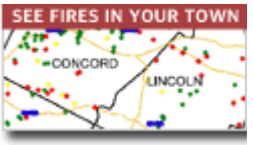
BOSTON GLOBE SPECIAL REPORT

Deadly Delays: The Decline of Fire Response



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It took 9 minutes for firefighters to arrive Jan. 3 at this house owned by Michelle DuBois and Dr. David Gambill at Stage Point in Plymouth. (Boston Globe Photo / Tom Herde)

PHOTO GALLERY: Fire stations

PART 1

Slower arrival at fires in US is costing lives

(By Bill Dedman, Globe Correspondent)

While cities and towns are closing fire stations, America's firefighters are taking longer to get to fires. This first installment of a Boston Globe investigation examines the effect on public safety.

GRAPHIC: Fire department response times

In Concord, a high price for suburban serenity

(By Bill Dedman, Globe Correspondent)

Concord -- like Carlisle, Boxford, and many affluent suburbs around Boston and other US cities -- has too few fire stations and too few firefighters to protect all of the town.

Concord fire response times, 1990-2002

WEB EXCLUSIVE

Who is watching the fire department?

(By Bill Dedman, Globe Correspondent)

Homebuyers can do their homework when choosing a community for their dream home. It's easy to check the Web for a community's crime rate, tax rate, and school test scores. But who is monitoring the performance of fire departments?

WEB EXCLUSIVE

20 questions for your fire chief

(By Bill Dedman, Globe Correspondent)

Are your community's resources adequate?

ABOUT THIS SERIES

The Boston Globe examined fire response times by looking at public records of fires reported by fire departments across the United States to a federal database, the National Fire Incident Reporting System.

- About this report
- **WEB LINKS:** Fire resources online

E-MAIL THE GLOBE

If you have questions or wish to respond to this series, send an e-mail to Bill Dedman at Dedman@Globe.com.

REPRINTS

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RANKINGS

The Globe ranked communities and fire departments in Massachusetts on these measures:

- On-time response ratings
- Department's share of municipal budget
- Per capita spending on fire protection
- Square miles per fire station

Find out for yourself by asking your fire chief these questions.

SUPPORTING DOCUMENTS

Facts on 20,000 US fire departments (1677K PDF)

- On-time response ratings for 20,000 US fire departments (2800K Excel spreadsheet)
- On-time rates for larger US fire departments

State investigative report on the Ipswich fire (424K PDF)

Chief's report on the Ipswich fire (198K PDF)

PART 2

Fewer resources, greater risk for firefighters

(By Bill Dedman, Globe Correspondent)
Fire departments are not only taking longer to get to fires, but often arrive at the scene with too few people to do the job safely. Such inadequate response increases property damage from fires and endangers occupants as well as firefighters.

A death on the border, a call for towns to work together

Nearly once a day in Massachusetts, a fire department puts out a building fire by itself although a neighboring town has a closer fire station, the Globe determined, using computer maps showing fire locations over the past decade.

- **GRAPHIC:** The death of firefighter Marty McNamara

Teamwork could save money, lives

(By Bill Dedman, Globe Correspondent)
A computer simulation by the Globe illustrates the scale of the state's deficit in fire stations and gives a glimpse of the potential cost-savings if communities worked together.

GLOBE EDITORIAL

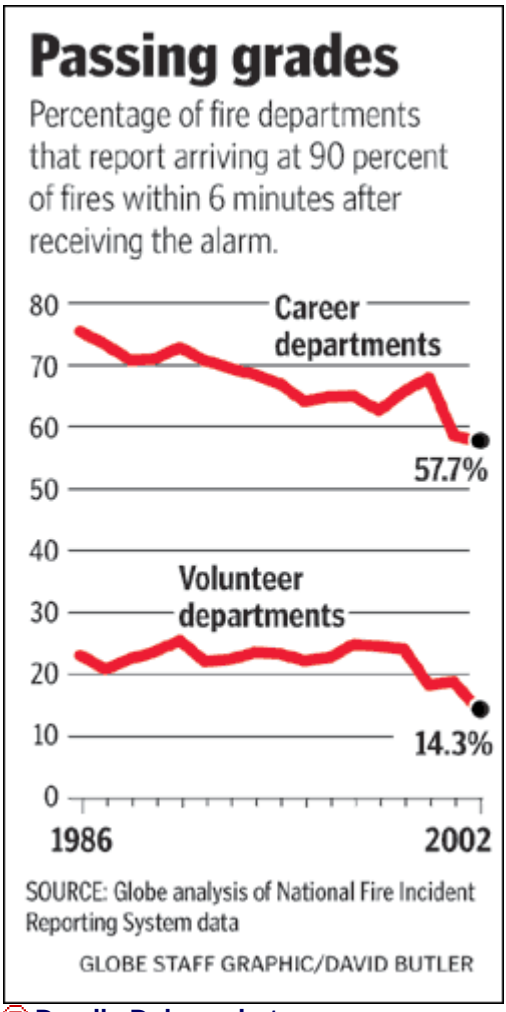
Fire alarm

The high public regard for firefighters is not always reflected in municipal budgets, especially in areas outside the big cities. Firefighters appreciate public respect. But that alone can't keep the engines running.

WEB EXCLUSIVE

Staffing, response times in fires where firefighters died

In 52 fires where firefighters died, only 18 got a full force of firefighters in the first 10 minutes, The Boston Globe found. Here are details on each fire.



Deadly Delays chat
Read the transcript of Bill Dedman's Feb. 1, 2005, chat with Boston.com users about this series.

SUPPORTING DOCUMENTS

- Staffing and response times in firefighter deaths, 1997-2004 (176K Excel spreadsheet)
- John McLaughlin's description of Lancaster fire (73K PDF)
- Federal report on the Lancaster fire (472K PDF)
- State report on the Lancaster fire (1281K PDF)

STORIES FROM THE BOSTON GLOBE'S ZONE EDITIONS

GLOBE NORTH: **Chief defends record on fires**
(By Kay Lazar, Globe Correspondent, 2/13/05)
Rowley's fire chief is on the hot seat, defending his department's performance after a selectman questioned the town's slow response times to fires.

GLOBE NORTH: **Fire aid is not always mutual**
(By Kay Lazar, Globe Correspondent, 2/6/05)
Gloucester has routinely neglected its responsibility to help neighboring communities battle blazes, records show, even six months after the regional fire chief's association sent the city an unusual letter questioning the Fire Department's commitment.

GLOBE SOUTH: **Fire times no surprise, officials say**
(By Maria Cramer, Globe Staff, 2/6/05)
They are among the richest towns south of Boston. But Hingham's Fire Department is down 11 firefighters since 1989, the station in the center of Norwell will have only one firefighter on duty during ambulance calls, and Cohasset officials doubt they can reopen two stations closed in the 1980s, even though they say the Greenbush commuter rail line, now under construction, will probably slow response times.

CITY WEEKLY: **Boston area scores well in fire response**
(By Ric Kahn, Globe Staff, 1/30/05)

Take heart, Bostonians: Your fire engines are running on time. The national gold standard for communities is that they should respond to fires within at least six minutes 90 percent of the time. Boston's departments arrive on time 97.7 percent of the time. That's a track record that many suburbs cannot match.

GLOBE NORTH: **Responding to building fires: a tale of 2 cities**
(1/28/05)
Gloucester, like many communities north of Boston, has responded to tough economic times by laying off firefighters and shutting stations. It has the slowest fire response rate from 1986-2002. Yet the region's second largest, Haverhill, has one of the best track records.
- Some towns rely heavily on part-timers (By Kay Lazar, Globe Correspondent)

GLOBE NORTHWEST: **Affluent suburbs lag behind cities in answering emergency calls**
(By Douglas Belkin, Globe Staff, 1/30/05)
In the quickly growing town of Boxborough, where million-dollar homes are popping up like mushrooms, there is just a single pair of firefighters on duty at any given time -- and they are responsible for both the ambulance and fire service. If those two men are busy, residents are going to have to settle in for a wait.

GLOBE WEST: **Racing the clock**
(By Emily Shartin, Globe Staff, 1/30/05)
When a fire breaks out, everything will be in the Berlin firehouse -- except firefighters. Volunteers will have to race to the station from their jobs or homes to jump on the trucks. And that takes time, which is precious when flames are spreading.
- Departing chief sees need for growth (By Megan Woolhouse, Globe Staff)

GLOBE SOUTH: **More homes, fewer resources leave firefighters struggling to keep up**
(By Maria Cramer, Globe Staff, 1/30/05)
Slow response times by firefighters have become increasingly common in fast growing Plymouth. But people who choose to build their dream homes far from traffic-clogged urban areas can also find themselves a long way from a fire station.
- When fire is faster than help (By Maria Cramer, Globe Staff)
- Citing snow, chief delays Manomet shift

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)
Photo gallery

Slower arrival at fires in US is costing lives

The Boston Globe

By Bill Dedman, Globe Correspondent | January 30, 2005

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."

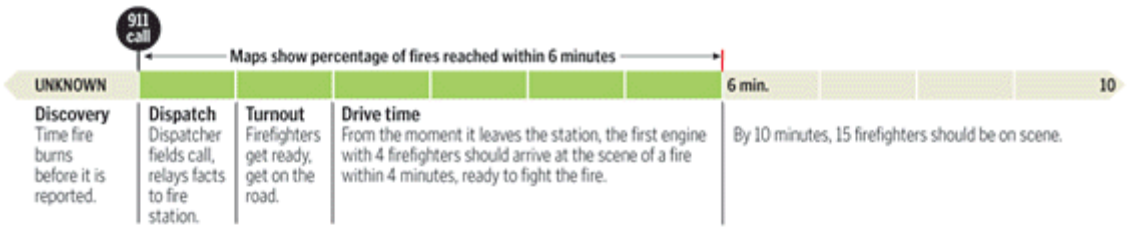
Tomorrow: the cost in firefighter lives

Bill Dedman can be reached at dedman@globe.com.

