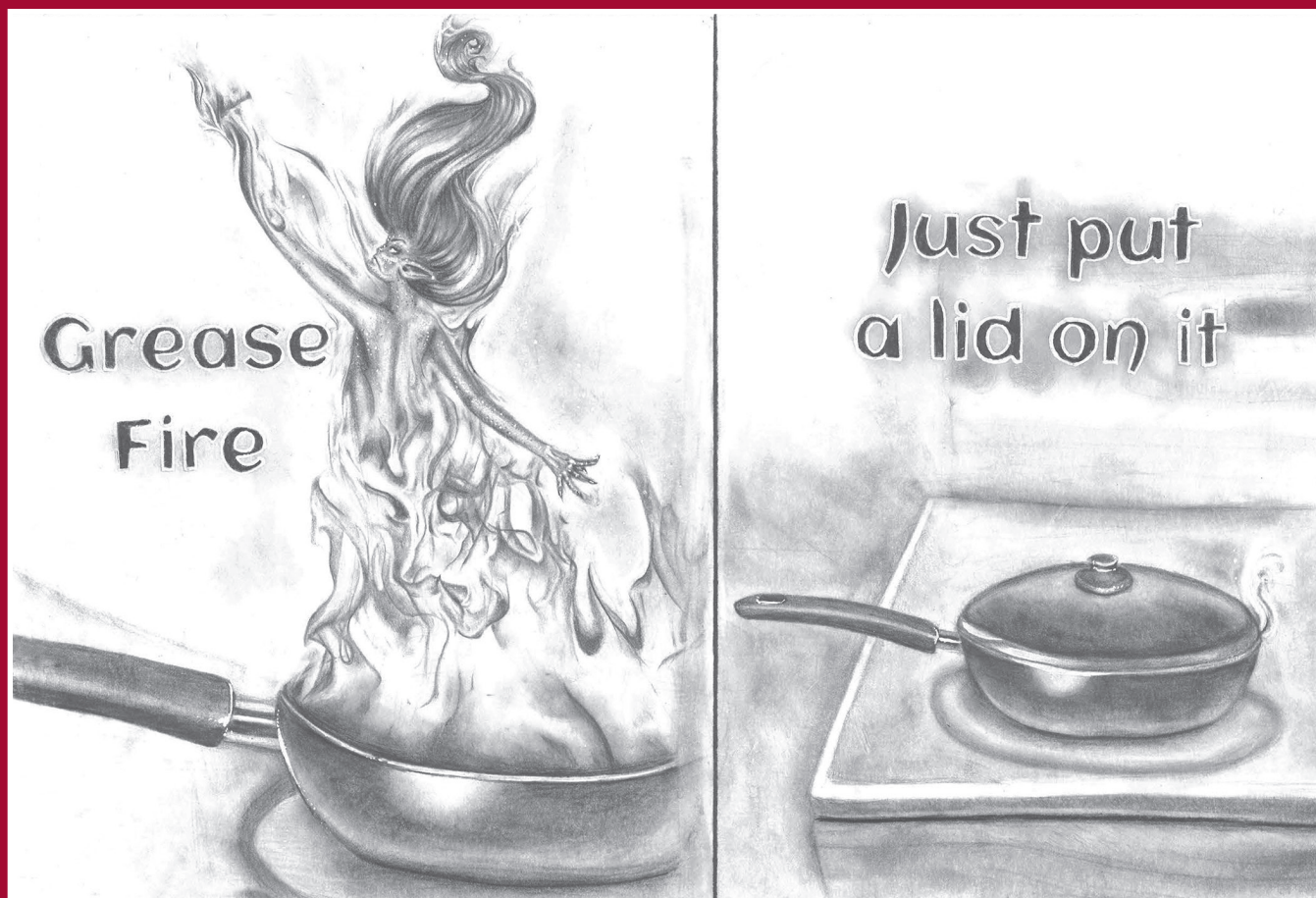


THE MASSACHUSETTS FIRE PROBLEM

Massachusetts Fire Incident Reporting System • 2015 Annual Report



Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Daniel Bennett, Secretary of Public Safety and Security
Peter J. Ostroskey, State Fire Marshal



Department of Fire Services
Division of Fire Safety • Fire Data and Public Education Unit

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ABOUT THE COVERS

The drawings on the front and back covers of this report are the 2016, 1st and 2nd place winners of the 34th annual statewide **Arson Watch Reward Program Poster Contest**. The contest is sponsored by the Massachusetts Property Insurance Underwriting Association (MPIUA) on behalf of all property and casualty insurance companies of Massachusetts. The poster theme was **Fire Prevention – Everyone/Everyday**.

A countywide poster contest was held for all students in grade 6-8. Twelve out of 14 counties participated and about 1,000 posters were submitted. Posters were judged by an impartial panel. First and 2nd place county winners were chosen at MPIUA. All 1st place county winners were entered into the Massachusetts statewide contest. An award ceremony was held in honor of all county winners at the Sheraton Framingham Hotel on June 2, 2016, and the three state winners were announced and presented with their awards.

The front cover drawing is by Ari Cox, a student at the JFK Middle School in Florence, Massachusetts. Ari's poster was the 1st place winner in the Hampshire County poster contest, and was automatically entered into the statewide contest, along with 11 other county winners, where it was chosen as the 1st place state winner.

The back cover drawing is by Olivia Boucher, a student at the Overlook Middle School in Ashburnham, Massachusetts. Olivia's poster was the 1st place winner in the Worcester County poster contest and was also automatically entered into the statewide contest where it was chosen as the 2nd place state winner.

MPIUA generously sponsored the printing of the *2015 Annual Report of the Massachusetts Fire Incident Reporting System (MFIRS)* and provided the cover posters. MPIUA has provided this sponsorship of the report and the poster contest for 33 years.

DEPARTMENT OF FIRE SERVICES MISSION

The mission of the Department of Fire Services, through coordinated training, education, prevention, investigation, and emergency response, to provide the citizens of Massachusetts with the ability to create safer communities; to assist and support the fire service community in the protection of life and property; to promote and enhance firefighter safety; and to provide a fire service leadership presence in the Executive Office of Public Safety and Security in order to direct policy and legislation on all fire related matters.

EXECUTIVE SUMMARY

This is the 2015 Annual Report of the Massachusetts Fire Incident Reporting System (MFIRS), which summarizes the Massachusetts fire experience for 2015. It is based on the 31,302 individual fire reports submitted by members of 366 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 Division of Fire Safety is to provide the fire service and the public with accurate and complete information about the fire experience in Massachusetts.

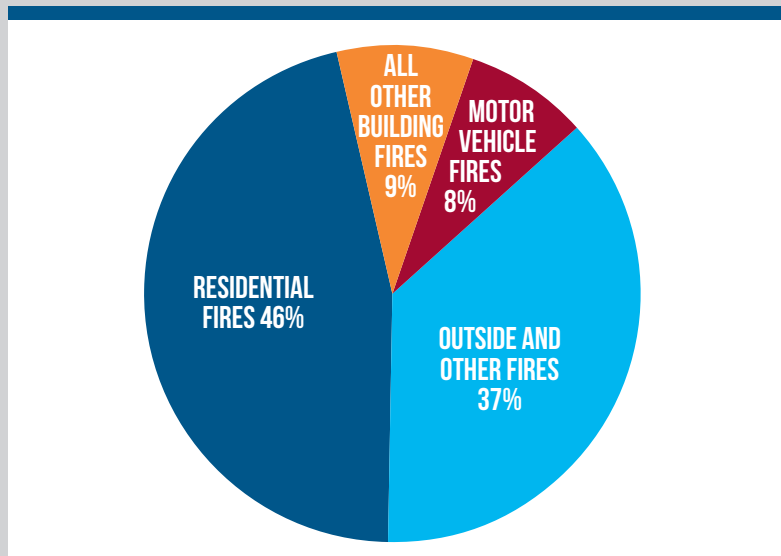
FIRES BY INCIDENT TYPE

16,983 Structure, 2,591 Vehicle, 11,728 Outside and Other Fires in 2015

There were 31,302 fire and explosion incidents reported by fire departments to the Massachusetts Fire Incident Reporting System (MFIRS) in 2015. The 16,983 structure fires, 2,591 motor vehicle fires, and 11,728 outside and other fires caused 62 civilian deaths, 293 civilian injuries, 465 fire service injuries, and an estimated dollar loss of \$258.2 million in property damages. In 2015 there were 1.98 civilian deaths for every 1,000 fires. See Figure 1.

