The Massachusetts Fire Problem

Annual Report of the Massachusetts Fire Incident Reporting System

2002

Mitt Romney
Governer

Edward A. Flynn
Secretary of Public Safety

Stephen D. Coan
State Fire Marshal

Thomas P. Leonard
Deputy State Fire Marshal

ABOUT THE COVERS

The original drawings shown on the front and back covers are the year 2003 winning entries of the 21st Annual Statewide Arson Watch Reward Program Poster Contest, sponsored by the Massachusetts Property Insurance Underwriting Association (FAIR Plan), on behalf of all property and casualty insurance companies of Massachusetts. This year's poster theme was "**REKINDLE YOUR FIRE SAFETY SENSE.**"

The Poster Contest is held on two levels; Level I is for 7th and 8th grade students and Level II is for 5th and 6th grade students. All public, private and parochial schools in each state are invited to participate. This year's poster theme is a reminder to everyone to rethink the issue of fire safety before it is too late.

First, second and third place winners, as well as several honorable mentions, were chosen in each level by an impartial panel of judges selected from the fire services. Official presentations were made at a luncheon reception for the teachers, students and their families, held in Framingham, Massachusetts on Thursday, May 29, 2003. Mr. John Golembeski, President of the FAIR Plan, presented the awards to all winning students.

The front cover shows a drawing submitted by Jimmy Tran, an eighth grade student at the Sterling Middle School, Quincy, Massachusetts. Jimmy's poster was chosen as First Place Winner from over 400 entries in the Level I division. His teacher, Mary Trainor, coordinated class participation.

The back cover shows a drawing submitted by Alexandra Sousa, a sixth grade student at the Franco American School, Lowell, Massachusetts. Alexandra's poster was chosen as First Place Winner out of approximately 400 entries in the Level II division. Her teacher, Lynne Shepherd, coordinated class participation.

The Massachusetts FAIR Plan has generously sponsored the printing of the 2002 Annual Report of the Massachusetts Fire Incident Reporting System (MFIRS), as well as the use of the first place posters for the covers, for the last 20 years.

Massachusetts Fire Incident Reporting System

2002 Annual Report

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Fireman's Prayer

When I am called to duty, God
Wherever Flames may rage
Give me the strength to save some life
Whatever Be its age
Help me embrace a little child
Before it is too late
Or save an older person from
The horror of that fate
Enable me to be alert and
Hear the weakest shout
And quickly and efficiently
To put the fire out
I want to fill my calling and
To give the best in me
To guard my every neighbor
And protect their property
And if according to your will
I have to lose my life
Please bless with your protecting hand
My children and my wife

-Unknown

Foreword from the State Fire Marshal

Our Mission: *To preserve life and property from fire, explosion, electrical and related hazards through prevention, life safety education, investigation, regulation, law enforcement and technical assistance to fire departments, the public, and regulated trades and industries.*

May, 2004

This is the *2002 Annual Report of the Massachusetts Fire Incident Reporting System* (MFIRS) which summarizes the Massachusetts fire experience for 2002. It is based on the 27,380 individual fire reports submitted by members of 342 fire departments and fire districts. It is this effort that makes it possible to look at the total fire experience, to identify our fire problems and to develop strategies to address these issues. One of the goals of the Office of the State Fire Marshal is to provide the fire service and the public with accurate and complete information about the fire experience in Massachusetts.

One Firefighter Death in 2002
In 2002, there was one fire-related fire service fatality in the Commonwealth of Massachusetts. District Chief Gerald Nadeau of the Fall River Fire Department, succumbed to injuries sustained while he was the incident commander at an apartment building fire. Firefighter injuries declined 11% from the number reported in 2001.

Structure Fires Up in 2002
The total number of reported fires decreased by 2% from 27,885 in 2001 to 27,380 in 2002. Structure fires rose 15% from 2001 to 2002. From 2001 to 2002, motor vehicle fires went down 16%. Outside, brush, and other fires decreased by 11% during the same time period.

Although the law states that only fires where a loss is sustained must be reported, many fire departments are wisely reporting all of the fire incidents that they respond to, giving a more accurate picture of the fire problem in Massachusetts.

Civilian Fire Deaths Up 5% in 2002
Civilian deaths in all types of fires increased by 5% from 59 in 2001 to 62 in 2002. Thirty-eight (38) men, 17 women, and seven children died in Massachusetts' fires. Of the 62 fire-related civilian deaths in 2002, 48 occurred in residential structure fires. Over three-quarters (77%) of civilians died in the "safety" of their own homes. Seven (7) deaths occurred in vehicle fires in 2002. Three (3) people died in three outside and other fires in 2002.

Cooking Caused the Most Fires in the Home – Stand By Your Pan
The leading cause of fires in the home in 2002 was cooking. Cooking caused almost half (49%), of all residential fires. Adhering to some simple rules will significantly decrease the likelihood of cooking related fires. Since we must cook to eat everyday, it is important to practice fire safety in the kitchen. Steps such as "standing by your pan" or not leaving cooking unattended, setting timers to remind yourself that you are cooking; turning handles in toward the stove; and keeping combustibles a safe distance from the

stove are all examples of good fire prevention around the stove. Learning what to do if a fire does occur is also important because cooking is the leading cause of fire injuries as well. The other leading causes of fires in the home are heating, electrical, smoking, arson, candles, clothes dryers, and juvenile-set fires.

Smoking Was the Leading Cause of Residential Fire Deaths
Once again smoking has claimed the distinction of being the leading cause of fatal fires and fire deaths in Massachusetts, with no other cause coming close. In 2002, the unsafe and improper use of smoking materials caused 19 fire deaths in 16 fatal fires, accounting for 40% of residential structure fire deaths and 39% of fatal residential structure fires.

Smoking Fires Pose High Risk to Older Adults
Older adults are at high risk of dying in fires caused by smoking. Almost one-third, or 31%, of the 16 senior residential structure fire deaths occurred in smoking-caused fires.

Smoke Detectors Save Lives
Working smoke alarms can double a family's chances of surviving a fire. This report illustrates the continuing problem in Massachusetts of disabled smoke alarms. Usually the battery has been removed or the power source disconnected. A smoke detector that does not work is useless. Test your smoke detectors on a monthly basis.

Lack of Working Detectors Contributing Factor in Fire Deaths
Over half (55%) of residential fire victims were not alerted by smoke detectors. In 70% of these cases, the victims were not alerted because no detectors were present at all, and in the other 30%, because detectors were present but did not operate.

Almost 1/3 of Residential Fires Occurred in Homes With No Working Detectors
Unfortunately, in 30% of the residential structure fires, there were no working smoke detectors. No detectors were present at all in 21% of the residential structure fires. Detectors were present but failed to operate in 9%. The fire was too small to activate the detector in 11% of residential fires. Detectors operated in 59% of residential structure fires.

People Who Try to Put Fire Out Themselves More Likely to be Injured
The majority of victims injured in fires in 2002 were attempting to fight the fire. Those who attempt to control a fire, rather than escape and summon the professionals, are much more likely to suffer injuries. Men are more likely to be injured while attempting to control the fire than are women. Prevention of these types of injuries is to make and practice a home escape plan and leave firefighting to the professionals. They have the training and the protective clothing to do the job.

Prevention Efforts Can Make Your Home Safer
Over three-quarters (78%) of structure fires and 92% of structure fire deaths took place in residential occupancies. Efforts to reduce the incidence of fire and fire deaths must be focused on home fire safety to have the greatest impact. Increased maintenance of smoke alarms, installation of residential sprinklers, practice of home escape plans coupled with safer products such as self-extinguishing cigarettes, upholstered furniture that meets the

California flammability standard and flame resistant sleepwear for all ages can help make homes, and the families who live in them, safer from fire.

1-& 2-Family Homes Least Likely to Have Working Detectors
In 2002, dormitories were the most likely residential occupancy to have operating smoke detectors. Rooming houses were the next most likely while one- and two-family homes were the least likely to have working smoke detectors. Fire departments need to be proactive in educating the public on the need to have and maintain working smoke detectors while also enforcing compliance with local and state regulations and laws.

2002 Year of Infamous Anniversaries
It was a year of infamous anniversaries for the Massachusetts fire service. November 28, 2002 marked the 60th anniversary of the Coconut Grove Fire in Boston where 492 patrons died from burns or smoke inhalation. The aftermath of this fire led to the implementation of new fire codes and the establishment of the state's Board of Fire Prevention Regulations. June 17, 2002 marked the 30th anniversary of the Hotel Vendome fire, which killed nine Boston firefighters. This tragedy led to improved fire ground awareness for firefighters.

39% of All Vacant Building Arsons Occurred in Unsecured Buildings
Thirty-nine percent (39%) of all vacant building arsons in 2002 occurred in unsecured vacant buildings. Twenty-seven percent (27%) occurred in secured, vacant buildings; while 19% happened in idle buildings that are not routinely used. Buildings under construction accounted for 10% of vacant building arsons. Buildings under major renovation accounted for 3% of the vacant building arsons in 2002. Two percent (2%) of these arsons occurred in buildings being demolished.

Vacant Buildings Threaten Community
Vacant buildings pose a serious threat to the surrounding community. They become targets for vandalism. Children may find them attractive play spaces. Drug users or dealers may utilize the space for their activities. The homeless may seek shelter inside them and set fires to keep warm. Arsonists who enjoy fires may consider these buildings to be available for their use and entertainment. All of these activities threaten the safety of firefighters, the neighborhood and surrounding homes.

Local Efforts of Marking Vacant Buildings Lead to Statewide Action
In December of 2001, in response to the fire at Worcester Cold Storage Warehouse that claimed the lives of six Worcester firefighters, the Board of Fire Prevention Regulations passed an emergency amendment requiring a simple, statewide system of marking vacant buildings. The marking system requires a joint inspection by fire and building officials to determine whether it is safe for firefighters to conduct an interior fire attack. That same month the Board of Building Regulations and Standards passed a similar emergency amendment to its regulations. This amendment also required vacant buildings to be boarded up using the so-called "HUD method."

These amendments took hold in 2002 and one can now see the vacant building markers across the Commonwealth.

Undetermined Fires Cause Over 1/4 of All Structure Fire Deaths
Fires of undetermined causes accounted for over one-quarter, or 29%, of all structure fire deaths in Massachusetts in 2002. Only 10% of civilian fire injuries occurred in fires without a determination as to the cause of origin.

Capt. Robert Milne Named Public Fire & Life Safety Educator of the Year
Captain Robert E. Milne of the Berkley Fire Department was awarded the 2002 Public Fire and Life Safety Educator of the Year. He developed a "Hunt for Hazards" program for local students; produced a local cable television show to demonstrate to adults how and what he teaches the school children; created the Berkley Fire Department website and has authored numerous fire safety articles for the local newspaper. He also teaches first aid and CPR to junior high students, and conducts a municipal smoke detector survey by asking students to go home, locate and test their smoke detectors and then plan and conduct home fire drills.

102 MA Fire Departments Receive $8.6 Million in Federal Grants
In the first year of the Federal Assistance to Firefighters Grant program, 102 Massachusetts fire departments received $8.6 million. One (1) department received $29,259 for EMS services. Ninety-one (91) departments received $7.3 million for fire operations and firefighter safety. Five (5) departments received $309,567 for fire prevention programs. Another five departments received $936,000 for the purchase of firefighting vehicles.

MFIRS Is a Partnership
By law, fire departments are required to report any fire resulting in a dollar loss or a human casualty to the Office of the State Fire Marshal, using the Massachusetts Fire Incident Reporting System. Fire departments may report other fires and are encouraged to do so, giving a more accurate representation of the fire problem in their community. We forward MFIRS data to the U.S. Fire Administration where it is merged with data from the rest of the country to form a picture of the national fire problem. This data is shared with other government agencies, industry, and the media.

We wish to thank the members and chiefs of fire departments for providing this office with the valuable statistical data that forms the backbone of the annual report. In 2002, 355 of the 365 fire departments in Massachusetts either submitted incident reports to MFIRS or certified that they had no reportable fires. This is a 97.3% compliance rate.

We also wish to recognize the efforts of the staff of the Fire Data and Public Education Unit, Jennifer Mieth, manager; Derryl Dion, research analyst; Pavel Gorelik, programmer; and Usha Patel, data-entry clerk, within the Office of the State Fire Marshal who manage the Massachusetts Fire Incident Reporting System and prepared this report.

Fire Departments Do More Than Fight Fires
Although this report is about Massachusetts' fires, it is important to remember that fire departments have many other responsibilities including fire prevention and code enforcement, emergency medical services, hazardous materials response, public fire education and assisting the public with other emergencies. We honor the courage,

dedication, and hard work of these individuals who are willing to risk their lives to keep us safe.

Using This Report
The information in this report is presented in self-contained sections. When applicable, material is repeated so that the reader can find the relevant material without reading the entire document. We encourage you to use this information.

We would like to thank the Massachusetts Property Insurance Underwriting Association for printing this report and for their support throughout the year.

We also wish to thank Governor Mitt Romney, and Public Safety Secretary Edward A. Flynn for their commitment and support to the Massachusetts fire service through the Department of Fire Services.

Stephen D. Coan
State Fire Marshal

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Executive Summary

"All…fires or explosions by which a loss is sustained shall be reported… to the State Fire Marshal on forms furnished by the department, and shall contain a statement of all facts relating to the cause and origin of the fire or explosion that can be ascertained, the extent of damage thereof, the insurance upon the property damaged, and such other information as may be required."

-Massachusetts General Laws, Chapter 148, Section 2.

11,979 Structure Fires, 4,331 Vehicle Fires, 11,070 Outside & Other Fires in 2002
There were 27,380 fire and explosion incidents reported by fire departments to the Massachusetts Fire Incident Reporting System (MFIRS) in 2002. The 11,979 structure fires, 4,331 motor vehicle fires, and 11,070 outside and other fires caused 62 civilian deaths, 440 civilian injuries, one fire service death, 620 fire service injuries, and an estimated dollar loss of $186 million in property damages. In 2002 there were 2.3 civilian deaths for every 1,000 fires.

Structure Fires Up in 2002
The total number of reported fires decreased by 2% from 27,885 in 2001 to 27,380 in 2002. Structure fires rose 15% from 2001 to 2002. From 2001 to 2002, motor vehicle fires went down 16%. Outside, brush, and other fires decreased by 11% during the same time period.

Although the law states that only fires where a loss is sustained must be reported, many fire departments are wisely reporting all of the fire incidents that they respond to, giving a more accurate picture of the fire problem in Massachusetts.

Cooking Was the Leading Cause of Residential Structure Fires
Almost half (49%) of all residential structure fires were caused by unattended and other unsafe cooking practices in 2002. Fifty-three percent (53%) of residential structure fires originated in the kitchen.

One Firefighter Death in 2002
In 2002, there was one fire-related fire service fatality in the Commonwealth of Massachusetts. District Chief Gerald Nadeau of the Fall River Fire Department, succumbed to injuries sustained while he was the incident commander at an apartment building fire. Firefighter injuries declined 11% from the number reported in 2001.

Civilian Fire Deaths Up 5% in 2002
Civilian deaths rose by 5% from 59 in 2001 to 62 in 2002. Thirty-eight (38) men, 17 women, and seven children died in Massachusetts' fires. Of the 62 civilian deaths in fires in 2002, 48 occurred in residential structure fires; four occurred in non-residential structure fires. Over three-quarters (77%) of civilians died in the “safety” of their own homes. The majority of these victims died at night, while they were sleeping and did not

have working smoke detectors. It is also important to remember that detectors only provide an early warning of a fire. They do not guarantee an escape. It is important to make and practice an escape plan.

Seven (7) deaths occurred in motor vehicle fires in 2002. Three (3) people died in three outside and other fires in 2002.

Smoking Was the Leading Cause of Residential Fire Deaths
For years, smoking has been far and away the leading cause of fatal fires and fire deaths in Massachusetts, with no other cause coming close. In 2002, the improper use and disposal of smoking materials caused 19 fire deaths, 10 men, seven women and two children, in 16 fatal fires. The unsafe and improper disposal of smoking materials caused 40% of residential structure fire deaths and 39%, or over one-third, of fatal residential structure fires.

Almost 1/3 of Residential Fires Occurred in Homes With No Working Detectors
Unfortunately, in 30% of the residential structure fires, there were no working smoke detectors. No detectors were present at all in 21% of the residential structure fires. Detectors were present but failed to operate in 9%. The fire was too small to activate the detector in 11% of residential fires. Detectors operated in 59% of residential structure fires. These percentages were calculated for 3,475 fires where the detector performance was known.

Detectors Operated in 54% of Structure Fires that Caused Injuries
Of the 269 civilian injuries where detector performance was known, 54% occurred where smoke detectors were present and operated. This may be because when the occupant is alerted to the presence of the fire, they may try to extinguish it themselves and injure themselves during this task or during the escape after the situation has considerably worsened. When alerted to the presence of a fire, occupants should vacate the building and notify the fire department as soon as possible, letting the professionals with the proper training and gear extinguish the fire.

All Arson Down 46%
One thousand eight hundred and sixty-seven (1,867) Massachusetts fires were considered arson in 2002. The 485 structure arsons, 395 vehicle arsons, and 987 outside and other arsons caused seven civilian deaths, 21 civilian injuries, 52 fire service injuries, and an estimated dollar loss of $16.8 million. This is a 46% drop in arson from the 3,426 reported in 2001.

‘Suspicious’ Eliminated as a Cause of Ignition
In version 5, arson is defined as Cause of Ignition is intentional and the age of the person involved is greater than 17, whereas in version 4 we included both intentionally set and suspicious fires in our definition of arson. In version 5, suspicious is eliminated, and the more accurate description Cause of Ignition = Cause Under Investigation is used.

Structure arson fell by 22%. Motor vehicle arsons fell 47% from 2001 to 2002, although since 1987, motor vehicle arson has fallen 92%. The steady decline of motor vehicle arsons can be explained by the enactment of the Burned Motor Vehicle Reporting Law, which took effect in 1987, and requires owners of burned motor vehicles to complete and sign a report which must also be signed by a fire official from the department in the community where the fire occurred before they can collect on their fire insurance. Outside and other arsons increased 52% from the 2,063 reported in 2001. Total arsons dropped by 46% from the 3,426 reported in 2001.

39% of All Vacant Building Arsons Occurred in Unsecured Buildings
Thirty-nine percent (39%) of all vacant building arsons in 2002 occurred in unsecured vacant buildings. Twenty-seven percent (27%) occurred in secured, vacant buildings; while 19% happened in idle buildings that are not routinely used. Buildings under construction accounted for 10% of vacant building arsons. Buildings under major renovation accounted for 3% of the vacant building arsons in 2002. Two percent (2%) of these arsons occurred in buildings being demolished.

Dormitory Fires Up
Reported fires in dormitories increased by 23% from 166 in 2001 to 214 in 2002. One hundred and forty-three (143), or two-thirds (67%) of these fires were cooking fires. Dormitory fires accounted for 2% of the 9,329 residential structure fires.

1/3 of School Fires Were Intentionally Set
Thirty-two percent (32%) of the 228 school fires were considered intentionally set. Indoor rubbish fires accounted for 19% of these fires. Cooking started 19% of fires in Massachusetts' schools in 2002. Only 3% of the fires in non-residential schools were attributed to juvenile-set fires.

Sprinklers were present and operated in 2% of the school fires where sprinkler performance was known. In 82% of the fires in schools, there were no sprinkler systems. Fifteen percent (15%) of these fires were too small to activate the sprinkler system and in 1% of the fires, the sprinkler system failed to activate.

Massachusetts Fire Departments

Today's firefighters do far more than fight fires. Many are emergency medical technicians or paramedics. All firefighters must be trained to offer first aid if they arrive first at an emergency. They are the first ones called to deal with hazardous materials incidents ranging from the suspected presence of carbon monoxide to a leaking propane truck. They may be called to rescue a child that fell through the ice or that locked himself in the bathroom. They get people out of stuck elevators and wrecked cars. They test and maintain their equipment, ranging from self-contained breathing apparatus to hydrants to hoses and trucks. They know the basics of construction, electricity and chemistry. They report their fire incidents through the Massachusetts Fire Incident Reporting System so we can spot trends, problems and successes.

When most people think of the fire department, they think of fire trucks, sirens and flames. Actually, the fire department aims to prevent fires. If prevention failed, then the alarm comes in and the trucks roll.

Fire Department Enforces M.G.L. Chapter 148 and 527 CMR
The fire department is legally required to enforce the provisions of 527 Code of Massachusetts Regulations (CMR). This contains regulation sections on fireworks, dry cleaning, oil burners, gas stations, liquid propane, plastics, transportation of flammable liquids, above ground and underground storage tanks, manholes, electrical systems, explosives, storage of flammable substances, marine fueling, model rockets, lumber yards, bulk plants, tentage, salamanders, flammable decorations and curtains, cannon or mortar firing, fire extinguishers, smoke detectors, obstructions and hazards, combustible fibers, rubbish handling, crop ripening, pesticide storage, and welding and storage. The fire department must also enforce the laws contained in Massachusetts General Law Chapter 148.

Inspectors must know the regulations they are enforcing and they must know how to apply the regulations to situations in the community. They must communicate information about weaknesses in plans they review or violations and perform follow-up inspections. Just as firefighters are sent to the Massachusetts Firefighting Academy to learn the principles of suppression, fire prevention personnel go to classes to learn the ins and outs of the regulations. These functions also produce a corresponding amount of documentation that must be maintained.

Firefighters Teach the Community Fire and Burn Prevention
Firefighters go out in the community to teach children, the elderly and interested community groups how to protect themselves from fire and burns. The statistics in this report are critical to these educators in developing injury prevention programs.

The S.A.F.E. Program

The Student Awareness of Fire Education or S.A.F.E. program was implemented in fiscal year 1996. Because smoking materials continue to be the leading cause of fire deaths in the state and nationwide, the Legislature approved $1,078,666 from the cigarette tax revenue to fund public fire education grants. These grants provide local fire departments with funding to educate children about the dangers associated with fire, particularly fires caused by smoking. Any city or town whose fire department is committed to working with school systems, public health or other community agencies to develop a well conceived and coordinated fire safety education program message is invited to apply for these grants. In fiscal year 2002, 244 fire departments participated in the S.A.F.E. program.

Southbridge Young Hero Xavier Melendez

On October 21, 2002, 7-year old Xavier Melendez was playing outside his home when he heard the sound of smoke detectors. He looked at his house and saw smoke coming from the home. While she was cooking, Xavier's mother had fallen and struck her head. Despite knowing that his mother was still inside, he knew not to go into the smoke filled house, so he immediately went to a neighbor's house and called 911 for help. He then went back outside to wait for the fire department to arrive to inform them that his mother was still inside the building. Firefighters arrived, entered the house, found Xavier's mother, brought her to safety and extinguished a stove fire. Xavier's calm, quick thinking during this emergency helped save his mother's life. Xavier, a second grade student at the Charlton Street School received his S.A.F.E education from the Southbridge Fire and School Departments.

97.3% of Massachusetts Fire Departments Participated in MFIRS

By law, fire departments are required to report any fire or explosion resulting in a human casualty or dollar loss to the Office of the State Fire Marshal. This is done through the Massachusetts Fire Incident Reporting System (MFIRS). Three hundred forty-four (344) Massachusetts Fire Departments reported at least one fire during 2002. Thirteen (13) reported that they had no fires that met the criteria. Ten (10) departments failed to report at all. Ninety-seven point three percent (97.3%) of the Massachusetts Fire Departments complied with fire incident reporting requirements this year. As an added incentive to comply with the law, a community had to be participating in MFIRS to be eligible for the S.A.F.E. program and for the federal FIRE Act grants.

More and more departments are automating fire incident reporting and other department functions. In 2002, 248, or 68%, of Massachusetts' fire departments submitted their data electronically. This is up 18% from the 183, or 50%, of departments that reported electronically in 2001.

Expanded Possibilities With Version 5

2002 is the first full year that fire incident reports were submitted and analyzed using version 5 reporting format and data codes. We hope this new version of the reporting system allows us a greater opportunity to complete a more in-depth analysis of the fire problem in Massachusetts. With MFIRS version 5 comes an expanded database set with new fields to help us answer the key question of what is causing our fires and how do we take the necessary steps to mitigate the problems. Some of the questions that MFIRS can now answer are: What types of vacant buildings are burned? What was the vacant building's status? Was it secured, unsecured, seasonal or under renovation? Why did the smoke or heat detectors or automated extinguishing systems such as sprinklers fail to perform? We can also now tell the severity of a person's injury and where they were in relation to where the fire started and see what factors helped or hampered their escape.

Version 5 also includes an entirely new module, the Arson/Juvenile Firesetter Module. This module should give us the ability to identify where and when the crime takes place, what form it takes, and the characteristics of its targets and perpetrators. Armed with such information, we can develop and implement prevention initiatives and counseling programs and track trends to identify, track and catch arsonists and juvenile firesetters.

Non-Fire Incidents

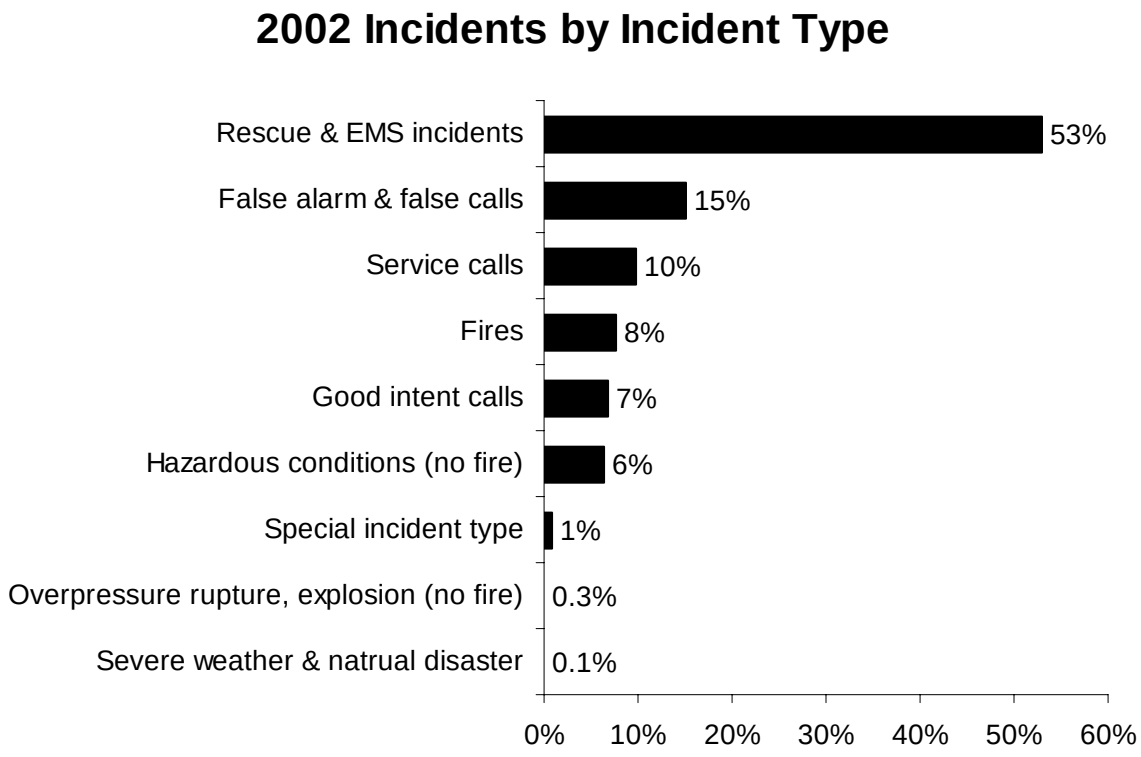
Fire Departments Do More Than Just Fight Fires

Massachusetts fire departments do much more than just fight fires. Over the past couple of decades they have branched out and taken on the added responsibilities for EMS responses, multiple types of specialized rescues, hazardous materials incidents, responding during and after natural disasters, as well as the typical service calls, good intent calls, false alarms and the special types of incidents that do not fit neatly into any of the other categories. We expect these numbers to rise as more fire departments automate their reporting and begin voluntarily reporting all of their incidents to MFIRS. Only then will we have a more complete understanding of the amount of work the Massachusestts fire service does on a day-to-day basis.

53% of All Massachusetts Calls Were EMS Incidents

In 2002, 240 fire departments voluntarily reported 327,501 non-fire incidents. Of these 327,501 non-fire incidents there were 187,834 (53%) reported rescue and emergency

medical services (EMS) calls; 53,504 (15%) reported false alarm or false calls; 34,380 (10%) reported service calls such as lock-outs, water or smoke problem, unauthorized burning or public service assistance; 24,165 (7%) reported good intent calls; 22,930 (6%) reported hazardous condition calls with no fire; 3,300 (1%) reported special incident type calls such as citizen complaints; 889 (0.3%) reported overpressure rupture, explosion or overheat calls with no fire; and 499 (0.1%) reported severe weather and natural disaster incidents.



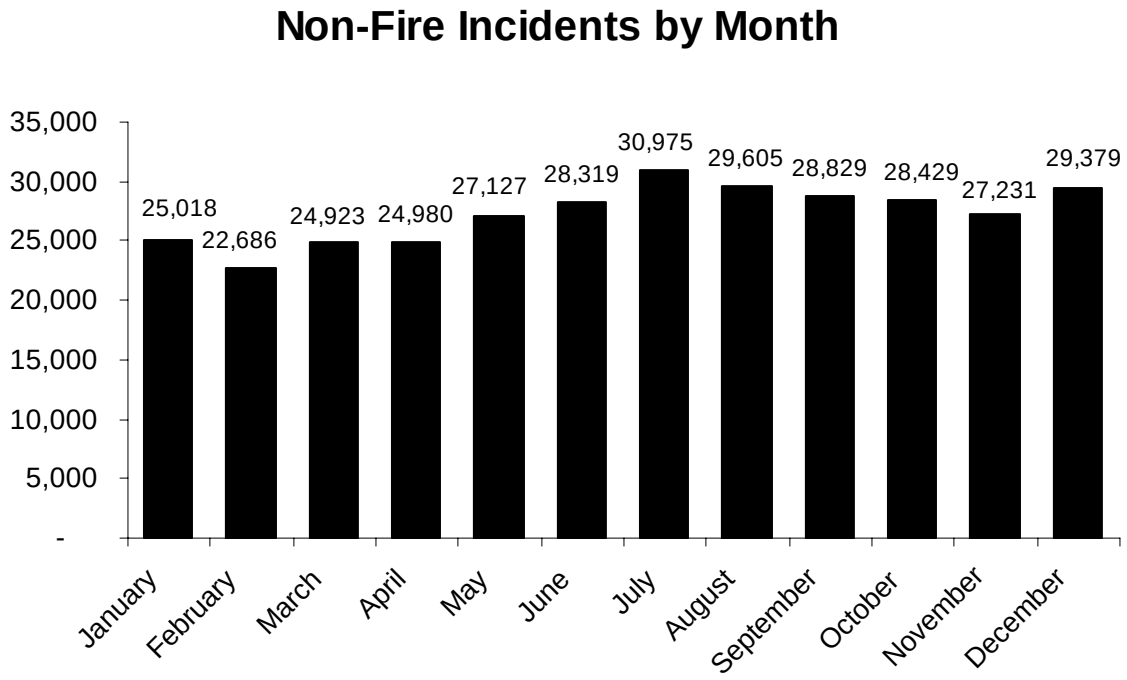
Most Large Cities Voluntarily Reporting All of Their Incidents
Boston, the largest city in the Commonwealth, did not report any non-fire incidents in 2002. The City of Worcester, the second largest city in Massachusetts reported the most non-fire incidents in 2002, 18,473 incidents. The next five cities in terms of the number of non-fire calls reported were: Cambridge, 11,741 calls; Springfield, 10,257 calls; Quincy, 8,558 incidents; Framingham, 8,071 calls, and Medford with 7,978 reported non-fire incidents in 2002.

Over Half of All Fire Dept. Responses Were EMS Calls
Fifty-three percent (53%) of all reported 2002 fire department responses in the Commonwealth were emergency medical service calls. The top five types of all calls were all EMS type incidents. Twenty-three percent (23%) of all reported incidents were non-vehicle accident with injury - EMS calls. Eleven percent (11%) were calls where firefighters assisted the EMS crews. Eight percent (8%) classified as rescue, EMS call, other. Five percent (5%) of all calls were coded as unclassified EMS calls; and 4% of all reported incidents in 2002 were motor vehicle accidents with injuries.

Middlesex County Reported 1/5 of All Non-Fire Incidents
One-fifth, (20%) of all reported non-fire incidents were submitted by Middlesex County fire departments. Norfolk County submitted the second most non-fire calls totaling 16%, and Worcester County reported 15% of all the 2002 non-fire incidents. Nantucket County reported two non-fire incidents and Dukes County reported one non-fire incident; both accounted for less than 1% of all non-fire incidents reported to MFIRS in 2002.

For a complete breakdown of non-fire incidents by incident type and county refer to the Appendix.

Non-Fire Incidents by Month
July was the month with the most reported non-fire incidents in 2002 (9%), followed by August (9%) and December (9%). February was the month with the least reported non-fire incidents (7%). Statistically these incidents are spread evenly from month to month. Six (6) months each accounted for 9% of the incidents, five months each accounted for 8% of the incidents and February accounted for 7% of the incidents. The average number of monthly reported non-fire incidents in 2002 was 27,102 calls.

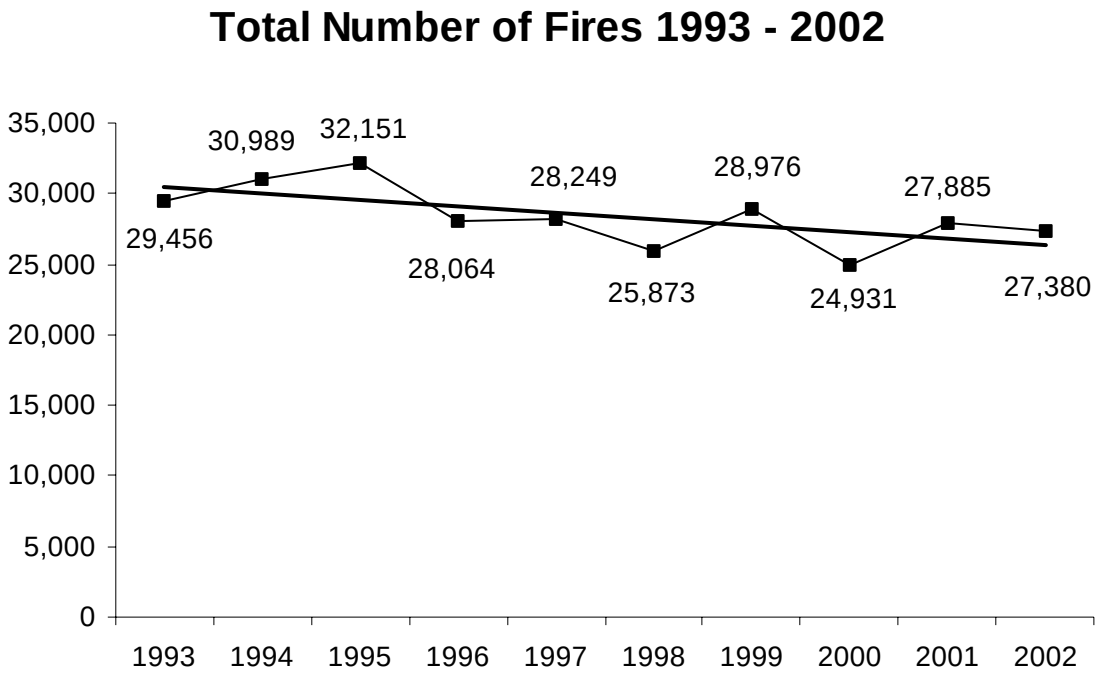


Fires by Incident Type

27,380 Fire Incidents Reported in 2002
Massachusetts fire departments reported 27,380 fire incidents to the Massachusetts Fire Incident Reporting System (MFIRS) in 2002. The total number of fire incidents was down 2% from the 27,885 incidents reported in 2001

The following table indicates the total number of fires and the subsequent breakdown into structure fires, motor vehicle fires and outside and other fires for the years 1993 through 2002. The graph following the table is a representation of this table for the total number of reported fires in the Commonwealth for that same time period. Note the overall downward trend in the total number of fires since 1993.

Year	Total Fires	Structure Fires	Vehicle Fires	Other Fires
2002	27,380	11,979	4,331	11,070
2001	27,885	10,384	5,127	12,374
2000	24,931	10,279	5,473	9,179
1999	28,976	10,595	6,011	12,370
1998	25,873	10,613	5,565	9,695
1997	28,249	11,452	6,096	10,701
1996	28,064	11,611	6,980	9,473
1995	32,151	11,689	6,612	13,850
1994	30,989	12,362	7,267	11,360
1993	29,456	11,605	7,234	10,617

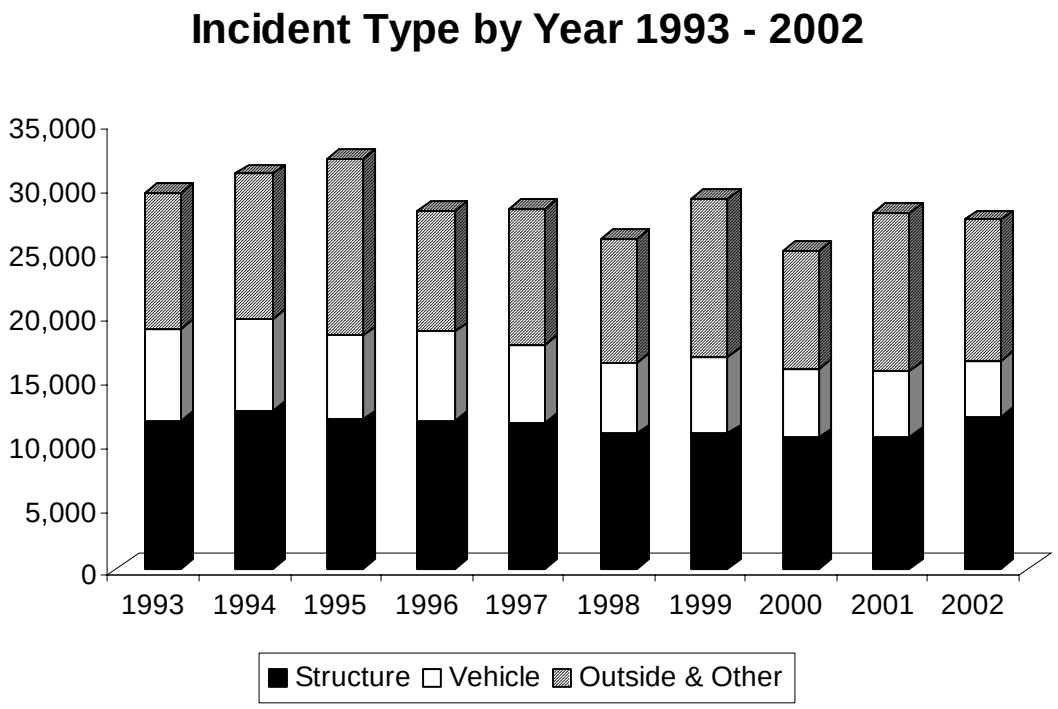


11,979 Structure Fires, 52 Civilian Deaths
Massachusetts fire departments reported 11,979 structure fires to the Massachusetts Fire Incident Reporting System (MFIRS) in 2002. These fires killed 52 civilians, caused 440 civilian injuries, 620 fire service injuries, and an estimated $186.1 million in property damage. Structure fires accounted for 44% of the total incidents and 84% of the civilian deaths in 2002. Structure fires were up 15% from 2001. There were 485 structure arsons in 2002. Structure fires in the Massachusetts Fire Incident Reporting System include any fires that occur inside or on a structure.

4,331 Motor Vehicle Fires Account for 16% of Reported Fires
The 4,331 motor vehicle fires caused seven civilian deaths, 31 civilian injuries, 26 fire service injuries, and $17.3 million in property damage. These incidents accounted for 16% of the reported 27,380 fires in 2002. There were 395 motor vehicle arsons in 2002. Motor vehicle fires accounted for 11% of civilian fire deaths. Motor vehicle fires were down 16% from 2001. According to MFIRS, a motor vehicle fire is defined as one involving a car, truck, boat, airplane, construction equipment or other mobile property that does not occur inside a structure.

11,070 Brush Fires, Trash Fires, and Other Outside Fires, Reported in 2002
The 11,070 outside and other fires caused three civilian deaths, 35 civilian injuries, 40 fire service injuries, and an estimated dollar loss of $4.1 million. The 4,611 trees, grass and brush fires, 3,021 outside rubbish fires, 746 special outside fires, 279 cultivated vegetation or crop fires, and 2,413 other fires accounted for 40% of the total fire incidents in 2002. These fires were down 11% from the 12,374 such outside and other fire incidents reported in 2001. There were 987 outside and other arsons in 2002. Fire departments are required to report any fire resulting in a dollar loss or human casualty to MFIRS. Fires that do not result in a loss may be reported. Many fire departments, particularly those that submit data electronically, voluntarily report these fires. These figures should be considered an underestimate of the “no loss” fire incidents to which fire departments actually responded.

The following graph depicts the breakout of the number of reported structure fires, motor vehicle fires and outside and other fires for the time period 1993 to 2002. During the first five years of this period (1993-1997) the total number of structure fires increased. However from 1998 through 2002 the number of structure fires steadily dropped. During the past 10 years motor vehicle fires have steadily declined. However, the trend for outside and other fires seems to be developing a ‘wave’ pattern whereas the number of these types of fires rises or ‘crests’ every four years.



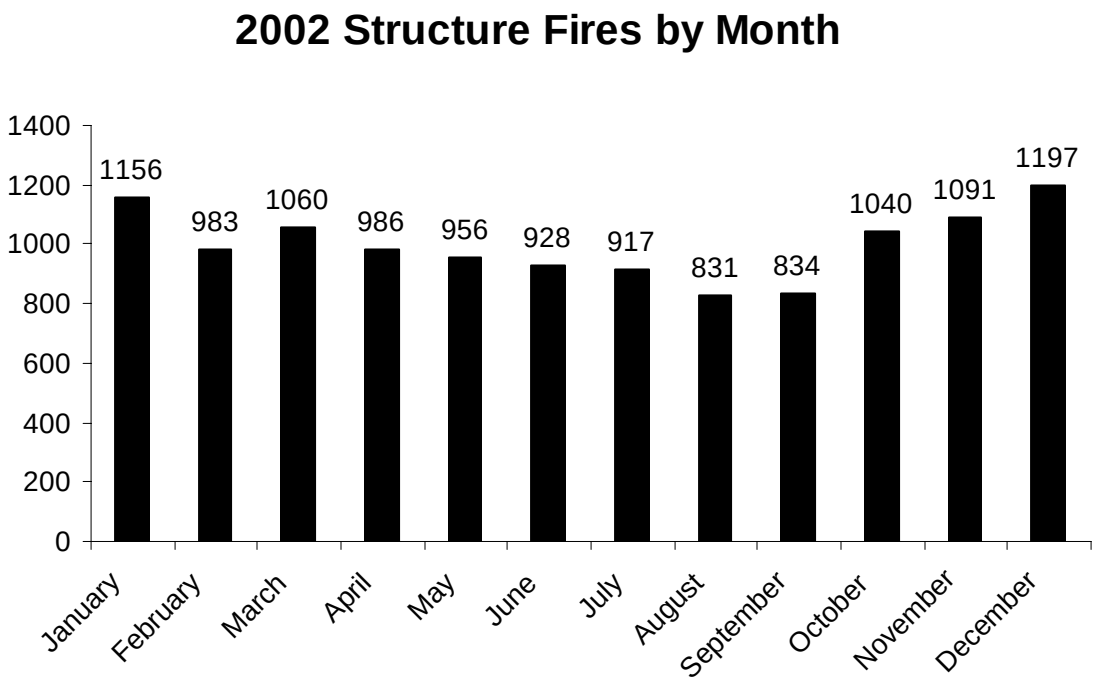
Structure Fires

11,979 Structure Fires Account for 44% of Reported Fires, 84% of Fire Deaths
The 11,979 structure fires caused 52 civilian deaths, 374 civilian injuries, 554 fire service injuries, and an estimated dollar loss of $165 million. The average structure fire caused $13,747 in property damage. Structure fires accounted for 44% of reported fires and 84% of the civilian fire deaths in 2002.

According to the MFIRS definition, any fire occurring inside or on a structure is considered a structure fire. This includes chimney fires, cooking fires, indoor waste basket fires, fires on a back porch, exterior trim fires, and vehicle fires that occur inside a garage. The number of structure fires rose by 15% from the 10,384 reported in 2001.

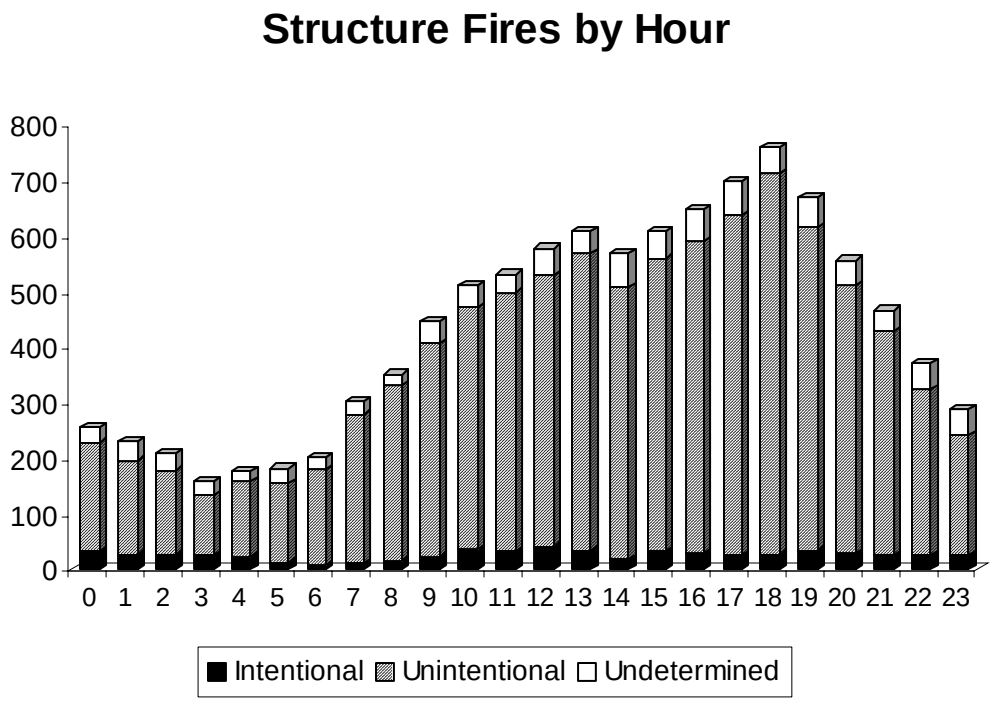
Structure Fires Most Common in Colder Months
Heating equipment plays a frequent role in structure fires. It is not surprising that December was the peak month for these incidents in 2002. January ranked second and November had the third largest number of structure fires. The warmer months had significantly fewer structure fires. The fewest fires occurred in August. September had

the second lowest frequency of these incidents, and July had the third lowest number of structure fires in 2002.



Structure Fires Most Common Around Dinner Time
Cooking is the leading cause of structure fires. Predictably, structure fires occurred most often around dinnertime. Intentionally set structure fires were most common between 2:00 p.m. and 6:00 p.m. Accidental structure fires reached their lowest point between 2:00 a.m. and 5:00 a.m. and increased fairly steadily to a peak between 5:00 and 6:00 p.m.

The following graph shows fire frequency by time of day on the 24-hour clock for structure arsons, unintentional structure fires and structure fires of undetermined origin. A fire is considered arson when the ignition factor is incendiary or suspicious. Midnight to 1:00 a.m. is represented by 0, 1:00 a.m. to 2:00 a.m. is represented by 1, etc.



Over 3/4 of Structure Fires Occurred in Residential Occupancies

Over three-quarters (78%) of the state's 11,979 structure fires and 48 of the 52 structure fire deaths occurred in residential occupancies. The following table shows the number of structure fires, civilian deaths, civilian injuries, fire service injuries, estimated dollar loss and the percentage of total structure fires for each occupancy group. Institutional properties are those used for purposes such as medical or other treatment of persons suffering from physical or mental illness, disease, or infirmity; for the care of infants, convalescents, or aged persons; and for penal or corrective purposes. Industrial facilities, utilities, defense facilities, laboratories, agricultural and mining facilities, are considered basic industries. Special properties include structures such as outbuildings, bus stop shelters and telephone booths.

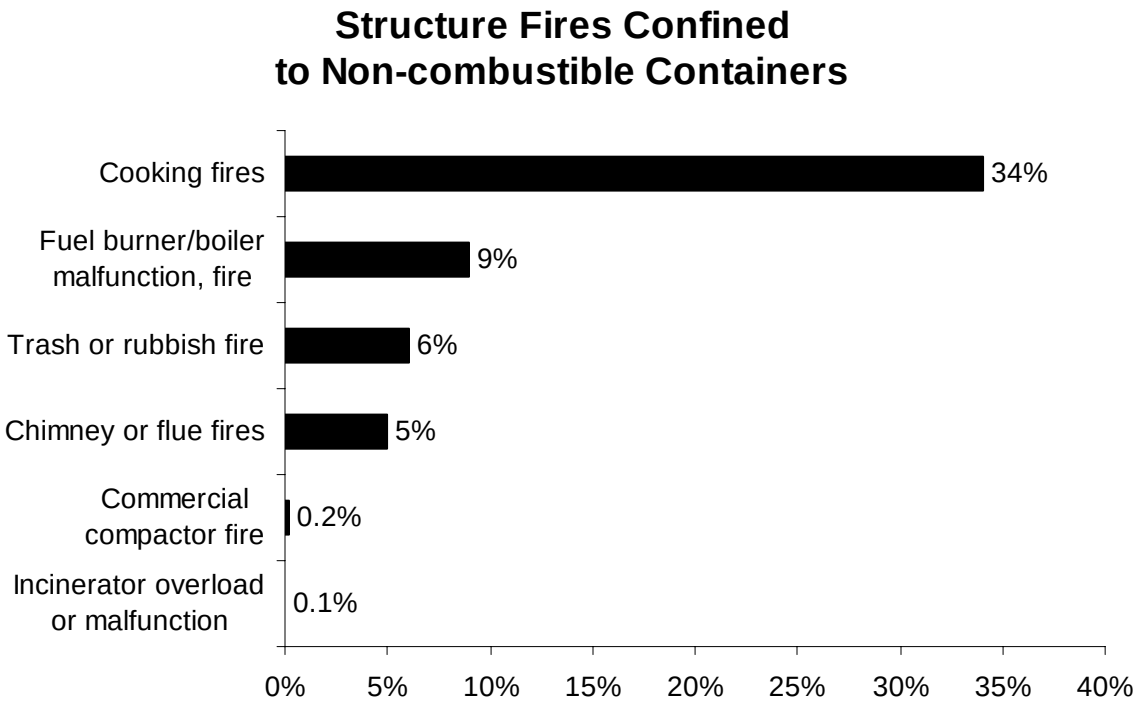
STRUCTURE FIRES BY OCCUPANCY TYPE

Occupancy	# of Fires	% of Total	Injuries FF	Injuries Civ	Deaths FF	Deaths Civ	Dollar Loss
Public assembly	421	4%	13	10	0	0	$5,896,106
Educational	228	2%	1	3	0	0	1,263,025
Institutional	301	3%	3	2	0	0	190,926
Residential	**9,329**	**78%**	**419**	**331**	**1**	**48**	**96,681,168**
1- & 2-Family homes	*4,475*	*37%*	*185*	*157*	*0*	*25*	*53,629,637*
Apartments	*3,978*	*33%*	*225*	*152*	*1*	*22*	*39,898,436*
All other residential	*876*	*8%*	*9*	*22*	*0*	*1*	*3,153,095*
Mercantile, business	547	5%	43	17	0	1	18,329,653
Basic industry	54	1%	9	5	0	0	17,335,130
Manufact., processing	170	1%	13	4	0	0	18,300,700
Storage properties	249	2%	41	1	0	2	4,482,020
Special properties	419	3%	5	1	0	0	560,148
Unclassified	201	2%	7	0	0	1	1,638,797
Total	**11,979**	**100%**	**554**	**389**	**1**	**52**	**$164,677,673**

Occupancy Group Definitions

- **Public assembly**: This category includes amusement and recreation places such as bowling alleys, skating rinks, ballrooms, gymnasiums, arenas, stadiums, playgrounds, churches, funeral parlors, clubs, libraries, museums, courtrooms, restaurants, taverns, passenger terminals, theatres and studios.
- **Educational**: This category includes classrooms from nursery school through college, and trade and business schools. Dormitories are considered residential.
- **Institutional**: This category includes institutions that care for the aged, the young, the sick or injured, the physically restrained, the physically inconvenienced and the mentally handicapped.
- **Residential**: This occupancy group includes one- and two-family homes, apartments, rooming, boarding or lodging houses, dormitories, hotels, motels and home hotels, and residential board and care facilities. Seasonal homes are included here.
- **Mercantile, business**: Retail establishments, service stations, laundries, offices, banks, medical offices and post offices are included in this category.
- **Basic industry**: This category includes nucleonics, energy production plants, laboratories, communications facilities, defense facilities, document facilities, utility and energy distribution systems, agriculture, forests, hunting and fishing, mining, and manufacturing of mineral products such as glass, clay or cement.
- **Manufacturing, processing**: Manufacturing that is not listed under Basic Industry is listed here.
- **Storage property**: This category includes warehouses, barns, garages and tool sheds.
- **Special property**: This category includes, dumps, sanitary landfills, recycling collection points, outbuildings, bridges, roads, railroad property, outdoor properties, water areas, aircraft areas and equipment operating areas.

44% of Structure Fires Are Confined to Non-Combustible Containers[1]
Six thousand five hundred and thirty-six (6,536), or 55% of all structure fires, were reported as confined to non-combustible containers in 2002. Four thousand and eighty-four (4,084) of the reported fires were cooking fires confined to a non-combustible container accounting for 34% of structure fires. One thousand one hundred and nine (1,109), or 9%, were fires confined to a fuel burner or boiler malfunction. Six hundred and eighty-nine (689), or 6%, of these fires were contained rubbish fires. Six hundred and twenty-seven (627), or 5%, of all structure fires reported in 2002 were fires confined to a chimney. Nineteen (19), or less than 1%, was a commercial compactor fire that was confined to the rubbish. Eight (8), or less than 1%, of these fires in the Commonwealth were contained to an incinerator overload or malfunction.



As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires increased by 4,478 incidents, or 218%, from the 2,058 reported in 2001.

Detectors Alerted Occupants in Over 1/2 of Confined Fires
Smoke or heat detectors alerted the occupants in 2,864, or 54%, of the residential structure fires that were confined to non-combustible containers. In 18% of these fires,

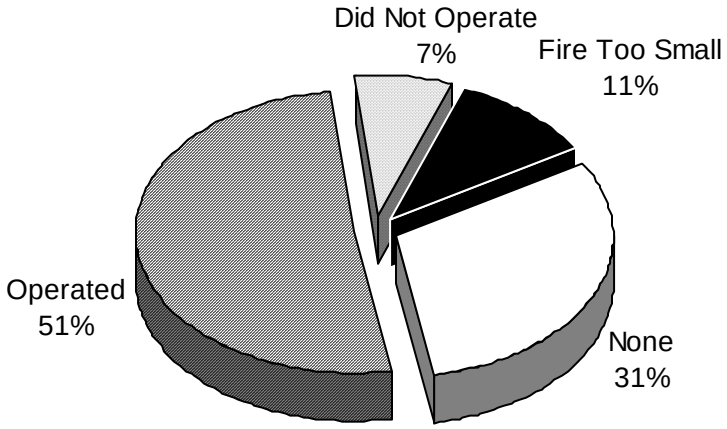
[1] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

the detectors did not alert the occupants. In 28% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded the Alarm in Half of Structure Fires
Smoke or heat detectors sounded the alarm in 51% of the 4,749 structure fires for which detector status was known. Smoke detectors failed to alert occupants in 38% of the structure fires in 2002; of these incidents, smoke detectors were present but did not operate in 7% of these fires and no detectors were present in 31% of the structure fires. In 11%, the fire was too small to activate the detector. Detector status for structure fires was undetermined or not reported in 786 incidents. These incidents were excluded from the percentage calculations.

Smoke Detector Status in Structure Fires



The following table shows detector performance by occupancy type for structure fires.

DETECTOR PERFORMANCE

	Operated	Did Not Operate	Fire Too Small	None	Unknown	Total
Public assembly	78	5	21	71	28	203
Educational	66	8	36	42	9	161
Institutional	83	5	19	16	3	126
Residential	2,032	308	388	747	669	4,144
Mercantile, business	106	8	39	138	34	325
Basic industry	13	0	1	15	2	31
Manufacturing	33	2	12	52	17	116
Storage properties	11	0	3	182	11	207
Special properties	9	2	1	52	8	66
Unclassified	1	1	3	146	5	156
Total	**2,426**	**339**	**523**	**1,461**	**786**	**5,535**

$10,000,000 Fire At Boston Electric Plant

- On October 1, 2002, at 4:23 p.m. the Boston Fire Department was called to a large loss fire at an electricity generating plant. The fire was caused when heat from overloaded machinery accidentally ignited some oily rags. There were no civilian injuries. Smoke detectors and an automated extinguishing system were present but it was undetermined if they operated. This was the largest loss fire in 2002. The fire department was on scene for approximately four hours. Damages from this fire were estimated at $10,000,000.

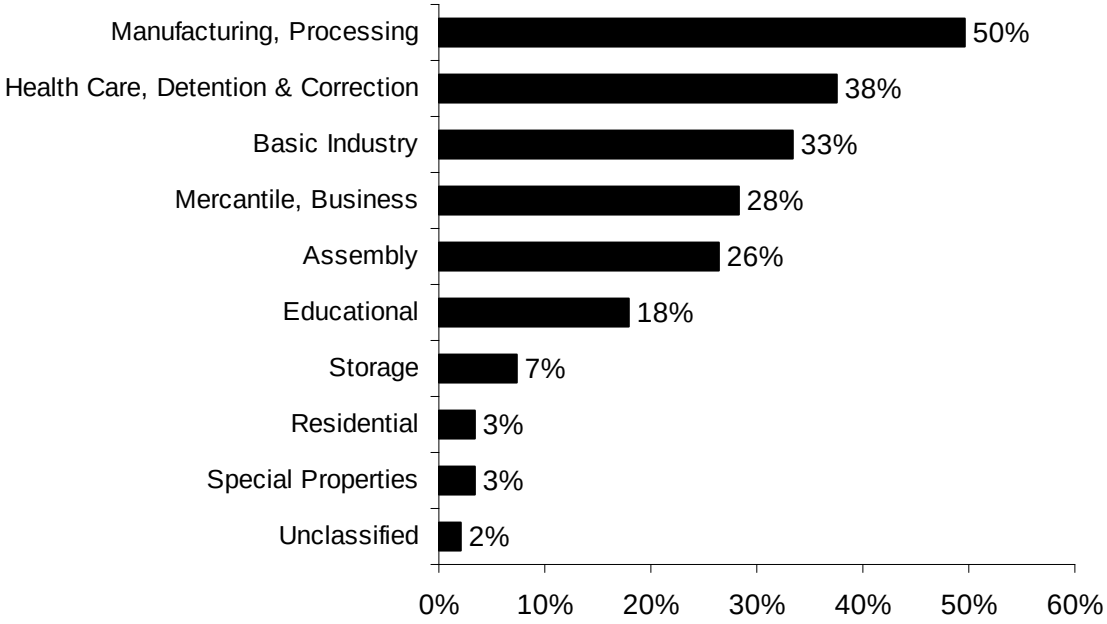
Only 8% of Non-Confined Fires Occurred in Buildings With Sprinklers

Overall, 8% of the non-confined[2] structure fires in 2002 occurred in buildings that had sprinklers, regardless of whether the fire was large enough to activate the sprinkler. Manufacturing and institutional properties were the most likely to be sprinklered. Fifty percent (50%) of the fires in manufacturing or processing facilities, 38% of the fires in health care, detention and correction facilities, and 33% of the fires in basic industrial facilities occurred in buildings with sprinklers. Only 3% of the residential fires occurred in sprinklered buildings.

