

FIRE IN THE U.S. AND JAPAN

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FIRE IN THE U.S. AND JAPAN, 2001

	U.S.	Japan
Fire Incidents	1,734,500	63,600
Civilian Deaths	6,196	2,195
(Excluding Incendiary Suicides)		(1,390)
(Excluding Events of 11 September)	(3,745)	
Civilian Injuries	21,100	8,244
Property Damage	\$44.02 Billion	147 Billion Yen
(Excluding Events of 11 September)	(\$10.58 Billion)	
Population (resident)	278,060,000	126,890,000
Area (square miles)	3,620,000	146,000
Gross Domestic Product	\$10.02 Trillion	503 Trillion Yen

Sources: *White Book on Fire Service in Japan*; special analyses by Dr. Ai Sekizawa, National Research Institute for Fire and Disaster; NFPA survey; U.S. Census Bureau international database; OECD data on gross domestic product and exchange rates.

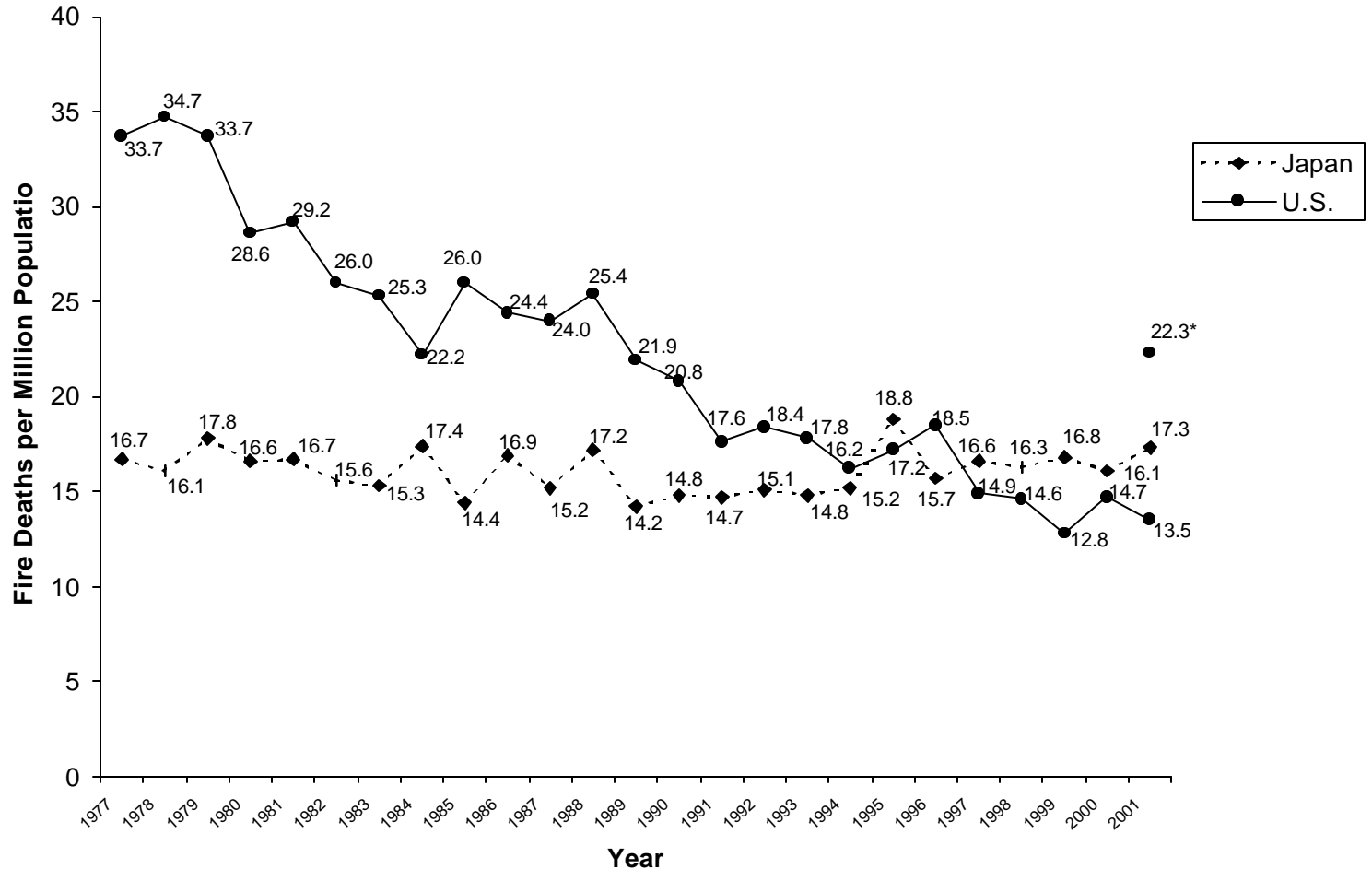
The United States (U.S.) has a population more than twice as large as Japan's in an area roughly 25 times as large. In 2001, the U.S. experienced 27 times as many reported fires as Japan. Most of this difference is typically in outdoor forest, brush, or trash fires, but the ratio of building fires is typically also much larger than the population ratio.

