

U.S. Fire Administration

Campus Fire Fatalities in Residential Buildings (2000–2015)



FEMA



Executive Summary

The goal of this report is to reveal the factors that are leading to the unnecessary fire deaths of college students. This study provides comprehensive information about campus fire fatalities to college and university fire and safety officials along with the local fire and emergency service organizations that serve these institutions so they can better plan to reduce and prevent injuries and deaths on college campuses in the future.

This report examines data from fatal campus fires and the fatalities that resulted from these fires, beginning with the horrific fire that took place in January 2000 at a Seton Hall University dormitory, where three students and 67 others were injured, through May 2015.

During the last 16 academic years from 2000 through 2015, there have been 85 fatal fires in dormitories, fraternities, sororities and off-campus housing, resulting in 118 fatalities — an average of approximately seven per school year.

An astonishing 94 percent of fatal campus fires examined took place in off-campus housing.

Smoke alarms were either missing or had been tampered with (disconnected or battery removed) in 58 percent of fatal campus fires.

Fire sprinklers were not present in any of the 85 fatal campus fires.

Methodology

The preliminary research for this report began with an analysis of campus fire fatalities from three sources: (1) Center for Campus Fire Safety — Fire Fatality Data; (2) Campus Firewatch Campus-Related Fatal Firelog, and (3) USA Today's Report on College Fires, published in August 2006.

The next step was to establish criteria for what constitutes a fatality. For this report, a campus fire death must meet the following criteria: (1) occurred in an on-campus residence hall, family housing, or college-owned off-campus dwelling fire; (2) occurred in an off-campus residential dwelling unit fire that is located 5 miles or less from the campus that the student attends (includes a rented house, duplex, apartment, rooming house, or privately owned residence hall that is not the student's permanent family residence); or (3) any

A disproportionate number of fatal campus fires occurred on the weekend — 70 percent on Friday, Saturday and Sunday.

Males were more likely than females to die in campus fires, accounting for 67 percent of all victims.

Alcohol was a factor in 76 percent of all fatal campus fires — fires where at least one of the students was drinking and, according to reports, legally drunk, which is at or above 0.08 percent blood alcohol concentration (BAC).

Smoking (29 percent) was the leading cause of fatal fires in campus housing, followed by intentional actions (16 percent), electrical (11 percent) and cooking (9 percent), with 18 percent of the fires classified as cause undetermined.

The adage “nothing good happens after midnight” rings true for fatal campus fires, with 73 percent occurring between midnight and 6 a.m.

April was the peak month (13 percent) for fatal fires in campus housing, with January, May and October at 12 percent each. Predictably, the least number of fires occurred in June, July and August, when there are fewer students enrolled in classes at colleges and universities.

person enrolled as a student at an institution of higher learning or any student visiting another student's college or university who died in a residential dwelling unit fire. Those not considered campus-related fire victims: (1) suicide victims by fire; (2) students murdered by means other than fire; (3) family members visiting or living with the student; (4) nonstudents who live with students in off-campus housing; (5) graduated or former students; (6) students living with a spouse or their children in a permanent residence; and (7) students on vacation. This includes spring, semester or summer break and holidays.

Initially, the scope of this project was to look at all campus fire fatalities, but in an effort to be consistent with reports based on the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System data and to com-

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pare campus fire fatalities with the general population, only residential deaths are included in this report. This excludes college fatalities that occurred in classrooms, administrative buildings, science laboratories, dining halls and campus settings. This eliminated two fatalities.

Much of the preliminary information collected was valuable but incomplete and was comprised of sporadic information included in early media reports. An exhaustive Internet search for updates on incidents was followed by hundreds of calls and email communiques to collect myriad facts from each fatal fire. The officials interviewed were comprised of mostly state and local fire investigators and fire marshals, along with local and university fire chiefs, campus fire safety staff, registrars, local police, and university staff. Several fatalities were not included in this report when it was discovered during research that the students had graduated, were not enrolled in school at the time of the fire, or were living in their permanent residence with their family. In this report, **campus** represents both on- and off-campus residential housing.

The following information was obtained for each fatality:

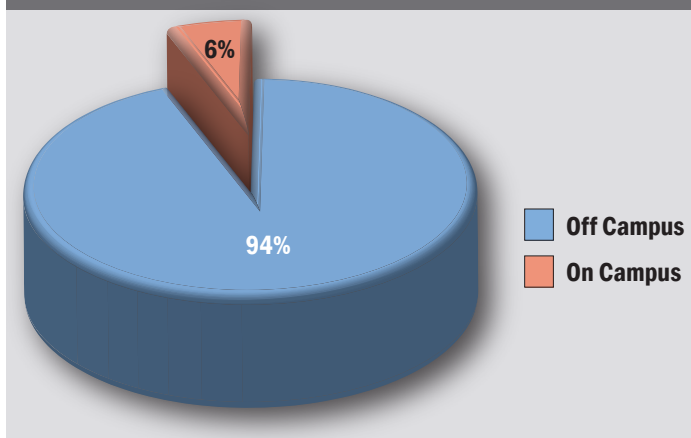
- Date of incident.

- Day of the week of incident.
- Name.
- Age.
- Gender.
- College/University.
- State (50 states or District of Columbia) for mapping purposes.
- Address.
- ZIP code.
- Time of alarm.
- On/Off campus.
- Alcohol or drugs as a factor in the death.
- Cause of fire — arson, cooking, smoking, electrical, candles, heating, other or undetermined.
- Presence of functional smoke alarms — yes, no, or yes/tampered and rendered inoperable.
- Presence of a fire sprinkler system.

No individual incidents were referenced in this report. The officials interviewed for this report were informed that the USFA will not publish, post or release any information about a single incident or the individual(s) who died in the fire. Only aggregate data from multiple events to analyze the major factors will be published. Most of this information is readily available from the aforementioned resources.

On-Campus Versus Off-Campus Housing

Figure 1. Location of Fatal Campus Fires (2000-2015)



Source: USFA Data.

More than nine in 10 fatal campus fires (94 percent) took place in off-campus housing.

