

Slower arrival at fires in US is costing lives

By Bill Dedman, Globe Correspondent | January 30, 2005



BREWSTER
Response rate:
44.4%

Fire Chief Roy Jones thinks his town needs a second station but says, "The people don't want this information out."
(Globe Staff Photo / John Tlumacki)

IPSWICH - Lisa Collum was breast-feeding her baby, and her 3-year-old was getting ready for a playdate, when the fire started in the apartment downstairs.

The firehouse a few blocks away was empty. Only three firefighters were on duty to cover all 33 square miles of this seaside town, and they were busy with two ambulance calls on this January evening in 2001. One firefighter drove back for the fire engine, then hurried into the chaos at the Collums' home.

Neighbors were shouting that the children were trapped. Up at a third-floor window, Lisa Collum was holding her baby. Before anyone realized what she was doing, she dropped 5-month-old Carly onto the driveway. Seconds later, the mother disappeared into the black smoke.

It was standing room only at the funeral, as the entire town helped Mark Collum mourn his wife and two girls.

And it was standing room only the next year at the town meeting, as the residents of Ipswich voted against hiring more firefighters. The Collum fire was a horrible tragedy, town leaders said, a series of coincidences that might occur once a generation.

In fact, it is a daily event somewhere in America. Once a day on average in this country, someone dies when firefighters arrive too late, an investigation of fire response times by the Globe has found. America's fire departments are giving fires a longer headstart, arriving later each year, especially in the suburbs around Boston, Atlanta and other cities, where growth is brisk but fire staffing has been cut.

In Massachusetts, people waited 10 minutes or more for firefighters to arrive at 214 building fires in 2002, the last year for which data is available. Since 1990, there have been 2,786 such fires,

including blazes at jails, mental hospitals, apartment buildings, shopping malls and private homes.

Indeed, in 2002, only about half of the local fire departments in the state -- 54 percent -- met the fire industry goal of arriving within 6 minutes of the first alarm at 90 percent of building fires. Across the nation, the showing was even worse, with only 35 percent of departments meeting the response time goal.

The national picture is somewhat brighter when only departments with full-time as opposed to volunteer firefighters are considered. Still, only 58 percent of such departments consistently met the standard. And that on-time performance has worsened steadily from 75 percent in 1986, when alarm times began to be reported.

Big-city fire departments, such as Boston's, are generally well staffed and respond to fires swiftly and in force. Outside the cities, it is another story. With fire departments receiving a steadily shrinking share of municipal budgets, fire stations in many communities, here and across the country, are shutting down. Fire engines often roll with only one or two firefighters on board.

-- And although fires are getting rarer -- thanks to stricter fire codes and safety education -- the workload of fire departments has risen sharply, with medical calls and every sort of household emergency being addressed by fire departments.

Even when they arrive quickly, fire departments, in Massachusetts as in the nation, commonly muster too few firefighters to put out blazes effectively and safely. Milton sometimes sends out its ladder truck with a crew of one -- the driver. Concord seems comparatively well staffed, with two men on its ladder truck, except when someone in town is having a medical emergency. The two firefighters on the ladder are also the town ambulance crew. And Boxborough, which has a persistent budget deficit, simply sold its ladder truck to the highest bidder, leaving the town dependent on its neighbors.

"Fire protection in America is a myth," said Vincent Dunn, a retired New York City deputy fire chief and author of books on fire safety, who reviewed the Globe's findings. "These two subjects are the dirty little secrets of the fire service: The response times outside the center cities are too great, and the personnel responding, inside and outside the center cities, are too few. No one wants to talk about that."

The decline in fire department performance has gone largely unexamined by state and federal officials, who have collected response times for fires since the mid-1980s without analyzing them. The Globe's investigation is apparently the first national effort to use those public records to measure the performance of this basic municipal service. The newspaper analyzed public records of 3.3 million building fires reported by 20,000 fire departments across the United States to the National Fire Incident Reporting System.

Fire departments have contributed to the problem by resisting proposals to regionalize fire response. Massachusetts has 351 cities and towns, and more than 360 fire departments -- some towns have more than one. Fire chiefs and firefighters unions have stymied efforts to save money and improve response times by combining fire departments or dispatch centers, fearing loss of turf and jobs.

But a few frustrated fire chiefs around the country are beginning to speak out.

"Since 1998, I've been trying to get a station location and response time study, and it was submarined," said Roy E. Jones III, the fire chief in Brewster, a town on Cape Cod with one fire station protecting 25 square miles. Jones thinks a second station is needed.