Figure 1

FIRES BY INCIDENT TYPE



CIVILIAN FIRE DEATHS

62 Civilians Died in Massachusetts Fires

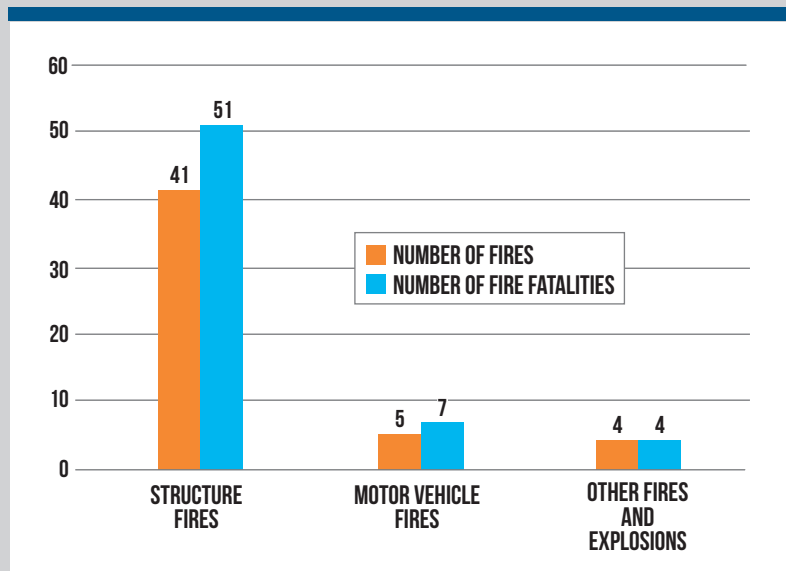
Sixty-two (62) civilians died in Massachusetts fires in 2015. Forty-nine, or 83%, of these deaths occurred in structure fires. Forty-nine (49), or 79% of these fire deaths, occurred where people feel safest, in their home. There were seven civilian deaths in motor vehicle fires and four deaths in outside fires. See Figure 2.

Structure fires decreased by 3% from the 17,539 that happened in 2014.

Twenty-one civilians over the age of 65 died in Massachusetts fires in 2015. These fatalities accounted for more than one third of fire deaths in the state.

Figure 2

FATAL FIRES AND FIRE DEATHS



Half of People Died in Fires at Night

Over half, 51%, of civilians died at night, at home, while they were sleeping. These fire victims did not have working smoke alarms or residential sprinklers. See Figure 3.

2015 Is above the 5 and 10-Year Averages

The 62 fire deaths in 2015 are 23% above the five-year average and 29% above the 10-year average number of fire deaths. See Figure 4.

Figure 3

CIVILIAN FIRE DEATHS BY HOUR

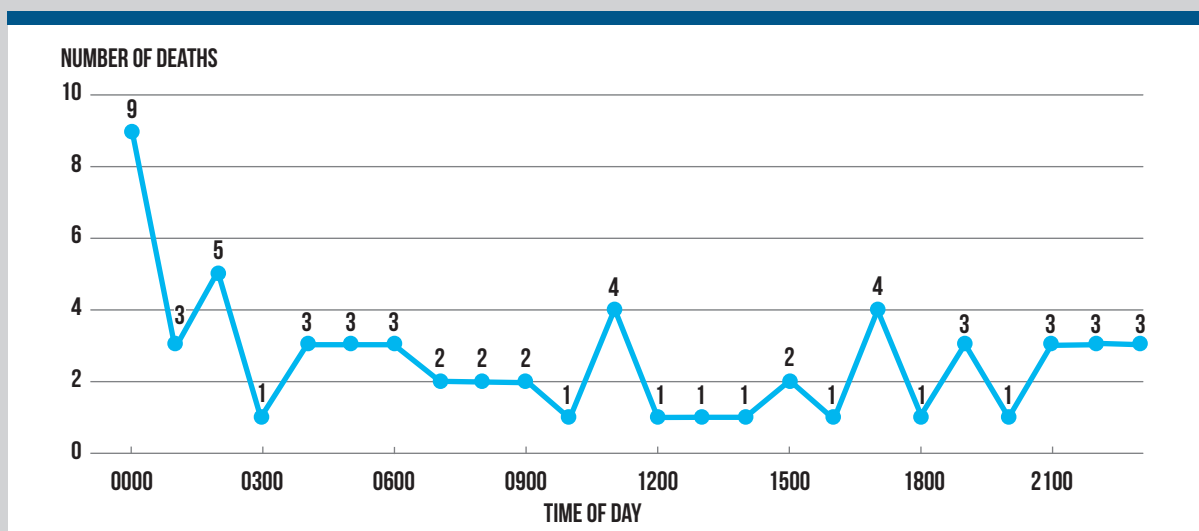
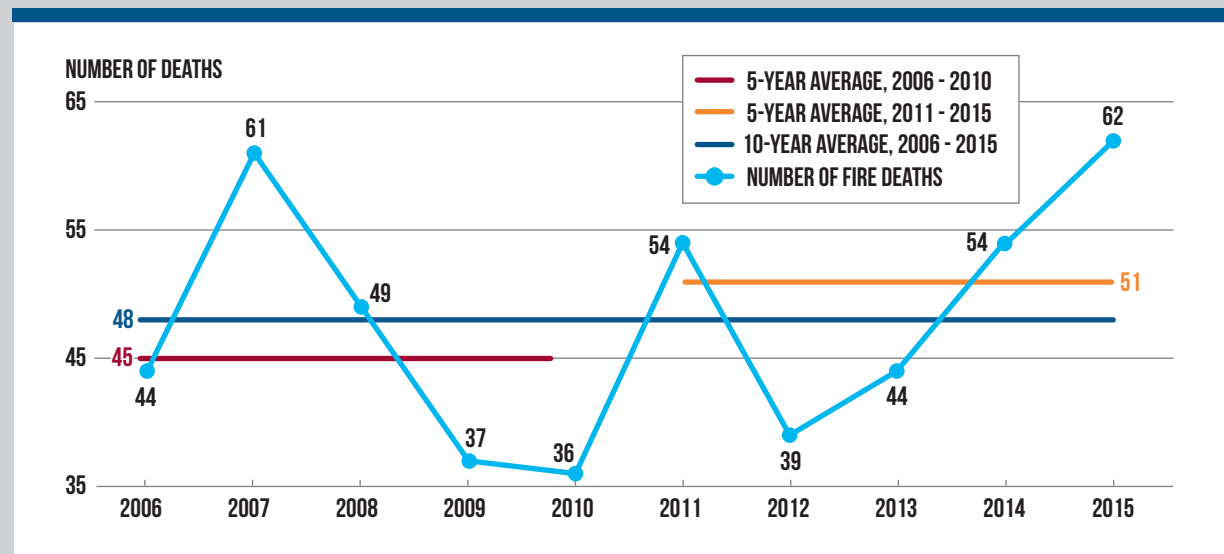


Figure 4

CIVILIAN FIRE DEATHS BY YEAR



32 Men, 26 Women and 4 Children under 18 Died from Fires in 2015

Of the 62 fire deaths in 2015, 32, or 52%, were men, 26, or 42%, were women and four, or 6%, were children under 18. See Figure 5.