Another factor could be differences in the definition of which fires need to be reported, which may especially affect very small fires. Also, the social stigma attached to unintentional fires is much greater in Japan, so citizens of Japan may be much more likely to attempt to control fires themselves, resulting in fewer fires that need to be reported.

The U.S. also suffered roughly three times as many fire deaths and two to three times as many fire injuries (excluding firefighters) as did Japan. If Japan's incendiary suicides are excluded as a phenomenon with almost no counterpart in the U.S., and the events of 11 September are also excluded as unique, then U.S. fire deaths were still two to three times as numerous as Japan's.

Based on the average 2001 exchange rate of 121.5 yen to the dollar, the U.S. economy measured by gross domestic product (GDP), was 2.4 times the size of Japan's, while the U.S. direct property losses to fire were nearly nine times Japan's (or 36 times Japan's if the events of 11 September are included).

Civilian Fire Death Rates, U.S. and Japan



Source: NFPA survey, U.S. Census Bureau, Japan's *White Book*, Dr. Ai Sekizawa.

*U.S. with events of 11 September.

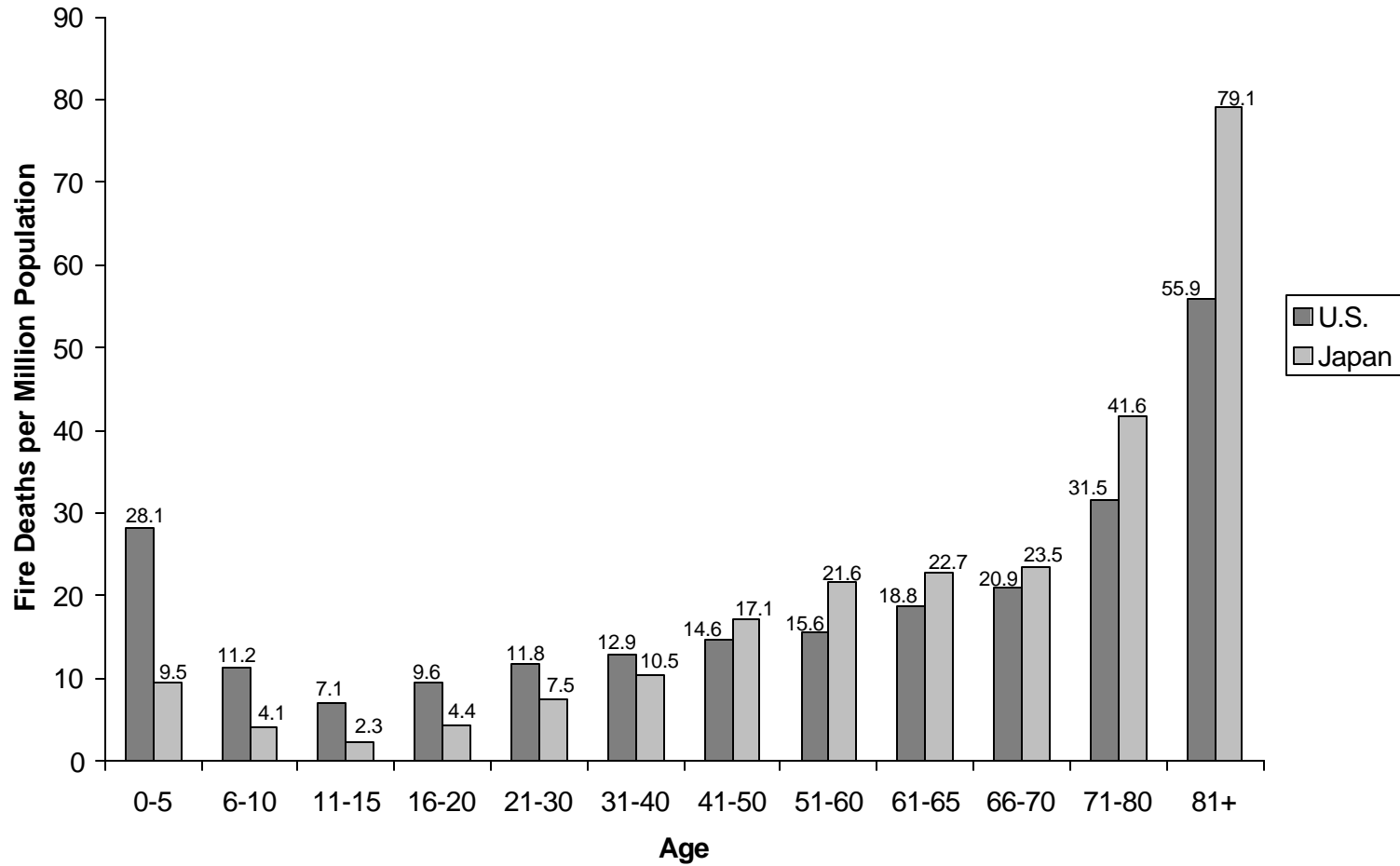
Japan's (civilian) fire death rates per million population were higher than those in the U.S. in 1995 and have been higher in the five years beginning with 1997, if the unique events of 11 September are excluded. The Hanshin earthquake of 1995 and its large fire death toll in and around Kobe account for 1995, but no comparable event explains the years from 1997 on. During the five-year period 1977-1981, U.S. fire death rates were nearly twice the rates in Japan and three times Japan's rate if incendiary suicides are excluded. During the five-year period of 