Unfortunately over three-quarters of structure fires occurred in residential buildings but only 3% of these residential occupancies were protected by a sprinkler system.

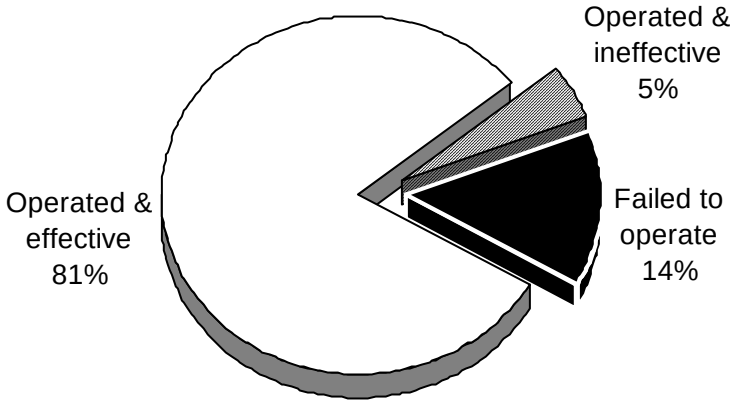
[2] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) also does not have to have a Structure Fire Module completed. Therefore the fields concerned with detector and sprinkler presence and performance would not be completed. These incidents are not included in the analysis of these fields.

Fires In Sprinklered Buildings by Property Use



Sprinklers Work in Over 4/5 of Building Fires When Installed
Sprinklers were present and operated in 126, or 86%, of the 147 structure fires in sprinklered buildings which had a reported fire large enough for the sprinklers to activate

Sprinkler Status in Sprinklered Buildings



in Massachusetts in 2002. Of these 126 fires, sprinklers were effective in 119, or 81%, and ineffective in seven, or 5%, of these incidents. Sprinklers were present but failed to operate in 21, or 14%, of these 147 structure fires. Some of the reasons for the sprinkler system failures were reported to be: the fire was not in an area protected by the system; there was some form of manual intervention; the system was shut off; and lack of maintenance to the system.

The table below shows sprinkler performance by occupancy group.

SPRINKLER PERFORMANCE[3]

	Operated	Did Not Operate	Fire Too Small	None	Unknown	Total
Assembly	14	5	32	147	4	421
Educational	3	1	23	132	2	288
Institutional	4	2	33	85	2	301
Residential	37	4	92	3,971	31	9,329
Mercantile, business	25	3	59	232	9	547
Basic industry	4	1	5	20	1	54
Manufacturing	31	3	20	60	4	170
Storage properties	7	2	5	194	0	249
Special properties	1	0	1	64	1	419
Unclassified	1	0	2	153	1	201
Total	**127**	**21**	**272**	**5,058**	**55**	**11,979**

High Rise Buildings Must be Fully Equipped with Sprinklers
Evacuating a high rise building while fighting a raging fire is a logistical nightmare for firefighters. Automatic sprinklers make these buildings much safer for residents, office workers, visitors and firefighters. Under the provision of MGL Chapter 148, Section 26A 1/2, all existing buildings of more than 70 feet in height above the mean grade had to be retrofitted by a fully protected adequate system of automatic sprinklers by March 30, 1998. All new high rises are required to have automatic sprinklers.

Written Permit Required from Fire Department before Disconnecting Sprinklers
Under the provisions of MGL Chapter 148, Section 27A, it is illegal to "…shut off, disconnect, obstruct, remove or destroy… any part of any sprinkler system, water main, hydrant, or other device used for fire protection… without first procuring a written permit from the head of the fire department." The head of the fire department is authorized to issue conditions necessary to provide protection from fire and the preservation of public safety. In the event of an emergency, the system may be shut down as long as the fire department head is immediately notified of the action and when the system is back in service. Violators may be punished by imprisonment for not more than one year and/or a fine of not more than $1,000.

[3] There were 6,446 fires in which this field was not populated. Many of these are the confined fires. In version 5 confined fires do not need to have this field completed. There were 5,194 residential structure fires where this field was not populated.

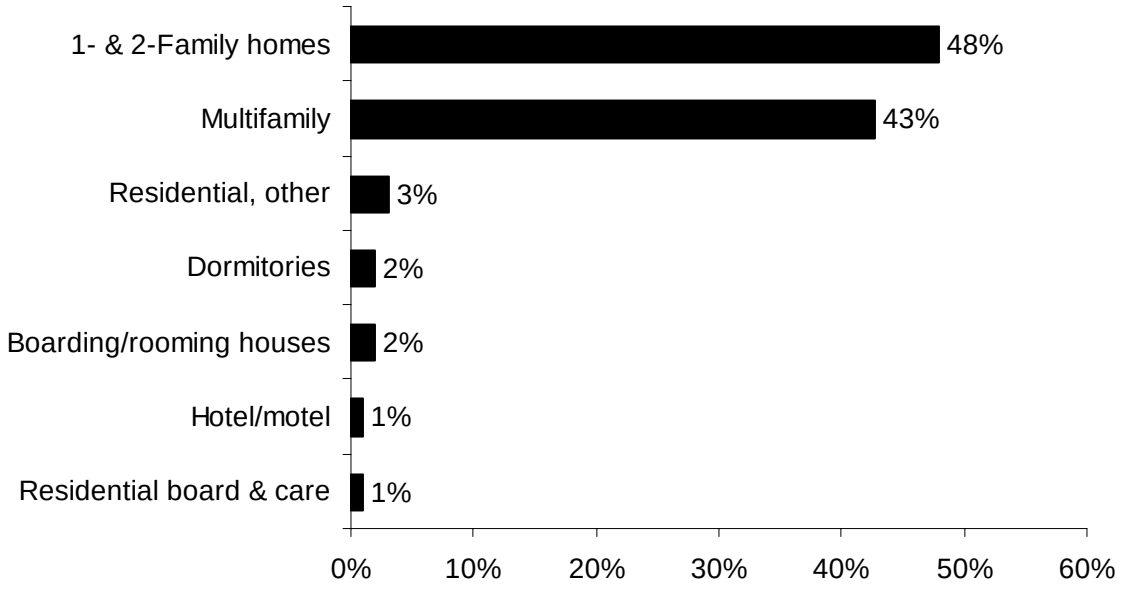
Residential Structure Fires

78% of Structure Fires Occurred in Residential Occupancies
Massachusetts fire departments reported that 9,329, or 78% of the 11,979 structure fires occurred in residential occupancies. These fires caused 48 civilian deaths, 331 civilian injuries, 419 fire service injuries and an estimated dollar loss of $96.7 million. The average dollar loss per fire was $10,364. The total number of reported residential structure fires went up 15% from the 8,134 reported in 2001. The following table shows the statistics for fires, firefighter and civilian casualties and the estimated dollar loss by residential occupancy.

RESIDENTIAL STRUCTURE FIRES

	# of	% of	Injuries		Deaths		Dollar
Occupancy	**Fires**	**Total**	**FF**	**Civ**	**FF**	**Civ**	**Loss**
1- & 2-Family homes	4,475	48%	185	157	0	25	$53,629,637
Multifamily	3,978	43%	225	152	1	22	39,898,436
Rooming houses	192	2%	2	8	0	1	1,011,365
Hotels & motels	98	1%	1	2	0	0	321,125
Residential board & care	79	1%	1	2	0	0	19,445
Dormitories	214	2%	0	3	0	0	466,110
Unclassified	293	3%	5	7	0	0	1,335,050
Total	**9,329**	**100%**	**419**	**331**	**1**	**48**	**$96,681,168**

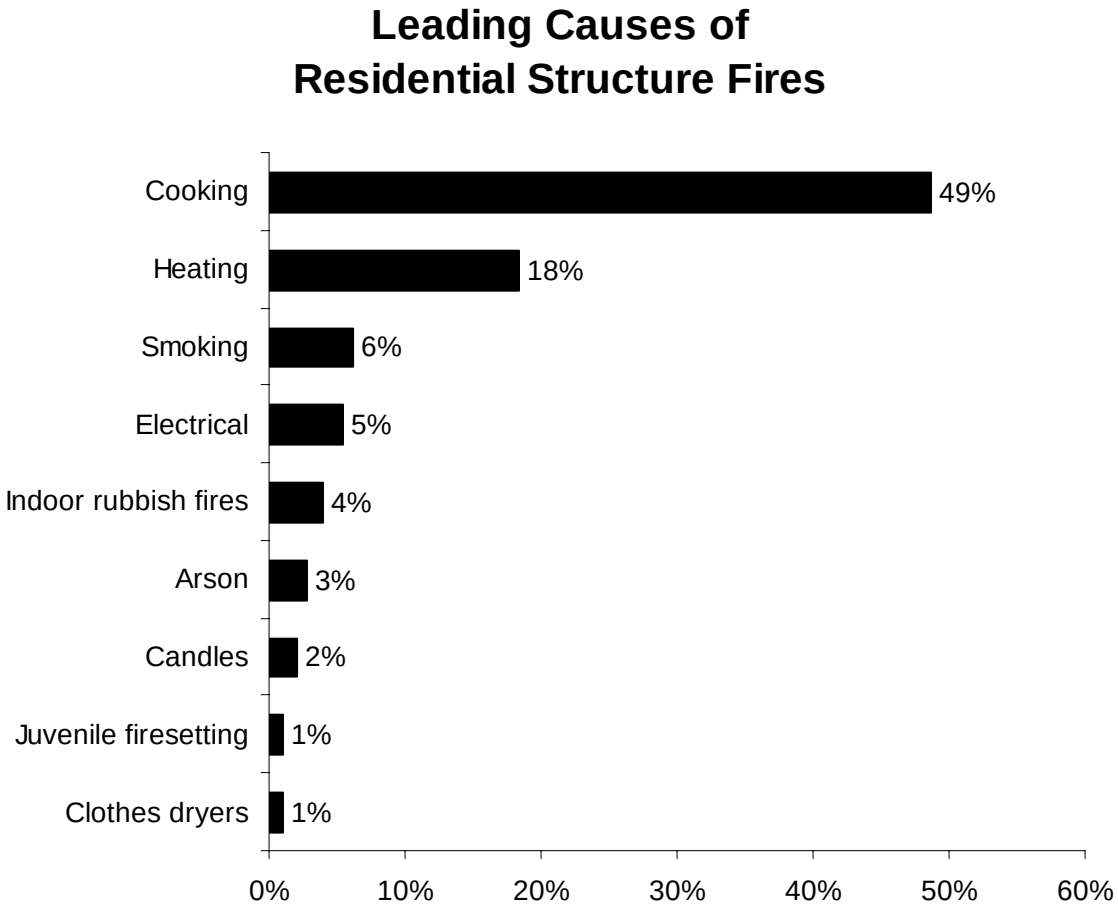
Residential Structure Fire by Occupancy Type



Residential Occupancy Sub-Group Definitions

- **1- & 2-Family**: This category includes one or two family homes, detached, manufactured homes, mobile homes and duplexes.
- **Mulitfamily dwellings**: This category includes apartments, condominiums, townhouses, rowhouses and tenements.
- **Boarding, rooming house**: This category includes residential hotels and shelters.
- **Hotel, motel**: This occupancy group includes commercial hotels, motels or inns.
- **Residential board and care**: This category includes long-term care and half-way houses. Excluded are nursing facilities (Property Use code = 311).
- **Dormitories**: This category includes dormitory type residences and sorority or fraternity houses. It also includes nurses' quarters, military barracks, monastery/convent, dormitories, bunk houses and workers' barracks.
- **Residential, other**: Any type of residential occupancy that is not defined above.

Cooking Leading Cause of Residential Structure Fires
The leading causes of residential structure fires in 2002 were cooking, heating, smoking, electrical, indoor rubbish fires, arson, candles, juvenile firesetting, and clothes dryers. Cooking was the leading cause of residential structure fires accounting for 4,547, or 49% of the 9,329 incidents. Heating accounted for 1,719, or 18% of the total fires. The unsafe use and disposal of smoking materials accounted for 574, or 6%, of these incidents. Electrical problems caused 506, or 5%, of incidents. Indoor rubbish fires were the cause of 372, or 4%, of residential structure fires. Arson accounted for 258, or 3%, of residential structure fires. Two percent (2%), or 193, were caused by candles. Juvenile firesetting accounted for 123, or 1%, of these incidents. Clothes dryer fires were the cause for 99, or another 1%, of residential structure fires in Massachusetts in 2002.



53% of Residential Fires Started in the Kitchen
For residential structure fires where area of origin was reported, 53% of the fires started in the kitchen. Eleven percent (11%) began in a heating room or area; 6% started in the chimney or flue; 5% began in the bedroom; 2% started in the living room; and another 2% started on an exterior balcony or unenclosed porch in 2002.

57% of Residential Structure Fires Confined to Non-Combustible Containers[4]
Five thousand three hundred and four (5,304), or 57% of all residential structure fires, were reported as confined to non-combustible containers in 2002. Three thousand five hundred and fifty (3,550) of the reported fires were cooking fires contained to a non-combustible container accounting for 38% of residential structure fires. Nine hundred and fifty-nine (959), or 10%, were fires confined to a fuel burner or boiler malfunction. Five hundred and ninety-two (592), or 6%, of all residential structure fires reported in 2002 were fires confined to a chimney. One hundred and ninety-eight (198), or 2%, of these fires were contained rubbish fires. Four (4), or less than 1%, of these fires in the Commonwealth were contained to an incinerator overload or malfunction. One (1), or less than 1%, of the residential structure fires in 2002 was a commercial compactor fire confined to the rubbish inside the compactor.

As expected the number of contained fires in residential occupancies rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires increased by 3,724 incidents, or 236%, from the 1,580 reported in 2001.

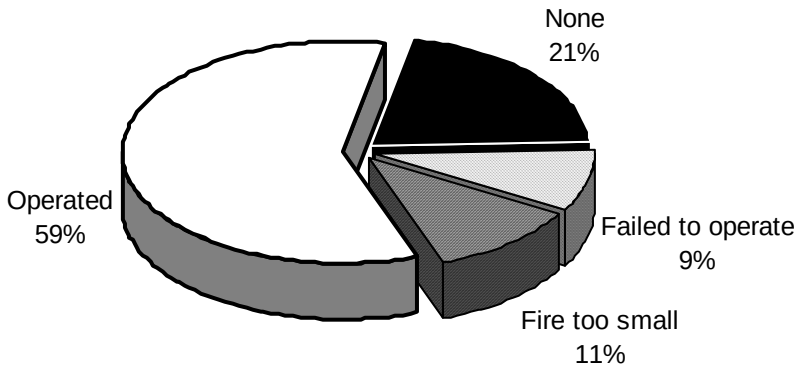
Detectors Alerted Occupants in 54% of Confined Fires
Smoke or heat detectors alerted the occupants in 2,864, or 54%, of the residential structure fires that were confined to non-combustible containers. In 18% of these fires, the detectors did not alert the occupants. In 28% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded in 59% of Residential Fires
Smoke or heat detectors were present and operated in 59% of the 3,475 residential structure fires for which detector performance was known. Detectors were present but did not operate in 9%, of these incidents. No detectors were present in 21% of the residential fires. In 11%, the fire department reported that the fire was too small to trigger the detector. Smoke detector performance was not reported or not classified in 669 incidents. These fires were excluded from the percentage calculations.

[4] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

Smoke Detector Status in Residential Fires



Houses Must Have Detectors at Time of Sale
Under the provisions of Massachusetts General Law Chapter 148, Section 26F, all buildings containing one to five dwelling units built prior to 1975, must be equipped by the seller with approved smoke detectors upon the sale or transfer of the building as provided in Section 26E. This statute took effect on January 1, 1982. Many homes changed hands during the real estate boom of the 1980's. While many owners had not installed detectors to protect themselves, they did install these devices to sell their home. The new owners were then protected by an early warning system but it is our concern that many have not been fully maintained since then. The new owners should maintain the detectors by testing the detectors monthly and replacing the batteries twice a year . Detectors should be kept free of dust and never painted over.

Smoke Alarms That Are 10 Years Old Or Older Should Be Replaced
Studies have indicated that not unlike any other appliance in your household, smoke detectors do not last forever. The life span for a typical smoke detector whether it is battery-powered or hard-wired is 10 years. Smoke alarms that are 10 years old or older should be replaced. The manufacture date is stamped on the back of the detector.

Automatic smoke detectors are required at all times in buildings containing three or more residential units. Massachusetts General Law Chapter 148, Section 26E (a) requires owners of one- and two-family homes to install smoke detectors outside each separate sleeping area and on the ceiling of each stairway leading to a floor above. Section 26F requires the seller of existing one- and two-family homes to equip the structure with approved smoke detectors as provided in section 26E (a).

New Homes Must Have Detector in Bedroom Area
At a minimum, smoke detectors should be installed on every floor of the home and at the bottom of the basement stairwell. The Massachusetts Building Code, requires smoke

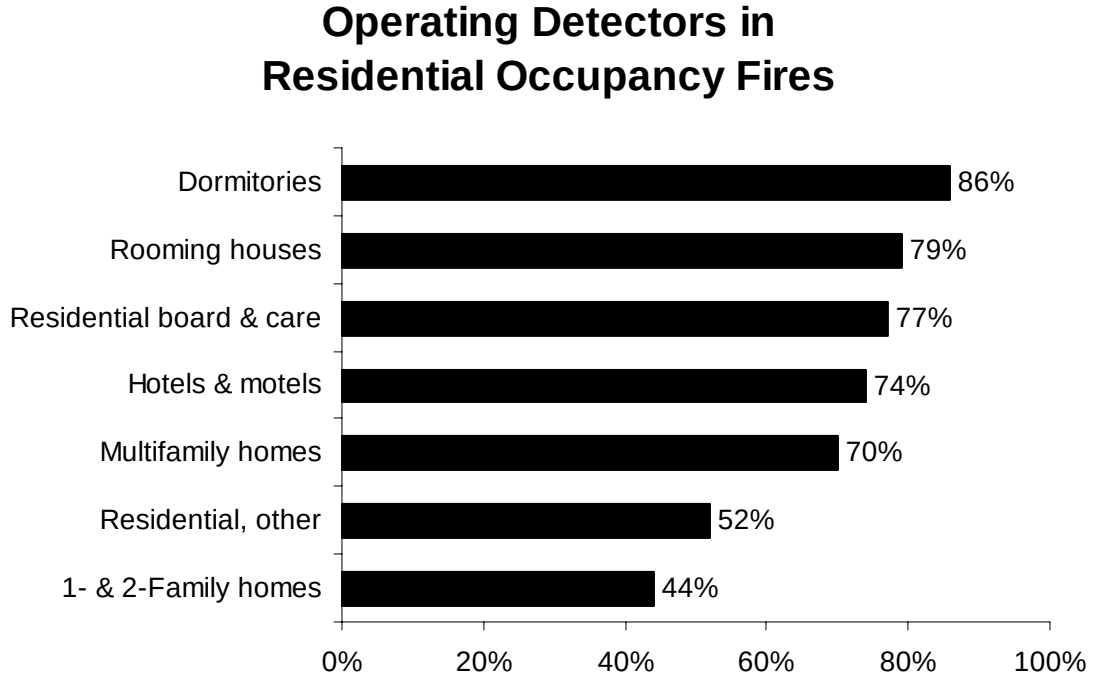
detectors within the bedroom area in all *new* residential occupancies. When a bedroom door is shut, it can help prevent the spread of fire from room to room. Unfortunately, a shut door also makes it harder to hear a smoke detector sounding in the hallway. People who sleep with their bedroom door closed should install a detector inside their bedroom. After detectors are installed, they need to be regularly tested and maintained. All the detector can do is sound the alarm. Everyone needs to develop and practice the escape routes they would use in the event of a fire.

1/4 of Failed Detectors Had Missing or Disconnected Batteries

Of the 305 fires where smoke detectors were present but failed to operate, 76, or 25%, failed because the batteries were either missing or disconnected. Twenty-seven (27), or 9%, failed because of a power failure, shutoff or disconnect. Twenty-five (25), or 8%, did not operate because of dead batteries. Eight (8) detectors, or 3%, failed from a lack of maintenance such as not cleaning dust from the detector or painting over the detector. Five (5), or another 2% failed from improper installation or placement. Two (2) units (1%) failed because they were defective. For 162 cases, or 54%, the reason the detector failed was not determined.

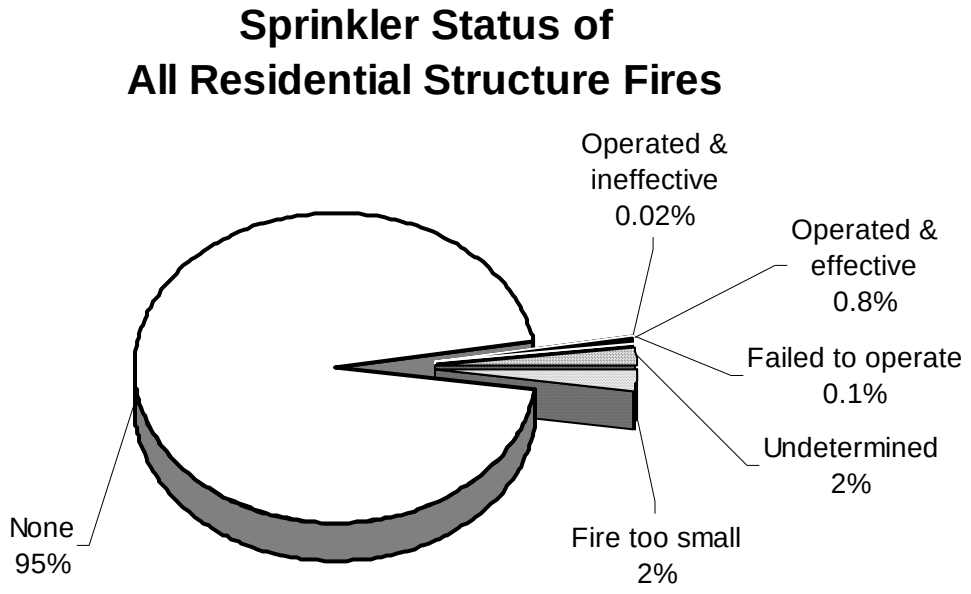
Dormitories Highest Percentage of Operating Detectors

Dormitories were the most likely residential occupancy to have operating smoke detectors. Rooming or board houses were the second most likely residence to have working smoke detectors. Residential board and care residences such as long-term care and halfway houses, were the next most likely residential occupancy to have operating smoke detectors while one- and two-family homes were the least likely. The following chart shows the percentage of operating smoke detectors in residential occupancies.



Almost 1/2 of Residential Fire Deaths Occurred with No Working Detectors
Seventy-seven percent (77%) of all 2002 fire deaths took place in residential occupancies, or the so -called "safety" of people's homes. Overall, 48% of the 48 residential structure fire deaths occurred in buildings with no working detectors; 15% took place in homes where detectors did not operate and 33% of deaths occurred where there were no detectors present at all. Thirty-nine percent (39%) of residential structure fire deaths occurred where smoke detectors were present and operated. Smoke detector status was unknown for 13% of the 2002 residential fire deaths.

Sprinklers Present in Only 3% of Residential Structure Fires
Sprinklers were present and operated effectively in 35, or 0.8% of the 4,135 residential structure fires where sprinkler performance was known in 2002. Sprinklers were present but operated ineffectively in one, or 0.02%, of these fires. In four, or 0.1%, of the fires in residential occupancies, the sprinkler systems did not operate. In 92, or 2%, the fire was too small to activate the system. In 3,925, or 95%, of the cases, there were no sprinkler systems present or installed. Sprinkler performance was not classified for 78 incidents involving residential structure fires.



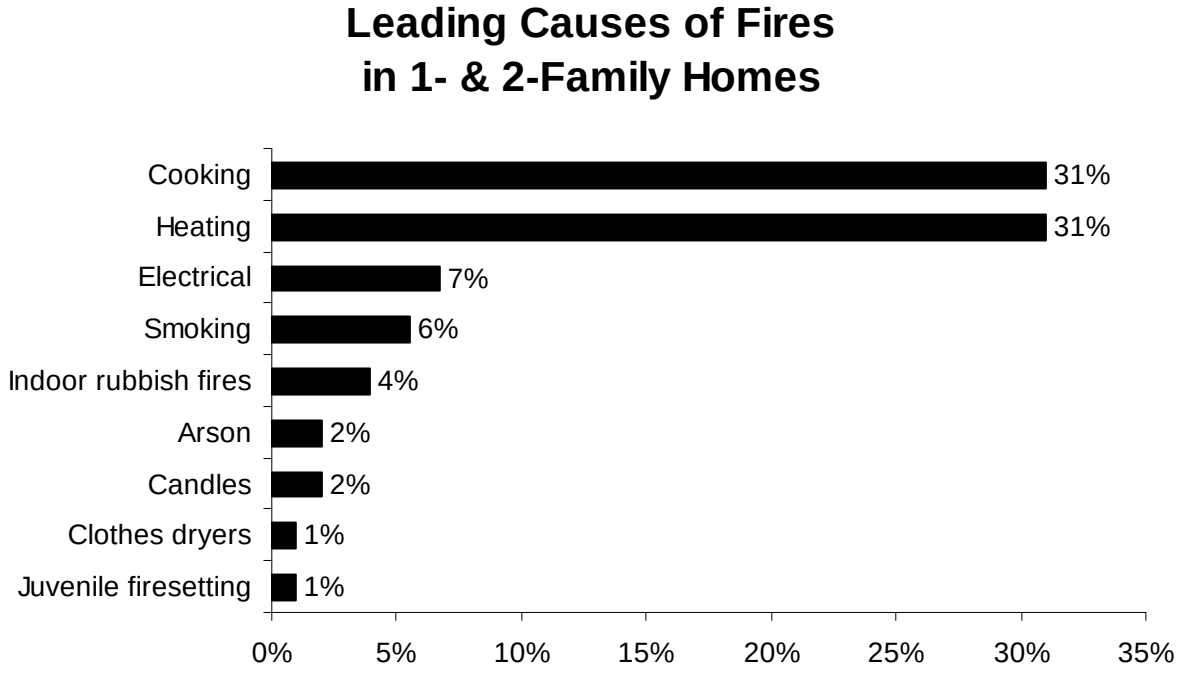
Only You Can Make Your Home Safer for You and Your Family
Over three-quarters (78%) of structure fires and 77% of fire deaths take place in residential occupancies. Efforts to reduce the incidence of fire and fire deaths must be focused on home fire safety to have the greatest impact. Increased maintenance of smoke alarms, installation of residential sprinklers, practice of home escape plans coupled with safer products such as self-extinguishing cigarettes, upholstered furniture that meets the

California flammability standard, and flame resistant sleepwear for all ages can help make homes and the families who live in them safer from fire.

Fires in One- and Two-Family Homes

4,475 Fires, 25 Civilian Deaths, $53.6 Million in Damage
Four thousand four hundred and seventy-five (4,475) structure fires in one- and two-family homes caused 25 civilian deaths, 157 civilian injuries, 185 fire service injuries, and an estimated $53.6 million in property damage. In 2002, 48% of the Commonwealth's 9,329 residential structure fires occurred in one- and two-family homes. The average dollar loss from these types of fires was $11,984. Fires in one- and two-family homes were up 5% from 4,267 in 2001.

Cooking & Heating Were Leading Causes
Cooking caused 31% of incidents occurring in one- and two-family homes. The next leading cause of fires in one- and two-family homes was heating, also accounting for 31%. Seven percent (7%) of one- and two-family residential structure fires were caused by electrical problems. The unsafe and improper use of smoking materials caused 6% of the fires. Indoor rubbish fires accounted for 4% of the fires in this category. Candle fires and arson were each the cause of 2% of the one- and two-family structure fires. Clothes dryers and juvenile-set fires each accounted for 1% of these fires.



35% of Fires in 1- & 2- Family Homes Started in the Kitchen
For fires in one- and two-family homes where area of origin is known, 35% started in the kitchen. The second leading area of origin was rooms or areas with heating equipment accounting for 18% of these fires. Twelve percent (12%) started in the chimney; 5% started in the bedroom; 2% started in the living room. The laundry room, exterior wall surfaces, crawl or substructure spaces and wall assemblies each accounted for another 2% of these incidents.

Over 1/2 of 1- & 2-Family Fires Were Confined to Non-Combustible Containers[5]
Two thousand five hundred and twenty (2,520), or 56%, of all residential structure fires in one- and two-family homes, were reported as confined to non-combustible containers in 2002. One thousand one hundred and thirty-one (1,131) were cooking fires confined to a non-combustible container accounting for 25% of all the residential structure fires in one- and two-family homes. Seven hundred and forty-seven (747), or 17%, were fires confined to a fuel burner or boiler. Five hundred and forty (540), or 12%, of all one- and two-family fires reported in 2002 were fires confined to a chimney. Ninety-seven (97), or 2%, of these fires were contained rubbish fires. Four (4), or less than 1%, of these fires were contained to an incinerator overload or malfunction. One (1), or less than 1%, of the residential structure fires in 2002 was a commercial compactor fire confined to the rubbish inside the compactor.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in one- and two-family homes increased by 1,602 incidents, or 175%, from the 918 reported in 2001.

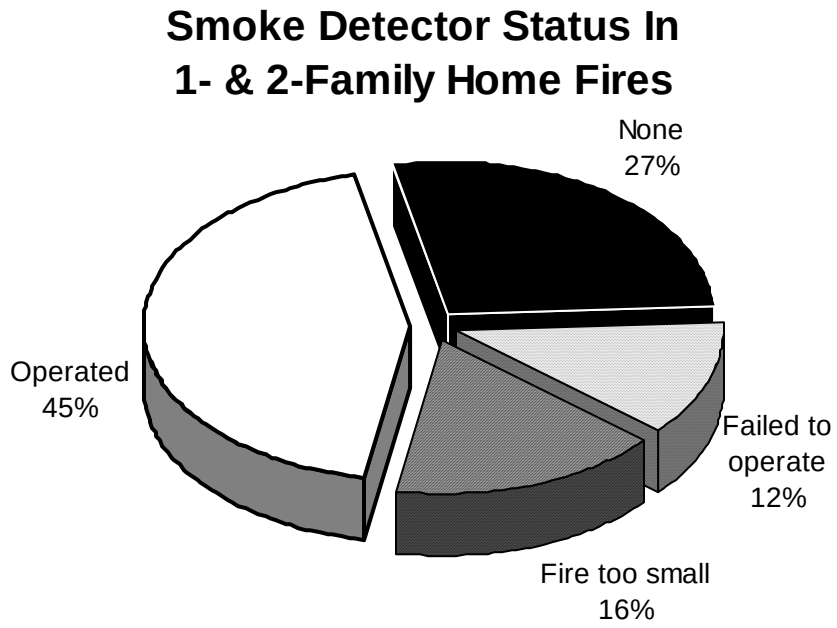
Detectors Alerted Occupants in 32% of Confined Fires
Smoke or heat detectors alerted the occupants in 815, or 32%, of the one- and two-family fires that were confined to non-combustible containers. In 27% of these fires, the detectors did not alert the occupants. In 41% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

No Working Detectors in Almost 1/3 of One- and Two-Family Fires
Smoke or heat detectors were present and operated in 45% of the 1,586 one- and two-family residential structure fires for which detector performance was known. Detectors were present but did not operate in 12% of these incidents. No detectors were present in 27% of the residential fires, which took place in a one- or two-family home. In 16%, the

[5] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

fire department reported that the fire was too small to trigger the detector. Smoke detector performance was not reported or not classified in 476 incidents. These fires were excluded from the percentage calculations.



Over 1/3 of Failed Detectors Had Missing or Disconnected Batteries
Of the 192 fires where smoke detectors were present but failed to operate, 67, or 35%, failed because the batteries were either missing or disconnected. Twenty-one (21), or 11%, did not operate because of dead batteries. Sixteen (16), or 8%, failed because of a power failure, shutoff or disconnect. Seven (7) detectors, or 4%, failed from a lack of maintenance. Four (4), or 2%, failed from improper installation or placement. One (1) unit (1%) failed because it was defective. For 62 cases, or 32%, the reason the detector failed was not determined.

Detectors Required in All One- and Two-Family Homes
Massachusetts General Law Chapter 148, Section 26E (a) requires owners of existing one- and two-family homes built before 1975 to install smoke detectors outside each separate sleeping area and on the ceiling of each stairway leading to a floor above. Section 26F requires the seller of existing one- and two- family homes to equip the structure with approved smoke detectors as provided in section 26E. All one- and two-family homes constructed after 1975 are required to have hardwired, interconnected smoke detectors outside each separate sleeping area and on the ceiling of each stairway leading to a floor above per the Commonwealth's Building Code - 780 CMR 3603.16.10.

No Sprinklers Present in 99% of One- and Two-Family Structure Fires
In 2002, one (1), or less than 1%, of these incidents a sprinkler system was present and operated effectively. In three, or less than 1% of the incidents, the fire was too small to activate the system. In 99% of the cases where sprinkler status was known, there was no

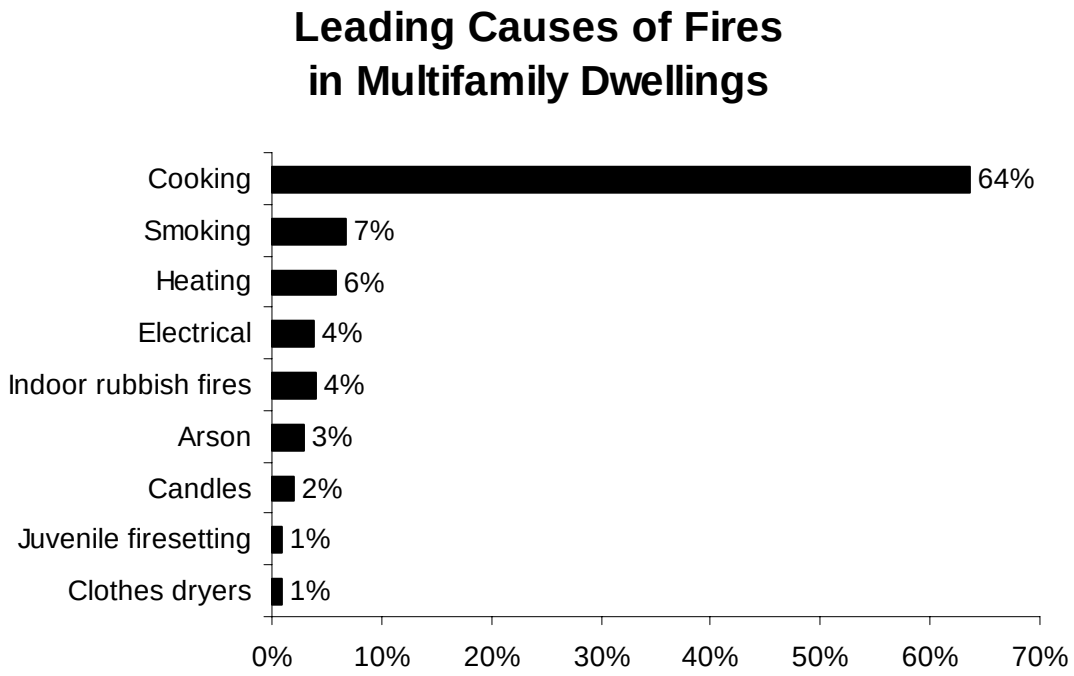
sprinkler system. Twelve (12) incidents were not classified. These were excluded from the percentage calculations.

Multifamily Home Fires

3,978 Fires, 22 Civilian Deaths, 1 Fire Service Death & $40 Million in Damage
Three thousand nine hundred and seventy-eight (3,978), or 43%, of the Commonwealth's 9,329 residential structure fires occurred in multifamily dwellings in 2002. These 3,978 fires caused 22 civilian deaths, one fire service death, 152 civilian injuries, 225 fire service injuries, and an estimated dollar loss of $40 million. The average dollar loss per fire was $10,030. Fires in apartments were up 20% from 3,308 in 2001.

This residential occupancy category includes apartments, condominiums, townhouses, rowhouses and tenements. It is equivalent to the fixed property codes 420 – 429 in MFIRS version 4.

Unsafe Cooking Caused 64% of Apartment Fires
Sixty-four percent (64%) of the fires in apartments were caused by unsafe cooking in 2002. The improper and unsafe use of smoking materials caused 7% of fires in multifamily dwellings. Heating accounted for 6% of apartment fires. Electrical problems and indoor rubbish fires each caused 4% of these incidents. Arson caused 3% of the fires in these dwellings. Candles accounted for 2% of apartment fires. Juvenile-set fires and clothes dryer fires each caused 1% of the fires in multifamily homes.



70% of Apartment Fires Started in the Kitchen
For apartment fires where area of origin is known, 70% started in the kitchen. Five percent (5%) started in the bedroom; 4% began in the heating room or area; 2% started in the living room, and 1% each started in the hallway or corridor, on an exterior balcony or unenclosed porch, in the chimney, in the bathroom, or in the laundry room

55% of Multifamily Home Fires Confined to Non-Combustible Containers[6]
Two thousand one hundred and ninety-one (2,191), or 55% of all structure fires in multifamily homes, were reported as confined to non-combustible containers in 2002. One thousand nine hundred and twenty-nine (1,929) were cooking fires contained to a non-combustible container accounting for 48% of all the multifamily dwelling fires in 2002. One hundred and sixty-three (163), or 4%, were fires confined to a fuel burner or boiler malfunction. Seventy-five (75), or 2%, of these fires were contained rubbish fires. Twenty-four (24), or 1%, of apartment fires reported in 2002 were fires confined to a chimney or flue.

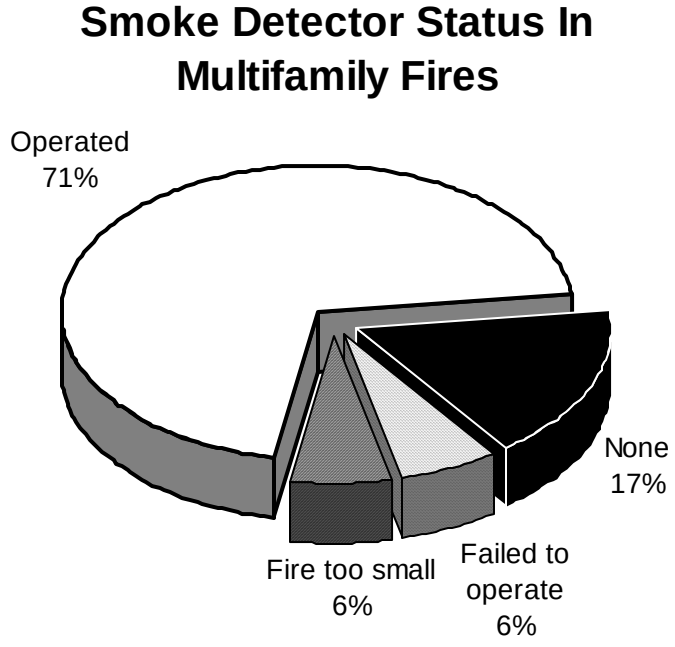
As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in apartments increased by 1,717 incidents, or 362%, from the 474 reported in 2001.

Detectors Alerted Occupants in 73% of Confined Fires
Smoke or heat detectors alerted the occupants in 1,594, or 73%, of the multifamily dwelling fires that were confined to non-combustible containers. In 10% of these fires, the detectors did not alert the occupants. In 17% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded in 71% of Apartment Fires
Smoke or heat detectors were present and operated in 71%, of the 1,616 apartment building fires for which detector performance was known. Detectors were present but did not operate in 6% of these incidents. In 6%, the fire department reported that the fire was too small to trigger the detector. No detectors were present in 17% of the fires which took place in an apartment. Smoke detector performance was not reported or not classified in 159 incidents. These fires were excluded from the percentage calculations.

[6] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.



11% of Failed Detectors Failed Due to Power Shutoff
Of the 103 fires where smoke detectors were present but failed to operate, 11, or 11%, failed because of a power failure, shutoff or disconnect. Eight (8), or 8%, failed because the batteries were either missing or disconnected. Two (2), or 2%, did not operate because of dead batteries. One (1), or 1%, failed from improper installation or placement. Another (1) unit (1%) failed because it was defective. For 80 cases, or 78%, the reason the detector failed was not determined.

Apartments with Six or More Units Must Have Hard-Wired Detectors
According to Massachusetts General Law Chapter 148, Section 26C, apartment houses containing six or more units must be equipped with hard-wired smoke detectors. In buildings of three to five dwelling units, the detectors may be hard-wired or battery operated in the units themselves. Detectors in common hallways and basements must be hard-wired.

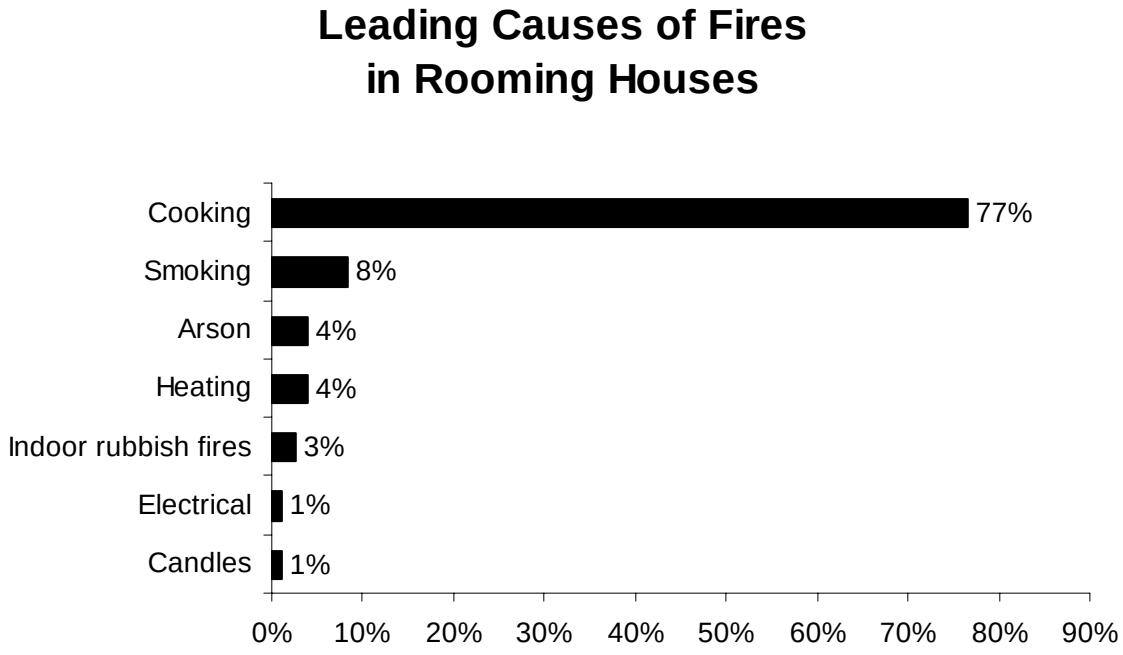
Sprinklers Present in Only 4% of Multifamily Dwelling Fires
Sprinklers were present and operated effectively in 23, or 1% of the 1,738 multifamily dwelling fires where sprinkler status was known in 2002. In only four of the fires, less than one percent (0.2%), the sprinkler system did not operate. In 51, or 3%, of these incidents, the fire was too small to activate the system. In 1,660, or 96%, of the cases, there were no sprinkler systems present or installed. In 37 incidents, sprinkler status was unknown. These fires were excluded from the percentage calculations.

Apartments More Likely to Have Sprinklers Installed
Apartments are more likely than single-family dwellings to have sprinklers installed. Newly constructed apartments with three or more units are required by building codes to have them installed. Also, apartments are likely to be found in high-rise buildings which were required to be retrofitted with sprinklers by March, 1998. Sprinklers were present in 4% of multifamily fires, but in less than 1% of fires in one- and two-family dwellings.

Rooming House Fires

192 Fires, 1 Civilian Death and $1 Million in Damage
One hundred and ninety-two (192) rooming, lodging, and boarding house fires were reported to the Massachusetts Fire Incident Reporting System (MFIRS) in 2002. These 192 fires caused one civilian death, eight civilian injuries, two firefighter injuries and an estimated $1 million in damages. The average dollar loss per fire was $5,268. Two percent (2%) of the 9,329 residential structure fires in 2002 occurred in rooming, boarding, or lodging houses. Fires in rooming houses were up 96% from 98 in 2001. This increase is due to the large increase in reported confined fires.

Cooking Caused Over 3/4 of Rooming House Fires
Of the 192 incidents in rooming houses, cooking caused 77%. The unsafe use and disposal of smoking materials was the next significant cause, igniting 8%, of the rooming house fires. Arson was the third leading cause of these incidents, causing 4%. Heating also caused 4% of the fires in rooming houses. Indoor rubbish fires accounted for 3% of these fires. Electrical fires and candles in rooming houses each accounted for 1% of the incidents.



77% of Rooming House Fires Started in the Kitchen
Seventy-seven percent (77%) of the fires started in the kitchen. Eight percent (8%) started in the bedroom; 2% started in each of the heating equipment room, a wall assembly, and the bathroom; and 1% started in a duct, interior stairway or ramp or exterior stairway, ramp or fire escape.

3/4 of Rooming House Fires Are Confined to Non-Combustible Containers[7]
One hundred and forty-four (144), or 75% of all structure fires in rooming houses, were reported as confined to non-combustible containers in 2002. One hundred and thirty-seven (137) were cooking fires contained to a non-combustible container accounting for 71% of all the fires in rooming or boarding houses in 2002. Four (4), or 2%, were fires confined to a fuel burner or boiler malfunction. Two (2) fires, accounting for 1% of rooming house fires were confined indoor rubbish fires. One (1), or another 1%, of these rooming house fires were confined to a chimney or flue.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in rooming houses increased by 113 incidents, or 365%, from the 31 reported in 2001.

Detectors Alerted Occupants in 86% of Confined Fires
Smoke or heat detectors alerted the occupants in 124, or 86%, of the rooming house fires that were confined to non-combustible containers. In 3% of these fires, the detectors did not alert the occupants. In 11% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

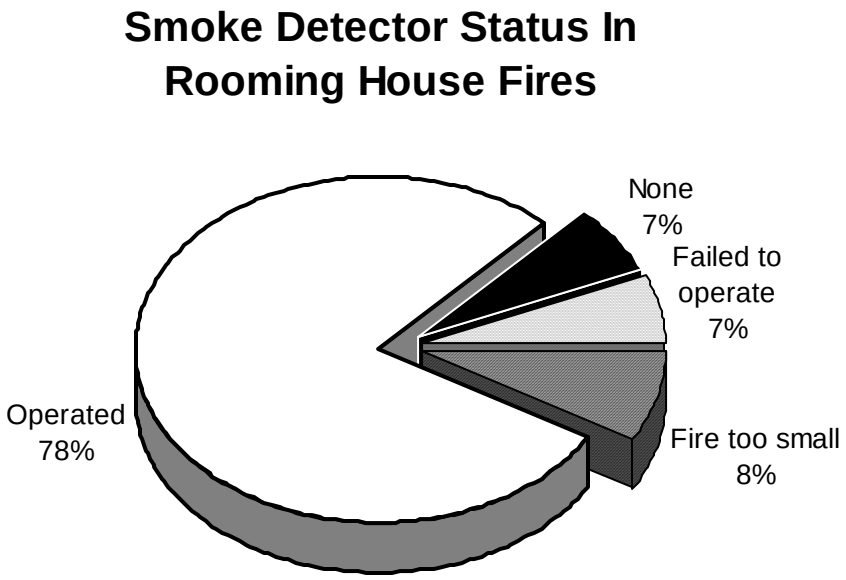
We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded in Over 3/4 of Rooming House Fires
Smoke or heat detectors were present and operated in 78% of the 61 rooming house fires for which detector performance was known. Detectors were present but did not operate in 7% of these incidents. In 8% of incidents, the fire department reported that the fire was too small to trigger the detector. In another 8% of rooming house fires, there were no detectors present. Smoke detector performance was not reported or not classified in five incidents. These fires were excluded from the percentage calculations.

Smoke detectors are required in rooming houses. Local communities may elect to adopt the provisions of Massachusetts General Law Chapter 148, Section 26H. This law

[7] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

mandates an adequate system of automatic sprinklers in every lodging or boarding house in the community. Sprinklers must be installed within five years after the provision is accepted. This was enacted after 15 people died in a Beverly rooming house fire on July 4, 1984.



1/4 of Failed Detectors Failed Due to Missing Batteries
Of the four fires where smoke detectors were present but failed to operate, one, or 25%, did not operate because of dead batteries. One (1), or 25%, failed from improper or a lack of maintenance. For two cases, or 50%, the reason the detector failed was not determined.

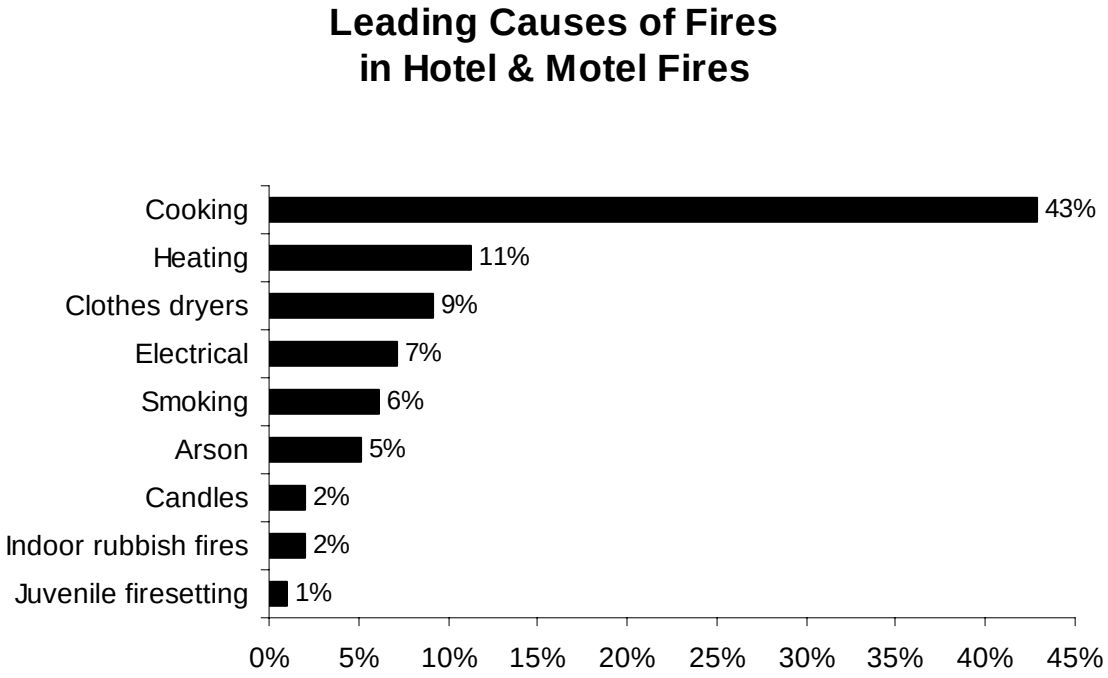
Sprinklers Present in 23% of Rooming House Residential Structure Fires
The fire was too small to activate the sprinklers in 19% of the 57 rooming house structure fires in 2002 where sprinkler status was known. In 4% of rooming house fires sprinklers were present and operated effectively. In 77% of the cases, there was no sprinkler system installed. Sprinkler status was unknown in eight incidents.

Hotel and Motel Fires

98 Fires, 2 Civilian Injuries and $321,125 in Damages
Ninety-eight (98) structure fires in hotels, motels and home hotels caused two civilian injuries, one fire service injury, and $321,125 in estimated property damage. The average dollar loss per fire was $3,277. In 2002, 1% of the 9,329 residential structure fires

occurred in hotels, motels, or home hotels. Fires in hotels and motels were down 17% from 118 in 2001.

Cooking Caused 43% of Hotel & Motel Fires
Of the 98 fires in hotels and motels in 2002, cooking was the leading cause, accounting for 43% of the fires in this occupancy. Heating was responsible for 11% of these fires. Clothes dryers caused 9% of these fires. Electrical problems caused 7% of the hotel and motel fires. Smoking materials caused 6%. Arson accounted for 5% of hotel and motel fires in 2002. Candles and indoor rubbish fires were each responsible for 2% of the fires in hotels and motels. Juvenile-set fires accounted for 1% of the fires in hotels and motels in 2002.



41% Hotel and Motel Fires Started in the Kitchen
For hotel and motel fires where area of origin is known, 41% of the fires started in the kitchen. Eleven percent (11%) of these fires began in the laundry room. Six percent (6%) started in a hallway or corridor. Five percent (5%) began in a heating room or area. Bedrooms were where 4% of these fires began. Another 4% began in chimneys or flues. Three percent (3%) of these fires started in each machinery or elevator room and substructure area or crawlspace.

Federal Hotel and Motel Fire Safety Act of 1990 Implemented in Massachusetts
The Federal Hotel and Motel Fire Safety Act of 1990 was implemented in Massachusetts in 1992. To increase the level of fire safety in hotels and motels, this act limits travel by federal employees to properties meeting certain fire safety standards. Each guestroom must be equipped with a hard-wired, single-station smoke detector installed in accordance with the National Fire Protection Association (NFPA) Standard 72. Hotels

and motels over three stories in height must also be protected by an automatic sprinkler system installed in the sleeping area of each room in accordance with NFPA Standard 13 or 13R.

Only properties that meet the fire safety standards are listed in the Federal Travel Directory used by federal employees to select lodging while on official business.

The last provision of this act took effect on October 1, 1996. At that time, 90% of all travel nights by federal employees must be in 'approved accommodations.' The Congressional authors of the act have clarified the term 'place of public accommodation;' to include hotels and motels and all such meeting and sleeping facilities except those specifically exempted. Private conference centers are now included. Meetings funded wholly or in part by federal funds are subject to this requirement. For a list of certified hotels go to the U.S. Fire Administration's website at http://www.usfa.fema.gov/appplications/hotel.

State Regulations Require Quarterly Innholder Inspections
State regulations require local fire departments to conduct quarterly inspections of the premises specified in inn holder licenses.

44% of Hotel or Motel Fires Confined to Non-Combustible Containers[8]
Forty-three (43), or 44% of all structure fires in hotels and motels, were reported as confined to non-combustible containers in 2002. Thirty-two (32) were cooking fires contained to a non-combustible container accounting for 33% of these fires. Five (5), or 5%, of the fires in hotels or motels were confined to a fuel burner or boiler malfunction. Four (4), or 4%, of hotel or motel fires in 2002 were confined to a chimney. Indoor rubbish fires cause two, or 2%, of the hotel and motel fires in 2002.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in hotels and motels increased by 32 incidents, or 291%, from the 11 reported in 2001.

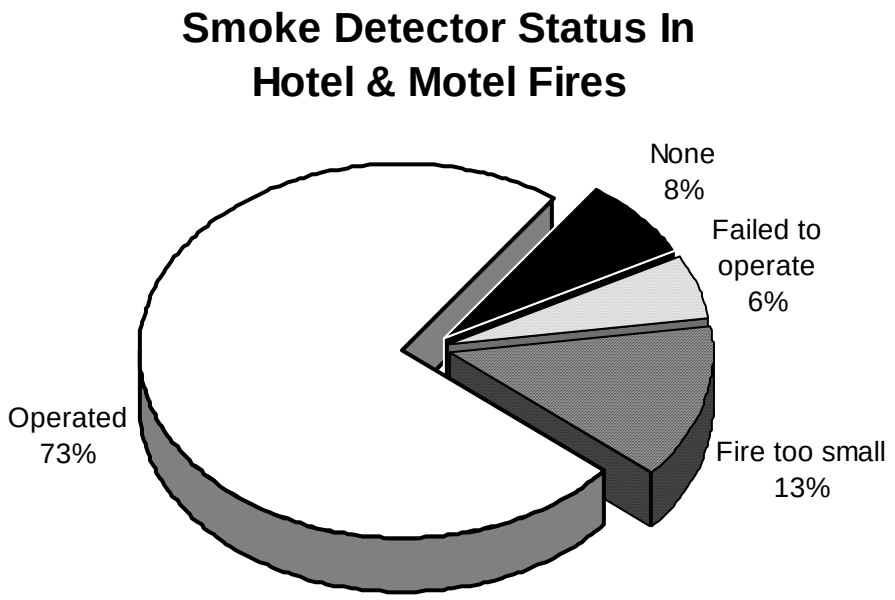
Detectors Alerted Occupants in 72% of Confined Fires
Smoke or heat detectors alerted the occupants in 31, or 72%, of the hotel and motel fires that were confined to non-combustible containers. In 7% of these fires, the detectors did not alert the occupants. In 21% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before

[8] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded in 73% of Hotel and Motel Fires
Smoke or heat detectors were present and operated in 73% of the 53 hotel and motel residential structure fires for which detector performance was known. Detectors were present but did not operate in 6% of these incidents. No detectors were present in 8% of the residential fires, which occurred in a hotel or motel. In 13%, the fire department reported that the fire was too small to trigger the detector. Smoke detector performance was not reported or not classified in one incident. This fire was excluded from the percentage calculations.



1/2 of Failed Detectors Failed Due to Missing Batteries
Of the two fires where smoke detectors were present but failed to operate, one, or 50%, did not operate because of dead batteries. For the other case, or 50%, the reason the detector failed was not determined.

Sprinklers Absent in 60% of Hotel and Motel Residential Structure Fires
Sprinklers were present and operated effectively in six, or 12%, of the 50 hotel and motel structure fires in 2002 where sprinkler status was known. In 14, or 28%, of these incidents, the fire was too small to activate the system. In 30, or 60%, of the cases, there was no sprinkler system. Sprinkler performance was not classified for four incidents.

Hotel-Motel Safety
It is important to consider fire safety when selecting accommodations.

- Choose lodging equipped with sprinklers and smoke detectors in each room.
- If you are hearing impaired, you may request a room with an appropriate smoke detector with a flashing strobe light.
- Think about fire safety when checking into a hotel or motel. Count the number of doors down the hall to the nearest fire exit staircase. Remember to never use the elevator in case of fire. Travelers should test the smoke detector in their room.
- It is recommended that you keep the room key, eyeglasses and a flashlight on the night table. If a fire occurs or a fire alarm sounds, take them with you and go out the door. However before opening the door, test the door with the back of your hand. If the door feels cool, open the door a crack. Be ready to close the door if hot air, flames, or smoke rush through the crack. If this does not occur, yet the hall is hazy with smoke, crawl down the hall counting the doors to the nearest stairway exit. If this exit cannot be reached, turn around and count the doors back to your room. Unlock the door and re-enter.
- If it is unsafe to leave the room during a fire:
  Fill the tub with cold water; stuff wet towels around the door to keep the smoke out; if possible, open a window and hang a sheet outside to signal for help; cover your face with a wet cloth and stay low if smoke gets in the room; do not jump.

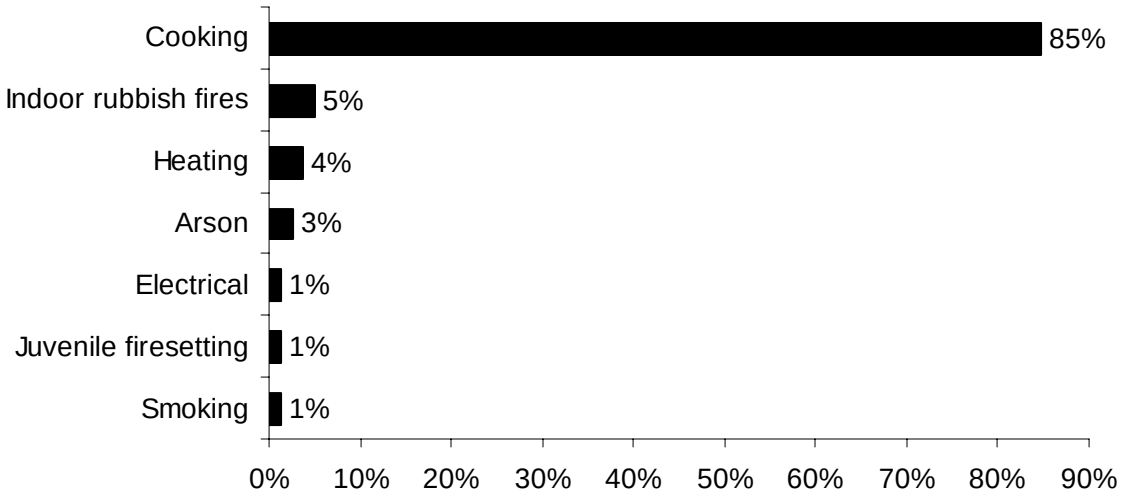
Residential Board & Care Fires

79 Fires & 2 Civilian Injuries
Seventy-nine (79) residential board and care[9] structure fires caused two civilian injuries, one fire service injury and an estimated dollar loss of $19,445 in damages. The average dollar loss per fire was $246. In 2002, 1% of the 9,329 residential structure fires occurred in residential board and care buildings.

