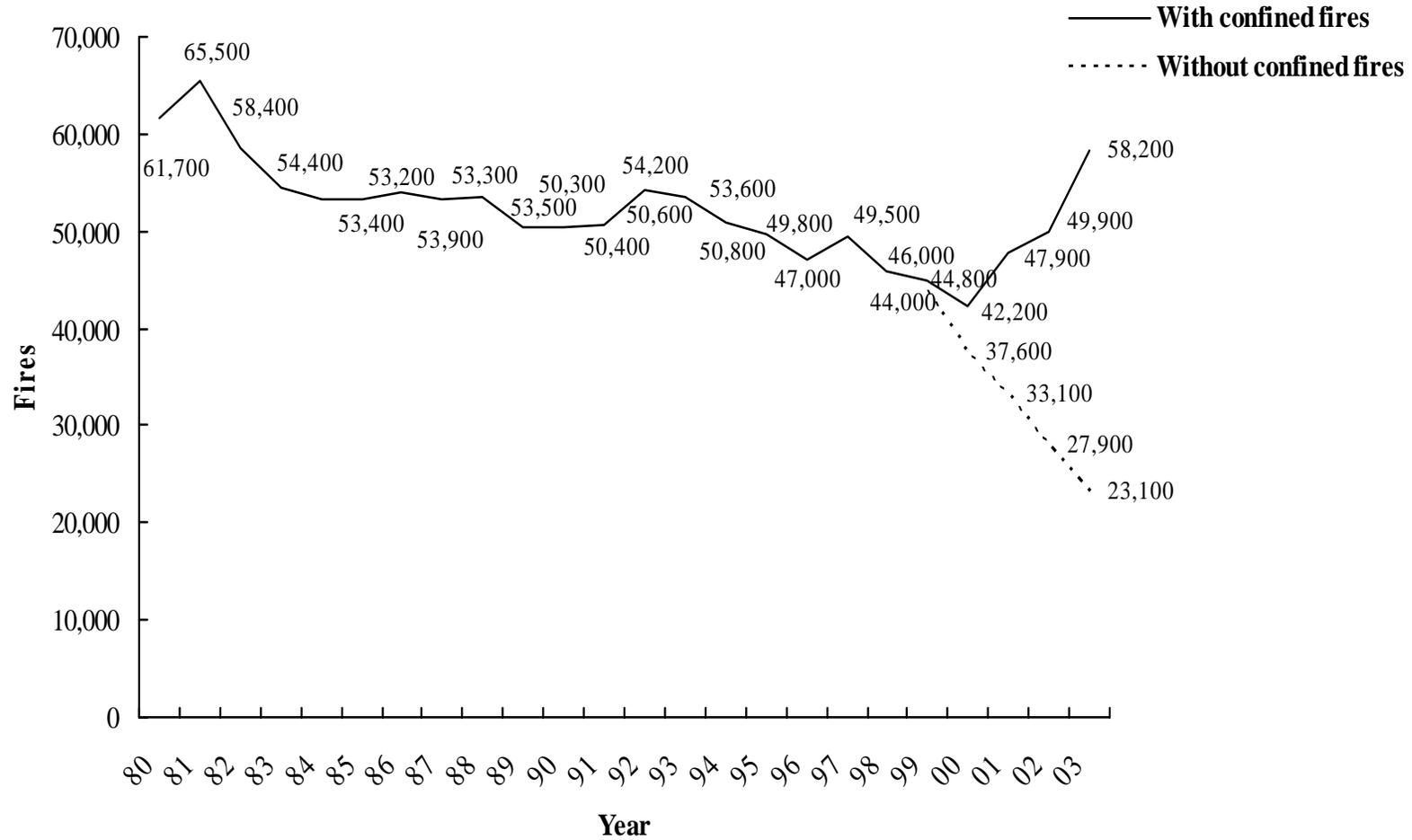
**Home Fires Involving Electric Ranges, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires.)

Year	Fires	Civilian		Civilian		Direct		Direct	
		Deaths	Injuries	Property Damage	Property Damage	(in Millions)	(in Millions of 2003 Dollars)	(in Millions of 2003 Dollars)	(in Millions of 2003 Dollars)
1980	61,700	80	2,410	\$101				\$226	
1981	65,500	160	2,510	\$92				\$186	
1982	58,400	90	2,630	\$111				\$211	
1983	54,400	110	2,810	\$145				\$267	
1984	53,400	140	2,360	\$166				\$293	
1985	53,200	160	2,300	\$147				\$251	
1986	53,900	160	2,510	\$164				\$275	
1987	53,300	140	2,800	\$154				\$249	
1988	53,500	110	2,870	\$166				\$258	
1989	50,400	90	2,800	\$191				\$284	
1990	50,300	150	3,010	\$199				\$281	
1991	50,600	110	3,000	\$257				\$347	
1992	54,200	110	2,950	\$174				\$229	
1993	53,600	170	3,430	\$253				\$322	
1994	50,800	80	2,830	\$181				\$225	
1995	49,800	80	2,820	\$178				\$215	
1996	47,000	110	2,730	\$198				\$233	
1997	49,500	100	3,020	\$223				\$255	
1998	46,000	130	2,870	\$214				\$241	
1999	44,800 (44,000)	150 (150)	2,480 (2,460)	\$261 (\$260)				\$288 (\$287)	
2000	42,200 (37,600)	60 (60)	2,500 (2,400)	\$279 (\$276)				\$298 (\$295)	
2001	47,900 (33,100)	200 (200)	2,620 (2,130)	\$231 (\$227)				\$240 (\$235)	
2002	49,900 (27,900)	100 (100)	2,350 (1,800)	\$252 (\$245)				\$258 (\$250)	
2003	58,200 (23,100)	100 (100)	2,490 (1,900)	\$266 (\$255)				\$266 (\$255)	

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confirmed cooking fires, device percent of confirmed cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Electric Ranges or Ovens, 1980-2003



Source: NFIRS and NFPA survey.

**Home Fires Involving Electric Ranges, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Cause</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unintentional	30,100	(91%)	110	(90%)	2,030	(95%)	\$229	(91%)
Failure of equipment or heat source	2,200	(7%)	10	(10%)	80	(4%)	\$11	(4%)
Intentional	500	(1%)	0	(0%)	20	(1%)	\$4	(1%)
Unclassified cause	400	(1%)	0	(0%)	10	(0%)	\$9	(3%)
Act of nature	0	(0%)	0	(0%)	0	(0%)	\$0	(0%)
<b>Total without confined fires</b>	<b>33,100</b>	<b>(100%)</b>	<b>120</b>	<b>(100%)</b>	<b>2,140</b>	<b>(100%)</b>	<b>\$253</b>	<b>(100%)</b>

<b>Factor Contributing to Ignition</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Equipment unattended	15,800	(48%)	80	(68%)	1,200	(56%)	\$112	(44%)
Unintentionally turned on or not turned off	3,800	(12%)	10	(6%)	200	(10%)	\$47	(19%)
Heat source too close to combustibles	3,300	(10%)	20	(17%)	220	(10%)	\$34	(13%)
Abandoned or discarded material	2,900	(9%)	10	(12%)	130	(6%)	\$24	(9%)
Unclassified misuse of material	2,300	(7%)	10	(12%)	190	(9%)	\$16	(6%)
Unclassified factor	1,500	(5%)	10	(5%)	80	(4%)	\$15	(6%)
Failure to clean	800	(3%)	0	(0%)	20	(1%)	\$1	(0%)
Unclassified operational deficiency	700	(2%)	0	(0%)	60	(3%)	\$3	(1%)
Unspecified short circuit arc	600	(2%)	0	(0%)	0	(0%)	\$6	(2%)
Unclassified electrical failure or malfunction	500	(2%)	0	(0%)	50	(2%)	\$3	(1%)
Unclassified mechanical failure or malfunction	500	(2%)	0	(0%)	10	(1%)	\$3	(1%)
Equipment not being operated properly	400	(1%)	10	(5%)	20	(1%)	\$3	(1%)
Flammable liquid or gas spilled	200	(1%)	0	(0%)	30	(1%)	\$2	(1%)
Arc or spark from operating equipment	200	(1%)	10	(5%)	20	(1%)	\$3	(1%)
Short circuit arc from defective or worn insulation	200	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Other known factors	1,600	(5%)	10	(10%)	40	(2%)	\$10	(4%)
<b>Total factor-contributing entries</b>	<b>35,500</b>	<b>(107%)</b>	<b>170</b>	<b>(139%)</b>	<b>2,270</b>	<b>(106%)</b>	<b>\$280</b>	<b>(111%)</b>
<b>Total fires without confined fires</b>	<b>33,100</b>	<b>(100%)</b>	<b>120</b>	<b>(100%)</b>	<b>2,140</b>	<b>(100%)</b>	<b>\$253</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Electric Ranges, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	7,400	(22%)	0	(0%)	470	(22%)	\$57	(22%)
Asleep	1,900	(6%)	50	(44%)	170	(8%)	\$21	(9%)
Age was a factor	800	(2%)	10	(12%)	80	(4%)	\$7	(3%)
Possibly impaired by alcohol or drugs	800	(2%)	20	(20%)	150	(7%)	\$9	(4%)
Possibly mentally disabled	300	(1%)	0	(3%)	30	(1%)	\$2	(1%)
Multiple persons involved	200	(1%)	0	(0%)	10	(0%)	\$1	(1%)
Physically disabled	200	(1%)	20	(13%)	30	(1%)	\$2	(1%)
None	21,300	(64%)	20	(20%)	1,260	(59%)	\$153	(61%)
Not reported	1,200	(4%)	0	(0%)	50	(2%)	\$10	(4%)
Total human-factor entries	34,100	(103%)	140	(113%)	2,250	(105%)	\$263	(104%)
Total fires without confined fires	33,100	(100%)	120	(100%)	2,140	(100%)	\$253	(100%)

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian death and injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Electric Ranges, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Cooking materials	21,400	(64%)	40	(35%)	1,640	(77%)	\$136	(54%)
Household utensils	1,600	(5%)	0	(0%)	70	(3%)	\$12	(5%)
Appliance housing	1,500	(4%)	10	(8%)	70	(3%)	\$11	(4%)
Cabinetry	1,300	(4%)	0	(4%)	30	(1%)	\$23	(9%)
Unclassified item	1,100	(3%)	0	(4%)	70	(3%)	\$7	(3%)
Electrical wire or cable insulation	900	(3%)	0	(0%)	10	(0%)	\$3	(1%)
Interior wall covering	900	(3%)	20	(17%)	40	(2%)	\$17	(7%)
Flammable or combustible liquid or gas	800	(2%)	0	(0%)	80	(4%)	\$6	(2%)
Box or bag	700	(2%)	0	(0%)	20	(1%)	\$8	(3%)
Papers	300	(1%)	0	(0%)	10	(0%)	\$3	(1%)
Other known item	2,700	(8%)	40	(32%)	110	(5%)	\$24	(10%)
<b>Total without confined fires</b>	<b>33,100</b>	<b>(100%)</b>	<b>120</b>	<b>(100%)</b>	<b>2,140</b>	<b>(100%)</b>	<b>\$253</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths and injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Electric Ranges, 2004**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Thermal burn	11,900	74%
Scald burn	500	3%
Anoxia	300	2%
Other diagnosis	3,400	22%
Total	16,000	100%

Notes: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Figures include proportional allocation of injuries from ranges with unknown power. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Source: NEISS estimate by CPSC.

## Gas Ovens or Rotisseries

**In 2003, an estimated 7,600 reported U.S. home structure fires involving gas-fueled ovens or rotisseries resulted in 90 civilian injuries and \$15 million in direct property damage. There were no reported civilian fire deaths.**

Fires involving gas ovens or rotisseries have declined substantially since 1980 unless estimated confined fires are included. Associated deaths and injuries have declined even with the inclusion of confined fires. With the change to NFIRS Version 5.0, it is possible that more ovens within ranges are being coded under ranges than when the range group's name emphasized the stove portion.

Deaths due to gas explosions with no after-fire are very rare and do not add significantly to the fire death toll. Non-fire deaths due to unvented carbon monoxide averaged 7.5 deaths a year in 1999-2002 for gas ranges and ovens. This is a small fraction of fire deaths in fires involving these devices but would be a large fraction of gas oven fire deaths if all involved gas ovens only.

**Less than 1% of households cook with something other than gas or electricity.**

If the fires and losses reported as involving liquid- or solid-fueled ovens or rotisseries were partly or wholly miscodings, they still would not significantly change the estimated fire problem for gas ovens or rotisseries.

**Two-fifths of gas-fueled oven fires involve cooking left unattended.**

The second leading cause is combustibles too close to heat.

**Two-fifths of gas-fueled oven fires begin with ignition of cooking materials.**

Other leading items first ignited include appliance housings, household utensils, and flammable or combustible liquids or the gas fuel for the oven,

**There were 300 emergency room injuries involving ovens in 2004.**

There were too few injuries to permit a breakdown by major diagnosis, and the coding no longer distinguishes gas vs. electric ovens.

### Safety Tips

- The leading cause of cooking fires is unattended equipment. Stay in the kitchen when you are frying, grilling, broiling or boiling food. If you must leave the kitchen for a short period of time, turn off the stove. If you are simmering, baking, or roasting food, check it regularly, remain in the home while food is cooking, and use a timer to remind you that something is cooking.
- Keep cooking equipment clear of items that could burn, including spilled cooking materials, rags, towels, low-hanging curtains or drapes, and grease build-up on walls or cabinets. Avoid wearing loose clothing or dangling sleeves, which can catch fire if it comes in contact with a flame or hot cooking element.

- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39”) away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.
- Be sure the oven is installed in accordance with *NFPA 54, National Fuel Gas Code*, which addresses clearances, installation, and maintenance. Read and follow manufacturer’s instructions, particularly with regard to installation, maintenance, and operation. Liquefied-petroleum (LP)-gas-fueled ovens with self-contained fuel supplies are prohibited for home use by NFPA codes.
- Be particularly careful with flammable or combustible liquids such as cooking oil near potential heat sources, such as oven heating elements, which are heat sources even when the oven is not in use.
- Be sure any container used is safe for oven use and for the temperature setting.
- Use oven mitts or other protection for hands when moving hot food from ovens, microwave ovens, or stovetops. Never use a wet oven mitt or potholder as there is a risk of scald burns.
- In case of an oven fire, turn off the heat and close the oven door, keeping it closed to prevent fire from burning you or your clothing.
- Never cook when you are drowsy or if you have consumed alcohol or medication that can make you sleepy.
- Install a carbon monoxide alarm to detect dangerous build-ups of unvented carbon monoxide from fueled cooking equipment or other sources.
- In September 1997, CPSC urged consumers to have qualified professionals inspect any older flexible connectors, made of uncoated brass, for cracking, breaking hazard.\* These connectors are used between gas supply pipes and home appliances, typically ranges, ovens, or clothes dryers.

\* “CPSC Urges Consumers to Have Flexible Gas Connectors Checked,” *News from CPSC*, Release #97-187, September 8, 1997.

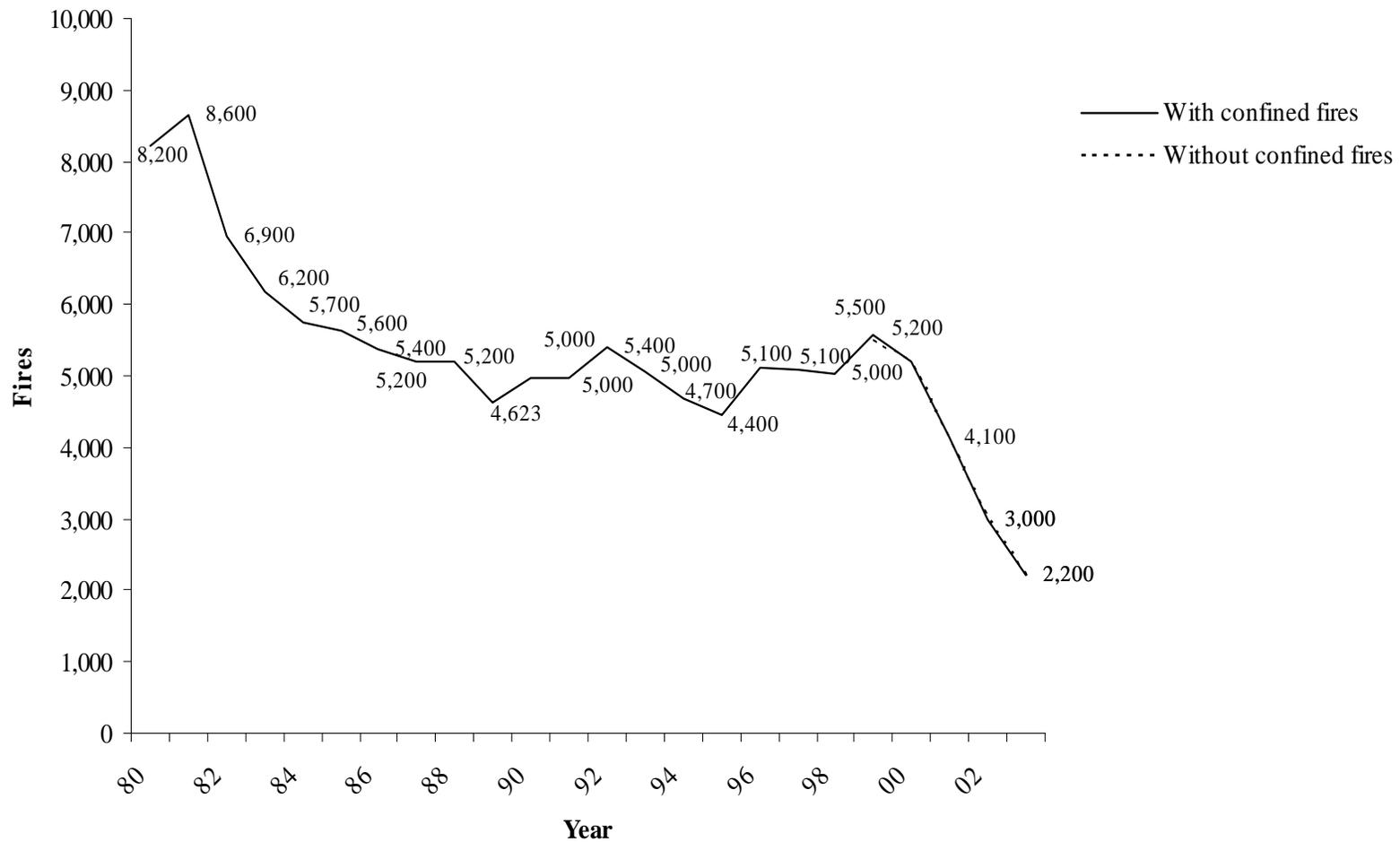
**Home Fires Involving Gas Ovens or Rotisseries, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires.)