1985-1989, U.S. fire death rates were just over 50% higher than the rates in Japan and two-and-a-half times higher if Japan's incendiary suicides are excluded. In 1997-2001 (excluding the events of 11 September), the U.S. fire death rate was 15% *lower* than the rate in Japan, although still 36% higher than the Japanese rate excluding incendiary suicides.

The reason is that U.S. fire death rates have declined substantially through most of the 25-year period, while Japanese fire death rates, with or without incendiary suicides, reached a low in 1989 and have been increasing, though not consistently, ever since.

The chances of dying if a reported fire occurs are actually higher in Japan (one death for every 46 fires, excluding incendiary suicides, compared to one death for every 463 fires in the U.S., excluding 11 September, in 2001). This is also true if the focus is narrowed to structures, where Japan had one death for every 19 reported fires and the U.S. had one death for every 162 reported fires, excluding 11 September, in 2001. It appears that Japan is more successful at preventing fires, while the U.S. is more successful at preventing fatal injury if fire occurs. Two studies showed where Japan does more fire prevention than the U.S.: (1) Japanese fire departments assign 10-15% of personnel full time to prevention and additional staff part-time. The corresponding share for the U.S. is less than 5%. (2) National fire prevention campaigns are conducted for three weeks a year, compared to one in the U.S. (3) Public service announcements in Japan include frequent prime time messages and a twice-weekly five-minute safety program. In the U.S., public service announcements on fire safety tend to be relegated to off-peak television viewing hours, such as the hours just after midnight.

