



Report

Home Structure Fires Involving Kitchen Equipment Other Than Cooking Equipment

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A computer entry error resulted in over-estimation of home fires involving equipment for the year 2002. All types of equipment were affected except for heating equipment and air conditioning or fan equipment. Estimates for heating equipment and air conditioning or fan equipment were calculated in an earlier, separate exercise.

Most causal tables in the equipment report show estimated annual averages for 2002-2005 based on a four-year average from the trend table. The estimates in these tables are also artificially high.

In general, corrections result in a reduction of 14% in fires, 3% in civilian injuries and 0.3% in direct property damage. Estimates of civilian deaths are not affected. For equipment with fewer fires, the influence of 2002 fires on the total may be disproportionately large or small.

The attached table shows the corrected fire and loss estimates for each type of equipment involved. Please contact the Fire Analysis and Research Division if you need more specific information about causal factors associated with specific types of equipment.

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**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments**

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National Fire Protection Association**

October 2008



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Acknowledgements

The National Fire Protection Association thanks all the fire departments and state fire authorities who participate in the National Fire Incident Reporting System (NFIRS) and the annual NFPA fire experience survey. These firefighters are the original sources of the detailed data that make this analysis possible. Their contributions allow us to estimate the size of the fire problem.

We are also grateful to the U.S. Fire Administration for its work in developing, coordinating, and maintaining NFIRS.

For more information about the National Fire Protection Association, visit www.nfpa.org or call 617-770-3000. To learn more about the One-Stop Data Shop go to www.nfpa.org/osds or call 617-984-7443.

Copies of this analysis are available from:

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**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|-----------------------------------|------------------------------------|----------------|----------------|-----------------|-------------------|--------------|--------------------------------------|--------------|
| | | Corrected | | | Corrected | | Corrected | |
| 631-647, COOKING EQUIPMENT | | 142,250 | 161,846 | 442 | 4,585 | 4,723 | \$761 | \$763 |
| 654 | | | | | | | | |
| | <i>Non-confined</i> | 36,910 | 42,730 | 442 | 3,163 | 3,257 | \$733 | \$735 |
| | <i>Confined</i> | 105,341 | 119,116 | 0 | 1,422 | 1,466 | \$28 | \$28 |
| 646 | Range | 94,534 | 107,233 | 381 | 3,792 | 3,909 | \$529 | \$530 |
| | <i>Non-confined</i> | 28,010 | 32,339 | 381 | 2,681 | 2,761 | \$509 | \$510 |
| | <i>Confined</i> | 66,524 | 74,894 | 0 | 1,111 | 1,149 | \$20 | \$20 |
| 645 | Oven | 27,529 | 31,503 | 4 | 270 | 274 | \$32 | \$32 |
| | <i>Non-confined</i> | 2,987 | 3,443 | 4 | 122 | 124 | \$26 | \$27 |
| | <i>Confined</i> | 24,541 | 28,060 | 0 | 148 | 149 | \$5 | \$5 |
| 631-641 | Portable cooking or warming device | 7,943 | 9,047 | 38 | 219 | 226 | \$78 | \$78 |
| | <i>Non-confined</i> | 2,439 | 2,893 | 38 | 156 | 162 | \$77 | \$77 |
| | <i>Confined</i> | 5,504 | 6,154 | 0 | 63 | 64 | \$1 | \$1 |
| 637 | Toaster or toaster oven | 4,282 | 4,962 | 15 | 72 | 74 | \$34 | \$34 |
| 639 | Wok, frying pan, or skillet | 1,982 | 2,192 | 0 | 96 | 98 | \$10 | \$10 |
| 631 | Coffee maker or teapot | 600 | 672 | 4 | 16 | 18 | \$20 | \$20 |
| 632 | Food warmer or hot plate | 412 | 473 | 15 | 16 | 16 | \$7 | \$7 |
| 633 | Kettle | 297 | 331 | 4 | 5 | 5 | \$1 | \$1 |
| 636 | Slow cooker | 216 | 242 | 0 | 15 | 16 | \$5 | \$5 |
| 635 | Pressure cooker or canner | 74 | 95 | 0 | 0 | 0 | \$0 | \$0 |
| 638 | Waffle iron or griddle | 34 | 34 | 0 | 0 | 0 | \$0 | \$0 |
| 641 | Breadmaking machine | 25 | 25 | 0 | 0 | 0 | \$0 | \$0 |
| 634 | Popcorn popper | 21 | 21 | 0 | 0 | 0 | \$0 | \$0 |
| 644 | Microwave oven | 7,123 | 8,085 | 0 | 108 | 111 | \$17 | \$17 |
| | <i>Non-confined</i> | 1,180 | 1,331 | 0 | 62 | 64 | \$17 | \$17 |
| | <i>Confined</i> | 5,944 | 6,754 | 0 | 45 | 46 | \$1 | \$1 |
| 643 | Grill, hibachi, or barbecue | 3,048 | 3,539 | 14 | 92 | 95 | \$83 | \$83 |
| | <i>Non-confined</i> | 1,306 | 1,552 | 14 | 80 | 83 | \$83 | \$83 |
| | <i>Confined</i> | 1,742 | 1,987 | 0 | 12 | 12 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|--------------------------------------|---|--------------------|------------------|-----------------|--------------------|----------------|--------------------------------------|-----------------|
| | | Corrected | | | Corrected | | Corrected | |
| COOKING EQUIPMENT (Continued) | | | | | | | | |
| 642 | Deep fryer | 1,169 | 1,382 | 5 | 70 | 73 | \$17 | \$17 |
| | <i>Non-confined</i> | 536 | 642 | 5 | 35 | 36 | \$17 | \$17 |
| | <i>Confined</i> | 633 | 740 | 0 | 35 | 37 | \$0 | \$0 |
| 654 | Grease hood or duct exhaust fan | 868 | 1,009 | 0 | 34 | 35 | \$5 | \$5 |
| | <i>Non-confined</i> | 447 | 524 | 0 | 26 | 27 | \$5 | \$5 |
| | <i>Confined</i> | 421 | 485 | 0 | 8 | 9 | \$0 | \$0 |
| 647 | Steam table or warming drawer | 35 | 48 | 0 | 0 | 0 | \$0 | \$0 |
| | <i>Non-confined</i> | 4 | 7 | 0 | 0 | 0 | \$0 | \$0 |
| | <i>Confined</i> | 31 | 42 | 0 | 0 | 0 | \$0 | \$0 |
| | <i>Confined to cooking vessel but coded as equipment other than cooking equipment</i> | <i>Not Checked</i> | 4,091 | 0 | <i>Not Checked</i> | 124 | <i>Not Checked</i> | \$2 |
| 611-623, | KITCHEN EQUIPMENT OTHER THAN | 2,852 | 3,340 | 15 | 102 | 105 | \$72 | \$72 |
| 651-653, | COOKING EQUIPMENT | | | | | | | |
| 655-656 | | | | | | | | |
| 652, | Refrigerator, freezer, or ice maker | 1,625 | 1,917 | 12 | 66 | 68 | \$48 | \$48 |
| 655-656 | | | | | | | | |
| 656 | Refrigerator | 1,347 | 1,580 | 12 | 47 | 48 | \$36 | \$37 |
| 652 | Separate freezer | 276 | 335 | 0 | 19 | 19 | \$12 | \$12 |
| 655 | Separate ice maker | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 651 | Dishwasher | 1,133 | 1,309 | 4 | 30 | 31 | \$22 | \$22 |
| 653 | Garbage disposer | 38 | 43 | 0 | 3 | 4 | \$0 | \$0 |
| 611 | Blender, juicer, or food processor | 30 | 37 | 0 | 0 | 0 | \$0 | \$0 |
| 621 | Can opener | 16 | 21 | 0 | 2 | 2 | \$0 | \$0 |
| 612 | Coffee grinder | 7 | 9 | 0 | 0 | 0 | \$1 | \$1 |
| 623 | Knife sharpener | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 622 | Knife | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | Civilian Deaths | Civilian Injuries | Direct Property Damage (in Millions) |
|---|---|---------------|--------------------|----------------------|---|
| NO CORRECTIONS WERE NEEDED FOR HEATING EQUIPMENT | | | | | |
| 121-152 | HEATING EQUIPMENT | 66,642 | 637 | 1,554 | \$961 |
| | <i>Non-confined</i> | 27,576 | 637 | 1,453 | \$942 |
| | <i>Confined</i> | 39,066 | 0 | 101 | \$19 |
| 125-127 | Chimney or chimney connector | 25,304 | 26 | 71 | \$98 |
| | <i>Non-confined</i> | 2,004 | 26 | 45 | \$85 |
| | <i>Confined</i> | 23,300 | 0 | 26 | \$13 |
| | Unspecified chimney or flue | 22,778 | 0 | 26 | \$13 |
| 127 | Metal chimney | 1,163 | 13 | 23 | \$47 |
| 126 | Brick or stone chimney | 975 | 13 | 16 | \$29 |
| 125 | Chimney connector | 388 | 0 | 6 | \$9 |
| 123-124, 131, 141-143 | Space heater | 19,557 | 521 | 1,005 | \$556 |
| | <i>Non-confined</i> | 14,711 | 521 | 984 | \$554 |
| | <i>Confined</i> | 4,845 | 0 | 21 | \$2 |
| 124 | Heating stove | 7,720 | 180 | 432 | \$174 |
| 131 | Local heating furnace | 4,575 | 42 | 102 | \$54 |
| 141 | Heater excluding oil-filled or catalytic | 4,166 | 189 | 317 | \$220 |
| 143 | Oil-filled heater | 1,587 | 80 | 76 | \$30 |
| 123 | Fireplace with insert | 1,175 | 26 | 38 | \$67 |
| 142 | Catalytic heater | 334 | 4 | 39 | \$11 |
| 132-133 | Furnace | 12,327 | 41 | 161 | \$105 |
| | <i>Non-confined</i> | 2,941 | 41 | 116 | \$101 |
| | <i>Confined</i> | 9,386 | 0 | 45 | \$4 |
| 132 | Central furnace | 9,171 | 41 | 145 | \$84 |
| 133 | Boiler | 3,156 | 0 | 16 | \$21 |
| 151 | Water heater | 7,101 | 46 | 275 | \$117 |
| | <i>Non-confined</i> | 5,767 | 46 | 266 | \$117 |
| | <i>Confined</i> | 1,335 | 0 | 9 | \$0 |