"Quite frankly," he said, "the people in power don't want this information out because it might mean spending more money. Life safety is not the top priority here -- saving money is. Unfortunately, we are not alone in this situation."

In Brewster in February 2003, postal worker Lynn Sullivan and her family were awakened by a fire at their home, probably caused by cigarettes. Only two firefighters were on duty, as on every night in Brewster. Two volunteers happened to live nearby and arrived within 7 minutes but could not get inside without air tanks. When a full crew arrived, they were able to revive Sullivan for a moment, but she died at the hospital of smoke inhalation.

-- "If we'd been there a minute earlier," Chief Jones said, "I'm sure she'd be alive."

'Every minute counts'

A swift response may be more critical than ever for avoiding fire tragedy.

It has always been true that a fire doubles in size roughly every minute, so long as it has oxygen, fuel, and heat. But many of today's fires burn hotter because the tight, energy-efficient construction that keeps out cold in the winter also keeps heat in during a fire. Newer roofs are collapsing faster because the prefabricated truss, the rigid framework that holds up the roof, separates easily into kindling during a fire. And modern furnishings generally burn faster.

In the 1970s, scientists at the National Institute of Standards and Technology found that after a fire breaks out, people have about 17 minutes to escape before being overcome by heat and smoke. Today, the estimate is 3 minutes.

"If you get to a fire early, you get there before flashover," said Dunn, the retired New York deputy fire chief, referring to the moment when a burning building gets so hot that walls and furniture spontaneously ignite. "And this saves lives of the occupants, and the firefighters' own lives, and property."

For these reasons, the National Fire Protection Association, or NFPA, set a 6-minute standard -- a guideline, not a law. In 2001, a 27-to-2 majority of its national panel of fire chiefs, firefighters, and others in the field set this goal for communities with full-time firefighters: 1 minute for the dispatcher handling a 911 call to alert firefighters; another minute for a full company of four firefighters to slip into their gear and get on the road; and 4 minutes to drive to the fire.

A 6-minute guideline also holds for ambulances responding to medical emergencies, based on the time before a heart attack causes brain damage.

Perfection is not expected: The NFPA recommends that each of the goals should be achieved 90 percent of the time.

The standards were opposed by the National League of Cities and many small fire departments. They argued that one benchmark could not fit every community, that the studies on flashover were insufficient, and that the cost of adding firefighters and stations would be overwhelming.

Communities across the country routinely adopt NFPA standards for electrical codes and other safety measures, but few have adopted the response-time standard. It is rare for response times to be measured by communities and reported to the public.

Still, the International Association of Fire Chiefs endorsed the standards as the minimum that fire departments should achieve.

"The key is getting water on the fire. We've got to get enough people in there quickly," said Chief Billy Goldfeder, a leading trainer of firefighters who commands a fire battalion in a suburb of Cincinnati. "It all ties in to money, what people are willing to pay for."

-- The cost of late arrival was demonstrated on a Sunday morning last September in Prairie Township, a suburb of Columbus, Ohio. The Noriegas, an extended family of Mexican immigrants, were awakened by smoke and flames in their apartment building. The closest fire engine was on another call, so it took 8 minutes for the first responders to arrive. By then flames were shooting through the roof. Four more fire departments were called, arriving 16 to 22 minutes after the original call.

"My family is dead," Antonio Noriega told reporters, after 10 relatives and friends died, including three children. Investigators said the family was the victim of an arsonist. Most of the bodies were just inside the door.

Across the nation from 1986 through 2002, more than 4,000 people died in fires in which response time was greater than 6 minutes, the Globe found. That works out to about five deaths a week. The true figure is probably higher because the US Fire Administration, which keeps the fires database, estimates that fewer than half of structure fires are reported. Reporting is voluntary. California, for example, last reported fires in 1998.

But it is clear from the data available that the probability of a death in a fire increases as the response time increases. Elaine Allen, a statistics professor at Babson College in Wellesley who examined the Globe's findings, confirmed this correlation.

"Every minute counts," Allen said.

Still, it is difficult to say precisely how many deaths would be prevented if firefighters always arrived within 6 minutes, Allen said. The circumstances of each fire are unique, and some occupants are killed by smoke or flames before anyone can dial 911. But Allen said she found that the connection between response time and the risk of a death was greater than could be explained by chance.

"If you were setting a response time standard based just on the death rates, not on what's practical for a fire department to accomplish, you'd set it at 1 minute," she said.