Cooking Accounted for Over 3/4 of Residential Board & Care Fires
In the 79 incidents of residential board and care structure fires, the leading cause was cooking, accounting for 67 incidents, or 85%, of the fire incidents. Four (4), or 5%, of these incidents were attributed to indoor rubbish fires. Heating accounted for three, or 4%, of these fires. Arson accounted for two incidents, or 3% of these fires. Electrical problems, juvenile-set fires, and smoking each accounted for one, or 1%, of fires in residential board and care facilities in 2002.

[9] This is a new residential Property Use code in version 5. Residential Board & Care includes long term-term health care facilities & halfway houses. It excludes nursing (home) facilities (code - 311).

Leading Causes of Fires in Residential Board & Care Facility Fires



87% of Residential Board & Care Fires Started in the Kitchen
For the 76 residential board and care building fires where area of origin is known, 69, or 87%, of the fires started in the kitchen. Three (3), or 4% began in the heating room or area; and one, or 1% each, began in a bedroom, a laundry room, an exterior roof surface and a substructure area crawlspace.

89% of Board & Care Fires Confined to Non-Combustible Containers[10]
Seventy (70), or 89% of all structure fires in residential board and care facilities, were reported as confined to non-combustible containers in 2002. Sixty-four (64) were cooking fires contained to a non-combustible container accounting for 81% of these fires. Three (3), or 4%, of these fires were contained rubbish fires. Another three, or 4%, of the fires in residential board and care facilities were confined to a fuel burner or boiler malfunction.

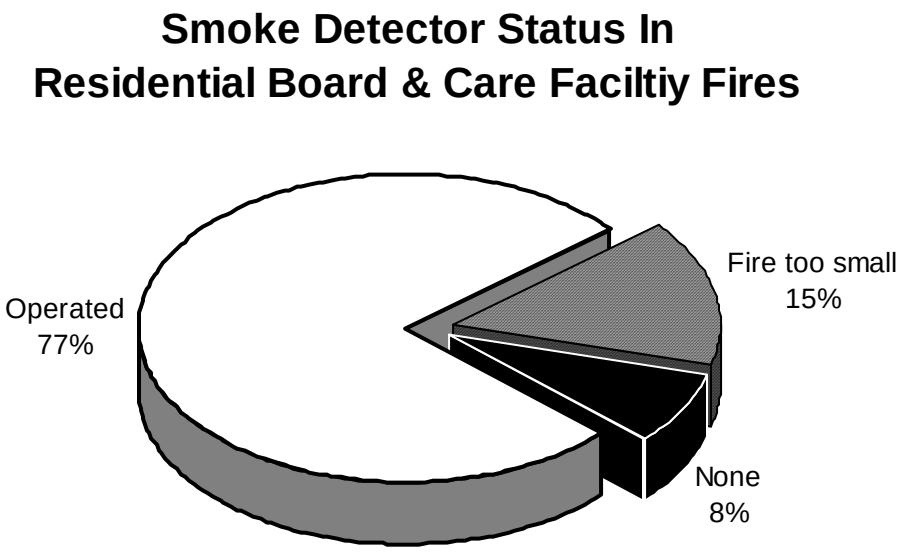
As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in residential board and care facilities increased by 50 incidents, or 250%, from the 20 reported in 2001.

[10] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

Detectors Alerted Occupants in 80% of Confined Fires
Smoke or heat detectors alerted the occupants in 56, or 80%, of the 70 fires in residential board and care lodgings that were confined to non-combustible containers. In 9% of these fires, the detectors did not alert the occupants. In 11% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded in Over 3/4 of Board & Care Fires
Smoke or heat detectors were present and operated in 77% of the 13 residential board and care structure fires for which detector performance was known. No detectors were present in 8% of these fires. In another 15% of incidents the fire department reported that the fire was too small to trigger the detector.



1/2 of Failed Detectors Were Missing Batteries
Of the two fires where smoke detectors were present but failed to operate, one, or 50%, did not operate because of dead batteries. For the other case, or 50%, the reason the detector failed was not determined.

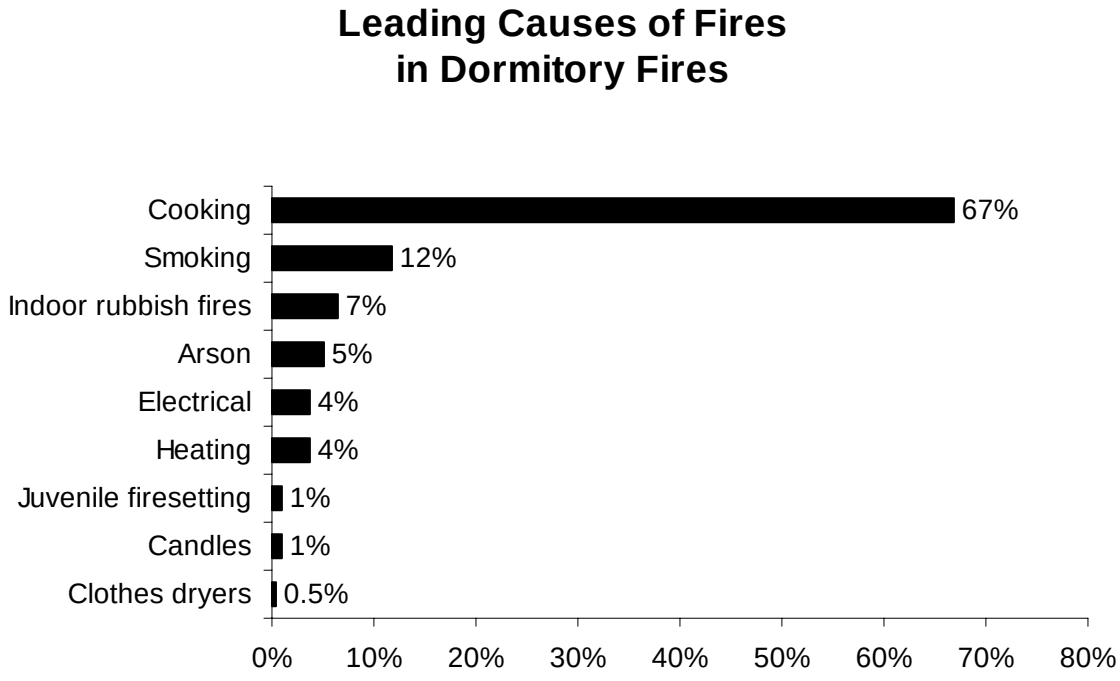
Sprinklers Present in 1/3 of Residential Board & Care Structure Fires
Sprinklers were present in four, or 33%, of the residential board and care structure fires where sprinkler presence was known. Sprinklers were present and operated ineffectively in one, or 7%, of the 12 fires where sprinkler status was known. In another one, or 7%, of these incidents, the fire was too small to activate the system. In 10, or 84%, there were no

sprinkler systems present. Two (2) incidents were not classified. These percentages were calculated without these incidents.

Dormitory Fires

214 Fires, 3 Civilian Injuries, $466,110 in Damages
Two hundred and fourteen (214) dormitory structure fires caused three civilian injuries, and an estimated dollar loss of $466,110 in damages. The average dollar loss per fire was $2,178. In 2002, 2% of the 9,329 residential structure fires occurred in dormitories. Fires in dormitories were up 29% from 166 in 2001.

Cooking Accounted for 2/3 of Dormitory Fires
In the 214 incidents of dormitory fires, the leading cause was cooking, accounting for 67%. Smoking accounted for 12% of these fires. Indoor rubbish fires were responsible for 7% of these incidents. Arson accounted for 5% of the fires in dormitories. Electrical problems and heating equipment each caused 4% of these fires. Juvenile-set fires and candles each caused 1% of the fires in dormitories. Clothes dryer fires were responsible for less than 1%.



Over 2/3 of Dormitory Fires Started in the Kitchen
For dormitory fires where area of origin is known, 69% of the fires started in the kitchen. Four percent (4%) began in the bedroom; 3% started in the hallway; another 3%

originated in the bathroom; 2% started in a heating room or area; and 1% each occurred in a lounge area, chimney or flue, dumbwaiter or elevator shaft and a trash chute.

64% of Dormitory Fires Confined to Non-Combustible Containers[11]
One hundred and thirty-eight (138), or 64% of all structure fires in dormitories, were reported as confined to non-combustible containers in 2002. One hundred and eighteen (118) were cooking fires contained to a non-combustible container accounting for 55% of these fires. Indoor rubbish fires accounted for 12, or 6% of the fires in dormitories in 2002. Five (5), or 2%, of the reported fires were confined to a fuel burner or boiler malfunction. Three (3), or 1%, of fires in Massachusetts' dormitories in 2002 were confined to chimneys.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in dormitories increased by 80 incidents, or 138%, from the 58 reported in 2001.

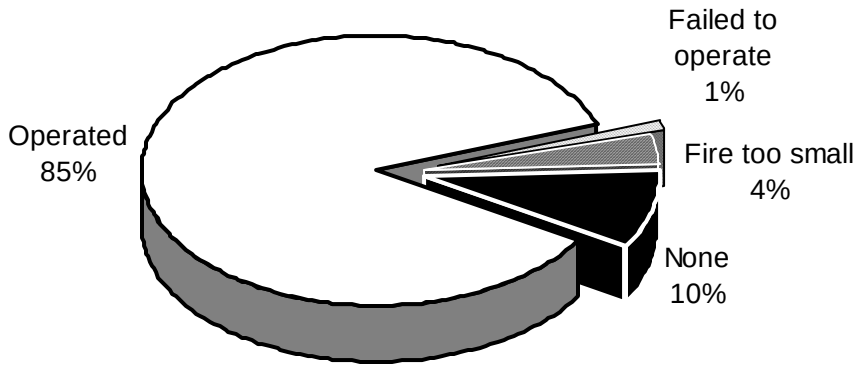
Detectors Alerted Occupants in 81% of Confined Fires
Smoke or heat detectors alerted the occupants in 112, or 81%, of the dormitory fires that were confined to non-combustible containers. In 19% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

We are not sure if it means fires confined to non-combustible containers usually have someone present at ignition, like a pan fire, and the person present extinguishes it before a smoke detector is activated. It could also mean that no detectors were present; detectors were present but not operating; or that no one was home to be alerted by the detectors.

Detectors Sounded in 85% of Dormitory Fires
Smoke or heat detectors were present and operated in 85% of the 84 dormitory structure fires for which detector performance was known. Detectors were present but did not operate in 1% of these incidents. No detectors were present in 10% of the residential fires, which occurred in a dormitory. In 4% of incidents the fire department reported that the fire was too small to trigger the detector. Smoke detector performance was not reported or not classified in one incident. This fire was excluded from the percentage calculations. It was undetermined why the one detector that failed to operate in a dormitory fire did not work.

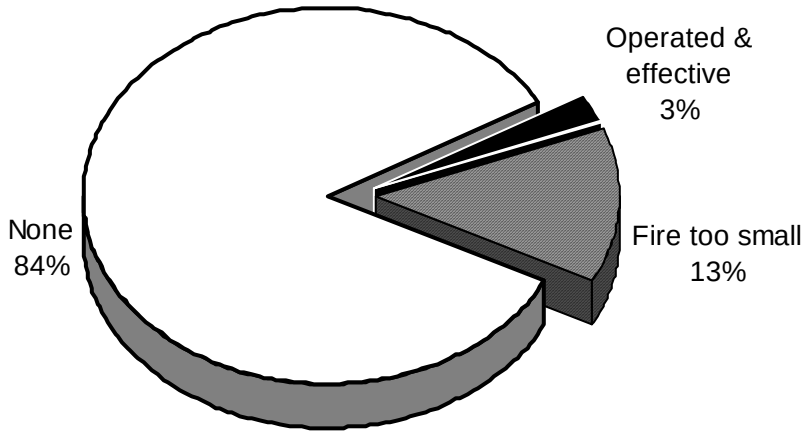
[11] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

Smoke Detector Status In Dormitory Fires



Sprinklers Present in 16% of Dormitory Fires
Sprinklers were present and operated effectively in 3% of the 76 structure fires in dormitories where sprinkler status was known. In 13% of these incidents, the fire was too small to activate the system. In 84% there were no sprinkler systems present. Nine (9) incidents were not classified. These percentages were calculated without these incidents.

Sprinkler Status in Dormitory Fires



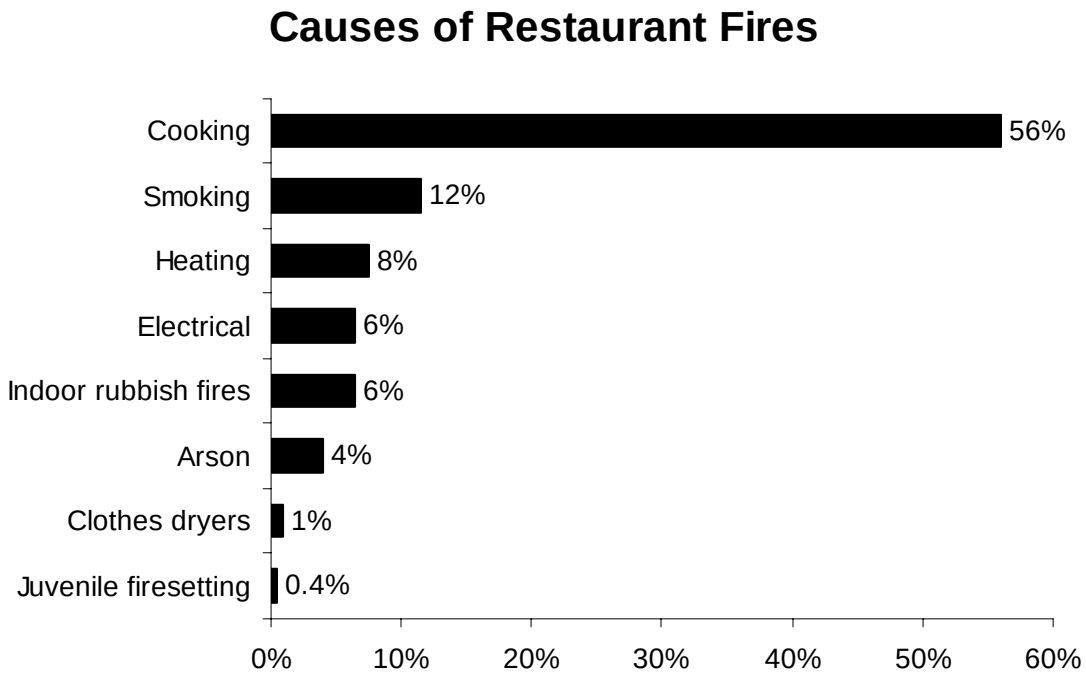
Restaurant Fires

231 Fires, 8 Civilian Injuries, 6 Firefighter Injuries, $2.4 Million in Damages

Two hundred and thirty-one (231) structure fires in 2002 occurred in restaurants and other eating and drinking establishments, causing eight civilian injuries, six firefighter injuries, and an estimated dollar loss of $2.4 million. The average dollar loss per fire was $10,417. In 2002, 2% of the 11,979 structure fires in Massachusetts occurred in restaurants. Fires in restaurants were up 3% from 225 in 2001.

Over 1/2 of Restaurant Fires Caused by Cooking

Unattended cooking and unsafe cooking practices caused 56% of the restaurant fires; 12% of the fires were caused by unsafe use of smoking materials; heating equipment caused 8%; electrical problems were responsible for 6% of these fires; indoor rubbish fires caused another 6% of these restaurant fires; another 4% were considered intentionally set; clothes dryer fires were responsible for 1%, and juvenile-set fires were the cause of less than 1% of the fires in restaurants in 2002.



59% of Restaurant Fires Started in the Kitchen
Fifty-nine percent (59%) of the 232 fires in restaurants, started in the kitchen. Four percent (4%) of the fires began on an exterior wall surface; another 4% of the fires started in a bathroom; 3% started in a heating room, and 2% of the fires in restaurants originated each on the exterior roof surface or in the chimney or flue.

45% of Restaurant Structure Fires Confined to Non-Combustible Containers[12]
One hundred and five (105), or 45% of all restaurant structure fires, were reported as confined to non-combustible containers in 2002. Eighty-eight (88) were cooking fires contained to a non-combustible container accounting for 38% of restaurant structure fires. Seven (7), or 3%, of these fires were contained rubbish fires. Five, or 2%, were fires confined to a fuel burner or boiler malfunction. Four (4), or another 2%, of all restaurant structure fires reported in 2002 were fires confined to a chimney. In 2002 there was one fire confined to an incinerator overload or malfunction accounting for less than 1% of restaurant fires.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in restaurants increased by 67 incidents, or 176%, from the 38 reported in 2001.

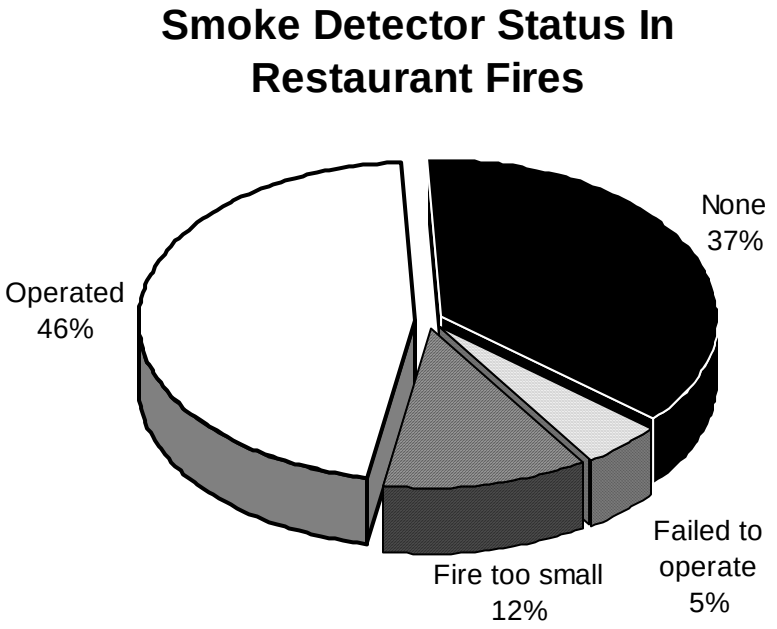
Detectors Alerted Occupants in 46% of Confined Fires
Smoke or heat detectors alerted the occupants in 48, or 46%, of the structure fires in restaurants that were confined to non-combustible containers. In 24% of these fires, the detectors did not alert the occupants. In 30% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

Detectors Operated in 46% of Restaurant Fires; None Present in 37%
Smoke or heat detectors were present and operated in 46% of the 127 restaurant fires where detector performance was known. Detectors were present, but did not operate in 5% of these fires. In 12% of the incidents the fire was too small to activate the detector. No smoke detectors were present in 37% of the restaurant fires. Detector performance was unknown or not classified in 19 fires in eating and drinking establishments. These fires were excluded from the analysis. Restaurants are not required by law to have smoke and/or heat detectors present. However, many if not all have some form of fire alarm system.

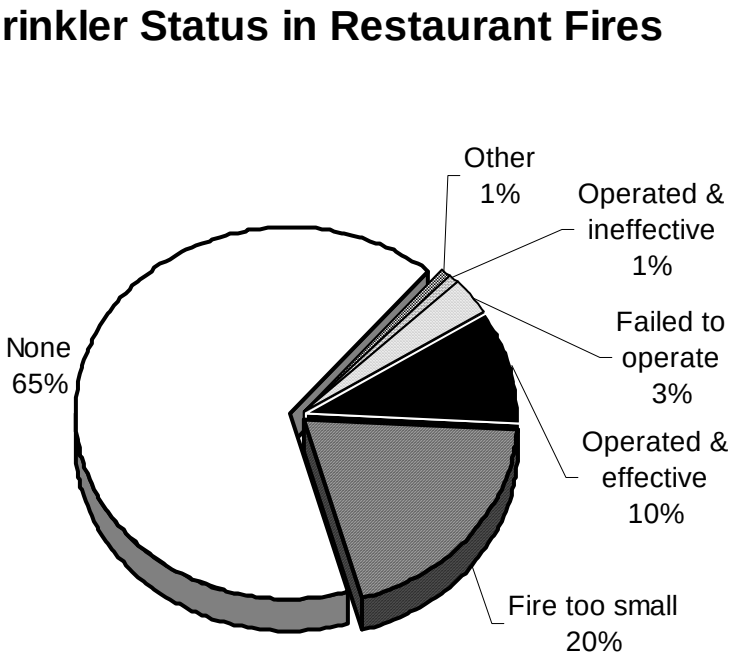
Restaurants Must Have Kitchen Exhaust & Fire Extinguishing Systems
According to Massachusetts 527 CMR 10.03 (8), restaurants must have commercial kitchen exhaust systems and fire extinguishing systems installed and maintained in accordance with NFPA 96 for any cooking equipment that produces grease-laden vapors.

[12] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

An automatic fire extinguishing system would be the primary protection and portable fire extinguishers would be used as a secondary backup.



No Sprinklers in 2/3 of Restaurant Fires
Sprinklers were present and operated effectively in 10% of the 122 restaurant fires where sprinkler status was known. In 1% of these fires, sprinklers were present but operated



ineffectively. In 3% of these fires, sprinkler equipment was present but did not operate. In 20% of these fires, the fire was too small to activate the sprinkler. No sprinkler equipment was present in 65% of the restaurant fires in 2002. Sprinkler status was unknown in five incidents. These incidents were excluded from the percentage calculations.

Fall River Pizzeria Had Largest Loss Restaurant Fire

- On December 19, 2002 at 11:35 p.m. the Fall River Fire Department was called to a fire at a local pizzeria of undetermined cause. The fire began in the kitchen area. This blaze was the largest loss fire in this category of structure fires, with an estimated $450,000 worth of damage done. Luckily, no one was injured. It was undetermined if smoke detectors were present. There were no sprinklers present in the building.

School Fires

228 Fires Caused 2 Civilian Injuries

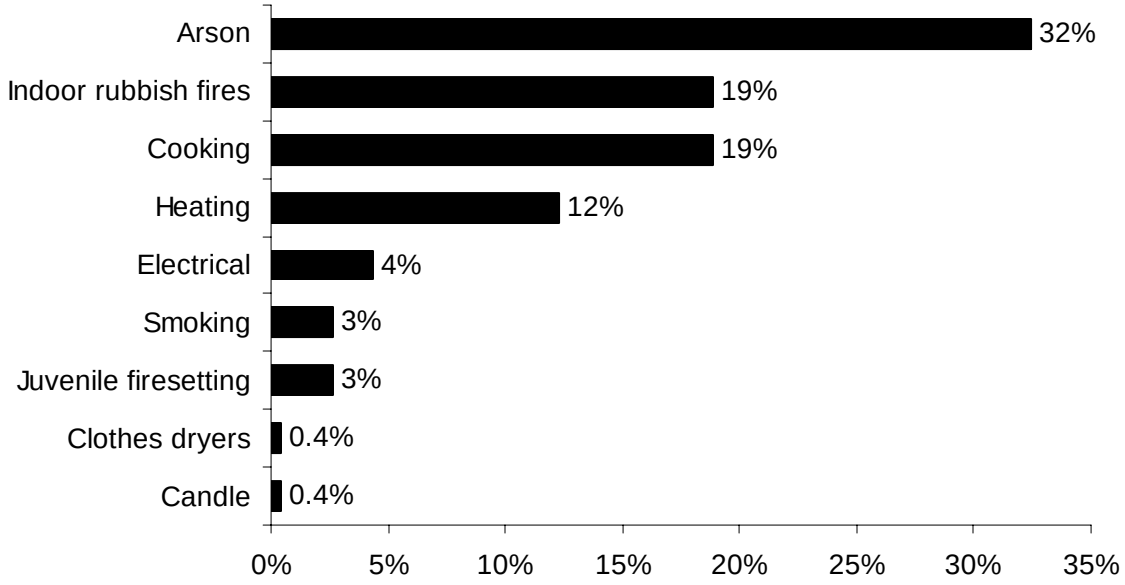
Two hundred and twenty- eight (228) structure fires in schools[13] caused two civilian injuries and $362,640 in property damages. The average dollar loss per fire was $1,591. In 2002, 2% of the structure fires occurred in non-residential schools. Fires in non-residential schools were up 25% from 182 in 2001.

1/3 of School Fires Were Intentionally Set

Thirty-two percent (32%) of the 228 school fires were considered intentionally set fires. Cooking started 19% of the fires in schools in 2002. Indoor rubbish fires accounted for another 19% of school fires. Problems with heating equipment accounted for another 12% of these fires. Electrical problems caused 4% of these fires. The unsafe use and improper disposal of smoking materials and juvenile-set fires each caused 3% of the fires in schools. A clothes dryer fire and a candle were each responsible for less than 1% of these incidents.

[13] School fires include version 5 Property Use codes 210 – Schools, non-adult, 211 – Preschool, 213 – Elementary school, including kindergarten, and 215 – High school/junior high school/middle school.

Leading Causes of Fires in Schools



Over 1/4 of Non-Residential School Fires Started in Bathrooms
Twenty-one percent (21%) of the fires in schools started in lavatories, locker rooms or cloak rooms; 19% began in kitchens; 10% started in a heating room or area; 9% started in corridors or malls; 4% started in small assembly area, and 2% each started in a wall assembly or ducts.

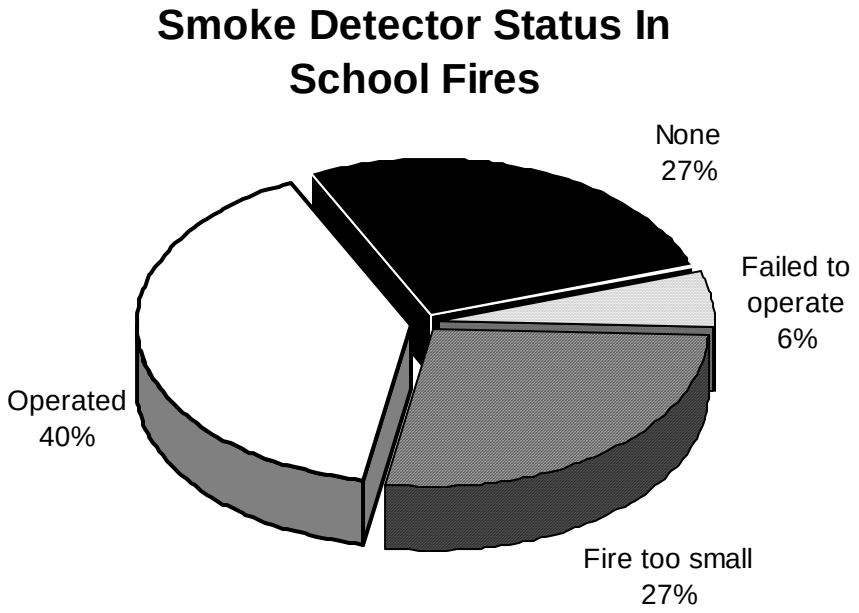
45% of School Structure Fires Confined to Non-Combustible Containers[14]
One hundred and two (102), or 45% of all school structure fires, were reported as confined to non-combustible containers in 2002. Forty-five (45), or 20%, of these fires were contained rubbish fires. Thirty-seven (37) were cooking fires contained to a non-combustible container accounting for 16% of school fires. Eighteen (18), or 8%, were fires confined to a fuel burner or boiler malfunction. A chimney fire and a confined fire in a commercial compactor each accounted for less than 1% of 2002 school fires.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in schools increased by 75 incidents, or 278%, from the 27 reported in 2001.

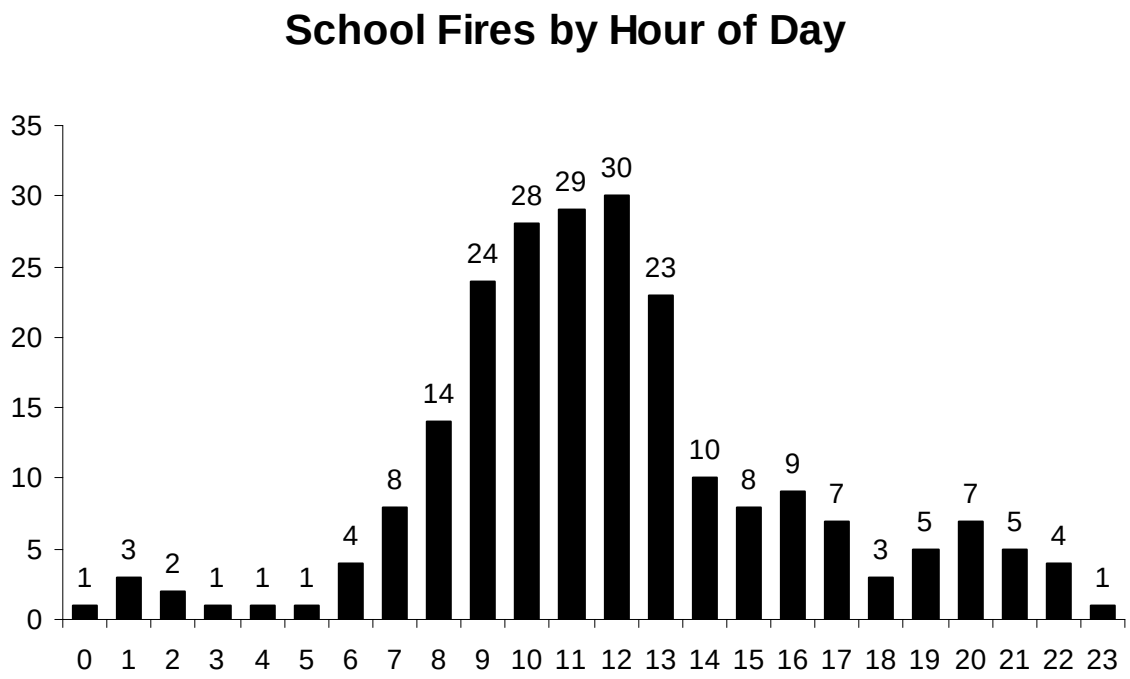
[14] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

Detectors Alerted Occupants in 40% of Confined Fires
Smoke or heat detectors alerted the occupants in 41, or 40%, of the school structure fires that were confined to non-combustible containers. In 28% of these fires, the detectors did not alert the occupants. In 31% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

Detectors Operated in 40% of School Fires
Smoke detectors were present and operated in 40% of the 125 non-residential school fires where detector performance was known. Detectors were present but did not operate in 6% of these fires. The fire was too small to activate the detector in 27% of the fires in non-residential schools. No detectors were present in 27% of these fires. Detector performance was unknown in nine of the fires in non-residential schools. These fires were excluded from the analysis. Older schools are not required by law to have smoke or heat detectors. However, many if not all have some form of fire alarm system.

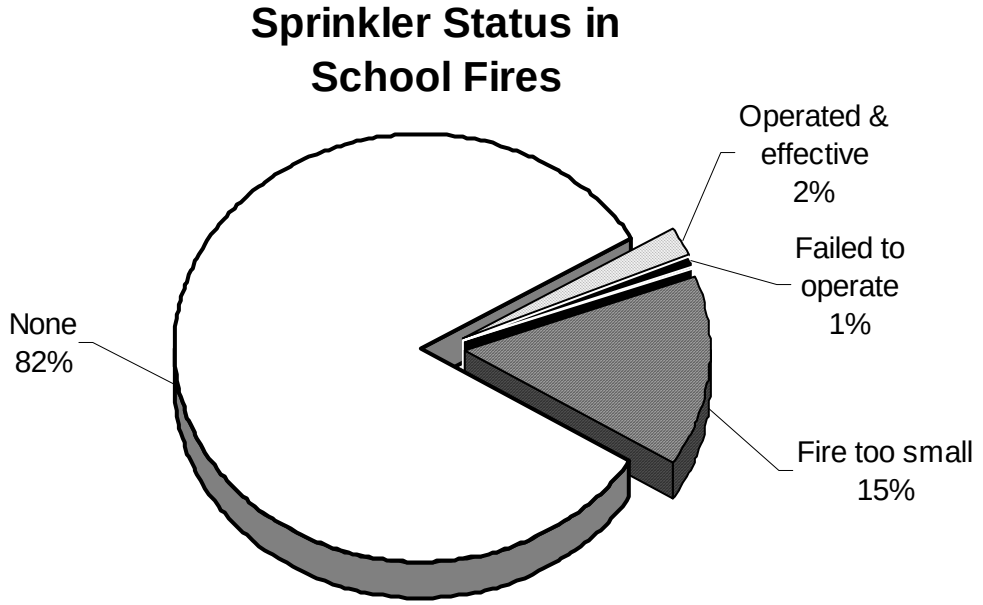


Most School Fires Occur When School is in Session During Lunch
School fires generally occur during the school day. Seventy-seven percent (77%) of the school structure fires occurred during the eight hours between 8:00 a.m. and 1:00 p.m. with a sharp increase between 11:00 a.m. and 1:00 p.m. The following graph shows the hour of alarm on the 24-hour clock. Midnight to 1:00 a.m. is represented by 0, 1:00 a.m. to 2:00 a.m. is represented by 1, etc. Eighty-nine percent (89%) of these fires occurred between Monday and Friday. It seems likely that many of the intentionally set and indoor rubbish fires were set by the students themselves.



No Sprinklers in 82% of Fires in Schools

Sprinklers were present and operated effectively in 2% of school structure fires where sprinkler performance was known. In 15% of school fires, the fires were too small to trigger the sprinkler. Sprinklers were present but did not operate in 1% of these fires. In



82% of the fires in schools, there were no sprinkler systems. Sprinkler performance was unknown in seven fires in Massachusetts' schools in 2002. These incidents were excluded from the percentage calculations.

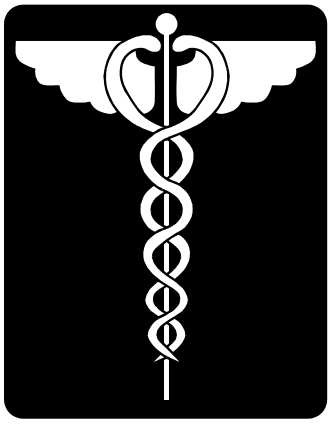
Schools Must Hold Fire Drills Four Times a Year
Effective fire prevention has undoubtedly contributed to the low injury rate at school fires. According to 527 CMR 10.09, fire drills must be conducted four times a year. The fire department must approve an evacuation plan developed by someone from the school system. All teachers must receive instructions about the plan. Students must be advised of the fire drill procedure or take part in a fire drill within three days after entering school.

Newton Elementary School Had Largest Loss School Fire

- On November 7, 2002 at 10:48 p.m. the Newton Fire Department was called to a fire at a local elementary school. Old newspapers stacked too close to a radiator started the fire in an assembly area. This blaze was the largest loss fire in a school, with an estimated $100,000 worth of damage. Luckily, no one was injured. Smoke or heat detectors were present and operating. It was reported that there were no sprinklers.

Fires in Hospitals

119 Fires Caused 1 Civilian & 1 Firefighter Injury
One hundred and nineteen (119) structure fires in hospitals[15] caused one civilian injury, one firefighter injury and an estimated dollar loss of $99,575. The average loss per fire was $837. In 2002, 1% of the 11,979 structure fires occurred in hospitals. Fires in hospitals were up 27% from 94 in 2001.

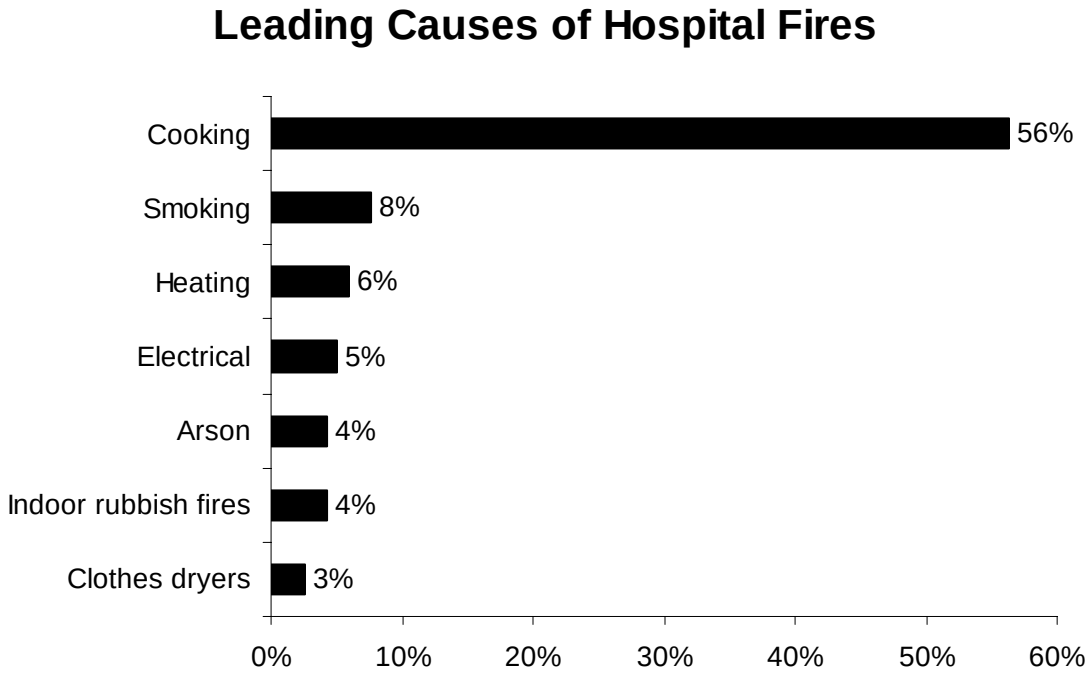


This property use section includes, mental institutions, including facilities for the criminally insane; medical, psychiatric and specialty hospitals where treatment is provided on a 24-hour basis; hospices; and clinic and clinic type infirmaries. It does not include doctor's or dentist's offices; nursing homes; alcohol or substance abuse centers; and mental retardation/development disability facilities.

Cooking Caused Over 1/2 of Hospital Fires
Unattended cooking and other unsafe cooking practices caused 56% of the fires in hospitals in 2002. The unsafe use of smoking materials accounted for 8% of these fires; heating equipment accounted for 6% of these fires; electrical problems caused 5%; arson,

[15] In v4 Property Use Codes for the Hospital Section included: 330 – Care of the sick, injured; insufficient information available to classify further, 331 – Hospital, hospital-type infirmary, 332 – Sanitorium, sanitarium, 334 – Clinic, clinic-type infirmary, and 339 – Care of the sick, injured not classified.

and indoor rubbish fires each initiated 4% of these fires; clothes dryer fires accounted for 3% of the fires in hospitals in 2002.



58% of Hospital Fires Began in the Kitchen
Fifty-eight percent, (58%) of the fires in hospitals in 2002, started in the kitchen; 6% began in heating rooms or areas; 5% occurred in patient's rooms; 3% occurred each in the cafeteria; and another 3% happened in laundry areas.

53% of Hospital Structure Fires Confined to Non-Combustible Containers[16]
Sixty-three (63), or 53% of all hospital structure fires, were reported as confined to non-combustible containers in 2002. Fifty-four (54), or 45%, of these fires were contained cooking fires. Five (5), or 4%, were fires confined to a fuel burner or boiler malfunction. Three (3) were confined indoor rubbish fires accounting for 3% of hospital fires. A commercial compactor fire accounted for less than 1% of 2002 hospital fires.

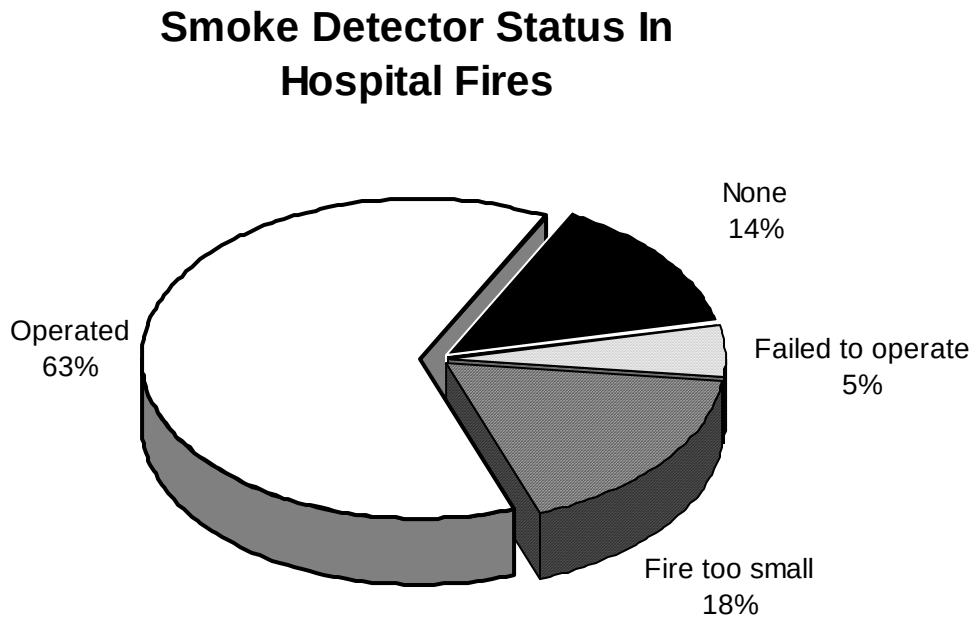
As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires increased by 56 incidents, or 800%, from the seven reported in 2001.

[16] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

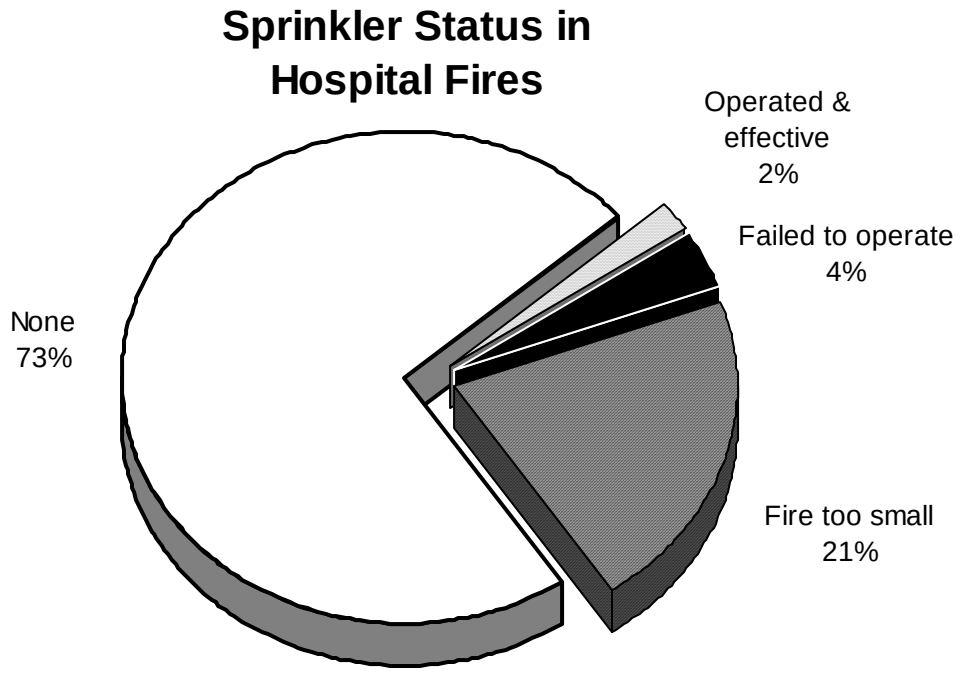
Detectors Alerted Occupants in Over 3/4 of Confined Fires
Smoke or heat detectors alerted the occupants in 48, or 76%, of the hospital fires that were confined to non-combustible containers. In 8% of these fires, the detectors did not alert the occupants. In 16% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

Detectors Operated in Almost 2/3 of Hospital Fires
Smoke detectors were present and operated in 63% of the 57 fires in hospitals where detector performance was known. In 5% of incidents, the detectors were present but did not operate. The fire was too small in 18% of these incidents. In 14% of the fires in hospitals, there were no detectors present at all.

Smoke detector status was unknown in one of the fires in hospitals. This incident was excluded from the analysis.



No Sprinklers in 73% of Hospital Fires
Of the 52 hospital fires where sprinkler performance was known, sprinklers were present and operated effectively in one, or 2% of these fires. The fire was too small to activate the sprinkler in 11, or 21%, of these fires. Seventy-three percent (73%), or 38, of the hospital fires had no sprinkler systems. Sprinkler performance was unknown in six of the fires in hospital facilities. These incidents were excluded from this analysis.



Arson Caused Largest Loss Hospital Fire in 2002

- On April 2, 2002 at 3:40 p.m. the Boston Fire Department was called to a fire at a hospital for the mentally ill. Someone intentionally ignited some trash in one of the corridors. The fire did not cause any injuries but did cause an estimated $15,000 in property loss. Smoke alarms were present but failed to operate. The sprinkler system was present but it was undetermined if it operated.

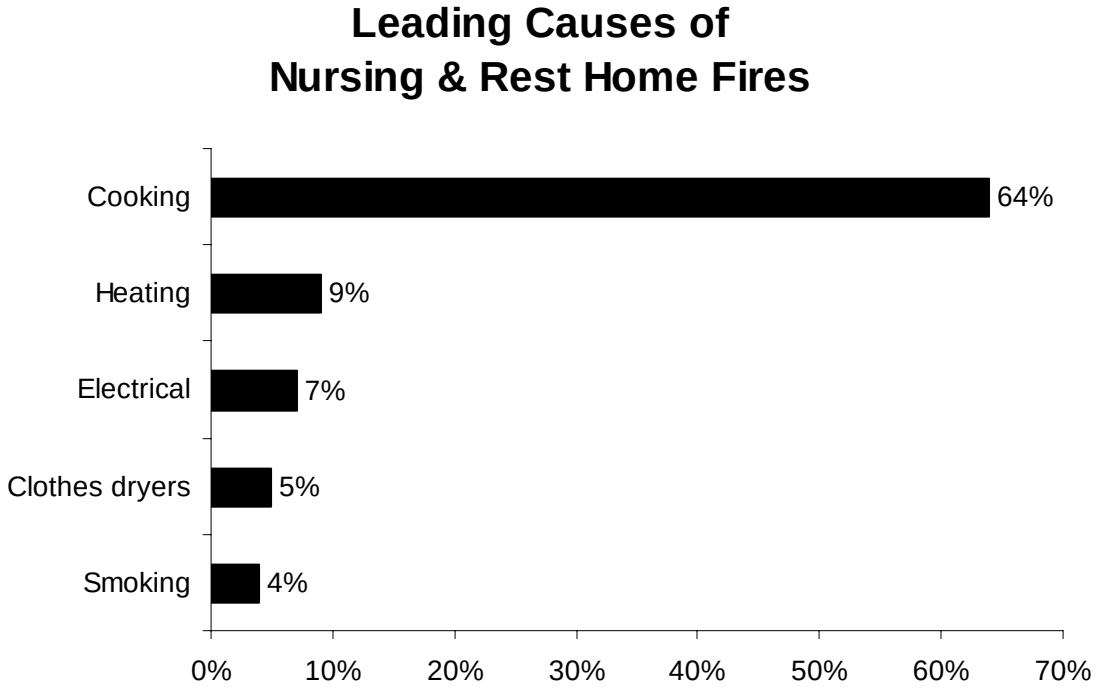
Nursing Home and Rest Home Fires

100 Fires Caused 1 Civilian Injury, 2 Fire Service Injuries and $29,175 in Damages
One hundred (100) structure fires occurred in nursing homes and rest homes[17] during 2002. These fires caused one civilian injury, two fire service injuries and an estimated dollar loss of $29,175. The average loss per fire was $292. In 2002, 1% of the 11,979 structure fires occurred in nursing homes and rest homes. Fires in nursing homes and rest homes were up 18% from 85 in 2001.

This property use category includes only nursing homes licensed by the state that provide 24-hour nursing care for four or more persons.

[17] In version 4 structures with a Fixed Property Use code 312 – Care of the aged without nursing staff - was included in this count. However, with the conversion to version 5 codes, all v4 FPU = 312 have been converted to Property Use code 459 – Residential board and care.

Cooking and Heating Equipment Were the Leading Causes of Nursing Home Fires
Unattended cooking and other unsafe cooking practices caused 64% of the fires in nursing and rest homes. Heating equipment was involved in 9% of these fires. Electrical problems caused 7% of these fires. Clothes dryers were involved in 5% of nursing home fires. Improper use or disposal of smoking materials caused 4% of nursing home fires.



Over 2/3 of Fires Began in the Kitchen
Sixty-eight percent (68%) of the nursing and rest home fires began in the kitchen. Eight percent (8%) of these fires began in a heating room or area. Six percent (6%) of the fires in nursing homes started in laundry rooms; another 6% began in the patient rooms. Two percent (2%) occurred in corridors or malls.

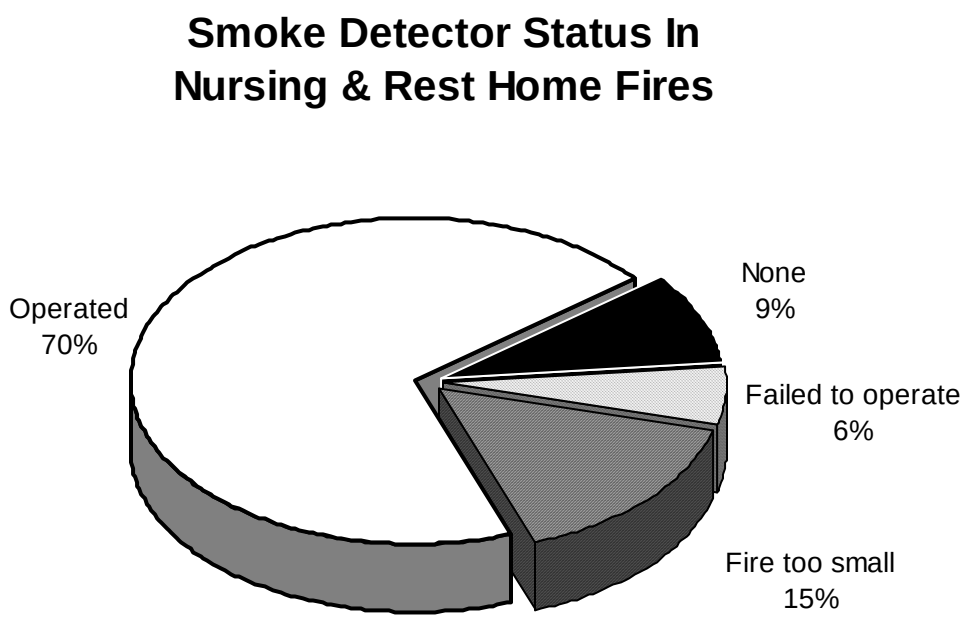
72% of Nursing Home Fires Are Confined to Non-Combustible Containers[18]
Seventy-two (72), or 72%, of all nursing home structure fires were reported as confined to non-combustible containers in 2002. Sixty-three (63) of the reported fires were cooking fires contained to a non-combustible container accounting for 63% of nursing home structure fires. Seven (7), or 7%, were fires confined to a fuel burner or boiler malfunction. Two (2), or 2%, of these fires was a contained rubbish fire.

[18] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

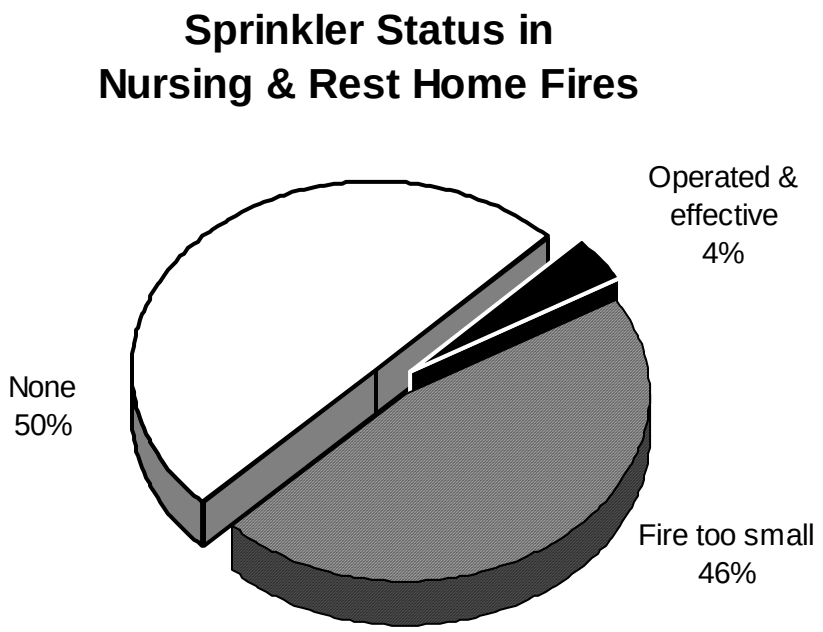
As expected the number of contained fires in nursing homes rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires increased by 53 incidents, or 279%, from the 19 reported in 2001.

Detectors Alerted Occupants in 85% of Confined Fires
Smoke or heat detectors alerted the occupants in 61, or 85%, of the structure fires in nursing and rest homes that were confined to non-combustible containers. In 4% of these fires, the detectors did not alert the occupants. In 11% of these fires, it was undetermined if the detectors alerted the nursing home occupants.

Detectors Operated in 70% of Nursing Home Fires
Smoke detectors were present and operated in 70% of the 33 fires in nursing and rest homes where detector performance was known or reported. Detectors were present but did not operate in 6% of these fires. Fifteen percent (15%) of these fires were too small to activate the detector. In 9% of these fires there were no smoke detectors. Smoke detector status was undetermined for two incidents. They were excluded from the percentage calculations.



No Sprinklers in 1/2 of Nursing Home Fires
Of the 24 hospital fires where sprinkler performance was known or reported, sprinklers were present and operated effectively in one, or 4% of these fires. In 46% of the fires in nursing and rest homes where sprinkler performance was known, the fire was too small to activate the sprinkler. No sprinkler systems were present in 50% of these fires. In 11 of these incidents, sprinkler performance was undetermined. These fires were excluded from the analysis.



Clothes Dryer Caused Largest Nursing Home Loss Fire

- On January 22, 2002 at 5:02 p.m. the Millbury Fire Department was called to a fire in a nursing home caused by a clothes dryer in a laundry room. This fire caused $10,050 in property damage. There were no injuries reported at this fire. Both smoke detectors and sprinklers were present but it was undetermined as to their performance.

Office Building and Bank Fires

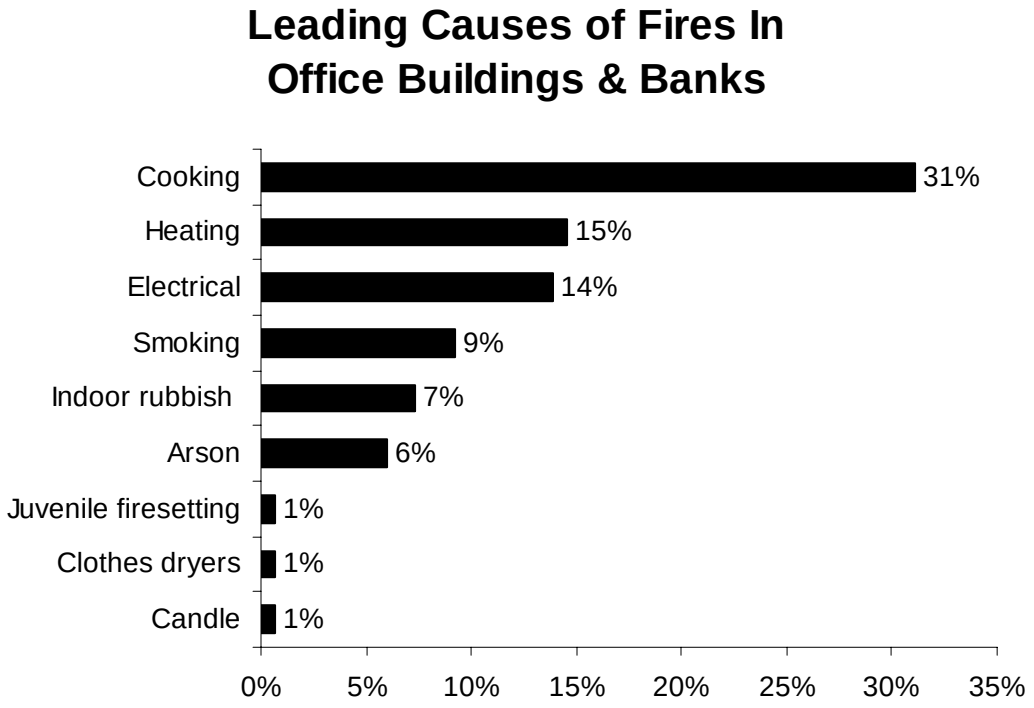
151 Fires, 1 Civilian & 8 Firefighter Injuries, $2.7 Million in Damages

One hundred and fifty-one (151) structure fires occurred in offices and banks during 2002. These fires caused one civilian injury, eight firefighter injuries, and an estimated dollar loss of $2.7 million. The average dollar loss per fire was $17,933. In 2002, 1% of the 11,979 structure fires occurred in offices and banks. Fires in office buildings and banks were down 13% from 174 in 2001.

Cooking Caused Almost 1/3 of Office & Bank Fires

Unattended cooking and other unsafe cooking practices caused 31% of the 151 fires in office buildings and banks in 2002. Heating equipment accounted for 15% of these fires.

Electrical problems caused 14%; smoking materials ignited 9%; 7% were due to indoor rubbish fires; 6% of the fires in offices and banks were considered arson. Juvenile-set fires, clothes dryers and candles were each responsible for 1% of these fires in 2002.



Over 1/4 Office Building and Bank Fires Started in Kitchen
Twenty-nine percent (29%) of the fires in office buildings or banks started in the kitchen. Ten percent (10%) of these fires began in a heating room or area. Six percent (6%) of these fires began in an office; 4% began in a corridor or mall; 3% occurred in a bathroom; another 3% began in a machinery or elevator room; 2% started on the exterior roof; 2% began in the attic or crawl space and another 2% occurred in a switchgear area or transformer vault.

37% of Office Building Fires Are Confined to Non-Combustible Containers[19]
Fifty-six (56), or 37%, of all office building and bank structure fires were reported as confined to non-combustible containers in 2002. Thirty-one (31) of the reported fires were cooking fires contained to a non-combustible container accounting for 21% of office building structure fires. Fifteen (15), or 10%, were fires confined to a fuel burner or boiler malfunction. Eight (8), or 5%, of these fires were contained rubbish fires. One of these fires was a confined chimney fire and another was a fire confined to the

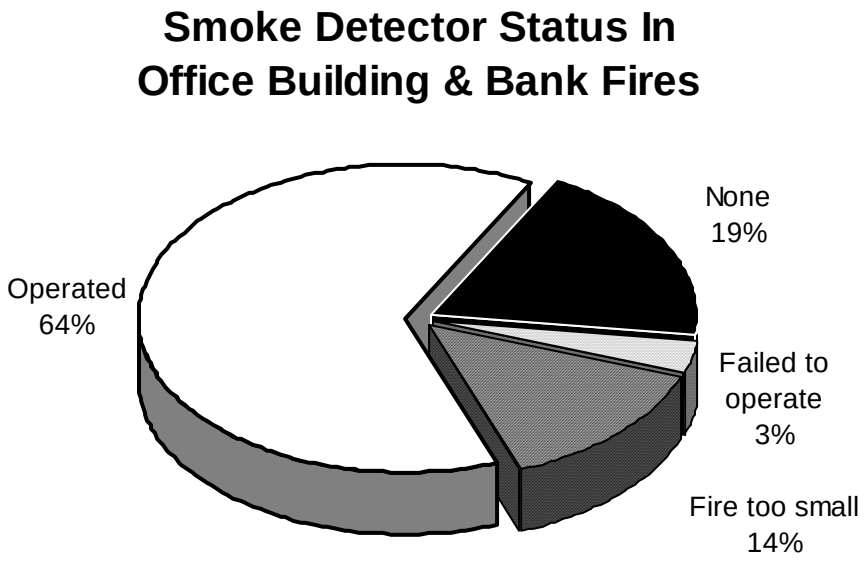
[19] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

commercial compactor, each of these fires accounted for 1% of the office building and bank fires in 2002.