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**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | Civilian Deaths | Civilian Injuries | Direct Property Damage (in Millions) |
|---|--|--------------|------------------------|--------------------------|---|
| NO CORRECTIONS WERE NEEDED FOR HEATING EQUIPMENT | | | | | |
| 121-122 | Fireplace | 1,469 | 3 | 17 | \$64 |
| | <i>Non-confined</i> | 1,309 | 3 | 16 | \$63 |
| | <i>Confined</i> | 160 | 0 | 1 | \$0 |
| 121 | Masonry fireplace | 924 | 0 | 11 | \$31 |
| 122 | Factory-built fireplace | 545 | 3 | 5 | \$33 |
| 145 | Heat tape | 451 | 0 | 9 | \$8 |
| | <i>Non-confined</i> | 451 | 0 | 9 | \$8 |
| | <i>Confined</i> | 0 | 0 | 0 | \$0 |
| 144 | Heat lamp | 383 | 0 | 15 | \$12 |
| | <i>Non-confined</i> | 343 | 0 | 15 | \$12 |
| | <i>Confined</i> | 40 | 0 | 0 | \$0 |
| 152 | Steamline, heat pipe, or hot air duct | 51 | 0 | 0 | \$1 |
| | <i>Non-confined</i> | 51 | 0 | 0 | \$1 |
| | <i>Confined</i> | 0 | 0 | 0 | \$0 |
| | <i>Confined to chimney or boiler but coded as equipment other than heating equipment</i> | 7,086 | 0 | 18 | \$1 |
| 111-117 | AIR CONDITIONING, FAN, OR RELATED EQUIPMENT | 6,071 | 35 | 254 | \$139 |
| 113 | Fan | 3,225 | 15 | 145 | \$73 |
| 111 | Air conditioner | 2,197 | 16 | 86 | \$55 |
| 112 | Heat pump | 321 | 0 | 10 | \$4 |
| 116 | Dehumidifier | 197 | 0 | 5 | \$5 |
| 114 | Humidifier | 67 | 0 | 2 | \$1 |
| 117 | Evaporative cooler or cooling tower | 39 | 0 | 4 | \$1 |
| 115 | Ionizer | 24 | 4 | 2 | \$1 |