The appeal of independent living coupled with saving money draws students to the outskirts of campus searching for off-campus housing. The strict dormitory

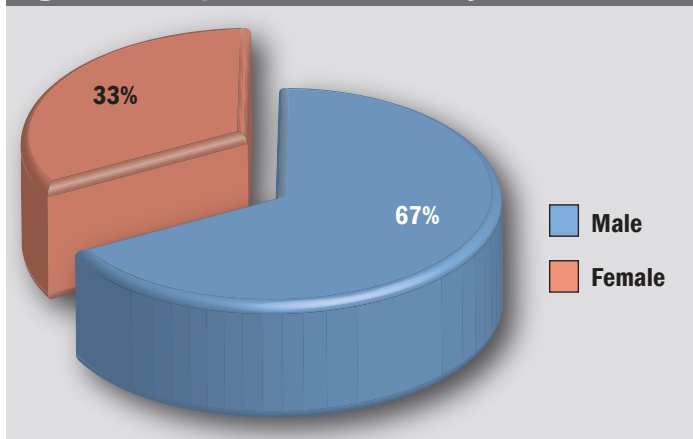
rules are absent from these dwellings. At many colleges, especially those in an urban environment, students have little choice and are forced to live in an enclave of homes offered up by some landlords who see dollar signs when renting a house.

Why are these deaths occurring in off-campus dwellings? The answer is a lack of control. From the fire safety features to the electrical system and everything in between, colleges and universities control the building maintenance. The school also controls what the students bring into that building and, more importantly, what they don't bring in, such as halogen lamps, hot plates, electric frying pans, toaster ovens, and space heaters. The college, to some extent, can control the student's behavior in on-campus housing, especially for the two biggest factors involved in fatalities — drinking and smoking.

There have been no fire fatalities in an on-campus dormitory in more than a decade (April 2005). This is due to an increased emphasis on fire safety, such as fire sprinkler systems and monitored smoke and fire alarms.

Campus Fire Fatalities by Gender

Figure 2. Campus Fire Fatalities by Gender

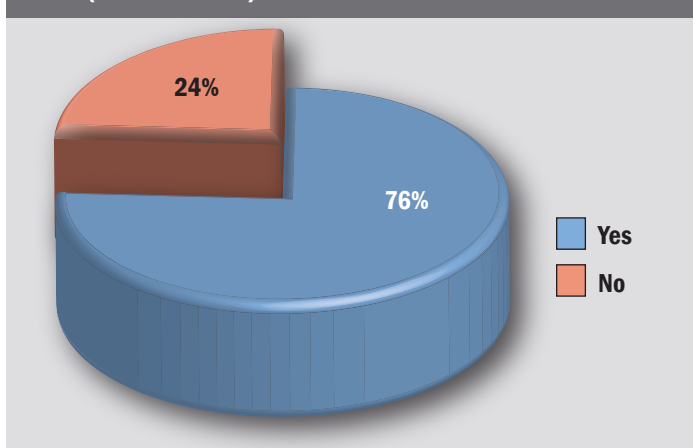


Source: USFA Data.

Males were more likely than females to die in campus fires, accounting for 79 of the 118 fatalities or 67 percent of all victims.

Alcohol as a Factor in Fatal Campus Fires

Figure 3. Alcohol as a Factor in Fatal Campus Fires (2000-2015)



Source: USFA Data.

Alcohol was a factor in 76 percent of all fatal campus fires — fires where at least one of the students was drinking and, according to reports, legally drunk, which is at or above 0.08 percent BAC. Students under the influence of alcohol or drugs are more likely to participate in risky behaviors that could cause fires. Additionally, students under the influence may respond more slowly to sounds of smoke alarms or not respond at all. A 2005 study, by Abraham Hasofer et al., showed that blood alcohol levels as low as 0.05 percent had a very significant effect in slowing down the response of all subjects.¹

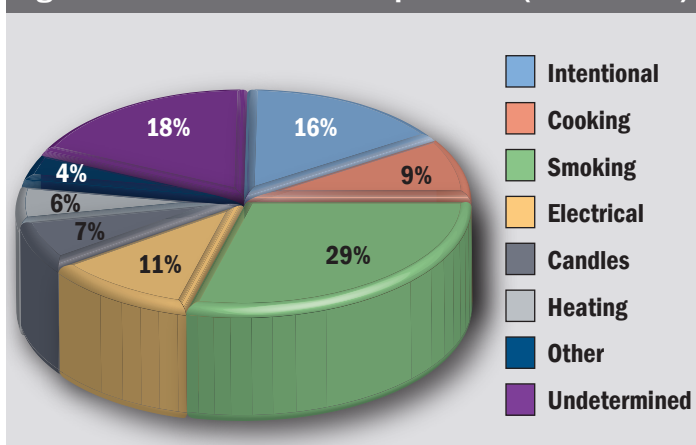
¹ Hasofer, Abraham, Thomas, Ian, Ball, Michelle and Bruck, Dorothy. (2005). Statistical Modelling of the Effect of Alcohol and Sound Intensity on Response to Fire Alarms. In: 8th International Symposium of the International Association for Fire Safety Science, September 2005.

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Cause of Fatal Campus Fires

Figure 4. Cause of Fatal Campus Fires (2000-2015)



Source: USFA Data.

