House Fire Deaths

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Over the past two decades the number of individuals dying in fires has fallen dramatically. In 1979 the total number of such deaths was 5,998. By 1999, the latest year for which data are available, the number of such deaths had fallen to 3,354—a decline of 44 percent. This reduction understates the true improvement in fire safety, as the U.S. population grew by almost 50 million persons during this 20-year period. As a result, the fire death rate per million people, a better measure of fire safety, fell from 26.66 in 1991 to 12.30 in 1999—almost 54 percent.

The most common type of fire death is a result of a house fire. Figure 1 shows the total number of fire deaths, and fire deaths that originated in the home, between 1979 and 1999. This excludes arson deaths (which are often categorized as homicides or suicides), fire deaths following car crashes, railway deaths involving fire, and deaths caused by explosive materials. It also excludes forest fires, camp fires, and all other fires that originate outside the home, yet result in the death of an individual in the home. The number of these fire deaths has declined by 45.6 percent, from 4,863 in 1979 to 2,644 in 1999. Taking into account the growth in population, the 45.6 percent decline in house fire deaths translates into a decline in the fire death rate per million persons from 21.6 to 9.7 or 55 percent.

These findings are based on the annual Multiple-Cause-of-Death file collected and compiled by the National Center for Health Services (NCHS), a part of the Centers for Disease Control and Prevention (CDC). Death certificates are coded by local medical authorities and compiled by the states and finally by NCHS. The result is an annual data file that contains a record of all deaths in the United States.

State-by-State

Table 1 looks at fire deaths, and fire deaths per million persons (DPMP) on a state-by-state basis from 1983 and 1999. While the total number of fire deaths is important, it is strongly influenced by the size and population growth of the state. By avoiding these distorting influences fire deaths per million persons (DPMP) is a more useful measure.

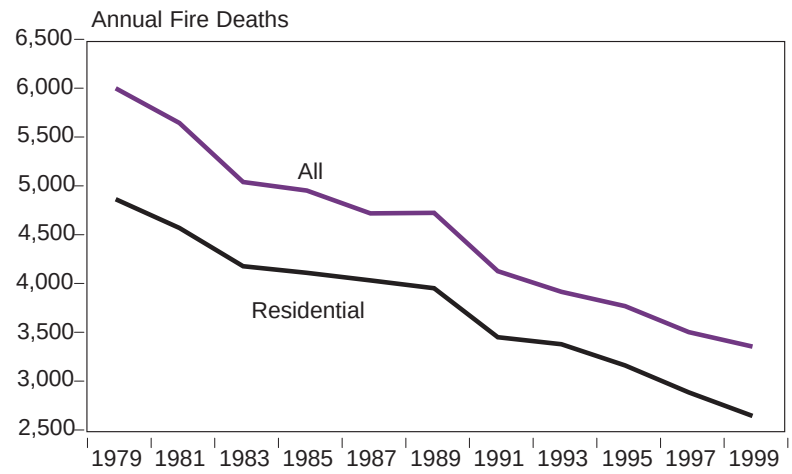
All states did not show a decline in fire deaths between 1983 and 1999 because in some states the number of fire deaths was already so low, or so unusually low in 1983, that a further reduction in the number of fire deaths was not possible.

Fire deaths rates are much higher in the South than in any other region of the nation. Nine of the 10 states with the highest fire DPMP rates are from the South. Fortunately, the DPMP rate in the South, and in other states with relatively high fire death rates, has declined rapidly during the past two decades. Mississippi has seen its rate plummet by 43 percent, while Georgia's rate has fallen by an even larger 57 percent. Other Southern states that have had very large declines in their fire DRMP rate include Louisiana, which enjoyed a reduction of 42.3 percent, and South Carolina who's rate fell by 65.8 percent.

One possible reason for the sharp decline is that due to rapid population growth many southern states have, on average, very new housing stock. Despite that, possible reasons for the continued high fire death rates in these states include lower overall levels of education, a high percentage of the population who live in rural areas, and high percentages of people who smoke and or who are below the poverty line.

A major reason for the large national fall in fire death rates has been due to the many fire safety features in new homes. A combination

Figure 1. Fire Deaths and House Fire Deaths 1979-1999



Source: National Center for Health Statistics, Multiple Cause-of-Death Files 1979-1999.

of improved smoke detector placement and technology, improved fire blocking and stopping—which results in better fire containment which in turn provides more time to escape and or extinguish the fire—better heating and electrical design, resulting in the use of fewer extension cords and space heaters, and improved fire ratings on interior furnishings and building materials have lead the way in reducing U.S. fire deaths.

International

While other countries' fire death rates have fallen over the past 25 years, U.S. rates have fallen significantly faster. Information to help compare the performance of the recent U.S. fire safety record to other countries comes from the National Fire Protection Association (NFPA).