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Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|-------------------|---|---------------|------------------|-----------------|-------------------|----------------|--------------------------------------|--------------|
| | | Corrected | | | Corrected | | Corrected | |
| 210-263 | ELECTRICAL DISTRIBUTION AND LIGHTING EQUIPMENT | 20,673 | 24,176 | 321 | 805 | 828 | \$696 | \$698 |
| 231-244 | Lamp, light bulb or light fixture | 5,762 | 6,789 | 57 | 237 | 244 | \$166 | \$166 |
| 231 | Table, floor, or desktop lamp | 1,929 | 2,247 | 43 | 130 | 135 | \$62 | \$63 |
| 233 | Incandescent light fixture | 1,488 | 1,723 | 9 | 38 | 39 | \$38 | \$38 |
| 238 | Light bulb | 626 | 769 | 0 | 13 | 13 | \$11 | \$11 |
| 235 | Halogen light fixture | 631 | 739 | 0 | 26 | 27 | \$19 | \$19 |
| 234 | Fluorescent light fixture | 417 | 519 | 0 | 3 | 3 | \$10 | \$10 |
| 237 | Work or trouble light | 315 | 369 | 0 | 7 | 7 | \$14 | \$14 |
| 242 | Decorative light on line voltage | 193 | 239 | 4 | 13 | 14 | \$7 | \$7 |
| 241 | Nightlight | 61 | 74 | 0 | 3 | 3 | \$1 | \$1 |
| 243 | Decorative or landscape lighting on low voltage | 40 | 44 | 0 | 0 | 0 | \$1 | \$1 |
| 232 | Lantern or flashlight | 43 | 43 | 0 | 3 | 3 | \$3 | \$3 |
| 244 | Sign | 9 | 14 | 0 | 0 | 0 | \$0 | \$0 |
| 236 | Sodium or mercury vapor light | 9 | 9 | 0 | 0 | 0 | \$0 | \$0 |
| 211-212, 214, 216 | Wiring | 4,621 | 5,403 | 88 | 73 | 75 | \$161 | \$161 |
| 216 | Branch circuit wiring | 2,328 | 2,736 | 83 | 43 | 44 | \$100 | \$100 |
| 212 | Service supply wiring from utility | 969 | 1,131 | 6 | 16 | 16 | \$33 | \$33 |
| 214 | Wiring from meter box to circuit breaker | 748 | 881 | 0 | 14 | 14 | \$17 | \$17 |
| 211 | Power (utility) line | 576 | 655 | 0 | 0 | 0 | \$11 | \$11 |
| 217-218 | Outlet, receptacle, or switch | 3,598 | 4,208 | 23 | 150 | 155 | \$116 | \$116 |
| 217 | Outlet or receptacle | 3,238 | 3,791 | 23 | 140 | 145 | \$107 | \$107 |
| 218 | Wall switch | 361 | 417 | 0 | 10 | 10 | \$9 | \$9 |

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Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|---|---|-----------|------------------|-----------------|-------------------|----------------|--------------------------------------|------------------|
| | | Corrected | | | Corrected | | Corrected | |
| ELECTRICAL DISTRIBUTION AND LIGHTING EQUIPMENT (Continued) | | | | | | | | |
| 215, 219, 227 | Overcurrent protection equipment | 2,606 | 3,052 | 15 | 71 | 73 | \$69 | \$70 |
| 215 | Panelboard or switchboard | 2,138 | 2,502 | 4 | 52 | 54 | \$54 | \$55 |
| 227 | Surge protector | 420 | 488 | 11 | 15 | 16 | \$14 | \$14 |
| 219 | Ground fault circuit interceptor (GFCI) | 48 | 62 | 0 | 3 | 3 | \$2 | \$2 |
| 261-263 | Cord or plug | 2,568 | 2,982 | 125 | 206 | 212 | \$116 | \$116 |
| 263 | Extension cord | 1,811 | 2,114 | 96 | 165 | 171 | \$91 | \$91 |
| 262 | Permanent power cord or plug | 440 | 510 | 25 | 20 | 20 | \$12 | \$12 |
| 261 | Detachable power cord or plug | 318 | 358 | 4 | 21 | 21 | \$13 | \$13 |
| 213 | Meter or meter box | 806 | 935 | 4 | 17 | 17 | \$32 | \$32 |
| 224-226, 228-229 | Power source | 411 | 450 | 0 | 36 | 37 | \$29 | \$29 |
| 224 | Generator | 209 | 229 | 0 | 29 | 30 | \$19 | \$19 |
| 228 | Battery charger or rectifier | 132 | 147 | 0 | 7 | 7 | \$7 | \$7 |
| 229 | Battery | 55 | 60 | 0 | 0 | 0 | \$2 | \$2 |
| 225 | Inverter | 9 | 9 | 0 | 0 | 0 | \$0 | \$0 |
| 226 | Uninterrupted power supply | 4 | 4 | 0 | 0 | 0 | \$0 | \$0 |
| 221-223 | Transformer | 286 | 341 | 8 | 13 | 13 | \$7 | \$7 |
| 223 | Low voltage transformer | 134 | 156 | 4 | 8 | 8 | \$3 | \$3 |
| 222 | Overcurrent or disconnect equipment | 93 | 110 | 4 | 5 | 5 | \$4 | \$4 |
| 221 | Distribution type transformer | 60 | 75 | 0 | 0 | 0 | \$0 | \$0 |
| 253 | Lightning rod or arrester | 10 | 10 | 0 | 0 | 0 | \$0 | \$0 |
| 251 | Electric fence | 4 | 4 | 0 | 2 | 2 | \$0 | \$0 |
| 252 | Traffic control device | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |

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Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|--|---|-----------|-------------------|-----------------|-------------------|----------------|--------------------------------------|-------|
| | | Corrected | | | Corrected | | Corrected | |
| 300-599, OTHER APPLIANCES AND EQUIPMENT | | | | | | | | |
| 700-999 | | | | | | | | |
| 811, 813, 814 | Washer or dryer | 15,638 | 18,282 | 26 | 454 | 468 | \$198 | \$198 |
| 811 | Clothes dryer | 14,420 | 16,867 | 26 | 423 | 436 | \$187 | \$187 |
| 814 | Washing machine | 720 | 844 | 0 | 12 | 13 | \$4 | \$4 |
| 813 | Washer/dryer | 498 | 571 | 0 | 19 | 20 | \$6 | \$6 |
| 331-334 | Torch or burner | 1,983 | 2,283 | 7 | 131 | 136 | \$100 | \$100 |
| 334 | Soldering equipment | 823 | 955 | 7 | 52 | 55 | \$35 | \$35 |
| 331 | Welding torch | 573 | 649 | 0 | 46 | 46 | \$45 | \$45 |
| 332 | Cutting torch | 309 | 351 | 0 | 12 | 14 | \$7 | \$7 |
| 333 | Burner | 277 | 328 | 0 | 20 | 22 | \$12 | \$12 |
| 730-757 | Entertainment equipment | 1,804 | 2,102 | 12 | 105 | 108 | \$49 | \$49 |
| 753 | Television | 789 | 911 | 4 | 62 | 64 | \$23 | \$23 |
| 748 | Stereo equipment | 266 | 314 | 8 | 9 | 10 | \$12 | \$11 |
| 743 | Radio | 216 | 267 | 0 | 7 | 8 | \$3 | \$3 |
| 754 | VCR or VCR/TV combination | 134 | 151 | 0 | 10 | 10 | \$2 | \$2 |
| 741 | (Audio) CD player | 103 | 120 | 0 | 0 | 0 | \$2 | \$2 |
| 747 | Separate audio speakers | 68 | 79 | 0 | 2 | 2 | \$1 | \$1 |
| 751 | Cable converter box | 49 | 58 | 0 | 5 | 5 | \$1 | \$1 |
| 750 | Unclassified video equipment | 39 | 45 | 0 | 3 | 4 | \$1 | \$1 |
| 740 | Unclassified sound recording or receiving equipment | 39 | 42 | 0 | 0 | 0 | \$1 | \$1 |
| 755 | Video game (electronic) | 32 | 38 | 0 | 5 | 5 | \$3 | \$3 |
| 745 | Phonograph, record player or turntable | 14 | 17 | 0 | 0 | 0 | \$0 | \$0 |
| 733 | Musical synthesizer or keyboard | 9 | 15 | 0 | 0 | 0 | \$0 | \$0 |
| 742 | Laser disk player | 12 | 12 | 0 | 0 | 0 | \$0 | \$0 |
| 732 | Piano or organ | 10 | 10 | 0 | 0 | 0 | \$0 | \$0 |
| 749 | Tape recorder or player | 9 | 9 | 0 | 0 | 0 | \$0 | \$0 |
| 730 | Unclassified musical instrument | 6 | 6 | 0 | 0 | 0 | \$0 | \$0 |

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| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|--|---|-----------|------------------|-----------------|-------------------|----------------|--------------------------------------|-----------------|
| | | Corrected | | | Corrected | | Corrected | |
| OTHER APPLIANCES AND EQUIPMENT(Continued) | | | | | | | | |
| Entertainment equipment (continued) | | | | | | | | |
| 744 | Two-way radio | 5 | 5 | 0 | 0 | 0 | \$0 | \$0 |
| 756 | Camcorder or video camera | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 752 | Film or slide projector | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 731 | Guitar | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 757 | Photographic camera or equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 850-855 | Portable appliance designed to produce controlled heat | 1,621 | 1,916 | 27 | 98 | 100 | \$62 | \$63 |
| 850 | Unclassified portable appliance designed to produce controlled heat | 557 | 639 | 14 | 22 | 22 | \$26 | \$26 |
| 855 | Clothes iron | 424 | 508 | 0 | 10 | 10 | \$10 | \$10 |
| 852 | Electric blanket | 403 | 483 | 8 | 54 | 55 | \$15 | \$15 |
| 853 | Heating pad | 229 | 275 | 4 | 12 | 13 | \$9 | \$9 |
| 854 | Clothes steamer | 8 | 11 | 0 | 0 | 0 | \$2 | \$2 |
| 851 | Baby bottle warmer | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 812 | Trash compactor | 1,432 | 1,455 | 0 | 4 | 4 | \$0 | \$0 |
| 812 | <i>Non-confined fire</i> | 16 | 21 | 0 | 2 | 2 | \$0 | \$0 |
| | <i>Confined fire</i> | 1,416 | 1,434 | 0 | 1 | 2 | \$0 | \$0 |
| 873 | Cigarette or pipe lighter ¹ | 1,019 | 1,256 | 50 | 183 | 190 | \$35 | \$35 |
| 841-849 | Personal care devices | 691 | 804 | 10 | 19 | 20 | \$22 | \$22 |
| 842 | Curling iron | 277 | 339 | 6 | 7 | 7 | \$6 | \$6 |
| 845 | Hair dryer | 301 | 334 | 0 | 12 | 13 | \$8 | \$8 |
| 844 | Hair curler warmer | 68 | 80 | 0 | 0 | 0 | \$7 | \$7 |
| 847 | Razor or shaver | 15 | 22 | 4 | 0 | 0 | \$0 | \$0 |
| 848 | Sunlamp or tanning equipment | 13 | 13 | 0 | 0 | 0 | \$1 | \$1 |
| 846 | Lighted makeup mirror | 12 | 12 | 0 | 0 | 0 | \$0 | \$0 |
| 841 | Comb or hair brush | 2 | 2 | 0 | 0 | 0 | \$0 | \$0 |
| 849 | Toothbrush | 2 | 2 | 0 | 0 | 0 | \$0 | \$0 |
| 843 | Electrolysis equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

¹ Home structure fires involving lighters are estimated much higher using the Heat Source field: 9,800 fires (including 2,200 confined fires), 210 civilian deaths, 930 civilian injuries, and \$221 million direct property damage (including \$1 million from confined fires).