Year	Fires	Civilian		Direct Property Damage (in Millions)		Direct Property Damage (in Millions of 2003 Dollars)	
		Deaths	Injuries				
1980	8,200	23	160	\$7		\$15	
1981	8,600	6	130	\$5		\$9	
1982	6,900	9	130	\$6		\$12	
1983	6,200	8	110	\$6		\$11	
1984	5,700	13	140	\$7		\$12	
1985	5,600	0	150	\$6		\$11	
1986	5,400	3	100	\$6		\$10	
1987	5,200	4	80	\$9		\$14	
1988	5,200	7	140	\$5		\$8	
1989	4,600	4	90	\$8		\$11	
1990	5,000	5	150	\$7		\$10	
1991	5,000	1	120	\$9		\$13	
1992	5,400	5	160	\$13		\$17	
1993	5,000	22	180	\$13		\$17	
1994	4,700	4	190	\$6		\$8	
1995	4,400	25	130	\$8		\$10	
1996	5,100	25	160	\$10		\$12	
1997	5,100	13	160	\$13		\$15	
1998	5,000	7	150	\$7		\$8	
1999	6,000 (5,500)	4 (4)	140 (140)	\$18 (\$18)		\$20 (\$20)	
2000	6,100 (5,200)	0 (0)	110 (110)	\$9 (\$8)		\$9 (\$9)	
2001	7,600 (4,100)	0 (0)	120 (110)	\$9 (\$9)		\$10 (\$9)	
2002	7,600 (3,000)	1 (1)	90 (80)	\$13 (\$13)		\$13 (\$13)	
2003	7,600 (2,200)	0 (0)	90 (70)	\$15 (\$15)		\$15 (\$15)	

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

### U.S. Home Structure Fires Involving Gas Ovens or Rotisseries, 1980-2003



Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Ovens or Rotisseries, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Cause	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unintentional	3,300	(83%)	NA	NA	70	(65%)	\$10	(79%)
Failure of equipment or heat source	500	(14%)	NA	NA	20	(19%)	\$3	(20%)
Intentional	100	(2%)	NA	NA	20	(16%)	\$0	(0%)
Unclassified cause	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Total without confined fires	4,000	(100%)	1	NA	100	(100%)	\$12	(100%)

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Equipment unattended	1,600	(41%)	NA	NA	0	(0%)	\$6	(52%)
Heat source too close to combustibles	300	(8%)	NA	NA	0	(0%)	\$0	(2%)
Unclassified misuse of material	200	(6%)	NA	NA	0	(0%)	\$1	(6%)
Leak or break	200	(6%)	NA	NA	20	(23%)	\$1	(8%)
Improper container or storage	200	(5%)	NA	NA	0	(0%)	\$0	(1%)
Unclassified mechanical failure or malfunction	200	(5%)	NA	NA	0	(0%)	\$0	(0%)
Failure to clean	200	(5%)	NA	NA	0	(0%)	\$0	(1%)
Abandoned or discarded material	200	(5%)	NA	NA	0	(0%)	\$1	(8%)
Unintentionally turned on or not turned off	200	(4%)	NA	NA	30	(29%)	\$0	(0%)
Unclassified operational deficiency	100	(3%)	NA	NA	0	(0%)	\$0	(0%)
Unclassified factor	100	(3%)	NA	NA	0	(0%)	\$0	(1%)
Installation deficiency	100	(2%)	NA	NA	0	(0%)	\$1	(11%)
Equipment used for not intended purpose	100	(2%)	NA	NA	0	(0%)	\$0	(0%)
Equipment not being operated properly	100	(2%)	NA	NA	0	(0%)	\$0	(1%)
Other known factors	300	(8%)	NA	NA	70	(67%)	\$1	(11%)
Total factor-contributing entries	4,100	(105%)	1	NA	120	(119%)	\$13	(101%)
Total fires without confined fires	4,000	(100%)	1	NA	100	(100%)	\$12	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Ovens or Rotisseries, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	800	(20%)	NA	NA	20	(16%)	\$2	(13%)
Asleep	600	(14%)	NA	NA	0	(0%)	\$0	(0%)
Physically disabled	0	(0%)	NA	NA	0	(0%)	\$0	(0%)
Possibly mentally disabled	0	(0%)	NA	NA	0	(0%)	\$0	(0%)
None	2,200	(56%)	NA	NA	80	(84%)	\$11	(85%)
Not reported	400	(9%)	NA	NA	0	(0%)	\$0	(2%)
Total human-factor entries	4,000	(100%)	1	NA	100	(100%)	\$12	(100%)
Total fires without confined fires	4,000	(100%)	1	NA	100	(100%)	\$12	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Ovens or Rotisseries, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Cooking materials	1,500	(38%)	NA	NA	0	(0%)	\$4	(35%)
Appliance housing	500	(12%)	NA	NA	10	(12%)	\$0	(2%)
Household utensils	300	(9%)	NA	NA	20	(18%)	\$0	(1%)
Flammable or combustible liquid or gas	300	(8%)	NA	NA	10	(15%)	\$1	(10%)
Interior wall covering	200	(6%)	NA	NA	40	(36%)	\$3	(27%)
Unclassified item	200	(6%)	NA	NA	20	(18%)	\$1	(6%)
Cabinetry	200	(4%)	NA	NA	0	(0%)	\$1	(7%)
Clothing	100	(2%)	NA	NA	0	(0%)	\$0	(0%)
Box or bag	100	(2%)	NA	NA	0	(0%)	\$0	(0%)
Linen other than bedding	100	(2%)	NA	NA	0	(0%)	\$0	(0%)
Other known item	400	(10%)	NA	NA	0	(0%)	\$1	(10%)
<b>Total without confined fires</b>	<b>4,000</b>	<b>(100%)</b>	<b>0</b>	<b>NA</b>	<b>100</b>	<b>(100%)</b>	<b>\$12</b>	<b>(100%)</b>

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

## Electric Ovens or Rotisseries

**In 2003, an estimated 15,900 reported U.S. home structure fires involving electric-powered ovens or rotisseries resulted in 11 civilian deaths, 290 civilian injuries, and \$37 million in direct property damage.**

Fires involving electric ovens or rotisseries declined from 1980 to 1989, then increased back to the 1980-1981 level in 1996-1998. After 1998, these fires declined, but with confined fires, the fire incident total has risen to levels never seen before. It is reasonable to consider that some of these confined fires would have been coded as something other than fires under the old NFIRS codes.

**Less than 1% of households cook with something other than gas or electricity.**

If the fires or losses reported as involving liquid- or solid-fueled ovens or rotisseries were partly or wholly miscodings, they still would not significantly change the estimated fire problem for electric ovens or rotisseries.

**One-seventh to one-sixth of electric oven fires involved cooking left unattended.**

Other leading causes in fires involving electric ovens include combustibles too close to heat, unintentionally turning it on or (more likely) not turning it off, and failure to clean.

**Two-fifths of electric-powered oven fires begin with ignition of cooking materials.**

Other leading items first ignited in electric oven fires include household utensils and electrical wire or cable insulation.

**There were 300 emergency room injuries involving ovens in 2004.**

There were too few injuries to permit a breakdown by major diagnosis, and the coding no longer distinguishes gas vs. electric ovens.

### Safety Tips

- The leading cause of cooking fires is unattended equipment. Stay in the kitchen when you are frying, grilling, broiling or boiling food. If you must leave the kitchen for a short period of time, turn off the stove. If you are simmering, baking, or roasting food, check it regularly, remain in the home while food is cooking, and use a timer to remind you that something is cooking.
- Keep cooking equipment clear of items that could burn, including spilled cooking materials, rags, towels, low-hanging curtains or drapes, and grease build-up on walls or cabinets. Avoid wearing loose clothing or dangling sleeves, which can catch fire if it comes in contact with a flame or hot cooking element.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39") away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.

- Be sure the oven is installed in accordance with NFPA's *National Electrical Code*®. Read and follow manufacturer's instructions, particularly with regard to, installation, maintenance, and operation.
- Be particularly careful with flammable or combustible liquids near potential heat sources, such as oven heating elements which are heat sources even when the oven is not in use.
- Be sure any container used is safe for oven use and for the temperature setting.
- Use oven mitts or other protection for hands when moving hot food from ovens, microwave ovens, or stovetops. Never use a wet oven mitt or potholder as there is a risk of scald burns.
- In case of an oven fire, turn off the heat and close the oven door, keeping it closed to prevent fire from burning you or your clothing.
- Never cook when you are drowsy or if you have consumed alcohol or medication that can make you sleepy.

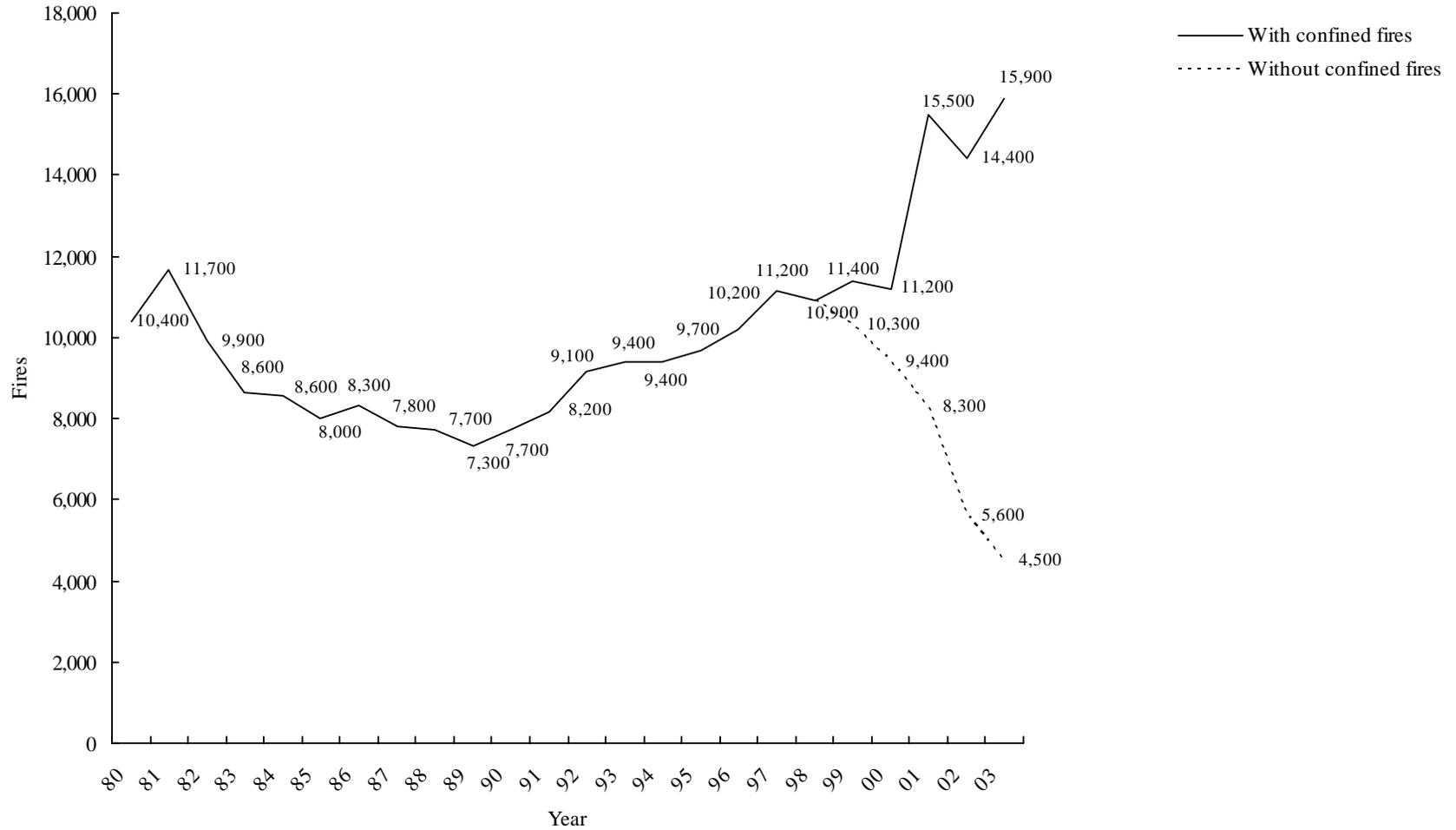
**Home Fires Involving Electric Ovens or Rotisseries, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires.)

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	Direct Property Damage (In Millions of 2003 Dollars)
1980	10,400	0	70	\$5	\$11
1981	11,700	12	160	\$6	\$13
1982	9,900	14	230	\$7	\$13
1983	8,600	0	130	\$4	\$8
1984	8,600	0	130	\$11	\$19
1985	8,000	0	170	\$9	\$16
1986	8,300	7	170	\$12	\$21
1987	7,800	9	170	\$12	\$20
1988	7,700	18	190	\$17	\$26
1989	7,300	0	170	\$13	\$20
1990	7,700	5	270	\$10	\$15
1991	8,200	2	230	\$14	\$19
1992	9,100	5	250	\$16	\$20
1993	9,400	3	270	\$20	\$26
1994	9,400	17	250	\$14	\$18
1995	9,700	4	320	\$23	\$28
1996	10,200	15	370	\$24	\$29
1997	11,200	0	330	\$26	\$29
1998	10,900	13	340	\$28	\$32
1999	11,400 (10,300)	0 (0)	280 (270)	\$26 (\$25)	\$28 (\$28)
2000	11,200 (9,400)	12 (12)	300 (300)	\$34 (\$32)	\$36 (\$34)
2001	15,500 (8,300)	17 (17)	350 (330)	\$26 (\$25)	\$27 (\$26)
2002	14,400 (5,600)	4 (4)	220 (210)	\$32 (\$32)	\$33 (\$32)
2003	15,900 (4,500)	11 (11)	290 (230)	\$37 (\$38)	\$39 (\$38)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

### U.S. Home Structure Fires Involving Electric Ovens or Rotisseries, 1980-2003



Source: NFIRS and NFPA survey.