(Correction: Because of a reporting error, a Page One story on fire department response times in the Jan. 30 Sunday Globe incorrectly listed Carver among communities that have closed fire stations. Also, because of inaccurate reports filed with a federal database by the Watertown Fire Department, the department's record looked worse than it should have in a map accompanying the story. The town's fire chief says the department got to all local fires from 1996 to 2002 in six minutes or less, not 89.1 percent of the fires, as the Globe reported.)

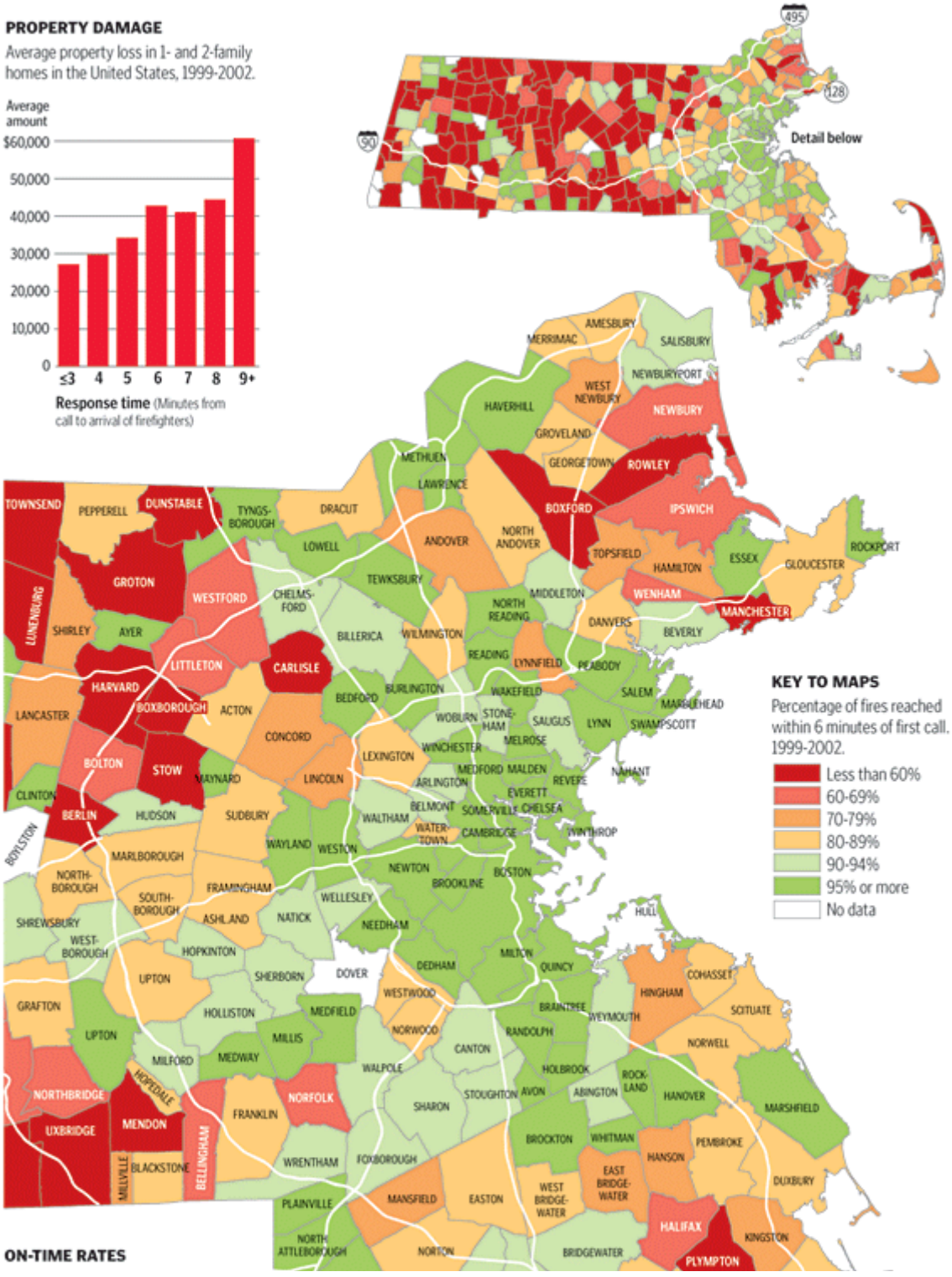
Fire department response times

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.



KEY TO MAPS

Percentage of fires reached within 6 minutes of first call. 1999-2002.

- Less than 60%
- 60-69%
- 70-79%
- 80-89%
- 90-94%
- 95% or more
- No data

ON-TIME RATES

www.boston.com/fires

SCITUATE
Response rate: 89.1%
When Colleen Fyffe's home on the west side of town caught fire in January 2003, it took 20 minutes and three 911 calls for the fire department to arrive. Fyffe -- shown with her children, Alex, James, and Annie -- says the family had to move out for 10 months, and they lost all of their daughter's baby pictures. (Globe Staff Photo / John Tlumacki)
Photo gallery

In Concord, a high price for suburban serenity

The Boston Globe

By Bill Dedman, Globe Correspondent | January 30, 2005

CONCORD -- For his family's 15,000-square-foot dream home, businessman Douglas R. Brown chose a wooded spot in the north end of Concord, not much different from when Henry David Thoreau hiked there in the 1850s.

"The remote location was an attractive issue for us," Brown recalled. "We never thought about the additional time it would take for the fire department to get there."

Seven times now, emergencies small and large have schooled the Brown family in the price of serenity. Concord -- like Carlisle, Boxford, and many affluent suburbs around Boston and other US cities -- has too few fire stations and too few firefighters to protect all of the town. The town's story is, in this respect, a disturbingly commonplace American story.

When the Browns' daughter had a seizure, the family waited 10 minutes for an ambulance. When their basement home theater burst into flames, they waited 11 minutes for a fire engine. And when a guest at their Christmas Eve party fell unconscious, 13 minutes passed before an emergency crew rolled up.

The other incidents were less serious, but in each case firefighters responded in 9 minutes or longer, well beyond the 6-minute national standard for fire and ambulance response.

The Brown family is just fine, if a little accident-prone. And they did choose to live at the northern edge of Concord, far from the nearest fire station. But a long wait for help can happen at any address in town.

The Middlesex School, in northeast Concord, waited 8 minutes for a fire engine in 2000. Concord Academy, right downtown, waited 9 minutes in 1998.

The problem is compounded because Concord's firefighters, like so many in the suburbs, do double duty on the town ambulance. The two firefighters on each shift assigned to the ladder truck also serve as the ambulance crew. It is a recipe for trouble, as the Browns found out that Christmas Eve. The fire crew was busy with a stove fire; the ladder crew had to return to the station to get the ambulance and make its way to the family home.

So far, no one in Concord has died from such delays.

"This town has a halo over it," Concord fire Captain Mark R. Cotreau said.

The Concord Fire Department has modern equipment, a new fire chief, and dedicated firefighters. But like many suburban communities, its resources are, in other ways, stuck in the 1950s. Concord has two fire stations to cover 26 square miles, just as in 1951. It has eight firefighters per shift, just as in 1956.

What has changed since the '50s is the department's workload. While Concord's population has grown by half, the number of calls handled by the fire department has grown tenfold, from about 500 to more than 5,000 a year. Most of the increase is for medical calls. And back in the '50s, the fire department had dozens of volunteers; now it is down to one.

Another challenge is the roads. On many calls in Concord, firefighters must take a detour. The direct route to the Browns' house goes across Flint's Bridge. Built in 1877, the bridge can safely carry only 5 tons. An ambulance weighs 8 tons, a fire engine 18 tons, a ladder truck 22 tons.

Any emergency in northeast Concord takes firefighters on a winding detour through Minute Man National Historical Park, where they compete with tour buses. Unless, of course, there is absolutely no time for a detour.

"If you tell me that a kid is choking up on Monument Street, I'm going across that bridge," Concord firefighter Brian Lefebvre said.

Concord has three bridges that will not bear the weight of a ladder truck, but this is hardly a one-town problem. Across the state there are 458 such bridges, excluding those on the narrowest rural roads, the Globe calculated from federal records.

The fire department's share of the municipal budget has slipped in Concord, as in most communities in the state and in the nation generally. Meanwhile, Concord firefighters arrived at the scene within 6 minutes at 76 percent of building fires from 1986 through 2002, well below the 90 percent guideline set by the National Fire Protection Association. That ranks Concord 144th among 186 communities in Eastern Massachusetts in on-time response, but ahead of some suburban peers, such as Groton, Stow, Hopkinton, Boxborough, and Harvard.

The problem is made more difficult because each community in the state handles fire service largely on its own. There is a Concord-Carlisle Regional High School, but each town has its own, underfunded fire department.

"It's a question of what level of risk the community is ready to accept," said Concord's new fire chief, Kenneth Willette. "People don't know about the fire department. I need parks because my kid plays soccer. I need roads because I drive to work. I need the schools. Do I need the fire department?"