Smoking (29 percent) was the leading cause of fatal fires in campus housing. In about half (52 percent) of the fatalities where smoking was determined to be the cause of the fire, smoking materials smoldered in a couch over time. A third of the couches were located outside the dwelling, either on a porch or deck. Cigarette and other smoldering fires are generally started by careless

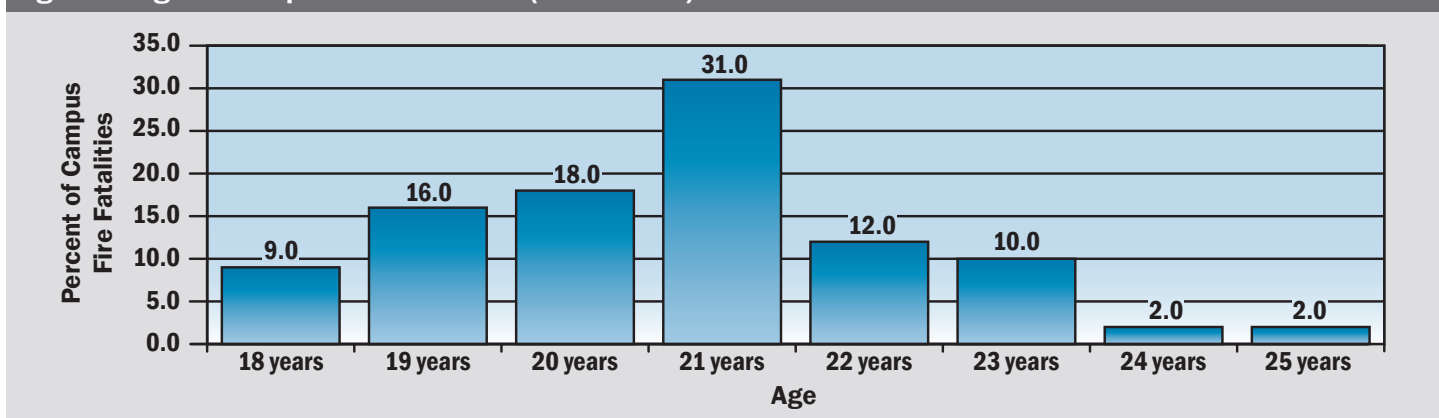
actions before people retire for the night; such fires may go unnoticed and grow while residents are sleeping. The problem is so prevalent in college towns that local ordinances have been passed in many communities banning upholstered furniture outside residences. During the last 15 years, the campus fire fatality data show that there have been more than 50 couch fires on a porch or deck, resulting in a dozen deaths.

Smoking is now prohibited in most college residence halls. Along with intricate alarm systems and fire suppression equipment, the problem of smoking-caused deaths is virtually nonexistent on campus.

Additionally, many off-campus rentals forbid smoking inside. This has resulted in students tossing their smoking materials just outside the door as they walk in. One-quarter of smoking-related campus fatalities have begun just outside the door when smoking materials were discarded in unsafe containers, such as a plastic bag filled with garbage, a can containing combustible and flammable materials, and in one particular case a bag of charcoal briquettes adjacent to a can of lighter fluid.

Age of Campus Fire Fatalities

Figure 5. Age of Campus Fire Fatalities (2000-2015)



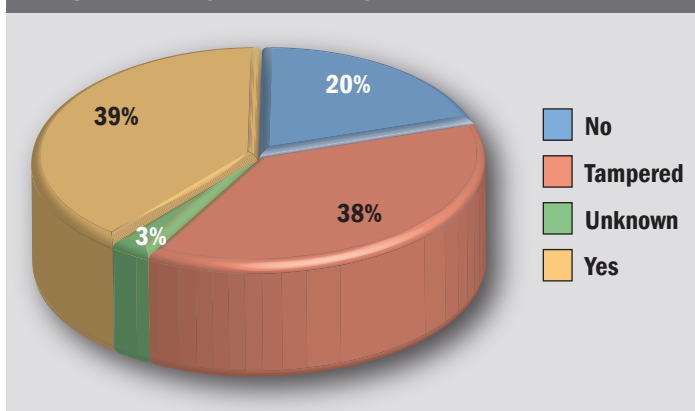
Source: USFA Data.

The majority of colleges and universities require freshmen to reside in student housing, where they are afforded all the security and protections that come with on-campus residential life. Nearly half (49 percent) of

the campus fire fatalities were 20 and 21 years old, the age of most sophomores and juniors, with their first foray into independent life ending tragically.

Alerting/Suppression Systems in Fatal Campus Fires

Figure 6. Functional Smoke Alarms in Fatal Campus Fires (2000-2015)



Source: USFA Data.

According to the National Fire Protection Association, the risk of dying in a home fire is cut in half in homes with working smoke alarms. More than half (58 percent) of fatal campus fires occurred in residences where smoke alarms were either missing or had been tampered with (disconnected or battery removed). This lack of early warning is a considerable factor in residential fatal fires. Additionally, an automatic fire sprinkler system was not present in any of the 85 fatal campus fires.

A too common theme among these fatal fires is that students get annoyed when smoke alarms activate while cooking and remove the batteries, and students rarely replace them after cooking.

Comparing Fatal Campus Fires in Residential Buildings With the Civilian Fatal Fires in Residential Buildings

This section looks at fatal campus fires from 2000-2015 and compares them to all fatal fires in residential buildings from 2011-2013.

The lifestyle of a college student differs greatly from that of civilians in the general population. For many, it's the first time they've lived away from home, and they are embracing the independence, and in some cases the new responsibilities, that come with this freedom. For most students, the last fire safety training they received was in grade school.

Not much can go wrong in terms of fire safety when students are safely ensconced in an on-campus residential hall protected by fire doors, an intricate alarm system, and in many cases sprinklers. But when the calendar

While the smoke from one or two cigarettes isn't enough to activate a smoke alarm, a party situation with multiple smokers in a poorly ventilated room may be enough. Again, students disconnect or remove the batteries at the very time when they are at the most risk — a party.

With respect to off-campus housing fatal fires, the students aren't the only ones to blame. Some rental homes are in disrepair with many rentals lacking working smoke alarms or not providing two exits from a room.

Sadly, some off-campus houses are very old, poorly maintained, and equipped with inadequate wiring to handle the electric power requirements of today's student. A student's room may contain a coffee maker, space heater, computer, printer, television, power chargers for several devices, refrigerator, and toaster oven connected to a labyrinth of extension cords and overloaded power strips. It's easy to see how the cause of 11 percent of fatal campus fires was electrical. (See Figure 4.)

The Boston Globe Spotlight Team published an eye-opening series titled "Shadow Campus" that exposed a situation which endangers college students living in substandard and often dangerous off-campus housing in the Boston area — home to more than 100 colleges and universities.

reaches Friday in the middle of the night, the choices they make could test even the most resilient fire safety plan.