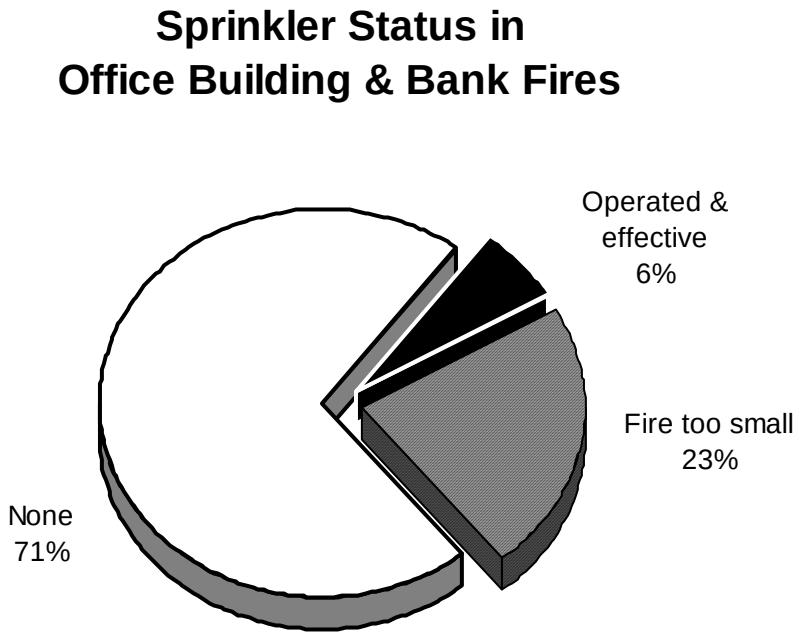
As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined fires in offices increased by 40 incidents, or 250%, from the 16 reported in 2001.

Detectors Alerted Occupants in Over 1/2 of Confined Fires
Smoke or heat detectors alerted the occupants in 31, or 55%, of the structure fires in office buildings and banks that were confined to non-combustible containers. In 21% of these fires, the detectors did not alert the occupants. In 23% of these fires, it was undetermined if the detectors alerted the nursing home occupants.

No Detectors in 19% of Office Building and Bank Fires
Smoke detectors were present and operated in 64% of the 93 fires in office buildings and banks where smoke detector performance was known. Detectors were present but did not operate in 3% of these fires. In 14%, the fire was too small to activate the detector. Nineteen percent (19%) of fires in office buildings or banks did not have any smoke detectors. Detector performance was undetermined in seven office building and bank fires. These incidents were excluded from the analysis.



71% of Office Building and Banks Had No Sprinklers
No sprinklers were installed in 71% of the 93 fires occurring in office buildings and banks where sprinkler performance was known. In 23% of these incidents, the fire was too small to activate the sprinkler. Sprinklers were present and operated effectively 6%, of these incidents. Sprinkler performance was not known in nine of the total number of office building and bank fires. These incidents were excluded from the analysis.



Electrical Cord Caused Largest Loss Office Building Fire

- On January 18, 2002 at 4:08 a.m. the Lynn Fire Department was called to a fire in a two-story office building that was caused by an electrical cord. This fire caused $600,000 in property damage. There were no civilian injuries, but there were three fire service injuries reported at this fire. It was undetermined if smoke detectors were present. There were no sprinklers present in the building.

Vacant Building Fires

17% of Vacant Building Fires Considered Arson
Four hundred and eighty-seven (487) structure fires occurred in buildings that were vacant, under construction or demolition[20]. These 487 fires caused one civilian death, 12

[20] In version 4 a vacant building was defined by having a Fixed Property Use code in the subsection of construction, unoccupied properties, between 910 & 919. However in version 5, the Property Use is separate from the Building Status. In v5 a building is considered vacant if the Building Status is coded: 1-

civilian injuries, 50 firefighter injuries and an estimated $14.5 million in damages. The average dollar loss per vacant building fire was $29,763. Eighty-three (83), or 17% of the fires in vacant buildings were considered arson. These 83 fires caused 10 firefighter injuries and $4 million in damages. In 2002, 17% of the 485 Massachusetts structure arson fires occurred in vacant buildings. Fires in vacant buildings were up 201% from 162 in 2001. This increase is due to version 5's ability to make a distinction between 'Property Use' and the new field 'Building Status.'

In this new format, you are able to make a distinction between the property's use and the building's status. For example in version 4 if you had a vacant apartment building, one might code the 'Fixed Property Use' as Apartments, 3-6 units or Vacant property, but not both. If the report used the former code then it would not have been counted as a vacant property fire. However in the new system, this same incident would now be coded with a 'Property Use' of Multi-family dwellings and a 'Building Status' of Vacant, secured or unsecured. The addition of this new field is most likely the primary reason for the dramatic increase in vacant property fires.

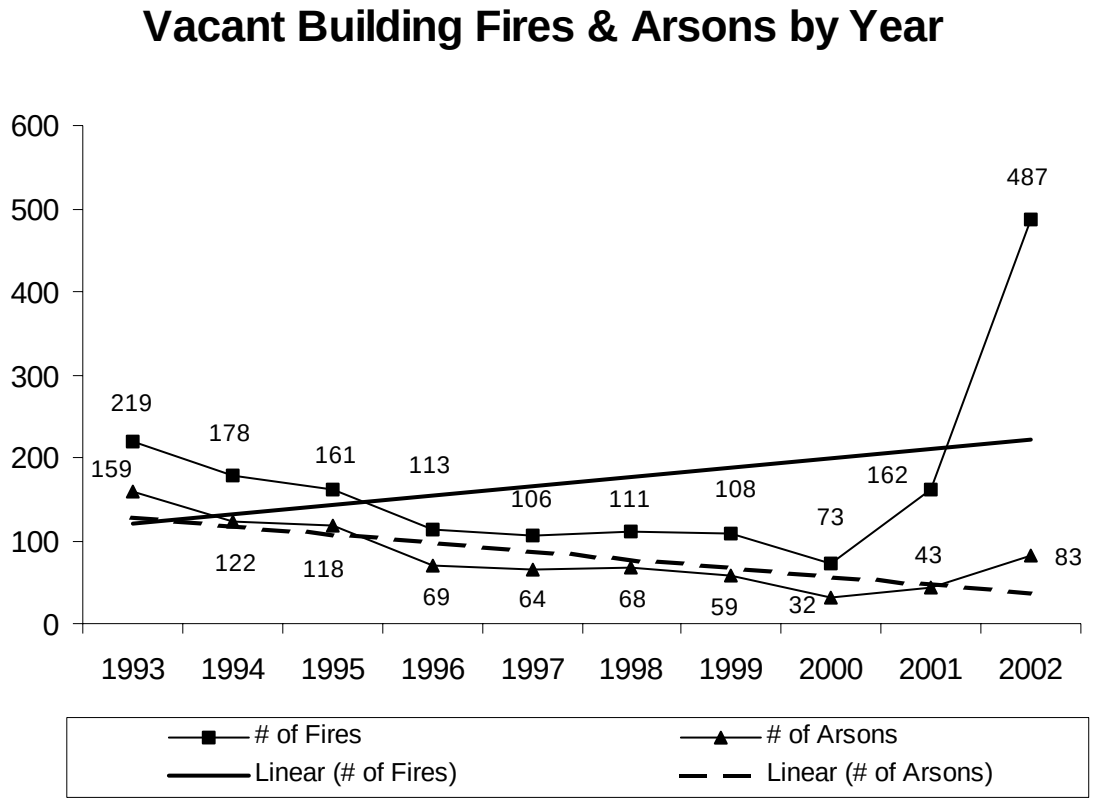
The following table and chart illustrate the trend in vacant building fires and arsons: they are steadily declining from 1993 to 2000. 2001 was the transition year to version 5 and its increased ability to track these fires. It should be noted that these statistics do not include the Boston Fire Department. Data from the BFIRS system loses the capability to identify vacant buildings during conversion to MFIRS. We expect this problem to be eliminated when Boston completes its conversion to MFIRS version 5. Therefore, the numbers in the table should be considered to be underestimated.

FIRES AND ARSONS IN VACANT BUILDINGS

Year	# of Fires	# of Arsons	% Arsons
2002	487	83	17%
2001	162	43	27%
2000	73	32	44%
1999	108	59	55%
1998	111	68	61%
1997	106	64	60%
1996	113	69	61%
1995	161	118	73%
1994	178	122	69%
1993	219	159	73%

The following graph clearly shows this downward trend in both vacant building fires and vacant building arsons. The 2002 numbers are from the new version 5 format. It is expected for the both the number of vacant building fires and arsons to increase because of version 5's new ability to distinguish between a structure's property use and its building status.

Under Construction; 3-Idle, not routinely used; 4-Under major renovation; 5-Vacant, secured; 6-Vacant, unsecured; & 7-Being demolished. The building use is coded separately in the Property Use field.

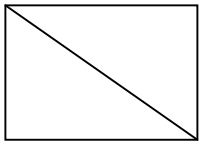


The 32% drop in reported vacant building fires from 1999 to 2000 was likely due to the aftermath of the December 3, 1999 Worcester Cold Storage Warehouse Fire where six firefighters lost their lives. A homeless squatter couple who had been living in the abandoned cold storage warehouse started the fire when a candle they were using was knocked over and ignited some of their clothes. This tragedy led to increased awareness of the dangers of abandoned and vacant buildings. This heightened awareness led to increased inspections, stricter adherence to building and fire codes along with tighter security around these structures. It also led to many changes in firefighting practices on these types of fires such as deciding whether to use an offensive attack strategy placing firefighters inside the building or a defensive strategy by setting up master stream devices and fighting the fire from the outside.

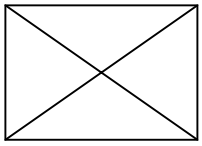
Some communities have gone on the offensive against vacant buildings. Some of the steps being taken by cities and towns are marking vacant buildings, more frequent patrols of areas where these structures are located, pre-incident planning including inspections of these buildings, tougher fines for owners who fail to keep vacant structures secured, and the taking of these properties by the municipality through a variety of means.
The City of Worcester took the lead. Since the tragic death of six of its own firefighters on December 3, 1999 at the vacant Worcester Cold Storage Warehouse, the city has marked vacant buildings with large placards for firefighters and other public safety personnel. These placards identify vacant buildings and either warn personnel to proceed

with extreme caution when entering these buildings or that the building is off limits and a defensive, exterior attack is recommended.

These standards are now mandatory throughout the Commonwealth. Under both the Building Code (780 CMR 121.7 & 8) and the Fire Code (527 CMR 10.13 (7)), owners of vacant buildings must secure and mark them with the following symbols.



Interior hazards exist. Interior operations should be conducted with extreme caution.



Interior and/or exterior hazards exist. Consideration should be given to conduct operations from the exterior only

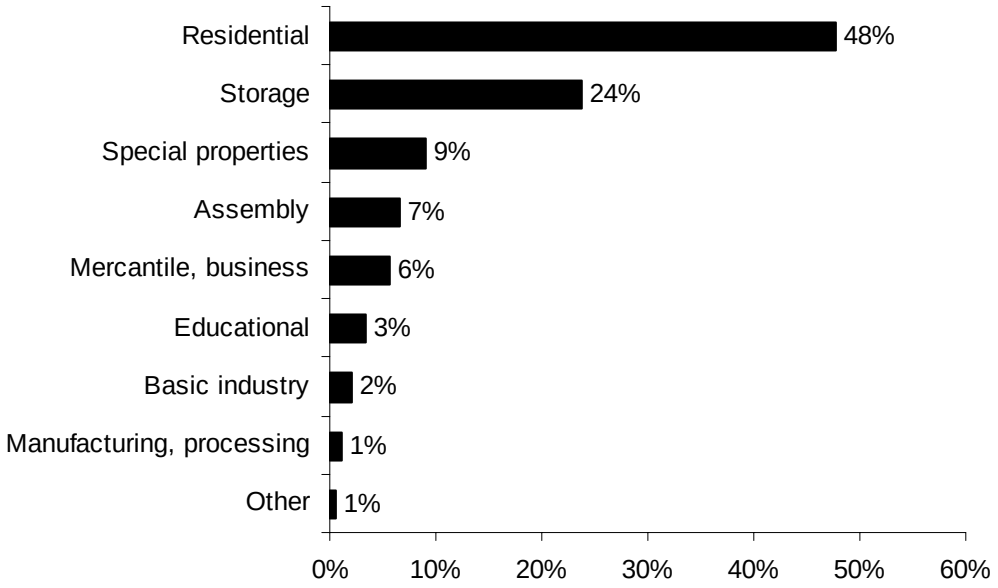
These placards can now be seen in communities throughout the Commonwealth. Neither of these symbols limit the incident commander in directing the operations he deems necessary.

Almost 1/2 of All Vacant Building Fires Were Residential

Out of the 487 vacant building fires, 472 had a known property use. Two hundred and twenty-five (225), or 48%, of these fires occurred in residential occupancies. One hundred and twelve (112), or 24%, happened in storage facilities; 43, or 9% occurred in special properties; 31, or 7%, were in public assembly properties; 27, or 6%, happened at a mercantile or business location; 16, or 3%, were at educational facilities; 10, or 2%, occurred at basic industrial sites; five, or 1%, happened at manufacturing or processing locations. Three (3) vacant building fires, or 1%, occurred in “other” types of buildings.

2002 is the first full year that the data is able to delineate between a building’s property use and its building status. The change in coding requirements did create a substantial increase in reported vacant building fires and arsons; only after we have five or more years of version 5 data will we be able to tell how substantial this increase really is.

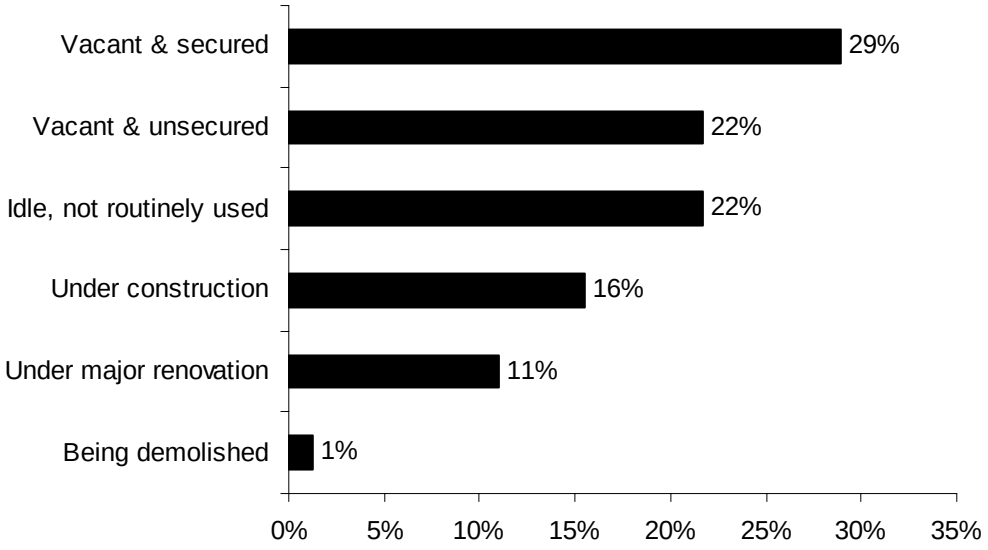
Vacant Building Fires by Property Use



29% Were Vacant and Secured Buildings
Of the 378 fires in vacant buildings where building status was known in 2002, 95, or 29% were in vacant buildings that were secured. Seventy-one (71), or 22%, of these fires occurred in vacant buildings that were unsecured; another 71, or 22%, of these fires took place in buildings that were idle or not routinely used; 51, or 16% were under construction; 36, or 11%, happened in buildings undergoing major renovations; and four, or 1%, of the fires in these buildings occurred in buildings that were in the process of being demolished.

In 81 incidents the building status was coded as 'Other.' In 63 incidents it was undetermined as to the building's status. These 144 incidents were not included in the above calculation.

Vacant Building Fires by Building Status



Over 1/3 of All Vacant Building Arsons Occurred in Residential Buildings
Thirty-seven percent (37%) of the vacant building arsons in 2002 occurred in residential occupancies. Nineteen percent (19%) took place in storage facilities; 16% occurred in public assembly properties; 12% happened in special properties; 5% happened in educational properties; 4% took place in manufacturing or processing facilities and 1% occurred in basic industrial facilities.

39% of All Vacant Building Arsons Occurred in Unsecured Buildings
Thirty-nine percent (39%) of all vacant building arsons in 2002 occurred in unsecured vacant buildings. Twenty-seven percent (27%) occurred in secured, vacant buildings; while 19% happened in idle buildings that are not routinely used. Building under construction accounted for 10% of vacant building arsons. Buildings under major renovation accounted for 3% of the vacant building arsons in 2002. Two percent (2%) of these arsons occurred in buildings being demolished.

Vacant Buildings Also Threaten Community
Vacant buildings also pose a serious threat to the surrounding community. They become targets for vandalism. Children may find them attractive play spaces. Drug users or dealers may utilize the space for their activities. The homeless may seek shelter and set fires to keep warm. Arsonists who enjoy fires may consider these buildings to be available for their use and entertainment. All of these activities threaten the safety of the neighborhood and surrounding homes.

Sprinklers Must Be Maintained
When the sprinkler systems are present, they should be maintained. If the head of the fire department decides to grant a request under MGL Chapter 148, Section 27 to disconnect the system, extra precautions should be taken.

Effective Boarding Up Is Key To Protection
Removing furniture, contents and debris from the interior of the building, insisting that all openings to the building are securely boarded up, preferably from the inside, and periodic security checks can reduce the risk of fire in any vacant building and the inherent risk to firefighters called to fight a vacant building fire. Local officials and building owners must ensure that these buildings are adequately secured to prevent entry into these buildings. This is a community's first line of defense in the battle to prevent arson and to maintain housing stock.

Large Loss Vacant Building Fires

- On December 20, 2002, at 2:24 a.m. the Dedham Fire Department was called to a fire in a building undergoing major renovations. The fire began in a cooking area. The cause of the fire was undetermined. There were no injuries associated with this fire. It was undetermined if smoke detectors were present. Sprinklers were not present. Damages from this blaze were estimated to be $2,500,000.

- On May 11, 2002, at 6:47 p.m., the West Barnstable Fire Department[21] was called to a fire in a single-family home undergoing major renovation. The fire was believed to have been intentionally set on an exterior porch. There were no injuries associated with this fire. Damages from this fire were estimated to be $2,500,000.

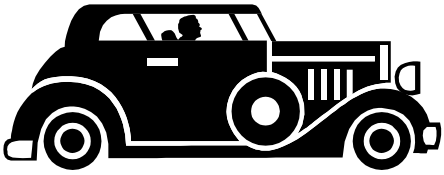
- On July 15, 2002, at 11:28 p.m. the Cambridge Fire Department was called to a laboratory that was under construction. It was undetermined how the fire started. One civilian and one firefighter were injured during this fire. Detectors were present and operated. Sprinklers were present but the system was not active because the building was unoccupied. Damages from this fire were estimated to be $1,000,000.

[21] West Barnstable Fire Department was a non-reporting department in 2002. This anecdote was compiled from various other sources.

Motor Vehicle Fires

4,331 Motor Vehicle Fires Account for 16% of All Reported Fires

The 4,331 motor vehicle fires accounted for seven, or 11%, of civilian fire deaths, 31 civilian injuries, 26 fire service injuries, and an estimated property damage of $17.3 million. Motor vehicle fires accounted for 16% of total reported fire incidents. The 4,331 fires in 2002 are a 16% drop from the 5,127 motor vehicle fires in 2001.



According to MFIRS, a motor vehicle fire is defined as any fire involving a car, truck, boat, airplane, construction equipment or other mobile property (not being used as a permanent structure) that occurs outside of a structure.

The Burned Motor Vehicle Reporting Law

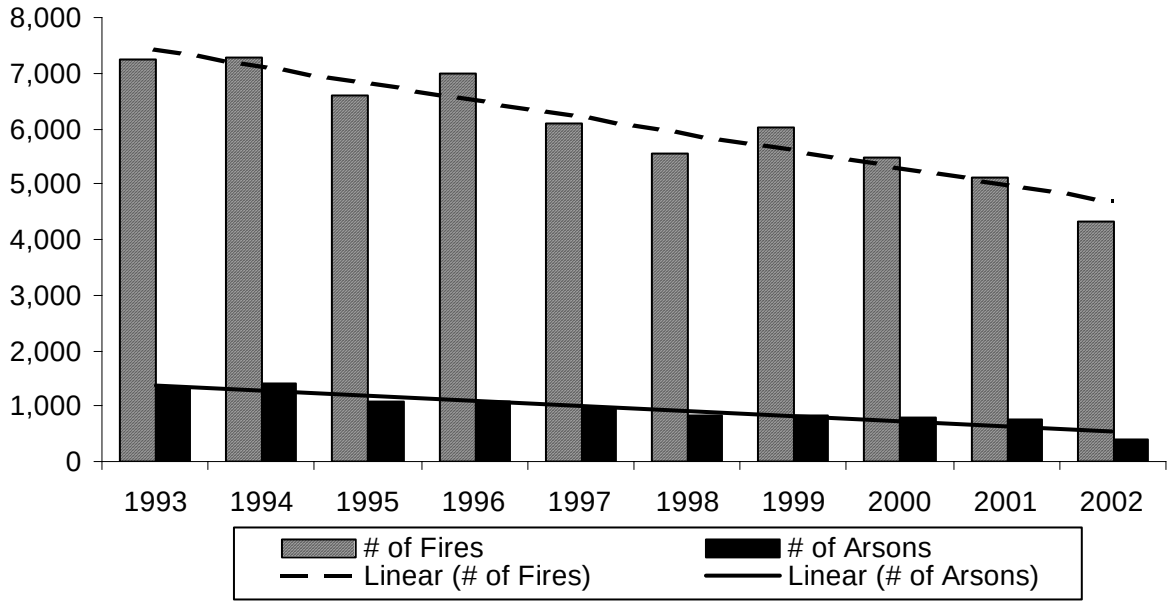
The Massachusetts Fire Incident Reporting System identified motor vehicle fires and motor vehicle arson as a major problem in 1985. The Burned Motor Vehicle Reporting Law took effect in August of 1987. The law requires owners of burned motor vehicles to complete and sign a report which must also be signed by a fire official from the department in the community where the fire occurred. The table below shows the effectiveness of this law. Since it took effect in 1987, motor vehicle arsons have decreased 92% from a high of 5,116 in 1987 to 395 in 2002. The percentage of motor vehicle fires that are arsons has also dropped 70% in the past decade from 18.4% in 1993 to 9.1% in 2002.

VEHICLE FIRES AND VEHICLE ARSONS BY YEAR

Year	Vehicle Fires	Vehicle Arsons	% Arsons
2002	4,331	395	9.1%
2001	5,127	743	14.5%
2000	5,473	798	14.6%
1999	6,011	818	13.6%
1998	5,565	836	15.0%
1997	6,096	979	16.1%
1996	6,980	1,082	15.5%
1995	6,612	1,093	16.5%
1994	7,267	1,395	19.2%
1993	7,234	1,329	18.4%

The following graph illustrates the data in the table.

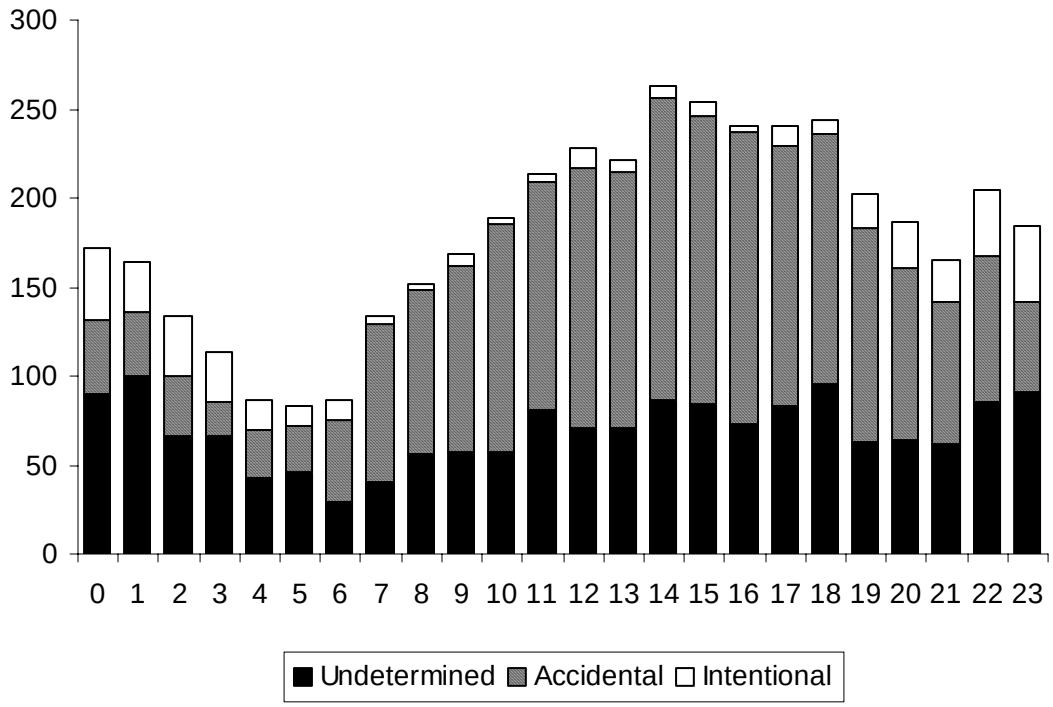
Motor Vehicle Fires & Arsons by Year



Mechanical Failures Caused 42% of Massachusetts Motor Vehicle Fires
Of the 4,331 motor vehicle fires in 2002, 29% were caused by some type of mechanical failure or malfunction; 9% were considered intentionally set and 23% resulted from other accidental causes. The cause was undetermined or not reported in 38% of the motor vehicle fires.

Accidental Fires Occur During Day and Early Evening, Vehicle Arson in Darkness
Motor vehicle fires of different causes occur at different times of the day. As the graph shows, accidental or unintentional fires are more common during the day and early evening. Incendiary fires are generally set in darkness. The graph below shows fire frequency by time of day on the 24-hour clock for the causes of motor vehicle fires by time of day. Midnight to 1:00 a.m. is represented by 0, 1:00 a.m. to 2:00 a.m. is represented by 1, etc.

Causes of Motor Vehicle Fires by Time of Day



Over 2/3 of Massachusetts Motor Vehicle Fires Involved Automobiles
Automobiles and vans accounted for 68% of the 4,331 motor vehicle fires, 1% were trucks weighing less than one ton and 3% were trucks weighing more than one ton.

Car Fire Safety Tips
Regular maintenance is the best way to prevent car fires. Leaking gasoline, oil and hydraulic fluids can catch fire. Electrical problems can cause short circuits and heat build-up. A properly operating catalytic converter can reach 1,100° F. It can get even hotter if the car has worked hard or needs a tune-up. If other parts come in contact with it, they can ignite. Catalytic converters on parked cars will sometimes ignite a pile of leaves or dried grass underneath.

What Should You Do if You Have a Car Fire?

1. Pull over to the side of the road and stop as soon as possible. Park the car, set the parking brake and put it in gear (or park for cars with an automatic transmission). Fire can disable a car's electrical system in seconds. Power steering and brakes can be harder to use than normal.
2. Turn off the ignition. You want to make sure no more gasoline is pumped to the fire.
3. Get everyone out of the car.
4. Move away and call 911. Do not open the hood. You risk injury, and give the fire more oxygen.

Unless you're trained, let firefighters handle it. They wear protective clothing and are trained to handle pressurized systems, exploding bumpers, etc. Chemicals in the fire extinguisher can be compacted. To be effective, they must be used correctly. You don't want to practice in a panic situation.

There were 43 motor vehicle fires at gas and service stations in 2002. There were 53 motor vehicle fires at facilities used for motor vehicle or boat sales, service or repairs. Many of these fires were started by gasoline or the gasoline fumes. Gasoline is so much a part of our lives that we don't think about it. However, it is a very dangerous substance and certain measures should be taken to minimize the chances of an incident.

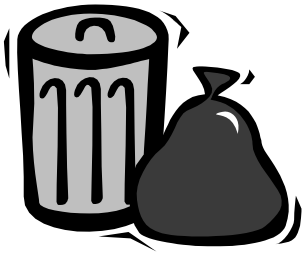
Gas Station Safety

- Turn off your car when you get gas.
- At self-service stations, remember to put the nozzle back and your gas cap on before driving off. Monitor the fueling; do not get back in the vehicle.
- Gasoline vapors burn at a very low temperature. These fumes are heavier than air, and can travel a distance to find a spark. Keep anything that could provide heat to start a fire away from gasoline. A spark or a lit cigarette is enough to ignite the invisible fumes that may linger on clothing.
- If you need to carry or store gasoline, use an approved container.
- When filling an approved container, place it on the ground to prevent static electricity build–up which could ignite the gasoline vapors. Make sure that the nozzle is always in contact with the container when filling.
- Make sure the approved container is in a secured, upright position away from passenger areas, and that the fill and vent openings are tightly closed. At home, always store these containers in safe secure areas – outside of living areas – away from ignition sources such as pilot lights.

Outside and Other Fires

11,070 Brush, Trash, and Other Outside Fires Reported in 2002

The 11,070 outside and other fires caused three civilian deaths, 35 civilian injuries, 40 fire service injuries, and an estimated dollar loss of $4.1 million. The 4,611 trees, grass and brush fires, 3,021 outside trash fires, 746 special outside fires, 279 cultivated vegetation or crop fires, and 2,413 other fires accounted for 40% of the total fire incidents in 2002. These fires were down 11% from the 12,374 incidents reported in 2001. Fire departments are required to report any fire resulting in a dollar loss or human casualty to MFIRS. Fires that do not result in a loss may be reported. Many fire departments, particularly those that submit data electronically, voluntarily report these fires. These figures should be considered an underestimate of the "no-loss" fire incidents to which fire departments actually responded.



The 11,070 reported outside and other fires include:

- 4,611 natural vegetation fires (trees, grass, and brush fires) which caused one civilian death, 16 firefighter injuries, three civilian injuries, and an estimated dollar loss of $161,315; this is a 29% decrease from the 6,462 incidents reported in 2001;
- 3,021 trash fires which caused four fire service injuries, three civilian injuries and an estimated dollar loss of $104,233; this is a 2% decrease from the 3,080 incidents reported in 2001;
- 746 special outside fires (including outside, storage, equipment, mailbox fires and outside gas or vapor explosions) which caused one civilian death, eight civilian injuries, four fire service injuries, and an estimated dollar loss of $378,573; this is a 47% increase from the 506 incidents reported in 2001;
- 279 cultivated vegetation or crop fires which caused an estimated dollar loss of $1,275,747; this is a 65% drop from the 789 incidents reported in 2001;
- 2,413 other fires which could not be classified further which caused one civilian death, 21 civilian injuries, 16 fire service injuries, and an estimated dollar loss of $2,148,742; this is a 57% increase from the 1,537 incidents reported in 2001.

Large Loss Outside and Other Fires

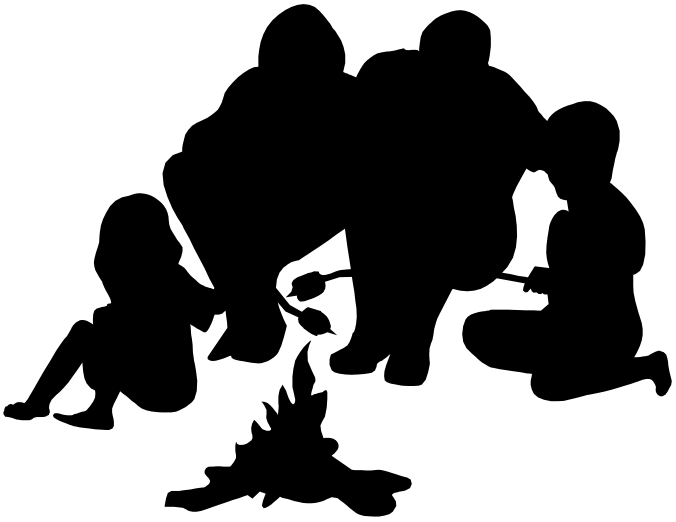
- On April 25, 2002 at 11:01 p.m. the Boston Fire Department was called to a fire at an NStar electric distribution facility. The fire started in the switchgear area and began with an unspecified short-circuit arc. An electrical transformer was the first item to ignite. Damages from this fire were estimated to be $1 million. There were no injuries resulting from this fire.

- On May 7, 2002 at 7:43 p.m. the Somerset Fire Department was called to an outside equipment fire of undetermined cause. Damages from this fire were estimated to be $100,050. There were no injuries associated with this fire.

Largest Injury Loss Outside and Other Fires

- On August 27, 2002 at 5:18 p.m. the Erving Fire Department was called to an outside storage fire at Erving Paper Mills of undetermined cause. A significant fuel load in the form of multiple rolls of paper waiting to be shipped hampered firefighters' efforts to get this fire under control. Surrounding towns provided mutual aid for this fire that took 30 firefighters 12 hours to put out. Two civilians were injured. Damages from this fire were estimated to be $77,200.

- On April 17, 2002 at 1:06 p.m. the Millbury Fire Department was called to a brush fire that started as a permit fire that got out of control of the homeowner. The fire spread to a large amount of 'junk and debris' on the property including tires, abandoned vehicles and abandoned propane tanks. Two civilians and one firefighter were injured. Damages from this fire were estimated to be $5,000.

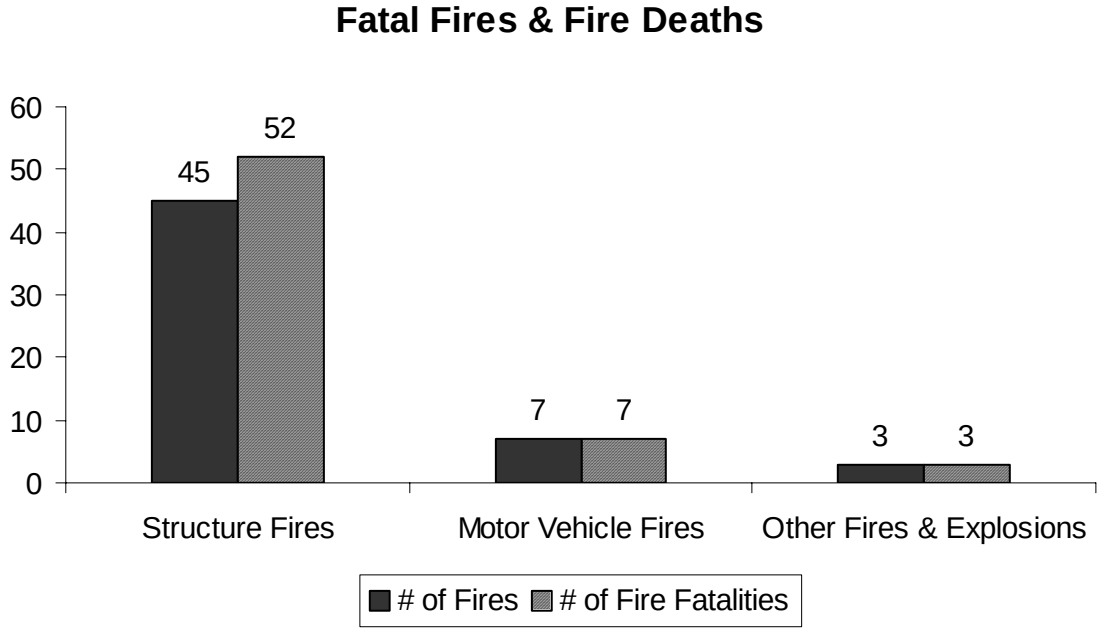


2002 Massachusetts Fire Deaths

Civilian Fire Deaths

62 Civilians Died in Massachusetts Fires
Sixty-two (62) civilians died in 55 Massachusetts fires during 2002. Fifty-two (52) civilians died in 45 structure fires. Seven (7) people died in seven motor vehicle fires. Three (3) people died in three outside and other fires in 2002. In 2002, there were 9.8 fire deaths per one million population in Massachusetts up slightly from 9.3 fire deaths per one million population in 2001.

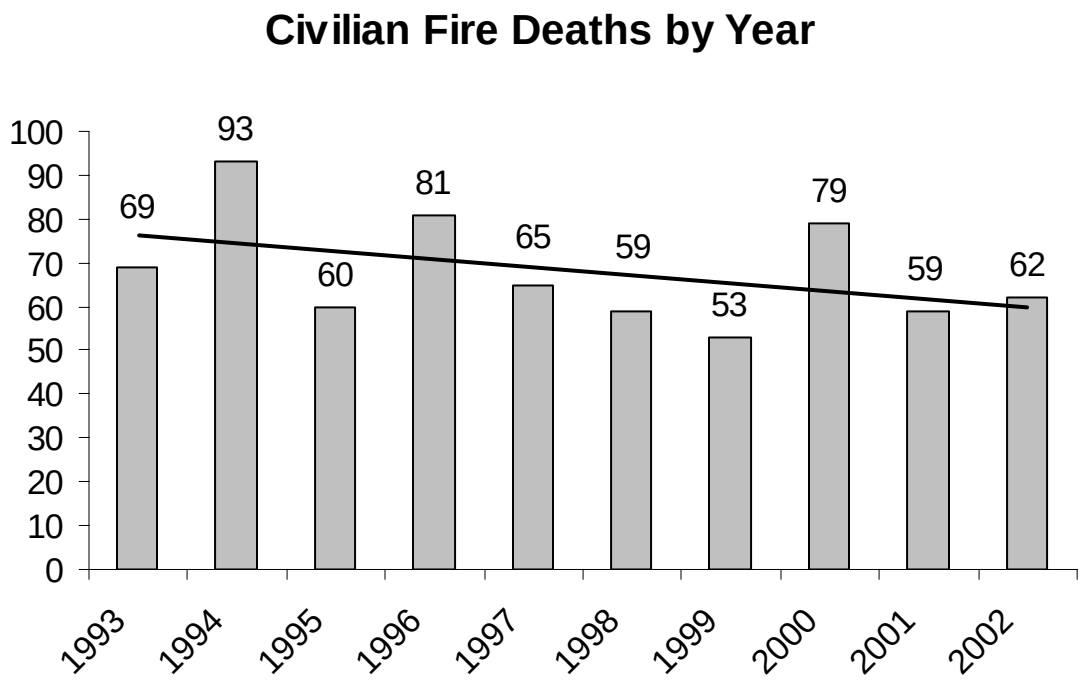
There was one fire-related fire service fatality in the Commonwealth of Massachusetts in 2002. The following graph shows the number of fatal fires and the number of fire deaths in structure fires, motor vehicle fires and other fires and explosions.



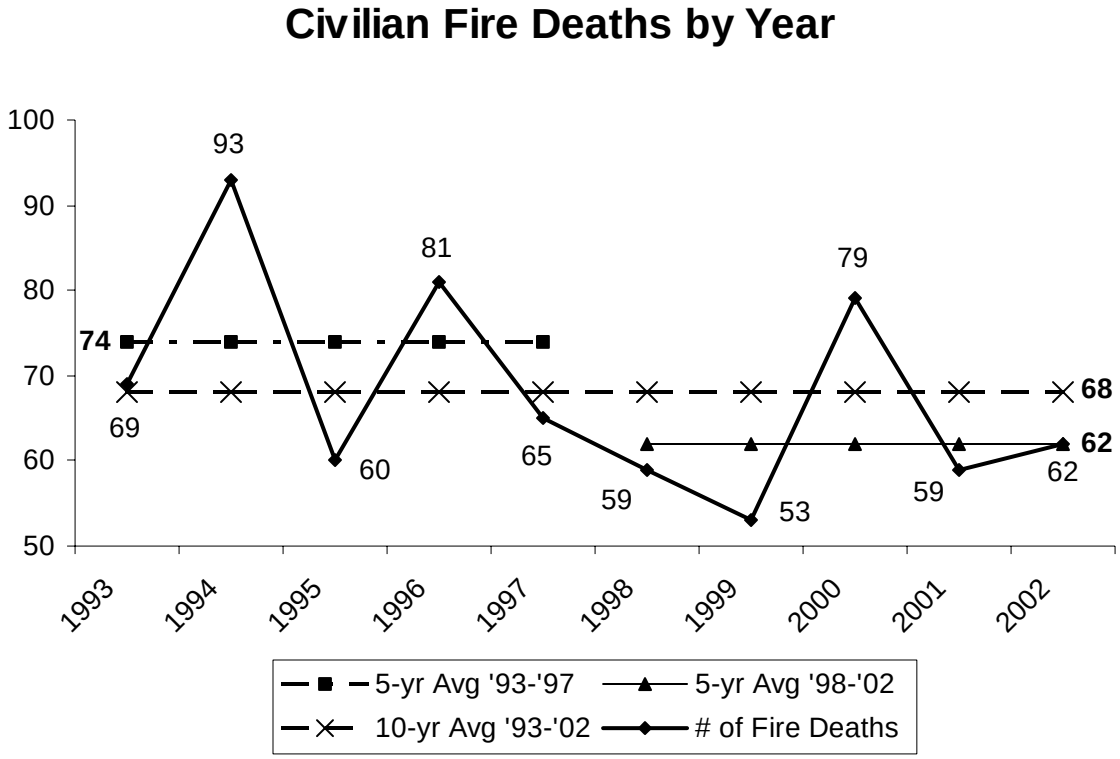
Fire Deaths Were Up 5% From Previous Year
In 2002 fire deaths rose by three, or 5%, from the previous year. The following chart shows the trend of civilian fire deaths for the past decade on a steady decline. Sixty-two (62) fire deaths is the third lowest total of deaths in the past ten years.

The following graph shows the number of civilian fire deaths per year for the last ten years. The 53 civilian fire deaths in 1999 were the lowest on record since the end of

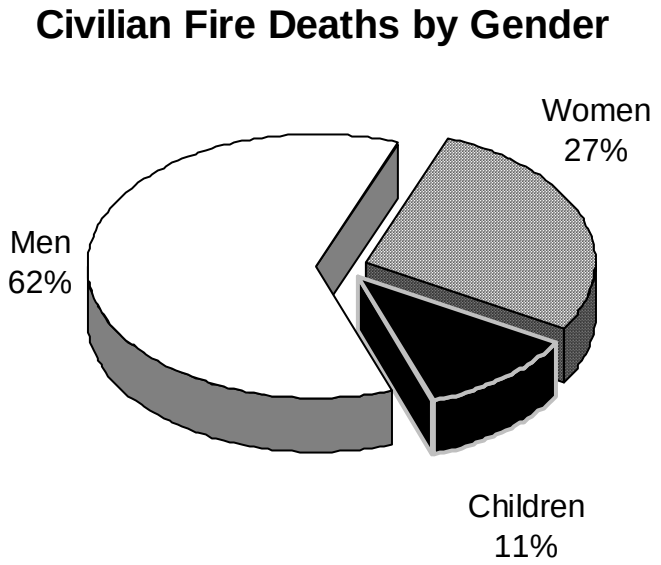
World War II. The trend in civilian fire fatalities over the past ten years is one of decline. Civilian fire deaths have decreased by 26% from the high of 93 in 1994.



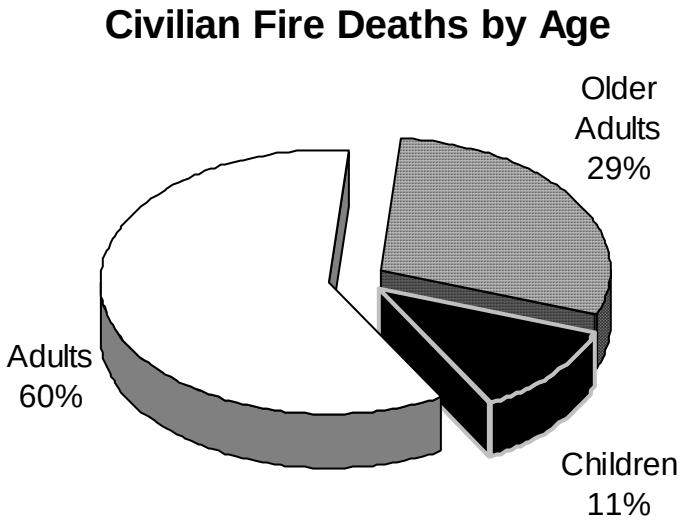
The following graph illustrates the five year averages for the periods from 1993 through 1997, 74 deaths, and 1998 through 2002, 62 deaths. It also shows the ten-year average of 68 deaths for the period 1993 through 2002. Four of the last five years have been below the ten year average and three of the last five years are below the five year average. Note that the chart below starts at 50 rather than the traditional zero value. The 62 fire deaths in 2002 are 13% below that ten-year average and equal to the five-year average.



38 Men, 17 Women and 7 Children under 18 Died from Fires in 2002
Of the 62 fire deaths, 38 or 62%, were men, 17, or 27%, were women and seven, or 11%, were children under 18. The following pie chart illustrates the above figures.

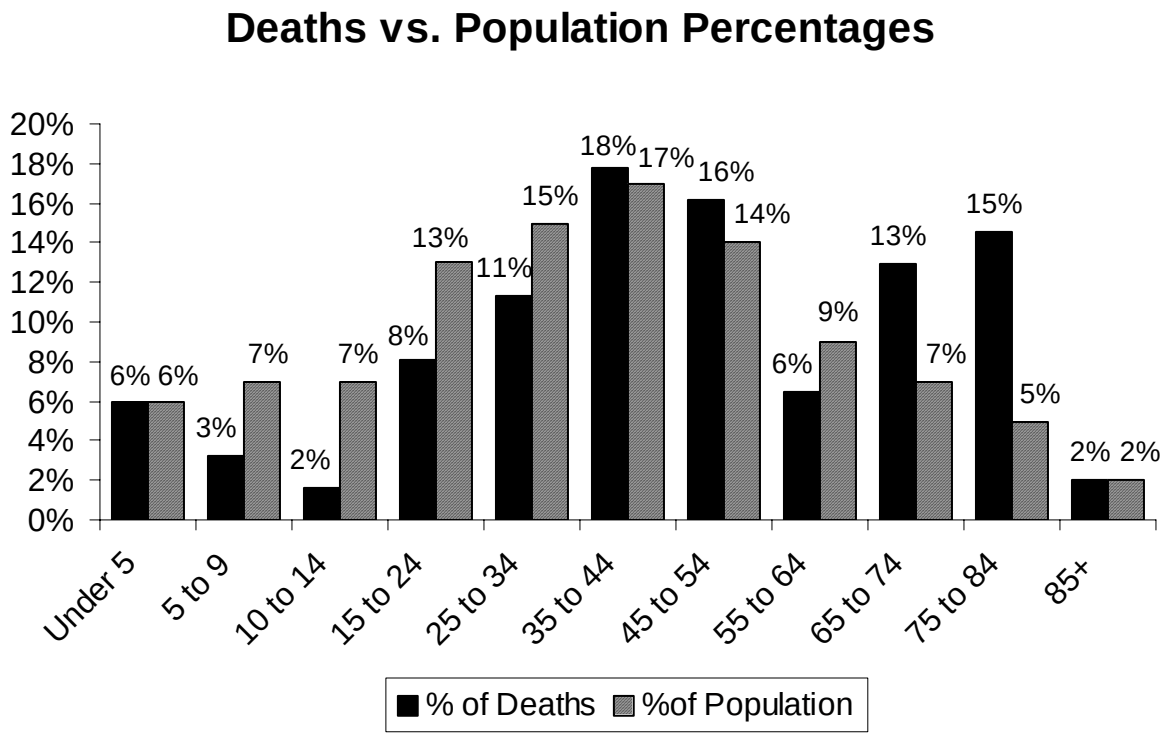


Eighteen (18), or 29%, of the civilian fatal fire victims were over 65 years of age. This included nine elderly women and nine elderly men. Seven (7), or 11%, were under 18-years old. Thirty-seven (37), or 60%, were adults between 18 and 65 years of age. The following pie chart illustrates the above figures.



Older Adults at Great Risk for Fire Death

Older adults (>65) account for 14% of the population but 29% of the fire deaths. The risk of fire death for older adults is 2.1, down from 2.2 last year. This means that older adults were twice as likely to be a fire-related fatality than other age groups. The following graph shows the percentage of fire deaths versus population percentage by age groups in 2002. If the percentage of deaths in a given age bracket is greater than its population, that group is at a higher than expected risk for fire death. People ages 5 to 14 had the lowest risk of fire deaths in 2002. Older adults, especially those between the ages of 75 and 84 had the greatest risk of dying in a fire.



The percentages of the population in each age group were calculated using data from the 2001 Census from the U.S. Census Bureau.

Children under five years old accounted for 6% of the fire deaths and 6% of the population in 2002. Children between the ages of five and nine accounted for 3% of the fire deaths and 7% of the population; children ages 10 to 14 accounted for 2% of the fire deaths and 7% of the population; young adults ages 15 to 24 accounted for 8% of the fire deaths and 13% of the population; people ages 25 to 34 accounted for 11% of the fire deaths and 15% of the population; adults between the ages of 35 and 44 were 18% of the fire fatalities, the highest of any age group and account for 17% of the population; people ages 45 to 54 accounted for 16% fatal fire victims and 14% of the Massachusetts population; victims between the ages of 55 to 64 accounted for 6% of the fatal fire deaths and 9% of the population; and older adults over the age of 65 accounted for 29% of the fire fatalities in Massachusetts in 2002, but only 14% of the population.

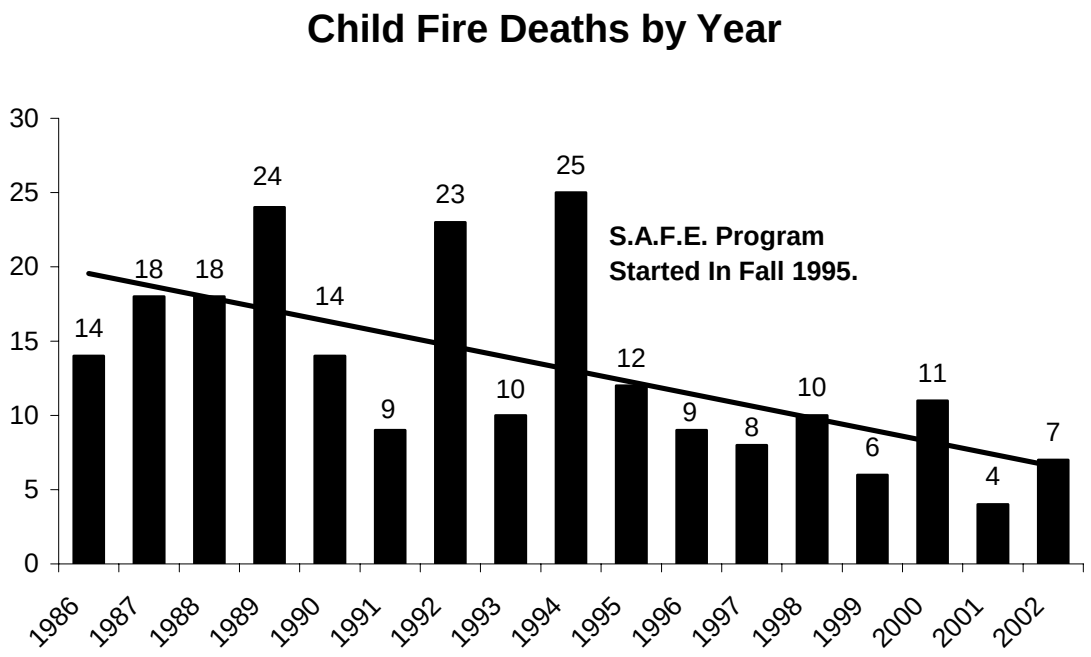
Child Fire Deaths Drop More Than 50% Since Start of S.A.F.E. Program
According to United States Fire Administration statistics, children under 10 accounted for an estimated 22% of all fire-related deaths nationally from 1994 – 1998.[22] In 2002 children under 10 accounted for only 10% of all Massachusetts fire-related deaths. Contrary to national trends, children are no longer at a disproportionate risk of dying in fires in Massachusetts. The following graph illustrates the number of child (age >18) fire fatalities in Massachusetts from 1986 through 2002. You can see a definite downward

[22] Source: United States Fire Administration's **Facts on Fire: Fire in the United States.**

trend in the number of fire related deaths to children from a high of 25 in 1994 to a low of four in 2002.

Fire deaths of children under age 18 have fallen more than 50% since the start of the S.A.F.E. Program in the fall of 1995. Since fire death numbers fluctuate quite a bit from year, it is helpful to look both at the trendline in the graph below and at averages over several years.

During the eight years where the S.A.F.E. Program has been in effect, from 1995 to 2002, the average number of child fire deaths per year has been 8.4. In the eight years prior to the S.A.F.E. Program, 1987-1994, the average number of child fire deaths per year was 17.6. This 50% drop in the average number of child fire deaths is significant when compared to the 29% drop in all fire deaths during the same time period.



The one thing that is happening in Massachusetts to improve fire safety exclusively for this age group, that is not also happening to all other age groups, is consistent, comprehensive, statewide, school-based fire safety education.

61% of the Fire Victims Died in Fires between 10:00 p.m. and 7:00 a.m.
People were more likely to die in fires that occurred while they slept. Thirty-eight (38), or 61%, of the fire victims died in fires that occurred between 10:00 p.m. and 7:00 a.m. The graph below shows the fire death frequency by time of day on the 24-hour clock. Midnight to 1:00 a.m. is represented by 0100; 1:01 a.m. to 2:00 a.m. is represented by 0200, etc.

The importance of having working smoke alarms is clearly demonstrated here. Because over one-half of the fire victims die during normal sleeping hours, the need to quickly awaken sleepers to the presence of danger is paramount.

Structure Fire Deaths

In 2002, there were 52 structure fire deaths in 45 fatal fires. For only the fourth time since 1994, not all of the structure fire deaths occurred in residential occupancies. One fatal fire occurred in a donut shop, one occurred in an old trailer that was being used for storage, one occurred in a detached tool shed, and one occurred in a structure of undetermined use in a junkyard.

Arsonist Died in a Botched Attempt at Donut Shop

- On March 8, 2002, at 1:54 a.m., the Boston Fire Department was called to a fire at a local donut shop. The victim, a 42-year old man, was trapped by the fire he set. He used gasoline in and around the kitchen area as his accelerant. After he ignited the fire, he was overcome by the heat and smoke it generated and died from burns and smoke inhalation. Three firefighters were injured battling this blaze. The fire caused $300,000 worth of damage. There were no smoke detectors present in the store. Sprinklers were present but it was undetermined if they activated.

Man Killed at Former Junkyard

- On July 11, 2002, at 1:24 p.m., the Boston Fire Department was called to a fatal fire in a structure at a closed junkyard. The cause of the fire remains undetermined after

the investigation concluded. The victim, a 43-year old male was overcome by the heat and smoke generated by the fire and succumbed to his burns and smoke inhalation. There were no other injuries associated with this fire. No detectors and no sprinklers were present in the structure. Damages from this fire were estimated to be $100,000.

One Man Killed in Storage Trailer Fire

- On October 12, 2002, at 11:18 a.m., the Northbridge Fire Department was called to a self-extinguished fatal fire in an old trailer that was being used for storage as a tool shed. The victim, a 34-year old man, who was familiar with the trailer, had illegally entered it the night before, and was found in the burned out sleeping area. The cause of the fire was undetermined, but the victim was known to be a heavy smoker who may have lit a candle for light. There were no other injuries associated with this fire. Damages from this fire were estimated to be $6,000.

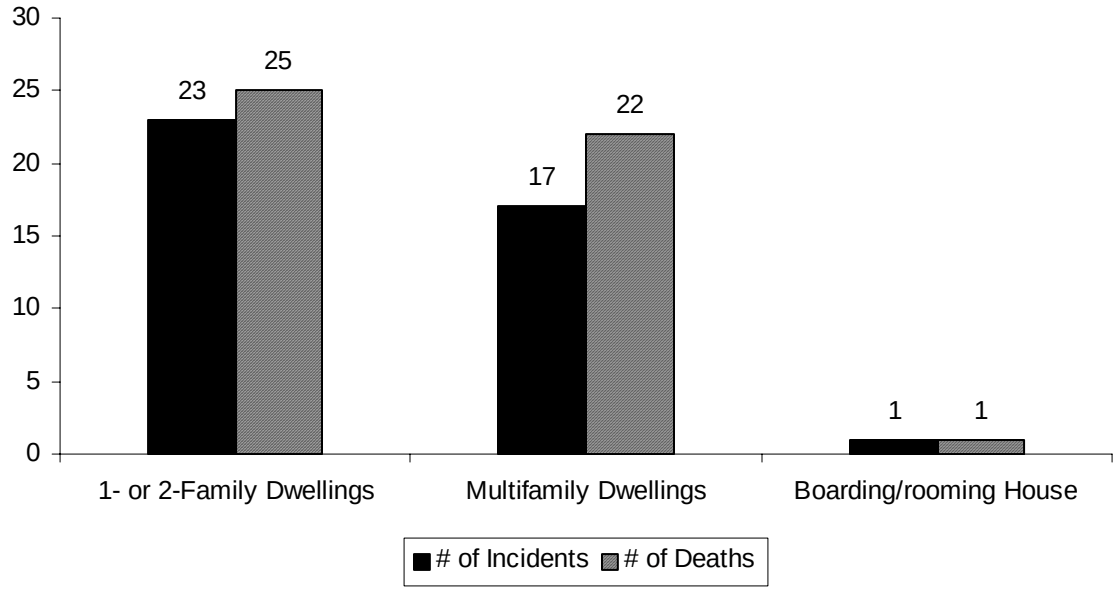
One Man Commits Self-Immolation in an Outside Storage Shed

- On December 9, 2002, at 2:23 p.m., the Amherst Fire Department was called to a fatal fire in an outside storage shed. The victim, a 62-year old man, had previously tried to commit suicide. It was determined that he purposely ignited the shed on fire with himself inside of it. It was undetermined as to how he set the fire. There were no other injuries associated with this fire. Damages from this fire were estimated to be $2,000.

Residential Structure Fire Deaths

Ninety-two percent (92%) of structure fire deaths occurred in residential occupancies. In 2002 there were 48 residential structure fire deaths in 41 residential fatal fires. This represents 92% of the structure fire deaths and 77% of all fire deaths. Twenty-five (25) fire deaths occurred in 23 fires in one- and two-family dwellings; 22 fire deaths occurred in 17 apartment fires; and one fire death took place in a rooming house. The graph below shows the number of fatal fire incidents and the number of civilian fatalities associated with various types of residential occupancies.