More than One Third of Fire Deaths in 2015 Were People over the Age of 65

Twenty-one, or 34%, of civilian fire victims were over 65 years of age. This included 12 elderly men and nine elderly women. Four, or 6%, of the civilian fire victims were under 18 years old. Thirty-seven (37), or 60%, were adults between 18 and 65 years of age. See Figure 6.

Figure 5

CIVILIAN FIRE DEATHS BY GENDER

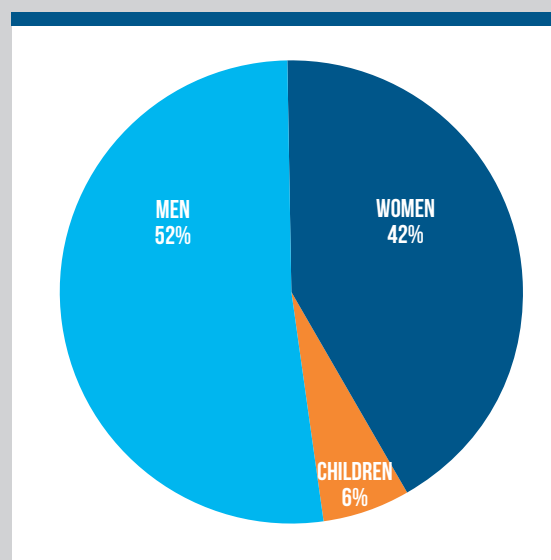


Figure 6

CIVILIAN FIRE DEATHS BY AGE

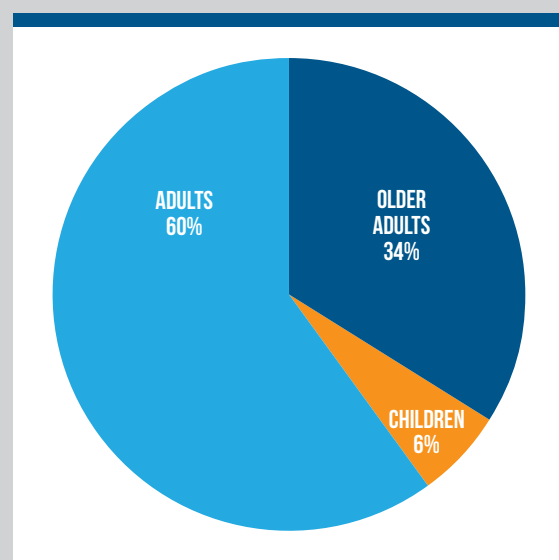


Figure 7

FIRE DEATHS BY AGE COMPARED TO PERCENT OF POPULATION

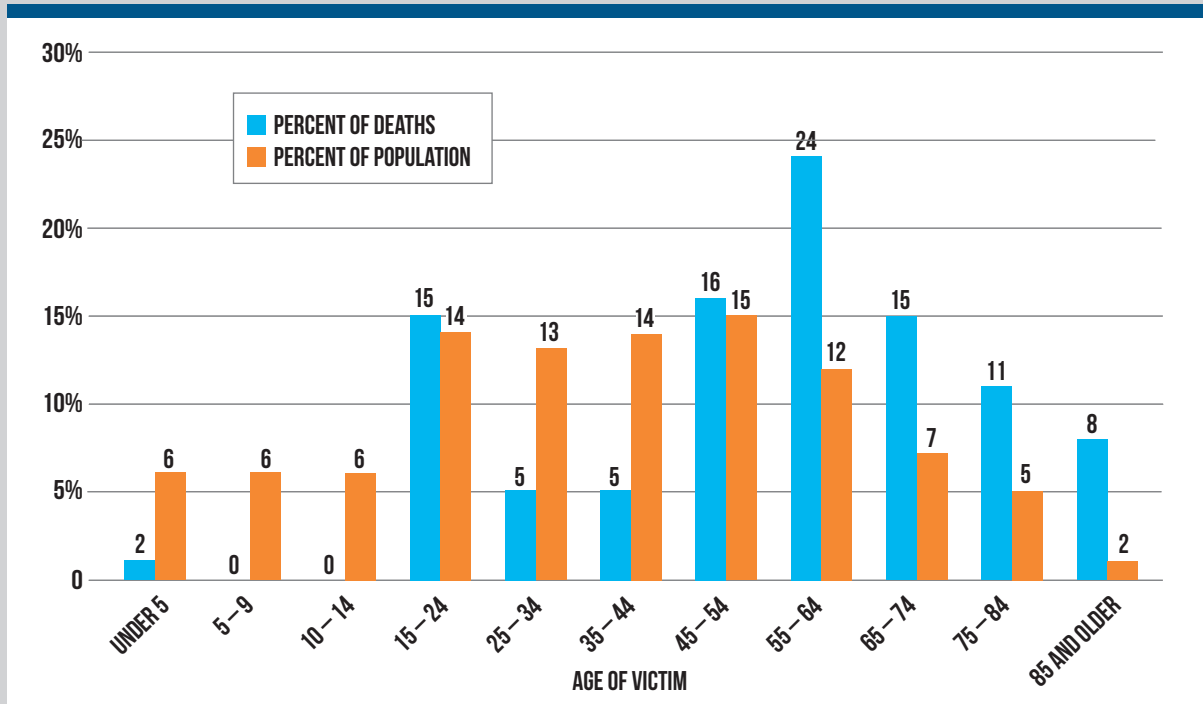


Figure 8

CHILD FIRE DEATHS BY YEAR

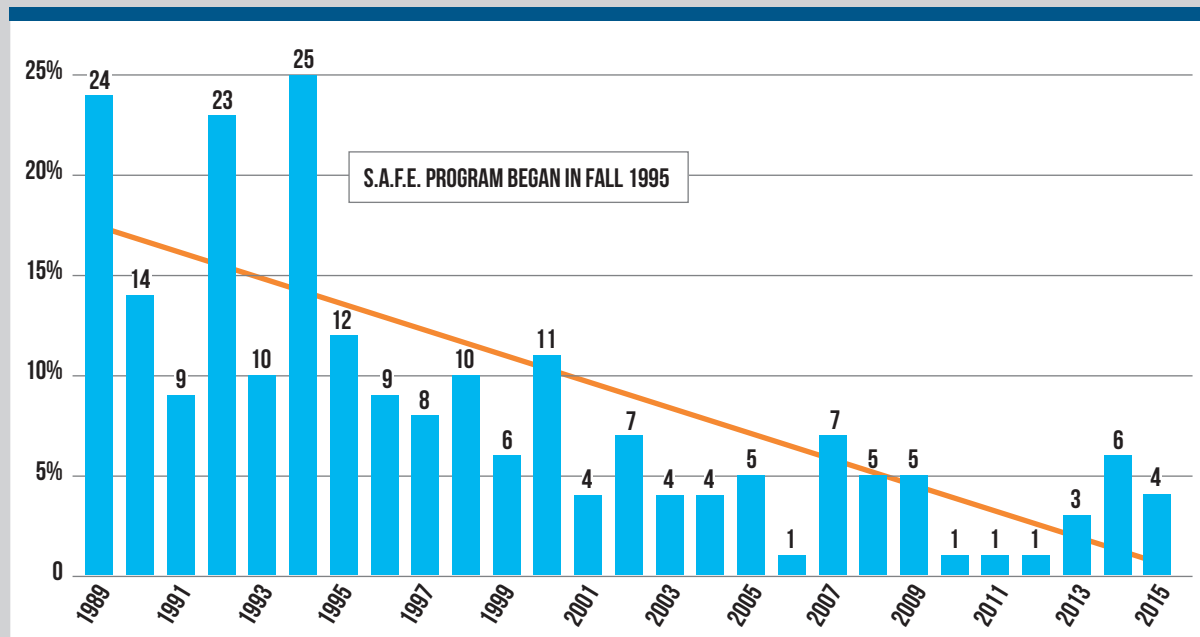
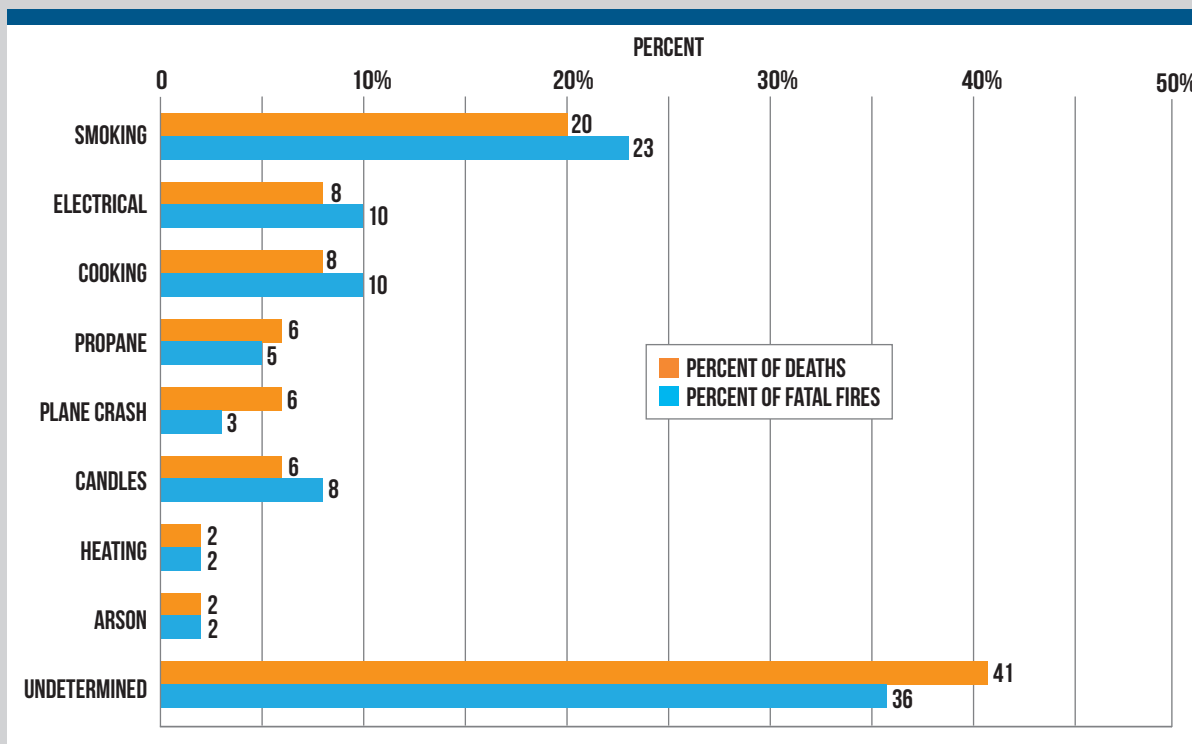


Figure 9

CAUSES OF RESIDENTIAL FATAL FIRES AND FIRE DEATHS



Older Adults Are Twice as Likely to Die in a Fire than Any Other Age Group

Older adults, especially those over the age of 85, had the greatest risk of dying in a fire. Adults over the age 85 account for 2% of the population but 8% of the fire deaths, making them 4 times more likely to die in a fire than any other age group. Figure 7 shows the percentage of fire deaths versus population percentage by age groups in 2015.

Average Annual Child Fire Deaths Down 72% Since the Start of S.A.F.E.