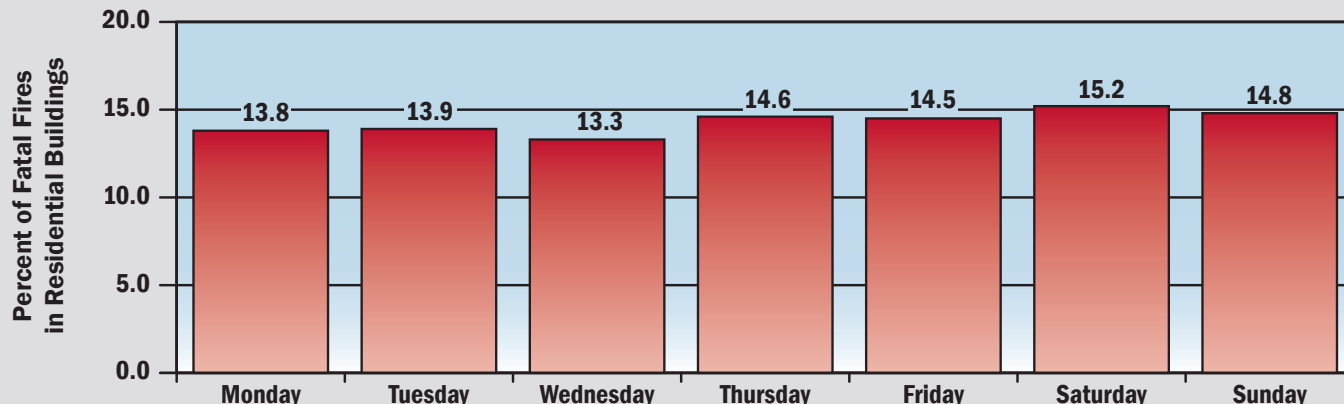
A look at Figures 7 and 8 show when fatal fires occurred by day of the week in residential buildings and in campus residences, respectively. Percentages of fatal fires in residential buildings ranged from 13.3-15.2 percent by day of the week, with the slightest increase on the weekend. A disproportionate number of fatal campus fires occurred on the weekend — 71 percent on Friday, Saturday and Sunday, compared with 45 percent of the fatal campus fires in residential buildings.

The time of fatal fires in residential buildings and campus housing differs immensely. See Figures 9-12.

Campus Fire Fatalities

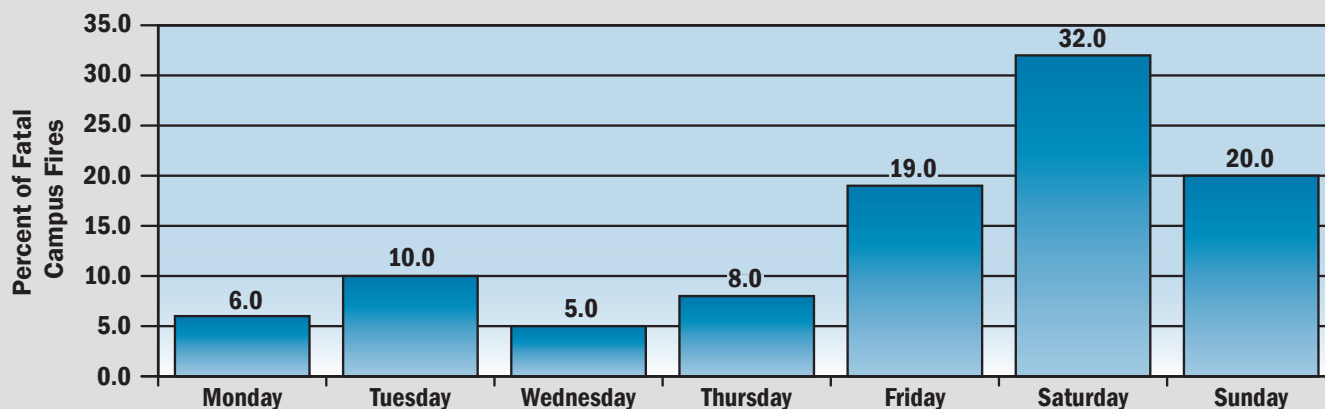
in Residential Buildings (2000-2015)

Figure 7. Fatal Fires in Residential Buildings by Day of the Week (2011-2013)



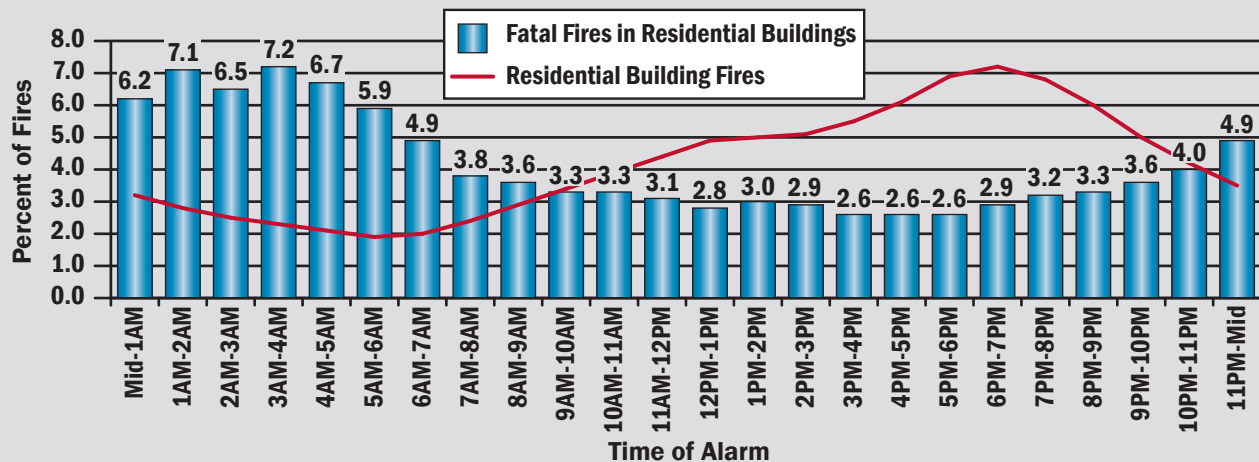
Source: USFA analyses — “Civilian Fire Fatalities in Residential Buildings (2011-2013).”