Figure 2 shows that between 1979 and 1999 the decline in the U.S. fire death rate has been the largest in both absolute and percentage terms. In absolute terms the U.S. rate has fallen by over 20 DPMP, which translates to a decline of 57 percent, only France the U.K. and Spain even come close, and in all three cases the decline has been at most 50 percent. Nonetheless, fire death rates are still about 33 percent lower in France and about half as high in Spain and in the Netherlands as they are in the United States.

Closer to home, fire death rates in the U.S. and Canada have been similar for the past 25 years. From 1977 through 1984 the rates were nearly identical in both countries. Since then, however, Canada has consistently had a slightly lower rate than the U.S. with the gap between the two rates fluctuating from a high of 6 DPMP to a low of about 2 in 1999.

While fire death rates in the U.S. have fallen dramatically and are now comparable to rates in some European nations, a recent report by the World Fire Statistics Centre (WFSC) shows that more needs to be done before our rates are in line with most European countries. While the WFSC, and the NFPA get their data from different sources, and thus have results that differ slightly, their conclusions are mutually reinforcing.

The U.S. has traditionally placed greater emphasis on fire suppression than other nations.

It is, however, in fire prevention and safety behavior where the U.S. falls short of the Europeans. In Europe 4 percent to 10 percent of fire department budgets are spent on fire prevention, in the U.S. the rate rarely approaches 3 percent. Also, there is generally much greater cultural awareness of the destructive force of fires in many European and Asian countries due to hundreds of years of experience living in densely populated cities, where fires have periodically threatened large parts of the population and housing stock. Additionally, in the U.S., house fires are considered an inevitable, albeit an unfortunate, part of life, and thus carry no social stigma. By contrast in Europe, and elsewhere, house fires are viewed as preventable. Thus, when they do occur they are a cause of deep personal shame and embarrassment.[1]

Causes of Fires

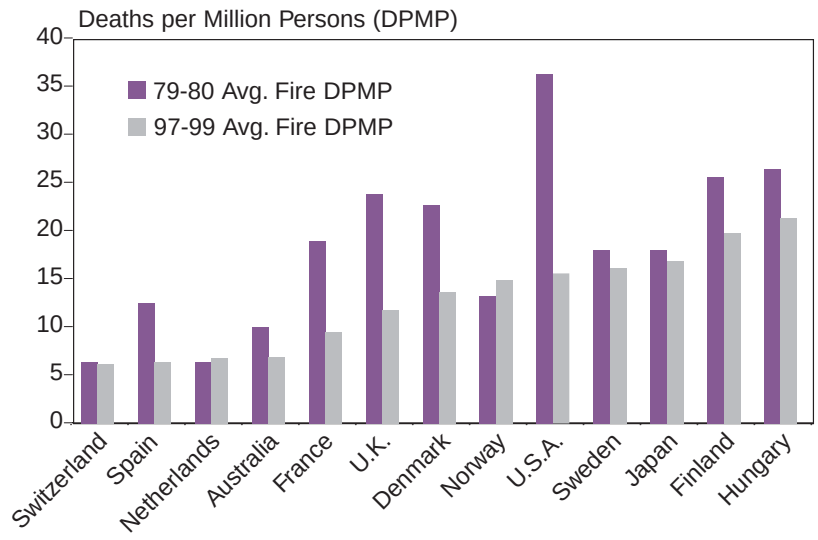
Figure 3 graphs the most common causes of house fire deaths as reported by the United States Fire Administration[2] (USFA). Smoking is the leading cause with more than 25 percent of all residential fire deaths attributable to it. The next most common cause is suspicious activities or arson that accounts for about to 20 percent of residential fire deaths. Cooking fires are next, followed closely by heating, with both cur-