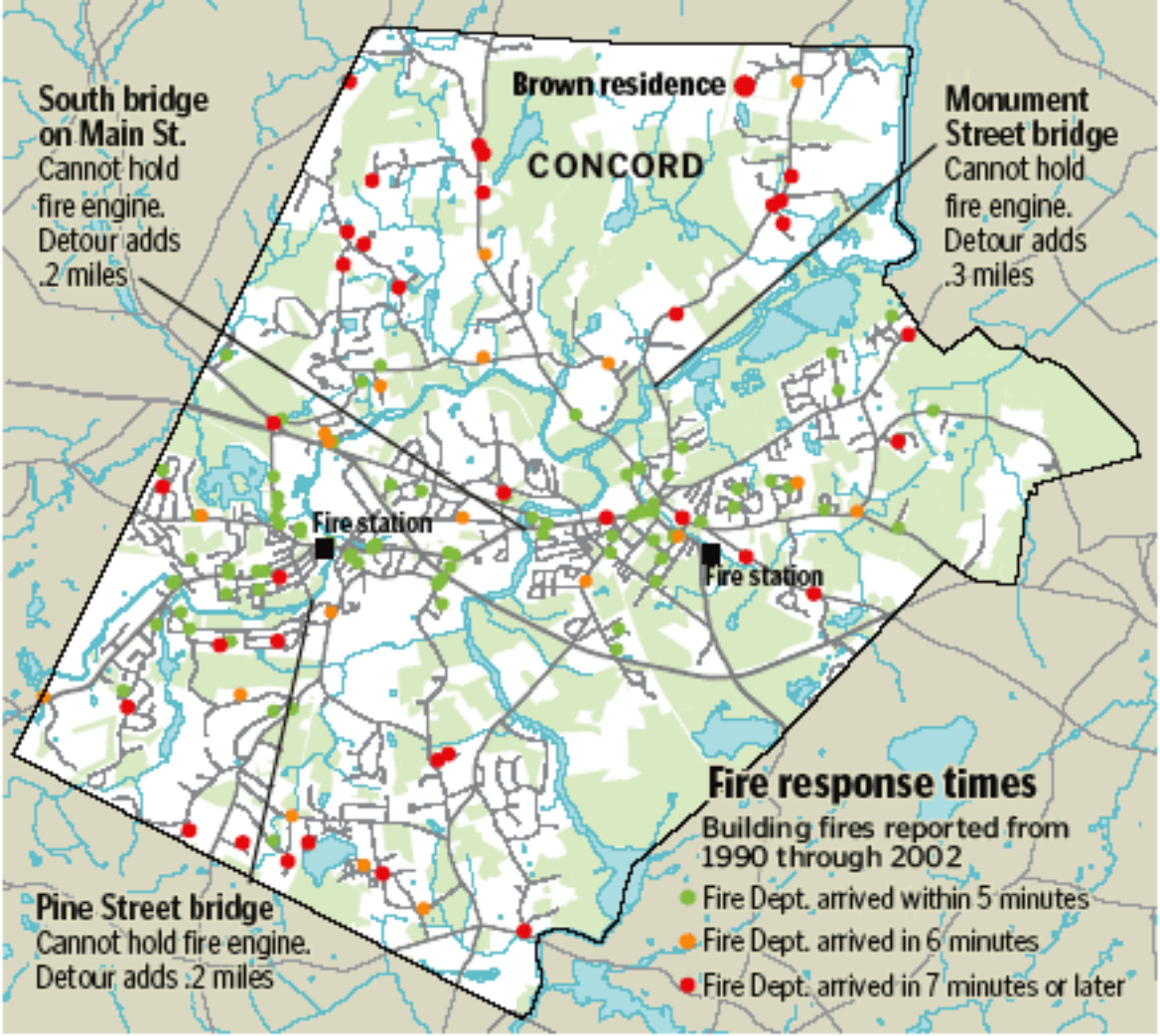
Town Manager Christopher Whelan said he was surprised by the substandard on-time rate. "I've been here 11 years, and no one has identified response times as a problem," Whelan said. "We've talked often about staffing."

Not even the town's current staffing plan of eight firefighters per shift is assured; the fire department runs short with only seven firefighters for several months each year when the budget runs low. And, barely able to staff its current firehouses, Concord has not studied how many fire stations it needs. Even if taxpayers were more aware of the long waits, Whelan said, public safety might not be the priority. Incomes in Concord are high, but with home values soaring, so are taxes.

"People love the fire department," he said. "But does that translate into dollars? There is a strong sense that taxes in Concord have gone up enough."

The firefighters do not complain about the lack of stations and staff. Still, it is hard not to be aware of the problem when two guys are alone at a fire, pumping 250 gallons a minute from a pumper that holds only 750 gallons, wondering when someone else is coming to lay hoses to a fire hydrant, to search for people inside, to put up ladders, and to watch their backs.

"They don't hire us to go to a fire and stand in the doorway," Captain Cotreau said. "We're going to get it done. Or we're going to try. On the other hand, we're not in the suicide business." ■



SOURCE: Town of Concord; Globe analysis of National Fire Incident Reporting System data

GLOBE STAFF MAP/DAVID BUTLER

WEB EXCLUSIVE

The Boston Globe

Who is watching the fire department?

By Bill Dedman, Globe Correspondent | January 30, 2005

Homebuyers can do their homework when choosing a community for their dream home. It's easy to check the Web for a community's crime rate, tax rate, and school test scores.

But who is monitoring the performance of fire departments?

At the local level, few fire chiefs publicize their response times to fires or medical calls. When they do report times, they usually give an average, but the meaningful measure, specialists say, is the percentage of fires that get a response within the community's target, whether that is four minutes or five or six.

At the state level, fire marshals get incident reports but don't report on-time rates. In Massachusetts, the data collection is one of the best, because state law requires fire departments to report fires. The annual report from the fire marshal, Stephen D. Coan, gives 200 pages of details on fire patterns, but nothing on response times. Coan said in an interview that state law gives him no authority to rate departments, and it's up to communities to decide how much fire protection they desire.

In Washington, the response times are kept in a database by the US Fire Administration, which has been collecting them for 20 years without analyzing them. USFA officials said that they leave that to the states and fire departments.

Congress hasn't required every fire departments to report its fires. The system is voluntary. The law does require fire departments that receive federal grants to participate in the reporting system, but the Fire Administration said they're giving leeway of several years before enforcing that requirement.

At the nonprofit organization that set the response-time standard, the National Fire Protection Association, in Quincy, no studies have been done on how many departments meet that standard.

The insurance industry, which sets rates for homeowner's insurance premiums, doesn't take into account response times. The industry's rating company, ISO, collects a broad range of information about the fire department's capacity -- down to the type of fittings on the fire hoses -- but it doesn't use response time data. It does look at the number of fire stations, and at fire staffing, which affect response times. ISO does give a lower rating to areas that are more than 1,000 feet from a fire hydrant, and gives the lowest rating to areas more than five miles from a fire station, but otherwise every neighborhood in a community gets the same rating. ISO declined to make public the ISO scores for every community, although communities are free to publish their score. The newspaper obtained the scores from the state Division of Insurance, and those scores are being published today for the first time, in community report cards at Boston.com/fires.

And the news media play a role. News articles about fatal fires rarely say how long it took the fire department to arrive. In cases with slow responses by fire departments, news reports commonly refer to firefighters encountering a "fast-moving fire," as though a fire with a 10-minute head start could be anything else. ■

WEB EXCLUSIVE

The Boston Globe

20 questions for your fire chief

By Bill Dedman, Globe Correspondent | January 30, 2005

These questions were distilled by The Boston Globe from the 300-page Fire & Emergency Service Self-Assessment Manual, a publication of the Commission on Fire Accreditation International (cfainet.org).

1. What is your personal expectation of how many minutes will pass from the time I call to report an emergency to the time that a fire engine or ambulance arrives?

2. Does the Fire Department have a response time goal? How close is it to your expectations? What factors went into setting the goal, such as fire loss data, areas of greater fire hazard, and water supply? Has this goal been adopted by the community's elected leaders?

3. What percentage of the time does the fire department meet that goal right now?

4. Are there areas where there are frequently longer response times? Which parts of the community are not within 4 minutes drive time of a fire station? What about within 5 minutes? Does the Fire Department use GIS (computer mapping) to evaluate current and future station locations?

5. How long does it take for dispatchers to process calls? Does the fire department run the dispatch center or contract with someone else to run it? Can time or money be saved by cooperating with neighboring communities on a joint dispatch center?

6. How long does it take for firefighters to get on the road once they are notified they have an alarm?

7. What statistical reports does the fire agency produce on its response time performance and the extent of local fire losses? How do you make these reports available to the public?

8. Do you keep the data in terms of whole minutes only or does your system record times down to the second? Do these reports show performance by station or company?

9. Do you report all fires to the National Fire Incident Reporting System?

10. What is the department's goal for staffing for a fire response? ? How are the stations staffed? by volunteers, by part-time personnel or full-time personnel?

11. What percentage of the time do they meet that staff goal? Does each engine and ladder company have four firefighters? Can the department muster between 12 to 15 firefighters at a fire within 10 minutes of an alarm?

12. What role do simultaneous calls play in your response times and staffing? If there's a medical call, how many firefighters are available for a fire alarm, and vice versa?

13. How many calls did the department handle 10 years ago, and how many last year? What percentage of growth has occurred? How has staffing changed in that time?

14. If you rely on volunteer or paid-on-call firefighters, how many respond to an alarm for a mid-day house fire? For a fire at night? How many live or work outside of town? How many volunteers do we have, compared with 10 years ago?

15. If the nearest fire station to my home is in the next community, which fire department is dispatched first? Is the

response from another department "mutual aid" (slower) or "automatic aid" (faster)? How much could you improve service by cooperating with neighboring communities on fire stations and staff?

16. Would transportation improvements speed response? Are there speed bumps that should be eliminated, or road network changes that could be made? Would devices to help you control traffic signals speed up response? Do we have any bridges that can't handle the weight of an ambulance or fire truck?

17. What level of service does the department provide for emergency medical service? Is it basic life support (BLS) or advanced life support (ALS)?