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| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|---------------------------------------|--|-----------|----------------|-----------------|-------------------|---------------|--------------------------------------|------|
| | | Corrected | | | Corrected | | Corrected | |
| OTHER APPLIANCES AND EQUIPMENT | | | | | | | | |
| (Continued) | | | | | | | | |
| 710-728 | Office equipment | 641 | 723 | 0 | 32 | 34 | \$21 | \$21 |
| 710-716 | Computers and related equipment | 446 | 488 | 0 | 27 | 28 | \$18 | \$18 |
| 711 | Computer | 213 | 230 | 0 | 15 | 15 | \$12 | \$12 |
| 710 | Unclassified computer device | 100 | 109 | 0 | 5 | 5 | \$4 | \$4 |
| 714 | Computer monitor | 66 | 72 | 0 | 2 | 2 | \$2 | \$2 |
| 715 | Computer printer | 55 | 66 | 0 | 5 | 5 | \$1 | \$1 |
| 716 | Computer projection device | 5 | 5 | 0 | 0 | 0 | \$0 | \$0 |
| 712 | External computer storage device | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 713 | External computer modem | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 722 | Telephone or answering machine | 107 | 124 | 0 | 5 | 6 | \$2 | \$2 |
| 720-721, 723-728 | Other office equipment | 88 | 111 | 0 | 0 | 0 | \$1 | \$1 |
| 726 | Paper shredder | 33 | 44 | 0 | 0 | 0 | \$0 | \$0 |
| 725 | Fax machine | 23 | 28 | 0 | 0 | 0 | \$0 | \$0 |
| 720 | Unclassified office equipment | 16 | 19 | 0 | 0 | 0 | \$0 | \$0 |
| 728 | Typewriter | 10 | 13 | 0 | 0 | 0 | \$0 | \$0 |
| 724 | Copier | 7 | 7 | 0 | 0 | 0 | \$0 | \$0 |
| 721 | Adding machine or calculator | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 723 | Cash register | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 727 | Postage or shipping meter equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 352 | Incinerator | 599 | 675 | 0 | 2 | 2 | \$0 | \$0 |
| 352 | <i>Non-confined</i> | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| | <i>Confined</i> | 599 | 675 | 0 | 2 | 2 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|---------------------------------------|---|-----------|-----|-----------------|-------------------|----|--------------------------------------|------|
| | | Corrected | | | Corrected | | Corrected | |
| OTHER APPLIANCES AND EQUIPMENT | | | | | | | | |
| (Continued) | | | | | | | | |
| 311-318 | Power tools | 392 | 438 | 0 | 21 | 22 | \$13 | \$13 |
| 316 | Power sander, grinder, buffer or polisher | 151 | 165 | 0 | 2 | 2 | \$2 | \$2 |
| 311 | Power saw | 82 | 91 | 0 | 5 | 5 | \$3 | \$3 |
| 315 | Power drill or screwdriver | 66 | 77 | 0 | 4 | 4 | \$1 | \$1 |
| 310 | Unclassified power tool | 66 | 77 | 0 | 8 | 8 | \$5 | \$5 |
| 314 | Power cutting tool | 22 | 22 | 0 | 2 | 2 | \$0 | \$0 |
| 313 | Power shaper, router, joiner, or planer | 5 | 5 | 0 | 0 | 0 | \$2 | \$2 |
| 312 | Power lathe | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 317 | Power hammer | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 318 | Power nail gun | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 500-538 | Yard or other outdoor equipment | 363 | 420 | 4 | 20 | 21 | \$13 | \$13 |
| 524 | Lawn mower | 260 | 298 | 0 | 14 | 15 | \$10 | \$10 |
| 523 | Weed burner | 31 | 40 | 0 | 2 | 2 | \$1 | \$1 |
| 534 | Snow blower or thrower | 22 | 22 | 4 | 4 | 4 | \$1 | \$1 |
| 532 | Leaf blower | 21 | 21 | 0 | 0 | 0 | \$0 | \$0 |
| 525 | Lawn or landscape trimmer or edger | 16 | 19 | 0 | 0 | 0 | \$0 | \$0 |
| 522 | Chain saw | 10 | 15 | 0 | 0 | 0 | \$0 | \$0 |
| 533 | Mulcher, grinder, or chipper | 4 | 6 | 0 | 0 | 0 | \$0 | \$0 |
| 511 | Combine or threshing machine | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 512 | Hay processing equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 513 | Farm elevator or conveyor | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 514 | Silo loader or unloader | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 515 | Feed grinder, mixer, or blender | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 516 | Milking machine | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 517 | Pasteurizer | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 518 | Cream separator | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|---------------------------------------|---|-----------|----------------|-----------------|-------------------|---------------|--------------------------------------|-----|
| | | Corrected | | | Corrected | | Corrected | |
| OTHER APPLIANCES AND EQUIPMENT | | | | | | | | |
| (Continued) | | | | | | | | |
| 521 | Farm or garden sprayer | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 531 | Lawn vacuum | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 535 | Log splitter | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 536 | Post-hole auger | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 537 | Post driver or pile driver | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 538 | Tiller or cultivator | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 373, 876 861-864, 866,868 | Control and detection equipment | 247 | 294 | 0 | 0 | 0 | \$3 | \$3 |
| 868 | Thermostat | 103 | 127 | 0 | 0 | 0 | \$1 | \$1 |
| 863 | Garage door opener | 59 | 70 | 0 | 0 | 0 | \$1 | \$1 |
| 866 | Smoke or heat detector | 42 | 46 | 0 | 0 | 0 | \$0 | \$0 |
| 373 | Gas regulator | 23 | 25 | 0 | 0 | 0 | \$0 | \$0 |
| 876 | Timer | 17 | 21 | 0 | 0 | 0 | \$0 | \$0 |
| 864 | Gas detector | 4 | 4 | 0 | 0 | 0 | \$0 | \$0 |
| 861 | Automatic door opener (not garage) | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 862 | Burglar alarm | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 410-419 | Biomedical equipment | 231 | 262 | 54 | 64 | 66 | \$9 | \$9 |
| 416 | Oxygen administration equipment | 182 | 209 | 46 | 60 | 62 | \$7 | \$7 |
| 419 | Therapeutic equipment | 23 | 28 | 4 | 0 | 0 | \$1 | \$1 |
| 410 | Unclassified medical equipment | 16 | 16 | 0 | 2 | 2 | \$1 | \$1 |
| 411 | Dental, medical or other powered bed or chair | 10 | 10 | 4 | 2 | 2 | \$0 | \$0 |
| 412 | Unclassified dental equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 413 | Dialysis equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 414 | Medical imaging equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 415 | Medical monitoring equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 417 | X-ray or other radiological equipment | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|---|--|-----------|----------------|-----------------|-------------------|---------------|--------------------------------------|------|
| | | Corrected | | | Corrected | | Corrected | |
| OTHER APPLIANCES AND EQUIPMENT (Continued) | | | | | | | | |
| 418 | Medical sterilizer | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 821 | Hot tub, whirlpool, or spa | 204 | 253 | 0 | 5 | 5 | \$16 | \$16 |
| 341-342, 344 | Pump or compressor | 206 | 238 | 0 | 0 | 0 | \$4 | \$4 |
| 344 | Pump | 136 | 154 | 0 | 0 | 0 | \$2 | \$2 |
| 341 | Air compressor | 70 | 84 | 0 | 0 | 0 | \$2 | \$2 |
| 342 | Gas compressor | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 830-834 | Floor care equipment | 207 | 233 | 0 | 20 | 21 | \$5 | \$5 |
| 834 | Vacuum cleaner | 166 | 188 | 0 | 15 | 16 | \$4 | \$4 |
| 832 | Carpet cleaning equipment including rug shampooer | 20 | 22 | 0 | 2 | 2 | \$0 | \$0 |
| 830 | Unclassified floor care equipment | 15 | 15 | 0 | 0 | 0 | \$0 | \$0 |
| 833 | Floor buffer or waxer | 6 | 8 | 0 | 3 | 3 | \$0 | \$0 |
| 831 | Electric broom | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 320-325 | Painting or coating equipment | 100 | 118 | 0 | 7 | 7 | \$10 | \$10 |
| 320 | Unclassified painting tool | 70 | 87 | 0 | 2 | 2 | \$7 | \$7 |
| 324 | Paint sprayer | 23 | 25 | 0 | 2 | 2 | \$3 | \$3 |
| 325 | Coating machine | 6 | 6 | 0 | 2 | 2 | \$0 | \$0 |
| 322 | Paint flow coating machine | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 321 | Paint dipper | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 323 | Paint mixing machine | 0 | 0 | 0 | 0 | 0 | \$0 | \$0 |
| 351 | Heat treating equipment | 101 | 117 | 0 | 0 | 0 | \$7 | \$7 |
| 374 | Separate motor | 71 | 94 | 0 | 2 | 2 | \$1 | \$1 |
| 872 | Charcoal lighter | 66 | 77 | 0 | 12 | 12 | \$3 | \$3 |
| 869 | Ashtray | 64 | 76 | 0 | 2 | 2 | \$1 | \$1 |
| 891 | Clock | 60 | 69 | 0 | 0 | 0 | \$2 | \$2 |
| 433 | Elevator or lift | 48 | 50 | 0 | 0 | 0 | \$0 | \$0 |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