Sources: Philip S. Schaenman and Edward F. Seits, *International Concepts in Fire Protection*, 1985; and Philip S. Schaenman et al., *Overcoming Barriers to Public Fire Education*, 1987, both published by TriData Corporation, Arlington, Virginia.

**Fire Death Rates by Age Group
U.S. and Japan, 1994-1998**



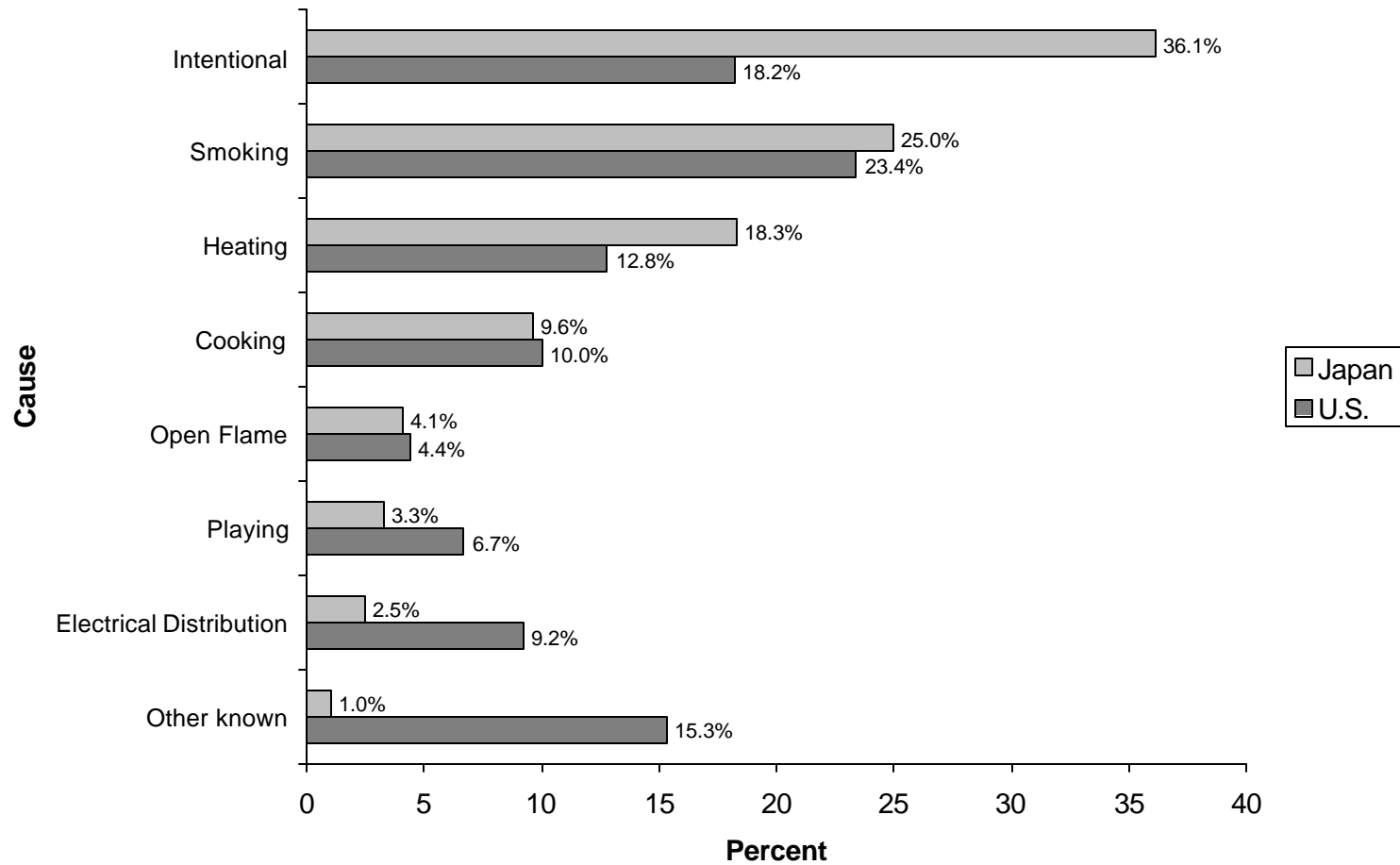
Source: NFPA survey, NFIRS, U.S. Census Bureau, Japan's *White Book*, Dr. Ai Sekizawa.