Figure 8. Fatal Campus Fires by Day of the Week (2000-2015)



Source: USFA Data.

Figure 9. Fatal Fires in Residential Buildings by Time of Alarm (2011-2013)

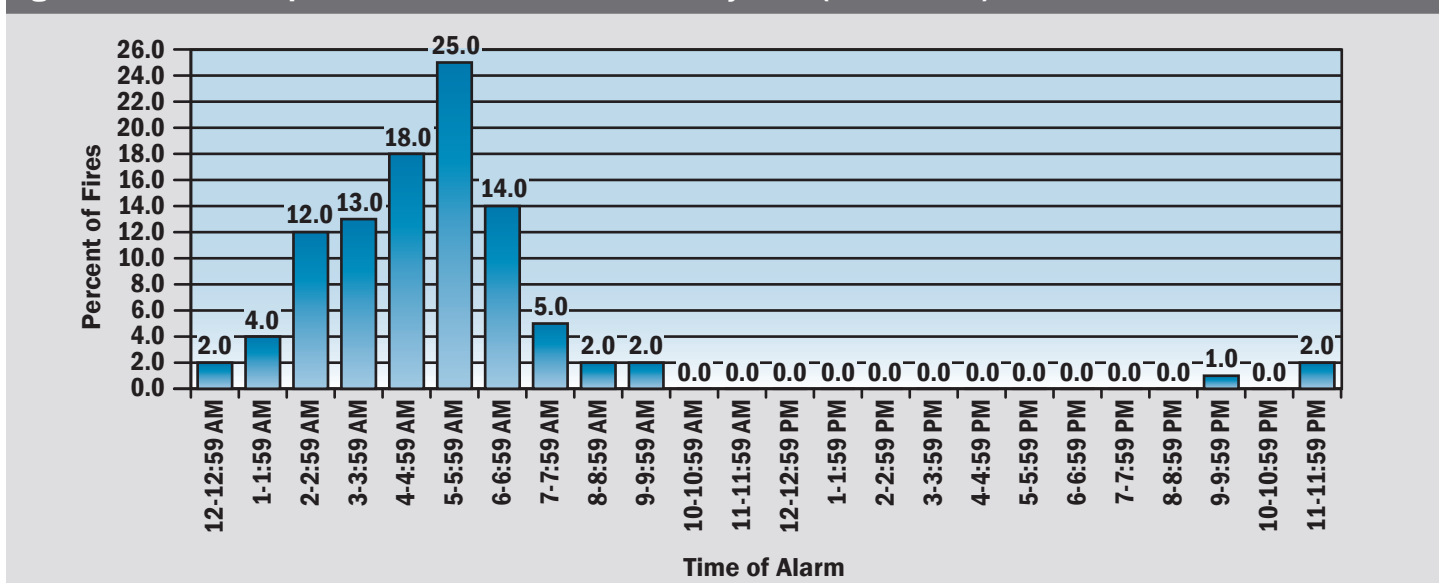


Source: USFA topical report — “Civilian Fire Fatalities in Residential Buildings (2011-2013).”

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in Residential Buildings (2000-2015)

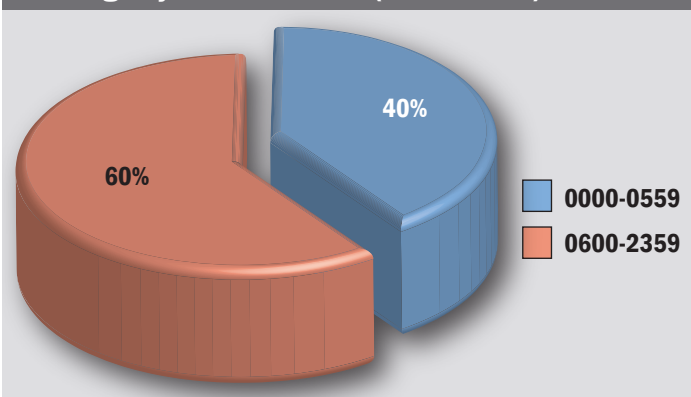
Figure 10. Fatal Campus Fires — Time of Alarm Hour by Hour (2000-2015)



Percent distribution of fatal fires in on-campus and off-campus residential buildings (2000-2015) hour by hour. Source: USFA Data.

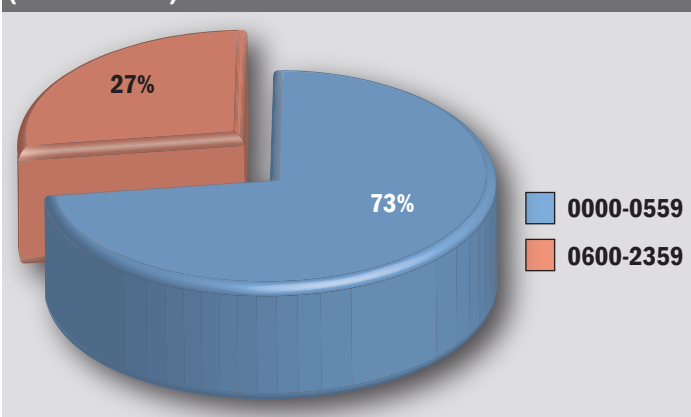
The percentage distribution of fatal fires in residential buildings by time of alarm also differs immensely from that of fatal campus fires. Figures 9-12 show that fatal fires in residential buildings peaked in the early morning hours, but not as drastically as the fatal campus fires, where almost three-quarters (73 percent) of the fires occurred between midnight and 6 a.m., compared to 40 percent of fatal fires in residential buildings that occurred during this same time frame. Figure 10 shows that for fatal campus fires, no deaths occurred from 10 a.m. to 9 p.m., which is coincidentally when classes are in session and before party time.

Figure 11. Fatal Civilian Fires in Residential Buildings by Time of Alarm (2011-2013)



Source: USFA topical report — “Civilian Fire Fatalities in Residential Buildings (2011-2013).”