| EII | Type of Equipment | Fires | | Civilian Deaths | Civilian Injuries | | Direct Property Damage (in Millions) | |
|---|---|---------------|--------------------------|-----------------|-------------------|----------------------|--------------------------------------|------------|
| | | Corrected | | | Corrected | | Corrected | |
| OTHER APPLIANCES AND EQUIPMENT (Continued) | | | | | | | | |
| 345 | Wet/dry vacuum or shop vac | 43 | 46 | 0 | 7 | 7 | \$1 | \$1 |
| 375 | Internal combustion engine | 36 | 45 | 0 | 0 | 0 | \$1 | \$1 |
| 822 | Swimming pool equipment | 36 | 41 | 0 | 3 | 3 | \$3 | \$3 |
| 882 | Powered toy | 27 | 36 | 0 | 0 | 0 | \$1 | \$1 |
| 895 | Sewing machine | 28 | 33 | 0 | 0 | 0 | \$1 | \$1 |
| 423 | TV monitor array | 24 | 29 | 0 | 2 | 2 | \$0 | \$0 |
| 883 | Woodburning kit | 20 | 22 | 4 | 3 | 3 | \$1 | \$1 |
| 354 | Tarpot or tar kettle | 19 | 21 | 0 | 0 | 0 | \$0 | \$0 |
| 445 | Water fountain or water cooler | 14 | 19 | 0 | 0 | 0 | \$0 | \$0 |
| 875 | Insect trap | 13 | 15 | 0 | 0 | 0 | \$0 | \$0 |
| 346 | Hoist or lift | 14 | 14 | 0 | 0 | 0 | \$0 | \$0 |
| 353 | Industrial furnace or kiln | 11 | 13 | 0 | 0 | 0 | \$0 | \$0 |
| 443 | Vending machine | 8 | 11 | 0 | 0 | 0 | \$0 | \$0 |
| 348 | Drilling machinery or equipment | 9 | 9 | 0 | 0 | 0 | \$0 | \$0 |
| 450 | Unclassified laboratory equipment | 5 | 5 | 0 | 0 | 0 | \$0 | \$0 |
| 874 | Fire extinguishing equipment | 5 | 5 | 0 | 0 | 0 | \$1 | \$1 |
| 425 | Studio type sound recording equipment | 4 | 4 | 0 | 0 | 0 | \$0 | \$0 |
| 340 | Unclassified hydraulic equipment | 4 | 4 | 0 | 0 | 0 | \$0 | \$0 |
| 358 | Extractor or waste recovery equipment | 4 | 4 | 0 | 0 | 0 | \$0 | \$0 |
| 356 | Distilling equipment | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 446 | Telescope | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 442 | Photo processing equipment | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 422 | Telephone switching gear | 3 | 3 | 0 | 0 | 0 | \$0 | \$0 |
| 362 | Power transfer equipment (rope, cable, or block) | 2 | 2 | 0 | 0 | 0 | \$0 | \$0 |
| 892 | Gun | 2 | 2 | 0 | 0 | 0 | \$0 | \$0 |
| 896 | Shoe polisher | 2 | 2 | 0 | 0 | 0 | \$0 | \$0 |
| 377 | Car washing equipment | 2 | 2 | 0 | 0 | 0 | \$0 | \$0 |
| | <i>Contained trash or rubbish fire</i> | <i>14,634</i> | <i>16,546</i> | <i>0</i> | <i>56</i> | <i>57</i> | <i>\$3</i> | <i>\$3</i> |