**Home Fires Involving Electric Ovens or Rotisseries, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Cause	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unintentional	5,400	(71%)	NA	NA	230	(85%)	\$24	(79%)
Failure of equipment or heat source	1,900	(25%)	NA	NA	30	(12%)	\$6	(20%)
Intentional	200	(3%)	NA	NA	10	(4%)	\$0	(1%)
Unclassified cause	100	(1%)	NA	NA	0	(0%)	\$0	(0%)
Act of nature	0	(0%)	NA	NA	0	(0%)	\$0	(0%)
Total without confined fires	7,600	(100%)	9	NA	270	(100%)	\$30	(100%)

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Equipment unattended	1,200	(15%)	NA	NA	70	(27%)	\$7	(23%)
Heat source too close to combustibles	900	(12%)	NA	NA	30	(11%)	\$2	(7%)
Unclassified misuse of material	700	(9%)	NA	NA	40	(16%)	\$2	(8%)
Unintentionally turned on or not turned off	600	(7%)	NA	NA	0	(0%)	\$3	(9%)
Unclassified factor	500	(7%)	NA	NA	10	(5%)	\$5	(16%)
Failure to clean	500	(7%)	NA	NA	10	(4%)	\$2	(5%)
Unclassified electrical failure or malfunction	500	(6%)	NA	NA	0	(0%)	\$0	(1%)
Abandoned or discarded material	400	(5%)	NA	NA	30	(11%)	\$3	(10%)
Unspecified short circuit arc	400	(5%)	NA	NA	20	(7%)	\$1	(3%)
Short circuit arc from defective or worn insulation	300	(4%)	NA	NA	10	(5%)	\$0	(0%)
Unclassified mechanical failure or malfunction	300	(4%)	NA	NA	0	(0%)	\$2	(5%)
Unclassified operational deficiency	200	(3%)	NA	NA	0	(0%)	\$0	(1%)
Improper container or storage	200	(3%)	NA	NA	10	(4%)	\$0	(1%)
Improper startup	200	(3%)	NA	NA	0	(0%)	\$0	(1%)
Worn out	200	(3%)	NA	NA	0	(0%)	\$0	(1%)
Leak or break	100	(2%)	NA	NA	0	(0%)	\$0	(0%)
Other known factors	800	(11%)	NA	NA	30	(10%)	\$3	(12%)
Total factor-contributing entries	8,100	(106%)	9	NA	270	(100%)	\$31	(104%)
Total fires without confined fires	7,600	(100%)	9	NA	270	(100%)	\$30	(100%)

NA - Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Electric Ovens or Rotisseries, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	900	(12%)	NA	NA	40	(16%)	\$6	(21%)
Asleep	100	(2%)	NA	NA	30	(13%)	\$1	(4%)
Age was a factor	100	(2%)	NA	NA	20	(8%)	\$0	(1%)
Possibly mentally disabled	100	(1%)	NA	NA	0	(0%)	\$1	(4%)
Possibly impaired by alcohol or drugs	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Physically disabled	0	(0%)	NA	NA	10	(4%)	\$0	(0%)
Multiple persons involved	0	(0%)	NA	NA	0	(0%)	\$0	(0%)
None	5,900	(77%)	NA	NA	190	(72%)	\$19	(64%)
Not reported	500	(7%)	NA	NA	0	(0%)	\$3	(10%)
<b>Total human-factor entries</b>	<b>7,700</b>	<b>(101%)</b>	<b>9</b>	<b>NA</b>	<b>300</b>	<b>(112%)</b>	<b>\$32</b>	<b>(105%)</b>
<b>Total fires without confined fires</b>	<b>7,600</b>	<b>(100%)</b>	<b>9</b>	<b>NA</b>	<b>270</b>	<b>(100%)</b>	<b>\$30</b>	<b>(100%)</b>

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factor can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Electric Ovens or Rotisseries, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Cooking materials	3,100	(41%)	NA	NA	140	(54%)	\$11	(38%)
Household utensils	700	(9%)	NA	NA	20	(7%)	\$3	(9%)
Electrical wire or cable insulation	700	(9%)	NA	NA	20	(7%)	\$2	(6%)
Unclassified item	600	(8%)	NA	NA	0	(0%)	\$3	(11%)
Appliance housing	600	(7%)	NA	NA	10	(4%)	\$2	(7%)
Cabinetry	400	(5%)	NA	NA	20	(9%)	\$2	(7%)
Box or bag	300	(4%)	NA	NA	30	(11%)	\$0	(1%)
Interior wall covering	200	(3%)	NA	NA	10	(3%)	\$2	(7%)
Flammable or combustible liquid or gas	100	(2%)	NA	NA	0	(0%)	\$0	(1%)
Trash	100	(2%)	NA	NA	0	(0%)	\$0	(0%)
Other known item	800	(11%)	NA	NA	20	(6%)	\$4	(13%)
Total without confined fires	7,600	(100%)	9	NA	270	(100%)	\$30	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fire reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

## Portable Cooking or Warming Device

**In 2003, an estimated 6,100 reported U.S. home structure fires involving portable cooking or warming devices resulted in 17 civilian deaths, 140 civilian injuries, and \$32 million in direct property damage.**

Fires involving portable cooking or warming devices have declined substantially since 1980, unless confined fires are included. Deaths have varied considerably with no consistent trend. Nearly all these devices are electric-powered, so no breakdown is given by type of fuel or power.

**More than half of portable cooking or warming device fires involve toasters, toaster ovens, or countertop broilers.**

Two-thirds of associated deaths were in fires involving hot plates or other food warmers.

### Percentage of 1999-2003 Portable Cooking or Warming Device Fires Reported in NFIRS Version 5.0

Portable Cooking or Warming Device	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage
Toaster, toaster oven, or counter-top broiler	49%	10%	27%	45%
Wok, frying pan, or skillet	17%	12%	28%	14%
Coffee maker or teapot	16%	12%	23%	21%
Food warmer or hot plate	10%	66%	10%	10%
Slow cooker	4%	0%	9%	8%
Kettle	3%	0%	3%	1%
Waffle iron or griddle	1%	0%	0%	1%
Bread-making machine	1%	0%	0%	0%
Total portable devices	100%	100%	100%	100%

### Percentage of 1999-2003 Portable Cooking or Warming Device Reported Confined Cooking Fires

Portable Cooking or Warming Device	Fires	Civilian Injuries	Direct Property Damage
Toaster, toaster oven, or counter-top broiler	60%	21%	51%
Wok, frying pan, or skillet	21%	79%	39%
Kettle	6%	0%	4%
Coffee maker or teapot	4%	0%	5%
Food warmer or hot plate	3%	0%	0%
Slow cooker	3%	0%	1%
Pressure cooker	1%	0%	0%
Bread-making machine	1%	0%	0%
Waffle iron or griddle	1%	0%	0%
Total portable devices	100%	100%	100%

**Unattended cooking is the leading cause, accounting for one-fifth of these fires.**

Other leading causes include placing combustibles too close to heat, various electrical or mechanical failures, and unintentionally turning the device on or, more likely, failing to turn the device off.

**More than one-quarter of these fires began with ignition of cooking materials.**

Other leading items first ignited include appliance housings (one-sixth of fires), cabinetry, household utensils and electrical wire or cable insulation.

**Scald and thermal burns accounted for two-thirds of emergency room injuries involving portable cooking or warming devices.**

The leading devices were pressure cookers and slow cookers, which both ranked low for fires.

**Safety Tips**

- The leading cause of cooking fires is unattended equipment. Stay in the kitchen when you are frying, grilling, broiling or boiling food. If you must leave the kitchen for a short period of time, turn off the stove. If you are simmering, baking, or roasting food, check it regularly, remain in the home while food is cooking, and use a timer to remind you that something is cooking.
- Keep cooking equipment clear of items that could burn, including spilled cooking materials, rags, towels, low-hanging curtains or drapes, and grease build-up on walls or cabinets. Avoid wearing loose clothing or dangling sleeves, which can catch fire if it comes in contact with a flame or hot cooking element. Avoid reaching over active cooking elements to access items behind them, including stored items on counters or in cabinets.
- Use portable cooking and warming devices only on stable surfaces, away from traffic, to avoid tipping them over.
- Comply with all manufacturer's instructions, which address clearances, maintenance, and operation.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39") away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.
- Keep power cords coiled so they are not within easy grasping range of children.
- If your clothes catch fire, stop drop and roll until the fire is out. Cool the burn with cool water for 3-5 minutes.

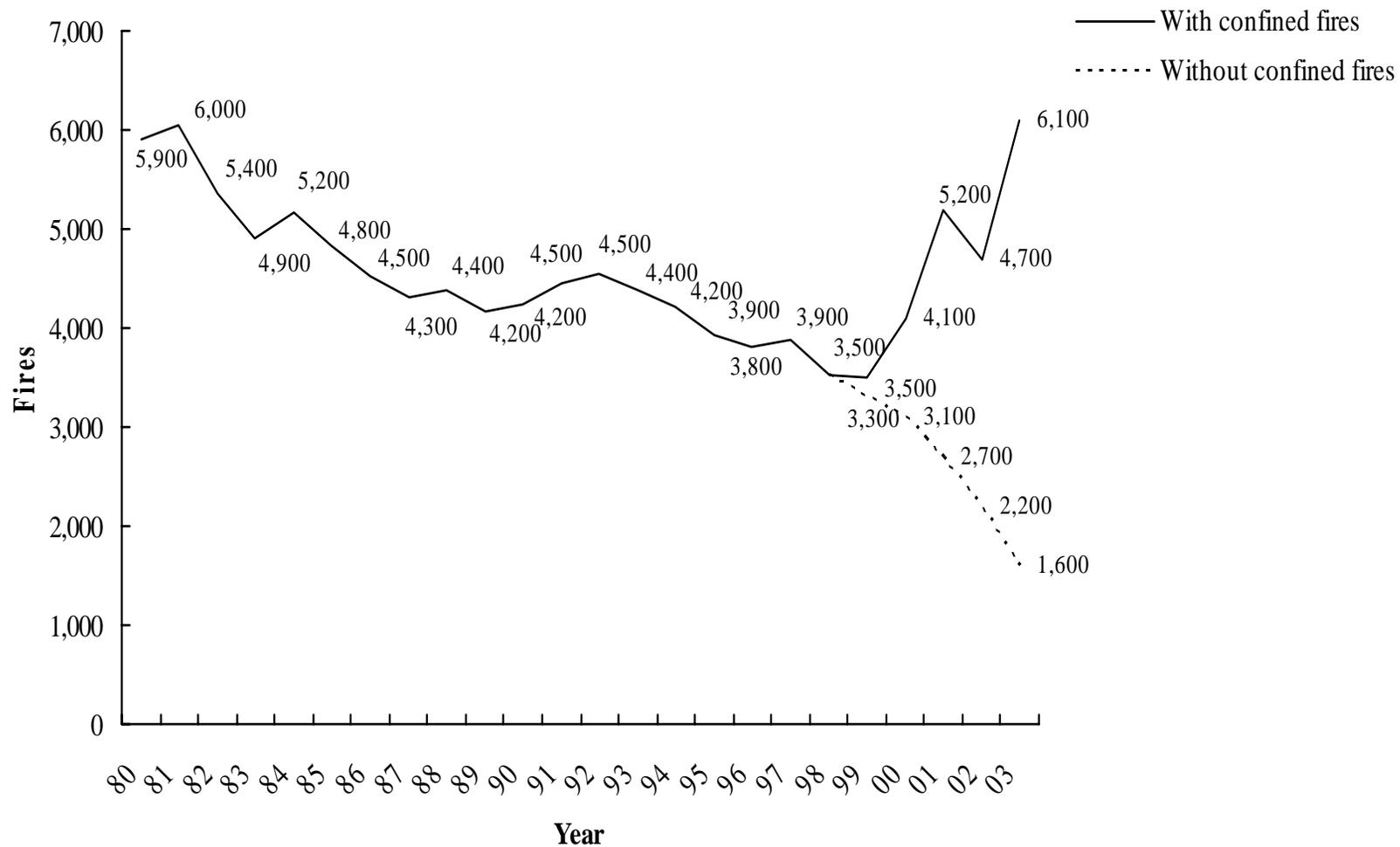
**Home Fires Involving  
Portable Cooking or Warming Devices, by Year  
Structure Fires Reported to U.S. Fire Departments  
(Numbers in parentheses exclude fires reported as confined fires.)**

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>	<b>Direct Property Damage (in Millions of 2003 Dollars)</b>
1980	5,900	43	130	\$15	\$33
1981	6,000	43	160	\$15	\$30
1982	5,400	24	150	\$19	\$36
1983	4,900	36	150	\$18	\$34
1984	5,200	29	150	\$22	\$38
1985	4,800	32	190	\$18	\$31
1986	4,500	50	150	\$21	\$35
1987	4,300	10	140	\$21	\$34
1988	4,400	32	150	\$23	\$36
1989	4,200	52	140	\$30	\$45
1990	4,200	23	140	\$31	\$44
1991	4,500	8	170	\$34	\$46
1992	4,500	10	170	\$18	\$24
1993	4,400	19	120	\$23	\$30
1994	4,200	35	160	\$23	\$28
1995	3,900	26	170	\$26	\$31
1996	3,800	31	140	\$35	\$41
1997	3,900	13	170	\$36	\$41
1998	3,500	43	180	\$24	\$27
1999	3,500 (3,300)	13 (13)	110 (110)	\$48 (\$48)	\$53 (\$53)
2000	4,100 (3,100)	12 (12)	70 (60)	\$39 (\$38)	\$42 (\$41)
2001	5,200 (2,700)	28 (28)	120 (90)	\$38 (\$35)	\$40 (\$37)
2002	4,700 (2,200)	11 (11)	120 (100)	\$37 (\$37)	\$38 (\$37)
2003	6,100 (1,600)	17 (17)	140 (90)	\$33 (\$32)	\$33 (\$32)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Portable Cooking or Warming Devices, 1980-2003



Source: NFIRS and NFPA survey.

**Home Fires Involving  
Portable Cooking or Warming Devices, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Cause	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unintentional	1,700	(65%)	16	(100%)	50	(56%)	\$24	(62%)
Failure of equipment or heat source	800	(32%)	0	(0%)	40	(42%)	\$14	(36%)
Unclassified cause	0	(2%)	0	(0%)	0	(3%)	\$0	(1%)
Intentional	0	(1%)	0	(0%)	0	(0%)	\$1	(1%)
Act of nature	0	(0%)	0	(0%)	0	(0%)	\$0	(0%)
Total without confined fires	2,600	(100%)	16	(100%)	90	(100%)	\$38	(100%)

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Equipment unattended	500	(21%)	5	(32%)	10	(9%)	\$8	(20%)
Heat source too close to combustibles	400	(17%)	9	(53%)	20	(19%)	\$6	(16%)
Unclassified electrical failure or malfunction	300	(12%)	0	(0%)	10	(8%)	\$6	(16%)
Unclassified mechanical failure or malfunction	200	(9%)	0	(0%)	10	(13%)	\$4	(10%)
Unintentionally turned on or not turned off	200	(8%)	2	(13%)	10	(7%)	\$5	(12%)
Automatic control failure	200	(6%)	0	(0%)	10	(7%)	\$2	(4%)
Unclassified misuse of material	100	(6%)	0	(0%)	20	(25%)	\$2	(4%)
Abandoned or discarded material	100	(5%)	3	(15%)	0	(0%)	\$2	(5%)
Unspecified short circuit arc	100	(5%)	0	(0%)	20	(27%)	\$2	(5%)
Unclassified factor	100	(5%)	0	(0%)	0	(4%)	\$2	(5%)
Other known factor	400	(14%)	4	(24%)	0	(3%)	\$5	(12%)
Total factor-contributing entries	2,800	(107%)	22	(137%)	110	(121%)	\$42	(110%)
Total fires without confined fires	2,600	(100%)	16	(100%)	16	(100%)	\$38	(100%)

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest two, and direct property damage to the nearest million dollars. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving  
Portable Cooking or Warming Devices, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Human Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unattended or unsupervised person	400	(17%)	2	(12%)	10	(7%)	\$4	(10%)
Asleep	100	(6%)	2	(12%)	10	(17%)	\$4	(11%)
Age was a factor	100	(4%)	3	(18%)	0	(3%)	\$1	(2%)
Multiple persons involved	0	(1%)	3	(18%)	0	(0%)	\$0	(1%)
Possibly impaired by alcohol or drugs	0	(1%)	0	(0%)	0	(0%)	\$0	(1%)
Physically disabled	0	(1%)	2	(12%)	0	(0%)	\$0	(0%)
Possibly mentally disabled	0	(0%)	0	(0%)	0	(0%)	\$0	(0%)
None	1,700	(66%)	8	(47%)	60	(64%)	\$25	(65%)
Not reported	200	(8%)	2	(12%)	10	(10%)	\$4	(11%)
<b>Total human-factor entries</b>	<b>2,600</b>	<b>(102%)</b>	<b>21</b>	<b>(130%)</b>	<b>90</b>	<b>(100%)</b>	<b>\$39</b>	<b>(102%)</b>
<b>Total fires without confined fires</b>	<b>2,600</b>	<b>(100%)</b>	<b>16</b>	<b>(100%)</b>	<b>90</b>	<b>(100%)</b>	<b>\$38</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factor can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving  
Portable Cooking or Warming Devices, by Item First Ignited  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Cooking materials	700	(28%)	0	(0%)	30	(34%)	\$9	(24%)
Appliance housing	400	(17%)	0	(0%)	10	(11%)	\$9	(23%)
Cabinetry	300	(11%)	0	(0%)	0	(3%)	\$4	(10%)
Household utensils	100	(6%)	3	(18%)	10	(13%)	\$2	(6%)
Electrical wire or cable insulation	100	(5%)	0	(0%)	10	(10%)	\$2	(6%)
Unclassified item	100	(4%)	0	(0%)	0	(3%)	\$1	(2%)
Interior wall covering	100	(4%)	6	(39%)	0	(0%)	\$3	(7%)
Box or bag	100	(2%)	0	(0%)	0	(0%)	\$0	(0%)
Papers	100	(2%)	0	(0%)	0	(0%)	\$1	(2%)
Unclassified structural component or finish	100	(2%)	0	(0%)	0	(0%)	\$1	(3%)
Unclassified furniture or utensil	100	(2%)	0	(0%)	10	(8%)	\$1	(2%)
Other known item	1,100	(43%)	7	(42%)	50	(52%)	\$15	(38%)
Total without confined fires	2,600	(100%)	16	(100%)	90	(100%)	\$38	(100%)

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Portable Cooking or Warming Devices, 2004**

**A. By Diagnosis**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Scald burn	2,500	38%
Thermal burn	2,000	30%
Anoxia	0	0%
Other diagnosis	2,100	32%
Total	6,600	100%

**B. By Type of Device**

<b>Device</b>	<b>Injuries</b>	<b>Percentage</b>
Pressure cooker	1,600	24%
Slow cooker	1,600	24%
Electric frying pan	800	12%
Toaster	600	10%
Electric coffee maker	500	8%
Hot plate	400	7%
Toaster oven, broiler, or other electric counter-top oven	400	6%
Electric kettle or hot pot	400	6%
Electric waffle iron	200	2%
Food warmer	100	1%
Electric griddle	0	1%
Electric corn popper	0	0%
Total	6,600	100%

Note: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Source: NEISS estimate by CPSC.