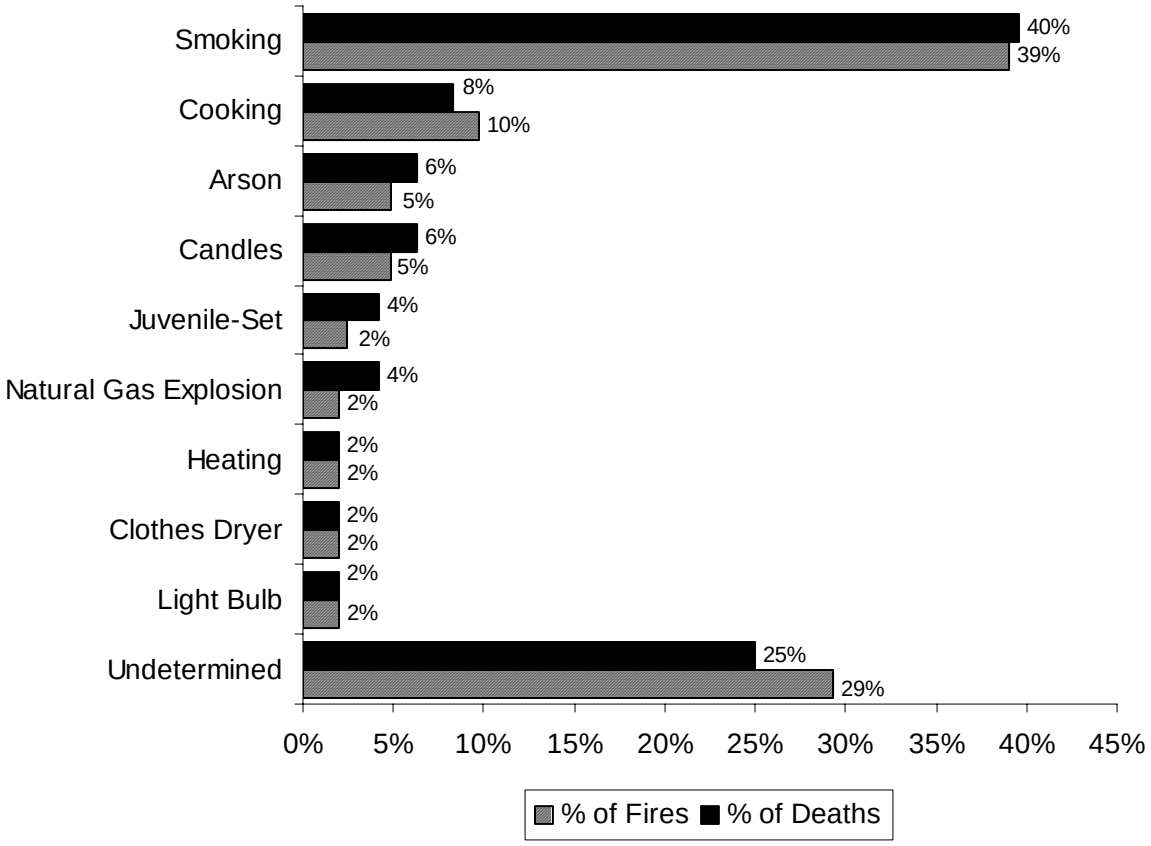
Residential Structure Fire Deaths
By Occupancy



Smoking & Cooking Are the Leading Causes of Fire Deaths
In 2002, smoking was once again the leading cause of residential structure fire deaths. For years, smoking has been far and away the leading cause of fatal fires and fire deaths in Massachusetts, with no other cause coming close. In 1999, cooking and smoking tied as the leading causes of fires that kill. In 2002, smoking remained the leading cause of fire deaths accounting for 40%. The second leading cause of fire deaths in 2002 was cooking which caused 8% with arson and candle fires tying for the third leading cause of fire fatalities in Massachusetts in 2002 each causing 6% of residential fire deaths.

The following graph illustrates the causes of residential structure fire deaths and fatal residential structure fires. The classifications are ranked by the percentage of fire deaths that they caused.

Causes of Residential Fatal Fires and Fire Deaths



16 Fatal Smoking Fires Cause 19 Deaths

In 2002, the improper use and disposal of smoking materials caused 19 fire deaths in 16 fatal fires. The unsafe and improper use of smoking materials caused 40% of residential structure fire deaths and 39% of fatal residential structure fires. Five (5), or 31%, of the 16 residential structure fire deaths of people over the age of 65 were caused by smoking.

- On January 15, 2002, at 6:57 a.m. the Holliston Fire Department was called to a fire in a single-family home caused by the improper use and disposal of smoking materials. An abandoned cigarette ignited a couch. The 54-year old male victim was sleeping at the time of the fire and responders found him just inside the front door. He died from burns and smoke inhalation. There were no smoke detectors present. There was one fire service injury associated with this fire. There was no estimate of damage caused by this fire.

- On January 16, 2002, at 4:49 a.m. the Freetown Fire Department was called to a fire in a single-family home caused by the improper use and disposal of smoking materials. The abandoned cigarette ignited a sofa in the living room. The 44-year old male victim was overcome by the heat and smoke while attempting to escape. There

was one other civilian fire casualty associated with this fire. There were no smoke detectors in the home. The fire caused $125,000 worth of damage.

- On February 2, 2002, at 10:53 a.m. the Boston Fire Department was called to a fire in a 4-unit apartment building caused by the improper disposal of smoking materials. The fire began in a third floor bedroom. The victims, a 74-year old woman, and her 42-year old physically disabled son were overcome by the heat and smoke generated by the fire and died from smoke inhalation. Damages were estimated to be $200,000. There were no other injuries associated with this fire. Detectors were present but it was undetermined if they operated.

- On February 3, 2002, at 3:44 a.m. the Ludlow Fire Department was called to a fire in a manufactured home (trailer) caused by improper disposal of smoking materials. The fire began in the living room where smoking materials ignited a piece of furniture. The victims, a 45-year old man, 23-year old woman and 13-year old girl were asleep in their bedrooms when they were overcome by the heat and smoke generated by the fire. They died from burns and smoke inhalation. Smoke detectors were present but failed to operate because the battery was either missing or disconnected. There were no other injuries associated with this fire. Damages from this blaze were estimated to be $46,100.

- At 6:41 a.m., on February 16, 2002, the Boston Fire Department was called to a fire in a two-family home caused by the improper disposal of smoking materials. The victim, a 30-year old man who was sleeping in an attic bedroom when the fire started, died from burns and smoke inhalation. Damages from this blaze were estimated to be $200,000. There were three fire service injuries were associated with this fire. Detectors were present and operating.

- On April 28, 2002, at 4:00 a.m., the Framingham Fire Department was called to a fire in a 28-unit apartment building caused by the improper disposal of smoking materials. The victim, a 53-year old man, was possibly impaired by alcohol and unable to act as the fire started, and died from smoke inhalation. The fire began when a cigarette ignited a sofa in the living room. Smoke detectors were present and operating. Damages from this blaze were estimated to be $30,000. There were no other injuries associated with this fire.

- At 5:58 a.m., on July 11, 2002, the Waltham Fire Department was called to a fatal fire in a 19-unit boarding house caused by the improper use and disposal of smoking materials. The fire started in the bedroom where the victim fell asleep while smoking. The victim, a 51-year old man, was overcome by heat and smoke while escaping, and died from burns and smoke inhalation. There were no other injuries associated with this fire. Damages from this fire were limited to the room where the fire had started and were estimated at $25,000. Smoke detectors were present and operating. The building was not sprinklered.

- On August 3, 2002, at 9:39 p.m., the Malden Fire Department was called to a fatal fire in a 6-unit apartment building caused by the improper disposal of smoking materials. The fire began in the bedroom when the victim fell asleep and his cigarette ignited the bedding. The victim, a 52-year old man, was asleep when the fire started and subsequently had his escape route blocked by the ensuing fire. He was overcome by the heat and smoke, and died from burns and smoke inhalation. Smoke detectors were present and operating. Damages from this blaze were estimated to be $40,000. One firefighter received an injury during this incident. The building was not sprinklered.

- At 10:51 p.m., on September 16, 2002, the Southborough Fire Department was called to a fatal fire in a single-family home caused by the unsafe disposal of smoking materials. The victim, a 44-year old woman, was sleeping in her bedroom when a discarded cigarette ignited her bedding. She was unable to escape and died from burns and smoke inhalation. Smoke detectors were present in the home and operating. There were no other injuries associated with this fire. Damages from this fire were estimated to be $10,000.

- On September 24, 2002, at 6:10 a.m., the Billerica Fire Department was called to a fire in a single-family home caused by unsafe disposal of smoking materials. After falling asleep on the sofa, the victim, a 19-year old woman, dropped the cigarette she was smoking, igniting the sofa. She later died from burns and smoke inhalation. One firefighter was injured during this fire. There were no smoke detectors present in the home. Damages from this blaze were estimated to be $150,000.

- On December 21, 2002, at 5:39 a.m., the Chicopee Fire Department was called to a fatal fire in a two-family home caused by the careless disposal of smoking materials in the bedroom. The victim, a 45-year old man, was overcome by the heat and smoke generated by the fire. Detectors were present, but did not operate because the batteries were either missing or disconnected. There was one fire service injury associated with this fire. The fire was contained to the bedroom and damages were estimated to be $12,000.

- On December 25, 2002, at 4:39 a.m., the Needham Fire Department was called to a fatal fire in a single-family residence caused by improper disposal of smoking materials. The fire was started when ashes from a cigarette ignited some furniture in the family room. The victim, an 83-year old woman, was overcome by the heat and smoke generated by the fire. She died from burns and smoke inhalation. Damages to the property were estimated to be $375,000. There were two fire service injuries associated with this fire. It was undetermined if smoke detectors were present.

Smoking on Oxygen

In 2002, the use of oxygen while smoking caused four of the 19 smoking-related fire deaths in four of the 16 smoking-related fatal fires.

- On August 11, 2002, at 6:04 a.m., the Athol Fire Department was called to a fatal fire caused by smoking while on home oxygen. The fire occurred in a single-family home that killed the 77-year old female owner. Investigators believe that the victim fell asleep while smoking and using her oxygen via a nasal cannula. A neighbor and responding police officers pulled her out of the house before the fire department arrived. One firefighter was also injured while fighting this fire. There were no smoke detectors in the home. Damages from this blaze were estimated to be $161,000.

- At 7:57 a.m., on August 18, 2002, the Boston Fire Department was called to a fatal fire in an apartment building. The victim, an 81-year old woman, succumbed to the burns sustained during the fire. She was trying to light a cigarette while using her oxygen. The match ignited her clothes, which spread to the furniture and eventually the entire structure. There was one fire service injury associated with this fire. Detectors were present and operating, but the victim was intimately involved with the ignition. Damages from this fire were estimated to be $125,000.

- On October 21, 2002, at 6:30 a.m., the Hyannis Fire Department was called to a fatal fire in a three-story, 38-unit apartment building. The victim, a 68-year old man, died while smoking on oxygen. His cigarette ignited some clothes in the hallway and soon spread to the floor and walls. The victim suffered from dementia and was unable to act to save himself. His seven-year old granddaughter managed to crawl out of the apartment when she heard the smoke detectors activate. The victim's wife attempted to extinguish the flames by carrying the burning clothing to a sink and running water over it. She received burns to her hand and had to retreat to her bedroom and eventually escaped by jumping out a window. There were seven other civilian injuries associated with this fire. Smoke detectors were present and operating. Damages from this fire were estimated to be $45,000.

- On October 28, 2002, at 3:46 a.m., the Boston Fire Department was called to a fatal fire in a single-family home. The victim, a nine-year-old girl, died in a fire started when her father was smoking while on oxygen. The cigarette ignited the bedding that he was using in the first floor living room. The victim was asleep in her second floor bedroom. She was overcome by the heat and smoke generated by the fire. Firefighters rescued her from the fire but she succumbed to her injuries days later in an area hospital. The victim's father was the only other injury associated with this fire. Smoke detectors were present and operating. Damages caused by this fire were estimated to be $300,000.

4 Fatal Cooking Fires Cause 4 Deaths

While cooking is the leading cause of residential structure fires, it is the second leading cause of residential fire deaths. Four (4) Massachusetts residents died in four residential fires caused by cooking in 2002. Cooking fires accounted or 10% of the fire deaths and 8% of fatal fires in people's homes in Massachusetts.

- On January 17, 2002, at 1:16 a.m., the Revere Fire Department was called to a fatal cooking fire in a single-family home. The victim was a 75-year old woman, who was

possibly mentally disabled. Her clothes ignited when she was too close to the kitchen stove and she was overcome by the heat generated by the fire. She died from burns sustained in the fire. There were no other injuries associated with this fire. There were no smoke detectors in the home. No estimation was made as to damages from the blaze.

- On April 3, 2002, at 4:30 p.m., the Sterling Fire Department was called to a fire in a single-family home caused by a malfunctioning hot plate. It was unknown what the victim, a 94-year old male, had been doing previous to the fire's ignition. After unsuccessful rescue attempts by neighbors, firefighters pulled him from the burning home. The victim was transported to a local hospital where he died from burns and smoke inhalation. No other injuries were associated with this fire. Damages from this blaze were estimated to be $200,000. There were no smoke detectors in the home.

- On July 29, 2002, at 4:55 a.m., the Lawrence Fire Department was called to a fatal fire in a three-story home caused by unattended cooking materials. The victim, a 65-year old woman, was sleeping at the time of the fire and was overcome by heat and smoke. There were three other civilian injuries associated with this fire. It was undetermined if detectors were present in the building. Damages from this blaze were estimated to be $75,000.

- On December 13, 2002, at 3:14 a.m., the Holyoke Fire Department was called to a fire in a nine-unit apartment building caused by unattended cooking materials left on the stove. The 21-year old male victim was overcome by the heat and smoke generated by the fire and died from burns and smoke inhalation. There were no other injuries associated with this fire. Smoke detectors were present, but failed to operate because of a power failure, shutoff or disconnect. No estimation was made as to damages from the blaze.

2 Fatal Arson Fires Cause 3 Deaths

Three (3) people died in two (2) residential arson fires in 2002. Arson accounted for 6% of fire deaths and 5% of the fatal fires in residential structures.

- On May 5, 2002, at 12:37 a.m., the Fall River Fire Department was called to a fatal arson fire in a three-unit apartment building. The fire began when someone intentionally lit a futon on fire in a bedroom in the third floor apartment. The victims, 49- and 43-year old men, were overcome by the heat and smoke and died from their burns and smoke inhalation. Smoke detectors were present and operated. There were no other injuries associated with this fire. Damages from this fire were estimated to be $70,000.

- On November 3, 2002, at 4:29 a.m., the Boston Fire Department was called to a fatal arson fire in a three-unit apartment building. This fire was the first of 20 exposure fires. The fire started on an exterior wall of a neighboring building. The victim, an 82-year old woman, was overcome by the heat and smoke generated by the fire. She died from smoke inhalation. Smoke detectors were not present in the building. There

were three other civilian injuries and four fire service injuries associated with this fire. Damages from this blaze to the original building were estimated to be $300,000.

2 Fatal Candle Fires Cause 3 Deaths
Two (2) candle fires accounted for three, or 6%, of residential structure fire deaths, and 5% of the residential structure fatal fires.

- On July 3, 2002, at 9:43 p.m., the Boston Fire Department was called to a fatal fire at a single-family home caused by an unattended candle. The candle was too close to the bedroom curtains. The victim, a 73-year old woman, was physically disabled and unable to act when she was overcome by the heat and smoke generated by the fire. She died from burns sustained in the fire. One other civilian and three firefighters were injured fighting this fire. Smoke detectors were present and operating in the building, and damages were estimated to be $150,000.

- On October 27, 2002, at 2:05 a.m., the Lowell Fire Department was called to a fatal fire at a six-unit apartment building caused by an unattended candle. The candle ignited an upholstered chair in the living room. The victim, a 35-year old man, was asleep when he was awakened by smoke detectors. He was able to escape the fire, only to re-enter to attempt a rescue of the second victim, a 33-year old woman. She was sleeping and had not been alerted to the presence of the fire. During the rescue attempt the male victim was overcome by the heat and smoke generated by the fire. They both died from burns and smoke inhalation. Two firefighters were injured fighting this fire. No estimation was made as to damages from the blaze.

1 Fatal Juvenile-set Fire Causes 2 Deaths
One juvenile-set fire accounted for 2% of the fatal fires in 2002, and caused two, or 4%, of residential structure fire deaths in 2002. This fatal fire was caused by a child playing with a cigarette lighter.

- On June 16, 2002 at 9:28 a.m. the West Springfield Fire Department was called to a fatal fire in a six-unit apartment building. The cause was determined to be a seven-year old boy playing with a lighter and burning some paper in his bedroom. The victims, the boy's three-year old sister and two-year old brother, were trapped by the fire while escaping and overcome by heat and smoke. They died from burns and smoke inhalation. There were nine other civilian injuries and one firefighter injury associated with this fire. Detectors were present and operating. Damages from this fire were estimated to be $275,000.

2 Deaths in a Fire Involving a Natural Gas Explosion
Two sisters were killed when there was a natural gas explosion in their home. This fire represents 2% of the fatal fires and 4% of the fire deaths in Massachusetts in 2002.

- On July 24, 2002, at 1:41 a.m. the Hopkinton Fire Department was called to a fatal natural gas explosion in a four-unit apartment building. The victims, two sisters, four and five years old, were trapped in the wreckage of the house. Firefighters were able

to locate one of the victims, remove her from the scene and transport her to a local hospital. Her sister was pulled from the rubble some hours later. They both succumbed to the traumatic injuries of being crushed beneath debris. There were no other injuries associated with this incident. Total estimated damages from this blaze were $264,000.

1 Fatal Heating Fire Causes 1 Death
One fatal heating fire, or 2% of fatal residential structure fires, caused one, or 2%, of residential structure fire deaths in 2002. This fatal fire was caused by a space heater.

- On January 26, 2002 at 5:52 a.m. the Worcester Fire Department was called to a fatal fire in an 18-unit apartment building. The cause was determined to be radiated heat from a portable space heater. The physically disabled victim, a 58-year old woman, was sleeping at the time of the fire. Unable to escape, she was overcome by heat and smoke. There were two other civilian injuries associated with this fire. Damages from this fire were estimated to be $50,000. Detectors were present and operating.

1 Clothes Dryer Fire Causes 1 Death
One fatal clothes dryer fire, or 2% of all fatal residential structure fires, caused one, or 2%, of residential structure fire deaths in 2002.

- On March 7, 2002 at 11:37 p.m. the Watertown Fire Department was called to a fatal fire in a three-unit apartment building. The fire began in a clothes dryer in the laundry room on the first floor. The victim, a 72-year old physically disabled man, was trapped by the fire in his second floor bedroom while sleeping. He was overcome by heat and smoke, and died from burns and smoke inhalation. There was one other civilian injury and four firefighter injuries associated with this fire. Damages from this fire were estimated to be $525,000. Detector performance was undetermined.

1 Fatal Fire by Light Bulb Causes 1 Death
One fatal fire, or 2% of residential fatal structure fires, caused one, or 2%, of residential structure fire deaths in 2002. This fatal fire was caused by combustibles being placed too close to a light bulb in a closet.

- On October 3, 2002 at 5:51 a.m. the Boston Fire Department was called to a fatal fire in an apartment building. The cause was determined to be combustibles placed too close to the radiated heat from a light bulb in a closet. The victim, a 25-year old woman, was overcome by heat as she attempted to escape. She died from burns sustained in the fire. There were two other civilian injuries associated with this fire. Damages from this fire were estimated to be $300,000. Detectors were present but failed to operate.

12 Fatal Fires of Undetermined Causes
Twelve (12) fatal residential structure fires took the lives of 12 Massachusetts residents in 2002 remain undetermined after investigation. These represent 29% of the fatal fires, and the 12 related deaths represent 25% of the fire deaths in 2002. The cause of one-quarter

of all fire deaths could not be definitely determined after investigation. According to NFPA 921, Chapter 16.2.4, whenever the cause of a fire cannot be proven, the proper classification is "undetermined." Undetermined is also acceptable when multiple fire causes or ignition factors cannot be eliminated, leaving the investigator with most probable causes – NFPA 921, Chapter 16.2.5.

- On January 10, 2002, at 3:54 a.m., the Fitchburg Fire Department was called to a fatal fire in an eight-unit apartment building of undetermined cause. The victim, a 43-year old woman, was overcome by the heat and smoke generated by the fire while trying to escape down the stairwell. She was trapped on the third floor, above the fire. The other occupant of her apartment had jumped from a window and received multiple fractures and trauma to his arms, head and chest. The victim would not jump and opted to escape via the main stairwell. She succumbed to burns and smoke inhalation. There were seven other civilian injuries and one firefighter injury associated with this fire. Smoke detectors were present and operating. Damages from this fire were estimated to be $295,000.

- On February 7, 2002, at 5:39 a.m., the Montague Fire Department was called to a fatal fire in a single-family home of undetermined cause. The victim, a 74-year old man, was overcome by the heat and smoke generated by the fire. He died from burns and smoke inhalation. There were no other injuries associated with this fire. Smoke detectors were present in the home but it was undetermined if they operated. There were no other injuries associated with this fire. Damages from this blaze were estimated at $125,000.

- On March 8, 2002, at 5:31 p.m., the Falmouth Fire Department was called to a fire in a single-family home of undetermined cause. The fire began in the living room on a piece of upholstered furniture. The victim, a 48-year old man was overcome by heat and smoke. He died from burns and smoke inhalation. His wife was able to escape on her own but not before she was overcome by smoke inhalation. She was transported to a local hospital where she recovered from her injuries. Two neighbors who attempted to rescue the male victim were also treated for smoke inhalation. Detectors were present and operated. Damages from this blaze were estimated at $130,000.

- On March 17, 2002, at 3:17 a.m., the Somerville Fire Department was called to a fatal fire in a two-family home of undetermined cause. The victim, a 78-year old man, was overcome by heat and smoke. The fire began in an interior stairway. He died from burns and smoke inhalation. It was undetermined if detectors were present. Damages from this blaze were estimated to be $525,000. There was one other civilian injury associated with this fire.

- On March 30, 2002, at 4:09 a.m., the Quincy Fire Department was called to a fire in a 10-unit apartment building of undetermined cause. The fire began in a first floor bedroom. The victim, a 40-year old physically disabled man, was sleeping at the time of the fire and was overcome by the heat and smoke and died from smoke inhalation. There were no other civilian injuries were associated with this fire. Three firefighters

were injured while battling this blaze. Damages from this blaze were estimated at $130,000. Combination heat and smoke detectors were present and operating during this fire.

- On April 2, 2002, at 8:53 a.m., the Hyannis Fire Department was called to a fatal fire in a single-family home of undetermined cause. The victim, a 56-year old man, was possibly impaired by alcohol and was found by firefighters lying on a burning mattress. He succumbed to burn injuries and smoke inhalation a few days later at Massachusetts General Hospital. There was one other civilian injury associated with this fire, and damages were estimated to be $5,000. Smoke detectors were present but failed to operate because of a power failure, shutoff or disconnection.

- On April 5, 2002, at 8:02 p.m., the Quincy Fire Department was called to a fatal fire in a 10-story, 300-unit apartment building of undetermined cause. The victim was a 66-year old woman. The most probable cause is that her nightgown caught fire while she was near the stove in her kitchen and that she attempted to extinguish the flames by splashing water on herself from the kitchen sink. The first arriving police officer extinguished the fire using a dry chemical extinguisher. There were no other injuries associated with this fire, and damages were estimated to be $2,500. Smoke detectors were present and operated.

- On May 5, 2002, at 2:35 a.m., the Pepperell Fire Department was called to a fire in a single-family home of undetermined cause that killed a 72-year old man. The victim was asleep when the fire started. He died from burns and smoke inhalation. One firefighter was injured fighting this fire. Smoke detector performance was undetermined. Damages from this blaze were estimated to be $273,000.

- On September 28, 2002, at 3:27 p.m., the Worcester Fire Department was called to a fire in a three-story apartment building of undetermined cause. The fire began in the living room. The victim, a three-year old boy, died as a result of burns and smoke inhalation. There was one firefighter injury associated with this fire. Damages from this fire were estimated to be $50,000. There were no smoke detectors present in the building.

- On November 1, 2002, at 3:62 a.m., the Littleton Fire Department was called to a fire in a single-family home of undetermined cause. The fire started in the kitchen. The victim, 42-year old Timothy Wargo, was an on-call firefighter for Littleton; and his company was on duty that night. His wife came home to find their home on fire. The fire chief was the first on scene and attempted a rescue which was completed by the first arriving engine company. The victim was trapped inside his home and it is believed that he succumbed to smoke inhalation while trying to extinguish the fire. Smoke detectors were present but it was undetermined if they operated. Damages from this blaze were estimated to be $200,000.

- On December 20, 2002, at 12:48 p.m., the Worcester Fire Department was called to a fatal fire in a single-family residence of undetermined cause. The victim, a 77-year

old man, died from burns and smoke inhalation. The fire began in the kitchen and he was found in the living room. There were no other injuries associated with this fire. Damages from this fire were estimated to be $100,000. Smoke detectors were present in the home but it was undetermined if they operated.

- On December 25, 2002, at 8:22 p.m., the Bondsville Fire Department was called to a fatal fire in a single-family residence of undetermined cause. The victim, a 52-year old man, died from burns and smoke inhalation. There were no other injuries associated with this fire. Damages from this fire were estimated to be $140,000. There were no smoke detectors present in the home.

Bedroom or Living Room is the Area of Origin for Almost 2/3 of All Victims
Twenty-seven (27), or 63%, of the civilians that died in residential fires were killed in fires that started in the living room or bedroom. Sixteen (16), or 37%, succumbed to fires that originated in the bedroom, another 11, or 26%, victims died in fires that began in the living room, and seven victims, or 16%, perished in fires that began in the kitchen. The area of origin for the remaining nine fatalities, or 21%, were spread throughout the structure with no one area being associated with more than two deaths. The area of origin was undetermined for five fire fatalities. These victims were excluded from the percentage calculations.

Twenty (20), or 42%, of the civilians that died in residential fires were reported to be in the area of fire origin.

Over 1/3 of Deaths Involved Smoking Materials as a Heat Source
Of the 48 residential structure fire deaths, 38% involved smoking materials: 17% were from cigarettes; 8% were from unspecified smoking materials; 6% were from cigarette lighters; 2% were from matches; and another 2% were from a pipe or a cigar. Four percent (4%) of the deaths involved heat from powered equipment. Another four percent (4%) of the deaths involved radiated or conducted heat from operating equipment. Four percent (4%) involved heat from a candle. Heat from an incendiary device, spark, ember or flame from operating equipment such as a heater, a hot plate and a clothes dryer, and multiple heat sources were each involved in 2% of the fire deaths. Two percent (2%) of the deaths were attributed to an undefined heat source. Heat source was undetermined in 17 deaths, or 35%, of the residential structure fire deaths in 2002.

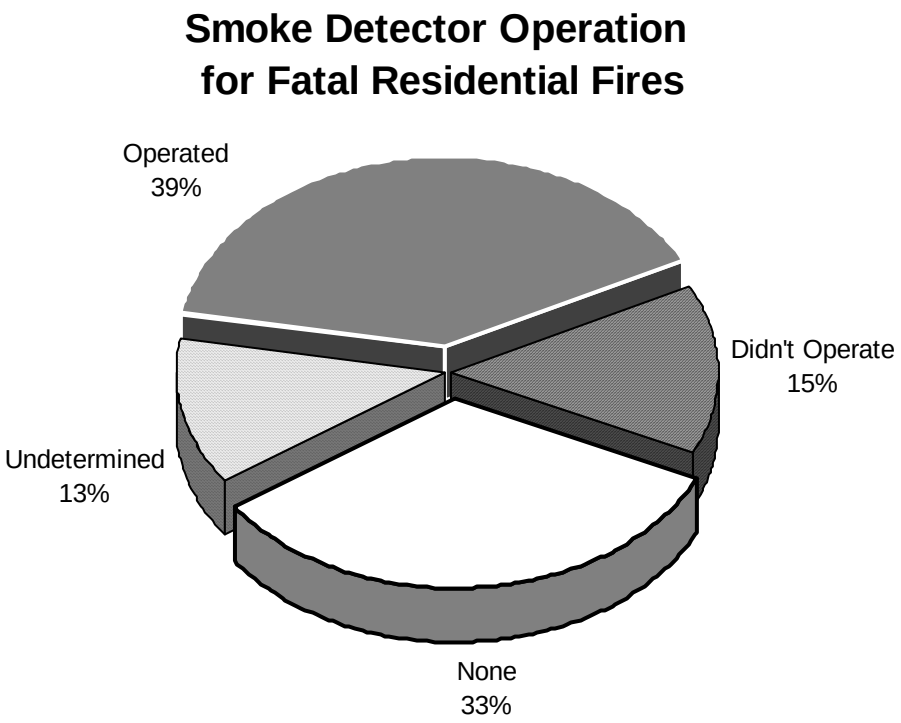
Furniture Ignited First in 23% of Deaths
Of the 48 residential structure fire deaths, 23% of the fire deaths were from fires where furniture was the item first ignited. Ten percent (10%) of deaths occurred when bedding, blankets, sheets or comforters, or mattresses and pillows were the first to burn. Four percent (4%) of residential fire deaths occurred when cooking materials or the clothes a person was wearing were the first to burn. Exterior wall coverings or finishes; clothes not on a person; interior wall coverings; structural member or framing; curtains, blinds or tapestries; pipes, ducts, conduits, or hoses; and dust, fiber, lint were each the item first ignited in two percent (2%) of the fatal fire deaths in 2002. First material ignited was undetermined in 14, or 29%, of the residential structure fire deaths in 2002.

The Fire Service through the National Association of State Fire Marshals (NASFM), has supported mandatory national fire safety standards for mattresses and upholstered furniture for the past decade. NASFM has recommended the national adoption of the most recently revised California standard (California Technical Bulletin 117) for upholstered furniture that addresses both small open flame (match, lighter, candle) and cigarette ignitions. This standard makes the average piece of furniture less likely to ignite rapidly, and if ignited, less likely to burn quickly or sustain burning.

No Working Detectors for Almost 1/2 of Residential Fire Victims
Of the forty-eight (48) people who died in residential structure fires in 2002, the smoke detector performance was known for 42 of the victims. Victims were not alerted by smoke detectors in 20 fires that killed 23 people, or 48% of the victims. In 15 of these incidents, no detectors were present at all. These 15 fires claimed the lives of 16 individuals. Detectors were present, but did not operate in five fires that killed seven people.

Nineteen (19) people died in 16 separate residential fires with detectors that did operate, accounting for 39% of fatal fire victims. It is important to remember that detectors provide an early warning of a fire. They do not guarantee an escape if exits are blocked or an individual's clothing ignites. A fire that appears small when discovered can quickly grow beyond an individual's ability to control or escape it. While smoke detectors cannot by themselves save a person who is directly involved in the ignition, they alert other occupants to the danger and give them precious time to escape to safety.

Detector performance was undetermined in five residential structure fires that killed six people accounting for 13% of the residential structure fire deaths in 2002. The pie chart



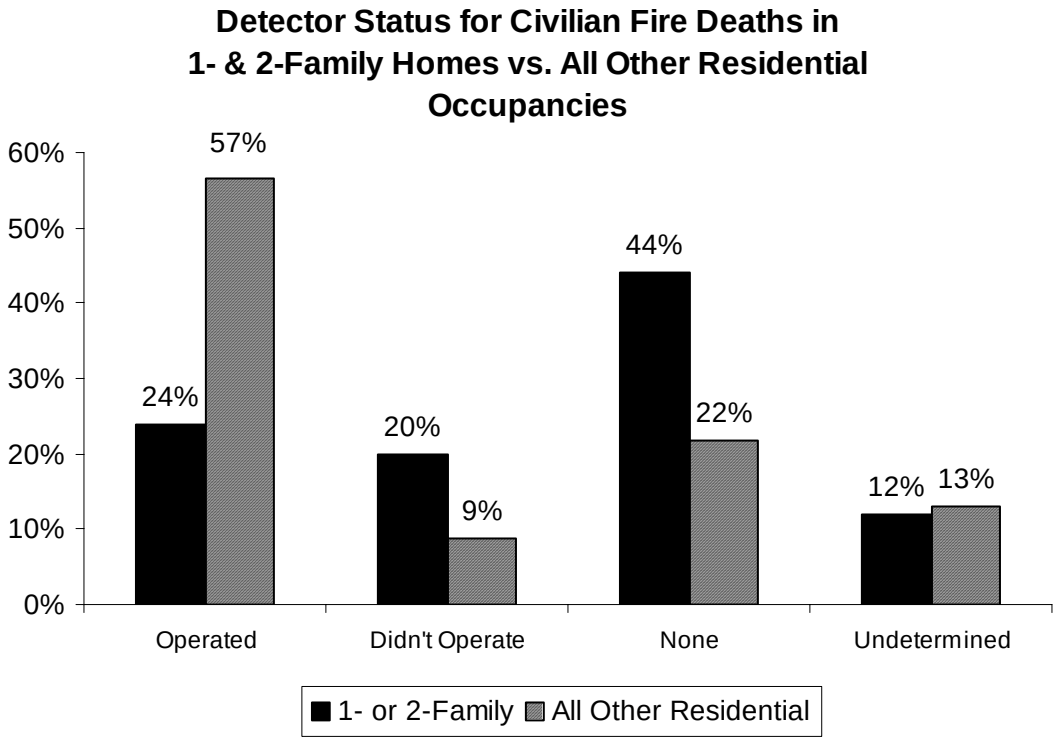
shows the smoke detector status as a percentage of the civilian residential structure fire deaths in 2002.

No Working Smoke Detectors in Over 1/2 of Fire Deaths in 1 & 2-Family Homes
There were 8% more fire deaths in 1- & 2-family homes than all other residential occupancies combined. Twenty-five (25) people died in 23 one- and two-family dwelling fires in 2002. Sixteen (16), or 64%, of the fire deaths in one- and two-family homes occurred in fires with no detectors at all or with detectors that failed to operate. Of these 16 deaths, five occurred in homes where smoke detectors failed to work while the other 11 deaths were in homes where there were no smoke detectors present. Six (6) deaths, or 24%, occurred in homes where the smoke detectors operated. Three deaths, or 12%, occurred in three fires where smoke detector performance was undetermined.

Almost 3/4 of Detectors Failed Because of Missing or Disconnected Batteries
Of the seven residential fire deaths where smoke detectors were present but failed to operate, five, or 72%, did not operate because the battery was missing or disconnected. One death, or 14%, had a detector fail to operate because of a power failure, shutoff or disconnect. In the remaining 14% of these deaths, it was undetermined why the remaining detector failed.

Other Residential Occupancies More Likely to be Protected by Smoke Detectors
Twenty-three (23) people died in 18 apartment and other residential fires in 2002. The detector performance was known for 20 of the victims. Two (2) individuals perished in two fires where smoke detectors were present but did not function. Thirteen (13) people died in 10 apartment or other residential fires where smoke detectors were present and working. Detector performance was unknown or not reported in two fires where three people lost their lives. In residential fatal fires other than the fires that occurred in one- and two-family homes, there were four fatal fires with five fatalities where there were no detectors present.

As the following graph illustrates more people died in 1- and 2-family homes that did not have working smoke detectors than died in all other residences combined.



Sleeping Was the Leading Human Factor Contributing to Injury[23]
Of the 48 fatal structure fire victims, 26 had some human factor contributing to their injury. Thirty-five percent (35%) of the fatalities were asleep before they died; 13% were bedridden or had another physical handicap; 6% were possibly impaired by alcohol; 2% were unattended or unsupervised; 2% were unconscious; and another 2% had a mental handicap. Twenty-two (22), or 46%, of the 48 civilians fire deaths did not have a human factor contributing to injury reported.

In version 5, a human factor contributing to injury is defined as the physical or mental state of the person shortly before becoming a casualty. Our data reports 35% of fatalities were asleep shortly before becoming a casualty but only 29% were still asleep at the time they died. This would seem to indicate that some people were awoken from their sleep and attempted to escape before being overcome. This combined with the lack of working smoke detectors in 48% of the fire deaths indicates that victims did not have enough time to get to safety.

[23] Some fields in version 5 allow for multiple entries. Therefore the number of entries may be greater than the actual number of incidents being analyzed.

29% of Victims Were Sleeping at Time of Death
Fourteen (14), or 29%, of the 48 fatal fire victims were sleeping when they died. This was the leading activity at the time of injury of all the fatal fire deaths in residential structure fires. Thirteen percent (13%) of the victims were unable to act; 8% were trying to escape; while 4% of the victims returned to the vicinity of the fire before it was under control; 2% were attempting a rescue; another 2% were involved in an irrational action; the activity at time of death of another 4% was classified as "other". Activity at time of death was undetermined for 18, or 38%, victims of fatal fires in 2002.

95% of Victims Suffered Burns, Smoke Inhalation or Both
For 39, or 95%, of the victims where the primary apparent symptom of their injury was known, 27, or 66%, suffered burns and smoke inhalation; seven, or 17%, suffered from smoke inhalation only and five, or 12% died from only the burns incurred in the fire. The other two victims died as the result of being crushed while trapped under the remains of their home after the natural gas explosion destroyed their house. The primary apparent symptom was undetermined in seven deaths. These victims were excluded from the percentage calculation.

Fatal Motor Vehicle Fires

In 2002, seven motor vehicle fires killed seven civilians. Motor vehicle fire deaths are determined subsequent to the autopsy of the victim, where smoke is found in the lungs of the victim, an indication the victim survived the impact of the collision. Four were because of motor vehicle accidents and the other three of these fires and deaths were arson due to self-immolation. All of these fatal car fires occurred between January and July.

4 Motor Vehicle Accidents Cause 4 Fires and 4 Deaths
Four (4) Massachusetts residents were killed in four separate motor vehicle accidents resulting in four motor vehicle fires. These four incidents accounted for 7% of the fatal fires and 6% of the fire fatalities in 2002.

- On January 12, 2002, at 5:18 p.m., the Rockland Fire Department was called to a vehicle fire at Exit 14 on Route 3 due to an accident. Upon arrival, the car was fully involved. The victim, a 23-year old woman, was located inside the front of the vehicle. She was unable to escape the wreckage, while one other person in the car had been able to escape. The fire started when the heat from the hot exhaust manifold ignited fuel leaking from the ruptured fuel line. The victim died from the burns sustained in this fire. No estimation was made as to damages from the blaze.

- On February 7, 2002, at 8:30 p.m., the Springfield Fire Department was called to a motor vehicle fire caused by an accident. The victim, a 33-year old man, was trapped inside the car's wreckage and could not escape. Neighbors were able to extricate a

13-year old girl who was also riding in the car. The victim died from burns and smoke inhalation. No estimation was made as to damages from the blaze.

- On March 9, 2002, at 3:13 a.m., the Plymouth Fire Department was called to a fatal motor vehicle fire. Originally dispatched for a brush fire, the first arriving units found a vehicle fully involved. After extinguishing the fire and during overhaul of the car, firefighters found the victim, a 20-year old man, in the front driver's seat. He died from the burns incurred while trapped inside the vehicle. The cause was listed as failure of electrical wire in trunk area of the vehicle. The estimated damages from this blaze were $2,000.

- On July 6, 2002 at 8:53 p.m. the Heath Fire Department was called to a vehicle fire on a residential street. The fire was caused by a single car accident. Neighbors and passers-by were able to save the driver of the vehicle. However, the other occupant of the car, a 30-year old man, was unable to be extricated from blazing wreck. The victim died from burns and smoke inhalation. No other injuries were associated with this fire. No estimate was made as to damages from the blaze.

Arson - Self-Immolation

Three (3) Massachusetts residents committed suicide in three different incidents by lighting themselves on fire inside their cars. A suicide is considered arson because it is intentionally set. These three incidents accounted for 5% of the fatal fires and 5% of the fire fatalities in the Commonwealth in 2002.

- On April 21, 2002, at 7:32 p.m., the Wayland Fire Department was called to a fatal arson car fire. It is believed that the victim, a 62-year old man committed suicide by lighting his car on fire. He died from burns and smoke inhalation. No one else was injured in this incident. The estimated damages from this blaze were $1,000.

- On July 12, 2002, at 2:19 a.m., the Millis Fire Department was called to a fatal arson car fire in an open field. It is believed that the victim, a 45-year old man committed suicide by lighting himself on fire in his car after being recently diagnosed with a terminal illness. He died from burns and smoke inhalation. No one else was injured in this incident. The estimated damages from this blaze were $2,500.

- On July 18, 2002 at 5:06 p.m. the Hyannis Fire Department was called to a vehicle fire on a residential street outside of a pizzeria. The fire was caused by the occupant pouring gasoline over himself and igniting it while he was still inside the car. The victim's wife worked at the pizzeria. A passer-by put out the fire with a dry chemical extinguisher and some other by-standers pulled the victim out of the vehicle. The victim was transported to a local hospital and then transferred to Brigham and Women's Hospital in Boston where he later died from burns and smoke inhalation. No other injuries were associated with this fire. The estimated damages from this blaze were $10,000.

Other Fatal Fires & Explosions

In 2002, three outside and other fire or explosion incidents killed three civilians. These three incidents accounted for 5% of the fatal fires and 5% of the fire fatalities in Massachusetts in 2002.

Man Killed in Welding Accident

- On August 8, 2002, at 5:23 p.m., the Methuen Fire Department was called to a fatal fire in the yard behind a single-family home. The victim, an 81-year old man, was welding a framework for grape vines when he accidentally set himself on fire. The first arriving units found the victim face down on the ground with no pulse. The victim died from the burns sustained in the fire. There were no other injuries associated with this fire, and no estimate of damage caused by this fire.

Man Dies In Brush Fire

- The Springfield Fire Department was called to a brush fire on a railroad right of way on September 13, 2002, at 4:29 p.m. The victim, a 36-year old man, was found in the middle of the brush fire. No other injuries were associated with this fire. There was no estimation as to the dollar loss incurred by this fire.

Man Killed While Making Homemade Charcoal

- On October 30, 2002, at 11:54 a.m., the Lawrence Fire Department was called to a fatal fire in the yard behind a single-family home. The fire occurred in a brick fireplace in the backyard that the victim used to make charcoal for cooking purposes. The victim, an 82-year old man, who was possibly impaired by alcohol and suffered from Alzheimer's, accidentally set himself on fire. The first arriving units found the victim on the ground with no pulse. The fire had self-extinguished. The victim died from the burns and smoke inhalation. There were no other injuries associated with this fire, and no estimate of damage caused by this fire.

Multiple Fire Deaths

For statistical purposes, a fire is considered a multiple death fire if it kills three or more people. In 2002, there was one multiple death fire in a Ludlow manufactured home (trailer) which killed 3 people, a 45-year old man, a 23-year old woman and 13-year old girl. Improper use of smoking materials caused this fire.

Civilian Fire Deaths - Conclusion

In 2002, there were 55 fatal fires in Massachusetts with 62 accompanying fatalities. This was a 5% increase from the 59 fire deaths reported in 2001, and a slight reversal of the downward trend over the past decade. Of these 62 deaths, 52 occurred in structure fires; and 92% of all fatal structure fire victims, died in residential structure fires. Twenty-five (25) of these deaths occurred in one- and two-family homes.

Smoking was the leading cause of residential fire deaths in 2002, responsible for 19 deaths in 16 fires. Smoking on oxygen accounted for four of these 19 deaths and four of the 16 fires. Cooking was the second leading cause of fire deaths accounting for four deaths and four fires with arson fires and candle fires each accounting for three deaths and two fires.

One quarter, or 25%, of the 16 residential structure fire deaths to people over the age of 65 were caused by smoking. Older adults (65+) were at greater risk for fire deaths in Massachusetts in 2002. Older adults accounted for 14% of the population but 29% of the fire deaths. Children are no longer at a disproportionate risk of dying in Massachusetts' fires.

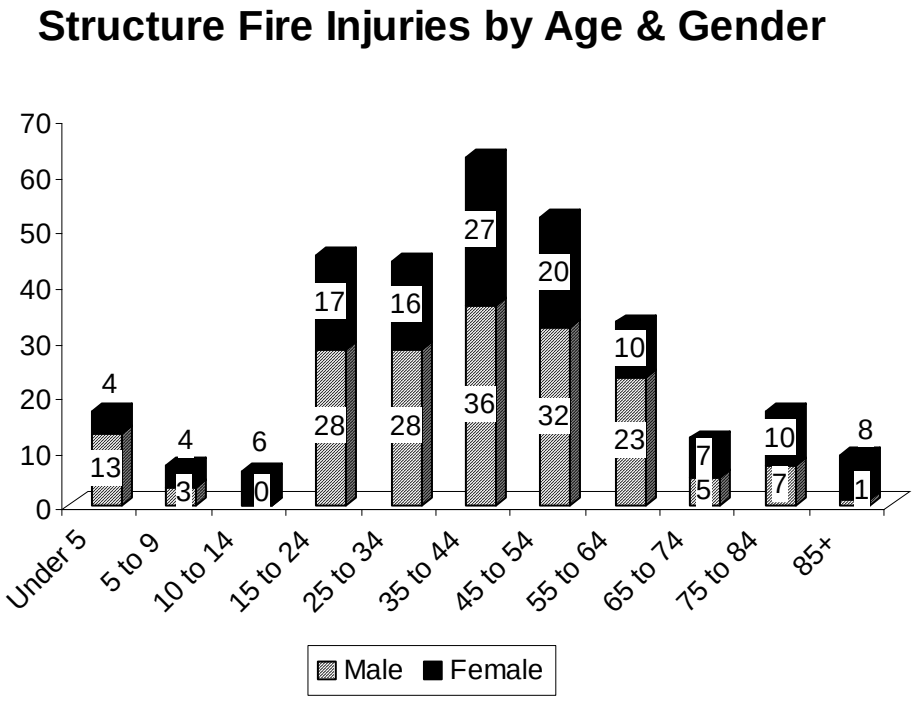
People were more likely to die in fires that occurred while they slept. Twenty-nine percent (29%) of fire fatalities were sleeping at the time of death. Almost half (48%) of the residential fire victims did not have a working smoke detector so they were never afforded the chance of escape because they had no prior warning. Over two-thirds (70%) of the fire victims who either had no detector installed or one that did not operate died in 1- and 2-family homes. Almost two-thirds (63%) of the victims died in fires that began in either the bedroom or living room, two of the areas in the home were people are most likely to fall asleep. Furniture was the leading item first ignited in all the residential structure fire deaths; bedding was the second leading item first ignited. Also, 95% of these victims suffered burns, smoke inhalation or both.

Civilian Injuries

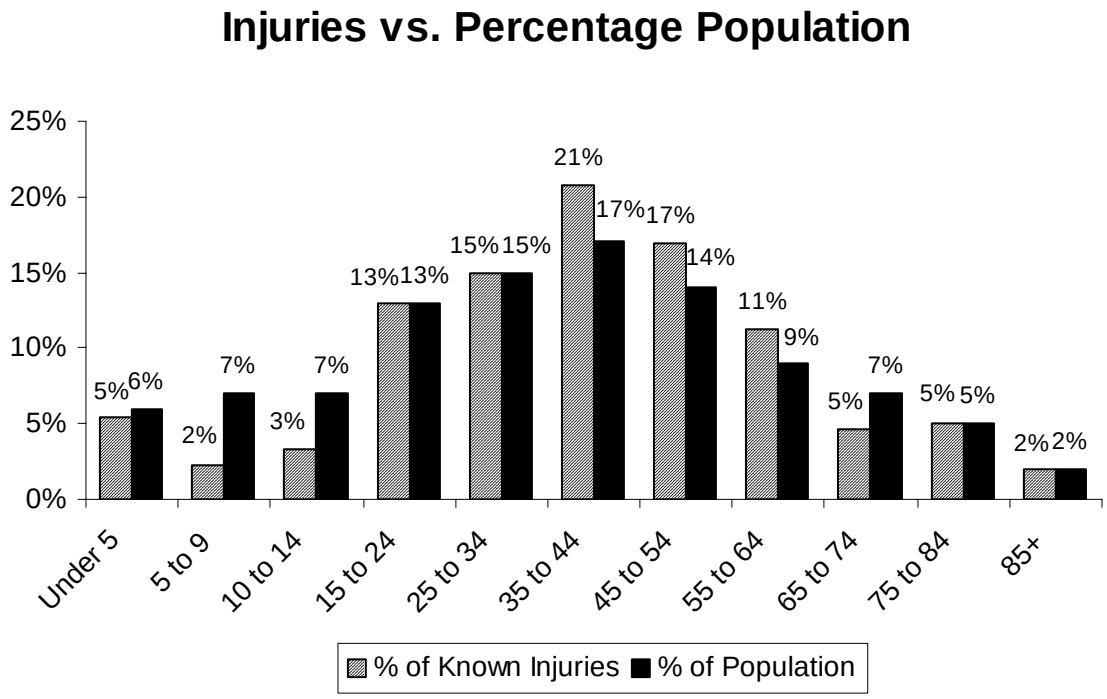
440 Civilians Injured in Fires in 2002 – Mostly at Home
Massachusetts' fires injured 440 civilians in 2002, but only 423 of these injuries had casualty reports completed in full. Three hundred and seventy-four (374), or 85%, of civilian injuries occurred in structure fires. Three hundred and thirty-one (331), or 89%, of all the structure fire injuries occurred in residential structure fires. Thirty-one (31), or 7%, occurred in motor vehicle fires. Eight (8), or 2%, occurred in special outside fires such as mailbox or outside equipment fires. Brush fires and outside rubbish fires each accounted for three (3), or 1%, of civilian injuries. Twenty-one (21), or 5%, of civilian injuries were caused by unclassified fires.

Structure Fire Injuries

Of the 305 civilian injuries resulting from structure fires where gender was reported, 176, or 58%, were men and 129, or 42%, were women. Overall, 43 children under 18 years of age, 224 adults and 38 older adults (65+) were injured by structure fires in 2002. The following chart illustrates the structure fire injuries by age and gender in 2002. Men and women ages 35-44 and 45-54 were injured the most and children between 5-9 and 10-14 were injured the least in 2002. Seventeen (17) children ages 0-4 were injured; seven (7) children ages 5-9; six (6) children ages 10-14, all of them female; 45 people ages 15-24; 44 people ages 25-34; 63 people ages 35-44; 52 people ages 45-54; 33 people ages 55-64; 12 people ages 65-74; 17 people ages 75-84 and nine (9) people were injured that were over 85 years of age, eight of them were women and one was a man.



The following graph shows the percentage of injuries by age group and the percent of the population that age group represents in Massachusetts. When the percentage of injuries is greater than the percentage of population, that group is at a greater risk for being injured in a fire.



Adults 35 to 64 at High Risk for Fire Injury
Adults between the ages of 35 and 44 represent 17% of the population and yet they accounted for 21% of the injuries in 2002. Adults between the ages of 45 and 54 represent 14% of the population and yet they accounted for 17% of the injuries in 2002. And adults between the ages of 55 and 64 represent 9% of the population and yet they accounted for 11% of the injuries in 2002. The disparity in the percentage of injuries to the percentage of population is most likely caused by the tendency to try and control the fire. In these age groupings, almost half, 49% of the fire-related injuries were incurred while trying to control the fire.

In 2001, older adults over the age of 85 accounted for 9% of the civilian fire injuries. In 2002, they only accounted for 2% of these injuries. They also account for 2% of the Commonwealth's population. In 2002 they were not at any greater risk of receiving a fire-related injury.

82% of Injuries Were Due to Smoke Inhalation or Burns or Both
Of the 241 civilian injuries in structure fires where the primary apparent symptom was known, 39%, or over one-third of the injuries, were caused by smoke inhalation only. Thirty-four percent (34%) were caused by burns only. Burns and smoke inhalation

together caused 9% of the injuries. Three percent (3%) of injuries were cuts or lacerations, and another 3% were caused by scald burns. Breathing difficulty and reported pain were each the cause of 2% of these injuries. Abrasions, cardiac symptoms, strains or sprains, and emotional or psychological stress each accounted for 1%. Fractures, disorientation, contusions or bruises, dizziness, fainting or weakness, and being unconscious each accounted for less than 1% of the fire-related injuries in 2002. The nature of injury was undetermined or not reported in 121 civilian fire injuries. These were excluded from the percentage calculations.

43% Injured While Trying to Control the Fire

Those who attempt to control a fire rather than escape and summon professional firefighters are much more likely to suffer injuries. Almost half were injured while attempting to control the fire themselves. It is important for people to exit a burning building, closing doors behind them to contain the fire, and to call the professionals from outside the burning building. Of the 221 victims for which activity at time of injury was known, 43%, were attempting to control the fire; 19% were escaping; 13% were sleeping; 6% were attempting a rescue; 5% returned to the vicinity of the fire before it was under control; 3% were acting irrationally; 2% were unable to act; and 1% returned to the vicinity of the fire after the fire was under control. Ten percent (10%) were injured in 'Other' activities. There were 141 injuries where the activity at time of injury was unknown; these were excluded from the percentage calculations

Men More Likely to Be Injured Trying to Control the Fire

In 2002, 46% of male victims sustained their injuries while attempting to control the fire as compared to only 38% of female. A higher percentage of women (24%) sustained their injuries while escaping than men (15%). There is a 3% or less difference between men and women in every other activity.

Historically, a higher percentage of men received fire-related injuries from trying to extinguish the fire themselves. In 2000, twice as many men than women were injured while trying to control the fire. However in structure fires in 2001, men and women were equally likely to be injured attempting to control the fire.

Prevention of these injuries is to make and practice a home escape plan and leave firefighting to the professionals. They have the training, equipment and protective clothing to do the job.

Over 1/2 of Victims Were Asleep Just Before the Injury[24]
Of the 80 victims for which the human factor contributing to the injury was known, 53% were asleep; 15% were possibly impaired by alcohol; 13% were possibly mentally disabled; 9% were physically disabled; 4% were possibly impaired by drugs; and 2% were each physically restrained, an unattended or unsupervised person, or unconscious.

The following table is a cross tabulation which allows us to know what the person was doing when injured and what was either their physical or mental state shortly before becoming a victim. The overall majority of civilian fire injuries came about through trying to control the fire. However, mainly because of the conversion of version 4 data to version 5 it is impossible to tell what their physical or mental state was right before their injury. In version 4 being awake was a valid entry for *Condition Before Injury*. However in version 5 there is no equivalent code in the field *Human Factors Contributing to Injury*.

When both of the fields were completed, the majority of civilian fire injuries are the result of people being asleep at the time of injury or time of the fire. The next leading cause was when someone was asleep and then tried to escape.

CIVILIAN INJURIES BY ACTIVITY AND PRIOR CONDITION

Human Factors Contributing to Injury

Activity At Injury	Asleep	Uncon-scious	Possibly Impaired		Mentally Disabled	Physically		Unsuper-vised
			Alcohol	Drugs		Disabled	Restrained	
Escaping	**11**	0	3	0	1	1	1	0
Rescue attempt	0	0	0	0	0	1	0	0
Fire control	5	0	0	0	5	0	0	0
Return before fire control	3	0	1	0	0	0	0	0
Return after fire control	0	0	0	0	0	0	0	0
Sleeping	**21**	2	4	1	0	2	0	0
Unable to act	5	0	4	1	1	4	0	0
Irrational action	0	0	0	0	1	1	0	0
Other	1	0	0	0	1	1	0	0
Unknown	4	0	2	2	1	2	1	2
Total	**51**	2	14	2	10	12	2	2

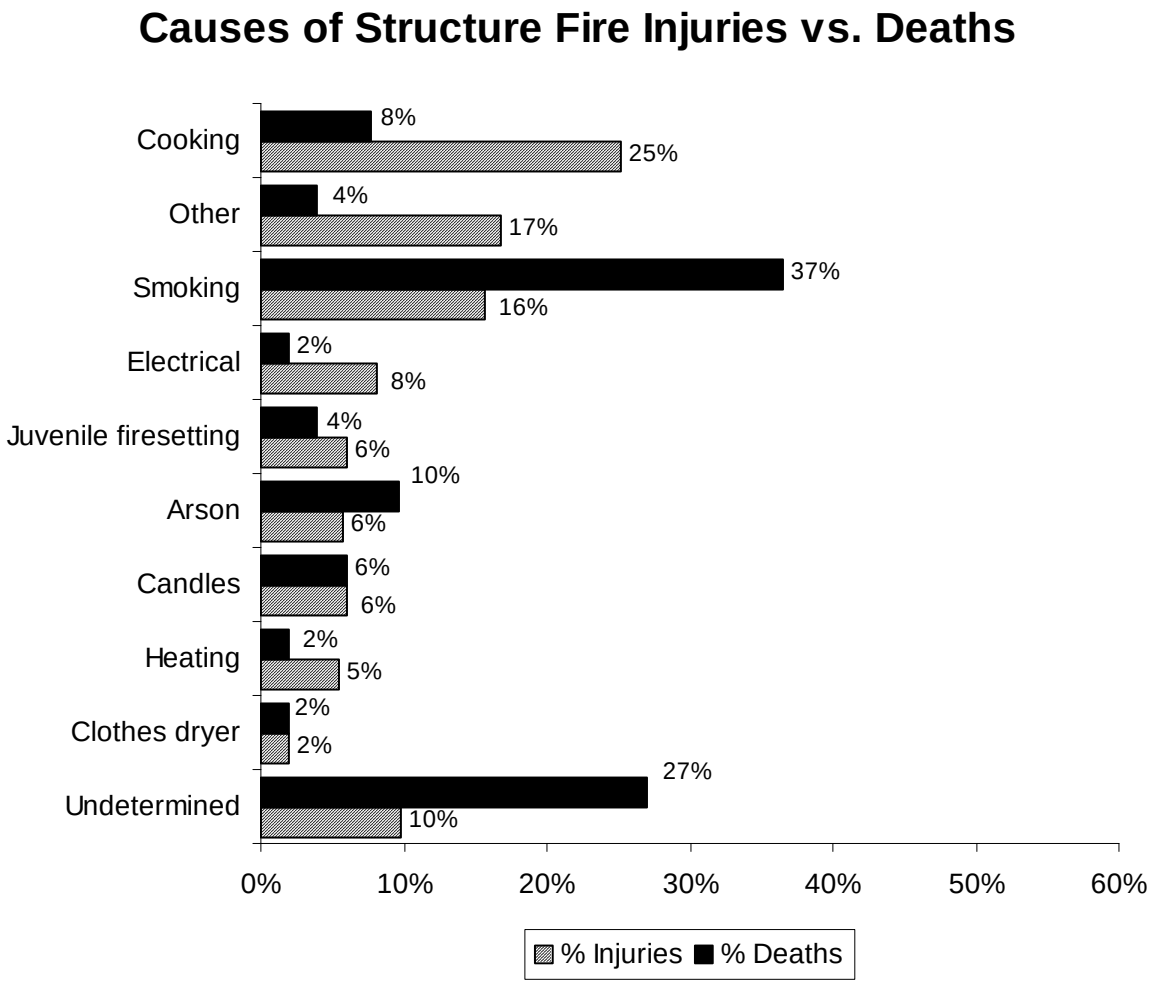
45% of All Victims Were Involved With the Ignition of the Fire
Forty-five percent (45%) of all victims were involved with the ignition of the fire that injured them. Over one-third (82), or 37%, of the 223 civilian victims where *Location at Time of Incident* was known, were in the area of origin and intimately involved with the

[24] This is a new field. It is not mandatory that it be completed. It loosely corresponds to the version 4 field Condition Before Injury. This is the reason for the low number of victims for which the field had been completed. It also does not contain a corresponding value for the version 4 code - awake and unimpaired.

ignition of the fire. Nineteen (19), or 9% were not in the area of origin but were involved with the start of the fire. An example of this is when someone starts a fire, leaves the area but becomes trapped by the heat or smoke of the fire and is injured in their attempt to escape. One-third (74), or 33%, of the 223 victims were in the area of origin but not involved with the ignition of the fire. An example of this is when someone leaves food unattended on the stove in the kitchen and leaves the room. After the fire starts and the individual is alerted to its presence they are injured trying to put out the fire. Forty-eight (48), or 22%, of these victims were not in the area of fire origin and were also not involved with its ignition The *Location at Time of Incident* was undetermined or not reported in 139 civilian fire injuries. These were excluded from the percentage calculations.

Cooking Was the Leading Cause of Injuries in Structure Fires

Cooking was the leading cause of injuries in structure fires. Fires started by cooking caused 25% of structure fire injuries and 8% of structure fire deaths. Smoking fires caused 16% of structure fire injuries and 37% of structure fire deaths. Electrical fires caused 8% of structure fire injuries and 2% of structure fire deaths. Juvenile-set fires caused 6% of structure fire injuries and 4% of structure fire deaths in 2002. Arson caused



6% of structure fire injuries and 10% of structure fire deaths. Candles caused 6% of injuries and 6% of deaths. Heating equipment fires caused 5% of injuries and 2% of deaths. Clothes dryer fires caused 2% of structure fire injuries and 2% of the structure fire deaths. All the other known causes of structure fires combined caused 17% of the structure fire injuries and 4% of structure fire deaths[25]. Undetermined fires caused 10% of structure fire injuries and 27% of structure fire deaths in Massachusetts in 2002.

The leading cause of fire-related injuries is most often not the leading cause of fire-related deaths. 2002 followed the recent trend of cooking causing the most injuries and smoking causing most of the fire deaths. The main reason for this difference is that in most smoking-related fire deaths, the victim is intimately involved in the ignition of the fire. The victim usually falls asleep with a lit cigarette or cigar and the ashes or butt fall down upon and ignite the victim's clothing, bedding or furniture that they were sleeping upon. The resulting smoke usually renders the victim unconscious and unable to respond to any alarms and attempt an escape, and thus succumb to burns, smoke inhalation or both. In cooking fires, most of the victims leave the cooking materials unattended. When the fire begins they are either alerted by working smoke alarms or by the smell of the smoke itself. The alerted individual usually either tries to control the fire or escape from the flames, incurring their injury in the process.