In the 20 years since the S.A.F.E. Program began (1996 to 2015), the average number of child fire deaths per year was 5.1. In the 20 years prior to the S.A.F.E. Program (1975 to 1994), the average number of child fire deaths per year was 18.3. This 72% drop in the number of child fire deaths is significant compared to the 44% drop in the number of all fire deaths during the same years. See Figure 8.

Smoking Fires Are Leading Cause of Fire Deaths

In 2015, the improper disposal of smoking materials was the leading cause of residential fire deaths and fatal residential fires. These fires accounted for 10, or 20%, of residential fire deaths. Electrical problems and cooking fires were tied as the second leading cause of fire deaths, each accounting for four, or 8%, of residential fire deaths. See Figure 9.

SMOKE ALARMS

Of the 62 civilian fire deaths in 2015, 49 occurred in residential structures. Only 37% of the buildings where these deaths happened had working smoke alarms.

One- and Two-Family Homes Had Lowest Percentage of Operating Alarms

Only 40% of smoke alarms operated in one- and two-family homes in 2015. See Figure 10.

Smoke alarms don't last forever and must be replaced, like all appliances. Smoke alarms last 10 years, whether they are battery-powered or hard-wired. Smoke alarms that are 10 years old or older should be replaced.

Smoke alarms are the key to notifying occupants of danger whether they are asleep or awake, but smoke alarms cannot guarantee escape from fires.

Figure 10

SMOKE ALARM STATUS IN 1- AND 2-FAMILY HOME FIRES

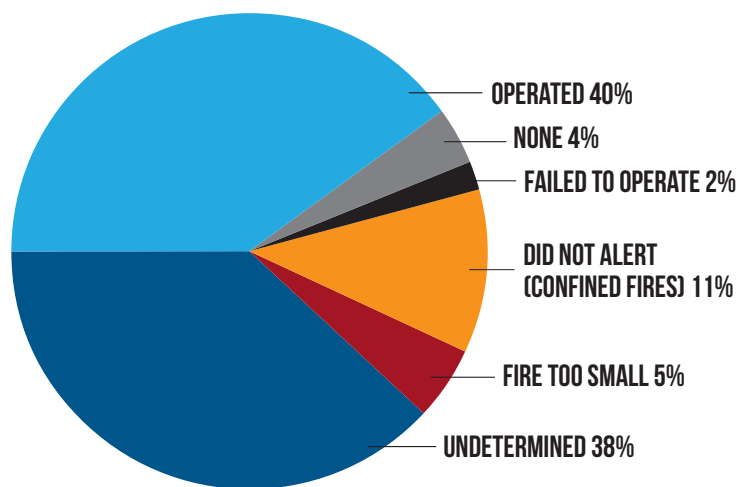
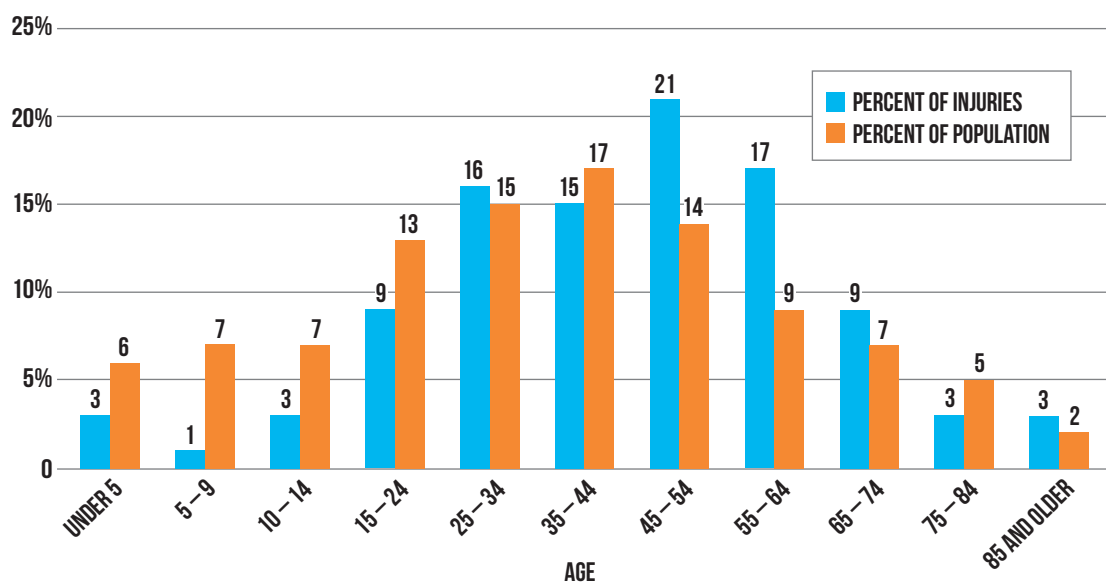