18. What level of service does the department provide for fire prevention, public education, fire investigation, technical rescue, hazardous materials, and disaster planning? How does the department measure performance in these areas?

19. Are your physical resources adequate, including fire stations, training facilities, fire apparatus, and personal protective safety equipment to meet the level of risk in this community? Do you have adequate training and personnel safety programs? What's the plan to pay for repair or replacement of fire apparatus?

20. What is the community's ISO rating for fire protection? for building code enforcement? Have these ratings changed? If we spent money to improve the fire department, how much of that money would come back to taxpayers through lower insurance premiums? ■

About The Boston Globe investigation of fire department response times

This page gives details of The Boston Globe's investigation of fire department response times across the nation, as well as a description of the sources of the public records and the people involved in the project.

- The home page for the investigation is www.boston.com/fires.
- Report cards for individual Massachusetts fire departments can be found by using the drop-down menu at the top of this and every page, or by browsing the complete list.
- An interactive map showing locations and details of more than 78,000 building fires in Massachusetts from 1990-2002 can be found here, as well as by clicking the red "See interactive version of this map" button on each fire department page.

Please send any questions to Bill Dedman, at Dedman@Globe.com.

About the data

The Globe studied building fires reported from 1986 through 2002 across the US, and mapped those for 1990 through 2002 in Massachusetts. Fire departments report the fires to a database called the National Fire Incident Reporting System (NFIRS), which is maintained by the US Fire Administration.

To focus only on true emergencies, the Globe included only fires meeting certain criteria: only building fires that a fire department reported it extinguished, and only fires in the department's territory. That left 3.3 million building fires, reported by 20,000 fire departments.

Statistics Professor Elaine Allen of Babson College in Wellesley looked for the Globe at the question of whether death rates in fires was related to response time, and she found a statistically significant increase in the percentage of fires with a fatality, as response time increased. Her regression analysis controlled for the time of day, day of the week, property loss, whether the fire department was volunteer or full-time, and whether the fire department needed aid from another fire department. Fire deaths are many -- about 4,000 a year in the US -- but they are rare as a percentage of fires, making any statistical analysis of deaths somewhat tentative. Still, Prof. Allen found that as the response time increases by one minute, the probability of a death increases by half a percent. If fires are broken down into two groups -- response time below 8 minutes, or longer -- the increase of probability of a fatality is 4.1 percent in the slower-response fires. The biggest missing variable in such an analysis is the time that

elapsed before anyone called the fire department.

Not every fire could be mapped, because of incomplete addresses reported by fire departments -- "behind Fred's" being the most inscrutable -- but the online maps show 89 percent of the building fires studied (78,502 out of 87,750 fires in Massachusetts).

Response times shown here are the elapsed time from the fire department's receipt of the alarm to the arrival at the fire. That response time therefore includes time for a dispatcher to handle the call and alert firefighters, turnout time for firefighters to get en route, and travel time. The National Fire Protection Association's national panel of fire chiefs, firefighters and technical specialists has adopted a standard urging communities with full-time fire departments to adopt a standard of 1 minute for dispatch time, 1 minute for response time, and 4 minutes for drive time. The federal database does not capture each of these times: just the receipt of the alarm and the arrival. The Globe judged every fire by this 6-minute standard. All times were rounded off to the nearest minute in the database.

The NFIRS database is voluntary in most states, so from year to year a different mix of fire departments report fires. This raises a question whether the decline in response times could be caused by a change in fire departments reporting fires -- for example, if Alaska did not report, but then started to report, the long distances in that state could drag down the national picture. To check this possibility, the Globe looked separately at volunteer and full-time departments. Using information from a US Fire Administration census of fire departments, the Globe put departments in five categories, based on the number of full-time and volunteer firefighters: entirely full-time, mostly full-time, mostly volunteer, entirely volunteer, or unknown, because they did not respond to the census. Both volunteer and career fire departments showed a sharp decline in the share of departments meeting an on-time standard of responding to 90 percent of fires within 6 minutes of receiving the alarm. In addition, the newspaper looked at response times only for fire departments that reported fires every year -- the equivalent of a "same-store sales" calculation in retail sales reports. Those departments also showed a downward trend in on-time performance.

Because this is apparently the first time that these public records have been used to study response times -- although state and federal officials have collected the times since the mid-1980s -- data quality issues have not received much scrutiny. Fire departments may vary in how scrupulously they record times. A fire crew could forget to tell a dispatcher that it arrived, so a later crew's arrival would be marked as the arrival time. And state and federal custodians of these records have apparently not performed the checks for data integrity that are common in business information management. For example, fire departments in Dallas, Houston and most other cities in Texas have reported perfection for more than a decade, arriving at fires at the exact moment they were dispatched. (State officials said they have no magic carpets for fire departments in Texas -- it must be a computer error in reporting times from computer-aided dispatch systems.) Other fire departments reported arriving before the alarm. To weed out such faulty times, the Globe excluded any fires with response times of 0 minutes, or 30 minutes or longer.

There is one more complexity in judging the response times. The federal incident reports ask when the fire department received the alarm. Because at many departments the first person to receive the alarm is a fire department dispatcher, the Globe used a 6-minute standard: one minute for dispatch time (from NFPA standard 1221), one minute for turnout time (from standard 1710), and four minutes for drive time (also from 1710). But some departments have told the Globe that they report as the alarm time a later time: when the fire department's dispatcher alerted firefighters. Those departments could be judged by a 5-minute standard, because they start the clock after the dispatching is done. But there is no way to know how many departments fill out the form in this way, so the Globe judged all departments by six minutes. This gives an advantage to departments such as the Boston Fire Department, which said it reports the later time; Boston would pass in either case: it gets to 90 percent of building fires within 5 minutes. To match up the incident reports perfectly with the NFPA standards, the NFIRS database would need to collect more detailed times on each step of the process from 911 call to arrival of each unit. Note that the public NFIRS database does not tell how many

firefighters were in that first response; in a volunteer department it could be a single firefighter.

Fire station locations on the maps are the best available current information. The Globe started with an old list of station locations from the state fire marshal, and telephoned and faxed every fire department in the state for updates. Not every department provided information. If you know of a change in a station location, please let us know. Many fire stations on the map are unstaffed.

A file on the main page of Boston.com/fires has reports for 20,000 fire departments in the US. Not every state is included -- few California fire departments, for example, participate. For a more complete spreadsheet file, with information on fires in each time period, send an e-mail to Bill Dedman, at Dedman@Globe.com.

Credits

Data analysis, mapping and reporting was done by Bill Dedman for the Boston Globe. The project was directed and edited by Mark Morrow, deputy managing editor/projects. The articles were copy edited by Lydia Rebac, Daniel Coleman and Christine Morris. David Butler and Reggie Myers created the graphics and maps. Pages were designed by Dan Zedek and David Schutz. John Tlumacki was the principal photographer. Photos were edited by Paula Nelson, Stephen Haines and Leanne Burden Seidel. Eric Bauer and Joel "Eddie" Medina of Boston.com designed the online presentation and fire department report cards. Many members of the Globe's regional staff contributed, including David Beard, Doug Belkin, Thomasine Berg, Thomas Coakley, Maria Cramer, Kerry Drohan, Martin Finucane, Dean Inouye, Ric Kahn, Kay Lazar, Jennifer Peter, Mark Pothier, Emily Shartin and Kim Tan. The deputy managing editor/Sunday is Ellen Clegg.

The public records for this report were provided by the US Fire Administration from its National Fire Incident Reporting System. Gayle Kelch and Stanford Stewart of the USFA staff were helpful in understanding the data. Additional records came from the Massachusetts Department of Fire Services, where Fire Marshal Stephen D. Coan, Jennifer Mieth and Derryl Dion helped explain the records.

Richard Mullins helped solve several technical issues with the federal database.

Globe correspondents Todd Morrison and Martha Bartle made hundreds of telephone calls to fire departments to pin down station locations and details of fatal fires.

Vincent Dunn, a former deputy fire chief in New York City and author of several books on firefighter safety, was generous in advising the Globe and reviewing its findings.

Maps of each community in Massachusetts were created using ArcView, from ESRI. The fires were geocoded, or placed on the map, using MapShop for Media, a service of ESRI. Thanks to Kris Goodfellow of ESRI for her help. Additional data analysis, looking at road distances from fire stations, used ESRI's Network Analyst and street information from Tele Atlas. The street information shown on the online maps, however, came from the US Census Bureau.

Then the interactive maps at Boston.com/fires were created using BeyondGeo, a service of Blue Marble Geographics. Sam Knight of Blue Marble provided technical help.

Dr. Bill Huber of Quantitative Decisions helped with several steps of the mapping and spatial analysis.

Locations for schools, hospitals and geographic features were provided by MassGIS, the state Office of Geographic and Environmental Information, within the Massachusetts Executive Office of Environmental Affairs. Thanks to Michael Trust of that office for help with the data.

Other data came from the US Census Bureau's survey of local government finances, the Massachusetts Department of Revenue, the Federal Communications Commission, the National Fire Protection Association, the Commission on Fire Accreditation International, and the National Institute of Standards and Technology.

LANCASTER
Response rate: 81.1%
Lancaster firefighter Steven Dimeco (left) and Captain Andrew Mortimer at the site where Martin H. McNamara was missing. (2003 Photo / Scott LaPrade)
Photo gallery

Fewer resources, greater risk for firefighters

The Boston Globe

By Bill Dedman, Globe Correspondent | January 31, 2005

Second of two parts

LANCASTER -- After the townspeople of Lancaster voted last fall not to provide a posthumous pension for volunteer firefighter Martin H. McNamara, the spotlight fell on the plight of his survivors and how unfair it all seemed.

Much less attention has been paid to how McNamara died and to the risks that firefighters in understaffed suburban and small town fire departments face every day.