## Microwave Ovens

**In 1999-2003, an estimated 3,800 reported U.S. home structure fires per year involving microwave ovens resulted in 5 civilian deaths, 80 civilian injuries, and \$9 million in direct property damage.**

Because NFIRS Version 4.1 has no specific category for microwave oven, it is necessary to estimate using data only from NFIRS Version 5.0. Microwave ovens accounted for 2.5% of all home cooking-equipment fires reported directly in NFIRS Version 5.0 in 1999-2003. If this percentage applied to the total of home cooking fires (excluding confined fires), it would translate into an estimated 1,700 home microwave oven fires per year. Similar calculations suggest 5 associated civilian fire deaths per year (2.0% of the total), 70 associated civilian fire injuries per year (1.8% of the total), and \$9 million per year in associated direct property damage (1.8% of the total). The microwave oven share of confined cooking fires is calculated in similar fashion, resulting in a large increase in estimated reported fires and slight increases in injuries and property damage.

**In addition to unattended cooking, microwave oven fires often involved mechanical or electrical problems.**

The leading factor, unattended cooking, accounted for only one-sixth of the fires. Note the 6% of fires that occurred because the equipment was used for other than its intended purpose. This is the only type of home equipment for which this scenario ranks so high.

**One-quarter of home microwave oven fires began with ignition of appliance housings.**

The usual leading item first ignited, cooking materials, was cited for only one-fifth of fires. One-sixth of fires began with electrical wire or cable insulation.

**Microwave ovens are involved in far more electrocution deaths than all other types of cooking equipment combined.**

In 1995-2002 excluding 1999 (when there was no report), there were an average of seven such deaths a year. All other cooking devices combined averaged two a year in the same period. A special study by the U.S. Consumer Product Safety Commission found that four electrocution deaths per year, or about half the total, involved victims who were trying to repair their own microwave ovens.\*

**In 2004, microwave ovens were involved in 9,000 hospital emergency room injuries.**

Nearly half of these were scalds. The total ranked behind only ranges (37,000) and grills (16,000) among cooking equipment.

**Fire risk and hospital emergency room injury risk is lower with microwave ovens than with ranges.**

In 1999-2003, microwave ovens had 4% as many estimated reported home structure fires as did ranges, 2% as many associated civilian deaths, 2% as many associated civilian injuries, 3% as much property damage due to fire, and 24% as many total hospital emergency room injuries, compared to 87% as many user households. The risk was higher for microwave ovens only for

\* Consumer Product Safety Commission, *Electrocution Hazard with Do-It-Yourself Repairs of Ovens*, CPSC document #5061, accessed on May 19, 2006, at <http://www.cpsc.gov/cpsc/pubs/5061.html>.

scald burns reported to hospital emergency rooms, where the 2004 microwave oven total was 54% higher than the range total, meaning roughly twice the risk per user household.

### **Safety Tips**

- Select a microwave oven with the seal of a nationally recognized testing laboratory, and have the unit installed or placed in accordance with manufacturer's instructions. Be particularly careful not to damage wiring during installation or use.
- Many of the emergency-room injuries associated with microwave ovens suggest a scenario where the unit has fallen onto someone. Microwave ovens are typically the heaviest cooking devices that are installed or placed in an elevated location in a home. Make sure it is securely installed or, if portable, kept well back from a counter edge.
- Place your microwave oven at a safe height within easy reach for all users to avoid spills. The face of the person using the microwave oven should always be higher than the oven doors.
- Heat foods only in containers or dishes that are safe for microwave use.
- Foods heat unevenly in microwave ovens. Stir and test before eating.
- Open food containers slowly away from the face to avoid steam burns. Hot steam escaping from the container or food can cause burns. Let food cool before eating or drinking.
- Never heat baby bottles of formula or milk in the microwave oven, especially those with plastic bottle liners. When the bottle is inverted, plastic liners can burst, pouring scalding liquids onto the baby. Test the formula on the back of your hand or inner wrist before feeding.
- Never use metal objects or foil in a microwave oven because they can cause a fire and damage the oven.
- Connect the power cord directly to the outlet, not through an extension cord, to avoid overloading the circuit.

**Home Fires Involving Microwave Ovens,  
by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Cause	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unintentional	1,000	(55%)	0	NA	50	(72%)	\$4	(51%)
Failure of equipment or heat source	700	(42%)	0	NA	10	(19%)	\$4	(46%)
Intentional	0	(2%)	0	NA	10	(9%)	\$0	(4%)
Unclassified cause	0	(1%)	0	NA	0	(0%)	\$0	(0%)
Total without confined fires	1,700	(100%)	5	NA	70	(100%)	\$9	(100%)

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Equipment unattended	300	(17%)	NA	NA	10	(8%)	\$1	(9%)
Unclassified electrical failure or malfunction	200	(14%)	NA	NA	10	(8%)	\$2	(24%)
Unclassified misuse of material	200	(13%)	NA	NA	40	(54%)	\$1	(15%)
Unspecified short-circuit arc	200	(11%)	NA	NA	10	(10%)	\$1	(8%)
Unclassified mechanical failure or malfunction	200	(11%)	NA	NA	10	(8%)	\$1	(9%)
Equipment used for other than intended purpose	100	(6%)	NA	NA	20	(25%)	\$0	(2%)
Equipment not being operated properly	100	(5%)	NA	NA	0	(0%)	\$3	(32%)
Arc or spark from operating equipment	100	(4%)	NA	NA	0	(0%)	\$0	(1%)
Short circuit arc from defective or worn insulation	100	(4%)	NA	NA	10	(8%)	\$0	(1%)
Heat source too close to combustibles	100	(4%)	NA	NA	0	(0%)	\$0	(1%)
Unintentionally turned on or not turned off	100	(3%)	NA	NA	0	(0%)	\$0	(2%)
Other known factor	300	(15%)	NA	NA	10	(12%)	\$0	(4%)
Total factor-contributing entries	1,900	(107%)	5	NA	90	(133%)	\$9	(106%)
Total fires without confined fires	1,700	(100%)	5	NA	70	(100%)	\$9	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Microwave Ovens,  
by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Human Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unattended or unsupervised person	100	(8%)	0	(0%)	10	(22%)	\$1	(6%)
Age was a factor	100	(6%)	0	(0%)	10	(8%)	\$0	(5%)
Asleep	100	(5%)	0	(0%)	20	(36%)	\$1	(7%)
Possibly impaired by alcohol or drugs	0	(2%)	5	(100%)	10	(17%)	\$1	(8%)
Possibly mentally disabled	0	(1%)	0	(0%)	10	(8%)	\$0	(0%)
Physically disabled	0	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Multiple persons involved	0	(1%)	0	(0%)	0	(0%)	\$0	(0%)
None	1,200	(70%)	0	(0%)	20	(27%)	\$6	(69%)
Not reported	200	(12%)	0	(0%)	0	(6%)	\$1	(8%)
<b>Total human-factor entries</b>	<b>1,800</b>	<b>(105%)</b>	<b>5</b>	<b>(100%)</b>	<b>80</b>	<b>(125%)</b>	<b>\$9</b>	<b>(104%)</b>
<b>Total fires without confined fires</b>	<b>1,700</b>	<b>(100%)</b>	<b>5</b>	<b>(100%)</b>	<b>70</b>	<b>(100%)</b>	<b>\$9</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Microwave Ovens, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Appliance housing	400	(23%)	0	(0%)	0	(7%)	\$2	(21%)
Cooking materials	400	(20%)	0	(0%)	0	(6%)	\$0	(5%)
Electrical wire or cable insulation	300	(17%)	0	(0%)	0	(6%)	\$2	(18%)
Cabinetry	100	(8%)	0	(0%)	0	(6%)	\$2	(21%)
Unclassified item first ignited	100	(4%)	0	(0%)	0	(0%)	\$0	(3%)
Interior wall covering	100	(3%)	5	(100%)	20	(29%)	\$2	(18%)
Other known item first ignited	400	(25%)	0	(0%)	30	(46%)	\$1	(14%)
<b>Total without confined fires</b>	<b>1,700</b>	<b>(100%)</b>	<b>5</b>	<b>(100%)</b>	<b>70</b>	<b>(100%)</b>	<b>\$9</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Microwave Ovens, 2004**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Scald burn	4,200	47%
Thermal burn	800	9%
Anoxia	200	2%
Other diagnosis	3,700	42%
Total	9,000	100%

Notes: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Source: NEISS estimate by CPSC.

## Gas Grills

**In 2003, an estimated 900 home structure fires and 2,500 home outdoor fires were reported to U.S. fire departments as involving gas-fueled grills.**

The structure fires resulted in 40 civilian injuries and \$30 million in direct property damage.

The outdoor fires resulted in 10 civilian injuries and \$0.11 million in direct property damage.

No deaths were reported for either structure or outdoor fires.

Most grills are designed for outdoor use only. Gas grills are involved in far more outdoor fires than structure fires (3-4 times as many in recent years), but most associated losses occur in fires that start in or spread to the structure. The number of households with gas-fueled grills in 1997 was more than five times the number in 1982 (from 9.4 million to 49.1 million), reaching roughly half of all U.S. households.\* (The NPD Group estimated that 56% of U.S. households owned gas grills in 2005.\*\*)

**The leading cause of gas grill fires is leak or break.**

Nearly one-third of gas grill home structure fires and nearly half of gas grill outdoor home fires begin with a leak or break, well ahead of unattended cooking, the leading cause of fires for most cooking equipment.

**The leading item first ignited for combined outdoor and structure home gas grill fires is flammable or combustible liquid or gas.**

For home gas grill structure fires, the leading item first ignited was exterior wall covering.

**One-third of gas grill structure fires begin on an exterior balcony or unenclosed porch.**

Unenclosed porches could include open decks. The dangers of using gas grills in garages and kitchens or in the yard too close to the exterior walls are demonstrated in the fire patterns by area of origin.

**Gas grills were associated with 8,100 hospital emergency room injuries.**

Half were thermal burns.

**Gas grills have higher fire risk than charcoal grills.**

The Barbecue Industry Association (now merged into the Hearth, Patio, and Barbecue Association) conducted a series of surveys of grill usage in odd-numbered years (but has not posted results later than 1997). Their 1997 usage statistics can be compared to 1995-1999 grill fire experience.\* In 1997, 75% of U.S. households owned a grill. Of these 75.6 million households, 54% owned a charcoal grill, 57% owned an LP-gas grill, 8% owned a natural-gas grill, and 3% owned an electric grill. Clearly, some households owned more than one grill and more than one type of grill. A total of 57-65% owned a gas grill, with the actual total depending

\* *Statistical Abstract of the United States 1986*, Washington, DC: U.S. Bureau of the Census, 1985, Table 1316, and [www.barbecuen.com/bbqstats](http://www.barbecuen.com/bbqstats), accessed on April 22, 2003 and rechecked on June 7, 2006.

\*\* The NPD Group, Inc., "NPD reveals outdoor grill usage at a 20-year high," news release, May 22, 2006, accessed at [http://www.npd.com/press/releases/press\\_060522.html](http://www.npd.com/press/releases/press_060522.html), on July 12, 2006.

on how many natural gas grills were owned by households that also owned an LP-gas grill. If none, the total is 65%; if all, the total is 57%.

The gas grill households were up to 20% more numerous than the charcoal grill households and 19-22 times as numerous as the electric grill households.

Even if one uses the maximum value of gas grill user households and assumes all “liquid”-fueled grill fires are miscoded charcoal grill fires, one finds that the ratio of gas grill fires to charcoal grill fires (3.2-to-1 for fires, 58-to-1 for fire deaths, 2.9-to-1 for fire injuries) is considerably higher than the 1.2 maximum ratio of usage. The risk for electric grills is comparable to the risk for gas grills for fires, lower for fire deaths, and higher for fire injuries, but the numbers are too small for much confidence.

Note, however, that if non-fire carbon monoxide deaths are included, the risk for charcoal grills becomes more than 5 times as high as the comparable risk for gas grills.

### **Safety Tips**

- Use only equipment bearing the mark of an independent testing laboratory, and be sure to follow all manufacturer’s instructions regarding operation, set-up, maintenance, and clearance to combustibles.
- Keep grills away from combustibles, including the exterior of the structure. This includes balconies and garages. When using grills on decks or patios, be sure to leave sufficient space for siding and eaves.
- Check hose integrity and hose connections to ensure there is no release of gas. Soapy water applied to hoses and connections will easily and safely reveal any leaks.
- Follow all provisions of NFPA 58, *Liquefied Petroleum Gas Code*, including the 2001 requirement for overfilling prevention devices which are required on all new gas grill cylinders.
- Never store a propane cylinder in a building or garage. If you store your gas grill in a basement or garage during the winter, disconnect the cylinder and leave it outdoors.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39”) away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.

**Home Fires Involving Gas Grills, by Year**  
**Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires coded as confined fires.)

**A. Structure Fires**

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>	<b>Direct Property Damage (in Millions of 2003 Dollars)</b>
1980	500	7	30	\$1	\$3
1981	800	4	60	\$3	\$6
1982	600	3	20	\$2	\$4
1983	600	0	40	\$5	\$10
1984	800	1	40	\$4	\$7
1985	900	7	40	\$6	\$10
1986	900	0	40	\$5	\$8
1987	1,000	3	40	\$6	\$9
1988	1,100	1	70	\$17	\$26
1989	1,100	0	40	\$8	\$11
1990	1,200	9	60	\$12	\$17
1991	1,200	3	80	\$15	\$21
1992	1,200	3	70	\$25	\$33
1993	1,100	3	60	\$12	\$15
1994	1,100	2	50	\$9	\$11
1995	1,000	0	30	\$9	\$11
1996	1,000	4	60	\$12	\$14
1997	1,200	0	50	\$19	\$22
1998	1,000	4	40	\$25	\$29
1999	1,200 (1,100)	4 (4)	30 (30)	\$25 (\$25)	\$27 (\$27)
2000	900 (800)	7 (7)	60 (60)	\$20 (\$20)	\$21 (\$21)
2001	900 (600)	0 (0)	30 (30)	\$12 (\$12)	\$12 (\$12)
2002	1,100 (600)	0 (0)	20 (20)	\$18 (\$18)	\$19 (\$19)
2003	900 (400)	0 (0)	40 (30)	\$30 (\$30)	\$30 (\$30)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Grills, by Year  
Fires Reported to U.S. Fire Departments (Continued)**

**B. Outdoor Fires**

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>	<b>Direct Property Damage (in Millions of 2003 Dollars)</b>
1980	1,700	0	20	\$0.08	\$0.17
1981	1,900	0	10	\$0.12	\$0.23
1982	1,500	0	30	\$0.10	\$0.19
1983	1,700	0	20	\$0.11	\$0.19
1984	1,700	1	20	\$0.04	\$0.07
1985	2,100	0	10	\$0.08	\$0.14
1986	2,600	0	30	\$0.06	\$0.09
1987	3,300	0	20	\$0.20	\$0.31
1988	4,000	0	20	\$0.17	\$0.25
1989	3,800	0	20	\$0.47	\$0.67
1990	4,200	0	10	\$0.26	\$0.35
1991	4,400	1	30	\$0.11	\$0.14
1992	3,900	0	30	\$0.62	\$0.79
1993	4,200	0	10	\$0.20	\$0.24
1994	3,800	0	20	\$0.09	\$0.11
1995	4,200	0	40	\$0.54	\$0.62
1996	4,500	0	20	\$0.22	\$0.24
1997	5,700	0	30	\$0.36	\$0.40
1998	4,400	0	30	\$0.60	\$0.65
1999	3,800	1	30	\$0.30	\$0.34
2000	3,300	0	10	\$0.11	\$0.12
2001	3,200	0	30	\$0.13	\$0.13
2002	3,200	0	10	\$0.10	\$0.10
2003	2,500	0	10	\$0.11	\$0.11

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest ten thousand dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Grills, by Year**  
**Fires Reported to U.S. Fire Departments (Continued)**  
(Numbers in parentheses exclude fires coded as confined fires.)