The fire service needs to redouble its efforts to get manufacturers to agree to produce and sell a self-extinguishing cigarette. The Moakley Bill has been submitted to Congress at the national level for this purpose. New York has passed the Safer Cigarette Law and similar legislation has been filed here in Massachusetts.

Detectors Operated in 54% of Structure Fires that Caused Injuries
Of the 269 injuries where detector performance was known, 54% occurred where smoke detectors were present and operated. Thirteen percent (13%) of the injuries occurred in structure fires where detectors were present but did not operate. Thirty percent (30%) of the injuries occurred where there were no detectors present in the structure at all. Three percent (3%) of civilian structure fire injuries occurred where the fire was too small to activate the smoke detector. Smoke detector performance was unknown for 101 structure fire injuries. These injuries were excluded from the percentage calculations. The presence of operating smoke detectors generally gives the victims the time needed to escape the byproducts of the fire; heat, flame and smoke.

Detectors Alerted Occupants in 36% of Confined Fires that Caused Injuries
Smoke or heat detectors alerted the occupants in 15, or 36%, of the 42 residential structure fires that were confined to non-combustible containers where injuries occurred. In 19% of these fires, the detectors did not alert the occupants. In 45% of these fires, it was undetermined if the detectors alerted the occupants of the residence.

[25] The two deaths in the Other category of fires were from a natural gas explosion.

Motor Vehicle Fire Injuries

There were 31 motor vehicle fire injuries in 2002, but only 30 of these injuries had completed civilian fire casualty reports. Of the 29 victims where gender was known, 69% were men and 31% were women. Eighty percent (80%) of the injuries were caused by exposure to fire products, when cause was known. Four percent (4%) of the injuries were caused when the victim was struck by or from contact with an object. Another 4% were caught in or trapped by the vehicle. Thirty-nine percent (39%) of these injuries were burns only and 26% were caused only by smoke inhalation when the primary apparent symptom was reported. Where activity at time of injury was known 46%, of the victims were trying to control the fire when injured. The causes of motor vehicle fires that injured civilians in 2002 included fuel spills, collisions, arson, and mechanical malfunctions. See the Motor Vehicle Fire section for safety tips in the event of a car fire.

Outside and Other Fire Injuries

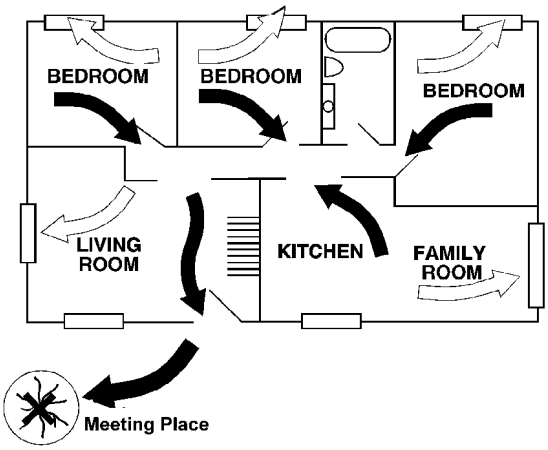
Thirty-five (35), or 8%, of civilian fire injuries occurred in outside and other fire incidents. Of these 35 injuries, 31 have completed reports. Seven (7), or 2% of civilian injuries were caused by special outside fires. Three (3), or 1%, of civilian injuries each occurred in brush fires and outdoor rubbish fires. Eighteen (18), or 4%, of civilian injuries were caused by unclassified fires.

Where gender was known, 71% of the civilian victims were men and 29% were women. Burns accounted for over half, 59%, of the injuries to this group, when the primary apparent symptom was known. The victim was intimately involved with the ignition in almost half, or 46%, of these injuries where location at ignition was known.

Safety Practices Are the Best Prevention Methods

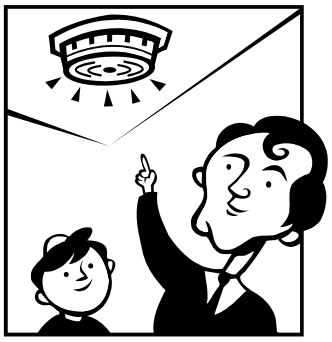
In a typical nighttime fire, there is a window of 2-4 minutes in the average home after the smoke alarm sounds for the family to get out safely. In a few minutes, heat and toxic gases make escape possible. To survive a fire, one must install and maintain smoke detectors as well as make and practice an escape plan. It is these types of basic fire safety practices that are ignored by too many Massachusetts residents and results in fires and injuries.

Home Escape Plan



- Practice your home escape plan with the whole family at least twice a year.
- Hold a nighttime drill to test if your children will react properly to a smoke alarm activation. Adjust your escape plan accordingly.
- Plan two ways out of each room. The easy way out is probably a door and the second way out might be a window.
- If you plan for a child or a senior to exit a window, make sure they can open it easily.
- If you can't get out, close your door and go to the window and signal for help. Teach children to never hide under beds or in closets.
- If you must go through smoke, crawl low. The coolest, cleanest air will be about 18 inches off the ground.
- Have a meeting place outside where everyone will meet. Be able to tell the fire department if everyone is out safely.
- Stay out; don't go back into a burning building for anything.
- Telephone the fire department from a neighbor's house or use the fire alarm emergency box or use a cell phone a safe distance from the building.

Smoke Detectors

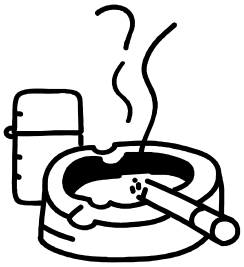


- Install smoke detectors on every level and outside each sleeping area.
- Test smoke detectors monthly.
- Replace the batteries twice a year.
- Never disable your detector.
- Replace detectors every 10 years.

Cooking Safety

- Put a lid on a grease fire to smother it then turn off the heat. Baking soda will also work.
- Wear short or tight fitting sleeves when cooking. Loose sleeves easily catch fire.
- Never throw water on a grease fire. Water will only spread the fire around.
- Never move a burning pan. You can too easily ignite your clothes or spill the fire onto someone or something else.
- Stand by your pan! Never leave cooking unattended.

Safe Smoking



- Quit!
- Never smoke in bed.
- Use large ashtrays with center rests so cigarettes fall into the ashtray not on the floor.
- Restrict smoking to outdoors.
- Do not smoke in homes or buildings where oxygen is used. Oxygen soaks into clothes, rugs, furniture, hair and bedding, creating an oxygen enriched environment, which make fires start more easily and burn more rapidly, even when the oxygen is "turned off."

Dryer Safety

- Clean the filter screen after each load.
- Stay home while the dryer is in use.
- Clean vents to outside.
- Vacuum the motor area periodically.
- Clean dryer vents regularly.

2002 Firefighter Deaths

In 2002, there was one fire-related fire service fatality in the Commonwealth of Massachusetts. District Chief Gerald Nadeau of the Fall River Fire Department, succumbed to injuries sustained while he was the incident commander at an apartment building fire.

Fall River District Chief Gerald Nadeau
District Chief Gerald Nadeau died from complications sustained while directing the efforts of Fall River firefighters at an apartment fire on September 19, 2002 at 6:42 p.m. at 34 Orange Street. District Chief Nadeau, completed the incident and returned to the station to write the incident report. However, he soon sought medical treatment and was admitted to a local hospital. He died at the hospital on October 10, 2002. He was 51-years old.

Fire Service Injuries

620 Firefighters Injured in 2002
In 2002, 620 firefighters were injured while fighting the 27,380 reported fires in Massachusetts. There was one firefighter death in 2002. On average, a firefighter was injured at one of every 44 fires in 2002. Five hundred and fifty-four (554) firefighters were injured at structure fires. Twenty-six (26) firefighters were injured at motor vehicle fires. Forty (40) firefighters were injured at outside and other fires.

89% of Firefighter Injuries Occurred at Structure Fires
Firefighters were injured more frequently at structure fires than any other fire incident type. Eighty-nine percent (89%) of firefighter injuries occurred at structure fires.

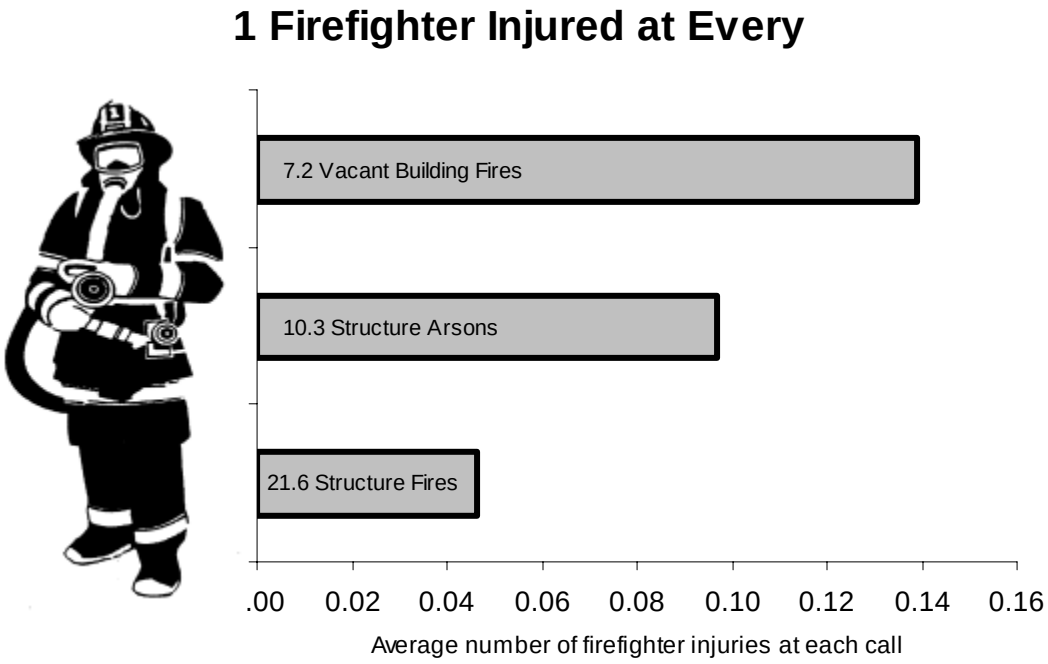
We ranked the total number of firefighter injuries at structure fires by fire cause. The largest number of firefighter injuries took place at electrical-caused fires. Sixty-nine (69), or 12% of structure fire firefighter injuries occurred at electrical fires. Fifty-seven (57), or 10%, occurred in smoking fires. Structure arsons accounted for 8%; cooking accounted for 7% and heating accounted for 6% of fire service injuries at structure fires.

Firefighters Injured at One of Every 10 Structure Arsons
One of the most dangerous types of fires for firefighters in 2002 were structure arson fires. Arson fires of all incident types accounted for 52, or 8.4%, of firefighter injuries in 2002. Forty-seven (47) of these 52 arson-related injuries occurred at structure arsons. These 47 injuries represent 8.5% of the number of firefighter injuries incurred fighting

structure fires, and 7.6% of the total firefighter injuries in 2002. One firefighter was injured at every 10 structure arsons.

The firefighter injury rate for vacant building fires was even higher. On average, a firefighter was injured at one of every seven vacant building fires.

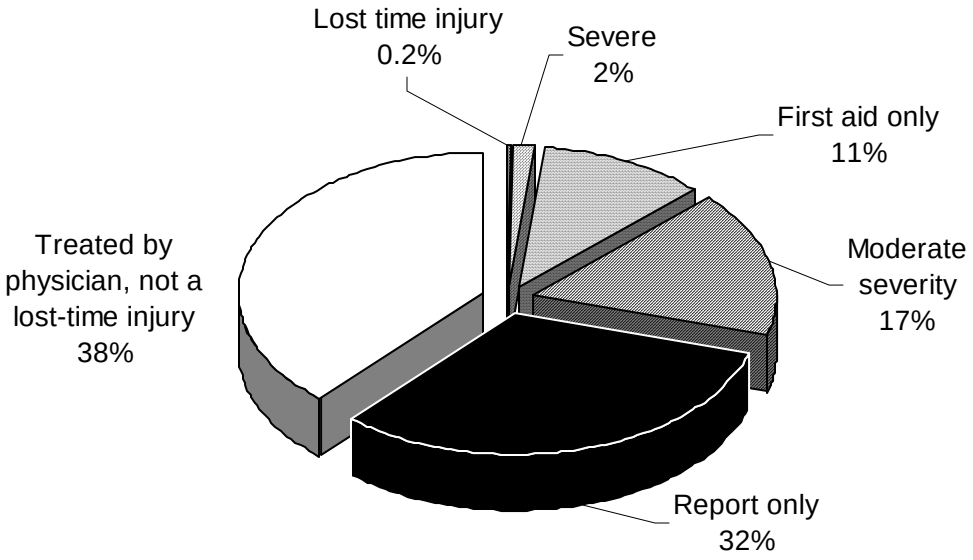
The following graph illustrates this. On average there was only 0.05 reported firefighter injuries per any type of structure fire in Massachusetts in 2002. On average there was only 0.1 reported firefighter injuries per structure arson in 2002. On average there was 0.14 reported firefighter injuries per vacant building fire in the Commonwealth in 2002.



70% of Firefighter Injuries Minor

When examining the severity of the 582 firefighter injuries that reported severity, 38% reported having been treated by a physician with no time lost. Thirty-two percent (32%) of the injuries were reports only, including exposures to toxic substances or harmful physical agents through any route of entry into the body. Moderate severity injuries accounted for 17% of firefighter injuries, meaning that immediate medical attention was needed but there is little danger of death or permanent disability. Eleven percent (11%) of these injuries were recorded as only needing first aid. Two percent (2%) of firefighter injuries were coded as severe. This means that the injury was potentially life threatening if the condition was not controlled. One (1) or less than 1%, of the firefighter injuries was life threatening, where body processes and vital signs were not normal. The severity was not reported for 38 firefighter injuries. These injuries were excluded from the percentage calculations.

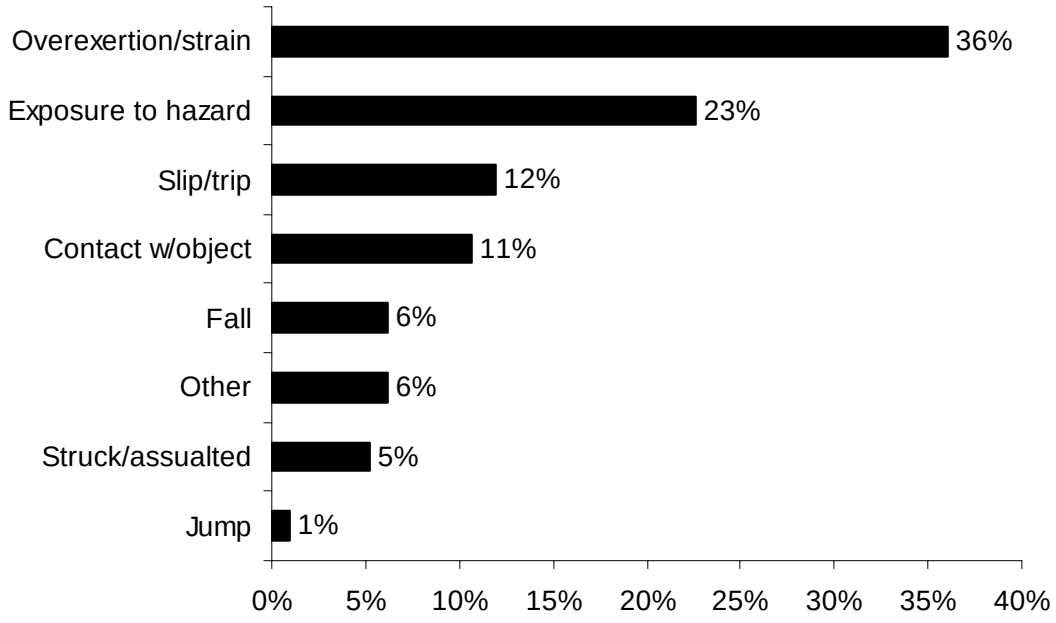
Severity of Firefighter Injuries



Over 1/3 of Injuries from Overexertion or Strain

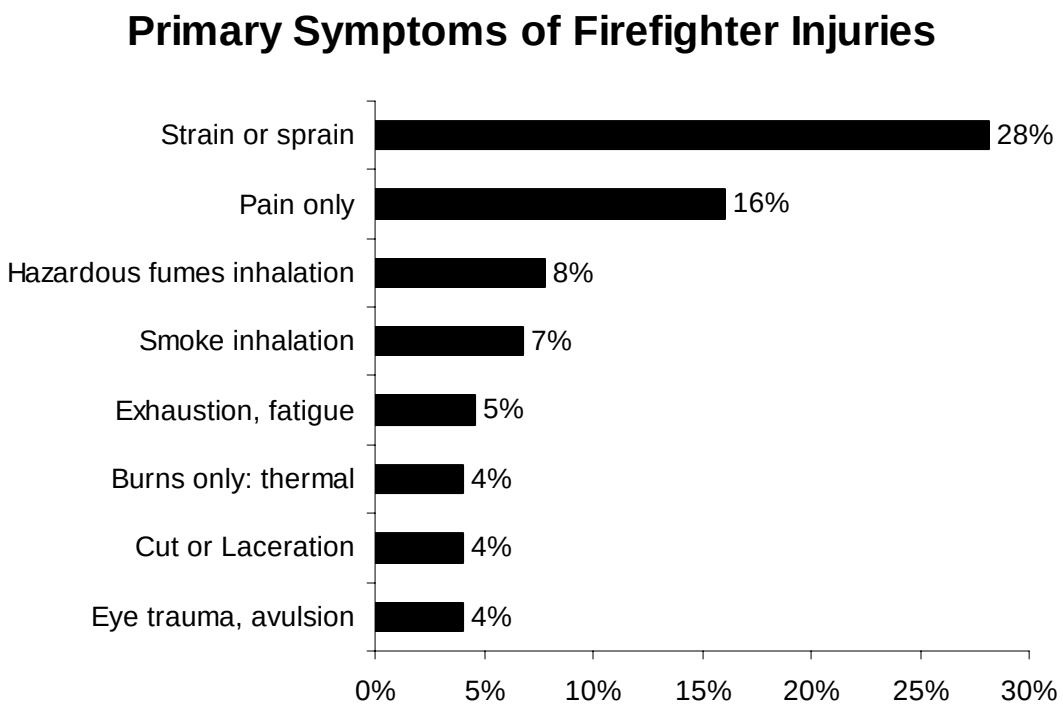
Thirty-six percent (36%) of the 402 firefighter injuries where cause is known were due to overexertion or strain; 23% were exposed to some form of hazard including heat, smoke or toxic agents; 12% were injured when they slipped or tripped; 11% were caused by

Causes of Firefighter Injuries



contact with some object; 6% of firefighters were injured from a fall; 5% were injured when they were struck or assaulted by a person, animal or object; 1% were injured when they jumped, and another 6% of the Massachusetts fire service injuries were caused by other conditions where no code was available to describe the instance. The cause was not reported for 218 firefighter injuries. These injuries were excluded from the percentage calculations.

Over 1/4 Experienced Sprains or Strains; 19% of Firefighters Reported Pain
Of the 412 firefighter injuries where primary symptom was known, 28% of injured firefighters reported sprains or strains as their primary symptom; 16% reported pain only; 8% reported hazardous fumes inhalation; 5% reported smoke inhalation; 5% reported exhaustion or fatigue; 4% reported lacerations or cuts; another 4% reported thermal burns; and still another 4% of the fire-related fire service injuries in 2002 was due to eye trauma or avulsions. Primary apparent symptom was not reported for 209 firefighter injuries. These injuries were excluded from the percentage calculations.



Firefighters Face Other Risks in Addition to Fires
The Massachusetts Fire Incident Reporting System primarily only collects information about injuries at fires. Firefighters face many other dangerous situations in addition to those found at fires. Many are also injured while controlling hazardous materials incidents, performing rescues and extrications, performing emergency medical services, inspections and other activities.

Look at Symptoms Incurred by Different Parts of Body to Prevent Injuries
Different parts of the body suffer different types of injuries. The following chart shows the types of injuries suffered by different parts of the body. For example, 59% of eye injuries were caused by avulsions; cuts or lacerations caused 12% of the injuries to the hands and fingers; 55% of the injuries to the back and spine were sprains or strains; and hazardous fume inhalation caused 39% of the internal injuries.

Quincy Storage Building Had 32 Fire Service Casualties

- On August 7, 2002, at 9:46 a.m., the Quincy Fire Department was called to a fire and hazardous materials incident at a storage building of undetermined causes. The building was fully involved upon arrival and contained unspecified amounts of fertilizer and other hazardous materials. There were no civilian injuries; but there were 32 reported fire service injuries. All 32 fire service injuries were exposure reports to hazardous fumes from the materials stored in the building. The fire department was on scene for approximately nine hours. Damages from this fire were estimated at $200,000.

1/5 of All Firefighter Injuries Were To Internal Body Parts
Eighty-three (83), or 20%, of all known firefighter injuries occurred to internal body parts. Fifty-seven (57), or 69% of these internal injuries were from hazardous fumes or smoke inhalation. The chart below shows the distribution of firefighter injuries by body part. The percentages given are the ratio of the number of reported primary apparent symptoms for each given body part grouping.

Firefighter Injuries by Part of Body

Eyes (22)

Avulsion	59%
Pain only	9%

Trunk (24)

Pain only	38%
Strain or sprain	25%
Fracture	13%

Internal (83)

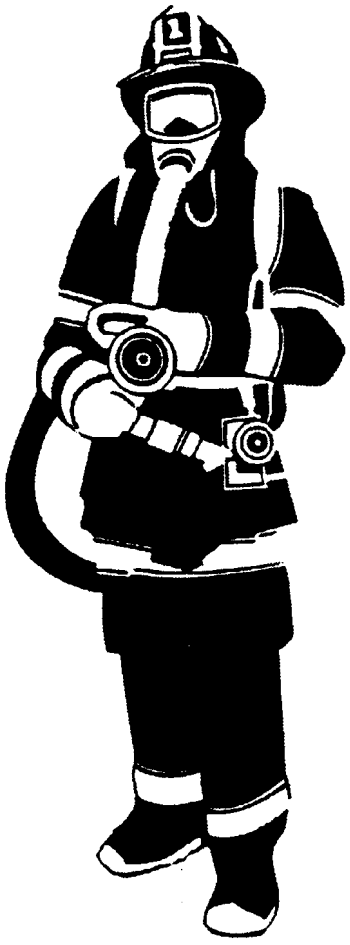
Hazardous fumes inhalation	39%
Smoke inhalation	30%
Dehydration	13%
Breathing difficutly	6%
Exhaustion/fatigue	2%

Hand, Fingers* (49)

Cut, laceration	12%
Swelling	12%
Thermal burns	10%
Strain or sprain	8%

Leg (10)

Strain, sprain	60%
Pain only	20%



Ears & Face (8)

Pain only	25%
Thermal burns	13%
Scald burns	13%

Back & Spine (42)

Sprain, strain	55%
Pain only	40%

Arm (17)

Sprain, strain	47%
Pain only	35%

Wrist (15)

Sprain, strain	56%
Thermal burns	22%

Knee (31)

Sprain, strain	77%
Swelling	13%
Contusion, bruise	6%

Foot & Toes (6)

Strain, sprain	33%
Puncture wound	17%
Pain only	17%
Fracture	17%
Contusion, bruise	17%

***Hand, Fingers** – 13, or 27%, of the reported injuries to hands & fingers were unspecified as to their *Primary Apparent Symptom*. All 13 of these injuries were from Boston & were most likely cuts or lacerations. If we add these 13 to the other six hand or finger injuries that were caused by cuts or lacerations, cuts or lacerations were responsible for 39% of hand or finger injuries.

Arson Fires

1,867 Arsons - 485 Structures, 395 Vehicles, 987 Other Arsons
One thousand eight hundred and sixty-seven (1,867), or 7%, of the 27,380 fire incidents reported to the Massachusetts Fire Incident Reporting System, were considered to be intentionally set, or for the purpose of analysis, arson[26]. The 485 structure arsons, 395 motor vehicle arsons, and 987 outside and other arsons caused seven civilian deaths, accounting for 11% of civilian fire deaths, 21 civilian injuries and 52 fire service injuries. The estimated dollar loss from arsons was $16.8 million. The average dollar loss per arson fire was $8,982. Total arson was down 46% from 3,426 in 2001.

'Suspicious' Eliminated as a Cause of Ignition
In version 5, arson is defined as Cause of Ignition is intentional and the age of the person involved is greater than 17, whereas in version 4 we included both intentionally set and suspicious fires in our definition of arson. In version 5, suspicious is eliminated, and the more accurate description Cause of Ignition = Cause Under Investigation is used.

In 2002, 1,218 Massachusetts fires were still listed as Cause Under Investigation. There were 4,592 fires where the Cause of Ignition was listed as Undetermined. In the past (in version 4) many of these fires would have been coded as 'Suspicious' and would have been counted as arsons. The change in coding requirements did create a larger drop than expected in reported arsons; only after we have five or more years of version 5 data will we be able to tell how substantial this drop really is.

The following table illustrates that structure arsons and motor vehicle arsons are at an all time low. 2002 was the lowest total for outside and other arsons in the last 10 years.

Another reason for this large drop is that in version 5, outside rubbish fires such as dumpster fires use the abbreviated reporting format where a Fire Module is not needed and the field Cause of Ignition is not captured. Thus many intentionally set outside rubbish fires will not be counted as arsons.

New Arson Module Will Bring Better Understanding & Tracking of Arsons
One of the new modules in version 5 is the Arson Module. This module contains many new data fields that we can use to identify when and where the crime takes place, what form it takes, and the characteristics of its targets and perpetrators. With this information we can develop and implement arson prevention initiatives and track trends to see if any arsons in an area exhibit similar characteristics.

One of the new fields is 'Other Investigative Information.' This field identifies other pertinent information pertinent to the case. In 2002, 33%, of the reported arsons which

[26] In MFIRS v5 a fire is considered an arson if the Cause of Ignition = 1 (Intentional) and the Age of Person (Fire Module) is greater than 17 or if the field is blank; or if the Wildland Module is used, the Wildland Fire Cause = 7 (Incendiary) and the Age of the Person (Wildland Module) is greater than 17 or if the field is left blank.

had this field completed, were reported to have other crimes involved; 18% had some code violations; and 13% had criminal or civil actions pending.

Another new field is 'Suspected Motivation Factors.' It indicates the suspected stimulus that caused the subject to burn any real or personal property. Eleven percent (11%), of the reported arsons which had this field completed, were reported to be from playing with fire or curiosity of fire; 10% said it was personal; another 10% did it for thrills; and 5% did it for insurance fraud.

Gasoline or other fuel cans were the leading container of incendiary devices. Ordinary combustibles such as paper and wood, and ignitable liquids were the leading fuels of reported incendiary devices.

ARSONS BY YEAR

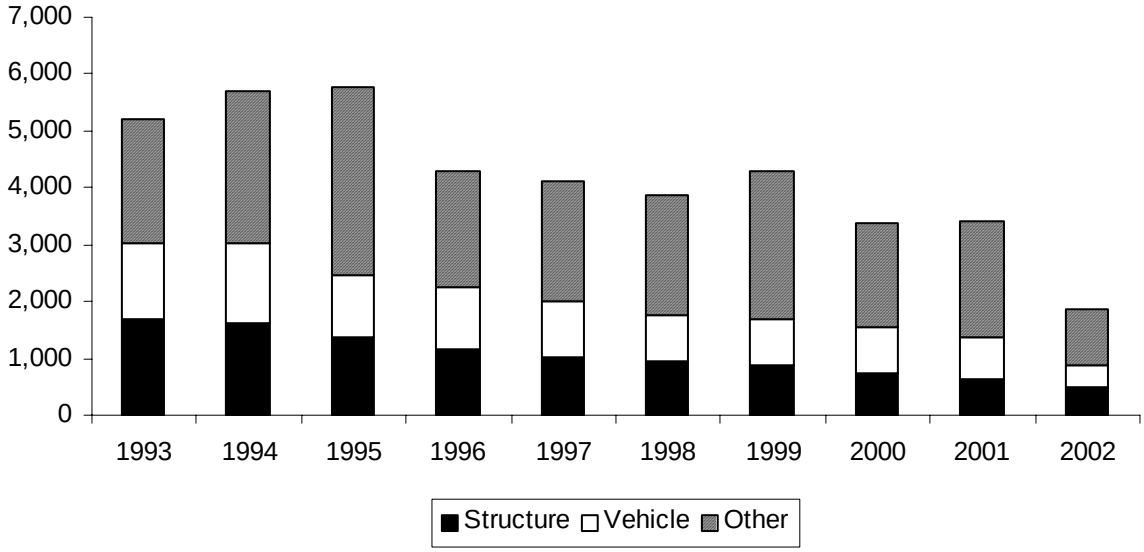
Year	Total Arsons	Structure Arsons	% All Arsons	Vehicle Arsons	%All Arsons	Other Arsons	% All Arsons
2002*	1,867	485	26%	395	21%	987	53%
2001	3,426	620	18%	743	22%	2,063	60%
2002	3,360	747	22%	798	24%	1,815	54%
1999	4,307	886	21%	818	19%	2,603	60%
1998	3,882	939	24%	836	22%	2,107	54%
1997	4,131	1,020	25%	979	24%	2,132	52%
1996	4,296	1,168	27%	1,082	25%	2,046	48%
1995	5,760	1,377	24%	1,093	19%	3,290	57%
1994	5,686	1,625	29%	1,395	25%	2,665	47%
1993	5,221	1,684	32%	1,329	25%	2,208	42%

*2002 was the 1st full year of version 5.

Largest Reduction in Structure & Motor Vehicle Arsons

The following chart illustrates arson by incident type over the past decade. This type of chart can be used as a visual representation of the ratios between the three types of arson, structure, motor vehicle and outside and other arsons. The trend has been for structure arsons to comprise a smaller percentage of total arsons, while the percentage of outside and other arsons of total arsons has risen during the same time span. For example, structure arsons accounted for 32% of arson fires in 1993 but only 26% of the total reported arson fires in 2002. Looking at these ratios allows one to more clearly identify specific fire problems, such as increases in structure or motor vehicle arsons. Trends may be masked if you were to look just at total numbers.

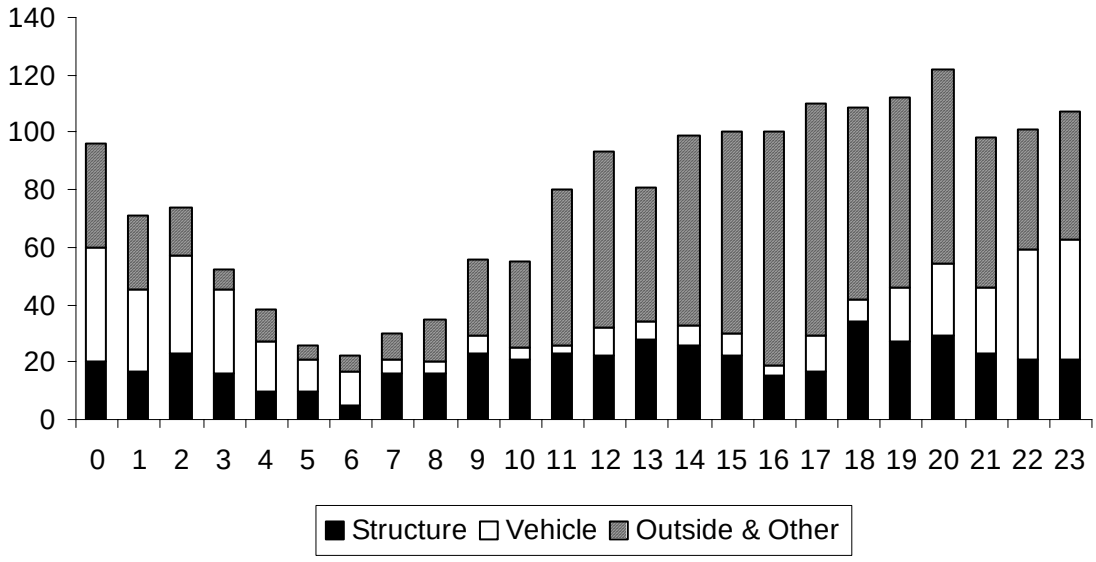
Arson by Incident Type 1993 - 2002



For instance, outside and other arsons numbered 2,208 in 1993 and 987 in 2002. While we have a huge drop in the total numbers of reported outside and other arsons, the ratio or percentage of outside and other arsons to total arsons has remained at or above 50%. Total arsons have declined over the same period, but this shows most of the reduction has occurred in structure and motor vehicle arsons.

The following chart illustrates the types of arsons by the time of day they occur. Midnight to 1:00 a.m. is represented by 0, 1:00 a.m. to 2:00 a.m. is represented by 1, etc. Arson is most likely to occur between the hours of 5:00 p.m. and midnight. The peak times for

Type of Arson by Time of Day



structure arson were from 6:00 p.m. to 9:00 p.m. Motor vehicle arsons were most likely to occur between 10:00 p.m. and 3:00 a.m. Outside and other arsons peaked from 2:00 p.m. to 10:00 p.m.

Structure Arson

485 Arsons, 4 Civilian Deaths, 17 Civilian Injuries, 47 Fire Service Injuries
In 2002, there were 485 reported structure arsons. They caused four civilian deaths, 17 civilian injuries, 47 fire service injuries and an estimated dollar loss of $14.3 million. These 485 incidents accounted for 4% of the 11,979 structure fires in 2002, down 22% from the 620 reported structure arsons in 2001. The four civilian deaths accounted for 6% of the total civilian death count and 8% of all structure fire deaths. The 17 civilian injuries accounted for 4% of the overall civilian injuries and 5% of all civilian injuries at structure fires. Forty-seven (47) fire service injuries accounted for 8% of the total fire service injuries and 8% of the injuries fire fighters sustained at all structure fires in 2002. The estimated dollar loss for structure arsons was $14,336,555, accounting for 8% of the overall dollar loss and 9% of the estimated dollar loss in all reported structure fires. The average loss per structure arson was $29,560.

In 2002, 499 Massachusetts structure fires were still listed as Cause Under Investigation. There were 551 structure fires where the Cause of Ignition was listed as Undetermined. In the past (in version 4) many of these fires would have been coded as ‘Suspicious’ and would have been counted as arsons. The change in coding requirements did create a larger drop in reported structure arsons; only after we have five or more years of version 5 data will we be able to tell how substantial this drop really is.

Structure Arsons Pose High Injury Risk to Firefighters
One firefighter was injured at every 10.3 structure arsons in 2002, compared with one firefighter injured at every 21.6 structure fires of all causes. This means that a firefighter was almost twice as likely to be injured at a structure arson than at a structure fire generally.

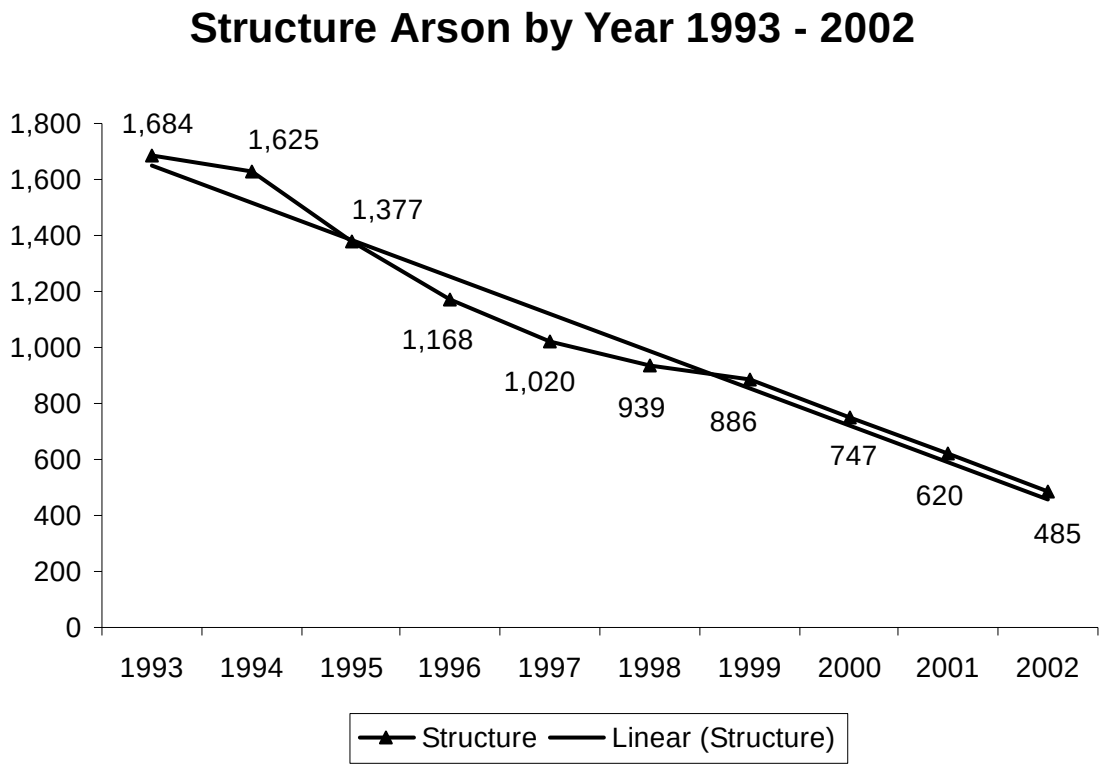
Over 1/2 of Structure Arsons Occurred in Residences
Two hundred and fifty-eight (258), or 53%, of the 485 structure arsons occurred in residential occupancies. Educational occupancies accounted for 74, or 15%, of the 485 structure arsons in 2002. The following table shows the number of structure arsons, civilian deaths, civilian injuries, fire service injuries, dollar loss and the percentage of the total structure arsons for each occupancy type.

STRUCTURE ARSON BY OCCUPANCY TYPE

Occupancy	Structure Arsons	Percent of Total	Injuries FF	Injuries Civ	Deaths FF	Deaths Civ	Dollar Loss
Assembly	32	6.6%	0	1	0	0	$415,000
Educational	74	16.0%	0	1	0	0	48,255
Institutional	11	1.5%	0	0	0	0	19,350
Residential	**258**	**53.2%**	**26**	**15**	**0**	**2**	**6,625,627**
1- & 2- Family	*110*	*22.7%*	*10*	*7*	*0*	*2*	*4,137,326*
Multifamily	*119*	*24.5%*	*15*	*6*	*0*	*0*	*2,212,206*
All Other Residential	*29*	*6.0%*	*1*	*2*	*0*	*0*	*276,095*
Mercantile, business	24	4.9%	9	0	0	1	5,998,923
Basic Industry	2	0.4%	0	0	0	0	3,000
Manufacturing	5	1.0%	0	0	0	0	1,100
Storage	28	5.8%	2	0	0	1	628,850
Special Properties	39	8.0%	5	0	0	0	69,250
Unclassified	12	2.5%	5	0	0	0	527,200
Total	**485**	**100%**	**47**	**17**	**0**	**4**	**$14,336,555**

Structure Arson Down 64% Since 1993

Structure arson has been on a downward trend since 1991 when 1,974 structure arsons were reported to MFIRS[27]. Structure arsons have decreased 64% since 1,684 were reported in 1993. The chart below shows the trend of structure arsons in the past decade.



[27] The highest number of reported structure arsons in the past 20 years, occurred in 1984 when 2,133 structure fires were considered to be intentionally set.

The following table shows the cities that reported the most structure arsons in 2002, their 2000 population according to the United States Census, the number of structure arsons reported in 2002, the rate of structure arsons per 1,000 people in 2002, and the same information for 2001. The cities are ranked by the 2002 rate of arsons per 1,000 population. Cities with the most structure arsons may not have the highest rate of structure arsons.

The City of Boston, as the largest city in the Commonwealth, leads the state in the number of structure arsons, Fall River had a higher structure arson rate. Although the City of Fall River ranked second in total structure arsons, its rate of 0.29 structure arsons per 1,000 population was the highest in the state and was more than four times the state structure arson rate of .08 per 1,000 population.

MASSACHUSETTS CITIES WITH THE MOST STRUCTURE ARSONS IN 2002

City	Population	2002 Arsons	2002 Rate/ 1,000 Pop.	2001 Arsons	2001 Rate/ 1,000 Pop.
Fall River	91,938	27	0.29	27	0.29
Boston	589,141	151	0.26	153	0.26
Chicopee	54,653	13	0.24	2	0.04
Milford	26,799	6	0.22	4	0.15
New Bedford	93,768	13	0.14	30	0.32
Everett	38,037	5	0.13	7	0.18
Fitchburg	39,102	5	0.13	26	0.66
Holyoke	39,838	5	0.13	0	0.00
Lynn	89,050	5	0.13	3	0.03
Springfield	152,082	15	0.10	36	0.24
Haverhill	58,969	5	0.08	5	0.08
Worcester	172,648	13	0.08	21	0.12
Brockton	94,304	7	0.07	10	0.11
Cambridge	101,355	6	0.06	18	0.18
Salem	40,407	2	0.05	6	0.15
Lowell	105,167	4	0.04	16	0.15
Lawrence	72,043	2	0.03	17	0.24
Massachusetts	**6,349,097**	**485**	**0.08**	**620**	**0.10**

Motor Vehicle Arson

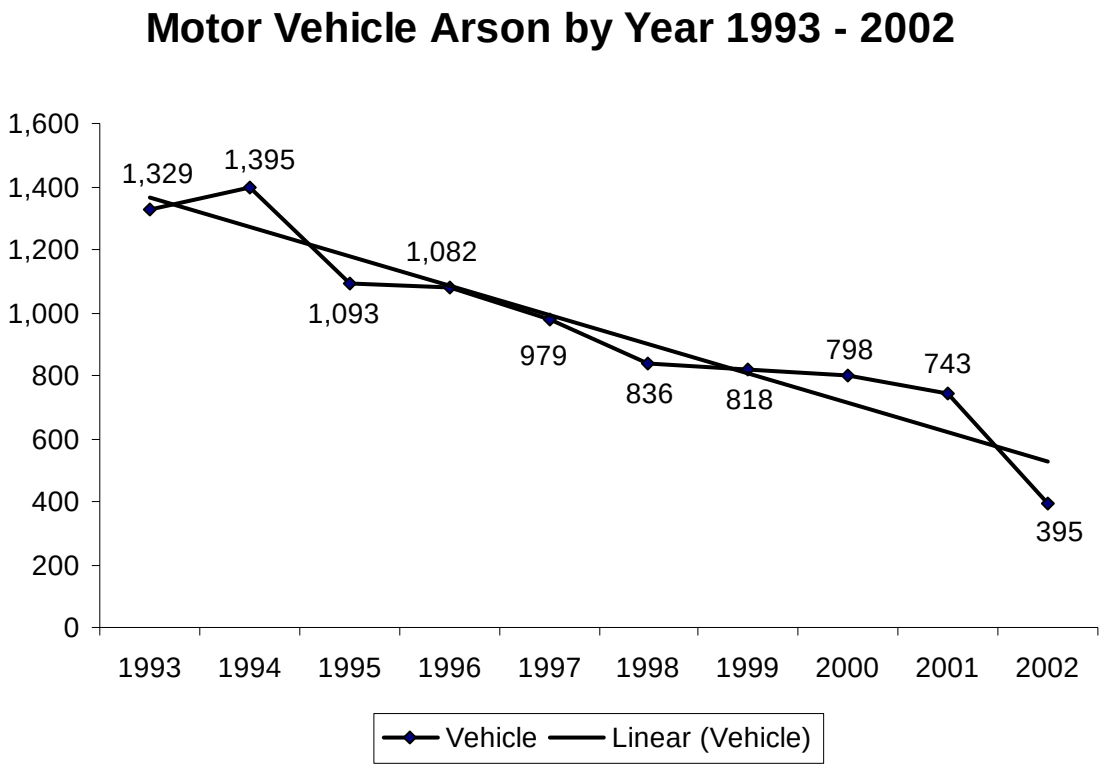
395 Arsons, 3 Civilian Deaths, 4 Civilian Injuries and 2 Fire Service Injuries
Three hundred and ninety-five (395), or 9%, of the 4,331 vehicle fires were considered intentionally set in 2002. The three civilian deaths, all self-immolations, accounted for 5% of the overall civilian deaths and 43% of the motor vehicle deaths. The four civilian injuries accounted for 1% of the overall civilian injuries and 13% of all civilian injuries

in motor vehicle fires. Two (2) fire service injuries accounted for less than 1% of the total fire service injuries and 8% of firefighter injuries associated with motor vehicle fires. The estimated dollar loss in motor vehicle arsons was $2.3 million, accounting for 1% of the overall fire dollar loss and 13% of the dollar loss associated with all the 2002 motor vehicle fires. The average loss per vehicle arson was $5,854. Passenger cars and vans accounted for 83% of the 395 motor vehicle arsons for which mobile property type was reported.

In 2002, 462 Massachusetts motor vehicle fires were still listed as Cause Under Investigation. There were 1,071 motor vehicle fires where the Cause of Ignition was listed as Undetermined. In the past (in version 4) many of these fires would have been coded as 'Suspicious' and would have been counted as arsons. The change in coding requirements did create a larger drop in reported motor vehicle arsons; only after we have five or more years of version 5 data will we be able to tell how substantial this drop really is.

The Burned Motor Vehicle Reporting Law

The Massachusetts Fire Incident Reporting System identified motor vehicle fires and motor vehicle arson as a major problem in 1985. The Burned Motor Vehicle Reporting Law took effect in August of 1987. The law requires owners of burned motor vehicles to complete and sign a report which must also be signed by a fire official from the department in the community where the fire occurred. The graph below shows the effectiveness of this law. Since the law took effect in 1987, motor vehicle arsons have decreased 92% from 5,116 in 1987 to 395 in 2002.



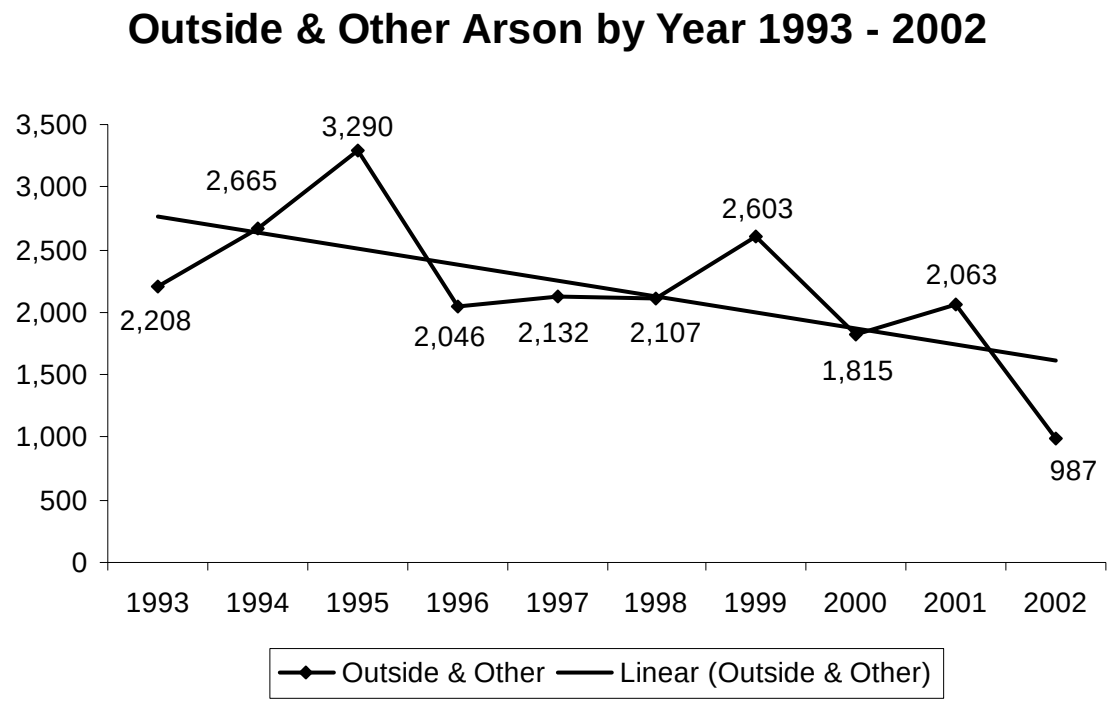
Outside and Other Arson

987 Arsons, 1 Civilian Death, 8 Civilian Injuries, 3 Fire Service Injuries
Nine hundred and eighty-seven (987), or 9%, of the total outside and other fires were considered intentionally set in 2002. Three (3) firefighters were injured in outside and other arson fires. One of the fire service injuries occurred at a brush fire, while the other two occurred at outside storage fires. The estimated dollar loss for these arsons was $120,105.

In 2002, 261 outside and other fires were still listed as 'Cause Under Investigation.' There were also 2,970 outside and other fires where the "Cause of Ignition" was listed as 'Undetermined.' In the past (in version 4) many of these fires would have been coded as 'Suspicious' and would have been counted as arsons. The change in coding requirements did create a larger drop in reported outside and other arsons; only after we have five or more years of version 5 data will we be able to tell how substantial this drop really is.

Another reason for this large drop is that in version 5, outside rubbish fires such as dumpster fires use the abbreviated reporting format where a Fire Module is not needed and the field Cause of Ignition is not captured. Thus many intentionally set outside rubbish fires will not be counted as arsons.

It is important to keep in mind that no-loss fires are voluntarily reported and these numbers represent only a fraction of the problem. While outside and other arsons did decrease by 52% from the 2,063 reported in 2001, the 987 reported arsons is the lowest total in the past 10 years.



Juvenile-set Fires

Children Playing With Fire Caused 534 Fires & 2 Deaths

In 2002, children playing with matches, lighters and other heat sources caused 534 reported fires, two civilian deaths, 24 civilian injuries, 25 fire service injuries and an estimated dollar loss of nearly $3.4 million. The average dollar loss per fire was $6,383. These fires are up 8% from 494 incidents in 2001. However the trend over the past decade has been declining. This may be due to the number of juvenile firesetters' intervention programs across the Commonwealth.

Version 5 Should Give Us A Better Understanding of the Problem

In the past in version 4, you could not code a fire as suspicious or incendiary and also as juvenile-set. The fire department may have considered a fire deliberately set by a juvenile or a group of children to be incendiary; these statistics should be considered an underestimate of the severity of the juvenile firesetting problem. Version 5 is able to capture these types of incidents by allowing the recording of multiple causal factors. The Arson/Juvenile Firesetting Module can collect information when a fire is intentionally set by an adult or set by a child. The information that will be collected with regard to juvenile firesetting will include age, race, family type, gender and ethnicity. Also included will be the motivation and risk factors associated with firesetting, for example, if there is a history of shoplifting, stealing, physical assault, fire play, transiency, etc.

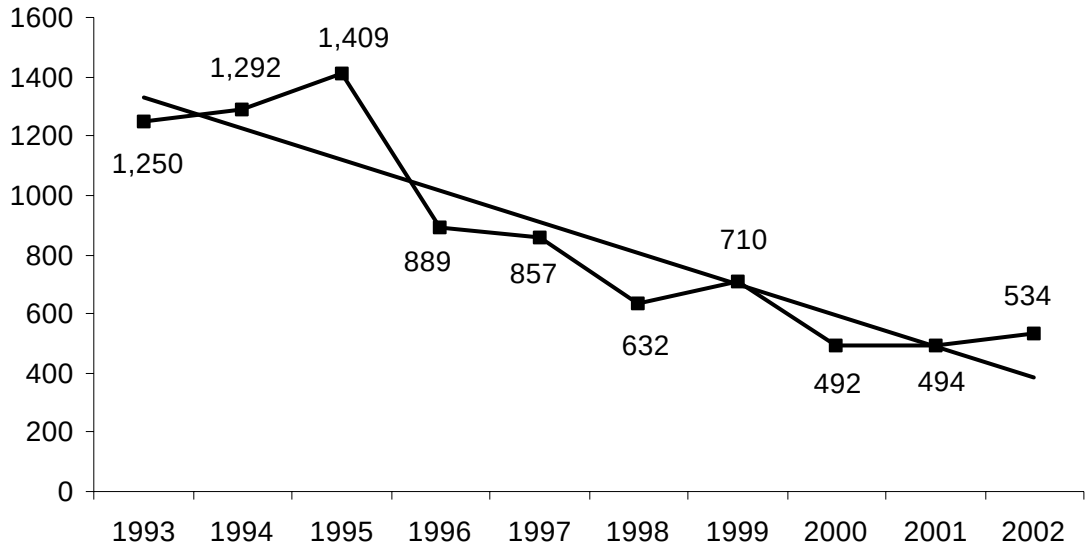
The second half of the new Arson Module is the new Juvenile Firesetter[28] Module. This module contains many new data fields that we can use to identify key items of information that could be used for local, state and national intervention programs. With this information we can develop and implement juvenile firesetting prevention initiatives and track trends to see if they exhibit similar characteristics.

Other than identify the age, gender and race of the subject, one of the new fields is called Motivation Risk Factors. It is an attempt to identify the possible motivation for the subject to burn, or attempt to burn, any real or personal property. The leading Motivation Risk Factors reported to MFIRS in 2002 were mild, moderate or extreme curiosity about fire, a history of fireplay or firesetting, and a history of trouble outside of school. The leading family type was two-parent families followed by single-parent families. When age was given, the majority of the subjects were between 12 and 17 years old.

The 534 fires set by children included: 122 structure fires; 341 brush, tree or grass fires; 32 special outside fires; 16 outside rubbish fires; eight motor vehicle fires; seven cultivated vegetation or crop fires; and eight fires that could not be classified further.

[28] Each juvenile-firesetter is assigned a unique number for that particular incident. No other personal identification information for juvenile firesetters is recorded on an MFIRS report.

Juvenile-Set Fires In Massachusetts
1993 - 2002



Juvenile-set Fires Cause 2 Civilian Deaths, 22 Civilian & 23 Firefighter Injuries
Two civilian deaths, 22 civilian injuries and 23 fire service injuries occurred in the 122 structure fires set by children. Child-set structure fires caused an estimated dollar loss of $3.3 million with an average dollar loss of $27,107 per fire.

Forty-two percent (42%) of the 122 structure fires caused by children occurred in multifamily homes, and 37% occurred in one- or two-family homes. Thirty percent (30%) of the juvenile-set fires started in the bedroom.

69% of Structure Fires Set by Children Using Smoking Materials

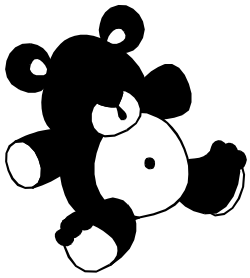
Over 2/3, 69%, of juvenile-set fires were started by smoking materials[29]. Twenty-nine percent (29%) of the structure fires set by children were started using lighters. Twenty-six percent (26%) of the structure fires were started with matches. Twelve percent (12%) were caused by unspecified smoking materials and 2% were started by cigarettes. Seven percent (7%) of the juvenile set structure fires involved candles; and 6% were started by fireworks. This demonstrates a need for education to both parents and children on the danger of matches and lighters, the use of illegal fireworks and safer candle use.

1 Fatal Juvenile-set Fire Causes 2 Deaths
One juvenile-set fire accounted for 2% of the fatal fires in 2002, and caused two, or 4%, of residential structure fire deaths in 2002. This fatal fire was caused by a child playing with a cigarette lighter.

[29] Smoking materials = cigarettes, pipes, cigars, cigarette lighters, matches, and heat from unspecified smoking materials.

- On June 16, 2002 at 9:28 a.m. the West Springfield Fire Department was called to a fatal fire in a six-unit apartment building. The cause was determined to be a seven-year old boy playing with a lighter and burning some paper in his bedroom. The victims, the boy's three-year old sister and two-year old brother, were trapped by the fire while escaping and overcome by heat and smoke. They died from burns and smoke inhalation. There were nine other civilian injuries and one firefighter injury associated with this fire. Detectors were present and operating. Damages from this fire were estimated to be $275,000.

Child Playing with Matches Injured 11 Firefighters



♦ On December 12, 2002 at 9:46 a.m., the Chelsea Fire Department was called to a fire in an apartment building caused by a child playing with matches in the living room. The match ignited a piece of upholstered furniture. Sixty (60) firefighters from five different departments were able to keep the fire from spreading beyond the building, and damages were estimated to be $200,000. There were no civilian injuries in this fire. There were 11 fire service injuries associated with this fire. Smoke detectors were present but it was undetermined if they operated; there were no sprinklers present.

Parents and Caregivers Must Protect Children from Themselves

Parents and caregivers must take steps to protect their children from the dangers of fire.

- Make sure that all matches and lighters are stored out of children's reach.
- If you need a lighter, buy one that is child resistant. Since, 1994, all disposable butane lighters and most novelty-lighters must be able to resist the efforts of 85% of children under 5 who tried to operate them in a specified test. Some are easier to use than others. If one brand is cumbersome, switch to another. *Do not disable the child-resistant feature.*
- Supervise young children at all times. Teach children the safe uses of fire, such as birthday candles and barbecuing. When a child is old enough, let him or her light the candles while you watch. It is only safe for children to use fire when adults are present.
- If your child seems overly curious about fire or has set a fire, call your local fire department and ask if they have a juvenile firesetters intervention program. Don't assume the child will 'grow out of it.' Juvenile firesetting is dangerous and must be addressed.
- Smoking parents should keep their lighter on their person at all times, not on the table or in a purse.

Cooking Fires

Cooking Caused 5,317 Fires, 4 Civilian Deaths, 101 Civilian Injuries

Unattended cooking, other unsafe cooking practices and defective cooking equipment caused 5,317 fires, four civilian deaths, 101 civilian injuries, 40 firefighter injuries and an estimated dollar loss of $11.5 million. The average dollar loss per fire was $2,175. Cooking fires accounted for 19% of the total 27,380 fires that occurred in 2002.

Ninety-eight percent (98%) of the fires caused by cooking occurred in structures. The 5,317 fires included: 5,206 structure fires; 40 special outside fires; two cultivated vegetation or crop fires; two brush fires; one outside rubbish fire; and 66 fires that could not be classified further.

Confined Cooking Fires Account for 14% of Total Fires

There were 4,084 cooking fires confined to a non-combustible container. These 4,084 fires represent 14% of the total 27,380 fires that occurred in Massachusetts in 2002. This is the largest single cause of fires in Massachusetts. These fires are also a 265% increase over the 1,119 confined cooking fires that were reported in 2001.

85% of Cooking Fires Were Unintentional

In 85% of cooking fires where the 'Cause of Ignition' was reported, it was reported as unintentional. Ten percent (10%) of these fires were the result of a failure of equipment or heat source. Only 2% of the reported cooking fires were classified as intentional. In 4% of cooking fires, the cause of ignition was undetermined. Three thousand four hundred and ninety-seven (3,497), or 66%, of all cooking fires, were fires contained to non-combustible containers that did not have a Fire Module completed.[30]

Unattended Cooking Starts 40% – Stand by Your Pan!

Forty percent (40%) of cooking fires where 'Factors Contributing to Ignition' was completed were caused by unattended cooking; 2% were caused by combustibles left too close to the cooking equipment; abandoned or discarded cooking materials accounted for 2%; 1% of the fires started because the cooking equipment was worn out; 1% started when the equipment was accidentally turned on or not turned off; and 1% were caused by a failure to clean. Human error was responsible for the majority of these fires. Sixty-six

[30] In version 5, a fire contained to a non-combustible container has special incident type code. If one of these codes is used then only a Basic Form is completed and the Cause of Ignition field on the Fire Module does not have to be populated. A fire department may still elect to complete the Fire & Structure Fire Modules and all associated fields if it wants to. In 2002, there were 4,084 confined cooking fires. However fire departments filed only a Basic Module in 587, or 14%, of these incidents.

percent (66%) of cooking fires were confined fires where only a Basic Module was completed and therefore none of the information that is contained in the Fire and Structure Fire Modules was collected.

Cooking Was the Leading Cause of Injury in Fires in 2002
Cooking was the leading cause of injury in fires in 2002. This is not surprising considering that almost one-half of residential structure fires start in the kitchen. Of the cooking fire injuries where gender is known, 48% of victims were female and 52% were male. Of the 89 victims where age is known, 3% of victims were under age 10; 3% of victims were between the ages of 10-14; 17% were 15-24; 10% were 25-34; 24% were 35-44; 10% were 45-54; 7% were 55-64; 4% were 65-74; 4% were 75-84 and 5% were over the age of 85. People aged 35 to 44 accounted for nearly one-quarter of people injured in cooking fires.