The official cause of his death was smoke inhalation, but investigative reports from state and federal officials point to a deeper cause: This firefighter, like so many others, was a victim, in large measure, of municipal neglect.

When residents of a wood-frame apartment building reported smelling smoke at 3 a.m., Lancaster's volunteers went for the fire engine. It didn't start -- not a new problem. Six minutes passed before a call went out to the next town for help.

McNamara was among the first Lancaster volunteers on the scene. He waited for help, then carried a hose line into a smoky basement with strangers from another department. For water they had to go to the so-called "sacred hydrant," the only one in town they were sure would work.

Then came the fatal mistake: When firefighters set up a fan to blow out hot smoke and gases, they inadvertantly fueled the fire, forcing it right onto McNamara. Mayday calls went unheard because radios from different towns used different frequencies. Two hours passed before his body was pulled from the flooded basement.

It was a night of extraordinary misfortune, but it disclosed some all-too-ordinary failings in fire protection. Lancaster is like many suburban towns, here and across the country, where fire departments are not only taking longer to get to fires, but often arrive at the scene with too few people to do the job safely.

Such inadequate response increases property damage from fires, and the risks to the occupants of burning buildings. It also endangers the men and women who fight the fires.

In fact, most firefighters who die fighting a fire were working in substandard conditions, arriving too late with too few people, the Globe found when it examined federal records of fatal fires across the country. And, like McNamara, most of those who died were going into buildings with no one inside to save.

The newspaper looked at federal investigative reports of 52 fires that killed 80 firefighters between 1997 and 2004. Each of the firefighters died actually fighting a building fire, not from heart attacks or motor vehicle accidents rushing to a fire.

In only 35 of the 52 fires could the department get even one firefighter to the scene within 6 minutes.

In only 27 of the fires could four firefighters muster within 6 minutes, the minimum attack force recommended by the National Fire Protection Association.

And in only 18 of the fires did a full force of 15 firefighters arrive within 10 minutes, the manpower standard for safe and effective work at a basic building fire.

Facing a lack of resources, some fire chiefs are starting to say the unthinkable: If they cannot get there soon enough, with enough people to do the job safely, maybe they should stop sending firefighters into burning buildings.

"We're a can-do organization. We give it the old college try," said Chief Ronald J. Siarnicki, former chief in Prince George's County, Md., who keeps count of line-of-duty deaths as executive director of the National Fallen Firefighters Foundation. "But maybe we need to stop accepting a five-person crew to cover an entire town. Maybe we need to say, 'We don't have the resources to do this job.' We're losing firefighters, and there are so many near misses."

While the number of fires in America has declined sharply, firefighter deaths are holding steady at about 100 a year -- not counting Sept. 11, 2001. More than half die from heart attacks and motor vehicle accidents. The building fires studied occurred in a mix of volunteer and career departments, from Memphis and New York City to Scenic Loop, Texas.

There is no way to be certain that understaffing or slow response was the principal cause of any firefighter's death. Each incident is unique, each with its own fatal mistake or just bad luck. So instead of causes, investigators talk in terms of contributing factors, of heightened risks.

Delays and short staffing add to the risk, said Vincent Dunn, a retired New York City deputy fire chief and author on fire safety. Dunn, an outside reviewer of the federal investigative reports, examined the Globe's findings.

An exploding propane tank, a falling garage door, a collapsing floor, a sudden flashover as the heat builds -- hazards mount, Dunn said, as minutes pass.

"The more firefighters you have, the faster you can put out the fire," he said. "Chances of a firefighter's death increase the longer a fire burns."

Fewer firefighters, more duties

A first alarm for a house fire in Boston summons 25 firefighters: three engine companies, two ladder trucks, a rescue company, and a district chief. If the first responders declare a "working fire," 12 more firefighters are on the way. That's 37 firefighters for a one-alarm fire.

Between that level of staffing in Boston, and the limited volunteer force in a small town like Lancaster, rest the mostly prosperous suburbs, which pay for full-time firefighters but rarely enough of them. Safety standards call for a minimum of four firefighters on a fire engine or ladder truck, but some suburban fire chiefs say it is common for them to run short with three, two, even one.

The reason is simple: Even as the population has grown and fire departments have taken on additional duties such as ambulance calls, the overall number of firefighters has declined in the state. The firefighters union estimates that Massachusetts has lost about 1,000 out of 13,000 firefighters since 1981, when the state's Proposition 2Â½ took effect, limiting property tax increases. Nationally, the number of full-time firefighters is essentially unchanged, though the volume

of emergency calls has doubled.

"Station closed. For emergencies call 911," reads a sign at one of Bridgewater's two fire stations. There are quite a few others like it in the region. In Milton, meanwhile, on Boston's southern border, there is sometimes only one man to operate a ladder truck.

"With one man, it becomes a transportation vehicle, not a firefighting vehicle," said Deputy Fire Chief John Foley in Milton. "We don't have a fully staffed ladder company. A full staff would be four. We have one man. I don't think we're alone in that deficiency."

That's when the truck is running at all. Milton's front-line ladder truck, a 1967 relic, is out with a failed transmission. For now, Milton is borrowing a truck from Boston.

To field a full force, fire departments in the suburbs must rely on their neighbors. Fewer and fewer departments are able to put out their own fires, records indicate. In volunteer and career departments across the nation, the share of fires resulting in calls for assistance more than doubled from 1986 to 2002, the latest year on record, the Globe found. In volunteer departments, the need for outside help rose from 18.5 percent in 1986 to 38 percent in 2002. The figure also doubled in career fire departments, from 4.9 percent to 10.5 percent.

That interdependence could be seen as a sign of healthy cooperation, except that more than two-thirds of the help was reported as "mutual aid," the spur-of-the-moment help that is usually called in only after the first fire engine has arrived at the fire.

Only 28 percent of the time was the help "automatic aid," in which both departments respond immediately to the first alarm.

"Mutual aid means that you get there, you decide you need more help, and you call another town," explained Will Maker, acting fire chief in Ipswich, north of Boston.

Why does it take 15 people to fight a simple fire? Because, the national standards say, these roles need to be filled to ensure safety: a scene commander, a water pump operator, two firefighters on each of two hose lines, a support person to help lay each hose, two people to search for survivors, two people to cut a hole in the roof or break windows to let out the deadly smoke, a person to operate the aerial ladder, and two people standing by to rescue any trapped firefighters.

"Any idiot can see that the more people you have, the more tasks you can accomplish," said Battalion Chief Billy Goldfeder, who serves in a department in a suburb of Cincinnati and keeps track of firefighter injuries and near misses on his website, FirefighterCloseCalls.com. "We've got to get water on the fire to cool it. We've got to ventilate to get gases out. We've got to do search and rescue. Which one of these tasks would you like us not to perform?

"We'll trim one more firefighter, we'll close this station, and over time it ends up with tragic results. Look at Keokuk."

That's Keokuk, Iowa, which lost three firefighters and the three children they were trying to save. When the town's four available firefighters showed up at a house fire in 1999, a woman was out front, covered in soot and yelling, "My babies are inside." Apparently the plastic trays from the twins' high chairs were left on the stove, and the 4-year-old turned on a burner.

Even in that situation, despite their instinct to save lives, firefighters should not have gone into that house, said their chief, Mark Wessel. The three were killed instantly by a fire flashover. The children were probably already dead.

"I'll never accept the deaths of the men as acceptable, even though there were three children in there," Wessel said. "Did they do what any red-blooded American firefighter would do? Yes, they did."

His department has the same staffing today. "To the people in the town, I'm not sure it sunk in why it happened," he said. "I think to the layperson, it was just a matter of bad luck, bad timing."

The lesson he learned that day, Wessel said, is "if you have inadequate resources, what you need to do is slow down your operation. We should have focused more on the hose, less on the mother screaming. Four firefighters is not enough,

not the way we did it. . . . I've learned that we can't do what those in the big cities do."

When the Globe reviewed the 52 building fires in which firefighters died, this also stood out: the needlessness of the loss. In only 14 of the fires was there even a suspicion that someone might be inside. In all the rest, firefighters were let into a locked building by the owner or were told by occupants or first responders that the building was empty. In only six of the 52 fires was there actually anyone in the building.

The list of firefighters who died in unoccupied buildings includes men like Los Angeles firefighter Joseph Dupee, a father of one, who was fighting a 1998 fire at Pacific Bird and Supply, a pet food factory.

And fire Captain Ralph Stott Jr., a father of two, who died in 2002 while battling a blaze at Russell's Garage and Body Shop in Terre Haute, Ind.

And firefighter Steve Fierro, whose children were 16 and 12 when he died last year in Carthage, Mo., while trying to save Bronc Buster's Bar Restaurant and Lounge.

A department in disarray
Before the fire that killed Marty McNamara, the Lancaster Fire Department was in disarray.

Taxpayers paid about $19 per capita per year for fire protection, one-sixth of the typical budget for towns in Eastern Massachusetts. There was no full-time chief. Half the volunteers lived out of town. And demoralized firefighters had "failed to adequately respond to a number of incidents," a consultant for the town warned in September 2003, just two months before the blaze.

Still, in many ways the job hazards faced by McNamara were typical of those facing suburban and small-town firefighters every day: heavy reliance on aid from other departments, outdated equipment, insufficient training, manpower, and backup.

Only lazy smoke was showing when firefighters arrived at the old farmhouse, which had been converted into an apartment building. They were told immediately that everyone was out safely. McNamara arrived in 6 minutes, but only when the Clinton fire engine arrived 2 minutes later could he join them and enter the basement with a hose line.

"It didn't look like a big deal," John McLaughlin, the deputy fire chief of the career department in Clinton, told state investigators.