Figure 11

INJURIES BY AGE COMPARED TO PERCENT OF POPULATION



CIVILIAN INJURIES

239 Civilians Injured in Fires in 2015 – Mostly at Home

Massachusetts fires injured 293 civilians in 2015. Two hundred and forty-one (241), or 82%, of civilian injuries occurred in structure fires. Two hundred and twenty-one (221) injuries occurred in residential building fires, accounting for 75% of all injuries and 92% of all structure fire injuries. Eleven, or 4%, occurred in motor vehicle fires. Forty-one (41), or 14%, of civilian injuries occurred in outside and other fires. Special outside fires accounted for seven, or 2%, of all civilian injuries. Brush fires accounted for four, or 1%, of civilian fire injuries; and outside rubbish fires accounted for one, or less than 1% of all civilian fire injuries. Thirteen, or 4%, of civilian injuries were caused by unclassified fires.

Adults 45 to 64 at High Risk for Fire Injury

Adults between the ages of 45 and 54 represent 14% of the Massachusetts population, yet they accounted for 21% of the injuries at structure fires in 2015. Adults between the ages of 55 and 64 represent 9% of the population and yet they accounted for 17% of the injuries in 2015. People in these age groups are most at risk of being injured in a fire because they are more likely to try and control the fire. In these age groups, 41% of fire-related injuries happened while people were trying to control the fire. See Figure 11.

FIRE SERVICE INJURIES

465 Firefighters Injured in 2015

In 2015, 465 firefighters were injured while fighting the 31,302 reported fires in Massachusetts. On average, one firefighter was injured at one of every 67 fires in 2015.

Firefighters Injured at 1 of Every 10 Vacant Building Fires

Vacant building fires were one of the most dangerous types of fire for firefighters in 2015. These fires accounted for 28, or 6%, of all firefighter injuries. These 28 injuries also represent 7% of firefighter injuries from fighting structure fires in 2015. On average there was one firefighter injury for every 10 vacant building fires; one firefighter injury for every 14 structure arsons; and one firefighter injury for every 45 structure fires. See Figure 12.

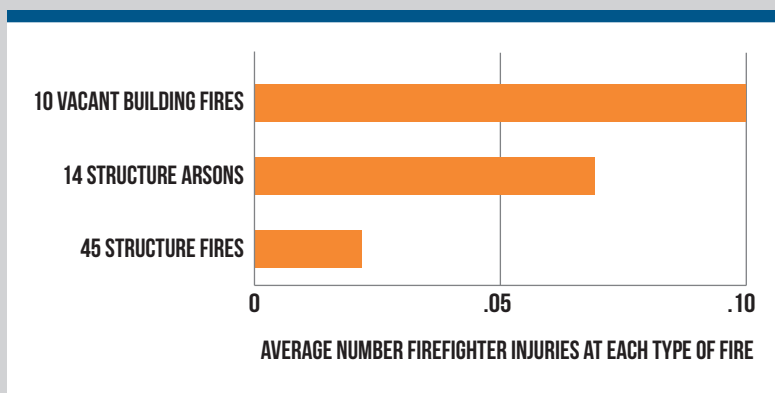
Almost 1/3 of Injuries from Overexertion or Strain

Thirty-two percent (32%) of all firefighter injuries in 2015 were from overexertion or strain. See Figure 13.

In 2015, 465 firefighters were injured while fighting the 31,302 reported fires in Massachusetts. On average, one firefighter was injured at one of every 67 fires in 2015.

Figure 12

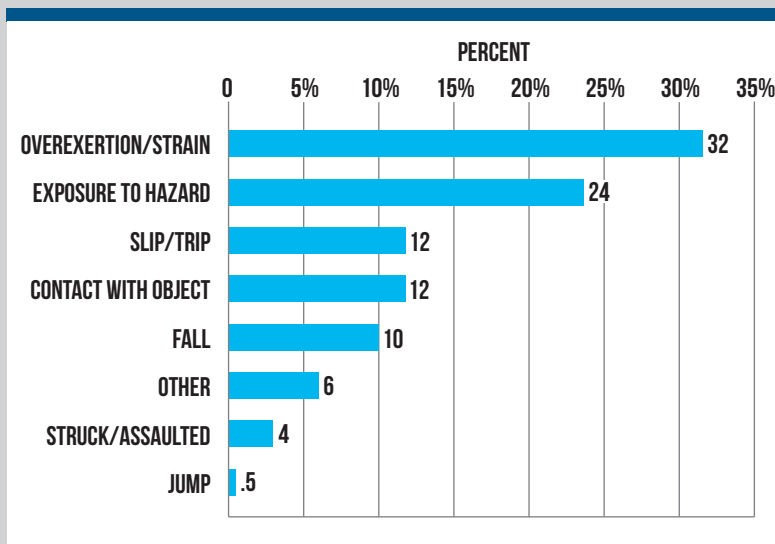
ONE FIREFIGHTER IS INJURED AT EVERY:



In 2015, 32% of all firefighter injuries were from overexertion or strains. Twenty-four percent were from exposure to hazards.

Figure 13

CAUSES OF FIREFIGHTER INJURIES



RESIDENTIAL BUILDING FIRES

85% of Building Fires Occurred in Residential Occupancies

Massachusetts fire departments reported that 14,293, or 85%, of the 16,872 building fires occurred in residential occupancies. These fires caused 49 civilian deaths, 221 civilian injuries, 315 fire service injuries and an estimated dollar loss of \$162 million.