Figure 12. Fatal Campus Fires by Time of Alarm (2000-2015)

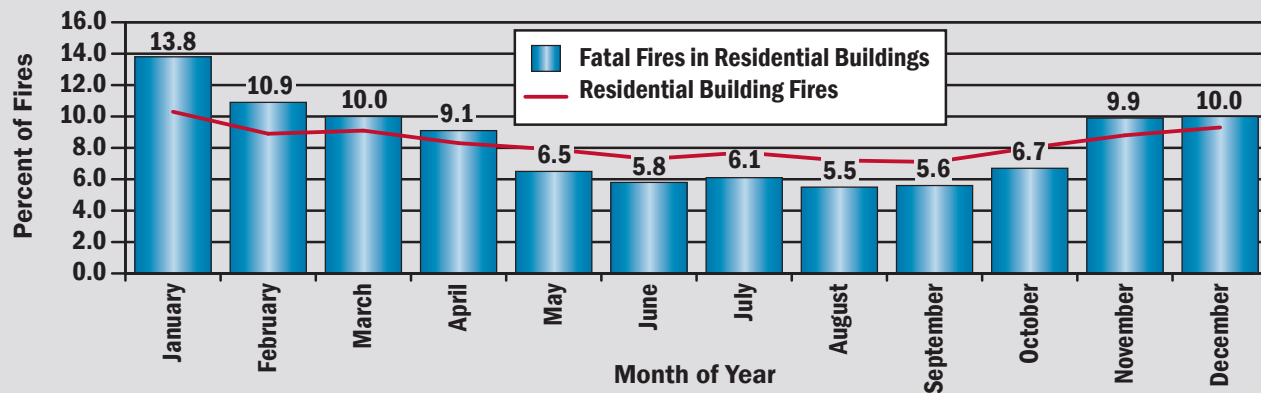


Source: USFA Data.

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Figure 13. Fatal Fires in Residential Buildings by Month (2011-2013)

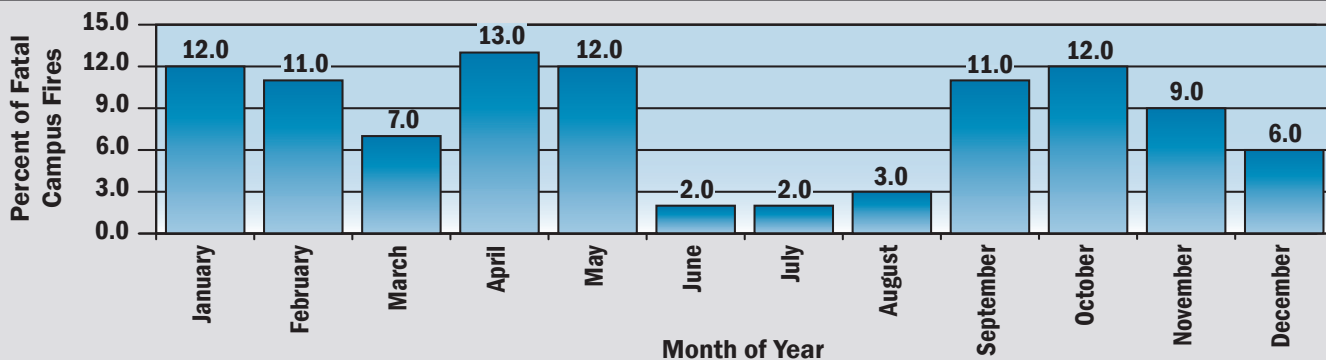


Source: USFA topical report — “Civilian Fire Fatalities in Residential Buildings (2011-2013).”

Civilian residential fatal fires occurred more frequently in the colder months, tracking the overall monthly residential fire incidence (Figure 13). The winter peak occurred during January (14 percent). Residential fatal fires were lowest from June through September. Figure 13 shows that fatal campus fires were common at the end of the school year in April (13 percent) and May (12 percent) and at the start of the school year in Sep-

tember (11 percent) and October (12 percent). As with fatal fires in residential buildings, there was also a peak during the winter months — January (12 percent) and February (11 percent) — due to heating and increased indoor activities. Predictably, the least number of fires occurred in June, July and August, when there are fewer students enrolled in classes at colleges and universities.

Figure 14. Fatal Campus Fires by Month (2000-2015)



Source: USFA Data.

Smoking (28 percent) was the leading cause of campus fire fatalities. According to the USFA’s “Civilian Fire Fatalities in Residential Buildings (2011-2013)” topical report, the leading causes of residential building fatal

fires were unintentional/careless actions (15 percent) and smoking (14 percent).

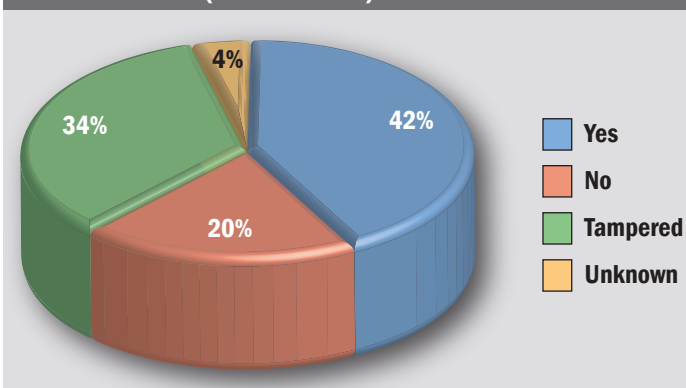
Campus Fire Fatalities

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U.S. Fire Administration Campus Fire Fatality Data