But it was -- the fire was lurking in the basement's suspended ceiling. Before they went into the building, Lancaster and Clinton firefighters had to trade gear. McNamara borrowed an air tank and mask from Clinton firefighters. The Clinton deputy borrowed a Lancaster radio so that he could talk with the scene commander.

McNamara was a 31-year-old call firefighter, paid only by the job. He had basic training as a Level 1 firefighter, and had taken many additional classes, but lacked the Level 2 certification that many full-time departments require.

He was at the nozzle of the hose line in the basement with Deputy Chief McLaughlin when the attempt by firefighters outside to vent the fire forced it instead across the basement, cutting off their exit.

"It basically got totally dark down there," McLaughlin told state investigators. "Someone grabbed me as they were going by and pulled me up, but I fell back down again. . . . I took the regulator off my face piece and put my face to the ground to get air. I was crawling and trying to find the stairs. After I called the Mayday. . . . someone [reached] down and gave me a yank." Only when he woke up in the hospital did he learn the name of the firefighter who had been with him on the hose line.

No one heard a Mayday call from the basement -- each of the five fire departments at this fire had its own dispatchers, and no joint radio frequency.

When McNamara was lost in the basement, no fresh team of firefighters was standing by to hunt for him. An arriving crew was drafted, and after three tries they were able to retrieve his body.

Across the nation, firefighters face similar circumstances every day.

Equipment shortages: Nationwide, only two-thirds of firefighters are equipped with a self-contained breathing apparatus, and only a quarter of fire departments can communicate by radio with all the departments they work with, a survey by the National Fire Protection Association and US Fire Administration found in 2003.

Missed communications: If there had been a regional dispatch center, investigators said, dispatchers could have relayed missed messages between departments. This is a particular problem in Massachusetts, which has 267 dispatch centers answering calls to 911 and handling emergency traffic, according to the latest Federal Communications Commission records. Maryland, with nearly as large a population, has 25.

Risky tactics: Small-town departments are increasingly undertaking aggressive interior assaults on fires. ''Some of these smaller fire departments do not have the training, equipment, and backup personnel to safely accomplish these dangerous tactics,'' warned a 1998 report by the National Institute for Occupational Safety and Health.

Insufficient training: Massachusetts, like many states, has no state requirements for firefighter training. Training for firefighters is free at the state academy, but few fire departments have a budget to pay for training exercises with the neighboring departments they rely on for help.

No backup: After the Worcester fire that killed six firefighters in 1999, federal investigators warned of the need to have a rested crew standing by with safety equipment. But fire chiefs in the Boston suburbs say such a team is usually assembled only after the fire is nearly out.

Marty McNamara and his wife had two daughters, Molli, now 6, and Elizabeth, 3. Just five days after the fire, Claire McNamara gave birth to a third daughter, whom she named Marty.

A year after the fire, Lancaster's voters drew national attention when they rejected by 16 votes a one-time tax increase of $650,000 to fund a pension for the family. The cost would have been about $260 for the average family's tax bill. (The family did receive about $400,000 in accidental death benefits from local, state, and federal sources, and an undisclosed amount of charitable donations from townspeople and others.) Voters will face another ballot next Monday to decide whether the family should at least be eligible for health insurance at half price through the town's plan.

On Beacon Hill, a legislative committee is working on a bill to require death benefits for volunteer and call firefighters, including the $650,000 for the McNamaras.

But there is no legislative effort to require working radios or air tanks for firefighters, or training, or sufficient fire stations, or minimum staffing.

''It's up to each community,'' said the state fire marshal, Stephen D. Coan, ''to decide what level of fire protection it's willing to pay for.''

Lancaster's elected leaders have increased the fire department budget by nearly 50 percent since the fire, and a new fire engine has been ordered. The first full-time chief has been hired, and attention is being paid to the dispatch system, equipment maintenance, and training.

''Tragically, we've learned what's needed,'' said Joanne Foster, chairwoman of the board of selectmen. ''If we could look back and change things, anyone on our board or in our community would do that. We realize that resources are needed, and resources have become available.''

Still, the town has no full-time company of firefighters, no new radios, and no money to fix all the fire hydrants, although the bad ones will be color-coded as a warning.

''Some of the hydrants barely have enough water to take a shower, much less to put out a fire,'' said the new chief, John Fleck. ''The people on those streets are living with a false sense of security.''

Globe correspondents Todd Morrison and Martha Bartle contributed to this report. Bill Dedman can be reached at dedman@globe.com.

The death of firefighter Martin McNamara

Tactical mistakes, equipment problems, and lack of planning and staff contributed to the Lancaster firefighter's death in November 2003. These are problems in many volunteer and some career departments. In two-thirds of the fires where firefighters died nationwide, 1997 to 2004, too few arrived within 10 minutes to meet safety standards.

THE FIRE

DISCOVERY A houseguest at 76 Mill St. in Lancaster calls 911 on a cell phone to report a fire. Call goes to State Police.

DISPATCH State police transfer call to Lancaster police, who call fire dept.

3:34 Firefighters are paged.

ARRIVALS Lancaster Deputy Chief Sandor Ford and Captain Andrew Mortimer head to the scene in their own vehicles. Mortimer learns one of his engines is out of service. He asks for backup from Clinton. McNamara and another Lancaster firefighter arrive.

3:42 Clinton Engine 6 arrives.

ATTACK Clinton crew and McNamara take a hose to the basement. Visibility is good, and heat is minimal.

3:48 Sterling Engine 5 arrives; is told to set up a fan at front door, but leave it off.

■ Firefighters search the top floors.

■ Firefighters in basement report fire is knocked down and request ventilation. Firefighters outside knock out basement windows and turn on fan.

■ Thick smoke drives firefighters from top floors and pours from basement.

■ Clinton Deputy Chief John McLaughlin in the basement runs low on air. With no visibility, intense heat, and debris covering the floor, he orders firefighters out.

4:07 McLaughlin calls Mayday but gets no response.

4:08 Two more Maydays, no response.

RESCUE Out of air, McLaughlin removes his mask and crawls toward stairs where someone grabs him and pulls him up. He tells crews that a firefighter is in basement and passes out.

■ Firefighters find McNamara trying to crawl out of the basement without his mask. They struggle to get him to the bottom of the stairs and call Mayday, getting no response. Flames engulf the basement, forcing the rescuers out.

■ Ladder 1 from Devens arrives and is ordered to the basement. The crew can make it only halfway down because of heat and smoke.

■ Building is evacuated, fire is fought from outside.

6:30 Fire is controlled and McNamara's body is recovered.

THE BASEMENT

Subdivided with bookshelves and furniture. Three beds were set up, but no one was sleeping in them at the time of the fire.

WHAT WENT WRONG

DISPATCH When the Lancaster fire engine wouldn't start, it took six minutes to call the next town for help. A regional dispatch center would have speeded response.

PLANNING Lancaster depended on five other towns for aid, but hadn't planned or trained with them. Most towns have no budget for training with other towns.

COMMUNICATION Clinton's portable radios used a different frequency, and Sterling's radios were tuned to a different channel than Lancaster's.

STAFFING The first firefighters arrived without an engine. There were only eight firefighters there within 10 minutes, not the 15 minimum to do the job safely.

TACTICS

Too aggressive

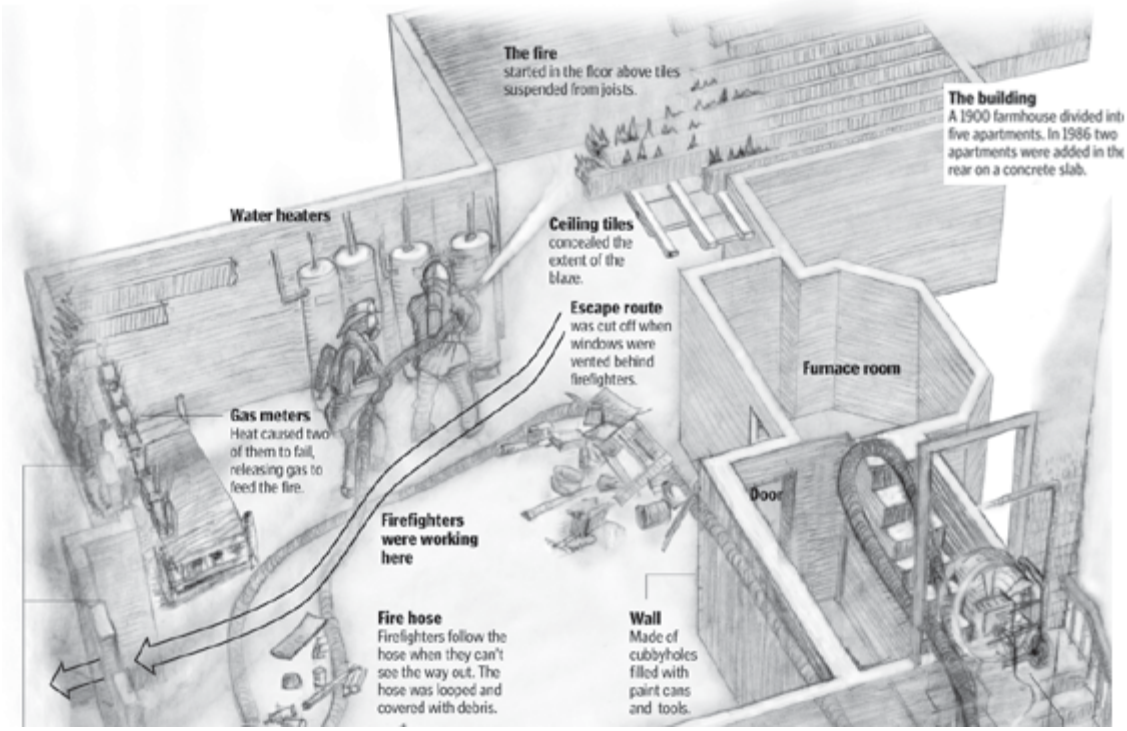
Firefighters knew that everyone was out of the building. Smaller departments are often too aggressive. In entering buildings to fight fires.