Half of Residential Fires Happen in Multi-Family Homes

Half (50%) of residential building fires happened in multifamily buildings in 2015. Thirty-five percent (35%) of these fires happened in one- or two-family homes. Dormitories accounted

Figure 14

RESIDENTIAL FIRES BY OCCUPANCY TYPE

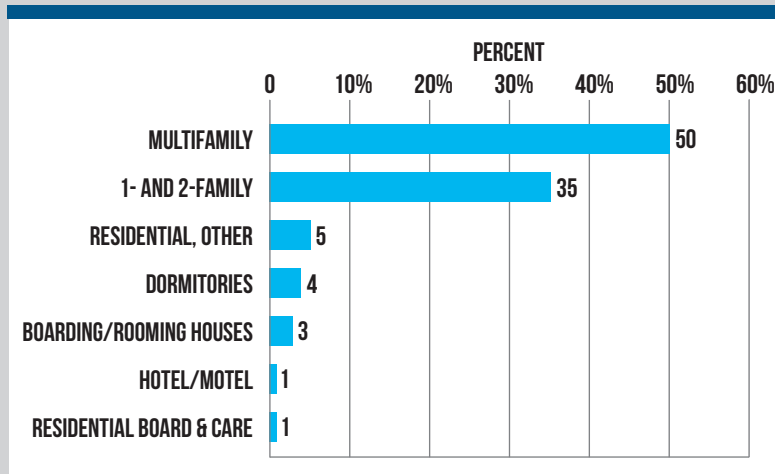
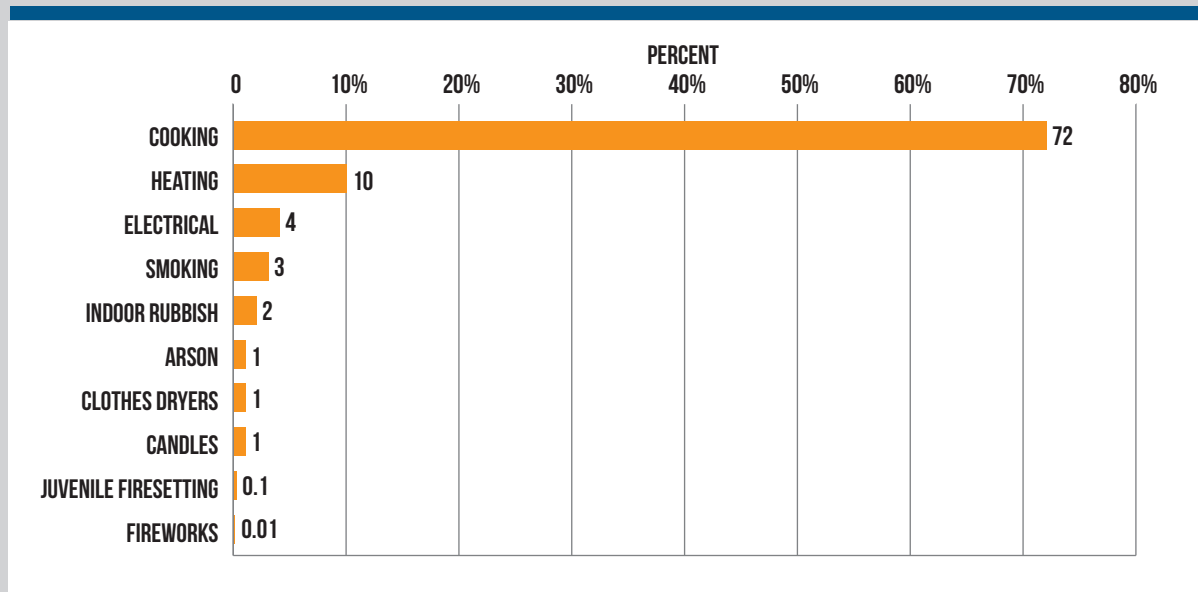


Figure 15

CAUSES OF RESIDENTIAL FIRES



for 5% of the fires. Three percent (3%) happened in rooming houses. Residential board and care facilities and hotels or motels each accounted for 1% of the residential fires. Five percent (5%) of the fires occurred in unclassified residences. See Figure 14.

Cooking & Heating Were the Leading Causes of Fires in 1- & 2-Family Homes

Cooking caused 44% of fires in one- and two-family homes in 2015. Heating equipment caused 25% of these fires, electrical problems caused 8%. The unsafe and improper use of smoking materials caused 4% and indoor rubbish fires caused 3% of these fires. Arson, clothes dryers, and candles each caused 1% of the fires. Juvenile-set fires and fireworks each accounted for less than 1% of the fires in one- and two-family homes in 2015. See Figure 15.

MOTOR VEHICLE FIRES

2,591 Motor Vehicle Fires Account for 8% of All Reported Fires

The 2,591 motor vehicle fires in 2015 caused seven civilian deaths, 11 civilian and 41 fire service injuries, and an estimated \$23.5 million in property damage. These incidents accounted for 8% of the reported 31,302 fires in 2015. Motor vehicle fires accounted for 11% of civilian fire deaths. Motor vehicle fires increased by 3% from 2014.

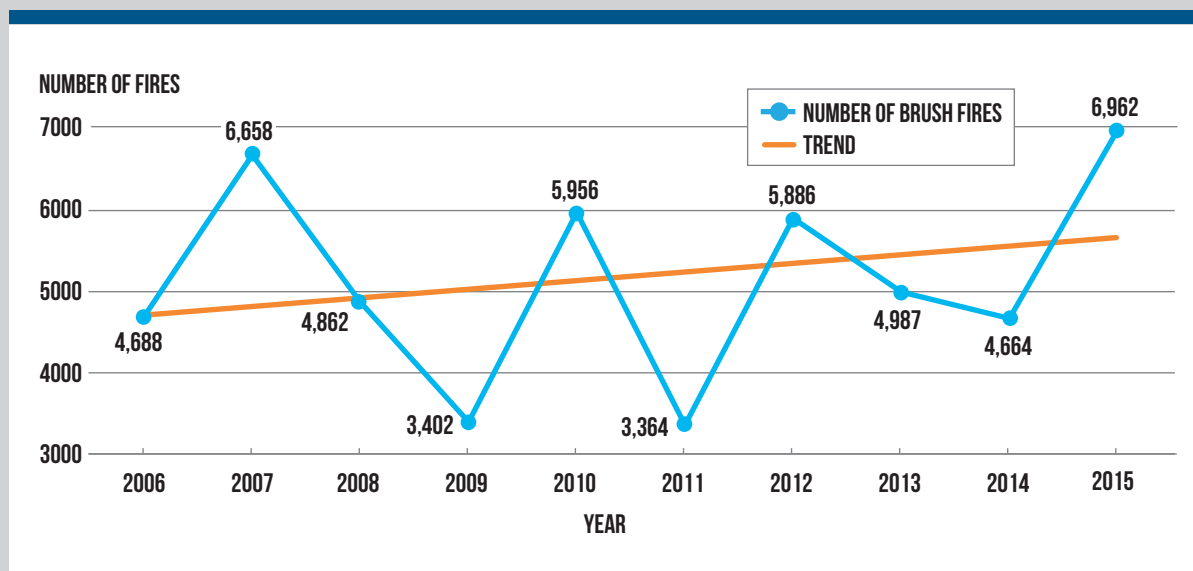
OUTSIDE AND OTHER FIRES

11,728 Brush, Trash, and Other Outside Fires

In 2015, 11,728 outside and other fires caused four civilian deaths, 41 civilian and 44 fire service injuries, and an estimated dollar loss of \$7 million. The 6,962 tree, grass and brush fires, 2,888 outside rubbish fires, 876 special outside fires, 60 cultivated vegetation or crop fires, and 942 other fires accounted for 37% of the total fire incidents in 2015, and 6% of civilian fire deaths. These fires were up 28% from the 9,176 outside and other fire incidents reported in 2014.

Figure 16

BRUSH FIRES BY YEAR



In 2015, 199 structure arsons, 95 motor vehicle arsons, and 489 outside and other arsons caused six civilian deaths, accounting for 10% of civilian fire deaths, five civilian injuries and 16 fire service injuries.

Brush Fires

Brush fires are the most variable category of fires from year to year. Large increases and decreases are not uncommon and are often dependent on the weather. If it is a dry spring or summer, the number of brush fires usually increases. In 2015, the reported number of brush fires increased by 2,298 or 49%, from the 4,664 reported in 2014. See Figure 16.