Table 1. State-By-State House Fire Deaths

	Deaths	Per Million		
	1999 Deaths	1983	1999	1999 Rank
United States	2,644	17.8	9.7	NA
Alabama	93	30.8	21.3	50
Alaska	7	35.2	11.3	35
Arizona	35	7.7	7.3	15
Arkansas	33	34.0	12.9	38
California	154	9.4	4.6	6
Colorado	18	8.6	4.4	4
Connecticut	25	7.3	7.6	18
DC	5	33.0	9.6	30
Delaware	10	51.3	13.3	39
Florida	91	13.6	6.0	10
Georgia	110	32.8	14.1	41
Hawaii	2	6.9	1.7	3
Idaho	11	9.1	8.8	26
Illinois	130	17.1	10.7	32
Indiana	59	19.5	9.9	31
Iowa	35	8.6	12.2	37
Kansas	24	12.8	9.0	28
Kentucky	57	23.1	14.4	42
Louisiana	71	28.1	16.2	45
Maine	23	21.8	18.4	48
Maryland	56	22.8	10.8	33
Massachusetts	31	21.2	5.0	7
Michigan	137	17.9	13.9	40
Minnesota	38	14.7	8.0	19
Mississippi	66	41.8	23.8	51
Missouri	49	17.5	9.0	27
Montana	4	19.6	4.5	5
Nebraska	14	12.5	8.4	23
Nevada	12	7.8	6.6	13
New Hampshire	2	18.8	1.7	2
New Jersey	60	15.5	7.4	16
New Mexico	9	7.8	5.2	9
New York	151	12.5	8.3	22
North Carolina	125	24.2	16.3	46
North Dakota	4	11.7	6.3	12
Ohio	126	17.9	11.2	34
Oklahoma	53	26.6	15.8	44
Oregon	29	15.0	8.7	25
Pennsylvania	141	20.5	11.8	36
Rhode Island	5	15.7	5.0	8
South Carolina	56	42.1	14.4	43
South Dakota	6	10.0	8.2	21
Tennessee	111	24.3	20.2	49
Texas	182	19.1	9.1	29
Utah	3	6.9	1.4	1
Vermont	4	53.2	6.7	14
Virginia	59	19.2	8.6	24
Washington	43	10.7	7.5	17
West Virginia	30	26.0	16.6	47
Wisconsin	42	13.5	8.0	20
Wyoming	3	7.8	6.3	11

Source: National Center for Health Statistics, Multiple Cause-of-Death Files 1983-1999.

Figure 2. International Fire Death Comparisons, 1979-1999



Source: World Fire Statistics Centre.

rently accounting for between 10 percent and 15 percent of house fire deaths. The three other most common causes are electrical, open flame and children, each responsible for between 5 percent and 10 percent of all house fire deaths. While there are other causes, none account for more than 4 percent of house fire deaths.

An overarching cause of residential fire deaths is the age of the dwelling. Both known studies that have looked at this question, have found that older structures burn much more frequently than newer ones. A study[3] that examined all residential fire deaths in California between 1986 and 1991 found that the average fatality rate in units that were less than 15 years old was one-eighth as high as the annual average for California's housing stock, and one-tenth as high as the rate for houses more than 15 years old.

Nearly identical results were obtained in a national study conducted by the NAHB in 1987. That study found that the fatality rate for units that were five years old or less was one-fifth as high as the average fatality rate for all housing units and one-sixth as high as the fatality rate for units more than 15 years old.[4]

Conclusion

House fire deaths in the US have fallen dramatically over the past 25 years. During that time the U.S. has gone from being a county where the chances of dying in a house fire were several times higher than in Europe, to being at worst twice as high and in many cases no higher. While any death is a tragedy, the U.S. has made great progress in reducing fire deaths and they no longer represent a large percentage of total deaths.

It was also shown that fire death rates have been decreasing across all states and decreasing most in states with high death rates. Smoking continues to be the number one cause of fatal residential fires, and bedrooms and living rooms are where nearly half of all fire deaths occur. Lastly, older residential structures were shown to have much higher fire death rates than newer ones.

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[1] Fire Death Rate Trends: An International Perspective, United States Fire Administration. May 1997.

[2] The data are compiled by the USFA but recorded by 13,000 US fire departments that participate in the National Fire Incident Reporting System (NFIRS). Data is available in *Fire in the United States 1989-1998* 12th Ed.

[3] Commissioned by the California Building and Industry Association.

[4] NAHB: Residential Fire Survey, 1987.

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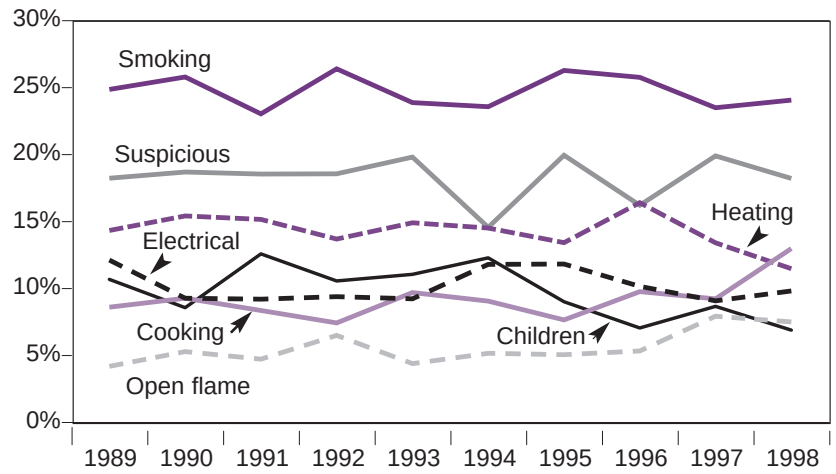
Figure 3. Leading Causes of Residential Fires, 1989-1998



Source: United States Fire Administration.