In the U.S., preschool children (ages 0-5) are a high-risk group, with a fire death rate per million people nearly twice the average for all ages. In Japan, preschool children have a higher fire death rate than older children but much lower risk than the overall average and lower risk than the overall rate even if incendiary suicides are excluded. One reason for this difference is probably a higher incidence of single-parent families in the U.S. and a generally larger incidence of gaps in child supervision. Preschool children in Japan also are more likely to sleep in their parents' rooms, which may give them an advantage in responding to fires. U.S. children age 5 and under have fire death rates roughly three times the rates for their Japanese counterparts.

Older adults are a high-risk group in both countries but especially in Japan. Even though the overall 1994-1998 U.S. fire death rate was the same as the rate in Japan, fire death rates in Japan are higher than U.S. rates for every age group from age 41 up. For ages 81 and older, the rates in Japan were 33% higher.

For adults 21-60 years of age, half (50%) of all Japanese fire deaths are incendiary suicides. Without this uniquely Japanese problem, the U.S. fire death rate is roughly 50% higher than the Japanese fire death rate in this age group. If incendiary suicides are included, the fire death rates in this age group are nearly the same in the two countries, with Japan actually higher by 5%. Only children and older adults (age 61 and higher) have most of their fatal fires from unintentional causes.

Causes of Structure Fire Deaths U.S. and Japan, 1995-1999



Sources: NFPA survey, NFIRS, Japan's *White Book*, Dr. Ai Sekizawa.