ARSON FIRES

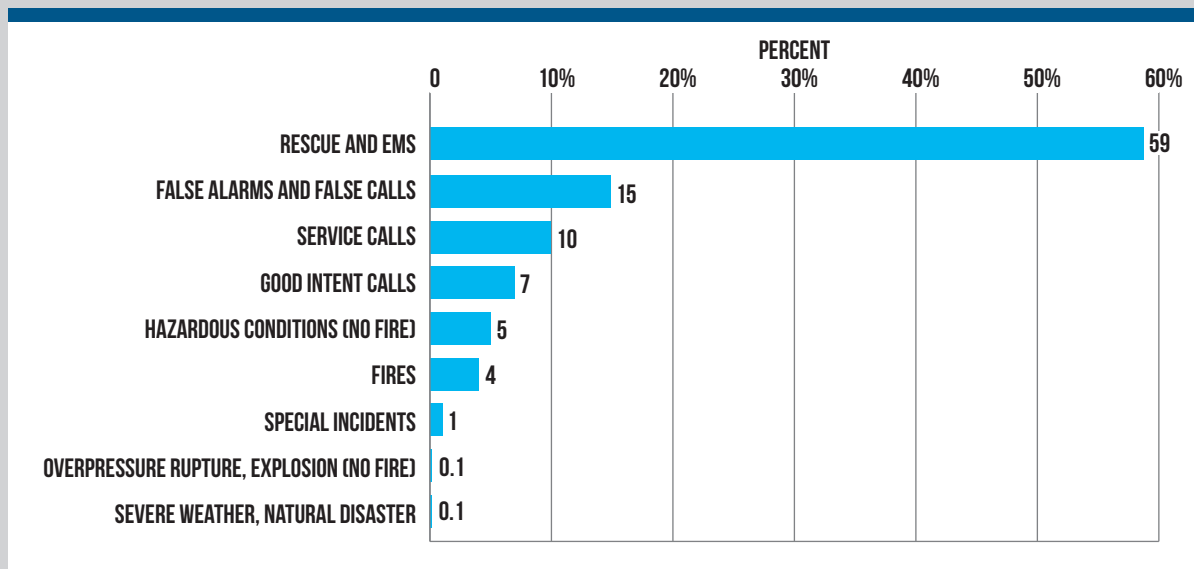
783 Arsons - 199 Structures, 95 Vehicles, 489 Other Arsons

Seven hundred eighty-three (783), or 3%, of the 31,302 fire incidents reported to the Massachusetts Fire Incident Reporting System were considered to be intentionally set, or arson¹. The 199 structure arsons, 95 motor vehicle arsons, and 489 outside and other arsons caused six, or 10%, of civilian fire deaths, five civilian injuries and 16 fire service injuries. The estimated dollar loss from arsons was \$7.8 million. The average dollar loss per arson was \$10,004. Total arson was down by 3% from the 810 in 2014.

¹ 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.

Figure 17

RESPONSES BY INCIDENT TYPE



NON-FIRE INCIDENTS

59% of All Massachusetts Calls Were EMS Incidents

In 2015, 344 fire departments in Massachusetts reported 873,272 responses to MFIRS (including mutual aid responses). Of these 873,272 responses, 839,670 non-fire calls were voluntarily reported. Rescue and EMS calls were by far the leading type of call that Massachusetts fire departments responded to with 512,529, or 59% of all reported calls. See Figure 17.

CONCLUSIONS

Working Smoke Alarms Save Lives

Most people die in fires at night in the so-called safety of their own home. While the overall trend in the number of deaths continues to decline, smoking was the leading cause of all fatal fires in 2015. Yet cooking, something we do everyday, is still the leading cause of fires in the home and the leading cause of civilian fire injuries. We must all work to address this problem.

The lack of working smoke alarms or sprinkler systems are contributing factors to these tragedies. We have under 3 minutes to get out of a building if there is a fire. It is important to remember that properly maintained alarms provide an early warning of a fire, and residential sprinklers provide the opportunity to safely escape. Having a practiced home escape plan in addition to working smoke alarms allows us to get out of our houses quickly. Time is of the essence in a fire.

Cooking remains the leading cause of fires in the home and the leading cause of civilian fire injuries. The lack of working smoke alarms or sprinkler systems are contributing factors to these tragedies.

2015 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	860	336	100	424	1	18	0	11	\$8,870,055
Berkshire	575	328	52	195	1	10	0	20	4,366,412
Bristol	2,014	858	264	892	6	32	0	20	19,983,475
Dukes	37	10	5	22	1	0	0	0	411,500
Essex	2,841	1,386	265	1,190	6	22	0	47	18,934,393
Franklin	296	151	30	115	0	2	0	3	3,799,610
Hampden	2,064	1,016	228	820	10	29	0	51	11,674,154
Hampshire	480	193	43	244	0	10	0	4	3,602,981
Middlesex	5,622	3,021	407	2,194	7	40	0	63	47,414,421
Nantucket	80	51	7	22	0	1	0	0	230,500
Norfolk	3,213	1,819	222	1,172	10	18	0	122	42,659,659
Plymouth	2,061	896	235	930	4	41	0	28	18,159,987
Suffolk	6,918	4,710	359	1,849	3	6	0	25	36,762,337
Worcester	4,241	2,208	374	1,659	13	64	0	71	41,359,471
Total	31,302	16,983	2,591	11,728	62	293	0	465	\$258,228,955