Property damage is also tied to time. As response times lengthen, the average property damage in a house fire steps up quickly. Using the national database, which provides estimates of fire losses, the Globe calculated these averages for property damage in house fires: when firefighters arrive in 3 minutes or less, \$27,000; at 5 minutes, \$34,000; at 7 minutes, \$41,000; at 9 minutes or longer, \$61,000.

The Globe estimated that if the 6-minute standard had been reached, about \$1 billion a year in losses from house fires nationally could have been prevented.

Colleen Fyffe knows something about such losses. When her family Christmas decorations caught on fire in January 2003 in Scituate, it took 20 minutes and three 911 calls before the fire department arrived.

-- "We called again, and they didn't come, and they didn't come," said Fyffe, who closed off the room with the blaze, slowing its spread. "We called again, and they said, 'Oh, everyone is out on another call,' and they had called Norwell and Cohasset, and they were all busy."

The Scituate fire chief, Edward J. Hurley, said that the town needs two more fire stations in addition to its current three, and that it has approved borrowing money to build them. But both sites, he said, are tied up in land-use disputes.

And there are other obstacles: money to pay firefighters to staff the stations, and the reluctance of many towns to regionalize fire service.

The Fyffes live in a fast-growing area on the west side of town; the closest station is in Cohasset, but fires in the Fyffes' area get a Scituate fire engine first. The town closed a station in 1992 on the north end of town, near the beach, to save money. Three children died in a fire near the station in 1995, but the station remains closed.

While she waited for a fire engine, Colleen Fyffe tried to put out the fire with a garden hose. When Scituate firefighters arrived, followed close behind by Norwell and Cohasset, they put out the fire easily. "Once they got here, they were as nice as could be," she said.

But \$500,000 in smoke and water damage had been done. The Fyffes had to stay out of their house for 10 months.

'Luck of the draw'

Slow-responding fire departments are found in established, wealthy suburbs: Bellevue, Wash., the fire department for Bill Gates's neighborhood, arrives within the 6-minute guideline at just 67 percent of fires. They are found in poorer cities: East St. Louis, Ill., 71 percent; Jacksonville, 64 percent. And, most commonly, they are found in fast-growing suburbs: The nine counties surrounding Atlanta have on-time rates of 71 percent or worse.

Communities commonly touted on lists of the most attractive places to live, in part because of low tax rates, also commonly have failing fire departments. The telecommuting haven of Bend, Ore., ranked in a Forbes magazine cover story as one of the best "cheap towns" in America, has an on-time rate of 18 percent.

Among Eastern Massachusetts communities with career firefighters, on-time rates ranged from a low in Westford, 53 percent, up to 100 percent in Melrose. Boston's on-time rate has consistently been above 90 percent, although it is barely at that level in some neighborhoods, particularly in Fire District 10, covering parts of West Roxbury and Readville.

Why are firefighters taking longer to get to fires? Fire chiefs say the explanation is simple: more work, fewer people.

-- Although the number of fires has declined with a greater emphasis on fire prevention, the number of calls at fire departments has doubled over the last two decades, according to the fire protection association. Many fire departments began handling ambulance work in the 1970s and '80s -- the source of most of the new calls. It's valued work, a source of revenue for the departments, but when two calls come in at once, someone must wait.

"City manager-type people have said these firefighters are just sitting around all day; we'll let 'em go on medical runs," Battalion Chief Goldfeder said. "Well, we're sitting around because you need someone when your house is on fire."

Not all the new calls are emergencies. Bats in the attic -- call the fire department. The basement is flooded -- dial 911. Somerville firefighters answered a call because a television was "buzzing," even when unplugged -- it turned out to be a vibrator in a bedside table.

And the fire department budgets are not growing to keep up, but shrinking. As a share of all municipal budgets across the country, fire spending has slipped, from 6.1 percent in fiscal 1987 to 5.7 percent in fiscal 2003, the Globe calculated from the US Census Bureau's survey of governments. Fire spending per capita, adjusted for inflation, is up 14.5 percent from fiscal 1987 to fiscal 2003, but other municipal spending is up 23.5 percent over the same period.

Since September 2001, Massachusetts has lost 800 paid firefighters by layoffs and attrition, a state legislative committee found.