3/4 of Victims in Room or Area of Fire Origin
Of the cooking fire injuries where location at ignition is known, 46% were intimately involved with the ignition; 28% of victims were in the room or space of fire origin but not involved; 21% were not in the area of origin but involved; and 4% were not in the area of origin and not involved.

60% of Cooking Injuries Occurred When Trying to Control Fire
Of the cooking fire injuries for which activity at time of injury was known, 60% of victims were trying to control the fire; of the 43 victims injured while attempting to control the fire 52% were male. Thirteen (13%) were sleeping; 8% were escaping; 1% were unable to act; and another 1% were attempting to return to the vicinity of the fire before the fire was under control.

2/3 of All Cooking Injuries Were Burns
Of the cooking fire injuries where nature of injury was known, 65% of victims suffered only from burns; 28% suffered only from smoke inhalation or asphyxia; 4% suffered from burns and asphyxia; 1% of cooking injuries was caused by cuts or lacerations; 1% were from strains or sprains; and another 1% of the cooking fire injuries were from abrasions.

Cooking Was the Second Leading Cause of Residential Fire Deaths
While cooking is the leading cause of residential structure fires, it is the second leading cause of residential fire deaths. Four (4) Massachusetts residents died in four residential fires caused by cooking in 2002. Cooking fires accounted or 8% of the fire deaths and 10% of fatal fires in people's homes in Massachusetts. The importance of responding correctly to a clothing ignition – stop, drop and roll – cannot be overemphasized. Older adults, who often are more afraid of falling than of fire, are the most common victims of cooking fires. They must be persuaded that they can indeed safely lower themselves to the ground and roll to smother the flames.

For a listing of cooking-related fire deaths in 2002, please refer to the Fire Deaths section of this report.

Cooking Safety

- Put a lid on a grease fire to smother it then turn off the heat. Baking soda will also work.
- Wear short or tight fitting sleeves when cooking. Loose sleeves easily catch fire.
- Never throw water on a grease fire. Water will only spread the fire around.
- Never move a burning pan. You can too easily ignite your clothes or spill the fire onto someone or something else.
- Stand by your pan! Never leave cooking unattended.
- Stop, drop and roll if clothing ignites, no matter how young or old.

Fires Caused by Smoking

Smoking Caused 6% of Fires and 31% of Deaths

During 2002, 1,648, or 6%, of the 27,380 reported incidents were caused by the improper use or disposal of smoking materials. These 1,648 caused 19, or 31%, of the 62 civilian deaths, 63 civilian injuries, 61 fire service injuries, and an estimated dollar loss of $14 million. The average dollar loss per fire was $8,491. The number of smoking fires decreased by 30% from 2,363 in 2001 to 1,648 in 2002. Given the expanded definition of what a smoking fire is in version 5, this is a real decrease in the number of smoking fires.

V5 More Accurately Describes Smoking Fire Problem

With the switch to MFIRS version 5 our parameters for calculating fires caused by smoking have changed. We may now accurately distinguish between arson or juvenile-set fires and smoking fires where the heat source is a match or lighter. For the first time, we have included in this category smoking-related fires where the heat source was a match or a lighter. This is one of the reasons for the shocking increase of smoking-related fires in 2001 from previous years. However, we believe one of the benefits of v5 is the ability to more accurately describe the risk smoking materials pose. In 2002, if one was to subtract all fires with a heat source of a match or cigarette lighter, there were 651 total fires, accounting for 17 civilian deaths, 41 civilian injuries, 39 fire service injuries, and an estimated dollar loss of $10.3 million. The average dollar loss per fire would be $15,941; and the number of smoking fires would have decreased by 58% from 1,552 fires reported the previous year.

727 Structure Fires - Down From 742 In 2001
The 1,648 fires caused by smoking included: 727 structure fires, down from 742 in 2001; 74 motor vehicle fires, down from 79 in 2001; 627 tree, brush or grass fires, down from 1,100 in 2001; 86 trash or rubbish fires, down from 239 in 2001; 67 special outside fires, up from 34 in 2001; 27 cultivated vegetation or crop fires, down from 128 in 2001, and 39 fires that could not be classified further, down from 42 in 2001. The number of fires caused by smoking has decreased 30% from 2001 to 2002.

Even though smoking fires decreased between 2001 and 2002, the reported figures are 9% higher than the 10-year average of 1,516 (1991-2000) smoking fires reported in the version 4 format. There are many possible explanations for this increase in fires caused by smoking. The first possible explanation is the change in the reporting system and of the parameters we use to calculate smoking-related fires. Another possible reason is that the conversion to version 5 has allowed more departments to start reporting electronically and therefore submit all of their fire incident reports regardless of the dollar loss incurred. Most of the increase in reported smoking fires has been in the outside and other fire category.

A more far reaching explanation may be all the new statutes that prohibit smoking in public places. These new laws have forced smokers to smoke outside where they may not be as careful disposing of their cigarettes or cigars thus accounting for the rise in brush fires attributed to smoking. People are now more likely to smoke more heavily at home because it is one of the few sanctuaries where they can partake in smoking. Eighty percent (80%) of all smoking-related structure fires occurred in residential occupancies. The occupancy groupings with the next highest percentages of smoking-related structure fires in Massachusetts in 2002 were mercantile and business properties accounting for 5% and public assembly buildings, including restaurants, nightclubs and bars, also accounting for 5%.

Smoking Remains the Leading Cause of Fire Deaths
The 727 smoking-related structure fires caused all 19 smoking-related fire deaths, 58 civilian injuries, 57 fire service injuries, an estimated dollar loss of $13.4 million and an average dollar loss of $18,457. Smoking fires accounted for 35% of the fatal fires in 2002. The unsafe and improper use of smoking materials caused 40% of residential structure fire deaths and 39% of fatal residential structure fires. Five (5), or 31%, of the 16 residential structure fire deaths to people over the age of 65 were caused by smoking. In 2001, 16 people died in 16 smoking-related fires. Smoking fires are still responsible for the most fatalities.

No Working Detectors in 4 Out of 10 Fatal Smoking Fires
In 38% of these deaths, there were no working smoke detectors; 13% of these deaths occurred where smoke detectors did not operate and 25% of these deaths occurred where there were no detectors present at all. Forty-four percent (44%) of smoking fire deaths occurred in structures where smoke detectors were present and operated, however all of these victims were intimately involved in ignition or in the area of origin when the fire began. The smoke detectors helped prevent these fires from claiming any additional lives. Nineteen percent (19%) of smoking-related deaths occurred where smoke detector status was unreported.

For a listing of all the smoking-related fire deaths in 2002, please refer to the Fire Deaths section of this report.

Smoking on Oxygen
In 2002, the use of oxygen while smoking caused four of the 19 smoking-related fire deaths in four of the 16 smoking-related fatal fires.

80% of Structure Smoking Fires Occurred in Residences
Of the 727 smoking-related structure fires, 574, or 80%, occurred in residences. Smoke detectors operated in 53% of the smoking-related residential structure fires where detector status was known. Detectors were present but failed to operate in an additional 11% of these incidents. No smoke detectors were present in 28% of incidents. In 8% the fire was too small to activate the smoke detector. The leading areas of origin were the bedroom, where 21% of residential smoking fires occurred, kitchens, where 17% of the fires occurred, outside balconies or porches, where 11% of the fires occurred, and the living room, where 9% started.

Smoking Fires Ignite Clothing, Sleepwear, Bedding & Upholstered Furniture
Almost one-quarter, or 22%, of smoking fires first ignited clothing, bedding or upholstered furniture. If smokers were using self-extinguishing cigarettes, many of these deaths could have been avoided. Some tobacco companies have begun to sell self-extinguishing cigarettes in test markets. There is no federal standard for self-extinguishing cigarettes despite nearly 20 years of proposed legislation. The state of New York has recently passed legislation for self-extinguishing cigarettes and Massachusetts is considering such a standard for the Commonwealth.

Another safety aspect to think about is purchasing only upholstered furniture that meets the California flammability standard, because many smoking-related fires start by igniting upholstery.

Until they can quit, smokers should use deep ashtrays, store ashes in metal containers and never smoke in bed. Families should consider banning smoking inside the house for health and fire safety reasons. Children of smokers often have easy access to matches and lighters. Adults must keep these tools out of the reach of small children.

State regulations and federal regulations require most children’s sleepwear to be flame-retardant. However, no such requirements apply to adult clothing. Physically disabled and elderly people may not be able to easily ‘stop, drop and roll’ if their clothing ignites.

While everyone needs at least one working smoke detector on every level of their home, this is even more important to smokers because of the high risk of fire death. Placing a detector inside every bedroom increases the probability that if a fire occurs, residents will wake up in time to escape. A cigarette accidentally left on a sofa, places the smoker and everyone else in the building at risk. A smoke detector's warning may enable a smoker to live long enough to quit.

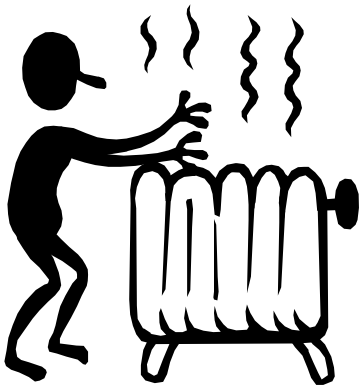
No smoking should ever be permitted in a home where oxygen is in use. The oxygen-enriched environment increases the speed at which the fire will burn once it starts. It lowers the ignition temperature, allowing fires to start more easily than usual.

Oxygen can saturate clothing, rugs, and upholstery, increasing the fire danger even when the home oxygen system is "turned off".

Illegal to Throw Cigarettes Out Car Window
The improper disposal of smoking materials has been a major problem to the fire service for years. Massachusetts General Law Chapter 148 Section 54 states, "Whoever drops or throws from any vehicle while the same is upon a public or private way running along or near forest land or open fields, or, except as permitted by law, drops, throws, deposits or otherwise places in or upon forest land, any lighted cigarette, cigar, match, live ashes or other flaming or glowing substance, or any substance or thing which in and of itself is likely to cause a fire, shall be punished by a fine of not more than one hundred dollars or by imprisonment for not more than thirty days."

Heating Equipment Fires

1,965 Fires, 1 Civilian Death, 20 Civilian Injuries, 34 Fire Service Injuries



Massachusetts fire departments reported that some form of heating equipment was involved in 1,965, or 16%, of the 11,979 structure fires in 2002. These heating equipment fires caused one civilian fire death, 20 civilian injuries, 34 fire service injuries, and an estimated dollar loss of $6.6 million. The average loss per fire was $3,373.

Only one type of equipment per fire incident may be reported to MFIRS. Consequently, the totals for specific types of equipment, should, in many cases, be considered underestimates. For example, sparks from a wood stove may ignite a fire in the chimney. The recorded equipment involved might be either the chimney or the wood stove. When a fire results from an extension cord overloaded by the demands of a portable heater, the extension cord might be recorded instead of the heater.

The following table shows the number of fires caused by each of the top 10 types of heating equipment (which caused fires), the percentage of heating equipment fires for each type of equipment, the number of civilian and fire service deaths and injuries, and the estimated dollar loss for each type of heating equipment.

HEATING EQUIPMENT FIRES[31]

Equipment	# of Fires	% of Heat Eq.	Injuries FF	Injuries Civ	Deaths FF	Deaths Civ	Dollar Loss
Boiler, furnace, cent. heat. unit	1,109	56%	6	5	0	0	$472,492
Chimney, flue of unknown type	627	32%	1	2	0	0	268,958
Heating, vent. & air cond., other	73	4%	9	2	0	0	622,900
Furnace, central heating unit	56	3%	0	0	0	0	219,253
Stove, heating	47	2%	2	3	0	0	854,500
Furnace, local heat. unit, built-in	36	2%	3	1	0	0	329,350
Heater, excl. catalytic & oil filled	27	1%	1	4	0	1	1,051,160
Boiler (power, process, heating)	23	1%	0	0	0	0	161,007
Water heater	22	1%	0	1	0	0	330,250
Fireplace, chimney, other	18	1%	0	0	0	0	261,550
Total	**1,965**	**100%**	**34**	**20**	**0**	**1**	**$6,627,668**

88% of All Heating Fires Were Confined Fires
In version 5, you are able to report two types of structure fires caused by heating equipment that are contained to its non-combustible container. When one of these incidents is reported, the official writing the report only needs to complete a Basic Module, so causal data that would otherwise be captured on the Fire Module are not required.

In 2002, 1,109, or 56% of all heating related structure fires in Massachusetts, were coded as fuel burner/boiler malfunction, fire contained. Six hundred and twenty-seven (627), or 32%, were determined to be chimney or flue fires, confined to the chimney or flue.

As expected the number of contained fires rose in 2002 when all fire departments began reporting in the new version 5 format. Confined heating equipment fires increased by 1,138 incidents, or 190%, from the 598 reported in 2001.

Central Heating Units

56 Fires, $219,253 in Losses
Central heating units[32] were involved in 56 structure fires in 2002. These fires caused an estimated dollar loss of $219,253. The average loss per fire was $3,915.

[31]In this table we followed the USFA & NFPA recommendations inferring codes for Equipment Involved from the fires contained to non-combustible containers (Incident Types 114 & 116). Incident Type – 114: Chimney or flue fire, confined to chimney or flue = Equipment Type – 129: Chimney or flue of unknown type. Incident Type – 116: Fuel burner/boiler malfunction, fire confined = Equipment Type – 130: Boiler furnace, or central heating unit of unknown type.

[32] These include all structure fires with Equipment Involved = 132: Furnace, central heating unit.

Almost 1/4 Caused by Mechanical Failures or Malfunctions
Of the 56 central heating unit fires mechanical failures or malfunctions caused 23% of these fires; 18% were caused by backfires; 13% were caused by combustibles being too close to the heat source; automatic control failures caused another 13%; and 5% were caused by unattended equipment.

Twenty-eight (28), or 53%, of the 53 central heating unit fires where the power source was known were caused by liquid-fueled equipment. These fires caused an estimated dollar loss of $30,952. The average loss per fire was $1,105.

Twelve (12), or 23%, of the central heating unit fires were caused by electrically powered equipment. Ten (10), or 19%, were caused by gas-fueled equipment. Three (3), or 6%, of the central heating unit fires were caused by solid fueled equipment. Version 5 has a new data field called Equipment Power Source that describes the power source of the equipment involved in ignition.

Furnaces Should Be Cleaned and Checked Annually
Homeowners should have furnaces cleaned and checked annually to ensure that they are working well. Combustible materials such as trash or supplies should never be stored near heating equipment. Keep a three foot clear space around the furnace. Only licensed tradespeople may install oil, gas, or electric heating units. Regulations about oil burners may be found in 527 CMR 4.

Fixed Heater Fires

83 Fires, 4 Civilian Injuries, 5 Fire Service Injuries
Eighty-three (83) fixed heater[33] structure fires caused four civilian injuries, five fire service injuries and an estimated dollar loss of $329,350. The average dollar loss per fire was $1.2 million.

Fixed heaters include stationary local units such as wood stoves and in-room gas heaters. A central heating unit heats the entire building or apartment, whereas a fixed local heating unit is set in a specific room to heat just that room or area immediately surrounding it.

Sixteen (16), or 19%, of fixed heater fires were caused by combustibles being to close to the heat source. Nine (9), or 11% were caused from a failure to clean the heater. Eight (8), or 10%, of these fires were caused by an unclassified mechanical failure or malfunction. Installation deficiencies, the heater being accidentally turned on and not turned off, and worn out parts were each the cause of four, or 5%, of fixed heater fires in 2002.

[33] These include all structure fires with Equipment Involved = 124: Stove, heating and 131: Furnace, local heating unit, built-in.

Twenty-five (25), or 32% of fixed heater fire incidents in 2002 involved wood stoves. These fires caused one civilian injury, two fire service injuries and an estimated dollar loss of $699,600. The average loss per fire was $27,984. Electrical powered fixed heaters caused 21, or 27% of these fires; 19, or 25%, were caused by gas fueled fixed heaters; and 12, or 16%, of these heater fires were caused by liquid fueled heaters.

Install Wood Stoves According to Building Code Standards
A homeowner must obtain a building permit prior to installing a wood or coal stove and the installation must be inspected upon completion. In general, the stove should be at least three feet away from walls, ceilings and furnishings. If the flue does not draw properly, deadly levels of carbon monoxide may accumulate in the home.

- Keep the temperature within the manufacturer's suggested range. Wood and coal stoves should be operated at moderate heat. If the fire is too low, creosote, a black tarry fire by-product, may accumulate in the chimney and eventually cause a fire. If the fire is too hot, nearby combustibles or creosote in the chimney could ignite.

- Only burn fuels intended for use in these stoves. Other items may cause overheating and the release of toxic gases. Never use gasoline or flammable liquids to stoke the fire — doing so could cause an explosion, flash fire or explosion.

- Install a carbon monoxide detector.

- Have your chimney cleaned and inspected for creosote build-up before each heating season, and check it at least once a month during the season.

- Place ashes in a covered metal container until they are completely cool. Store outdoors, away from the house, porch or other outside buildings. Hot ashes may stay "live" for 24 hours.

Chimney Fires

652 Fires Caused 14 Fire Service Injuries
Six hundred fifty-two (652) structure fires involved chimneys[34], gas vent flues, chimney connectors or vent connectors. These 652 fires caused 14 fire service injuries and an estimated dollar loss of $1.7 million. The average dollar loss per fire was $56,849.

Six hundred and twenty-seven (627) of these chimney or flue fires were confined to the chimney or flue. [35]

[34] These include all incidents with an Incident Type = 114: Chimney or flue fire, confined to the chimney or flue, and all other structure fires with Equipment Involved = between 125 and 127.
[35] In MFIRS v5 a fire in a building contained to a non-combustible container (Incident Type = 113-118) does not have to have a Fire Module completed. Therefore the following data fields do not need to be completed: Area of Origin, Detector Status, Item First Ignited, Heat Source, Factors Contributing to

Thirty-two percent (32%) of the remaining 25 fires were caused by a failure to clean the creosote build-up; 16% were caused by construction deficiencies; and 12% were caused by combustibles being too close to the heat source.

Have Chimneys Cleaned Annually to Remove Creosote
Creosote is a black, tar-like by-product of fire. It can accumulate in your chimney and cause a fire. Have your chimney cleaned at the start of each heating season and check it monthly for soot build-up. It should also be checked for loose mortar. If you use a wood or coal stove, keep the temperature in the recommended range. Use chimney guards to prevent animals from nesting in your chimney. If you should have a chimney fire, have the chimney inspected by a professional before using it again.

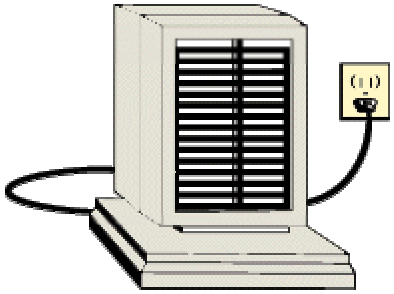
Fires Caused by Fireplaces

26 Fires, 2 Civilian Injuries, 1 Fire Service Injury
Twenty-six (26) fireplaces[36] were involved in Massachusetts structure fires in 2002. These fires caused two civilian injuries, one fire service injury and an estimated dollar loss of $433,500. The average dollar loss per fire was $16,673.

A failure to clean caused 27% of these 26 fireplace incidents; 12% were caused by construction deficiencies; 12% were caused by installation deficiencies; and worn out parts, and combustibles too close to the heat source, each caused 8% of fireplace fires.

Twenty-two (22), or 88%, of fireplaces involved in fires were solid fueled. The other three, or 12%, were gas-fueled fireplaces.

Space Heater Fires



13 Fires, 1 Civilian Death, 3 Civilian Injuries, 1 Fire Service Injury
Thirteen (13) space heater[37] fires caused one civilian death, three civilian injuries, one firefighter injury and an estimated dollar loss of $635,250. The average dollar loss per fire was $48,865. Sixty-nine percent (69%) of these fires were caused by combustible materials such as bedding, rubbish, or furniture that were too close to the heater, 15% were caused by unspecified short-circuit arcs and another 15% were caused by the equipment being left unattended.

Ignition, Cause of Ignition, and Equipment Involved In Ignition. These incidents are not included in the analysis of these fields.

[36] These include all structure fires with Equipment Involved = Between 121 and 123.

[37] These include all structure fires with Equipment Involved = Between 141 and 143; and Equipment Portability = 1: Portable

Eleven (11), or 92% of the portable heaters involved in fires were electric; and one, or 8%, was gas fueled. The type of heater was determined from the new version 5 equipment power source field.

Space Heater Killed 1 Civilian in 1 Fatal Fire in 2002
A fire involving a space heater claimed the life of one civilian in one fire in 2002. This victim accounted for 2% of the total residential structure fire deaths. The fatal heating fire accounted for 2% of the total fatal residential structure fires in Massachusetts.
There were no fatal fires involving space heaters in Massachusetts in 2001. Five fires involving space heaters caused 10 deaths in 2000.

- On January 26, 2002 at 5:52 a.m. the Worcester Fire Department was called to a fatal fire in an 18-unit apartment building. The cause was determined to be radiated heat from a portable space heater. The physically disabled victim, a 58-year old woman, was sleeping at the time of the fire. Unable to escape, she was overcome by heat and smoke and died from burns and smoke inhalation. There were two other civilian injuries associated with this fire. Damages from this fire were estimated to be $50,000. Detectors were present and operating.

If you must use a space heater for heat, use it as safely as possible.

- When buying a heater, look for one that has been tested and labeled by a nationally recognized testing company.
- Keep the heater three feet away from drapes, furniture or other flammable materials. Place it on a level surface away from areas where a person or a pet might bump it and knock it over.
- If you must use an extension cord, make sure it is a heavy-duty cord marked with a power rating as least as high as that on the label of the heater itself. (These are usually orange colored.)
- Never leave a space heater unattended or running while you sleep.
- Keep electric heaters away from water. Never use them near a sink or in the bathroom.
- Do not use space heaters to thaw pipes. They were not designed for this task. Space heaters must be kept at least 3 feet away from any combustibles including walls and wall coverings.

According to MGL Chapter 148, Section 5A, 25A and 25B, the sale and use of all liquid-fired (kerosene) unvented space heaters are illegal in Massachusetts.

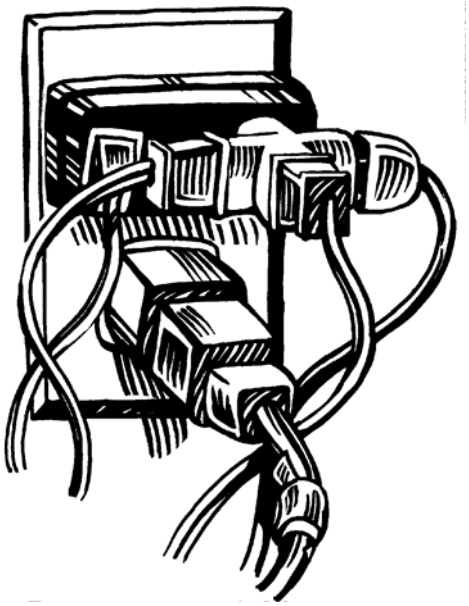
Fires Caused by Hot Water Heaters

22 Fires, 1 Civilian Injury and $330,250 in Damages
Twenty-two (22) structure fires were caused by hot water heaters[38] in 2002. These 22 fires caused one civilian injury, and an estimated dollar loss of $330,250. The average dollar loss per fire was $15,011. Combustibles placed too close to the water heater caused 12% of the fires; 6% resulted from unclassified mechanical failures or malfunctions; and 4% resulted from unclassified misuse of material or product.

Fifty-two percent (52%) of the 21 fires involving hot water heaters where the equipment power source was known were identified as gas-fueled water heaters. Thirty-three percent (33%) were identified as electrically powered water heaters; and 14% were caused by liquid fueled water heaters.

Electrical Fires

704 Fires, 1 Civilian Death, 30 Civilian Injuries & 69 Fire Service Injuries
Local fire departments reported that there were 704 structure fires caused by electrical problems in Massachusetts in 2002. These fires caused one civilian death, 30 civilian injuries, 69 fire service injuries and an estimated dollar loss of $31.3 million. The average loss per fire was $44,402.



When we used MFIRS version 4, this section of the annual report used to count electrical equipment fires. The criteria to qualify for an electrical equipment fire was to have the Form of Heat of Ignition – heat from electrical equipment arcing, overloaded. In version 5 this section has been expanded to include all fires caused by electrical problems or malfunctions. The new criteria is to have Factors Contributing to Ignition – equipment overloaded or – electrical failure malfunction or to have Equipment Involved in Ignition in the 200 series – electrical distribution, lighting and power transfer equipment.

1 Fatal Fire by Light Bulb Causes 1 Death
One fatal fire, or 2% of residential fatal structure fires, caused one, or 2%, of residential structure fire deaths in 2002. This fatal fire was caused by combustibles being placed too close to a light bulb in a closet.

[38] These include all structure fires with Equipment Involved = 151: Water Heater.

- On October 3, 2002 at 5:51 a.m. the Boston Fire Department was called to a fatal fire in an apartment building. The cause was determined to be combustibles placed too close to the radiated heat from a light bulb in a closet. The victim, a 25-year old woman, was overcome by heat as she attempted to escape. She died from burns sustained in the fire. There were two other civilian injuries associated with this fire. Damages from this fire were estimated to be $300,000. Detectors were present but failed to operate.

Unspecified Short Circuit Arc Responsible for 38% of Electrical Fires[39]

Two hundred and sixty-six (266), or 38%, of electrical fires were caused by an unspecified short circuit arc. Two hundred and one (201), or 29%, were caused by an unclassified electrical failure or malfunction. Eleven percent (11%), or 75 of these fires, had a short circuit arc from defective or worn insulation. Seven percent (7%), or 50 of the fires, were caused by overloaded equipment. An arc or spark from operating equipment caused 40, or 6% of these fires. Thirty-seven (37), or 5%, of electrical fires were caused by an arc from a faulty contact or broken conductor. The heat source being too close to combustibles caused 30, or 4%, of these fires. Twenty-four (24), or 3%, of electrical fires were caused by a short circuit arc from mechanical damage. Mechanical failure and worn out equipment each caused 19, or 3%, of these fires. Water caused a short circuit arc in 12, or 2%, of electrical fires.

Electrical Equipment Fires

Three hundred and ninety-three (393), or 56%, of the 704 electrical fires reported the type of equipment involved in ignition. These 393 fires caused one civilian death, 22 civilian injuries, 21 fire service injuries and an estimated dollar loss of $22.4 million. The average dollar loss per fire was $57,035.

128 Electrical Service, Wiring, Meter Boxes & Circuit Breaker Fires

The most common equipment involved in ignition in electrical fires that was reported was electrical service, wiring, meter boxes and circuit breakers accounting for 128, or 33%, of the fires. These fires caused eight civilian injuries, seven fire service injuries and an estimated dollar loss of $3.7 million. The average dollar loss per electrical wiring fire was $28,751.

Lamp, Lighting Fixtures Involved in 78 Fires & Caused 1 Civilian Death

Lamps and other lighting fixtures were involved in 78, or 20%, of electrical equipment fires where equipment involved in ignition was reported. These fires caused one civilian death, five civilian injuries, one fire service injury and an estimated dollar loss of $1.2 million. The average loss per fire was $15,896.

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[39] *Factors Contributing to Ignition* is one of the fields in version 5 that allows for multiple codes. Two factors contributing to ignition may be coded. For example, in the case of a malfunctioning electrical heater, we can capture not only the electrical malfunction, but also a contributing factor such as: was the heater too close to combustibles; did the automatic control fail; was it knocked over; was it worn out; or was the equipment overloaded. This field also is not a mandatory field, although fire departments are strongly encouraged to complete it, should it apply to the incident. Because of these factors, the percentages may not add up to 100%.

30 Fires Involving Kitchen & Cooking Equipment
Thirty (30) electrical equipment fires involving kitchen or cooking equipment caused an estimated dollar loss of $353,300. These fires accounted for 8% of the structure fires involving electrical equipment when equipment involved in ignition was reported. The average dollar loss per fire was $11,777.

Cords or Plugs Caused 29 Fires
Twenty-nine (29), or 7%, of the structure fires where electrical equipment involved was reported were caused by cords or plugs. These fires caused five civilian injuries, seven fire service injuries and an estimated dollar loss of $2.2 million. The average dollar loss per fire was $74,310.

Transformer, Generator, Battery or Chargers Caused 24 Fires
Transformers, generators, batteries and chargers were involved in 24, or 6%, of the electrical fires where equipment involved in ignition was reported. These fires caused two civilian injuries and an estimated dollar loss of $587,376. The average loss per fire was $24,474.

Ventilation & Air Conditioners Caused 22 Fires
Twenty-two (22), or 6%, of the structure fires involving known electrical equipment were caused by air conditioning or ventilation units. These fires caused one fire service injury and an estimated dollar loss of $411,400. The average dollar loss per fire was $18,700.

Household Appliances (Non-Cooking) Caused 18 Fires
Non-cooking household appliances such as clothes dryers, washing machines and trash compactors, caused 18, or 5%, of the 393 electrical structure fires where equipment involved in ignition was reported. These 18 fires caused an estimated $37,727 in damage. The average dollar loss was $2,096.

10 Fires Involving Unspecified Electrical Distribution Equipment
Ten (10) electrical equipment fires involving unspecified electrical distribution equipment caused an estimated dollar loss of $116,600. These fires accounted for 3% of the structure fires involving reported electrical equipment. The average dollar loss per fire was $11,660.

54 All Other Electrical Equipment Fires
The remaining 54 electrical fires where equipment involved in ignition was reported caused two civilian injuries, five fire service injuries and an estimated dollar loss of $13.9 million. Two fires were responsible for $12.5 million, or 90%, of the estimated dollar loss of these 58 fires. The average dollar loss per fire was $256,171.

311 Unspecified Electrical Equipment Fires Caused $8.8 Million in Damages
There were 311 electrical fires where the piece of equipment involved in ignition was unknown or not reported. These 311 fires caused eight civilian injuries, 48 fire service injuries and an estimated dollar loss of $8.8 million. The average dollar loss per fire was $28,439.

3 Electrical Fires Cause $14 Million in Damages

- On October 1, 2002, at 4:23 p.m., the Boston Fire Department was called to a fire in an electric generating plant. One hundred and ninety (190) personnel fought this nine-alarm fire. The improper start-up of a motor overloaded some of the equipment and the radiated heat ignited some nearby oil. There were four fire service injuries associated with this fire, and damages were estimated to be $10 million.

- On October 22, 2002 at 5:45 p.m. the Falmouth Fire Department was called to a fire in a laboratory at the Woods Hole Oceanographic Institute. A spark from a malfunctioning spectrometer ignited its electrical wire. There were no injuries reported. Smoke detectors were present and operated. Sprinklers were not present. Damages from this fire were estimated to be $2,505,000.

- On April 8, 2002 at 9:35 p.m., the Boston Fire Department was called to a fire at a motor vehicle service facility. Ninety-five (95) personnel battled this three-alarm fire. An arc from a faulty contact ignited part of the wood frame in a storage room. There were no injuries associated with this fire. There were no smoke detectors or sprinklers present in this building. Damages from this blaze were estimated to be $1,500,000.

Almost 3/4 of Electrical Fires Occurred in Residential Occupancies

Of the 690 electrical fires where property use was known, 506, or 73% occurred in residential occupancies. Seventy-six (76), or 11%, occurred in mercantile or business properties, such as offices, banks, retail stores or markets. Public assembly buildings like restaurants, libraries and courthouses accounted for 26, or 4%, of these fires. Educational properties accounted for 17, or 2%, of Massachusetts' electrical fires in 2002. Manufacturing or processing facilities had another 17, or 2%, of these incidents. Storage properties accounted for 16, or another 2%, of these fires. Institutional buildings such as hospitals and asylums also had 16, or 2%, of the 2002 electrical fires occur on their premises. Nine (9), or 1%, of these fires occurred in special or outside properties. The remaining seven, or 1%, of Massachusetts' electrical fires occurred in basic industry properties such as laboratories, communications centers, electrical distribution sites and utility and distribution centers.

12% of Electrical Fires Began in the Kitchen

Eighty-three (83), or 12%, of the 704 electrical fires occurred in the kitchen. Seventy-eight (78), or 11%, originated in the bedroom. The bathroom was the area of origin for 39, or 6%, of these fires. Substructure area or crawl space (38), the living room (38), wall assemblies (35), and attics or crawl space each accounted for 5%. The exterior wall surface (30) and the laundry room (26) each accounted for 4%. The floor assembly or crawl space between stories (24) accounted for 3% of the electrical fires in Massachusetts in 2002.

Electrical Wiring Was the Item First Ignited in 1/3 of Electrical Fires

In 227, or 32%, of electrical fires, electrical wiring or cable insulation was the item first ignited. This includes fixed wiring and appliance cords. In 59, or 8% of these fires, a structural member, framing, was the first item ignited.

Watch For Warning Signs
People should watch for warning signs of electrical problems. These include:

- Fuses blowing or circuit breakers tripping frequently.
- Unusually warm or faulty outlets or switches.
- A vague smell of something burning.
- A sizzling sound in the wall.

Any of these signs may indicate a potential problem. Contact a licensed electrician if you notice any of these signs. Or contact the local fire department. Many departments now have new technologies such as thermal imaging cameras that can see inside walls to detect potential problems before they expand and extend to other parts of the building.

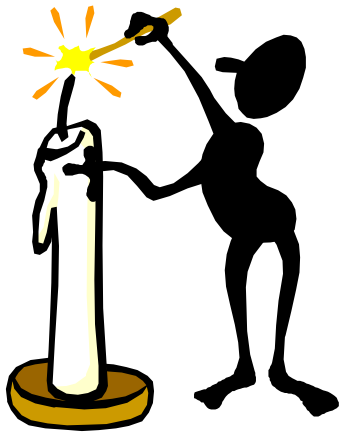
Fuses and circuit breakers are safety devices. They blow or trip when the amount of current cannot safely travel through the wires. *Trying to bypass the fuse or circuit breaker protection is an invitation to danger.*

Electrical Systems Pose Unseen Dangers
Just as all systems need maintenance and inspection, so does electrical wiring. As switches, receptacles and connections age, heat is generated and the risk of fires inside walls and at poor connections greatly increases. Because wiring is often hidden behind walls, electrical faults may be hard to detect except by properly trained electricians.

Have electrical systems examined by a licensed electrician every 10 years. A good electrician will look for electrical faults, check for warm switch plates and receptacles, and analyze the use of electricity to see if additional capacity is needed. It is important to help our homes keep up with the electrical demands of our changing lifestyles, changes in society and new technologies.

Candle Fires

208 Fires Caused 3 Civilian Deaths and $4.3 Million in Damages
In 2002, candles caused 208 fires. These fires caused three civilian deaths, 20 civilian injuries, 22 firefighter injuries and an estimated dollar loss of $4.3 million in damages. There was a 24% decline from the 272 fires started by candles in Massachusetts in 2001.



Large Loss Candle Fires
One fire in an apartment building in Warren caused by a candle resulted in $500,000 in damages. Another fire in a Boston apartment building caused $300,000 in damages. There were also 11 other residential structure fires in one- and two-family homes or apartments caused by candles that each caused an

estimated dollar loss between $100,000 and 300,000. This is the main reason that the average dollar loss of candle fires is still so high at $20,598 even though there was a decrease in candle fires from 2001 to 2002.

93% of Candle Fires Occurred in Homes
Of the 208 candle fires, 93% were residential structure fires. Candles caused 193 residential structure fires, three civilian deaths, 20 civilian injuries, 21 firefighter injuries and an estimated dollar loss of $4,214,192.

45% of Candle Fires in Homes Occurred in the Bedroom
Of the 192 candle fires in residential structures where area of origin was known, 45% occurred in the bedroom. Fourteen percent (14%) occurred in the living room; 12% occurred in some other function rooms such as enclosed patios and three-season rooms; 10% started in the kitchen; 7% occurred in the bathroom; and 2% each started in a closet, exterior balcony or unenclosed porch, and wall assembly. One candle fire occurring in a Massachusetts home did not specify the area of origin. This incident was excluded from the percentage calculations.

Smoke Detectors Operated in Almost 3/4 of Candle Fires in Homes
Of the 159 candle fires in homes where smoke detector status was known, smoke alarms operated in 74%. Smoke detectors were present but did not operate in 9% of these incidents. No detectors were present in 13% of candle fires in people's homes. Four percent (4%) of the candle fires were too small to activate the smoke detector. In 34 incidents, the smoke detector status was undetermined or not reported. These were excluded from the percentage calculations.

2 Fatal Candle Fires Cause 3 Deaths

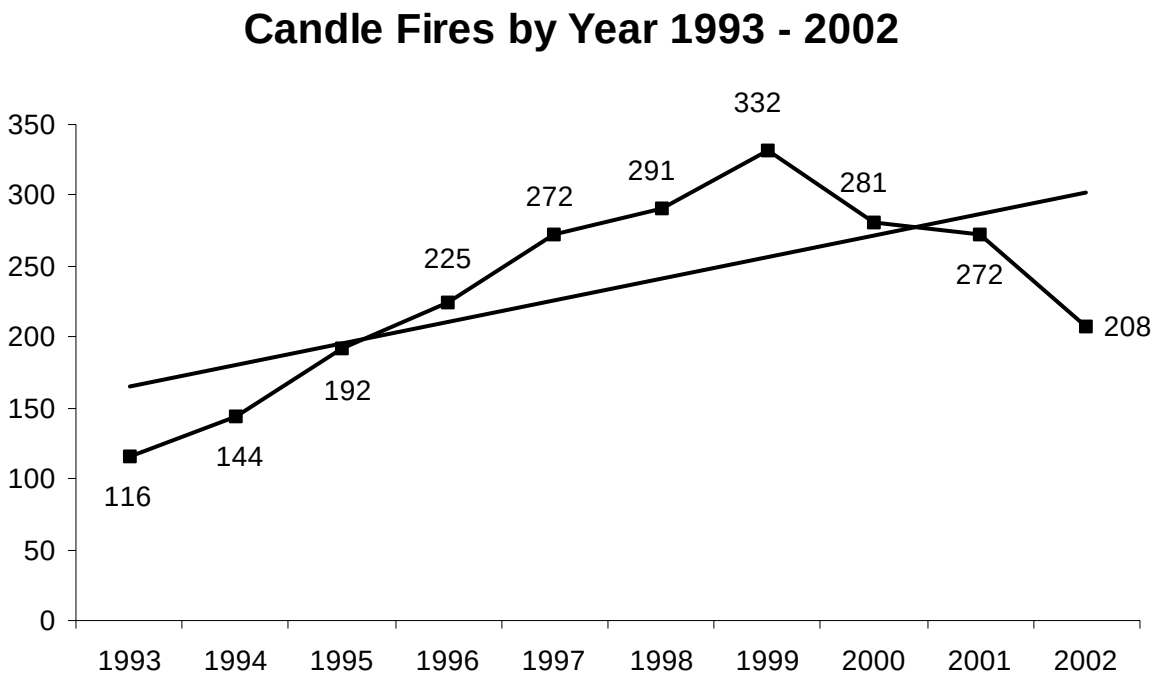
- On July 3, 2002, at 9:43 p.m., the Boston Fire Department was called to a fatal fire at a single-family home caused by an unattended candle. The candle was too close to the bedroom curtains. The victim, a 73-year old woman, was physically disabled and unable to act when she was overcome by the heat and smoke generated by the fire. She died from burns sustained in the fire. One other civilian and three firefighters were injured fighting this fire. Smoke detectors were present and operating in the building, and damages were estimated to be $150,000.

- On October 27, 2002, at 2:05 a.m., the Lowell Fire Department was called to a fatal fire at a six-unit apartment building caused by an unattended candle. The candle ignited an upholstered chair in the living room. The victim, a 35-year old man, was asleep when he was awakened by smoke detectors. He was able to escape the fire, only to re-enter to attempt a rescue of the second victim, a 33-year old woman. She was sleeping and had not been alerted to the presence of the fire. During the rescue attempt the male victim was overcome by the heat and smoke generated by the fire. They both died from burns and smoke inhalation. Two firefighters were injured fighting this fire. No estimation was made as to damages from the blaze.

Candle Safety Tips

- Burn candles in the center of a 1-foot **Circle of Safety,** free of anything that can burn.
- Stay in the same room with burning candles; Do not leave unattended.
- Burn candles on a non-combustible surface such as a ceramic saucer, or plate.
- Be sure to snuff out candles before falling asleep, going out, or leaving the room.
- Teach everyone in the family the rules of safe candle use.
- Keep candles out of reach of small children and pets.

Candle fires had become a serious problem in Massachusetts during the decade of the 1990's, nearly tripling from 93 incidents in 1990 to an all time high of 332 in 1999. The following chart shows the increase from 116 candle fires in 1993 to 208 in 2002. In 1999, a new effort to analyze these incidents began. In conjunction with the National Fire Protection Association (NFPA), the Office of the State Fire Marshal conducted a follow-up survey that went out to any fire department having a candle fire for one year. The goal was to gain a greater understanding of these incidents, why they are happening and what we can do to prevent them.



Major findings from the report were:

- 75% of the fires occurred when the candle was left unattended.
- 40% of the fires resulted from combustible materials being too close to the candle.
- Teenagers face the greatest risk of starting candle fires. Although teens account for only 9% of the state population, 21% of the candle fires were attributed to them. Two-thirds of candle users, however, were between 20 and 64 years old.
- 98% of the candles used in Massachusetts' candle fires were not needed as sources of light but were used for other purposes such as decoration, pleasure or mood.

The year 2000 may be the beginning of a new downward trend thanks to stronger public education and tougher industry standards. There was a 15% drop from the all time high of 332 reported candle fires in 1999. From 1999 to 2002 this drop increased to 37%. During this year, State Fire Marshal Coan began reaching out to candle manufacturers and retailers in Massachusetts to ask for their help in educating consumers on candle fire safety and to highlight and separate fire safety information from other fire safe use tips. He also asked them to adopt the candle **Circle of Safety** logo, to use it in their printed materials and on their webpages.

More information on candle fire safety can be found on our webpage at http://www.mass.gov/dfs.htm.

Clothes Dryer Fires

Failure to Clean Caused 21% of Dryer Fires

One hundred and thirty-one (131) clothes dryer fires caused one civilian death, eight civilian injuries, 10 firefighter injuries, and an estimated dollar loss of $1.9 million. The average dollar loss per fire was $13,885. Of these 131 fires, 99, or 76%, occurred in residential occupancies.

Twenty percent (20%) of the dryer fires were caused by a failure to clean the machines; 13% were caused by worn out parts; 11% were caused by mechanical failures or malfunctions; 5% were caused by operational deficiencies; another 5% each were caused by combustibles being too close to the dryer, leaving the dryer unattended and electrical failure or malfunction.

Fifty-five percent (55%) of the 131 dryers involved in fires were identified as electricity as their power source. Thirty-seven percent (37%) involved gas-fueled clothes dryers. This may be a reflection of the market share of electrical and gas-powered dryers rather than any inherent danger of one power source over another.

Forty-one percent (41%) of clothes dryer fires identified the heat source as radiated or conducted heat from equipment inside the dryer itself. Thirty-three percent (33%) of dryer fires identified the form of heat source as coming from other operating equipment.

Most Clothes Dryer Fires Occurred In Homes

Twenty-four percent (24%) of the dryer fires occurred in one- and two-family homes; 11% occurred in apartments; 11% occurred in mercantile or business properties such as

laundry or dry cleaning businesses (9%); 8% occurred in institutional properties such as nursing homes (4%), hospitals and jails; 4% occurred in hotel and motels; and 3% occurred in assembly properties, such as restaurants (2%) and athletic or health clubs.

However, the rank among the fire causes in these occupancies is very different. Dryers caused 1% of the fires in one- and two-family homes, 1% of the apartment fires, 9% of hotel and motel fires; 4% of the fires in nursing homes; 3% of the fires in institutional properties; 3% of the fires in mercantile or business properties, and 1% of the fires in assembly properties.

The public should be reminded to clean the dryer filter screen after each load of laundry, to clean the outside vents twice a year and to occasionally vacuum the motor area of the dryer. If materials such as cooking oil, solvents and other combustible or flammable liquids were not removed completely during the laundry cycle, heat from the dryer may cause them to ignite. This is the reason that mop heads should not be put into the dryer. An adult should be at home whenever the dryer is in use and the home should have working smoke alarms.

1 Clothes Dryer Fire Causes 1 Death

- On March 7, 2002 at 11:37 p.m. the Watertown Fire Department was called to a fatal fire in a three-unit apartment building. The fire began in a clothes dryer in the laundry room on the first floor. The victim, a 72-year old physically disabled man, was trapped by the fire in his second floor bedroom while sleeping. He was overcome by heat and smoke, and died from burns and smoke inhalation. There was one other civilian injury and four firefighter injuries associated with this fire. Damages from this fire were estimated to be $525,000. Detector performance was undetermined.

Clothes Dryer Fire Caused $125,000 In Losses

- On May 4, 2002 at 9:33 a.m. the Boston Fire Department was called to a fire in a laundromat caused by a gas powered clothes dryer. A worn out part inside the machine started the blaze that caused an estimated dollar loss of $125,000. Smoke detectors and sprinklers were not present. There was one fire service injury associated with this fire.

Fireworks Incidents

73 Incidents Involving Fireworks in 2002

According to the 2002 Massachusetts Fire Incident Reporting System (MFIRS) data, there were 50 fire incidents reported that involved fireworks, a 19% increase from the 43 fire incidents reported in 2001. One firefighter and one civilian were injured in these fire incidents and there was an estimated $613,752 in property damages. The average dollar loss per fireworks incident was $12,275. Seventeen (17), or 35%, of the fireworks-caused fires in

2002 took place during the week of the 4th of July. Ten (10) of the 17, occurred on July 4th and 5th. Over half (56%) of the fireworks incidents were brush fires, while more than a quarter, 28% were structure fires.

- On August 10, 2002, at 10:11 a.m., the Littleton Fire Department was called to a structure fire in a single-family home. The fire was started on an exterior porch, ignited by the use of illegal fireworks and it quickly spread to the remainder of the structure. Smoke detectors were present and operated inside the home. There was one civilian injury associated with this fire. Damages were estimated to be $500,000.

- On July 5, 2002, at 5:49 p.m., the Brockton Fire Department was called to a structure fire in a three-unit apartment building. The fire started when fireworks ignited a structural member in the attic. It spread to the other parts of the building. Smoke detectors were present but it was undetermined if they operated. There were no sprinklers in the building. There were no injuries associated with this fire and damages were estimated to be $50,000.

In version 5, a fireworks explosion without fire is coded as an Incident Type 243 – Fireworks explosion (no fires). In 2002, 23 such incidents were reported.

Refer to M–BIRS Annual Report for More Information about Fireworks Injuries
For more information about the causes of burn injuries, please refer to the *Massachusetts Burn Injury Reporting System —2002 Annual Report.* According to Massachusetts General Law (MGL) Chapter 112, Section 12A, the treatment of all burn injuries extending over 5% or more of a person's body surface area must be reported immediately to the State Fire Marshal. All burn reports received by the Office of the State Fire Marshal are reviewed for possible suspicious circumstances. Gasoline burns, burns on the hands and arms or other unusual scenarios are referred for further investigation.

There were five fireworks-related burn injuries reported to M-BIRS in 2002. Since we started collecting burn injury reports in M-BIRS in 1984, the average number of fireworks-related burns per year is 14 burns. The highest number of reported fireworks-related burns occurred in 1989, with 45 reported burn injuries. Except for 2001, in which there were no reported burn injuries, 1999 had the next fewest number of reported fireworks-related burn injuries with just three reported burn injuries.

Grill Fires

49 Incidents Involving Grills in 2002

In 2002, there were 49 fires and explosion incidents reported to the Massachusetts Fire Incident Reporting System (MFIRS) involving open fired grills. These incidents caused three civilian injuries, four fire service injuries and an estimated dollar loss of $429,876. Predictably, 67% of these incidents occurred in the months of May to September when people are most likely to use their outdoor grills.

Gas Grill Fires
Of the 49 grill incidents, 41, or 84%, of the grills were gas grills. Six percent (6%) were grills fueled with charcoal or other solid fuels and 2% were liquid-fueled. For another 8% the type of fuel was not specified. They were most likely a combination of charcoal grills and more gas grills. LP-gas grill fire incidents caused an estimated $30,176 in damage. Sixty-eight percent (68%) of the LP-gas grill fires in Massachusetts occurred between May and September.

It is illegal to have LP-gas on balconies or porches above the first floor. Section 5a of 527 Code of Massachusetts Regulation 6:07 states "…Storage or use of LP-Gas containers above the first floor of a building used for habitation is prohibited…" The reason for this is that LP-Gas is heavier than air and will sink. A spark from below could ignite gas that has leaked.

- On April 12, 2002 at 4:40 p.m. the Boston Fire Department was called to a fire where a charcoal grill located on the first floor exterior balcony ignited the wall of a four-unit apartment building. The fire quickly spread to a nearby building. There were three fire service injuries associated with this fire. Smoke detectors were in the building and operated. The estimated property loss of this incident was $250,000. Sprinklers were not present.

Refer to MBIRS Annual Report for More Information about Grill Injuries
For more information about the causes of burn injuries, please refer to the *Massachusetts Burn Injury Reporting System — 2002 Annual Report.* According to Massachusetts General Law (MGL) Chapter 112, Section 12A, the treatment of all burn injuries extending over 5% or more of a person's body surface area must be reported immediately to the State Fire Marshal. Seven civilians were reported to M-BIRS in 2002 with burn injuries from a grill. Five (5), or 71%, of these injuries occurred between May and September.

Grill Safety
Follow these safety tips when using a grill:
- Use all barbecue grills away from the house in the backyard.
- Supervise children whenever any grill is in use.
- Never use gasoline on any grill!

Gas Grill Safety
- Keep all LP-gas outside, three feet away from building openings such as doors, windows, dryer vents and air intake vents. Gas grill containers must be kept at least five feet away from possible ignition sources such as air conditioners, compressors, cars, and pilot lights. It is recommended LP-gas canisters be ten feet away from the house, if possible, especially when in use.
- LP-gas grills are not permitted inside or on balconies above the first floor of any building where people live. LP-gas is heavier than air and sinks. A leaky grill could pose a hazard to people below.
- Make sure all connections are tight and secure.

Charcoal Grill Safety

- Use only charcoal lighter fluid to start charcoal grills.
- Once the coals have been lighted, never add more lighter fluid to the fire — flames may travel up the stream of lighter fluid resulting in serious burns.

Carbon Monoxide Incidents

In 2002, 192 fire departments voluntarily reported 2,061 carbon monoxide (CO) incidents; 934 carbon monoxide hazard incidents; 588 carbon monoxide detector activations – no CO found and 539 carbon monoxide detector activations due to malfunction. A CO hazard is an identifiable carbon monoxide emergency whether or not a CO detector activated and the presence of CO was confirmed and some corrective action was indicated.

Boston, the largest city in the Commonwealth, did not report a single carbon monoxide incident. The Town of Wellesley however, with a population of 26,613, reported the most CO incidents in 2002, 59 CO calls. The next five cities in terms of the number of carbon monoxide calls reported were: Springfield, 57 calls; Plymouth, 41 incidents; Framingham, 39 calls; Sandwich, 35 calls; and Shrewsbury with 31 carbon monoxide incidents in 2002.

A CO detector activation is when it is activated in response to pollution, an unknown trigger or a non-threatening situation. Fire departments responded to 1,127 CO detector activations. In version 5, these types of calls are split into two categories: CO detector activation due to malfunction and CO detector activation – no CO found after investigation. One hundred and thirty-six (136) fire departments reported 588 CO detector activations due to malfunction, while 129 fire departments reported 539 CO detector activations with no CO found after investigation.

95% of All CO Incidents Occur in Residences

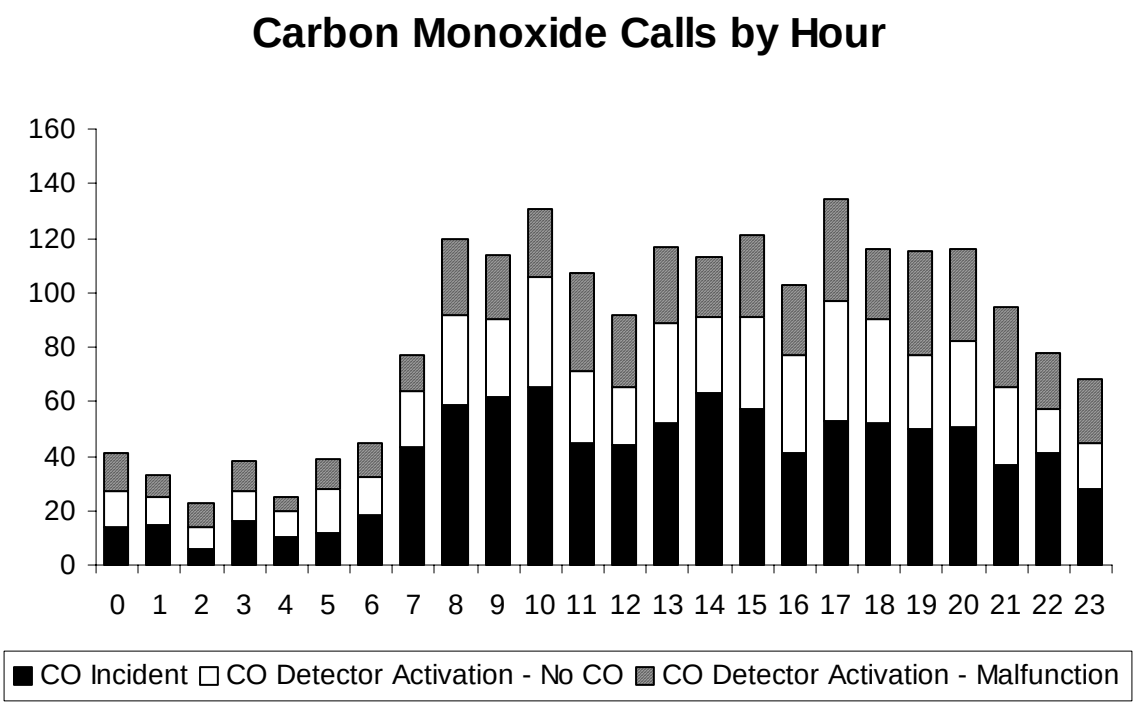
Ninety-five percent (95%) of all carbon monoxide calls occur at residential occupancies. Mercantile and business properties are the next leading property use for CO calls accounting for 2% of the incidents. Public assembly, educational and special properties each accounted for 1% of these calls. Institutional, storage, basic industrial, and manufacturing and processing facilities each accounted for less than 1% of the carbon monoxide calls in 2002.

1/2 of All CO Calls Occur During the Winter

Half (50%) of all the CO calls that occurred in 2002 happened during the colder months of November, December, January and February. Heating equipment is a leading cause of carbon monoxide incidents, and these are the peak heating months.

Most CO calls occur between the hours of 7:00 and 10:00 in the morning and 5:00 and 8:00 in the evening. These seem to be the times when most people are waking up and

coming home from work or school. This would also be the time that people would turn the heat up.



According to the U.S. Consumer Product Safety Commission (CPSC), an acceptable level of CO is a 15 PPM average over a time span of eight hours or a 22 PPM average for an hour. If you have 1,000 PPM for over thirty minutes, it puts you at a high level of danger of collapse into a coma or permanent brain damage.

Only a gas meter can detect if carbon monoxide is present and in what quantities. Because you can't see it or smell it, you may not know that it is there. Human senses don't provide enough information. Finding little or no CO when the fire department arrives does not prove conclusively that no problem exists. An appliance may release large quantities of CO at one particular stage in its operation. Knowledgeable repair people must check out the equipment. Carbon monoxide is a by-product of combustion. It is one of the toxic gases produced in a fire. Many people falsely believe they will awaken to the smell of smoke. In fact, when a person falls asleep, so does their sense of smell. Carbon monoxide usually causes fatigue and will put someone into a deeper sleep so that people are less likely to awaken before their life slips away. This is why smoke detectors are so important. Large amounts of carbon monoxide are produced in a fire.

The United States Consumer Product Safety Commission (CPSC) has produced a 'scratch and sniff' pamphlet on the "*Senseless Killer*," to remind people that carbon monoxide has no taste or color. Sample copies are available from the Office of the State Fire Marshal.