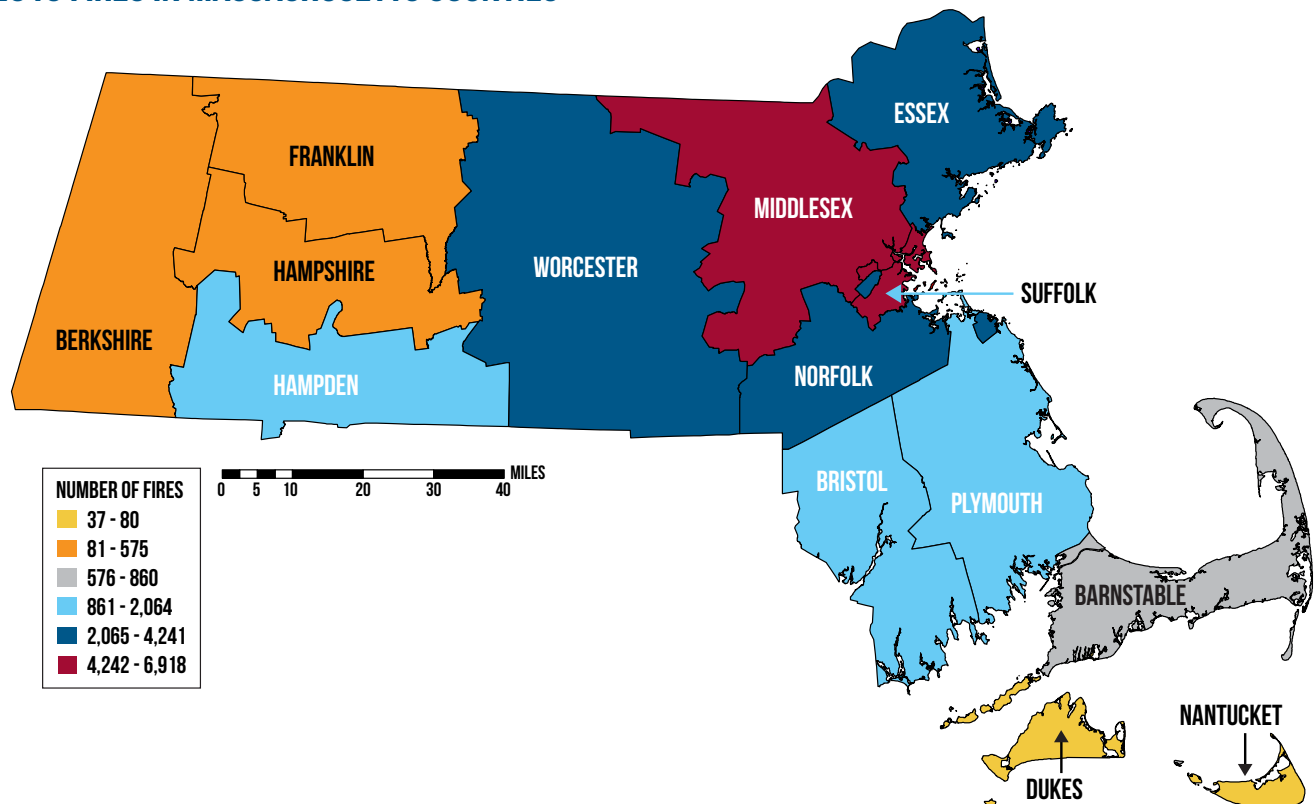
2015 ARSONS BY COUNTY

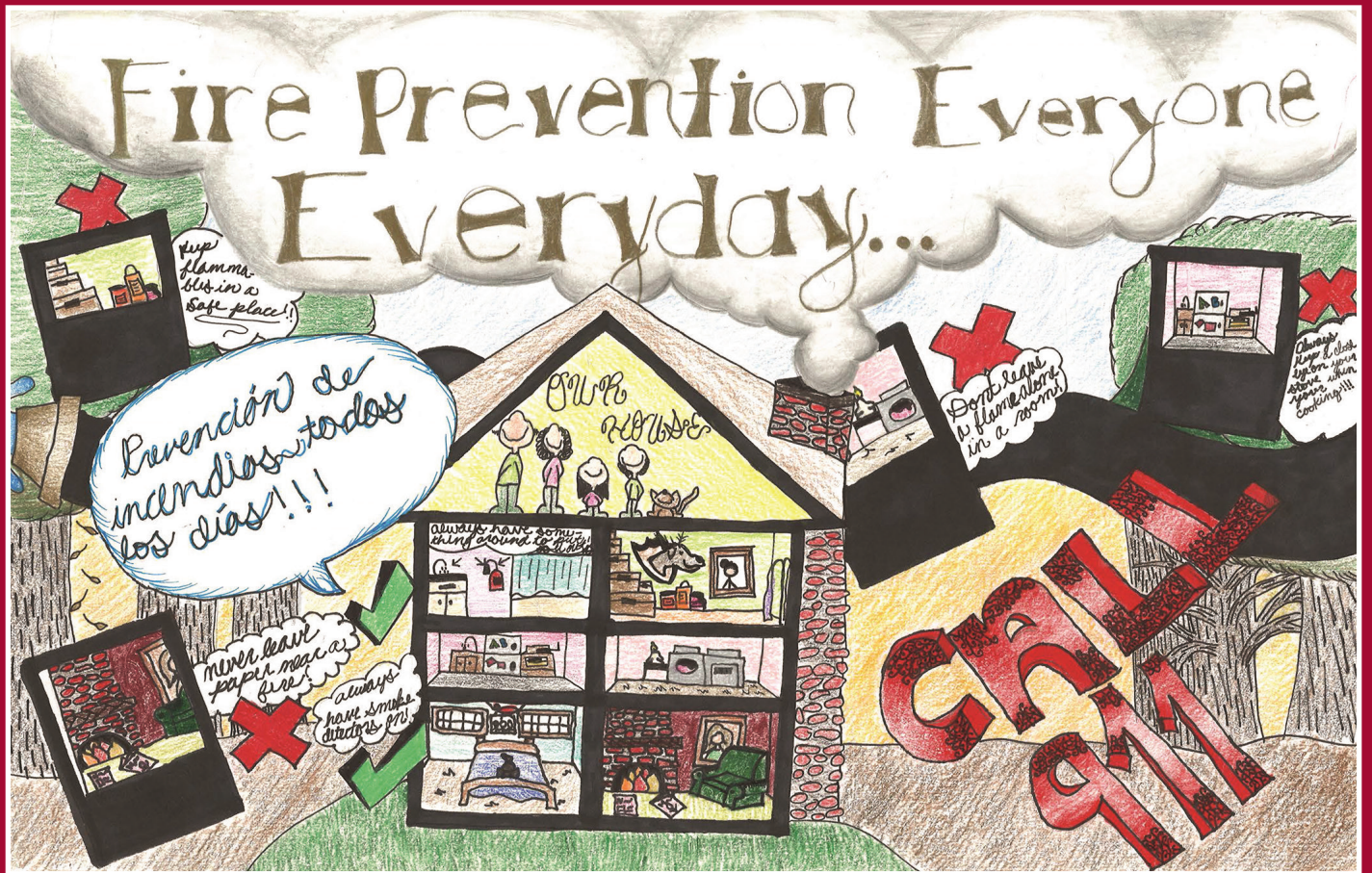
County	Total Arsons	Structure Arsons	Vehicle Arsons	Other Arsons	Civilian Deaths	Civilian Injuries	Fire Service Deaths	Fire Service Injuries	Dollar Loss
Barnstable	48	5	2	41	0	1	0	0	\$137,410
Berkshire	28	9	6	13	0	2	0	2	70,700
Bristol	83	26	16	41	1	0	0	0	778,750
Dukes	1	0	1	0	0	0	0	0	0
Essex	85	19	15	51	1	0	0	1	1,262,284
Franklin	15	3	1	11	0	0	0	0	6,000
Hampden	103	28	15	60	0	2	0	1	1,257,210
Hampshire	30	4	1	25	0	0	0	0	382,505
Middlesex	66	20	9	37	2	3	0	2	606,391
Nantucket	0	0	0	0	0	0	0	0	0
Norfolk	59	8	5	46	0	0	0	0	184,224
Plymouth	38	14	3	21	0	0	0	3	691,357
Suffolk	120	25	10	85	0	0	0	0	244,750
Worcester	107	38	12	57	2	1	0	6	2,211,586
Total	783	199	95	489	6	9	0	15	\$7,833,167

2015 NON-FIRE RESPONSES BY COUNTY AND BY INCIDENT TYPE

County	Total Non-Fire Responses	Over-pressure Rupture, Explosion (No-fire)	Rescue, EMS Incidents	Hazardous Conditions (No-fire)	Service Calls	Good Intent Calls	False Alarm Calls	Severe Weather, Natural Disaster	Special Incidents
Barnstable	45,540	47	31,395	1,915	3,686	1,792	5,915	96	154
Berkshire	12,010	7	6,836	676	1,651	618	2,164	5	53
Bristol	66,908	75	44,746	2,673	4,276	3,941	10,680	39	478
Dukes	679	2	68	45	27	170	352	0	15
Essex	98,888	91	57,399	4,314	13,216	6,412	16,602	81	773
Franklin	6,622	18	3,839	521	812	583	701	12	136
Hampden	43,427	68	25,210	1,877	3,644	5,553	6,867	16	192
Hampshire	13,935	23	8,334	654	1,458	818	2,550	16	82
Middlesex	178,637	113	105,106	10,236	18,781	10,490	28,572	94	5,245
Nantucket	3,042	8	1,395	276	162	52	1,140	0	9
Norfolk	87,628	100	53,422	5,515	9,032	5,272	12,635	54	1,598
Plymouth	85,036	90	57,249	4,407	7,604	5,665	9,695	95	281
Suffolk	102,250	64	54,101	4,522	15,861	9,534	17,678	15	475
Worcester	94,496	119	62,498	4,145	7,817	6,181	12,550	48	1,138
Massachusetts	839,148	825	512,138	41,776	88,027	57,081	128,101	571	10,629

2015 FIRES IN MASSACHUSETTS COUNTIES





MFIRS
Massachusetts Fire Incident Reporting System

Department of Fire Services
www.mass.gov/dfs
(978) 567-3380