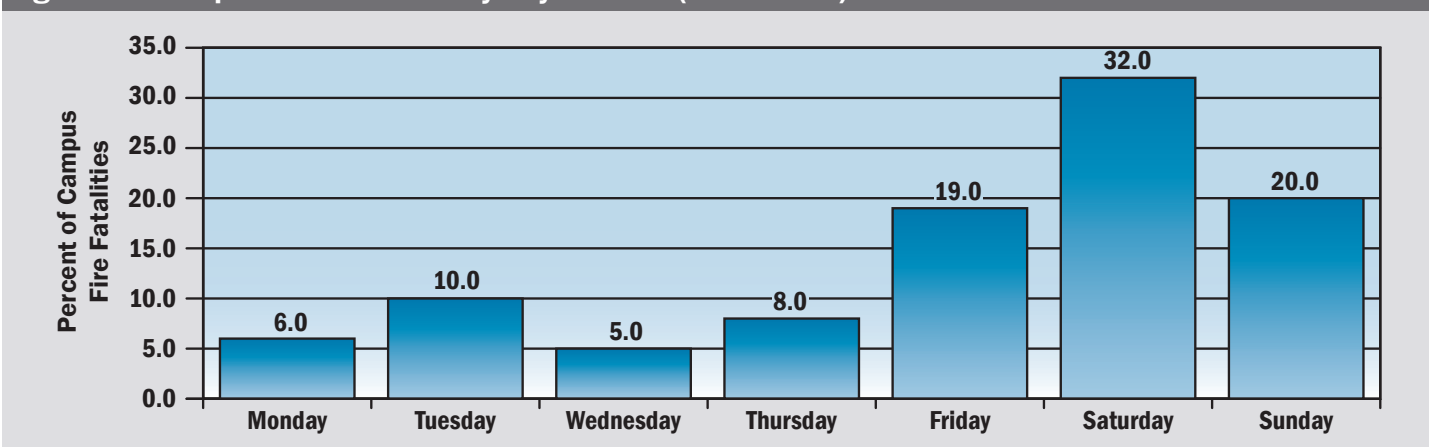
The graphs preceding this section are based on statistics derived from the 85 fatal fires, whereas the following seven charts (Figures 15-21) reflect the 118 campus fire fatalities that occurred from January 2000 through May 2015.

Figure 15. Functional Smoke Alarms for Campus Fire Fatalities (2000-2015)



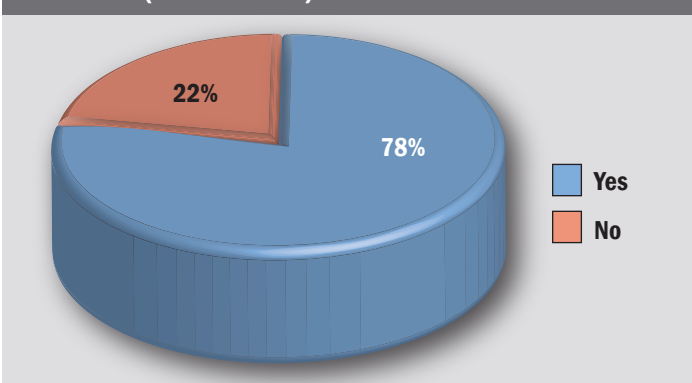
Source: USFA Data.

Figure 16. Campus Fire Fatalities by Day of Week (2000-2015)



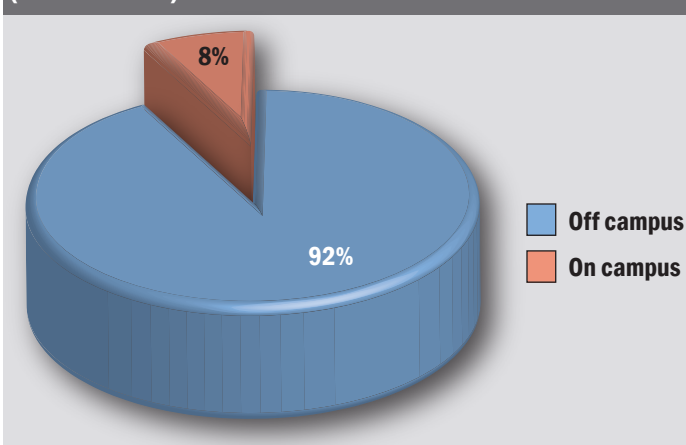
Source: USFA Data.

Figure 17. Alcohol as a Factor in Campus Fire Fatalities (2000-2015)



Source: USFA Data.

Figure 18. Location of Campus Fire Fatalities (2000-2015)

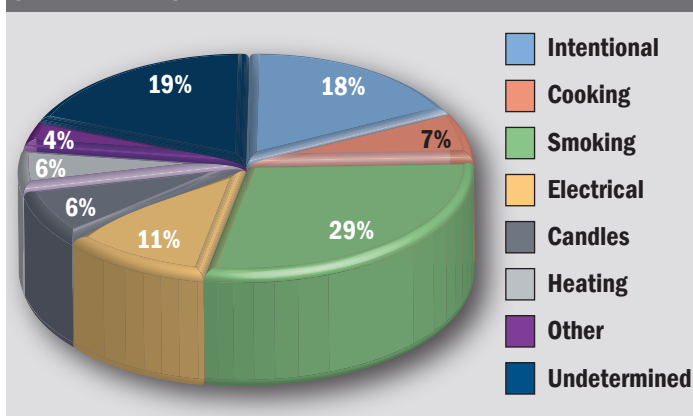


Source: USFA Data.

Campus Fire Fatalities

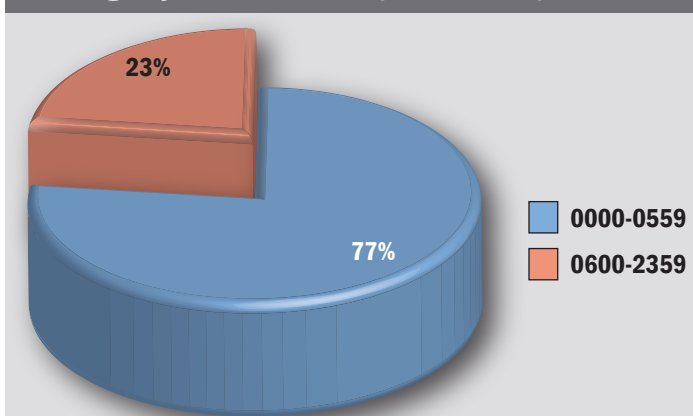
in Residential Buildings (2000-2015)

Figure 19. Cause of Campus Fire Fatalities (2000-2015)