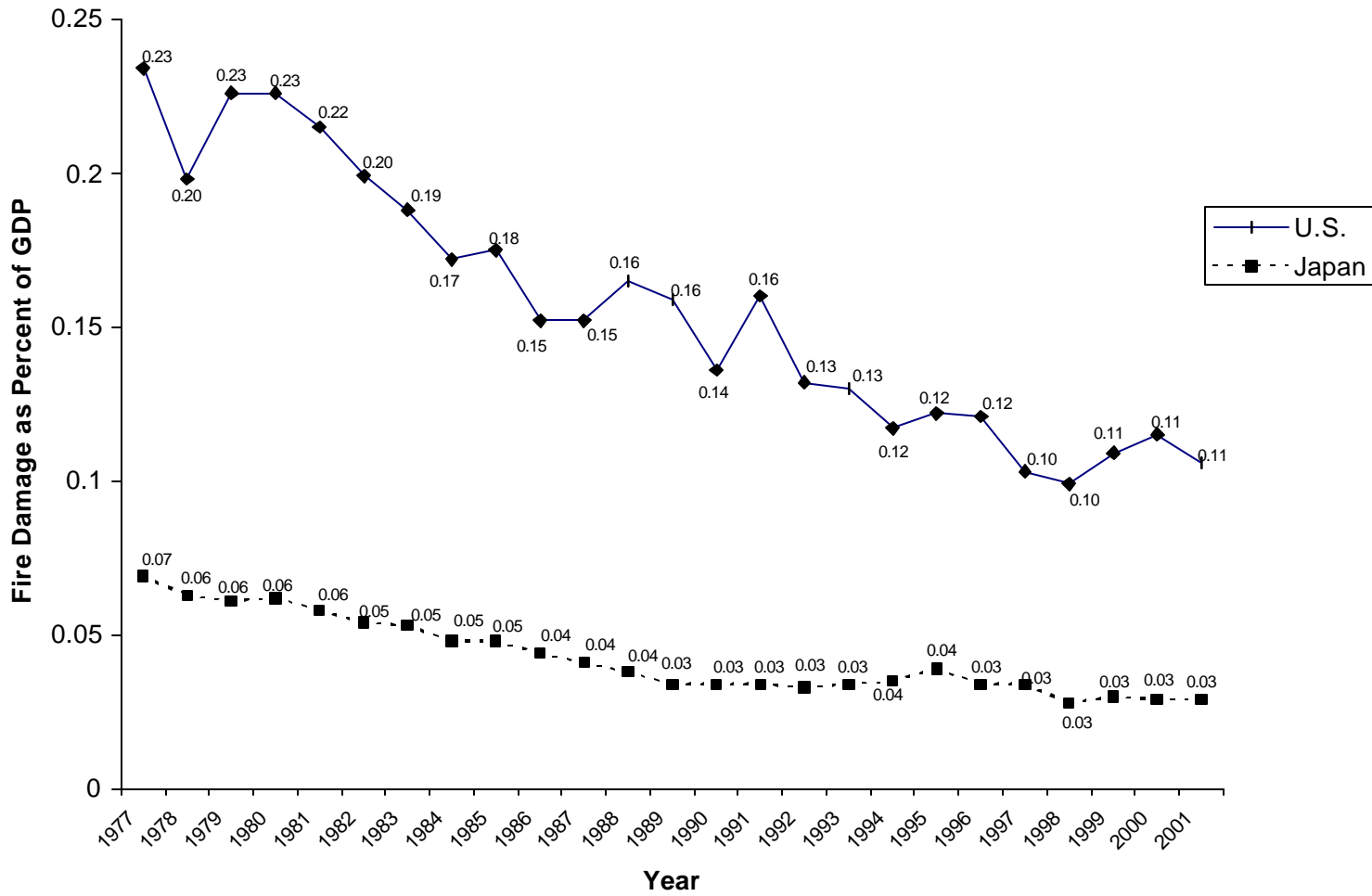
Note: Most incendiary suicides are excluded.
Unknown-cause fires have been allocated proportionally.

Japan's cause profile for structure (building) fire deaths reflects their special problem with incendiary suicides and other intentional fires. "Smoking" fires include only cigarettes and other lighted tobacco products.

Japan also has more trouble proportionally with heating equipment in fatal structure fires. The U.S. heating fire deaths are dominated by portable heaters and fixed space heaters, which are especially a problem in poor, rural areas of the southeastern region. Part of the explanation for the high risk of fire death among older adults in Japan, noted earlier, may be a tendency to use older types of portable heaters, such as kerosene heaters. When placed too close to combustibles, as can easily happen in the smaller rooms typical in Japanese homes, the popular portable heaters, and especially the older types used by many older adults, can pose a substantial risk of serious fire. "Heating" includes water heaters in both cases.

The U.S. has proportionally more problems with electrical distribution fires, and (child) playing fires, as causes of fire fatalities in structures. The gap in fire deaths due to playing has been shrinking, as the U.S. sees the effects of the child-resistant lighter requirement introduced in 1994.

**Fire Loss Rates, U.S. and Japan, 1977-2001
(Excluding Events of 11 September)**



Sources: NFPA survey, OECD, Japan's *White Book*, Dr. Ai Sekizawa.

Japan's property losses to fire, relative to the size of its economy as measured by gross domestic product (GDP), are roughly one-third the rate in the U.S. The gap has changed little in the 25 year period. Japan's ratio fell by 58% from 1977 to 2001, while the U.S. rate fell by 56%.

The U.S. rate was 3.4 times the Japanese rate in 1977, and the ratio was 3.7 in 2001 (excluding the events of 11 September 2001). The U.S. rate was 0.44% in 2001 if the events of 11 September are included.