Appendix

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Abington	96	47	8	41	0	0	0	0	$150,010
Acton	1	0	1	0	0	0	0	0	$4,700
Acushnet	46	13	5	28	0	0	0	0	$154,500
Adams	11	6	5	0	0	0	0	0	$129,900
Agawam	94	52	13	29	0	3	0	0	$571,010
Alford	4	3	1	0	0	1	0	0	$135,800
Amesbury	50	25	11	14	0	2	0	0	$136,808
Amherst	155	56	19	80	1	8	0	2	$214,650
Andover	86	30	23	33	0	0	0	0	$239,700
Aquinnah	1	0	1	0	0	0	0	0	$500
Arlington	53	24	7	22	0	0	0	0	$159,935
Ashburnham	45	25	1	19	0	2	0	0	$10,000
Ashby	11	6	2	3	0	0	0	0	$36,000
Ashfield	4	3	1	0	0	0	0	0	$700,000
Ashland	3	3	0	0	0	0	0	0	$80,000
Athol	104	37	14	53	1	3	0	1	$216,100
Attleboro	258	28	46	184	0	3	0	1	$238,810
Auburn	86	28	30	28	0	0	0	0	$742,800
Avon	36	4	16	16	0	0	0	0	$56,505
Ayer	21	11	3	7	0	0	0	0	$126,620
Barnstable Fire Districts									
Barnstable	*37*	*10*	*3*	*24*	*0*	*2*	*0*	*0*	*$73,500*
C.O.M.M.	*67*	*38*	*16*	*13*	*0*	*3*	*0*	*1*	*$220,725*
Hyannis	*190*	*58*	*35*	*97*	*3*	*24*	*0*	*1*	*$376,675*
West Barnstable	*Non-Reporting Community*								
Barre	23	12	5	6	0	3	0	0	$123,850
Becket	3	2	0	1	0	1	0	2	$225,000
Bedford	38	10	5	23	0	1	0	0	$3,510
Belchertown	31	16	6	9	0	0	0	0	$35,500
Bellingham	45	26	18	1	0	1	0	2	$882,351
Belmont	164	126	9	29	0	1	0	4	$1,006,760
Berkley	29	8	5	16	0	0	0	0	$66,350
Berlin	16	6	2	8	0	0	0	2	$286,500
Bernardston	16	7	2	7	0	0	0	0	$187,500
Beverly	29	21	5	3	0	0	0	0	$666,300

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Abington	5	1	2	2	0	0	0	0	$3,150
Acton	1	0	1	0	0	0	0	0	$4,700
Acushnet	1	1	0	0	0	0	0	0	$0
Adams	0	0	0	0	0	0	0	0	$0
Agawam	10	4	2	4	0	1	0	0	$11,060
Alford	0	0	0	0	0	0	0	0	$0
Amesbury	2	0	0	2	0	0	0	0	$0
Amherst	10	1	0	9	1	0	0	0	$2,000
Andover	12	0	0	12	0	0	0	0	$525
Aquinnah	0	0	0	0	0	0	0	0	$0
Arlington	3	1	0	2	0	0	0	0	$0
Ashburnham	4	0	0	4	0	0	0	0	$0
Ashby	0	0	0	0	0	0	0	0	$0
Ashfield	0	0	0	0	0	0	0	0	$0
Ashland	0	0	0	0	0	0	0	0	$0
Athol	8	3	1	4	0	0	0	0	$0
Attleboro	28	4	3	21	0	0	0	0	$51,100
Auburn	1	0	1	0	0	0	0	0	$35,000
Avon	2	0	0	2	0	0	0	0	$0
Ayer	5	3	0	2	0	0	0	0	$0
Barsnstable Fire Districts									
Barnstable	*2*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*$0*
C.O.M.M.	*6*	*0*	*3*	*3*	*0*	*0*	*0*	*0*	*$42,800*
Hyannis	*34*	*13*	*4*	*17*	*1*	*1*	*0*	*0*	*$32,050*
West Barnstable	*Non-Reporting Community*								
Barre	3	0	1	2	0	0	0	0	$36,040
Becket	0	0	0	0	0	0	0	0	$0
Bedford	8	0	0	8	0	0	0	0	$0
Belchertown	1	0	0	1	0	0	0	0	$0
Bellingham	5	2	3	0	0	0	0	1	$28,075
Belmont	6	1	0	5	0	0	0	0	$0
Berkley	3	0	1	2	0	0	0	0	$18,000
Berlin	6	4	0	2	0	0	0	2	$80,000
Bernardston	3	0	0	3	0	0	0	0	$0
Beverly	0	0	0	0	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Billerica	209	80	23	106	1	4	0	7	$3,154,581
Blackstone	39	13	1	25	0	2	0	0	$19,200
Blandford	8	2	6	0	0	0	0	0	$15,200
Bolton	2	0	2	0	0	0	0	0	$2,500
Boston	4,051	1,593	595	1,863	10	58	0	159	$43,762,193
Bourne	124	24	33	67	0	0	0	4	$1,019,690
Boxborough	28	13	4	11	0	2	0	0	$274,227
Boxford	44	23	8	13	0	1	0	0	$293,101
Boylston	1	0	0	1	0	0	0	0	$0
Braintree	146	15	37	94	0	0	0	0	$509,400
Brewster	18	10	2	6	0	0	0	0	$4,100
Bridgewater[i]	0	0	0	0	0	0	0	0	$0
Brimfield	3	0	3	0	0	1	0	0	$18,650
Brockton	215	124	76	15	0	6	0	4	$1,590,200
Brookfield	2	1	0	1	0	1	0	0	$0
Brookline	44	19	18	7	0	0	0	0	$251,406
Buckland	Fire Department In Good Standing, Certified No Fires To Report								
Burlington	115	42	10	63	0	0	0	0	$180,250
Cambridge	510	370	30	110	0	6	0	8	$2,524,357
Canton	41	18	18	5	0	1	0	0	$170,580
Carlisle	1	1	0	0	0	0	0	0	$2,500
Carver	6	3	3	0	0	1	0	0	$189,100
Charlemont	11	6	1	4	0	0	0	0	$0
Charlton	72	40	12	20	0	1	0	1	$12,741,251
Chatham	11	6	3	2	0	2	0	0	$153,650
Chelmsford	55	25	22	8	0	0	0	0	$2,661,300
Chelsea	243	197	23	23	0	1	0	48	$791,050
Cheshire	1	1	0	0	0	0	0	0	$30,500
Chester	2	1	0	1	0	0	0	1	$2,000
Chesterfield	6	6	0	0	0	0	0	0	$1,000
Chicopee	304	146	45	113	1	12	0	6	$639,925
Chilmark	3	3	0	0	0	2	0	1	$200,000
Clarksburg	2	1	0	1	0	0	0	1	$40,000
Clinton	3	3	0	0	0	1	0	0	$3,000
Cohasset	33	27	2	4	0	0	0	0	$11,000

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Billerica	22	4	2	16	0	0	0	0	$400,050
Blackstone	6	1	1	4	0	0	0	0	$1,000
Blandford	0	0	0	0	0	0	0	0	$0
Bolton	0	0	0	0	0	0	0	0	$0
Boston	275	151	113	11	1	2	0	28	$7,706,975
Bourne	3	1	0	2	0	0	0	0	$130
Boxborough	2	0	0	2	0	0	0	0	$0
Boxford	0	0	0	0	0	0	0	0	$0
Boylston	0	0	0	0	0	0	0	0	$0
Braintree	2	1	0	1	0	0	0	0	$2,000
Brewster	0	0	0	0	0	0	0	0	$0
Bridgewater[i]	0	0	0	0	0	0	0	0	$0
Brimfield	0	0	0	0	0	0	0	0	$0
Brockton	14	7	7	0	0	1	0	0	$18,500
Brookfield	0	0	0	0	0	0	0	0	$0
Brookline	2	1	1	0	0	0	0	0	$10,000
Buckland	Fire Department In Good Standing, Certified No Fires To Report								
Burlington	3	1	0	2	0	0	0	0	$0
Cambridge	15	6	0	9	0	0	0	0	$3,975
Canton	0	0	0	0	0	0	0	0	$0
Carlisle	0	0	0	0	0	0	0	0	$0
Carver	0	0	0	0	0	0	0	0	$0
Charlemont	0	0	0	0	0	0	0	0	$0
Charlton	3	0	1	2	0	0	0	0	$0
Chatham	0	0	0	0	0	0	0	0	$0
Chelmsford	2	0	0	2	0	0	0	0	$950
Chelsea	4	2	1	1	0	0	0	4	$6,000
Cheshire	0	0	0	0	0	0	0	0	$0
Chester	0	0	0	0	0	0	0	0	$0
Chesterfield	0	0	0	0	0	0	0	0	$0
Chicopee	52	13	4	35	0	2	0	0	$90,500
Chilmark	0	0	0	0	0	0	0	0	$0
Clarksburg	0	0	0	0	0	0	0	0	$0
Clinton	0	0	0	0	0	0	0	0	$0
Cohasset	0	0	0	0	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Colrain	8	7	0	1	0	0	0	0	$1,000
Concord	26	14	6	6	0	0	0	0	$148,450
Conway	5	4	0	1	0	0	0	0	$5,000
Cotuit	1	1	0	0	0	0	0	0	$25,000
Cummington	Fire Department In Good Standing, Certified No Fires To Report								
Dalton	22	12	2	8	0	0	0	0	$1,500
Danvers	64	33	25	6	0	2	0	4	$1,787,783
Dartmouth Fire Districts									
Dartmouth #1	*47*	*15*	*4*	*28*	*0*	*1*	*0*	*0*	*$4,000*
Dartmouth #2	*1*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*$5,500*
Dartmouth #3	*113*	*30*	*31*	*52*	*0*	*0*	*0*	*0*	*$0*
Dedham	12	10	1	1	0	1	0	0	$3,383,000
Deerfield Fire Distircts									
Deerfield	*13*	*2*	*6*	*5*	*0*	*0*	*0*	*0*	*$0*
South Deerfield	*21*	*9*	*4*	*8*	*0*	*0*	*0*	*0*	*$50,500*
Dennis	96	17	12	67	0	1	0	1	$245,000
Devens	9	4	2	3	0	0	0	0	$23,500
Dighton	41	5	4	32	0	1	0	0	$482,582
Douglas	36	20	6	10	0	0	0	0	$374,500
Dover	Fire Department In Good Standing, Certified No Fires To Report								
Dracut	143	27	18	98	0	0	0	0	$370,080
Dudley	12	3	9	0	0	1	0	0	$136,150
Dunstable	Fire Department In Good Standing, Certified No Fires To Report								
Duxbury	25	14	3	8	0	0	0	0	$68,050
East Bridgewater	100	30	11	59	0	0	0	0	$153,000
East Brookfield	10	3	1	6	0	0	0	2	$0
East Longmeadow	59	17	9	33	0	1	0	0	$37,735
Eastham	27	6	4	17	0	3	0	0	$11,500
Easthampton	62	37	4	21	0	3	0	3	$271,115
Easton	21	12	5	4	0	0	0	0	$91,450
Edgartown	2	2	0	0	0	0	0	0	$0
Egremont	1	1	0	0	0	0	0	0	$150,000
Erving	3	0	1	2	0	2	0	0	$81,000
Essex	3	0	3	0	0	0	0	0	$8,600
Everett	110	62	23	25	0	7	0	4	$912,235
Fairhaven	80	33	12	35	0	0	0	3	$318,700
Fall River	722	275	110	337	2	11	1	14	$3,731,005

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Colrain	0	0	0	0	0	0	0	0	$0
Concord	3	2	1	0	0	0	0	0	$81,000
Conway	0	0	0	0	0	0	0	0	$0
Cotuit	0	0	0	0	0	0	0	0	$0
Cummington	Fire Department In Good Standing, Certified No Fires To Report								
Dalton	1	0	1	0	0	0	0	0	$500
Danvers	3	2	1	0	0	2	0	0	$1,068,323
Dartmouth Fire Districts									
Dartmouth #1	*4*	*1*	*0*	*3*	*0*	*1*	*0*	*0*	*$0*
Dartmouth #2	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Dartmouth #3	*16*	*3*	*2*	*11*	*0*	*0*	*0*	*0*	*$0*
Dedham	2	1	1	0	0	0	0	0	$505,000
Deerfield Fire Districts									
Deerfield	*1*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*$0*
South Deerfield	*1*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*$0*
Dennis	12	1	0	11	0	0	0	0	$0
Devens	1	1	0	0	0	0	0	0	$500
Dighton	0	0	0	0	0	0	0	0	$0
Douglas	3	1	1	1	0	0	0	0	$210,000
Dover	Fire Department In Good Standing, Certified No Fires To Report								
Dracut	8	1	4	3	0	0	0	0	$29,150
Dudley	0	0	0	0	0	0	0	0	$0
Dunstable	Fire Department In Good Standing, Certified No Fires To Report								
Duxbury	0	0	0	0	0	0	0	0	$0
East Bridgewater	4	1	0	3	0	0	0	0	$2,000
East Brookfield	1	0	0	1	0	0	0	0	$0
East Longmeadow	11	0	0	11	0	0	0	0	$30
Eastham	4	0	0	4	0	0	0	0	$0
Easthampton	4	2	0	2	0	0	0	0	$0
Easton	1	0	0	1	0	0	0	0	$500
Edgartown	0	0	0	0	0	0	0	0	$0
Egremont	0	0	0	0	0	0	0	0	$0
Erving	0	0	0	0	0	0	0	0	$0
Essex	0	0	0	0	0	0	0	0	$0
Everett	13	5	3	5	0	2	0	0	$50,600
Fairhaven	1	1	0	0	0	0	0	0	$0
Fall River	64	27	14	23	2	2	0	0	$228,445

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Falmouth	117	35	30	52	1	7	0	0	$2,945,835
Fitchburg	174	64	31	79	1	11	0	9	$1,216,200
Florida	7	4	2	1	0	0	0	0	$3,600
Foxborough	65	22	18	25	0	0	0	0	$44,250
Framingham	363	238	45	80	1	4	0	6	$1,615,038
Franklin	9	9	0	0	0	0	0	0	$195,600
Freetown	61	23	23	15	1	1	0	2	$563,975
Gardner	84	39	13	32	0	1	0	2	$908,950
Georgetown	Fire Department In Good Standing, Certified No Fires To Report								
Gill	15	6	0	9	0	0	0	0	$12,000
Gloucester	182	61	25	96	0	2	0	16	$4,099,200
Goshen	Fire Department In Good Standing, Certified No Fires To Report								
Gosnold	1	1	0	0	0	0	0	0	$200
Grafton	61	31	12	18	0	0	0	0	$13,500
Granby	50	17	7	26	0	1	0	0	$2,029,100
Granville	8	2	3	3	0	0	0	0	$5,000
Great Barrington	55	34	6	15	0	0	0	0	$24,320
Greenfield	161	84	19	58	0	4	0	4	$2,018,490
Groton	1	1	0	0	0	0	0	0	$0
Groveland	3	3	0	0	0	0	0	0	$8,000
Hadley	1	1	0	0	0	0	0	0	$0
Halifax	17	8	5	4	0	1	0	0	$166,600
Hamilton	49	31	4	14	0	1	0	1	$138,550
Hampden	3	1	1	1	0	0	0	0	$122,500
Hancock	2	2	0	0	0	0	0	0	$223,000
Hanover	67	19	12	36	0	0	0	0	$357,600
Hanson	48	16	5	27	0	2	0	2	$464,300
Hardwick	18	5	2	11	0	0	0	0	$143,200
Harvard	32	14	5	13	0	0	0	1	$64,700
Harwich	48	19	2	27	0	0	0	0	$156,000
Hatfield	18	5	1	12	0	0	0	0	$173,300
Haverhill	124	63	53	8	0	3	0	3	$692,950
Hawley	4	3	1	0	0	0	0	0	$143,400
Heath	2	1	1	0	1	0	0	0	$10,000
Hingham	123	55	13	55	0	0	0	0	$216,365

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Falmouth	23	2	9	12	0	0	0	0	$45,325
Fitchburg	28	5	7	16	0	0	0	0	$26,100
Florida	0	0	0	0	0	0	0	0	$0
Foxborough	5	1	0	4	0	0	0	0	$1,000
Framingham	19	1	1	17	0	0	0	0	$2,011
Franklin	0	0	0	0	0	0	0	0	$0
Freetown	15	2	8	5	0	0	0	0	$113,900
Gardner	3	2	0	1	0	0	0	0	$150
Georgetown	Fire Department In Good Standing, Certified No Fires To Report								
Gill	2	0	0	2	0	0	0	0	$0
Gloucester	12	3	0	9	0	0	0	0	$14,000
Goshen	Fire Department In Good Standing, Certified No Fires To Report								
Gosnold	0	0	0	0	0	0	0	0	$0
Grafton	1	0	0	1	0	0	0	0	$0
Granby	19	1	0	18	0	0	0	0	$2,000
Granville	0	0	0	0	0	0	0	0	$0
Great Barrington	2	2	0	0	0	0	0	0	$7,100
Greenfield	3	2	0	1	0	0	0	0	$400
Groton	0	0	0	0	0	0	0	0	$0
Groveland	0	0	0	0	0	0	0	0	$0
Hadley	0	0	0	0	0	0	0	0	$0
Halifax	0	0	0	0	0	0	0	0	$0
Hamilton	0	0	0	0	0	0	0	0	$0
Hampden	0	0	0	0	0	0	0	0	$0
Hancock	0	0	0	0	0	0	0	0	$0
Hanover	4	1	0	3	0	0	0	0	$0
Hanson	6	1	0	5	0	0	0	1	$0
Hardwick	4	1	0	3	0	0	0	0	$22,000
Harvard	1	0	0	1	0	0	0	0	$0
Harwich	2	0	0	2	0	0	0	0	$0
Hatfield	1	0	0	1	0	0	0	0	$0
Haverhill	5	5	0	0	0	0	0	0	$4,000
Hawley	0	0	0	0	0	0	0	0	$0
Heath	0	0	0	0	0	0	0	0	$0
Hingham	8	1	0	7	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Hinsdale	2	0	0	2	0	0	0	0	$95,000
Holbrook	53	29	5	19	0	5	0	0	$385,405
Holden	57	28	7	22	0	0	0	3	$187,500
Holland	16	7	1	8	0	0	0	0	$19,000
Holliston	8	6	0	2	1	0	0	1	$149,500
Holyoke	174	102	28	44	1	0	0	0	$0
Hopedale	9	6	1	2	0	1	0	1	$86,650
Hopkinton	19	9	9	1	2	1	0	0	$570,100
Hubbardston	24	14	3	7	0	0	0	0	$95,426
Hudson	29	15	5	9	0	0	0	0	$429,050
Hull	128	33	1	94	0	1	0	1	$292,900
Huntington	2	1	1	0	0	0	0	0	$250
Ipswich	58	27	4	27	0	4	0	0	$142,300
Kingston	59	19	22	18	0	1	0	1	$659,704
Lakeville	20	2	7	11	0	0	0	0	$8,000
Lancaster	Non-Reporting Community								
Lanesborough	14	3	8	3	0	0	0	0	$0
Lawrence	591	339	112	140	2	4	0	5	$2,554,370
Lee	17	6	10	1	0	0	0	0	$125,600
Leicester	48	30	7	11	0	0	0	0	$164,000
Lenox	66	42	6	18	0	0	0	0	$33,520
Leominster	220	152	23	45	0	7	0	1	$76,913
Leverett	8	4	1	3	0	0	0	0	$175,130
Lexington	13	9	4	0	0	0	0	0	$144,900
Leyden[ii]	0	0	0	0	0	0	0	0	$0
Lincoln	70	1	0	69	0	0	0	0	$0
Littleton	55	24	14	17	1	1	0	1	$1,196,131
Logan Airport FD	48	9	12	27	0	0	0	0	$120,000
Longmeadow	51	27	9	15	0	4	0	2	$576,950
Lowell	97	66	16	15	2	5	0	5	$197,906
Ludlow	97	46	13	38	3	3	0	1	$586,750
Lunenburg	13	10	3	0	0	1	0	1	$423,000
Lynn	128	78	48	2	0	5	0	38	$1,622,550
Lynnfield	87	52	15	20	0	1	0	2	$65,310

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Hinsdale	0	0	0	0	0	0	0	0	$0
Holbrook	2	2	0	0	0	0	0	0	$36,500
Holden	7	1	0	6	0	0	0	0	$0
Holland	5	0	0	5	0	0	0	0	$0
Holliston	0	0	0	0	0	0	0	0	$0
Holyoke	6	5	1	0	0	0	0	0	$0
Hopedale	0	0	0	0	0	0	0	0	$0
Hopkinton	1	0	1	0	0	0	0	0	$2,000
Hubbardston	3	1	0	2	0	0	0	0	$176
Hudson	1	1	0	0	0	0	0	0	$500
Hull	4	0	1	3	0	0	0	0	$0
Huntington	0	0	0	0	0	0	0	0	$0
Ipswich	6	0	1	5	0	0	0	0	$0
Kingston	8	1	0	7	0	0	0	0	$1,600
Lakeville	3	0	0	3	0	0	0	0	$0
Lancaster	Non-Reporting Community								
Lanesborough	0	0	0	0	0	0	0	0	$0
Lawrence	30	2	13	15	0	0	0	0	$94,115
Lee	2	0	1	1	0	0	0	0	$17,500
Leicester	0	0	0	0	0	0	0	0	$0
Lenox	1	0	1	0	0	0	0	0	$5,400
Leominster	7	0	3	4	0	0	0	0	$0
Leverett	1	1	0	0	0	0	0	0	$160,000
Lexington	1	1	0	0	0	0	0	0	$0
Leyden[ii]	0	0	0	0	0	0	0	0	$0
Lincoln	0	0	0	0	0	0	0	0	$0
Littleton	4	1	0	3	0	0	0	0	$10
Logan Airport FD	0	0	0	0	0	0	0	0	$0
Longmeadow	4	1	1	2	0	0	0	0	$3,375
Lowell	6	4	2	0	0	0	0	0	$0
Ludlow	9	1	2	6	0	0	0	0	$350
Lunenburg	0	0	0	0	0	0	0	0	$0
Lynn	15	9	6	0	0	0	0	3	$15,050
Lynnfield	2	1	0	1	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Malden	68	17	0	51	1	0	0	1	$40,000
Manchester	55	22	6	27	0	0	0	0	$553,000
Mansfield	76	32	12	32	0	0	0	0	$879,755
Marblehead	14	12	2	0	0	0	0	0	$1,407,000
Marion	7	4	2	1	0	1	0	1	$194,765
Marlborough	74	38	22	14	0	7	0	0	$662,376
Marshfield	120	48	11	61	0	2	0	3	$142,000
Mashpee	8	0	8	0	0	1	0	0	$43,200
Mattapoisett	25	7	5	13	0	0	0	0	$0
Maynard	12	9	3	0	0	0	0	0	$46,200
Medfield	34	17	2	15	0	1	0	0	$745,550
Medford	348	184	46	118	0	2	0	4	$2,538,095
Medway	18	11	2	5	0	0	0	1	$292,000
Melrose	16	9	4	3	0	0	0	0	$328,650
Mendon	1	0	0	1	0	0	0	0	$500
Merrimac	56	10	8	38	0	0	0	0	$0
Methuen	179	66	37	76	1	0	0	0	$1,567,900
Middleborough	151	35	34	82	0	0	0	3	$5,000
Middlefield	Non-Reporting Community								
Middleton	7	4	1	2	0	2	0	0	$15,300
Milford	186	82	28	76	0	3	0	3	$926,325
Millbury	67	44	13	10	0	3	0	3	$256,450
Millis	4	3	1	0	1	0	0	0	$72,500
Millville	24	5	0	19	0	1	0	0	$117,450
Milton	175	90	19	66	0	4	0	3	$442,750
Monroe	Fire Department In Good Standing, Certified No Fires To Report								
Monson	23	9	3	11	0	0	0	0	$1,953
Montague Fire Districts									
Montague Center	*16*	*5*	*0*	*11*	*1*	*0*	*0*	*0*	*$125,000*
Turners Falls	*46*	*29*	*2*	*15*	*0*	*2*	*0*	*0*	*$121,300*
Monterey	6	3	1	2	0	0	0	0	$165,200
Montgomery	Non-Reporting Community								
Nahant	16	3	1	12	0	1	0	0	$85,000
Nantucket	35	10	14	11	0	0	0	0	$221,230
Natick	55	27	26	2	0	1	0	2	$855,150
Needham	60	23	11	26	1	3	0	3	$500,100

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Malden	3	0	0	3	0	0	0	0	$0
Manchester	5	0	1	4	0	0	0	0	$0
Mansfield	4	2	1	1	0	0	0	0	$6,500
Marblehead	0	0	0	0	0	0	0	0	$0
Marion	1	1	0	0	0	0	0	1	$34,000
Marlborough	6	3	1	2	0	3	0	0	$211,600
Marshfield	9	1	1	7	0	0	0	1	$0
Mashpee	1	0	1	0	0	0	0	0	$8,000
Mattapoisett	0	0	0	0	0	0	0	0	$0
Maynard	1	0	1	0	0	0	0	0	$4,800
Medfield	3	0	0	3	0	0	0	0	$0
Medford	15	3	2	10	0	0	0	0	$18,030
Medway	1	0	0	1	0	0	0	0	$0
Melrose	1	1	0	0	0	0	0	0	$0
Mendon	0	0	0	0	0	0	0	0	$0
Merrimac	15	0	0	15	0	0	0	0	$0
Methuen	8	0	3	5	0	0	0	0	$4,000
Middleborough	15	0	3	12	0	0	0	0	$0
Middlefield	Non-Reporting Community								
Middleton	2	0	0	2	0	0	0	0	$0
Milford	26	5	1	20	0	1	0	0	$12,150
Millbury	3	2	1	0	0	0	0	0	$25,250
Millis	1	0	1	0	1	0	0	0	$2,500
Millville	2	1	0	1	0	0	0	0	$3,250
Milton	15	1	0	14	0	0	0	0	$5,000
Monroe	Fire Department In Good Standing, Certified No Fires To Report								
Monson	0	0	0	0	0	0	0	0	$0
Montague Fire Districts									
Montague Center	*3*	*1*	*0*	*2*	*0*	*0*	*0*	*0*	*$0*
Turners Falls	*2*	*1*	*0*	*1*	*0*	*0*	*0*	*0*	*$1,500*
Monterey	0	0	0	0	0	0	0	0	$0
Montgomery	Non-Reporting Community								
Nahant	1	0	1	0	0	0	0	0	$0
Nantucket	2	1	1	0	0	0	0	0	$6,000
Natick	4	2	1	1	0	0	0	0	$10,500
Needham	3	0	1	2	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
New Ashford	1	1	0	0	0	0	0	0	$0
New Bedford	347	117	94	136	0	4	0	7	$688,189
New Braintree	Non-Reporting Community								
New Marlborough	Fire Department In Good Standing, Certified No Fires To Report								
New Salem	5	2	0	3	0	0	0	0	$0
Newbury	6	4	1	1	0	0	0	0	$400,000
Newburyport	21	11	5	5	0	0	0	0	$141,370
Newton	189	100	37	52	0	1	0	4	$1,671,710
Norfolk	33	17	5	11	0	0	0	0	$29,200
North Adams	48	30	7	11	0	0	0	2	$134,900
North Andover	14	9	5	0	0	1	0	0	$691,175
North Attleboro	5	3	0	2	0	0	0	0	$38,000
North Brookfield	Fire Department In Good Standing, Certified No Fires To Report								
North Reading	102	50	9	43	0	0	0	0	$0
Northampton	154	68	26	60	0	4	0	1	$773,575
Northborough	23	12	10	1	0	2	0	0	$424,300
Northbridge	69	31	10	28	1	1	0	3	$210,250
Northfield	Non-Reporting Community								
Norton	38	25	13	0	0	1	0	0	$321,625
Norwell	75	38	6	31	0	1	0	0	$7,000
Norwood	16	8	6	2	0	0	0	0	$1,222,075
Oak Bluffs	0	0	0	0	0	0	0	0	$0
Oakham	10	7	0	3	0	0	0	0	$8,000
Orange	67	19	7	41	0	1	0	1	$35,000
Orleans	42	11	6	25	0	1	0	0	$114,525
Otis	3	3	0	0	0	0	0	0	$15,002
Oxford	95	37	15	43	0	3	0	0	$229,625
Palmer Fire Districts									
Bondsville	*1*	*1*	*0*	*0*	*1*	*0*	*0*	*0*	*$140,000*
Palmer	*46*	*10*	*14*	*22*	*0*	*0*	*0*	*0*	*$246,500*
Three Rivers	*9*	*0*	*3*	*6*	*0*	*0*	*0*	*0*	*$0*
Paxton	8	6	2	0	0	0	0	0	$181,500
Peabody	65	46	12	7	0	2	0	3	$575,180
Pelham	Fire Department In Good Standing, Certified No Fires To Report								
Pembroke	43	25	15	3	0	0	0	0	$642,100
Pepperell	1	1	0	0	1	0	0	1	$273,000

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
New Ashford	0	0	0	0	0	0	0	0	$0
New Bedford	49	13	11	25	0	0	0	2	$122,425
New Braintree	Non-Reporting Community								
New Marlborough	Fire Department In Good Standing, Certified No Fires To Report								
New Salem	0	0	0	0	0	0	0	0	$0
Newbury	0	0	0	0	0	0	0	0	$0
Newburyport	1	0	0	1	0	0	0	0	$20
Newton	10	1	3	6	0	0	0	2	$55,900
Norfolk	2	1	0	1	0	0	0	0	$0
North Adams	2	1	0	1	0	0	0	0	$0
North Andover	1	0	1	0	0	0	0	0	$22,000
North Attleboro	0	0	0	0	0	0	0	0	$0
North Brookfield	Fire Department In Good Standing, Certified No Fires To Report								
North Reading	2	1	0	1	0	0	0	0	$0
Northampton	9	1	1	7	0	0	0	0	$29,475
Northborough	2	1	1	0	0	0	0	0	$18,000
Northbridge	6	0	0	6	0	0	0	0	$0
Northfield	Non-Reporting Community								
Norton	6	1	5	0	0	0	0	0	$21,450
Norwell	4	1	1	2	0	0	0	0	$0
Norwood	0	0	0	0	0	0	0	0	$0
Oak Bluffs	0	0	0	0	0	0	0	0	$0
Oakham	0	0	0	0	0	0	0	0	$0
Orange	1	0	0	1	0	0	0	0	$0
Orleans	3	0	0	3	0	0	0	0	$2
Otis	0	0	0	0	0	0	0	0	$0
Oxford	10	1	1	8	0	0	0	0	$4,295
Palmer Fire Districts									
Bondsville	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Palmer	*4*	*0*	*1*	*3*	*0*	*0*	*0*	*0*	*$3,000*
Three Rivers	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Paxton	0	0	0	0	0	0	0	0	$0
Peabody	4	2	2	0	0	0	0	0	$4,550
Pelham	Fire Department In Good Standing, Certified No Fires To Report								
Pembroke	2	1	1	0	0	0	0	0	$2,000
Pepperell	0	0	0	0	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Peru	5	4	0	1	0	0	0	0	$0
Petersham	11	6	1	4	0	0	0	0	$0
Phillipston	11	3	4	4	0	0	0	0	$0
Pittsfield	139	42	13	84	0	4	0	0	$65,960
Plainfield	4	1	1	2	0	0	0	0	$0
Plainville	1	0	1	0	0	0	0	0	$0
Plymouth	287	67	41	179	1	8	0	4	$1,583,890
Plympton	22	13	2	7	0	0	0	0	$253,600
Princeton	2	1	0	1	0	0	0	0	$0
Provincetown	12	9	0	3	0	0	0	1	$752,000
Quincy	726	375	59	292	2	4	0	48	$2,659,700
Randolph	92	37	22	33	0	1	0	0	$228,000
Raynham	125	25	18	82	0	0	0	1	$143,100
Reading	44	33	9	2	0	1	0	0	$243,075
Rehoboth	64	32	5	27	0	0	0	0	$319,600
Revere	191	88	43	60	1	2	0	2	$65,900
Richmond	7	4	0	3	0	0	0	0	$0
Rochester	9	5	2	2	0	1	0	0	$260,500
Rockland	46	16	18	12	1	2	0	1	$13,500
Rockport	2	2	0	0	0	0	0	0	$50,000
Rowe	Fire Department In Good Standing, Certified No Fires To Report								
Rowley	33	14	8	11	0	0	0	0	$100,300
Royalston	2	0	0	2	0	0	0	0	$8,000
Russell	33	8	2	23	0	0	0	1	$164,800
Rutland	34	19	3	12	0	0	0	0	$123,325
Salem	567	434	29	104	0	5	0	1	$315,350
Salisbury	68	15	15	38	0	1	0	0	$113,433
Sandisfield	4	4	0	0	0	0	0	0	$4,250
Sandwich	148	63	12	73	0	2	0	3	$272,857
Saugus	65	31	27	7	0	5	0	7	$1,132,337
Savoy	1	0	0	1	0	0	0	0	$65,000
Scituate	90	39	11	40	0	1	0	2	$618,602
Seekonk	91	30	19	42	0	2	0	1	$283,340
Sharon	57	21	6	30	0	1	0	0	$604,850
Sheffield	2	1	1	0	0	0	0	0	$6,000

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Peru	0	0	0	0	0	0	0	0	$0
Petersham	0	0	0	0	0	0	0	0	$0
Phillipston	0	0	0	0	0	0	0	0	$0
Pittsfield	28	2	2	24	0	0	0	0	$0
Plainfield	0	0	0	0	0	0	0	0	$0
Plainville	0	0	0	0	0	0	0	0	$0
Plymouth	21	5	2	14	0	0	0	0	$3,835
Plympton	6	3	1	2	0	0	0	0	$18,000
Princeton	1	1	0	0	0	0	0	0	$0
Provincetown	0	0	0	0	0	0	0	0	$0
Quincy	29	5	2	22	0	0	0	0	$18,500
Randolph	1	1	0	0	0	1	0	0	$6,000
Raynham	6	2	0	4	0	0	0	0	$0
Reading	2	2	0	0	0	1	0	0	$33,500
Rehoboth	1	1	0	0	0	0	0	0	$0
Revere	4	0	3	1	0	0	0	0	$0
Richmond	2	0	0	2	0	0	0	0	$0
Rochester	1	0	1	0	0	0	0	0	$60,000
Rockland	4	1	0	3	0	0	0	0	$0
Rockport	0	0	0	0	0	0	0	0	$0
Rowe	Fire Department In Good Standing, Certified No Fires To Report								
Rowley	1	0	0	1	0	0	0	0	$0
Royalston	0	0	0	0	0	0	0	0	$0
Russell	5	0	0	5	0	0	0	0	$0
Rutland	2	1	0	1	0	0	0	0	$0
Salem	36	2	2	32	0	0	0	0	$27,000
Salisbury	0	0	0	0	0	0	0	0	$0
Sandisfield	0	0	0	0	0	0	0	0	$0
Sandwich	10	2	0	8	0	0	0	0	$16,500
Saugus	2	2	0	0	0	0	0	0	$5,500
Savoy	0	0	0	0	0	0	0	0	$0
Scituate	6	0	0	6	0	0	0	0	$0
Seekonk	9	3	2	4	0	1	0	0	$5,700
Sharon	1	0	0	1	0	0	0	0	$0
Sheffield	0	0	0	0	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Shelburne Fire Districts									
Shelburne	*6*	*2*	*0*	*4*	*0*	*0*	*0*	*0*	*$40*
Shelburne Falls	*12*	*9*	*1*	*2*	*0*	*1*	*0*	*0*	*$90,100*
Sherborn	21	6	2	13	0	0	0	0	$230,500
Shirley	9	9	0	0	0	0	0	0	$0
Shrewsbury	125	86	21	18	0	0	0	0	$887,050
Shutesbury	4	4	0	0	0	0	0	0	$100
Somerset	57	18	12	27	0	0	0	0	$184,000
Somerville	70	35	31	4	1	2	0	3	$1,046,900
South Hadley Fire Districts									
S. Hadley Dist.#1	*1*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*$35,000*
S. Hadley Dist.#2	*3*	*0*	*0*	*3*	*0*	*0*	*0*	*0*	*$5,300*
Southampton	22	10	3	9	0	0	0	1	$316,200
Southborough	40	21	6	13	1	1	0	0	$57,125
Southbridge	121	67	21	33	0	3	0	3	$663,650
Southwick	47	18	7	22	0	2	0	0	$34,800
Spencer	68	31	9	28	0	0	0	0	$7,000
Springfield	1,187	576	157	454	2	14	0	43	$2,771,516
Sterling	16	5	11	0	1	0	0	1	$648,300
Stockbridge	Non-Reporting Community								
Stoneham	33	13	17	3	0	1	0	0	$126,000
Stoughton	102	49	18	35	0	1	0	0	$961,300
Stow	4	4	0	0	0	0	0	0	$618,000
Sturbridge	68	23	16	29	0	1	0	1	$447,969
Sudbury	42	17	1	24	0	0	0	0	$127,000
Sunderland	7	1	1	5	0	0	0	0	$0
Sutton	37	14	10	13	0	0	0	0	$77,000
Swampscott	51	33	2	16	0	0	0	1	$1,247,006
Swansea	105	54	20	31	0	1	0	3	$7,000
Taunton	10	2	2	6	0	0	0	0	$15,000
Templeton	36	14	5	17	0	0	0	0	$96,000
Tewksbury	15	10	1	4	0	0	0	0	$48,000
Tisbury	5	3	2	0	0	0	0	0	$306,000
Tolland	2	2	0	0	0	0	0	0	$133,800
Topsfield	83	50	1	32	0	1	0	0	$650
Townsend	6	1	2	3	0	2	0	2	$197,081
Truro	2	2	0	0	0	2	0	0	$62,000

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Shelburne Fire Districts									
Shelburne	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Shelburne Falls	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Sherborn	2	0	0	2	0	0	0	0	$0
Shirley	1	1	0	0	0	0	0	0	$0
Shrewsbury	5	3	0	2	0	0	0	0	$250
Shutesbury	0	0	0	0	0	0	0	0	$0
Somerset	4	3	0	1	0	0	0	0	$2,500
Somerville	8	2	6	0	0	0	0	0	$49,500
South Hadley Fire Districts									
S. Hadley Dist.#1	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
S. Hadley Dist.#2	*3*	*0*	*0*	*3*	*0*	*0*	*0*	*0*	*$5,300*
Southampton	1	0	0	1	0	0	0	0	$0
Southborough	1	0	1	0	0	0	0	0	$12,175
Southbridge	8	2	0	6	0	0	0	0	$210,250
Southwick	7	0	0	7	0	0	0	0	$0
Spencer	10	0	0	10	0	0	0	0	$0
Springfield	73	15	13	45	0	0	0	4	$284,200
Sterling	1	0	1	0	0	0	0	0	$1,300
Stockbridge	Non-Reporting Community								
Stoneham	0	0	0	0	0	0	0	0	$0
Stoughton	4	1	0	3	0	0	0	0	$0
Stow	0	0	0	0	0	0	0	0	$0
Sturbridge	2	0	0	2	0	0	0	0	$0
Sudbury	2	0	0	2	0	0	0	0	$0
Sunderland	1	0	1	0	0	0	0	0	$0
Sutton	0	0	0	0	0	0	0	0	$0
Swampscott	2	2	0	0	0	0	0	0	$0
Swansea	2	1	0	1	0	0	0	0	$0
Taunton	1	0	0	1	0	0	0	0	$0
Templeton	6	0	1	5	0	0	0	0	$20,000
Tewksbury	0	0	0	0	0	0	0	0	$0
Tisbury	0	0	0	0	0	0	0	0	$0
Tolland	0	0	0	0	0	0	0	0	$0
Topsfield	12	0	0	12	0	0	0	0	$0
Townsend	0	0	0	0	0	0	0	0	$0
Truro	0	0	0	0	0	0	0	0	$0

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Tyngsborough	40	7	12	21	0	0	0	0	$33,200
Tyringham	Fire Department In Good Standing, Certified No Fires To Report								
Upton	62	38	3	21	0	0	0	0	$161,650
Uxbridge	110	52	19	39	0	1	0	0	$134,050
Wakefield	57	47	9	1	0	0	0	0	$93,950
Wales	Non-Reporting Community								
Walpole	128	58	16	54	0	1	0	1	$168,000
Waltham	218	88	34	96	1	4	0	0	$366,870
Ware	57	13	13	31	0	0	0	1	$427,826
Wareham Fire Districts									
Onset[iii]	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Wareham	*143*	*47*	*15*	*81*	*0*	*1*	*0*	*2*	*$548,650*
Warren	24	9	10	5	0	0	0	1	$550,325
Warwick	14	6	1	7	0	0	0	0	$0
Washington	Fire Department In Good Standing, Certified No Fires To Report								
Watertown	113	74	9	30	1	1	0	16	$1,695,700
Wayland	8	5	3	0	1	1	0	0	$46,151
Webster	30	14	5	11	0	0	0	0	$53,500
Wellesley	72	38	10	24	0	2	0	1	$352,400
Wellfleet	6	1	4	1	0	0	0	0	$6,000
Wendell	1	1	0	0	0	0	0	0	$0
Wenham	6	1	1	4	0	0	0	0	$50
West Boylston	9	6	2	1	0	1	0	0	$124,300
West Bridgewater	37	13	23	1	0	0	0	2	$104,450
West Brookfield	2	2	0	0	0	0	0	0	$186,000
West Newbury	Non-Reporting Community								
West Springfield	151	82	24	45	2	9	0	3	$615,500
West Stockbridge	9	1	0	8	0	0	0	0	$0
West Tisbury	3	3	0	0	0	0	0	0	$0
Westborough	80	30	17	33	0	3	0	6	$4,036,535
Westfield	181	82	34	65	0	2	0	1	$610,849
Westford	2	2	0	0	0	0	0	0	$3,075
Westhampton	1	0	1	0	0	0	0	0	$13,000
Westminster	26	11	13	2	0	1	0	0	$176,200
Weston	37	18	13	6	0	0	0	0	$104,815
Westport	88	6	4	78	0	0	0	0	$24,500
Westwood	114	63	4	47	0	0	0	1	$347,107
Weymouth	347	185	33	129	0	3	0	6	$1,425,975

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Tyngsborough	4	0	0	4	0	0	0	0	$0
Tyringham	Fire Department In Good Standing, Certified No Fires To Report								
Upton	3	0	1	2	0	0	0	0	$22,000
Uxbridge	11	1	1	9	0	0	0	0	$3,000
Wakefield	2	1	1	0	0	0	0	0	$5,000
Wales	Non-Reporting Community								
Walpole	1	1	0	0	0	0	0	0	$0
Waltham	4	2	0	2	0	0	0	0	$1,310
Ware	10	2	1	7	0	0	0	1	$181,017
Wareham Fire Districts									
Onset[iii]	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*$0*
Wareham	*2*	*0*	*0*	*2*	*0*	*0*	*0*	*0*	*$0*
Warren	0	0	0	0	0	0	0	0	$0
Warwick	2	0	0	2	0	0	0	0	$0
Washington	Fire Department In Good Standing, Certified No Fires To Report								
Watertown	0	0	0	0	0	0	0	0	$0
Wayland	1	0	1	0	1	0	0	0	$1,000
Webster	1	1	0	0	0	0	0	0	$0
Wellesley	3	0	0	3	0	0	0	0	$100
Wellfleet	0	0	0	0	0	0	0	0	$0
Wendell	0	0	0	0	0	0	0	0	$0
Wenham	0	0	0	0	0	0	0	0	$0
West Boylston	3	2	1	0	0	0	0	0	$25,600
West Bridgewater	2	0	2	0	0	0	0	0	$19,000
West Brookfield	0	0	0	0	0	0	0	0	$0
West Newbury	Non-Reporting Community								
West Springfield	7	1	0	6	0	0	0	0	$20,000
West Stockbridge	1	0	0	1	0	0	0	0	$0
West Tisbury	0	0	0	0	0	0	0	0	$0
Westborough	2	0	0	2	0	0	0	0	$0
Westfield	9	2	4	3	0	0	0	0	$33,200
Westford	0	0	0	0	0	0	0	0	$0
Westhampton	0	0	0	0	0	0	0	0	$0
Westminster	2	0	1	1	0	0	0	0	$5,000
Weston	3	0	1	2	0	0	0	0	$400
Westport	1	0	0	1	0	0	0	0	$0
Westwood	17	3	1	13	0	0	0	0	$5,650
Weymouth	16	5	3	8	0	0	0	1	$342,250

2002 Fire Experience By Community

Community	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Whately	13	2	0	11	0	0	0	0	$1,000
Whitman	77	40	8	29	0	1	0	0	$330,100
Wilbraham	53	7	10	36	0	0	0	0	$6,000
Williamsburg	2	1	1	0	0	0	0	0	$7,500
Williamstown	19	12	2	5	0	2	0	0	$11,975
Wilmington	45	8	17	20	0	1	0	0	$52,900
Winchendon	22	10	6	6	0	0	0	0	$233,800
Winchester	14	9	3	2	0	3	0	0	$203,000
Windsor	2	2	0	0	0	0	0	0	$14,000
Winthrop	80	46	10	24	0	1	0	2	$948,891
Woburn	77	53	8	16	0	3	0	2	$35,250
Worcester	1,424	243	195	986	3	2	0	1	$1,989,444
Worthington	Non-Reporting Community								
Wrentham	144	10	16	118	0	0	0	0	$173,375
Yarmouth	21	10	6	5	0	0	0	0	$128,000

[i]Bridgewater Fire Department did not report any incidents for calendar year 2002. They had a catastrophic computer failure and all records of 2002 incident reports were deleted and lost.
[ii]Leyden Fire Deparment reported 3 incidents to MFIRS in 2002. None of these incidents were fires or explosions.
[iii]Onset Fire District reported 14 incidents to MFIRS in 2002. None of these incidents were fires or explosions.

2002 Arson Experience By Community

Community	Total Arson	Structure Arson	Vehicle Arson	Other Arson	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Whately	0	0	0	0	0	0	0	0	$0
Whitman	4	0	0	4	0	0	0	0	$0
Wilbraham	1	0	0	1	0	0	0	0	$0
Williamsburg	0	0	0	0	0	0	0	0	$0
Williamstown	0	0	0	0	0	0	0	0	$0
Wilmington	5	0	1	4	0	0	0	0	$0
Winchendon	0	0	0	0	0	0	0	0	$0
Winchester	1	0	0	1	0	0	0	0	$1,000
Windsor	0	0	0	0	0	0	0	0	$0
Winthrop	9	1	5	3	0	0	0	0	$43,671
Woburn	1	0	1	0	0	0	0	1	$0
Worcester	111	13	43	55	0	0	0	0	$393,486
Worthington	Non-Reporting Community								
Wrentham	2	0	0	2	0	0	0	0	$10
Yarmouth	2	0	1	1	0	0	0	0	$0

[i]Bridgewater Fire Department did not report any incidents for calendar year 2002. They had a catastrophic computer failure and all records of 2002 incident reports were deleted and lost.
[ii]Leyden Fire Deparment reported 3 incidents to MFIRS in 2002. None of these incidents were fires or explosions.
[iii]Onset Fire District reported 14 incidents to MFIRS in 2002. None of these incidents were fires or explosions.

2002 Fires By Incident Type

Incident Type	Total Fires	% of Total	Civilian Deaths	Civilian Inj.	Fire Service Deaths	Fire Service Inj.	Dollar Loss
Structure Fires	11,979	44%	52	374	1	554	$164,677,673
Vehicle Fires	4,331	16%	7	31	0	26	17,313,439
Brush Fires	4,611	17%	1	3	0	16	161,315
Outside Rubbish Fires	3,021	11%	0	3	0	4	104,233
Special Outside Fires	746	3%	1	8	0	4	378,573
Cult. Veg.& Crop Fires	279	1%	0	0	0	0	1,275,747
Other Fires	2,413	9%	1	21	0	16	2,148,742
Total Fires	**27,380**	**100%**	**62**	**440**	**1**	**620**	**$186,059,722**

2002 Arsons* By Incident Type

Incident Type	Total Fires	% of Total	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Structure Arsons	485	26%	4	17	0	47	$14,336,555
Vehicle Arsons	395	21%	3	4	0	2	2,312,281
Brush Arsons	539	29%	0	0	0	1	9,593
Outside Rubbish Arsons	179	10%	0	0	0	0	12,235
Special Outside Arsons	174	9%	0	0	0	2	12,632
Cult. Veg.& Crop Arsons	50	3%	0	0	0	0	24,730
Other Arsons	45	2%	0	0	0	0	60,915
Total Arsons	**1,867**	**100%**	**7**	**21**	**0**	**52**	**$16,768,941**

*For statistical purposes in MFIRS v5 a fire is considered an arson if the Cause of Ignition = 1 (Intentional) and the Age of Person (Fire Module) is greater than 17 or if the field is blank; or if the Wildland Module is used, the Wildland Fire Cause = 7 (Incendiary) and the Age of the Person (Wildland Module) is greater than 17 or if the field is left blank.

2002 Fires By County

County	Total Fires	Structure Fires	Vehicle Fires	Other Fires	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Barnstable	977	322	176	479	4	48	0	11	$9,610,257
Berkshire	452	224	64	164	0	8	0	55	1,685,027
Bristol	2,425	786	444	1,195	3	25	1	32	8,550,981
Dukes	13	10	3	0	0	0	0	0	506,700
Essex	2,805	1,553	497	755	3	43	0	81	20,850,573
Franklin	462	216	49	197	2	10	0	5	3,756,560
Hampden	2,552	1,198	385	969	10	51	0	58	7,320,438
Hampshire	568	233	83	253	1	16	0	8	4,303,316
Middlesex	3,861	2,055	573	1,233	14	61	0	71	27,552,178
Nantucket	35	10	14	11	0	0	0	0	221,230
Norfolk	2,605	1,183	364	1,058	4	25	0	66	16,107,379
Plymouth	2,035	766	359	910	2	30	0	26	8,984,986
Suffolk	4,613	1,933	683	1,997	11	62	0	211	45,688,034
Worcester	3,976	1,490	637	1,849	8	61	0	46	30,922,063
Total	**27,380**	**11,979**	**4,331**	**10,070**	**62**	**440**	**1**	**620**	**$186,059,722**

2002 Arsons* By County

County	Total Arsons	Structure Arsons	Vehicle Arsons	Other Arsons	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Barnstable	104	21	18	65	1	1	0	0	$3,144,807
Berkshire	38	5	5	28	0	0	0	0	15,500
Bristol	216	65	47	104	2	4	0	2	570,520
Dukes	0	0	0	0	0	0	0	0	0
Essex	177	30	31	116	0	2	0	3	1,259,083
Franklin	20	5	2	13	0	0	0	0	161,900
Hampden	203	42	28	133	0	3	0	4	445,715
Hampshire	58	7	2	49	1	0	0	1	219,792
Middlesex	201	51	34	116	1	6	0	3	897,986
Nantucket	2	1	1	0	0	0	0	0	6,000
Norfolk	119	26	13	80	1	1	0	2	962,585
Plymouth	133	26	22	85	0	1	0	3	162,085
Suffolk	292	154	122	16	1	2	0	32	7,756,646
Worcester	304	52	70	182	0	1	0	2	1,166,322
Total	**1,867**	**485**	**395**	**987**	**7**	**21**	**0**	**52**	**$16,768,941**

*For statistical purposes in MFIRS v5 a fire is considered an arson if the Cause of Ignition = 1 (Intentional) and the Age of Person (Fire Module) is greater than 17 or if the field is blank; or if the Wildland Module is used, the Wildland Fire Cause = 7 (Incendiary) and the Age of the Person (Wildland Module) is greater than 17 or if the field is left blank.

2002 Fires, Arsons and Deaths By County and By Population*

County	Population	Total Fires	Fires per 1,000 Pop.	Fire Deaths	Deaths per 1,000 Fires	Deaths per 10,000 Pop.	Total Arsons	Arsons per 1,000 Pop.
Barnstable	222,230	977	4.4	4	4.1	0.18	104	0.5
Berkshire	134,953	452	3.3	0	0.0	0.00	38	0.3
Bristol	534,678	2,425	4.5	3	1.2	0.06	216	0.4
Dukes	14,987	13	0.9	0	0.0	0.00	0	0
Essex	723,419	2,805	3.9	3	1.1	0.04	177	0.2
Franklin	71,535	462	6.5	2	4.3	0.28	20	0.3
Hampden	456,228	2,552	5.6	10	3.9	0.22	203	0.4
Hampshire	152,251	569	3.7	1	1.8	0.07	58	0.4
Middlesex	1,465,396	3,861	2.6	14	3.6	0.10	201	0.1
Nantucket	9,520	35	3.7	0	0.0	0.00	2	0.2
Norfolk	650,308	2,605	4.0	4	1.5	0.03	119	0.2
Plymouth	472,822	2,035	4.3	2	1.0	0.04	133	0.3
Suffolk	689,807	4,613	6.7	11	2.4	0.16	292	0.4
Worcester	750,963	3,976	5.3	8	2.0	0.11	304	0.4
Massachusetts	6,349,097	27,380	4.3	62	2.3	0.10	1,867	0.3

*Population statistics based on 2000 U.S. Census Bureau data.

2002 Non-Fire Incidents By County and By Incident Type

County	Total Non-Fire Incidents	Overpressure Rupt. & Explos. (No-fire)	Rescue EMS Incidents	Hazardous Conditions (No-fire)	Service Calls	Good Intent Calls	False Alarm Calls	Severe WX[1] & Natural Disaster	Special Incident Type
Barnstable	15,086	45	11,212	737	902	607	1,504	30	49
Berkshire	6,221	14	3,156	601	938	465	1,001	16	30
Bristol	26,034	59	14,456	1.213	3,142	2,183	4,778	26	177
Dukes	1	0	0	0	0	0	1	0	0
Essex	29,096	93	14,761	2,56	3,256	2,307	5,873	30	221
Franklin	3,236	26	1,491	377	379	290	637	20	16
Hampden	25,145	97	13,818	1,344	3,223	2,244	4,275	25	119
Hampshire	6,222	46	2,781	498	370	419	2,039	17	52
Middlesex	66,668	141	37,773	4,751	6,950	3,794	12,746	75	438
Nantucket	2	0	0	1	0	0	1	0	0
Norfolk	52,754	138	28,101	4,059	7,466	3,170	7,978	69	1,773
Plymouth	29,212	94	17,233	2,239	3,006	2,820	3,620	63	137
Suffolk	17,182	31	11,906	1,108	1,251	918	1,922	9	37
Worcester	50,642	106	31,146	3,446	3,497	4,948	7,129	119	251
Massachusetts	327,501	889	187,834	22,930	34,380	24,165	53,504	499	3,300

[1] WX is the abbreviation for Weather.

M.G.L. Chapter 148 §26G – Sprinklers in Buildings or Additions

"In any city or town which accepts the provisions of this section, every building of more than seventy-five hundred gross square feet in floor area or every addition of more than seventy-five hundred gross square feet in floor area shall be protected throughout with an adequate system of automatic sprinklers in accordance with the state building code; provided, however, that in the case of said addition, such an adequate system of automatic sprinklers shall be installed in said addition only. No such sprinkler system shall be required unless sufficient water and water pressure exists. For the purposes of this section, the gross square feet of a building or addition shall include the sum total of the floor areas for all floor levels, basements and sub-basements, measured from outside walls, irrespective of the existence of interior fire resistive walls, floors and ceilings.

In such buildings or additions, or in certain areas of such buildings or additions, where the discharge of water would be an actual danger in the event of fire, the head of the fire department shall permit the installation of such other fire suppressant systems as are prescribed by the state building code in lieu of automatic sprinklers, Automatic suppressant or sprinkler systems shall not be required in rooms or areas of a telephone central office equipment building when such rooms or areas are protected with an automatic fire alarm system. Sprinkler systems shall not be required in a one-story building having a fire resistance rating as prescribed in the state building code that is used solely for offices provided the building is protected by an automatic fire alarm system. Sprinkler systems shall not be required in open-air parking structures, defined as: buildings, structures, or portions thereof, used for parking motor vehicles and having not less than twenty-five per cent of the total area open to atmosphere at each level, utilizing at least two sides of the structure. This section shall not apply to buildings or additions used for residential purposes.

The head of the fire department shall enforce the provisions of this section.

Whoever is aggrieved by the head of the fire department's interpretation, order, requirement, direction or failure to act under the provisions of this section, may, within forty-five days after the service of notice thereof, appeal from such interpretation, order, requirement, direction or failure to act to the automatic sprinkler board as provided in section two hundred and one of chapter six."

Communities Which Have Adopted M.G.L. Chapter 148 Section 26G

Abington
Acton
Acushnet
Agawam
Amesbury
Amherst
Arlington
Ashburnham
Ashland
Attleboro
Auburn
Avon
Ayer
Barnstable
Barre
Belchertown
Bellingham
Belmont
Berkley
Beverly
Billerica
Boston
Boxborough
Braintree
Bridgewater
Brockton
Brookfield
Brookline
Burlington
Cambridge
Centerville
Chatham
Chelsea
Chelmsford
Chicopee
Cohasset
Concord
Cotuit
Danvers
Dartmouth Dist. 1
Dartmouth Dist. 3
Dedham
Dighton
Duxbury
East Bridgewater
East Longmeadow
Easton
Edgartown
Everett
Fairhaven
Fall River
Falmouth
Fitchburg
Foxborough
Framingham
Franklin
Gardner
Georgetown
Grafton
Granby
Groton
Hamilton
Hanover
Hanson
Harwich
Haverhill
Hingham
Holbrook
Holden
Holliston
Holyoke
Hopedale
Hubbardston
Hudson
Hull
Hyannis
Ipswich
Kingston
Lakeville
Lancaster
Lawrence
Leicester
Leominster
Lexington
Lowell
Ludlow
Lunenburg
Manchester
Mansfield
Marblehead
Marlborough
Marshfield
Mashpee
Maynard
Medfield
Medford
Medway
Melrose
Methuen
Middleborough
Middleton
Milford
Millbury
Natick
Needham
Newburyport
Newton
North Andover
North Attleboro
North Reading
Northborough
Norton
Norwell
Orange
Paxton
Pelham
Pittsfield
Plainville
Plymouth
Randolph
Raynham
Reading
Revere
Rockland
Rutland
Salem
Sandwich
Saugus
Scituate
Seekonk
Sharon
Shirley
Shrewsbury
Somerset
Somerville
South Hadley-
District 2
Southborough
Southbridge
Sterling
Stoneham
Stoughton
Sudbury
Sutton
Swampscott
Swansea
Taunton
Tewksbury
Tisbury
Turners Falls
Tyngsboro
Upton
Wakefield
Walpole
Waltham
Ware
Wareham
Warren
Watertown
Wayland
Wellesley
Wenham
West Barnstable
West Boylston
West Bridgewater
West Brookfield
West Springfield
Westborough
Westfield
Westford
Westminster
Westport
Westwood
Whitman
Wilbraham
Wilmington
Winchester
Winthrop
Woburn
Worcester
Wrentham
Yarmouth

Total : 181

M.G.L. Chapter 148 §26H – Sprinklers in Boarding & Lodging Houses

"In any city or town which accepts the provision of this section, every lodging house or boarding house shall be protected throughout with an adequate system of automatic sprinklers in accordance with the provisions of the state building code…The head of the fire department shall enforce the provisions of this section.

For the purpose of this section, 'lodging house' or 'boarding house' shall mean a house where lodgings are let to six or more persons not within the second degree of kindred to the person conducting it, but shall not include fraternity houses or dormitories, rest homes or group home licensed to or regulated by the agencies of the Commonwealth.

Any lodging or boarding house subject to the provisions of this section shall be equipped with automatic sprinklers within five years of the acceptance of this act by a city or town…Whoever is aggrieved by the head of the fire department's interpretation…under the provisions of this section, may within forty-five days after the service of notice thereof, appeal from such interpretation, order or requirement to the board of appeals of the fire safety commission in section two hundred and one of chapter six."

Communities Which Have Adopted M.G.L. Chapter 148 Section 26H

Abington
Acton
Acushnet
Amesbury
Amherst
Arlington
Ashland
Auburn
Ayer
Belmont
Berkley
Beverly*
Billerica
Boston
Braintree
Brockton
Brookfield
Brookline
Burlington
Chatham
Chelsea
Chelmsford
Chicopee
Clinton
Cohasset
Concord
Danvers
Dartmouth Dist. 1
Dartmouth Dist. 3
Dennis
Everett
Fairhaven
Fall River
Fitchburg
Framingham
Franklin
Gardner
Georgetown
Grafton
Hamilton
Hanson
Haverhill
Holyoke
Hopedale
Hull
Ipswich
Kingston
Lancaster
Lawrence
Lee
Lowell
Ludlow
Lunenburg
Mansfield
Marlborough
Marshfield
Maynard
Medford
Medway
Melrose
Middleton
Milford
Natick
Needham
Newburyport
Newton
North Andover
North Reading
Northborough
Norton
Pelham
Plainville
Randolph
Raynham
Revere
Rutland
Salem
Saugus
Scituate
Seekonk
Sharon
Somerset
Somerville
Southborough
Sterling
Stoneham
Stoughton
Sudbury
Sutton
Swampscott
Taunton
Tewksbury
Turners Falls
Tyngsboro
Upton
Wakefield
Ware
Warren
Watertown
Wayland
Wenham
Westborough
Westford
Westminster
Westport
Westwood
Whitman
Wilmington
Winchester
Winthrop
Woburn
Worcester
Wrentham

Total: 112

M.G.L. Chapter 148 §26I – Sprinklers in New Dwelling Units (4+ units)

"In a city, town or district which accepts the provisions of this section, any building hereafter constructed or hereafter substantially rehabilitated so as to constitute the equivalent of new construction and occupied in whole or in part for residential purposes and containing not less than four dwelling units including, but not limited to, lodging houses, boarding houses, fraternity houses, dormitories, apartments, townhouses, condominiums, hotels, motels and group residences, shall be equipped with an approved system of automatic sprinklers in accordance with the state building code. In the event that adequate water supply is not available, the head of the fire department shall permit the installation of such other fire suppression systems as are prescribed by the state building code in lieu of automatic sprinklers. Owners of building with approved and properly maintained installations may be eligible for a rate reduction on fire insurance."

Communities Which Have Adopted M.G.L. Chapter 148 Section 26I

Abington	Easton	Mansfield	S. Hadley-Dist. 2
Acton	Everett	Marblehead	Southborough
Acushnet	Fairhaven	Marlborough	Sterling
Agawam	Fall River	Marshfield	Stoneham
Amesbury	Falmouth	Mashpee	Stoughton
Amherst	Fitchburg	Maynard	Sudbury
Arlington	Foxborough	Medfield	Swansea
Ashland	Framingham	Medford	Taunton
Athol	Franklin	Medway	Tewksbury
Avon	Georgetown	Melrose	Tyngsboro
Ayer	Grafton	Milford	Upton
Barnstable	Great Barrington	Millbury	Wakefield
Barre	Groton	Natick	Walpole
Bellingham	Hamilton	Newton	Waltham
Belmont	Hanover	North Andover	Ware
Berkley	Hanson	North Attleboro	Watertown
Beverly	Harwich	North Reading	Wayland
Billerica	Haverhill	Northborough	Wellesley
Boston	Hingham	Norton	Wenham
Brewster	Holden	Norwell	West Barnstable
Brookfield	Holliston	Orange	West Boylston
Brookline	Holyoke	Paxton	West Springfield
Burlington	Hopedale	Pelham	Westborough
Centerville	Hopkinton	Plainville	Westford
Chatham	Hudson	Randolph	Westminster
Chelmsford	Hull	Raynham	Westport
Clinton	Hyannis	Revere	Westwood
Cohasset	Ipswich	Rockland	Whitman
Concord	Kingston	Rutland	Wilmington
Cotuit	Lancaster	Salem	Winthrop
Dartmouth Dist. 1	Lawrence	Saugus	Woburn
Dartmouth Dist. 3	Lexington	Scituate	Wrentham
Dedham	Longmeadow	Shrewsbury	Yarmouth
Duxbury	Lowell	Somerset	
E. Longmeadow	Lunenburg	Somerville	**Total: 113**


Rekindle Your Fire Safety Sense!
Beware of fire
Check tag for date
Check your smoke detectors!
How do fires start?
Why do we need to check our smoke detectors?