No backup

Firefighters went in without a rapid intervention team standing by with a search rope, resuscitator, and other tools. Few small communities employ enough staff for backup.

Coordination

The use of a fan to push air in, combined with venting basement windows, forced smoke and fire toward the firefighters.



A death on the border, a call for towns to work together

The Boston Globe

January 31, 2005

HAMILTON -- Clark Wood died 50 yards from the town line.

When the 84-year-old retired policeman fell asleep with a lit cigarette, setting his easy chair ablaze, the nearest fire station was down the road, 3 minutes away.

But that station was in Wenham, and Wood's house was just across the border in Hamilton. Although the same dispatchers handle calls to 911 for both towns, it was a Hamilton fire, so Hamilton firefighters got the first call. Their station was 5 minutes away.

The Hamilton firefighters arrived 8 minutes later and fought through flames to carry out Wood, unconscious. He died a month later from his burns.

"That fire was rocking, and the men broke their backsides to save him," said Kenneth "Kirby" Brand, Hamilton's deputy fire chief. "We can't say for sure whether those 2 minutes would have made a difference or not."

When you dial 911, you do not necessarily get the nearest fire engine. You get a fire engine from the nearest fire station in your community. That is how it works in most towns in Massachusetts, as in most of the nation, a vestige of the colonial New England roots of America's fire service. Each town typically takes care of its own.

Although popular histories give him the credit, Ben Franklin's Philadelphia did not invent organized firefighting in America -- Boston did. But the old Boston Mutual Fire Societies put out fires only for their paid members. Franklin's innovation was that the firefighters would put out any fire, no matter whose property was burning.

Nearly four centuries later, some elements of firefighting have not changed. A death like Clark Wood's does not happen every day, but not for lack of opportunity: Nearly once a day in Massachusetts, a fire department puts out a building fire by itself although a neighboring town has a closer fire station, the Globe determined, using computer maps showing fire locations over the past decade.

Fire service is not constrained just by loss of staff and closings of fire stations. Some of the problems are rooted in lack of coordination among communities and turf wars between unions and management. Opposition from the firefighters union has held up a plan to speed response time in the Boston suburbs through a regional dispatch center, which would send the nearest fire engine. Across the United States, relatively few fire chiefs have studied response times.

"There's plenty of blame to go around," said Roy E. Jones III, chief of the Brewster Fire Department on Cape Cod. "Most fire chiefs know what needs to be done, but for various reasons are unable to move forward."

Balkanization is a particular problem in Massachusetts, where county government plays a limited role. The state has 351 cities and towns, but at least 365 fire departments. (Shelburne, population 2,000, has two fire departments. Dartmouth has three. Barnstable has five.) Few fire departments have told the public how quickly they respond to fires.

"You start to talk about response times -- bam! City managers go crazy, unions get involved, it affects the cost of fire departments, " said Vincent Dunn, a former deputy in the New York Fire Department. "No one wants to talk about it."

Jones, the Brewster fire chief, is ready to start talking about it.

Towns resist helping their neighbors, he said, because they worry about the costs. Towns resist receiving help, for fear that it will encourage the town's leaders to trim fire staffing. And sometimes the barrier is pride: "This is my town," Jones said, giving voice to the objection. "I don't want you here, especially if you might put out the fire before I do."

Cooperation is strong among the closer communities around Boston. A system of mutual aid called Metrofire ties together 34 communities, though still there are times when Boston, for example, handles a fire alone when a Brookline station is closer. Many towns also have what is called a line box, an agreement that an area on the border will get aid from both towns. This is a form of what is called "automatic response," with both towns dispatching simultaneously. But it is not unusual in the outlying suburbs for a line box to protect only a single high-risk building, such as a school or hospital, not the surrounding homes.

Some towns have talked for years about regional solutions. A decade ago selectmen in five South Shore towns -- Cohasset, Hingham, Hull, Norwell, and Scituate -- approved a plan to combine their fire departments. The idea was shelved after the state firefighters union protested its exclusion from the talks.

"The union is not opposed to regionalization, if it is done correctly," said Robert B. McCarthy, president of the Professional Fire Fighters of Massachusetts. The chiefs said they favored the plan, but McCarthy gives them the blame. "The fire chiefs don't want to lose their jobs."

Hamilton and Wenham, bedroom communities north of Boston, have studied combining fire and police. They already have combined schools and the library. Their separate volunteer fire departments cooperate to a degree; Wenham did arrive later at the Wood fire in April 2000.

A joint department could cost more, not less, if it pushed the towns toward hiring full-time firefighters.

One way to save money and shave seconds off response times would be to combine dispatch operations. Metrofire has proposed combining fire and EMS dispatch for its 34 communities into five regional centers. And Norfolk County has proposed a regional dispatch for towns that choose to participate.

"If we save a minute, it's like moving the fire station closer to your house," said John E. Dacey, the county administrator.

Bigger communities, such as Needham and Quincy, said they do not need or want to join, but several smaller towns have expressed interest: Walpole, Westwood, Canton, and Sharon. Legislative approval has been delayed because of union concerns. "They didn't bring us to the table until after it was filed," said McCarthy, the union president, who said he remains open to discussing the idea, so long as any dispatched jobs lost are moved into the fire department where they are needed.

BILL DEDMAN ■

Teamwork could save money, lives

The Boston Globe

By Bill Dedman, Globe Correspondent | January 31, 2005

It was easy, a century ago, to determine where a fire station should be located. A fire station was expected to protect properties within a radius of 1½ miles.

Why? Because that's how far a team of horses could pull a fire wagon in 5 minutes.

The horses are gone, but a lot of fire stations have not budged.

In 1888 the suburb of Westborough, west of Boston, had about 5,000 people and one fire station at the corner of Milk and Grove streets. Today, it has 30,000 people and one fire station at the corner of Milk and Grove streets.

A computer simulation by the Globe illustrates the scale of the state's deficit in fire stations and gives a glimpse of the potential cost-savings if communities worked together. The Globe focused on a cluster of eight prosperous suburbs northwest of Boston: Acton, Bedford, Carlisle, Concord, Lincoln, Maynard, Sudbury, and Wayland.

The object was to see how many fire stations it would take for each house in each town to be within a 4-minute drive of a fire station. The standards from the National Fire Protection Association call for firefighters to be able to drive to fires and ambulance calls within 4 minutes. That's on top of a minute for dispatchers to do their work and another minute for firefighters to get on the road.

The simulation assumed that the 14 current fire stations would stay and that fire engines could drive the speed limit, be free to make left turns as needed, and use every bridge.

The answer was that those towns would need 24 additional stations if they continue to go it alone, covering all their own fires.

But if the towns cooperated, 13 new stations would be needed. That is still a costly increase, considering that each station could cost $2 million or more. But working together could almost halve the cost of reaching the goal.

That goal may not be the right one for every town, said Ronny J. Coleman, a former California fire marshal and a leader of the Commission on Fire Accreditation International. "Most fire departments don't know what their response deficiencies are. I'd say that less than 1 percent have even set a standard."

BILL DEDMAN ■

Not up to speed

The Boston Globe

Responding to building fires: a tale of 2 cities

By Kay Lazar, Globe Staff | January 30, 2005

Valerie Fay knows the fearsome power of fire when it gains the upper hand.

In December 1991, the Gloucester woman fled her condominium as flames raced through nine nearby shops and wind-whipped sparks threatened her building.

Firefighters said they could have extinguished the blaze sooner if the Magnolia fire station, just two blocks away, had not been temporarily closed due to voters' rejection of a tax increase to staff it.

Full report of response times, Pages 6-7.

Instead, crews were dispatched from the next-closest station -- eight minutes away.

Eleven years later, fire struck again, and this time Fay wasn't so lucky. Her condo burned from the roof down while two firefighters, the only ones manning the first engine on the scene, fought in vain, lacking the manpower and water pressure needed to get a foothold. Fay lost everything.

"Gloucester is probably one of the worst [full-time departments in the state] as far as staffing and response times," said Robert McCarthy, president of the Professional Fire Fighters of Massachusetts union. "It's a disaster waiting to happen."

Gloucester, like many communities north of Boston, has responded to tough economic times by laying off firefighters and shutting stations.

But Gloucester's cuts stand out. Among the region's 19 communities with full-time fire departments, Gloucester has the slowest response rate from 1986 to 2002, barely meeting industry standards, and is getting slower, according to the most recent National Fire Incident Reporting System records reviewed by the Globe.

Gloucester's firefighters have a lot of ground to cover in the region's second largest city in square miles. Yet the largest, Haverhill, has one of the best track records.

The two cities, with working-class centers and newer, upscale housing on the outskirts, are similar in many respects, including median family income, [Gloucester, $65,474 for 2004; Haverhill, $66,945] and the average number of building fires fought each year [186 for each]. And both are sprawling cities, Gloucester covering 26 square miles and Haverhill 35. But the two are strikingly different when the fire alarm sounds. Among the reasons:

Haverhill uses a central dispatch for police and fire, while Gloucester relies on a system that transfers fire calls after they are screened by police, losing precious time.

Haverhill staffs a minimum of three firefighters per engine. Gloucester usually has just two, hampering efforts to rush water lines to burning buildings.

From 1987 to 2003, Haverhill increased its Fire Department funding, per capita, by 7 percent, from $122 to $131, during a period when the city's spending on other municipal budgets was shrinking. Over the same time, Gloucester decreased fire spending by 4 percent per capita from $149 to $143, while other municipal spending jumped 28 percent.