And few communities in Massachusetts are adding firehouses to serve new subdivisions. Stow has no fire station for the new homes at the southern end of town. Marlborough's west side is uncovered. Fire chiefs are barely able to hold onto the resources they have: Gloucester has closed its Bay View station off and on since July. Springfield closes two when there is no one to work at them, which is most of the time. Andover closed one of four stations, Bridgewater one of two.

Volunteers can no longer fill the gap. There was an era when the self-employed grocer and the counterman at the hardware store were volunteer firefighters, available during the day to fight fires in small towns and suburbs. Now they may work at chain stores or commute to work three towns away. Still, many communities in metropolitan areas rely entirely or in part on volunteers.

"We struggle during the day to get people back to a fire," said Kenneth "Kirby" Brand, Hamilton's deputy fire chief. His volunteer department, north of Boston, has an on-time rate below 80 percent -- and falling. "We're a bedroom community. We'll get six to 10 people to a fire sometimes. At night we may get 20 or 25."

-- It shows in the response times. Service has always been slower in areas with volunteer firefighters, but it has gotten worse more quickly than in career departments. The share of volunteer departments in the United States hitting the 6-minute mark has fallen from 23.1 percent in 1986 to 14.3 percent in 2002. Although the NFPA exempts volunteer fire departments from its 6-minute standard, the Globe evaluated every fire response by the same benchmark, for two reasons: Communities choose what type of fire department to have, and a fire does not burn slower when volunteers are coming to put it out.

Among volunteer fire departments in the Boston area, the lowest on-time rate was in Boylston, at 18 percent, and the highest in Nahant, at 100 percent.

"You're playing the luck of the draw," Brand said. "Where are the people the exact second the tones go off?"

Even when a deadly fire makes clear the costs of delays and inadequate staffing, will taxpayers pay more for better fire service? Fire chiefs respond with a sigh and a single word: Ipswich.

Even before the fire at the Collum house, Ipswich town supervisors had paid for a consultant's report that confirmed what their fire chief had told them. The town had one fire station, built for horse-drawn wagons, but needed three. Taxpayers were paying about \$84 per capita per year for fire protection, below the \$117 median in Eastern Massachusetts.

After the Collum fire, the chief asked for 64 additional firefighters, a fourfold increase. The town selectmen asked voters to approve only eight of the 64, at \$756,800 a year, or an additional \$56 for every person in town. But townspeople voted against even those eight. The vote was 1,027 for and 1,388 against.

In the three years since the vote, the selectmen have not raised the issue again. There may be a vote this spring on a new fire station, but no new firefighters.

"It was more than the town was willing to bite off," said Edward B. Rauscher, the chairman of the selectmen. "As horrible as the fire was, it wasn't an everyday event, and there are horrible consequences from cutting other town services."

The fire chief, now retired, said maybe his timing was off.

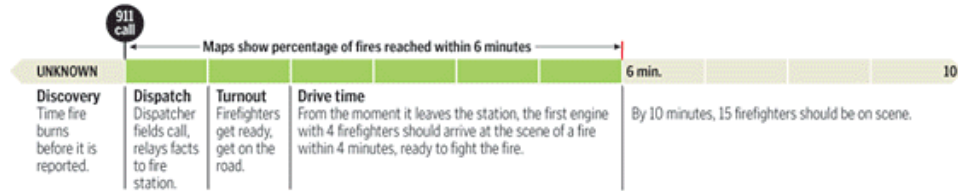
"It would have passed," Chief Henry Michaelski said, "if we'd had the vote at the funeral."

