Methodology Used in the Development of the Topical Fire Research Series

Analyses in the U.S. Fire Administration's Topical Fire Research Series are based primarily on data from the National Fire Incident Reporting System (NFIRS). NFIRS is a data system maintained by the U.S. Fire Administration (USFA). Established in 1975, NFIRS is the largest fire data set in the world. The NFIRS data set is updated annually with nearly one million new fire incident records. Fire departments from all regions of the country report the number and types of fires to which they respond. Although the system is voluntary, an estimated one-third to one-half of the nation's fire departments participate in NFIRS.

Limitations of the NFIRS data set are that it is incomplete—11 states and many fire departments within participating states do not participate in NFIRS—and that an enormous number of smaller fires are not reported to the fire service at all. These unreported fires are generally industrial or residential fires that burn themselves out or are extinguished by the occupant. Despite these shortcomings, the distribution of participants in NFIRS is at least reasonably representative of the entire nation, even though the sample is not random.

Since the data set is incomplete and represents only a sample of American fire departments, many of the numbers in this analysis are national estimates or percentages, rather than raw totals or absolute numbers. Many estimates are derived by computing a percentage from NFIRS and multiplying it by the total number of fires, deaths, injuries, or dollar loss from the NFPA annual survey. Further, in making national estimates, the "unknowns" (entries left blank or reported as unknown) should not be ignored. In this report, included are an estimate for both the specific item and well as an estimate in which unknowns are distributed in the same proportion as the knowns.

Other sources of data may have been used in the preparation of this analysis. These include the National Fire Protection Association's (NFPA) annual survey of fire departments; mortality data from the National Center for Health Statistics; population data from the Bureau of the Census; arson data from the Bureau of Alcohol, Tobacco, and Firearms; firefighter fatality statistics from the National Institute for Occupational Safety and Health – Firefighter Fatality Investigation and Prevention Program and the USFA's Firefighter Fatality Project; and statistical information from the Consumer Product Safety Commission. The USFA gratefully acknowledges the use of these data and cites these sources where used.

This methodology has been adopted by the USFA; see *Fire in the United States, 1987–1996*, published by the USFA and available at the USFA website (http://www.usfa.fema.gov), for a complete explanation.

U.S. Fire Administration

National Fire Incident Reporting System: Analysis Criteria

Analyses in the U.S. Fire Administration's Topical Fire Research Series are based primarily on data from the National Fire Incident Reporting System (NFIRS). Database runs for each topical research area are based on the criteria/codes used in sorting the data. The following represent the actual criteria used in the development of the specific analysis.

Halloween Fires (Vol. 1, Issue 1)

Date =	Between October 30 and November 1

Christmas/Christmas Fires (Vol. 1, Issue 4)

Date =	Between December 24 and December 26
Form of Material Ignited	41 (Christmas tree)

Older Adults and Fire (Vol. 1, Issue 5)

Fixed Property Use =	Between 400 and 499 (residential property)
Type Situation Found =	11 (structure fire)
Age =	≥65
Severity =	1 (injuries); 2 (deaths)

Children and Fire (Vol. 1, Issue 6)

Priority Cause Grouping Code =	02 (children playing)

The Dangers of Fireworks (Vol. 1, Issue 7)

Form of Heat of Ignition =	63 (fireworks)

Arson in the United States (Vol. 1, Issue 8)

Priority Cause Grouping Code =	01 (incendiary/suspicious)

Heating Fires in Residential Structures (Vol. 1, Issue 9)

Priority Cause Grouping Code =	04 (heating)
Fixed Property Use =	Between 400 and 499 (residential property)
Type Situation Found =	11 (structure fire)

Portable Heating Fires In Residential Structures (Vol. 1, Issue 10)

Fixed Property Use =	Between 400 and 499 (residential property)
Type of Situation Found =	11 (structure fire)
Equipment Involved in Ignition =	15 (portable local heating unit)

Agricultural Storage Fires (Vol. 1, Issue 11)

Fixed Property Use =   Between 810 and 819 (storage property)

Candle Fires in Residential Structures (Vol. 1, Issue 12)

