



FACT SHEET » RESEARCH

Sprinklers in Reported U.S. Fires during 2010 to 2014

Fire sprinklers can control a fire while the fire is still small. Some type of sprinkler was present in an estimated average of 49,840 (10%) reported structure fires during 2010 to 2014. Automatic extinguishing systems (AES) are designed to control fires until the fire department arrives. Sprinklers are a type of AES that uses water to control fires. Other types of AES use something other than water.

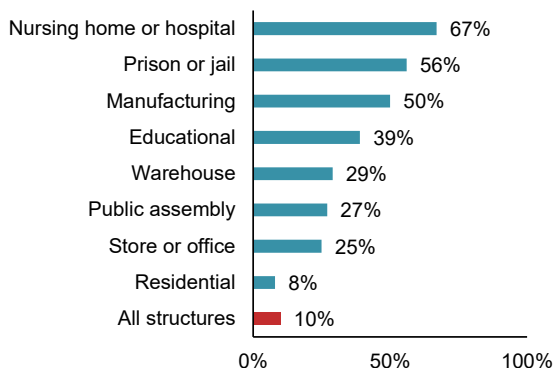
Sprinkler Presence

Sprinklers were most likely to be found in institutional occupancies such as nursing homes, hospitals, and prisons or jails.

Most structure fires and fire deaths occurred in residential properties, particularly homes, but only 8% of the reported residential fires were in properties with sprinklers.

Wet pipe sprinklers accounted for 87% of the sprinklers in reported structure fires, dry pipe systems accounted for 10%, and other types of sprinklers accounted for 3%.

Presence of sprinklers in reported fires by occupancy



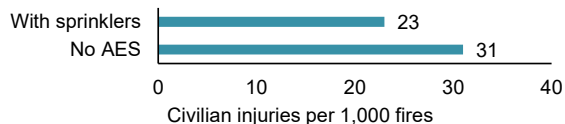
Impact of Sprinklers

Civilian death rates per 1,000 fires in properties with sprinklers and with no AES



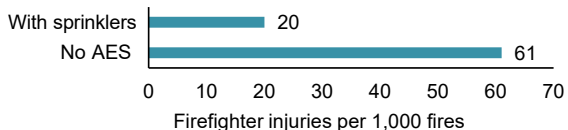
The civilian fire death rate of 0.8 per 1,000 reported fires was 87% lower in properties with sprinklers than in properties with no AES.

Civilian injury rates per 1,000 fires in properties with sprinklers and with no AES



The civilian injury rate of 23 per 1,000 reported fires was 27% lower in properties with sprinklers than in properties with no AES. Many injuries occurred in fires that were too small to activate the sprinkler or in the first moments of a fire before the sprinkler operated.

Firefighter injury rates per 1,000 fires in properties with sprinklers and with no AES



The average firefighter fireground injury rate of 20 per 1,000 reported fires was 67% lower where sprinklers were present than in fires with no AES.



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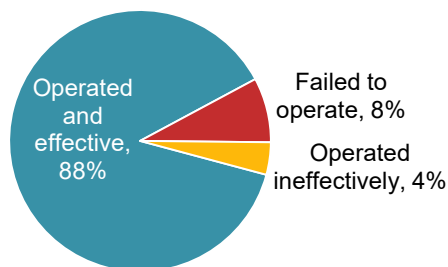
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FACT SHEET » RESEARCH (continued)

Sprinkler Operation and Effectiveness

Sprinkler operation and effectiveness

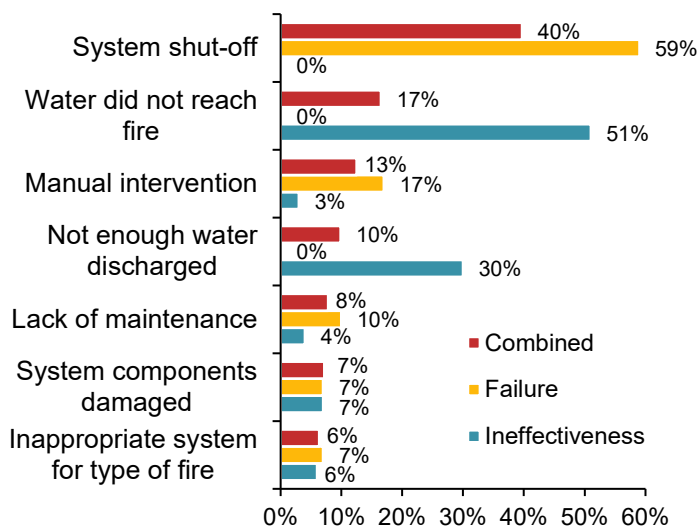


Sprinklers operated in 92% of the fires in which sprinklers were present and the fire was large enough to activate them.

- ▶ Sprinklers were effective at controlling the fire in 96% of fires in which they operated.
- ▶ Sprinklers operated effectively in 88% of the fires large enough to activate them.

Only one sprinkler head operated in four out of five (79%) fires in which sprinklers operated. In 97% of fires with operating sprinklers, five or fewer heads operated.

Reasons for combined sprinkler failure and ineffectiveness



Reported sprinkler failures (660 per year) were twice as common as reported fires in which sprinklers were ineffective and did not control the fire.

- ▶ 40% of the combined sprinkler problems were due to system shut-offs.
- ▶ In three of every five (59%) incidents in which sprinklers failed to operate, the system had been shut off.
- ▶ In half (51%) of the fires in which sprinklers were ineffective, the water did not reach the fire.

Source: *U.S. Experience with Sprinklers*, National Fire Protection Association report, 2017.

Source: NFPA Research: www.nfpa.org/research
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