Tomorrow: the cost in firefighter lives

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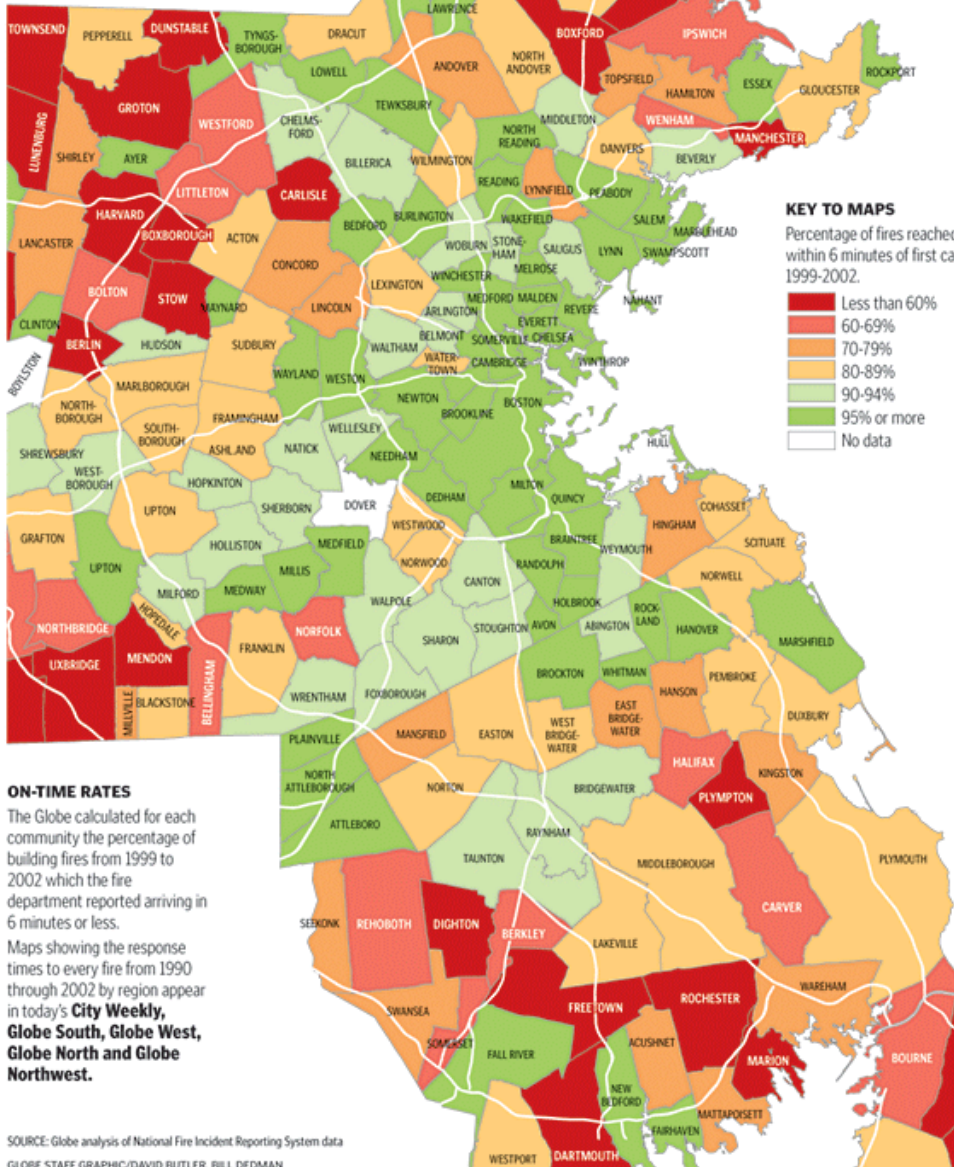
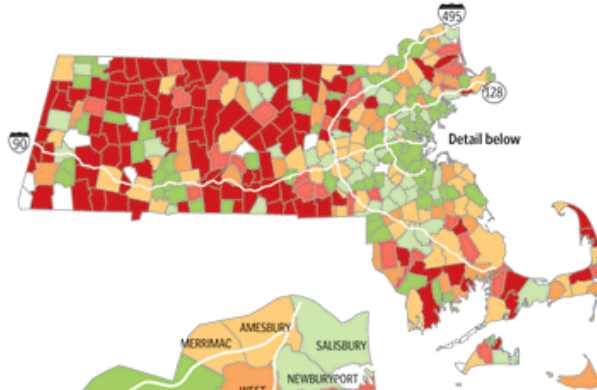
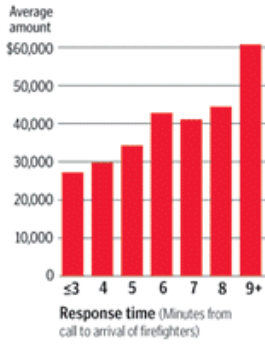
Fire department response times

The Globe used the fire response goal set by the National Fire Protection Association to calculate on-time rates.



PROPERTY DAMAGE

Average property loss in 1- and 2-family homes in the United States, 1999-2002.



ON-TIME RATES

The Globe calculated for each community the percentage of building fires from 1999 to 2002 which the fire department reported arriving in 6 minutes or less.

Maps showing the response times to every fire from 1990 through 2002 by region appear in today's **City Weekly, Globe South, Globe West, Globe North and Globe Northwest.**

SOURCE: Globe analysis of National Fire Incident Reporting System data
GLOBE STAFF GRAPHIC/DAVID BUTLER, BILL DEDMAN