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Firefighter Injuries in Structures

FINDINGS

- 45,500 firefighters were injured at the fire scene in 1999. 85% of these injuries occurred responding to or fighting structure fires.
- Total firefighter injuries and injuries per fire have trended down significantly 10 years
- Although 72% of firefighter injuries were at one- and two-family dwellings, risk of injury to the firefighter is higher at apartment fires—34 injuries per thousand apartment fires versus 28 per thousand one- and two-family structure fires.
- Injury risk is even higher at non-residential structures (44 per thousand fires).

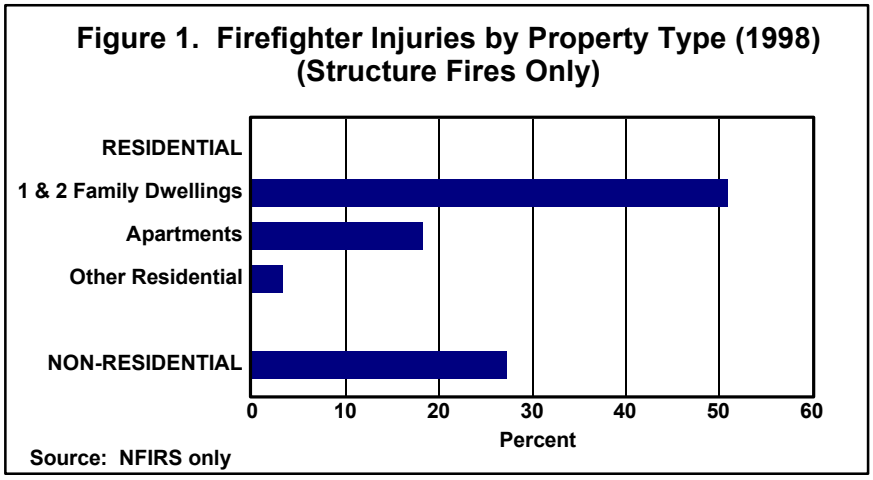
Sources: NFPA and NFIRS

Firefighting is an extremely dangerous profession, especially in the suppression of structure fires. The firefighter's mission is to protect life and property. Each year, thousands of firefighters are injured in the performance of their duties.

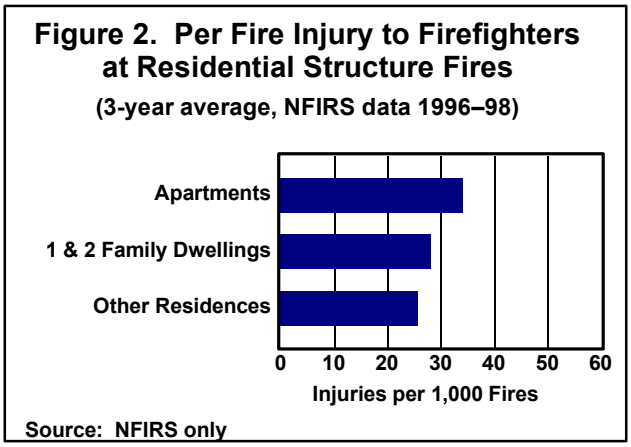
This paper examines the trends and factors related to firefighter injuries in structures. The 1999 data are from the annual survey by the National Fire Protection Association (NFPA); the 1998 data are from the National Fire Incident Reporting System (NFIRS). (1998 is the most recent year for which NFIRS data are available.)

In 1999, firefighters suffered 88,500 injuries while on duty. More than 45,500 of these injuries occurred at emergency scenes (fireground and non-fire emergency). And fully 85% of on-scene firefighter injuries (nearly 39,000) occurred at or in structures.

Figure 1 shows the percentage of firefighters injured in 1998 by type of structure. Residential structures comprise 73% of all structure fire injuries to firefighters. Examining only residential structures, 72% of injuries are at one- and two-family dwelling fires, and 26% are at apartment fires.



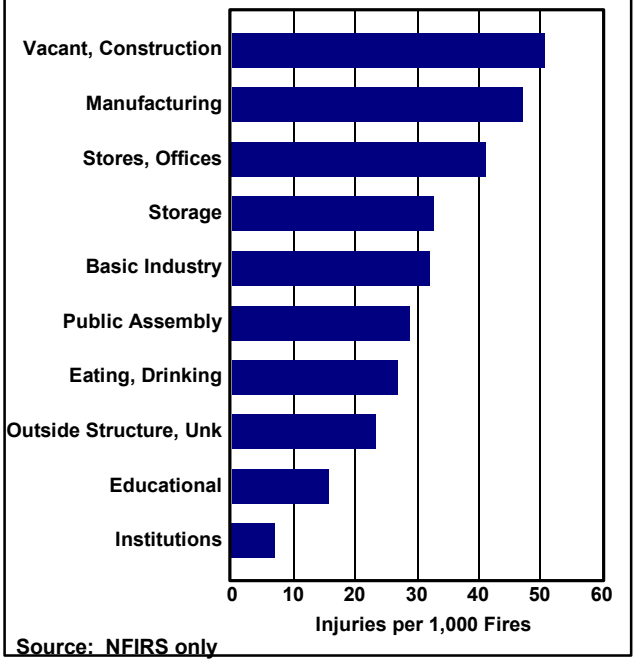
These numbers, however, obscure the actual danger of injury to firefighters. Figure 2 shows that injuries per fire are greater at apartment fires (34 per thousand fires) than at one- and two-family dwelling fires (28 per thousand fires). Apartments are usually taller, have narrower passageways, and have fewer exits relative to the number of occupants—factors that may increase the risk to firefighters. Modern construction methods in newer apartments, however, may lessen these risks.



Injuries per fire are higher still at non-residential structures (Figure 3). Over 3 years, injuries averaged 44 injuries per thousand fires.

Figure 3. Per Fire Injury to Firefighters at Non-Residential Structure Fires

(3-year average, NFIRS data 1996–98)



Source: NFIRS only

Vacant and under construction properties are particular high-risk sites. The layout of these properties is often unfamiliar and changes from week to week. Fire defenses built into such structures are often not working or have not been installed. Nevertheless, there has been a 10-year downward trend in firefighter injuries at these properties. Today, fire-fighting activities at vacant and under construction properties are not as aggressive as in the past as there is less inclination to risk firefighter health.

From 1996 to 1998, one-third of all firefighters injured were aged 30–39. Seventy-two percent of 1998 injuries were incurred above ground at the outside/inside scene. Sixty-five percent of injuries are from extinguishing a fire or providing suppression support. The leading causes of injury in 1998 were contact with or exposure to flames or smoke (34%), overexertion and strains (24%), and fell or slipped (19%).

Firefighter injuries have significantly fallen over the 10-year period 1989–98. Injuries on the fireground have trended down 28%, and injuries per 1,000 fires in structures have trended down 26%. The reduction in the total number of firefighter injuries appears to be due to a reduction in injuries per fire rather than a reduction in the number of fires.

Either the nature of fires has changed or the equipment or safety practices have changed.

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