

Tennessee's Severe Fire Mortality Problem

Dear Reader:

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We hope this information will be useful to you; reference to it will assist you with many of the questions that will arise in your tenure with municipal government. However, the *Tennessee Code Annotated* and other relevant laws or regulations should always be consulted before any action is taken based upon the contents of this document.

Please feel free to contact us if you have questions or comments regarding this information or any other MTAS website material.

Sincerely,

The University of Tennessee
Municipal Technical Advisory Service
1610 University Avenue
Knoxville, TN 37921-6741
865-974-0411 phone
865-974-0423 fax
www.mtas.tennessee.edu

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Residential structure fires account for the overwhelming majority of fire fatalities, and improving the safety of homes will help reduce the number of Tennesseans who die in residential fires. The Tennessee Fire Mortality Study was released to the public at the Tennessee Fire Chief's Association Annual Conference in July 2011.

This comprehensive study, covering the period 2002-2010, highlights the severe fire mortality rate that exists in Tennessee. The resources section contains a link to an interactive mapping tool that allows zooming down to street levels. Small triangles and dates on the map show where fire deaths have occurred in our state along with the year. The map website will be continually updated as more information is produced. The fire mortality study was produced by the University of Tennessee with the cooperation of the Tennessee Fire Chief's Association, Tennessee Fire Safety Inspector Association, and the Tennessee State Fire Marshal's Office. For more information or for questions on the study contact Gary L. West, Deputy Commissioner, Tennessee Department of Commerce & Insurance at (615) 741-7490. The following highlights from the study illustrate the state's fire problem.

- Historically, Tennessee's fire mortality rate for civilians has been among the highest in the nation. During 2002-2010, the time period for this study, the national fire mortality rate declined, but the rate in Tennessee increased.
- Residential structure fires account for about three-fourths of all civilian fire deaths in the state.
- Most civilian residential deaths occur in the state's largest cities, but the residents of rural areas and smaller communities actually experience higher rates of fire mortality.
- Residential fires in which several individuals perish occur more frequently in Tennessee compared to the nation. The increase in multiple fire death incidents in urban areas during 2010 was one of the reasons why the state's mortality rate spiked while the national rate trended downward.
- The most common heat source for fatal residential fires in Tennessee was operating equipment that included HVAC and kitchen and cooking equipment that involved heating and electrical malfunctions (short circuits, arcing, and the like).
- Smoke alarms were present in only 28 percent of cases during the study period. By contrast, smoke alarms were present in about 38 percent of fatal fires nationally suggesting that more lives might be saved if smoke alarms were more widely employed and maintained by Tennessee households.
- Similar to the nation, the state's residential fire victims tend to be the very young, the very old, and minorities. Members of each of these groups die in fatal fires in proportions that exceed their size in the population.
- Of the state's 1,261 populated census tracts, 635 (50.4 percent) have an above average or higher risk for fire fatalities.
- Of the 715 fire departments in Tennessee, 306 (42.8 percent) serve cities, 391 (54.7 percent) serve some or all of a county outside of an incorporated city, and 18 (2.5 percent) serve both a city and county. Less than 5 percent of these fire departments are classified as "career." About 16 percent are classified as a combination of "career" and "volunteer" but most fire departments (79.3 percent) are "volunteer."
- Just over half of Tennessee residents enjoy one of the two highest levels of fire protection but more than 30 percent have low or no fire protection service. The level of fire protection provided matters a great deal. Those departments that provide high or moderate plus service levels respond more quickly to fire calls and have lower rates of fire mortality.
- The fire chiefs who responded to the statewide survey thought that the top four strategies to prevent and reduce residential fire deaths were:
 - smoke alarm distribution and installation;
 - having home sprinkler systems;

- enforcing applicable codes; and
- presenting fire safety demonstrations and instruction at local schools.

As shown by the study, residential fires are responsible for almost 75 percent of Tennessee's fire fatalities, and Tennessee has a high rate of multiple fatality fires. The most common heat source for fatal residential fires involves structural components: HVAC, kitchen, and cooking equipment that involved heating, and electrical malfunctions (short circuits, arcing, etc.). In 72 percent of these fires, smoke detectors were not present. The very young, the very old, and minorities die in fatal fires in proportions that exceed their size in the population. Properly constructed homes that meet all code requirements, verified through an inspection program, address every one of these risk factors. Properly installed structural components are less likely to catch fire. Working smoke detectors and fire alarm systems provide early warning so occupants can escape. The very young and very old are less likely to take action or be able to self-evacuate, and a properly constructed home is less likely to catch fire and therefore is safer.

Over half of the populated census tracts in Tennessee have a higher than average risk for fire fatalities. Historically, communities have looked to improving fire response capability (i.e. the fire department) as a way to minimize loss. The study showed that more than 30 percent of Tennesseans live where there is little to no fire protection service (a fire department). Also, fire department response to a fire is reactive: a fire is in progress, property damage is occurring, and lives (i.e. the occupant's) are or soon will be (i.e. the responding fire fighters') at risk. At this point, the community's comprehensive fire protection system has failed because a fire occurred. According to the study, "Success in reducing residential fire deaths may depend upon the implementation of various types of proactive measures to prevent fires." The fire that causes the least amount of damage and risk to the community is the fire that never occurs. If a fire does occur, it is possible to save lives before the arrival of the fire department through code enforcement.

The components of a comprehensive community fire protection system include code enforcement, public education, and a fire department. It is simply not possible to prevent all fires: there will be accidents, equipment failures, acts of nature, intentionally set fires, etc., so a community needs a fire department. However, code enforcement has a significant return-on-investment in that a fire prevented saves the community money and lives. It is estimated that the indirect cost of fire is at least 10 percent of the direct property loss. The median home value in Tennessee is \$165,000. If that home is lost to fire, another 10 percent (\$16,500) of indirect loss occurs. There is an aesthetic impact to the community too, as the home may sit untouched for a year or more as the insurance claim proceeds, which impacts property values in the neighborhood and may affect the ability of other homes in the neighborhood to sell.

Exempt communities and opt-in communities already enjoy the benefits of having good fire codes and an inspection program. The person buying the home knows that the home is built right and meets code. For cities that decide to take the opt-in route, there is no cost to the community for this program. A permit is required, and if the city decides to act as the issuing agent for the permit, the city can keep \$15 of the permit fee. Once the permit is issued, the state fire marshal's office will take care of scheduling the inspection(s) and will provide certified inspectors to make the inspections.

For more information on the residential inspection program, and to opt-in to the program, contact the Tennessee Department of Commerce and Insurance contract inspection services director, at (615) 741-7170.

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