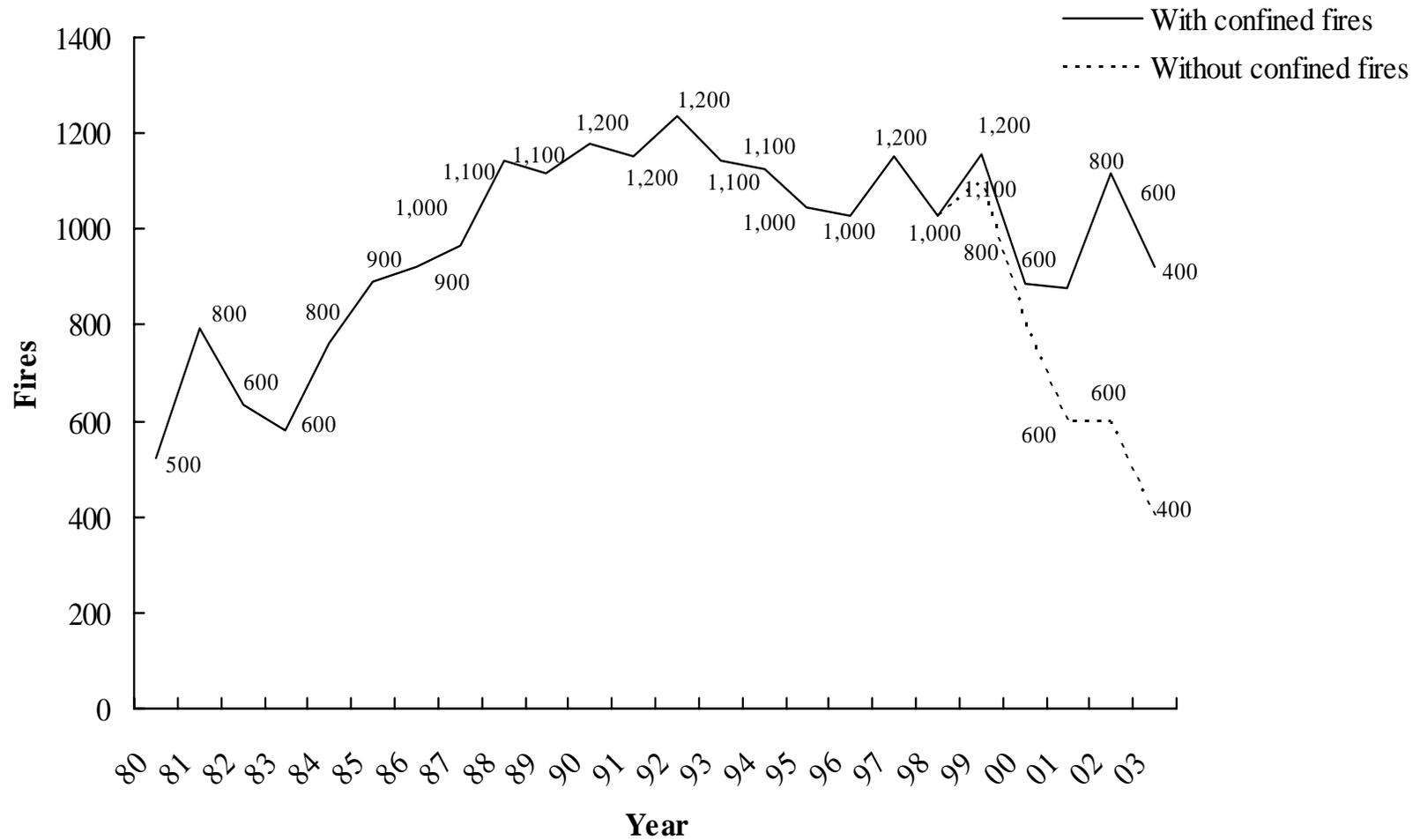
**C. Structure and Outdoor Fires Combined**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	Direct Property Damage (in Millions of 2003 Dollars)
1980	2,200	7	50	\$2	\$3
1981	2,700	4	70	\$3	\$6
1982	2,100	3	50	\$2	\$4
1983	2,300	0	60	\$5	\$10
1984	2,400	2	50	\$4	\$7
1985	3,000	7	50	\$6	\$9
1986	3,500	0	70	\$5	\$8
1987	4,300	3	60	\$6	\$10
1988	5,100	1	80	\$17	\$27
1989	5,000	0	50	\$8	\$12
1990	5,400	9	70	\$12	\$17
1991	5,600	4	110	\$15	\$21
1992	5,200	3	100	\$26	\$34
1993	5,400	3	70	\$12	\$16
1994	5,000	2	70	\$9	\$11
1995	5,200	0	70	\$9	\$11
1996	5,500	4	80	\$12	\$14
1997	6,800	0	90	\$19	\$22
1998	5,500	4	70	\$26	\$29
1999	5,000 (4,900)	5 (5)	60 (60)	\$25 (\$25)	\$28 (\$28)
2000	4,200 (4,000)	7 (7)	70 (70)	\$20 (\$20)	\$21 (\$21)
2001	4,000 (3,800)	0 (0)	70 (70)	\$12 (\$12)	\$12 (\$12)
2002	4,300 (3,800)	0 (0)	30 (30)	\$18 (\$18)	\$19 (\$19)
2003	3,400 (2,800)	0 (0)	50 (40)	\$30 (\$30)	\$30 (\$30)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Gas Grills, 1980-2003



Source: NFIRS and NFPA survey.

**Home Structure Fires Involving Gas Grills, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Cause</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unintentional	400	(58%)	0	(0%)	30	(81%)	\$18	(87%)
Failure of equipment or heat source	200	(36%)	2	(100%)	10	(19%)	\$3	(13%)
Unclassified cause	0	(5%)	0	(0%)	0	(0%)	\$0	(0%)
Intentional	0	(1%)	0	(0%)	0	(0%)	\$0	(0%)
<b>Total without confined fires</b>	<b>700</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>30</b>	<b>(100%)</b>	<b>\$21</b>	<b>(100%)</b>

<b>Factor Contributing to Ignition</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Leak or break	200	(30%)	2	(100%)	10	(24%)	\$12	(58%)
Heat source too close to combustibles	200	(22%)	0	(0%)	10	(36%)	\$3	(14%)
Equipment unattended	100	(11%)	0	(0%)	0	(11%)	\$2	(8%)
Unclassified mechanical failure or malfunction	100	(11%)	2	(100%)	0	(0%)	\$1	(4%)
Other known factors	300	(42%)	0	(0%)	20	(66%)	\$16	(75%)
<b>Total factor-contributing entries</b>	<b>800</b>	<b>(116%)</b>	<b>5</b>	<b>(200%)</b>	<b>50</b>	<b>(136%)</b>	<b>\$33</b>	<b>(159%)</b>
<b>Total fires without confined fires</b>	<b>700</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>30</b>	<b>(100%)</b>	<b>\$21</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Structure Fires Involving Gas Grills, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian		Civilian		Direct	
			Deaths	Injuries	Injuries	Property Damage (in Millions)		
Unattended or unsupervised person	100	(15%)	0	(0%)	10	(16%)	\$2	(11%)
Asleep	0	(5%)	0	(0%)	0	(0%)	\$3	(14%)
Possibly impaired by alcohol or drugs	0	(1%)	0	(0%)	10	(16%)	\$1	(5%)
Age was a factor	0	(1%)	0	(0%)	0	(0%)	\$0	(0%)
Multiple persons involved	0	(1%)	0	(0%)	0	(0%)	\$0	(0%)
None	500	(66%)	2	(100%)	20	(68%)	\$15	(72%)
Not reported	100	(13%)	0	(0%)	0	(0%)	\$1	(3%)
Total human-factor entries	700	(101%)	2	(100%)	30	(100%)	\$22	(105%)
Total fires without confined fires	700	(100%)	2	(100%)	30	(100%)	\$21	(100%)

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Factors can have multiple entries, which is why total entries can exceed total fires. Fires involving unknown power arc allocated for specific equipment if power type is part of specification. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Outdoor Home Fires Involving Gas Grills, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Fires Reported to U.S. Fire Departments  
(Percents Based Only On Fires Reported in NFIRS Version 5.0)**

Cause	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Failure of equipment or heat source	1,800	(58%)	NA	NA	10	(72%)	\$0.10	(65%)
Unintentional	1,300	(40%)	NA	NA	10	(28%)	\$0.05	(34%)
Intentional	100	(2%)	NA	NA	0	(0%)	\$0.00	(1%)
Unclassified cause	0	(1%)	NA	NA	0	(0%)	\$0.00	(1%)
<b>Total</b>	<b>3,200</b>	<b>(100%)</b>	<b>0</b>	<b>NA</b>	<b>20</b>	<b>(100%)</b>	<b>\$0.15</b>	<b>(100%)</b>

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Leak or break	1,500	(46%)	NA	NA	0	(17%)	\$0.04	(29%)
Unclassified mechanical failure or malfunction	400	(14%)	NA	NA	0	(16%)	\$0.05	(30%)
Failure to clean	300	(10%)	NA	NA	0	(0%)	\$0.00	(3%)
Worn out	200	(6%)	NA	NA	0	(0%)	\$0.00	(2%)
Unclassified operational deficiency	100	(4%)	NA	NA	0	(0%)	\$0.00	(2%)
Unclassified misuse of material	100	(3%)	NA	NA	0	(14%)	\$0.00	(1%)
Equipment not being operated properly	100	(3%)	NA	NA	0	(0%)	\$0.00	(1%)
Outside or open fire for warming or cooking	100	(3%)	NA	NA	0	(0%)	\$0.01	(4%)
Unclassified factor	100	(3%)	NA	NA	0	(0%)	\$0.00	(0%)
Heat source too close to combustible	100	(3%)	NA	NA	10	(37%)	\$0.00	(0%)
Other known factors	400	(14%)	NA	NA	0	(15%)	\$0.05	(31%)
<b>Total factor-contributing entries</b>	<b>3,400</b>	<b>(107%)</b>	<b>0</b>	<b>NA</b>	<b>20</b>	<b>(100%)</b>	<b>\$0.15</b>	<b>(103%)</b>
<b>Total fires</b>	<b>3,200</b>	<b>(100%)</b>	<b>0</b>	<b>NA</b>	<b>20</b>	<b>(100%)</b>	<b>\$0.15</b>	<b>(100%)</b>

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Factors can have multiple entries, which is why total entries can exceed total fires. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest ten thousand dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Outdoor Home Fires Involving Gas Grills, by Human Factor Contributing to Ignition**  
**Annual Average of 1999-2003 Non-Confined Structure and Outdoor Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	100	(5%)	NA	NA	0	(0%)	\$0.00	(2%)
Possibly impaired by alcohol or drugs	0	(0%)	NA	NA	0	(0%)	\$0.00	(0%)
Multiple persons involved	0	(0%)	NA	NA	0	(0%)	\$0.00	(0%)
Asleep	0	(0%)	NA	NA	0	(0%)	\$0.00	(0%)
None	2,500	(77%)	NA	NA	10	(57%)	\$0.10	(64%)
Not reported	600	(17%)	NA	NA	10	(43%)	\$0.05	(33%)
Total human-factor entries	3,200	(100%)	0	NA	20	(100%)	\$0.15	(100%)
Total fires	3,200	(100%)	0	NA	20	(100%)	\$0.15	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Totals reflect multiple entries per fire. Factor can have multiple entries, which is why total entries can exceed total fires. Fires involving unknown power arc allocated for specific equipment if power type is part of specification. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest ten thousand dollars. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Gas Grills, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure and Outdoor Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

**A. Structure Fires**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior wall covering or finish	200	(32%)	2	(100%)	10	(24%)	\$6	(28%)
Flammable or combustible liquid or gas	200	(22%)	0	(0%)	10	(18%)	\$11	(51%)
Unclassified item	100	(8%)	0	(0%)	0	(0%)	\$0	(2%)
Structural member or framing	100	(7%)	0	(0%)	10	(22%)	\$0	(0%)
Other known item	200	(30%)	0	(0%)	10	(36%)	\$4	(18%)
Total without confined fires	700	(100%)	2	(100%)	30	(100%)	\$21	(100%)

**B. Outdoor Fires**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Flammable or combustible liquid or gas	1,900	(61%)	NA	NA	10	(67%)	\$0.11	(72%)
Cooking materials	400	(13%)	NA	NA	0	(8%)	\$0.01	(6%)
Unclassified item	300	(11%)	NA	NA	0	(0%)	\$0.01	(4%)
Pipe, duct, conduit or hose	100	(5%)	NA	NA	0	(10%)	\$0.00	(1%)
Appliance housing or casing	100	(2%)	NA	NA	0	(0%)	\$0.00	(3%)
Other known item	300	(8%)	NA	NA	0	(15%)	\$0.02	(14%)
Total fires	3,200	(100%)	0	NA	20	(100%)	\$0.15	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars (for structure) and the nearest ten thousand dollars (for outdoor). Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Home Structure Fires Involving Gas Grills, by Area of Origin**  
**Annual Average of 1999-2003 Non-Confined Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior balcony or unenclosed porch	200	(32%)	0	(0%)	10	(26%)	\$11	(53%)
Courtyard, patio, porch, or terrace	100	(20%)	0	(0%)	0	(8%)	\$4	(17%)
Exterior wall surface	100	(13%)	0	(0%)	0	(0%)	\$2	(8%)
Other known area	200	(35%)	2	(100%)	20	(66%)	\$5	(22%)
<b>Total</b>	<b>700</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>30</b>	<b>(100%)</b>	<b>\$21</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and area of origin unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Gas Grills, 2004**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Thermal burn	4,100	51%
Anoxia	300	3%
Scald burn	0	0%
Other diagnosis	3,700	46%
Total	8,100	100%

Notes: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Figures include proportional allocation of fires involving grills with unknown type of power. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Sources: NEISS estimate by CPSC.

## Charcoal Grills

**In 2003, an estimated 600 home structure fires and 300 home outdoor fires were reported to U.S. fire departments as involving charcoal-fueled (or other solid-fueled, such as wood-fueled) grills.**

The structure fires resulted in an estimated 10 civilian injuries and \$5 million in direct property damage. The outdoor fires resulted in \$0.036 million in direct property damage. No deaths were reported for either structure or outdoor fires and no injuries were reported for the outdoor fires.

Most grills are designed for outdoor use only. However, the majority of fires involving charcoal-fueled barbecue grills and nearly all associated losses occur in fires that start in or spread to the structure. There has been a generally downward trend in structure and outdoor fires involving charcoal grills. Unlike gas grills, charcoal grills typically have more structure fires than outdoor fires.

**Leading causes are combustibles too close to heat and unattended cooking.**

**Leading items first ignited for combined structure and outdoor fires are structural member or framing and exterior wall covering.**

**Nearly half of charcoal grill structure fires begin on an exterior balcony or unenclosed porch.**

Unenclosed porches could include open decks. The dangers of using charcoal grills in garages and kitchens or in the yard too close to the exterior walls are demonstrated in the fire patterns by area of origin.

**Charcoal grills were associated with 5,000 hospital emergency room injuries in 2004.**

Most were thermal burns, which accounted for 71% of the injuries.

**Charcoal grills have lower fire risk than gas grills.**

The Barbecue Industry Association (now merged into the Hearth, Patio, and Barbecue Association) conducted a series of surveys of grill usage in odd-numbered years (but has not posted results later than 1997), and their 1997 usage statistics can be compared to 1995-1999 grill fire experience.\* In 1997, 75% of U.S. households owned a grill. Of these 75.6 million households, 54% owned a charcoal grill, 57% owned an LP-gas grill, 8% owned a natural-gas grill, and 3% owned an electric grill. Clearly, some households owned more than one grill and more than one type of grill. A total of 57-65% owned a gas grill, with the actual total depending on how many natural-gas grills were owned by households that also owned an LP-gas grill. If none, the total is 65%, if all, the total is 57%. This corresponds to a range of 43-49% of U.S. households with a gas grill vs. 41% with a charcoal grill. The NPD Group estimates the percentage of U.S. households with a charcoal grill fell to 30% by 2005.\*\*

\*Statistics taken from [www.barbecuen.com/bbqstats](http://www.barbecuen.com/bbqstats), accessed on April 22, 2003 and rechecked on June 7, 2006.

\*\* The NPD Group, Inc., "NPD reveals outdoor grill usage at a 20-year high," news release, May 22, 2006, accessed at [http://www.npd.com/press/releases/press\\_060522.html](http://www.npd.com/press/releases/press_060522.html), on July 12, 2006.

The gas grill households were up to 20% more numerous than the charcoal grill households and 19-22 times as numerous as the electric grill households.

Even if one uses the maximum value of gas grill user households and assumes all “liquid”-fueled grill fires are miscoded charcoal grill fires, one finds that the ratio of gas grill fires to charcoal grill fires (3.2-to-1 for fires, 58-to-1 for fire deaths, 2.9-to-1 for fire injuries) is considerably higher than the 1.2 maximum ratio of usage. The risk for electric grills is comparable to the risk for gas grills for fires, lower for fire deaths, and higher for fire injuries, but the numbers are too small for much confidence.

Note, however, that if non-fire carbon monoxide deaths are included, the risk for charcoal grills becomes more than 5 times as high as the comparable risk for gas grills. There were an average of 16 non-fire deaths per year in 1994-1998 due to carbon monoxide attributed to charcoal grills but none for gas grills.

### **Safety Tips**

- Use only equipment bearing the mark of an independent testing laboratory, and be sure to follow all manufacturer’s instructions regarding operation, set-up, maintenance, and clearance to combustibles.
- Keep grills away from combustibles, including the exterior of the structure. This includes balconies and garages. When using grills on decks or patios, be sure to leave sufficient space for siding and eaves.
- Never add charcoal starter fluid when coals or kindling have already been ignited. Never use any flammable or combustible liquid other than charcoal starter fluid to help ignite the charcoal.
- Make sure used coals are completely cold before disposing of them.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39”) away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment.

**Home Fires Involving Charcoal Grills, by Year**  
**Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires coded as confined fires.)