Fixed Property Use =   Between 400 and 499 (residential property)
Type of Situation Found =   11 (structure fire)
Form of Heat of Ignition =   44 (candle, taper)

Winter Residential Fires (Vol. 1, Issue 13)

Month =   Between November and February
Fixed Property Use =   Between 400 and 499 (residential property)
Type of Situation Found =   11 (structure fire)

Dormitory Fires (Vol. 1, Issue 14)

Fixed Property Use =   461 (school, college, university dormitory)
Type of Situation Found =   11 (structure fire)

Smoke Alarm Performance In Residential Structure Fires (Vol. 1, Issue 15)

Fixed Property Use =   Between 400 and 499 (residential property)
Type of Situation Found =   11 (structure fire)
Detector Performance =   Between 1 and 8

Residential Structure Fires on Agricultural Properties (Vol. 1, Issue 16)

Fixed Property Use =   Between 400 and 499 (residential property)
Type of Situation Found =   11 (structure fire)
Complex =   65 (farm complex)

Child Fire Casualties (Vol. 1, Issue 17)

Age =   Between 1 and 14
Severity =   1 (injuries); 2 (deaths)

Landfill Fires (Vol. 1, Issue 18)

Fixed Property Use =   932 (dump, sanitary landfill)

Fire Station Fires (Vol. 1, Issue 19)

Fixed Property Use =   888 (fire stations)

Grill Fires (Vol. 2, Issue 3)

Equipment Involved in Ignition =   26 (open fired grill)

Highway Vehicle Fires (Vol. 2, Issue 4)

Type of Situation Found =   13 (vehicle fire)

Residential Air Conditioner Fires (Vol. 2, Issue 5)

Equipment Involved in Ignition =   Between 30 and 39 (air conditioning, refrigeration)

Lightning Fires (Vol. 2, Issue 6)

Ignition Factor =   84 (lightning)

Church Fires (Vol. 2, Issue 7)

Fixed Property Use =   131 (church, chapel)
Type of Situation Found =   11 (structure fire)

Medical Facility Fires (Vol. 2, Issue 8)

Fixed Property Use =   Between 330 and 339 (care of the sick, injuried)
Type of Situation Found =   11 (structure fire)

School Fires (Vol. 2, Issue 9)

Fixed Property Use =   Between 210 and 219 (nonresidential schools)
Type of Situation Found =   11 (structure fire)

Agricultural Fires (Vol. 2, Issue 10)

Fixed Property Use =   Between 650 and 659 (agriculture)

Multiple-Fatality Fires (Vol. 2, Issue 11)

Civilian Fatalities = ≥ 2
Fixed Property Use =   Between 400 and 499 (residential property)
Type of Situation Found =   11 (structure fire)

Fraternity and Sorority Fires (Vol. 2, Issue 12)

Fixed Property Use =   462 (fraternity, sorority house)
Type of Situation Found =   11 (structure fire)

Subway Fires (Vol. 2, Issue 13)

Fixed Property Use =   Between 174 and 176 (rail terminals)

Construction Site Fires (Vol. 2, Issue 14)

Complex =   91 (construction complex)

Daycare Center Fires (Vol. 2, Issue 15)

Fixed Property Use =   320 and 329 (care of the young)
Type of Situation Found =   11 (structure fire)

Mattress and Bedding Fires in Residential Structures (Vol. 2, Issue 17)

Fixed Property Use =   Between 400 and 499 (residential property)
Type of Situation Found =   11 (structure fire):
Form of Material Ignited =   31 (mattress, pillow); 32 (Bedding, blanket, sheet, comforter)

Highrise Fires (Vol. 2, Issue 18)

Type of Situation Found =   11 (structure fire)
Number of Stories =   Between 4 and 8

Fatal Fires (Vol. 2, Issue 19)

Civilian Fatalities =   1

Outdoor Fires (Vol. 2, Issue 19)

Type of Situation Found =   12 (outside of structure fire); 14 (trees, brush, grass fire):
                                        15 (refuse fire); 17 (outside spill, leak with ensuring fire)

http://www.usfa.dhs.gov/downloads/pdf/tfrs/methodology.pdf