*Table created May 2008, corrected October 2008

**Home Structure Fires (Including Fires Coded as Confined Fires), by Equipment Involved in Ignition (EII)
Annual Average of 2002-2005 Structure Fires Reported to U.S. Fire Departments (Continued)***

Additional equipment with no reported home structure fires in 2002-2005.

| Equipment Involved in Ignition | Equipment Involved in Ignition |
|---|--|
| 343 Atomizing equipment | 426 Radar equipment |
| 347 Powered jacking equipment | 431 Amusement ride equipment |
| 355 Casting, molding or forging equipment | 432 Ski lift |
| 357 Digester or reactor | 434 Escalator |
| 361 Conveyor | 441 Microfilm or microfiche viewing equipment |
| 363 Power take-off | 444 Non-video arcade game |
| 364 Powered valve | 451 Electron microscope |
| 365 Bearing or brake | 500 Unclassified gardening tools |
| 371 Picking, carding or weaving machine | 865 Intercom |
| 372 Testing equipment | 881 Model vehicle |
| 376 Printing press | 893 Jewelry cleaning machine |
| 400 Unclassified commercial or medical equipment | 894 Scissors |
| 421 Transmitter | 897 Sterilizer |
| 424 Studio type TV camera | |

Notes on Formats: Equipment groups shown in all caps and bold are the subject of an NFPA report. Types and groups of equipment whose names are indented are parts of the equipment group they are listed under. Equipment types that belong to a listed group are shown with that group, even if they had no reported fires estimated for the period.

Notes on Statistical Methodology: 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 and civilian deaths and injuries are rounded to the nearest one, and direct property damage is rounded to the nearest million dollars. Damage has not been adjusted for inflation. Figures reflect a proportional share of home fires with equipment involved in ignition unknown, and partial unknown have been allocated as indicated. Fires reported as “no equipment” but lacking a confirming specific heat source (codes 40-99) are also treated as unknown equipment and allocated. Fires reported as “no equipment” and having a confirming specific heat source are not shown on the table. Totals may not equal sums because of rounding error.

Notes on Allocations: Equipment Involved in Ignition 100, 200, 300, 400, 500, 600, 700, and 800 are partial unknowns that are proportionally allocated over the known equipment categories defined by the same initial digit (e.g., EII 100 over 101-199). Other partial unknowns that are allocated are EII 120 (over 121-129, fireplaces and chimneys), EII 210 (over 211-219, wiring, outlets, receptacles, switches, and some overcurrent protection equipment), EII 230 (over 231-239, certain light fixtures and lamps), and EII 260 (over 261-269, cords and plugs). Incident Type 113 (confined cooking vessel fires) are allocated over all known equipment codes, with the fires allocated to cooking equipment shown with those equipment types and the other fires shown together as fires confined to cooking vessel but coded as non-cooking equipment. Incident Types 114 and 116 (confined chimney and boiler fires) are similarly allocated over all known equipment codes, with the fires allocated to heating equipment shown with those equipment types and the other fires shown together as fires confined to heating equipment but coded as non-heating equipment. Incident Types 115 (confined to incinerator) and 117 (confined to trash compactor) are shown with those two types of equipment. Incident Type 118 (confined trash fire) is shown by itself. Source: NFIRS Version 5.0 and NFPA survey.

*Table created May 2008, corrected October 2008

Appendix A.

How National Estimates Statistics Are Calculated

The statistics in this analysis are estimates derived from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual survey of U.S. fire departments. NFIRS is a voluntary system by which participating fire departments report detailed factors about the fires to which they respond. Roughly two-thirds of U.S. fire departments participate, although not all of these departments provide data every year.

NFIRS provides the most detailed incident information of any national database not limited to large fires. NFIRS is the only database capable of addressing national patterns for fires of all sizes by specific property use and specific fire cause. NFIRS also captures information on the extent of flame spread, and automatic detection and suppression equipment. For more information about NFIRS visit <http://www.nfirs.fema.gov/>. Copies of the paper forms may be downloaded from <http://www.nfirs.fema.gov/download/nfirspaperforms2007.pdf>.

Each year, NFPA conducts an annual survey of fire departments which enables us to capture a summary of fire department experience on a larger scale. Surveys are sent to all municipal departments protecting populations of 50,000 or more and a random sample, stratified by **community size**, of the smaller departments. Typically, a total of roughly 3,000 surveys are returned, representing about one of every ten U.S. municipal fire departments and about one third of the U.S. population.

The survey is stratified by size of population protected to reduce the uncertainty of the final estimate. Small rural communities have fewer people protected per department and are less likely to respond to the survey. A larger 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.

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 in NFIRS; (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 results of the survey are published in the annual report *Fire Loss in the United States*. To download a free copy of the report, visit <http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf>.

Projecting NFIRS to National Estimates

As noted, NFIRS is a voluntary system. Different states and jurisdictions have different reporting requirements and practices. Participation rates in NFIRS are not necessarily uniform across regions and community sizes, both 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 database - 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.

Scaling ratios are obtained by comparing NFPA's projected totals of residential structure fires, non-residential structure fires, vehicle fires, and outside and other fires, and associated civilian deaths, civilian injuries, and direct property damage with comparable totals in NFIRS. Estimates of specific fire problems and circumstances are obtained by multiplying the NFIRS data by the scaling ratios.

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission have developed the specific analytical rules used for this procedure. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national estimates. A copy of the article is available online at <http://www.nfpa.org/osds> or through NFPA's One-Stop Data Shop.

Version 5.0 of NFIRS, first introduced in 1999, used a different coding structure for many data elements, added some property use codes, and dropped others.

Figure 1.