**A. Structure Fires**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	Direct Property Damage (in Millions of 2003 Dollars)
1980	1,400	19	30	\$4	\$8
1981	1,200	6	10	\$6	\$11
1982	1,000	5	40	\$5	\$9
1983	900	4	50	\$6	\$12
1984	1,000	1	10	\$8	\$14
1985	1,000	0	20	\$4	\$8
1986	1,000	3	20	\$7	\$12
1987	800	0	10	\$5	\$8
1988	900	1	30	\$11	\$17
1989	600	6	20	\$7	\$11
1990	700	0	20	\$5	\$7
1991	500	1	10	\$10	\$13
1992	500	9	0	\$6	\$7
1993	400	0	0	\$3	\$4
1994	500	1	20	\$6	\$7
1995	500	0	0	\$12	\$14
1996	300	0	30	\$3	\$4
1997	400	0	10	\$4	\$4
1998	300	0	10	\$4	\$5
1999	400 (400)	0 (0)	10 (10)	\$5 (\$5)	\$6 (\$6)
2000	400 (300)	3 (3)	20 (20)	\$5 (\$5)	\$5 (\$5)
2001	600 (400)	0 (0)	20 (20)	\$7 (\$7)	\$7 (\$7)
2002	700 (400)	0 (0)	10 (10)	\$11 (\$11)	\$11 (\$11)
2003	600 (300)	0 (0)	10 (10)	\$5 (\$5)	\$5 (\$5)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

**Home Fires Involving Charcoal Grills, by Year  
Fires Reported to U.S. Fire Departments (Continued)**

**B. Outdoor Fires**

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>	<b>Direct Property Damage (in Millions of 2003 Dollars)</b>
1980	400	0	10	\$0.028	\$0.059
1981	300	0	10	\$0.010	\$0.019
1982	400	0	0	\$0.015	\$0.028
1983	300	0	0	\$0.013	\$0.023
1984	400	0	0	\$0.071	\$0.120
1985	300	0	0	\$0.013	\$0.021
1986	300	0	0	\$0.002	\$0.004
1987	300	0	0	\$0.014	\$0.021
1988	400	0	0	\$0.006	\$0.008
1989	300	0	0	\$0.014	\$0.020
1990	400	0	0	\$0.025	\$0.034
1991	300	0	0	\$0.012	\$0.015
1992	300	0	0	\$0.076	\$0.096
1993	300	0	0	\$0.031	\$0.037
1994	300	0	0	\$0.004	\$0.004
1995	300	0	0	\$0.030	\$0.034
1996	300	0	0	\$0.016	\$0.018
1997	300	0	0	\$0.016	\$0.018
1998	300	0	0	\$0.095	\$0.103
1999	200	0	0	\$0.018	\$0.019
2000	200	0	0	\$0.009	\$0.010
2001	200	0	0	\$0.002	\$0.002
2002	300	0	0	\$0.006	\$0.006
2003	300	0	0	\$0.036	\$0.036

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest thousand dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

**Home Fires Involving Charcoal Grills, by Year**  
**Fires Reported to U.S. Fire Departments (Continued)**  
(Numbers in parentheses exclude fires reported as confined fires.)

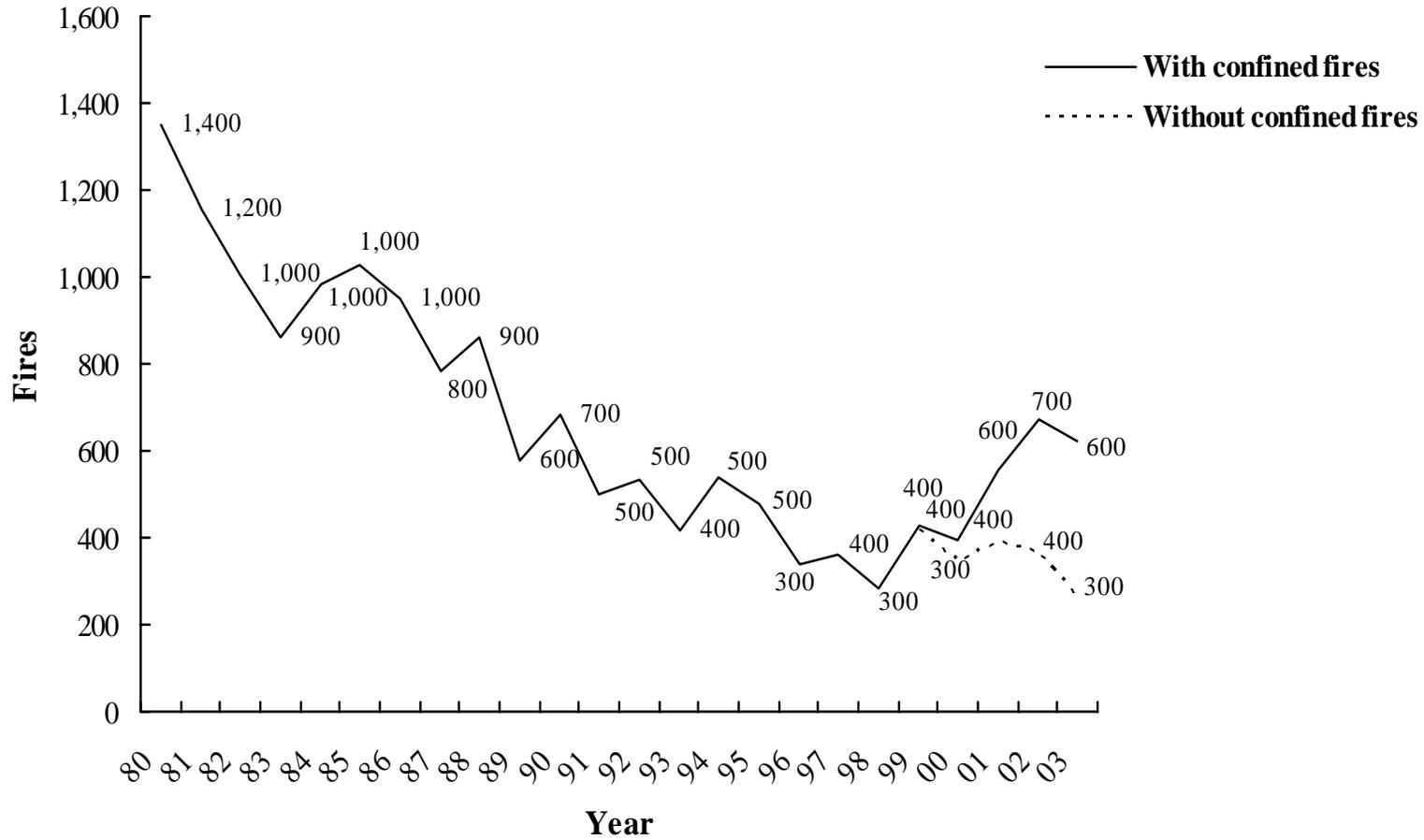
**C. Structure and Outdoor Fires Combined**

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	Direct Property Damage (in Millions of 2003 Dollars)
1980	1,800	19	40	\$4	\$8
1981	1,500	6	20	\$6	\$12
1982	1,400	5	40	\$5	\$9
1983	1,200	4	50	\$6	\$12
1984	1,400	1	10	\$8	\$15
1985	1,400	0	20	\$4	\$8
1986	1,200	3	20	\$7	\$12
1987	1,100	0	10	\$5	\$8
1988	1,200	1	30	\$11	\$17
1989	800	6	20	\$7	\$11
1990	1,100	0	20	\$5	\$7
1991	800	1	10	\$10	\$13
1992	800	9	0	\$6	\$7
1993	700	0	0	\$3	\$4
1994	800	1	20	\$6	\$8
1995	800	0	0	\$12	\$14
1996	600	0	30	\$3	\$4
1997	700	0	10	\$4	\$4
1998	500	0	10	\$4	\$5
1999	600 (600)	0 (0)	10 (10)	\$5 (\$5)	\$6 (\$6)
2000	600 (500)	0 (0)	20 (20)	\$5 (\$5)	\$5 (\$5)
2001	800 (600)	0 (0)	20 (20)	\$7 (\$7)	\$7 (\$7)
2002	900 (600)	0 (0)	10 (10)	\$11 (\$11)	\$11 (\$11)
2003	1,000 (600)	0 (0)	10 (10)	\$5 (\$5)	\$5 (\$5)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device. Fires involving unknown power are allocated for specific equipment if power type is part of specification.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Charcoal Grills, 1980-2003



Source: NFIRS and NFPA survey.

Note: From 1999 on, there are two structure lines, with and without confined fires.

**Home Structure Fires Involving Charcoal Grills, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Cause</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unintentional	300	(89%)	NA	NA	0	(0%)	\$5	(80%)
Intentional	0	(3%)	NA	NA	0	(0%)	\$0	(0%)
Unclassified cause	0	(3%)	NA	NA	0	(0%)	\$0	(0%)
Failure of equipment or heat source	0	(3%)	NA	NA	10	(100%)	\$1	(20%)
Act of nature	0	(2%)	NA	NA	0	(0%)	\$0	(0%)
Total without confined fires	400	(100%)	1	NA	10	(100%)	\$7	(100%)

<b>Factor Contributing to Ignition</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Heat source too close to combustibles	100	(36%)	NA	NA	0	(18%)	\$4	(62%)
Equipment unattended	100	(18%)	NA	NA	10	(82%)	\$2	(33%)
Abandoned or discarded material	100	(15%)	NA	NA	0	(0%)	\$0	(1%)
Other known factors	200	(43%)	NA	NA	0	(18%)	\$1	(20%)
Total factor-contributing entries	400	(112%)	1	NA	10	(118%)	\$8	(116%)
Total fires with confined fires	400	(100%)	1	NA	10	(100%)	\$7	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion of exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Factors can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Structure Fires Involving Charcoal Grills, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Fires Reported to U.S. Fire Departments  
(Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	100	(22%)	NA	NA	10	(82%)	\$0	(2%)
Asleep	0	(10%)	NA	NA	0	(0%)	\$2	(24%)
Possibly impaired by alcohol or drugs	0	(3%)	NA	NA	0	(0%)	\$0	(0%)
Multiple persons involved	0	(1%)	NA	NA	0	(18%)	\$0	(0%)
Age was a factor	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Possibly mentally impaired	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
None	200	(59%)	NA	NA	0	(0%)	\$5	(73%)
Not reported	0	(6%)	NA	NA	0	(0%)	\$0	(0%)
Total human-factor entries	400	(103%)	1	NA	10	(100%)	\$7	(100%)
Total fires without confined fires	400	(100%)	1	NA	10	(100%)	\$7	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projection. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Factors can have multiple entries, which is why total entries can exceed total fires. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Outdoor Home Fires Involving Charcoal Grills, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Fires Reported to U.S. Fire Departments  
(Based Only on Fires Reported in NFIRS Version 5.0)**

Cause	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unintentional	200	(71%)	NA	NA	NA	NA	\$0.014	(94%)
Intentional	0	(20%)	NA	NA	NA	NA	\$0.000	(0%)
Failure of equipment or heat source	0	(4%)	NA	NA	NA	NA	\$0.001	(6%)
Act of nature	0	(3%)	NA	NA	NA	NA	\$0.000	(0%)
Unclassified cause	0	(2%)	NA	NA	NA	NA	\$0.000	(0%)
<b>Total fires</b>	<b>200</b>	<b>(100%)</b>	<b>0</b>	<b>NA</b>	<b>0</b>	<b>NA</b>	<b>\$0.015</b>	<b>(100%)</b>

Factor Contributing to Ignition	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Heat source too close to combustibles	0	(22%)	NA	NA	NA	NA	\$0.003	(18%)
Other known factors	200	(84%)	NA	NA	NA	NA	\$0.013	(88%)
<b>Total factor-contributing entries</b>	<b>200</b>	<b>(106%)</b>	<b>0</b>	<b>NA</b>	<b>0</b>	<b>NA</b>	<b>\$0.016</b>	<b>(107%)</b>
<b>Total fires</b>	<b>200</b>	<b>(100%)</b>	<b>0</b>	<b>NA</b>	<b>0</b>	<b>NA</b>	<b>\$0.015</b>	<b>(100%)</b>

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion of exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Factor can have multiple entries, which is why total entries can exceed total fires. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest thousand dollars. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Outdoor Home Fires Involving Charcoal Grills, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	100	(30%)	NA	NA	NA	NA	\$0.011	(72%)
Possibly impaired by alcohol or drugs	0	(2%)	NA	NA	NA	NA	\$0.002	(13%)
Asleep	0	(2%)	NA	NA	NA	NA	\$0.001	(6%)
Multiple persons involved	0	(2%)	NA	NA	NA	NA	\$0.001	(6%)
None	100	(53%)	NA	NA	NA	NA	\$0.004	(24%)
Not reported	0	(17%)	NA	NA	NA	NA	\$0.001	(4%)
Total human-factor entries	200	(106%)	0	NA	0	NA	\$0.018	(125%)
Total fires	200	(100%)	0	NA	0	NA	\$0.015	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fire reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Factor can have multiple entries, which is why total entries can exceed total fires. Fires involving unknown power arc allocated for specific equipment if power type is part of specification. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest thousand dollars. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Charcoal Grills, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure and Outdoor Fires Reported to U.S. Fire**  
**Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

**A. Structure Fires**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Structural member or framing	100	(24%)	NA	NA	0	(0%)	\$3	(43%)
Exterior wall covering or finish	100	(22%)	NA	NA	0	(18%)	\$2	(23%)
Unclassified structural component or finish	100	(15%)	NA	NA	10	(82%)	\$1	(22%)
Other known item	100	(40%)	NA	NA	0	(0%)	\$1	(12%)
Total without confined fires	400	(100%)	0	NA	10	(100%)	\$7	(100%)

**B. Outdoor Fires**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified item	100	(24%)	NA	NA	NA	NA	\$0.011	(78%)
Other known item	200	(76%)	NA	NA	NA	NA	\$0.003	(22%)
Total fires	200	(100%)	0	NA	0	NA	\$0.015	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars (for structure) and the nearest thousand dollars (for outdoor). Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Home Structure Fires Involving Charcoal Grills, by Area of Fire Origin**  
**Annual Average of 1999-2003 Non-Confined Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Exterior balcony or unenclosed porch	200	(45%)	NA	NA	10	(82%)	\$5	(71%)
Exterior wall surface	100	(16%)	NA	NA	0	(0%)	\$0	(3%)
Courtyard, patio, porch, or terrace	100	(14%)	NA	NA	0	(18%)	\$1	(8%)
Other known area	100	(25%)	NA	NA	0	(0%)	\$1	(18%)
Total	400	(100%)	1	NA	10	(100%)	\$7	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and area of origin unknown. Fires involving unknown power are allocated for specific equipment if power type is part of specification. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Charcoal Grills, 2004**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Thermal burn	3,600	71%
Anoxia	0	0%
Scald burn	0	0%
Other diagnosis	1,500	29%
Total	5,000	100%

Notes: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Figures include proportional allocation of grills with unknown fuel or power. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Source: NEISS estimate by CPSC.

## Grease Hoods or Ducts

**In 2003, an estimated 900 reported home structure fires involving grease hoods or ducts resulted in 40 civilian injuries and \$3 million in direct property damage. There were no reported deaths.**

Grease hoods and ducts are venting devices, normally electric-powered, for cooking equipment, particularly stovetops or other range surface units. As a hood or duct, it is more an area of origin than a type of equipment. Therefore, beginning in 1999, the equipment code refers to the grease hood or duct fan, which is the equipment capable of acting as a heat source for fire.

**The leading cause is failure to clean, accounting for one-fifth of these fires.**

Other leading causes are various electrical or mechanical failures and unattended cooking.

**The leading item first ignited is cooking materials, accounting for one-third of these fires.**

Presumably, this is food deposits from cooking vapors. The second leading item first ignited was electrical wire or cable insulation.

### **Safety Tip**

- Follow manufacturer's instructions regarding installation, operation, and especially regular maintenance, including cleaning.