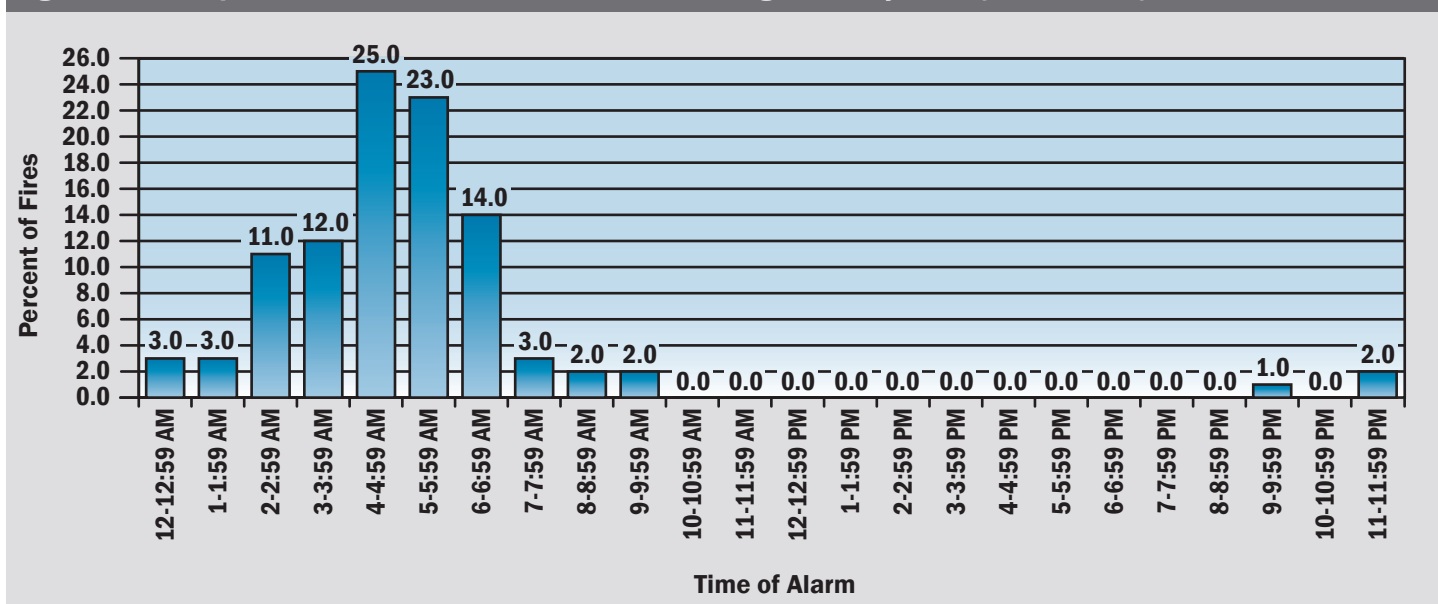
Source: USFA Data.

Figure 20. Campus Fire Fatalities in Residential Buildings by Time of Alarm (2000-2015)



Source: USFA Data.

Figure 21. Campus Fire Fatalities in Residential Buildings Hour by Hour (2000-2015)



Source: USFA Data.

Conclusion

As of the publication of this report, November 2015, there hasn't been a campus fire fatality in nearly a year, with the most recent death occurring on Halloween in 2014.

During the last five years, there's been an average of five campus fire deaths, compared to the first five full academic years of this report (2000-2004) where twice as many college students died in fire annually.

On-campus residential housing has become safer, with modern alarm systems and fire sprinklers protecting students. The last fire fatality in an on-campus dor-

mitory took place in April 2005. There's still room for improvement, as too many colleges hide behind building codes that allow residence halls to remain without sprinklers because of their age.

Off-campus living remains the highest risk for fatal fires, with more than 90 percent of campus fire deaths occurring in these dwellings. Colleges need to work with the surrounding neighborhoods. Universities are often the financial juggernaut in these towns and cities, and they have the ability to effect change.

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“Ex malo bonum,” the Latin phrase meaning “out of bad comes good,” has taken hold on many college campuses. Parents who have lost their children to campus fires have become advocates for improving off-campus living and encouraging local leaders to implement change through fire safety ordinances and legislation.

One example is the **Kerry Rose Fire Sprinkler Notification Act**, which requires public and private colleges in New York state to provide written information on fire safety and sprinkler systems to students residing in college owned or operated housing. Kerry Rose Fitzsimmons and Eva Block were Marist College students who died in an off-campus fire along with a friend in January 2012.

The Peter Talen Smoke Alarm Ordinance, which requires all rental properties in Madison, Wisconsin, to have working smoke alarms, came to fruition through the work of his family. Talen died in an off-campus house fire in November 2007.

Highlighting the leading dangers involved in campus fatal fires results in describing this sad, stereotypical scenario. There’s a party in an unsafe and crowded off-campus house. The batteries have been removed from the smoke alarms. Exits are blocked with clutter. People are drinking and smoking in the wee hours of the morning. An antiquated electrical system powers many electronic devices.

A partygoer decides to cook and falls asleep while waiting for the oil to heat up. A smoker believes his

cigarette is extinguished, and unbeknownst to him, it falls between the cushions of the sofa. Another smoker arrives home and tosses his smoking materials in a plastic bucket outside the door. A student plugs in his mobile phone, tablet and computer into a power strip that gets covered by a rug. Chilled by the walk back to her apartment, a student arrives home and turns on the space heater, which is covered by a comforter. Sound ridiculous? These are what caused fatal campus fires during the last decade.

The goal of this report is to reveal the factors that are leading to the unnecessary fire deaths of college students. This study provides comprehensive information about campus fire fatalities to college and university fire and safety officials along with the local fire and emergency service organizations that serve these institutions so they can better plan to reduce and prevent injuries and deaths on college campuses in the future.

Fire safety training needs to be provided to students, especially those embarking in off-campus living. The off-campus landlords need to see the value in providing fire-safe environments for their renters. Students need to be more aware of their surroundings, especially at parties; they must ensure that they have two ways out of every room, have functioning smoke alarms, and think before they drink and smoke. Schools, parents and students must partner to reduce residential fire injuries and deaths in and around college campuses.

One student fire death is one too many.