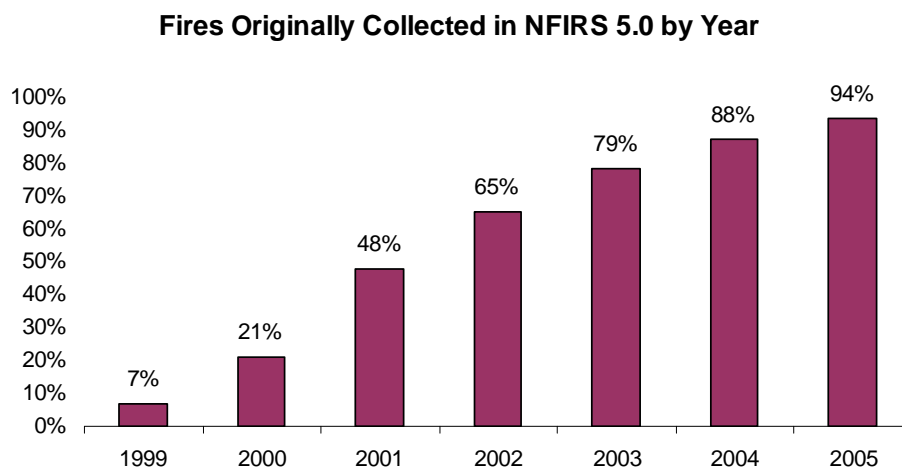


Figure 1 shows the percentage of fires originally collected in the NFIRS 5.0 system. Each year's release version of NFIRS data also includes data collected in older versions of NFIRS that were converted to NFIRS 5.0 codes.

For 2002 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

$$\frac{\text{NFPA survey projections}}{\text{NFIRS totals (Version 5.0)}}$$

For 1999 to 2001, the same rules may be applied, but estimates for these years in this form will be less reliable due to the smaller amount of data originally collected in NFIRS 5.0; they should be viewed with extreme caution.

A second option is to omit year estimates for 1999-2001 from year tables.

NFIRS 5.0 has six categories of confined structure fires, including:

- cooking fires confined to the cooking vessel,
- confined chimney or flue fires,
- confined incinerator fire,
- confined fuel burner or boiler fire or delayed ignition,
- confined commercial compactor fire, and
- trash or rubbish fires in a structure with no flame damage to the structure or its contents.

Although causal and other detailed information is typically not required for these incidents, it is provided in some cases. In order for that limited detail to be used to characterize the confined fires, they must be analyzed separately from non-confined fires. Otherwise, the patterns in a factor for the more numerous non-confined fires with factor known will dominate the allocation of the unknown factor fires for both non-confined and confined fires. If the pattern is different for confined fires, which is often the case, that fact will be lost unless analysis is done separately.

For most fields other than Property Use, NFPA allocates unknown data proportionally among known data. This approach assumes that if the missing data were known, it would be distributed in the same manner as the known data. NFPA makes additional adjustments to several fields.

For Factor Contributing to Ignition, the code "none" is treated as an unknown and allocated proportionally. For Human Factor Contributing to Ignition, NFPA enters a code for "not reported" when no factors are recorded. "Not reported" is treated as an

unknown, but the code “none” is treated as a known code and not allocated. Multiple entries are allowed in both of these fields. Percentages are calculated on the total number of fires, not entries, resulting in sums greater than 100%. Groupings for this field show all category headings and specific factors if they account for a rounded value of at least 1%.

Type of Material First Ignited (TMI). This field is required only if the Item First Ignited falls within the code range of 00-69. NFPA has created a new code “not required” for this field that is applied when Item First Ignited is in code 70-99 (organic materials, including cooking materials and vegetation, and general materials, such as electrical wire, cable insulation, transformers, tires, books, newspaper, dust, rubbish, etc..) and TMI is blank. The ratio for allocation of unknown data is:

$$\frac{(\text{All fires} - \text{TMI Not required})}{(\text{All fires} - \text{TMI Not Required} - \text{Undetermined} - \text{Blank})}$$

Heat Source. In NFIRS 5.0, one grouping of codes encompasses various types of open flames and smoking materials. In the past, these had been two separate groupings. A new code was added to NFIRS 5.0, which is code 60: “Heat from open flame or smoking material, other.” NFPA treats this code as a partial unknown and allocates it proportionally across the codes in the 61-69 range, shown below.

- 61. Cigarette,
- 62. Pipe or cigar,
- 63. Heat from undetermined smoking material,
- 64. Match,
- 65. Lighter: cigarette lighter, cigar lighter,
- 66. Candle,
- 67 Warning or road flare, fusee,
- 68. Backfire from internal combustion engine. Excludes flames and sparks from an exhaust system, (11)
- 69. Flame/torch used for lighting. Includes gas light and gas-/liquid-fueled lantern.

In addition to the conventional allocation of missing and undetermined fires, NFPA multiplies fires with codes in the 61-69 range by

$$\frac{\text{All fires in range 60-69}}{\text{All fires in range 61-69}}$$

The downside of this approach is that heat sources that are truly a different type of open flame or smoking material are erroneously assigned to other categories. The grouping “smoking materials” includes codes 61-63 (cigarettes, pipes or cigars, and heat from undetermined smoking material, with a proportional share of the code 60s and true unknown data.

Equipment Involved in Ignition (EII). NFIRS 5.0 originally defined EII as the piece of equipment that provided the principal heat source to cause ignition if the equipment malfunctioned or was used improperly. In 2006, the definition was modified to “the piece of equipment that provided the principal heat source to cause ignition.” However, the 2006 data is not yet available and a large portion of the fires coded as no equipment involved (NNN) have heat sources in the operating equipment category. To compensate, NFPA treats fires in which EII = NNN and heat source is not in the range of 40-99 as an additional unknown.

To allocate unknown data for EII, the known data is multiplied by

All fires

(All fires – blank – undetermined – [fires in which EII = NNN and heat source <>40-99])

Additional allocations may be used in specific analyses. For example, NFPA’s report about home heating fires treats Equipment Involved in Ignition Code 120, fireplace, chimney, other” as a partial unknown (like Heat Source 60) and allocates it over its related decade of 121-127, which includes codes for fireplaces (121-122) and chimneys (126-127) but also includes codes for fireplace insert or stove, heating stove, and chimney or vent connector. More general analyses of specific occupancies may not perform as many allocations of partial allocations. Notes at the end of each table describe what was allocated.

Rounding and percentages. The data shown are estimates and generally rounded. An entry of zero may be a true zero or it may mean that the value rounds to zero. Percentages are calculated from unrounded values. It is quite possible to have a percentage entry of up to 100%, even if the rounded number entry is zero. Values that appear identical may be associated with different percentages, and identical percentages may be associated with slightly different values.