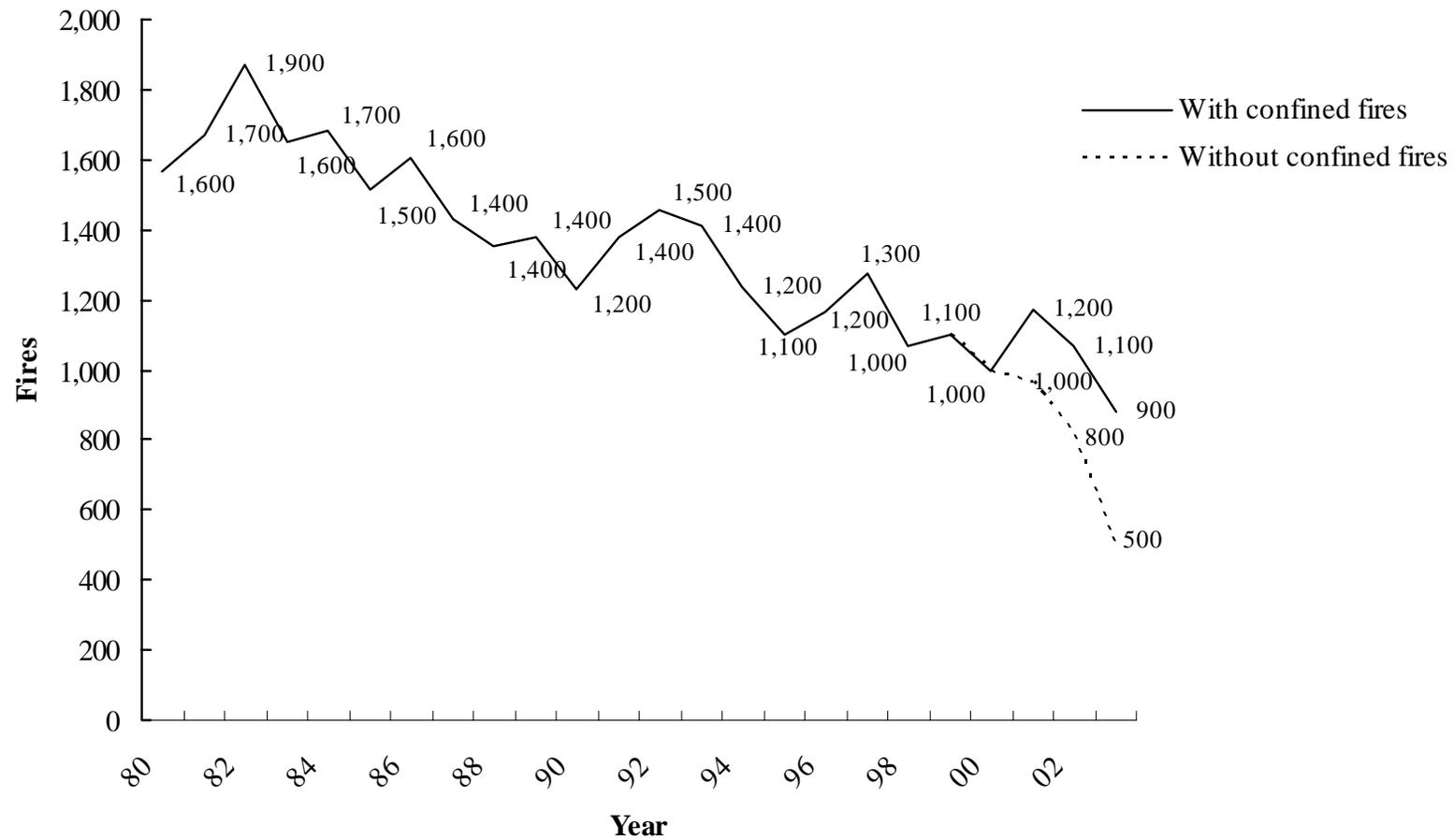
**Home Fires Involving Grease Hoods or Ducts, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires.)

Year	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage		Direct Property Damage	
							(in Millions)		(in Millions of 2003 Dollars)	
1980	1,600		0		30		\$4		\$9	
1981	1,700		0		30		\$5		\$10	
1982	1,900		5		20		\$4		\$8	
1983	1,600		0		20		\$6		\$11	
1984	1,700		0		30		\$5		\$8	
1985	1,500		0		20		\$5		\$9	
1986	1,600		0		20		\$5		\$9	
1987	1,400		0		50		\$3		\$5	
1988	1,400		0		50		\$9		\$14	
1989	1,400		0		50		\$4		\$6	
1990	1,200		3		20		\$6		\$8	
1991	1,400		0		50		\$9		\$12	
1992	1,500		0		40		\$5		\$6	
1993	1,400		0		50		\$8		\$10	
1994	1,200		0		40		\$7		\$9	
1995	1,100		0		40		\$5		\$6	
1996	1,200		0		30		\$4		\$5	
1997	1,300		0		30		\$9		\$10	
1998	1,100		0		30		\$4		\$5	
1999	1,100	(1,100)	4	(4)	10	(10)	\$6	(\$6)	\$6	(\$6)
2000	1,000	(1,000)	0	(0)	40	(40)	\$6	(\$6)	\$7	(\$7)
2001	1,200	(1,000)	0	(0)	30	(30)	\$9	(\$9)	\$9	(\$9)
2002	1,100	(800)	0	(0)	50	(30)	\$4	(\$4)	\$4	(\$4)
2003	900	(500)	0	(0)	40	(40)	\$3	(\$3)	\$3	(\$3)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Grease Hoods or Ducts, 1980-2003



Source: NFIRS and NFPA survey.

**Home Fires Involving Grease Hoods or Ducts, by Cause and Factors Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Cause</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unintentional	500	(58%)	NA	NA	30	(100%)	\$3	(60%)
Failure of equipment or heat source	300	(40%)	NA	NA	0	(0%)	\$2	(40%)
Intentional	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Unclassified cause	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Total without confined fires	900	(100%)	1	NA	30	(100%)	\$6	(100%)

<b>Factor Contributing to Ignition</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Failure to clean	200	(18%)	NA	NA	10	(20%)	\$1	(22%)
Unclassified mechanical failure or malfunction	100	(16%)	NA	NA	0	(0%)	\$1	(19%)
Unclassified electrical failure or malfunction	100	(13%)	NA	NA	0	(0%)	\$2	(28%)
Equipment unattended	100	(12%)	NA	NA	20	(60%)	\$0	(4%)
Short circuit arc from defective or worn insulation	100	(9%)	NA	NA	0	(0%)	\$0	(3%)
Unspecified short-circuit arc	100	(9%)	NA	NA	10	(20%)	\$1	(26%)
Other known items	300	(37%)	NA	NA	10	(20%)	\$1	(25%)
Total factor-contributing entries	1,000	(114%)	1	NA	40	(120%)	\$7	(127%)
Total fires without confined fires	900	(100%)	1	NA	30	(100%)	\$6	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factor can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Grease Hood or Duct, by Human Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Human Factor	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unattended or unsupervised person	100	(11%)	NA	NA	0	(12%)	\$0	(7%)
Age was a factor	0	(2%)	NA	NA	10	(18%)	\$1	(20%)
Asleep	0	(2%)	NA	NA	0	(12%)	\$0	(1%)
Multiple persons involved	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Possibly mentally disabled	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
Physically disabled	0	(1%)	NA	NA	0	(0%)	\$0	(0%)
None	600	(74%)	NA	NA	20	(59%)	\$3	(63%)
Not reported	100	(10%)	NA	NA	0	(0%)	\$1	(9%)
Total human-factor entries	900	(101%)	1	NA	30	(100%)	\$6	(100%)
Total fires without confined fires	900	(100%)	1	NA	30	(100%)	\$6	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factor can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding errors.

Source: NFIRS and NFPA survey.

**Home Fires Involving Grease Hoods or Ducts, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian		Civilian		Direct	
			Deaths	Injuries	Injuries	Property Damage (in Millions)		
Cooking materials	300	(35%)	NA	NA	30	(88%)	\$3	(52%)
Electrical wire or cable insulation	200	(21%)	NA	NA	0	(0%)	\$1	(16%)
Appliance housing or casing	100	(15%)	NA	NA	0	(12%)	\$0	(2%)
Cabinetry	100	(6%)	NA	NA	0	(0%)	\$0	(5%)
Other known item	200	(23%)	NA	NA	0	(0%)	\$1	(25%)
Total without confined fires	900	(100%)	1	NA	30	(100%)	\$6	(100%)

NA – Not applicable because no cases were reported with the cited characteristic known.

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. “Home” includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Totals may not equal sums because of rounding. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown.

Source: NFIRS and NFPA survey.

## Deep Fryers

**In 2003, an estimated 900 reported U.S. home structure fires involving deep fryers resulted in 6 civilian deaths, 60 civilian injuries, and \$14 million in direct property damage.**

Fires involving home deep fryers have declined since the early 1980s even if confined fires are included.

**Nearly half of deep fryer fires involve unattended cooking.**

The second leading cause was heat source too close to combustibles.

**The majority of deep fryer home fires began with ignition of cooking materials.**

**Most emergency room injuries involving deep fryers are scald burns.**

Among cooking equipment, the only ones where scald burns outnumber thermal burns are microwave ovens, pressure cookers, deep fryers, electric frying pans, slow cookers, and electric coffee makers, all devices with large quantities of hot liquid.

### Safety Tips

- Never leave an operating deep fryer unattended.
- Do not overfill the fryer, in order to avoid splashing or boil-over of hot liquid.
- Maintain a safe separation (36", or, in metric terms, 1 meter, which is just over 39", unless manufacturer's instructions specify otherwise) between a deep fat fryer and combustibles.
- Follow manufacturer's instructions regarding set-up, operation, and maintenance.

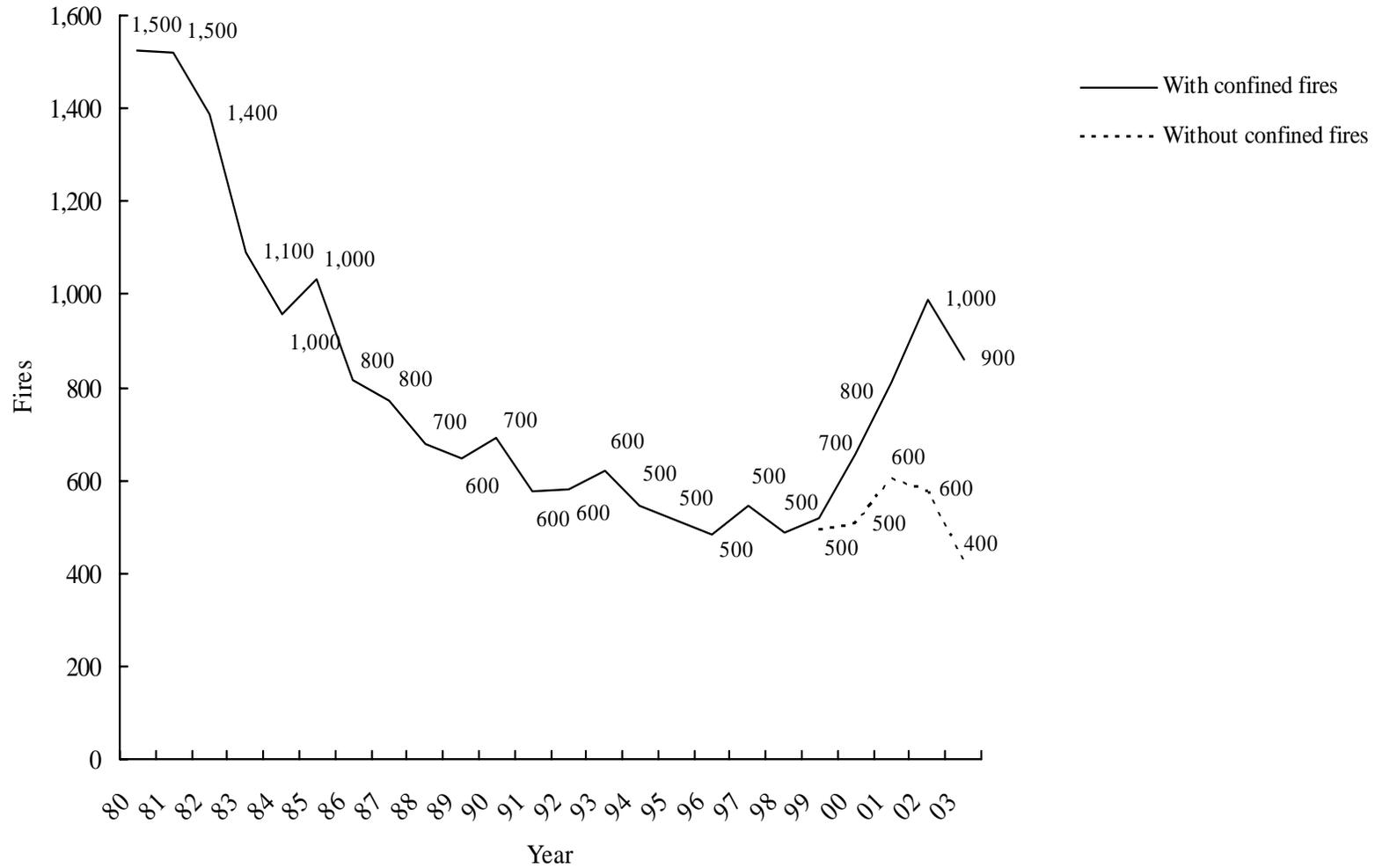
**Home Fires Involving Deep Fryers, by Year**  
**Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires)

Year	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)	Direct Property Damage (in Millions of 2003 Dollars)
1980	1,500	0	150	\$5	\$11
1981	1,500	12	110	\$5	\$11
1982	1,400	18	140	\$7	\$14
1983	1,100	8	80	\$5	\$10
1984	1,000	0	50	\$4	\$7
1985	1,000	11	50	\$6	\$11
1986	800	14	60	\$5	\$8
1987	800	3	60	\$4	\$6
1988	700	0	70	\$8	\$13
1989	600	3	50	\$6	\$9
1990	700	3	50	\$7	\$9
1991	600	5	30	\$7	\$9
1992	600	0	50	\$3	\$4
1993	600	0	60	\$6	\$8
1994	500	18	30	\$5	\$6
1995	500	3	40	\$5	\$6
1996	500	0	30	\$4	\$4
1997	500	0	40	\$5	\$6
1998	500	0	30	\$6	\$6
1999	500 (500)	0 (0)	50 (50)	\$7 (\$7)	\$8 (\$8)
2000	700 (500)	0 (0)	50 (50)	\$12 (\$12)	\$12 (\$12)
2001	800 (600)	6 (6)	60 (60)	\$13 (\$13)	\$14 (\$14)
2002	1,000 (600)	0 (0)	60 (20)	\$13 (\$13)	\$13 (\$13)
2003	900 (400)	6 (6)	60 (30)	\$14 (\$14)	\$14 (\$14)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Deep Fryers, 1980-2003



Source: NFIRS and NFPA survey.

**Home Fires Involving Deep Fryers, by Cause and Factor Contributing to Ignition  
Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments  
(Percents Based Only on Fires Reported to NFIRS Version 5.0)**

Cause	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Unintentional	500 (91%)	2 (100%)	40 (94%)	\$10 (85%)
Failure of equipment or heat source	0 (8%)	0 (0%)	0 (6%)	\$2 (14%)
Unclassified cause	0 (1%)	0 (0%)	0 (0%)	\$0 (0%)
<b>Total</b>	<b>500 (100%)</b>	<b>2 (100%)</b>	<b>40 (100%)</b>	<b>\$12 (100%)</b>

Factor Contributing to Ignition	Fires	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Equipment unattended	200 (45%)	2 (100%)	20 (43%)	\$5 (44%)
Heat source too close to combustibles	100 (13%)	0 (0%)	0 (6%)	\$1 (7%)
Other known factors	300 (52%)	0 (0%)	30 (63%)	\$8 (69%)
<b>Total factor-contributing entries</b>	<b>600 (110%)</b>	<b>2 (100%)</b>	<b>50 (112%)</b>	<b>\$14 (120%)</b>
<b>Total fires without confined fires</b>	<b>500 (100%)</b>	<b>2 (100%)</b>	<b>40 (100%)</b>	<b>\$12 (100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion of exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured home, and apartments. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with this equipment and cause or factor contributing to ignition coded as unknown. For cause, unknown includes undetermined and under investigation, and for factor, unknown includes blank, none, and not reported. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factor can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Deep Fryers, by Human Factor Contributing to Ignition**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

<b>Human Factor</b>	<b>Fires</b>		<b>Civilian Deaths</b>		<b>Civilian Injuries</b>		<b>Direct Property Damage (in Millions)</b>	
Unattended or unsupervised person	100	(21%)	0	(0%)	10	(27%)	\$3	(26%)
Asleep	0	(5%)	1	(44%)	0	(10%)	\$0	(2%)
Possibly impaired by alcohol or drugs	0	(3%)	1	(56%)	0	(5%)	\$0	(2%)
Multiple persons involved	0	(2%)	0	(0%)	0	(0%)	\$0	(0%)
Age was a factor	0	(0%)	0	(0%)	0	(0%)	\$0	(1%)
None	300	(64%)	0	(0%)	20	(57%)	\$7	(59%)
Not reported	0	(5%)	0	(0%)	0	(6%)	\$1	(11%)
<b>Total human-factor entries</b>	<b>500</b>	<b>(101%)</b>	<b>2</b>	<b>(100%)</b>	<b>40</b>	<b>(105%)</b>	<b>\$12</b>	<b>(101%)</b>
<b>Total fires without confined fires</b>	<b>500</b>	<b>(100%)</b>	<b>2</b>	<b>(100%)</b>	<b>40</b>	<b>(100%)</b>	<b>\$12</b>	<b>(100%)</b>

Note: These are fires reported to U.S. municipal fire departments and so exclude fires reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Figures reflect a proportional share of fires with equipment involved unknown and with cooking equipment of unknown type. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Factor can have multiple entries, which is why total entries can exceed total fires. Totals may not equal sums because of rounding error.

Source: NFIRS and NFPA survey.

**Home Fires Involving Deep Fryers, by Item First Ignited**  
**Annual Average of 1999-2003 Non-Confined Structure Fires Reported to U.S. Fire Departments**  
**(Percents Based Only on Fires Reported in NFIRS Version 5.0)**

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Cooking materials	300	(56%)	0	(0%)	30	(74%)	\$6	(53%)
Flammable or combustible liquid or gas	100	(10%)	0	(0%)	0	(10%)	\$1	(11%)
Other known item	200	(34%)	2	(100%)	10	(16%)	\$4	(36%)
Total without confined fires	500	(100%)	2	(100%)	40	(100%)	\$12	(100%)

Note: These are fires reported to U.S. municipal fire departments and so exclude fire reported only to federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. "Home" includes one- and two-family dwellings, manufactured homes, and apartments. Fires are shown to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten, and direct property damage to the nearest million dollars. Figures reflect a proportional share of fires with equipment involved unknown, with cooking equipment of unknown type, and with the indicated equipment and item first ignited unknown. Totals may not equal sums because of rounding.

Source: NFIRS and NFPA survey.

**Injuries Reported to U.S. Emergency Rooms  
Involving Deep Fryers, 2004**

<b>Diagnosis</b>	<b>Injuries</b>	<b>Percentage</b>
Scald burn	1,000	79%
Thermal burn	200	13%
Anoxia	0	1%
Other diagnosis	100	6%
Total	1,200	100%

Notes: “Anoxia” can occur as a result of smoke inhalation from fire but can be due to other causes, such as carbon monoxide from unvented fuel-burning equipment for 2001. “Thermal burn” can be due to heat from fires or heat from other causes, such as contact with hot objects. Sums may not equal totals because of rounding. Injuries are estimated to the nearest hundred.

Source: NEISS estimate by CPSC.

## Fixed Food Warming Appliance

**In 2003, an estimated 300 reported home structure fires involving fixed food warming appliances resulted in 10 civilian injuries and \$3 million in direct property damage. There were no reported deaths in these fires.**

In NFIRS 5.0, cooking equipment coded as steam table or warming drawer is the only cooking equipment assigned to the fixed food warming appliance category. All other small cooking or warming devices are considered portable. So few fires in homes are coded with this equipment that no meaningful breakdowns are possible using only percents based on fires reported in NFIRS 5.0.

### Safety Tips

- The leading cause of cooking fires is unattended equipment. Stay in the kitchen when you are frying, grilling, broiling or boiling food. If you must leave the kitchen for a short period of time, turn off the equipment. If you are simmering, baking, or roasting food, check it regularly, remain in the home while food is cooking, and use a timer to remind you that something is cooking.
- Keep cooking equipment clear of items that could burn, including spilled cooking materials, rags, towels, low-hanging curtains or drapes, and grease build-up on walls or cabinets. Avoid wearing loose clothing or dangling sleeves, which can catch fire if it comes in contact with a flame or hot cooking element.
- Comply with all manufacturer's instructions, which address clearances, installation, maintenance, and operation.
- Keep young children at least 3 feet (or, in metric terms, 1 meter, which is just over 39") away from any place where hot food or drink is being prepared. Young children have high risk of thermal or scald burns from hot food, drink, tableware, cookware, and cooking equipment..

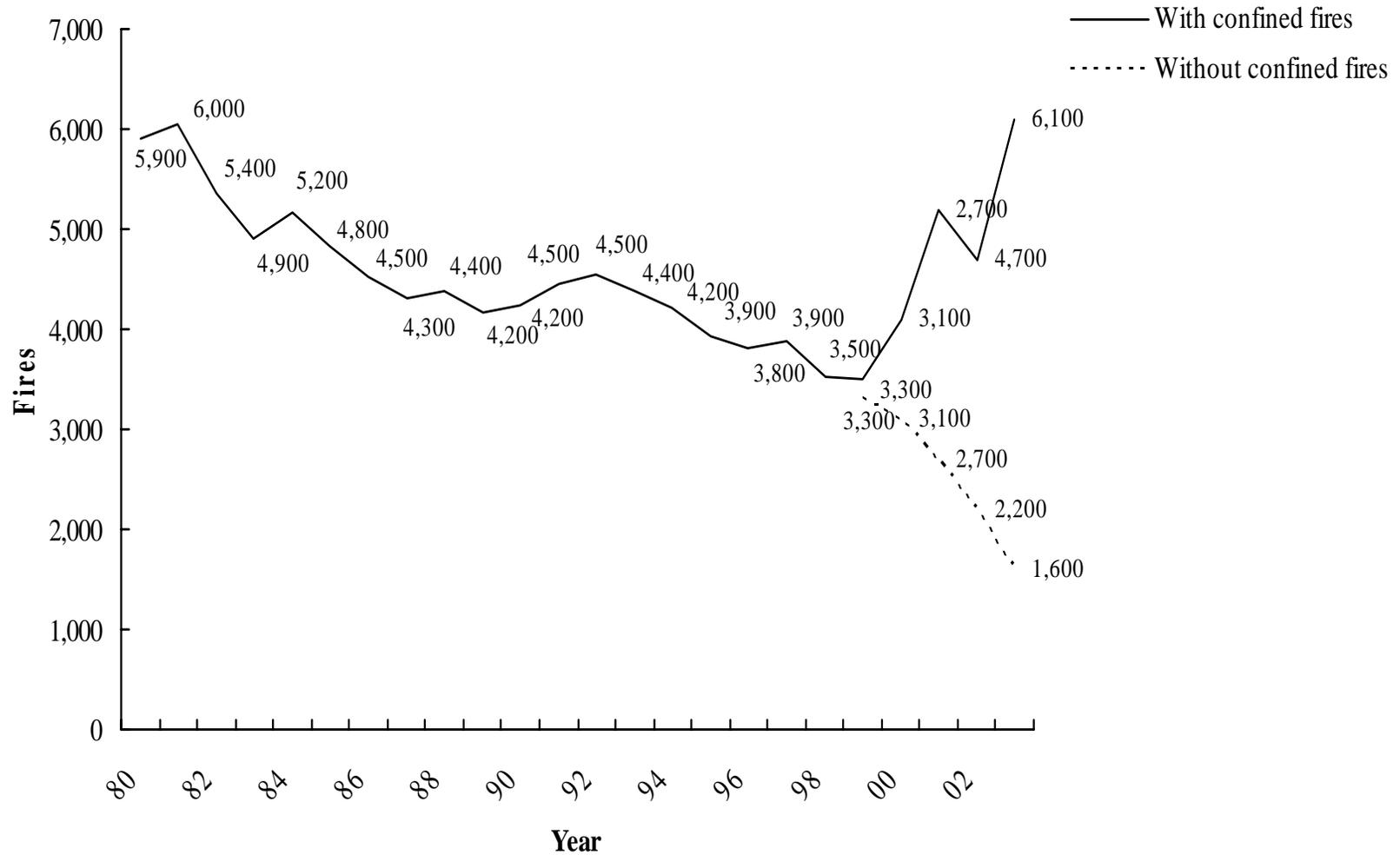
**Home Fires Involving Fixed Food Warming Appliances, by Year  
Structure Fires Reported to U.S. Fire Departments**  
(Numbers in parentheses exclude fires reported as confined fires.)

<b>Year</b>	<b>Fires</b>	<b>Civilian Deaths</b>	<b>Civilian Injuries</b>	<b>Direct Property Damage (in Millions)</b>	<b>Damage Property Damage (in Millions of 2003 Dollars)</b>
1980	800	0	20	\$5	\$10
1981	800	0	30	\$6	\$12
1982	800	0	20	\$3	\$5
1983	700	4	20	\$5	\$9
1984	700	3	20	\$7	\$12
1985	700	7	10	\$3	\$5
1986	600	3	30	\$4	\$6
1987	700	0	10	\$3	\$5
1988	700	3	20	\$5	\$7
1989	700	6	10	\$10	\$15
1990	700	0	10	\$5	\$7
1991	800	3	20	\$8	\$11
1992	1,000	12	40	\$7	\$9
1993	900	7	20	\$6	\$8
1994	900	0	20	\$4	\$5
1995	900	3	50	\$3	\$4
1996	900	4	30	\$3	\$3
1997	900	0	50	\$4	\$5
1998	900	0	30	\$4	\$4
1999	800 (800)	4 (4)	30 (30)	\$5 (\$5)	\$6 (\$6)
2000	700 (700)	6 (6)	30 (30)	\$4 (\$4)	\$4 (\$4)
2001	600 (600)	0 (0)	20 (20)	\$6 (\$6)	\$6 (\$6)
2002	400 (400)	0 (0)	20 (20)	\$2 (\$2)	\$2 (\$2)
2003	300 (300)	0 (0)	10 (10)	\$3 (\$3)	\$3 (\$3)

Note: These are national estimates of fires reported to U.S. municipal fire departments and so exclude fires reported only to Federal or state agencies or industrial fire brigades. National estimates are projections. Casualty and loss projections can be heavily influenced by the inclusion or exclusion of one unusually serious fire. Fires are estimated to the nearest hundred, civilian deaths to the nearest one, civilian injuries to the nearest ten and direct property damage to the nearest million dollars. Fires reflect a proportional share of home fires with equipment involved in ignition unknown and home cooking equipment fires with type of cooking equipment unknown. Inflation adjustment to 2003 dollars is done using the consumer price index. Estimate of device share of confined fires is based on reported confined cooking fires, device percent of confined cooking fires with equipment involved reported, and power share of non-confined fires with this type of device.

Source: NFIRS and NFPA survey.

## U.S. Home Structure Fires Involving Portable Cooking or Warming Devices, 1980-2003



Source: NFIRS and NFPA survey.

## **Appendix A: How National Estimates Statistics Are Calculated**

Estimates are made using the National Fire Incident Reporting System (NFIRS) of the Federal Emergency Management Agency's (FEMA's) United States Fire Administration (USFA), supplemented by the annual stratified random-sample survey of fire experience conducted by the National Fire Protection Association (NFPA), which is used for calibration.

### **Data Bases Used**

NFIRS provides annual computerized data bases of fire incidents, with data classified according to a standard format based on the NFPA 901 Standard. Roughly three-fourths of all states have NFIRS coordinators, who receive fire incident data from participating fire departments and combine the data into a state data base. These data are then transmitted to FEMA/USFA. Participation by the states, and by local fire departments within participating states, is voluntary. NFIRS captures roughly one-third to one-half of all U.S. fires each year. More than one-third of all U.S. fire departments are listed as participants in NFIRS, although not all of these departments provide data every year.

The strength of NFIRS is that it provides the most detailed incident information of any national data base not limited to large fires. NFIRS is the only data base capable of addressing national patterns for fires of all sizes by specific property use and specific fire cause. (The NFPA survey separates fewer than 20 of the hundreds of property use categories defined by NFPA 901 and solicits no cause-related information except for incendiary and suspicious fires.) NFIRS also captures information on the avenues and extent of flame spread and smoke spread and on the performance of detectors and sprinklers.

The NFPA survey is based on a stratified random sample of roughly 3,000 U.S. fire departments (or just over one of every ten fire departments in the country). The survey includes the following information: (1) the total number of fire incidents, civilian deaths, and civilian injuries, and the total estimated property damage (in dollars), for each of the major property use classes defined by the NFPA 901 Standard; (2) the number of on-duty firefighter injuries, by type of duty and nature of illness; and (3) information on the type of community protected (e.g., county versus township versus city) and the size of the population protected, which is used in the statistical formula for projecting national totals from sample results.

The NFPA survey begins with the NFPA Fire Service Inventory, a computerized file of about 30,000 U.S. fire departments, which is the most complete and thoroughly validated such listing in existence. The survey is stratified by size of population protected to reduce the uncertainty of the final estimate. Small rural communities protect fewer people per department and are less likely to respond to the survey, so a large number must be surveyed to obtain an adequate sample of those departments. (NFPA also makes follow-up calls to a sample of the smaller fire departments that do not respond, to confirm that those that did respond are truly representative of fire departments their size.) On the other hand, large city departments are so few in number and protect such a large proportion of the total U.S. population that it makes sense to survey all of them. Most respond, resulting in excellent precision for their part of the final estimate.

## **Projecting NFIRS to National Estimates**

To project NFIRS results to national estimates, one needs at least an estimate of the NFIRS fires as a fraction of the total so that the fraction can be inverted and used as a multiplier or scaling ratio to generate national estimates from NFIRS data. But NFIRS is a sample from a universe whose size cannot be inferred from NFIRS alone. Also, participation rates in NFIRS are not necessarily uniform across regions and sizes of community, both of which are factors correlated with frequency and severity of fires. This means NFIRS may be susceptible to systematic biases. No one at present can quantify the size of these deviations from the ideal, representative sample, so no one can say with confidence that they are or are not serious problems. But there is enough reason for concern so that a second data base - the NFPA survey - is needed to project NFIRS to national estimates and to project different parts of NFIRS separately. This multiple calibration approach makes use of the annual NFPA survey where its statistical design advantages are strongest.

There are separate projection formulas for four major property classes (residential structures, non-residential structures, vehicles, and other) and for each measure of fire severity (fire incidents, civilian deaths, and civilian injuries, and direct property damage).

For example, the scaling ratio for 2001 civilian deaths in residential structures is equal to the total number of 2001 civilian deaths in residential structure fires reported to fire departments, according to the NFPA survey (3,140), divided by the total number of 2001 civilian deaths in residential structure fires reported to NFIRS (1,053). Therefore, the scaling ratio is  $3,140/1,053 = 2.98$ .

The scaling ratios for civilian deaths and injuries and direct property damage are often significantly different from those for fire incidents. Except for fire service injuries, average severity per fire is generally higher for NFIRS than for the NFPA survey. Use of different scaling ratios for each measure of severity is equivalent to assuming that these differences are due either to NFIRS under-reporting of small fires, resulting in a higher-than-actual loss-per-fire ratio, or possible biases in the NFIRS sample representation by region or size of community, resulting in severity-per-fire ratios characteristic only of the oversampled regions or community sizes.

Note that this approach also means that the NFPA survey results for detailed property-use classes (e.g., fires in storage structures) may not match the national estimates of the same value.

## **Calculating National Estimates of Particular Types of Fires**

Most analyses of interest involve the calculation of the estimated number of fires not only within a particular occupancy but also of a particular type. The types that are mostly frequently of interest are those defined by some ignition-cause characteristic. The six cause-related characteristics most commonly used to describe fires are: form of the heat that caused the ignition, equipment involved in ignition, form or type of material first ignited, the ignition factor that brought heat source and ignited material together, and area of origin. Other characteristics of interest are victim characteristics, such as ages of persons killed or injured in fire.

For any characteristic of interest in NFIRS, some reported fires have that characteristic unknown or not reported. If the unknowns are not taken into account, then the propensity to report or not report a characteristic may influence the results far more than the actual patterns on that characteristic. For example, suppose the number of fires remained the same for several consecutive years, but the percentage of fires with cause unreported steadily declined over those years. If the unknown-cause fires were ignored, it would appear as if fires due to every specific cause increased over time while total fires remained unchanged. This, of course, does not make sense.

Consequently, most national estimates analyses allocate unknowns. This is done by using scaling ratios defined by NFPA survey estimates of totals divided by only those NFIRS fires for which the dimension in question was known and reported. This approach is equivalent to assuming that the fires with unreported characteristics, if known, would show the same proportions as the fires with known characteristics. For example, it assumes that the fires with unknown ignition factor contain the same relative shares of child-playing fires, incendiary-cause fires, short circuit fires, and so forth, as are found in the fires where ignition factor was reported.

## **Rounding Errors**

The possibility of rounding errors exists in all our calculations. One of the notes on each table indicates the extent of rounding for that table, e.g., deaths rounded to the nearest one, fires rounded to the nearest hundred, property damage rounded to the nearest hundred thousand dollars. In rounding to the nearest one, functional values of 0.5 or more are rounded up and functional values less than 0.5 are rounded down. For example, 2.5 would round to 3, and 3.4 would round to 3. In rounding to the nearest one, a stated estimate of 1 could be any number from 0.5 to 1.49, a roughly threefold range.

The impact of rounding is greatest when the stated number is small relative to the degree of rounding. As noted, rounding to the nearest one means that stated values of 1 may vary by a factor of three. Similarly, the cumulative impact of rounding error - the potential gap between the estimated total and the sum of the estimated values as rounded - is greatest when there are a large number of values and the total is small relative to the extent of rounding.

Suppose a table presented 5-year averages of estimated deaths by item first ignited, all rounded to the nearest one. Suppose there were a total of 30 deaths in the 5 years, so the total average would be  $30/5 = 6$ .

In case 1, suppose 10 of the possible items first ignited each accounted for 3 deaths in 5 years. Then there would be 10 entries of  $3/5 = 0.6$ , rounded to 1, and the sum would be 10, compared to the true total of 6.

In case 2, suppose 15 of the possible items first ignited each accounted for 2 deaths in 5 years. Then there would be 15 entries of  $2/5 = 0.4$ , rounded to 0, and the sum would be 0, compared to the true total of 6.

Here is another example: Suppose there were an estimate of 7 deaths total in 1992 through 1996. The 5-year average would be 1.4, which would round to 1, the number we would show as the total. Each death would represent a 5-year average of 0.2.

If those 7 deaths split as 4 deaths in one category (e.g., smoking) and 3 deaths in a second category (e.g., heating), then we would show  $4 \times 0.2 = 0.8$  deaths per year for smoking and  $3 \times 0.2 = 0.6$  deaths per year for heating. Both would round to 1, there would be two entries of 1, and the sum would be 2, higher than the actual rounded total.

If those 7 deaths split as 1 death in each of 7 categories (quite possible since there are 12 major cause categories), then we would show 0.2 in each category, always rounding to 0, and the sum would be 0, lower than the actual rounded total. The more categories there are, the farther apart the sum and total can -- and often do -- get.

Note that percentages are calculated from unrounded values, and so it is quite possible to have a percentage entry of up to 100%, even if the rounded number entry is zero.