"I have been trying for years to change the mentality," said Gloucester Fire Chief Barry McKay.

Today, two of Gloucester's four stations, Magnolia and Bay View, are shuttered much of the time**,** again because voters rejected a tax increase last summer to keep them open. The city, however, did beef up its substandard water pressure near Fay's Magnolia condo. The Ocean Terrace complex was rebuilt after the June 2002 fire.

"We have this great sprinkler system now in our building, but we don't have a firehouse," said Fay, 50. "It's terribly unsettling."

After many losing battles to keep stations open, McKay recently pitched a controversial consolidation plan that would permanently close two of his city's four stations -- Magnolia to the south and West Gloucester -- to build one halfway in-between. The plan would increase staffing to four firefighters per engine, the industry standard, but would add as much as two minutes to already slow response times in several areas, McKay said. He is slated to present more details, including the proposal's cost, to the City Council in mid-February.

Gloucester has long grappled with tough geography. Its 26 square miles are spread over several peninsulas, impeding quick travel. Records show neighborhoods in these areas -- Magnolia, Bay View, and East Gloucester -- face the slowest fire response times. The area with the highest number of slow response times is East Gloucester, full of narrow roads and mansions along its point. It hasn't had a fire station since the city sold its crumbling building in the early 1990s to a private developer.

Industry standards, set by the National Fire Protection Association, say full-time departments should have firefighters at a blaze within six minutes from the time a caller dials 911. Full-time departments are expected to meet that standard 90 percent of the time. Public records show about two-thirds of the communities north of Boston -- including some that rely on part-timers -- exceeded that mark from 1986 to 2002, the most recent data available.

From 1986 to 1998, Gloucester's on-time record has hit the minimum standard, 90 percent, and has slipped below that level every year since 1999.

Increased demand for firefighters to handle medical emergencies -- often 50 percent of a department's calls -- and booming development far from stations has slowed response times for many departments since the late 1990s.

Despite those challenges, Haverhill is among a small batch of departments north of Boston that has consistently made it to building fires in six minutes or less more than 98 percent of the time through 2002, records show.

Fire chiefs say speed is critical because a blaze doubles in size roughly every minute. It is also crucial when responding to medical calls.

"Brain death starts in four to six minutes if you are in cardiac arrest," Haverhill Acting Fire Chief Lewis Poore Jr. said. "Our goal is under six minutes."

Still, the 28-year fire veteran is uneasy. Haverhill's population jumped 15 percent during the 1990s and much of the recent growth has been on the city's once-rural outskirts, especially west of Interstate 495. But Haverhill's four manned fire stations are near the downtown -- at least six minutes away from several newer neighborhoods.

"We are on borrowed time," said Poore.

Firefighters last fall agreed to a cut in overtime pay to boost staffing levels and reopen the city's Bradford station, closed on and off for more than a year due to budget cuts.

Even with Bradford reopened, Poore says two more full-time stations -- for a total of six -- are needed to protect his sprawling, 35-square-mile city. He would place them out toward Haverhill's faster-growing eastern and western borders.

Haverhill has about a dozen part-time firefighters in these outskirts, half living near the city's eastern edge, known as Rocks Village, and the rest on the western front, called Ayers Village. Each village has an unmanned station, where the part-timers report when called for duty. Most hold full-time jobs and are unavailable during the day. When they are, the equipment can be shaky. The Ayers station has not had a working fire engine in more than two years.

That was the case on July 4, 1994, when a house in the village on Crystal Street caught fire.

"I made a run for the fire station, and I went to the pumper we had to respond with and there was a note on the steering wheel saying not to take it," recalls part-timer Charles Reynolds.

So he jumped in his 1991 Dodge Dynasty and raced to the scene about a quarter-mile away. The family had escaped, but Reynolds dashed in to save the cats. While waiting seven minutes for the first engine to arrive from downtown, Reynolds said he started fighting the flames with the closest liquid he could find -- a jar of juice on the kitchen counter.

The house was heavily damaged.

A year later, the DeMarco family moved in, after buying the home at a bargain price. Fire safety was not on their list of criteria for a new home.

"You want a house in a nice neighborhood, safe for your children to grow up," said Dorothy DeMarco.

Despite the house's history, DeMarco had no idea the Ayers station around the corner was not staffed and did not have an engine, should fire strike again.

"I can't say I thought about it much," DeMarco said. "I always assumed if anything happened, we would be protected."

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Some towns rely heavily on part-timers

The Boston Globe

By Kay Lazar, Globe Correspondent | January 30, 2005

Many communities north of Boston, including some of the wealthier suburbs, choose to rely on fire departments that essentially close up shop after dark.

That means when residents dial 911 at night, the firefighters who respond -- usually trained citizens who hold other day jobs -- must first dash from their homes to the station and then suit up before racing to the fire.

That delay can be critical. In several of the towns, including Boxford, Rowley, and Topsfield, residents typically wait longer than six minutes for the first engine to arrive, records show.

"People think we are here all the time. The average person in Topsfield has no idea we are [an on-call] fire department," said Topsfield Fire Chief Ronald Giovannacci.

But voters this spring will have a chance to change that. A plan to be considered at May Town Meeting would add five full-time firefighters. Topsfield has just four now, plus 20 civilians on call. The five would be cross-trained as para-medics, allowing Topsfield to stop paying for ambulance service from an outside contractor -- and it would allow the town's sole fire station to be staffed 24/7.

It would also raise property taxes, costing the average homeowner an additional $70.58 a year, based on the town's 2005 tax rate.

Yet even a round-the-clock fire department with many part-timers can't guarantee fast response times or adequate staffing. Consider Ipswich.

On a January night in 2001, Lisa Collum and her two young daughters died in a house fire. The first responders were a single full-time firefighter and some volunteer firefighters with no gear. The two other full-time firefighters on duty that night were tied up on medical calls.

A year later, voters rejected a plan that would have added more full-time firefighters -- and raised property taxes. Today, Ipswich has 18 full-time firefighters and 18 citizens on call to cover 33 square miles from two stations. And the on-call force of firefighters, who are paid for each blaze they respond to, is shrinking. In 1982 the town had 36 on-call firefighters.

"If you are trying to support a large mortgage in town, the doctors and the lawyers and the stockbrokers, there's not too many of them that want to sign up and be on the call force," said Ipswich Fire Lieutenant Dennis Durrell.

Rowley is having the same problem. Fire Chief James Broderick has just two full-timers and 23 on-call members to cover 19 square miles from one station. He had 27 on-call firefighters in 2002. The chief said he needs a second fire station. Voters have rejected plans to beef up the department, even as $500,000 homes spring up on the town's outskirts.

The town posted the worst response rate in the region between 1986 and 2002, arriving at building fires within six minutes just 32.4 percent of the time, far below the industry standard of 90 percent.

"It could take up to 20 minutes to get there in some parts of town," Broderick said.

But apparently fire protection is not on the radar screen for most home buyers.

"No one has ever asked me about that," said Jay Burnham, a Beverly-based real estate agent with Coldwell Banker Residential Brokerage, who sells homes throughout the area. "In 22 years, I have never been asked about the police or fire department."

Not up to speed

The Boston Globe

Affluent suburbs lag behind cities in answering emergency calls

By Douglas Belkin, Globe Staff | January 30, 2005

When a middle-aged landscaper fell, convulsing on the ground in his front yard last July, Frank Gordon called the Boxborough Fire Department for an ambulance.

Ten minutes later, the man now limp and unconscious and still no help in sight, Gordon called back. Another 10 minutes, still nothing. Exasperated, he called a third time, his voice now rising in panic. Apologies, said the dispatcher, everybody is busy. The call has been rerouted to another town, an ambulance would be there any moment.

It was 25 minutes after the initial call was placed before the first responder finally arrived. The land-

A map showing community-by-community response times is inside, Page 6

scaper, who'd had a grand mal seizure, was still unconscious but otherwise OK. Gordon was not. He was livid.

"If it had been a fire or someone had been bleeding, it could have been fatal," he said. "It was incredibly frustrating. My wife kept asking me if I had given them the right address. It was getting to the point where I didn't know if anyone was going to come."

In this quickly growing town where million-dollar homes are popping up like mushrooms, Boxborough Fire Chief Kevin Lyons says that scenario could be repeated almost any time the department is faced with two calls at once. There is just a single pair of firefighters on duty at any given time in Boxborough -- and they are responsible for both the ambulance and fire service. If those two men are busy, residents are going to have to settle in for a wait.

"It's like playing Russian roulette," said Lyons. "We just don't have the manpower to respond to multiple calls."

Across the Interstate 495 belt where developers have built houses faster than communities can beef up their infrastructure, fire departments are struggling to make the transition from sleepy communities with volunteer fire departments to wealthy suburbs with ever-increasing demands.

According to a Boston Globe investigation, between 1986 and 2002, 14 of 33 towns in the area served by Globe NorthWest failed to meet national standards for response times, and delays getting to fires are growing.

The consequence is that while residents flock to Boxborough for its top-notch schools and attractive, wooded neighborhoods, they are being served by a fire department that is -- by the chief's own admission -- woefully inadequate. According to national standards, a department should be on the scene of an emergency call in 6 minutes 90 percent of the time. Boxborough met that goal 62 percent of the time, according to a Globe investigation.

By contrast, the most densely populated urban communities, like Lawrence and Lowell, with full professional staffs, have some of the best response times in the state.

In Boxborough, since there are only two firefighters per shift, if they encounter a fire, they are trained to wait for backup before entering a building for search and rescue. And if a fire has engulfed the home and the roof needs to be ventilated, they will have to wait for a ladder truck to arrive from another town because the chief scrapped the department's 37-year-old ladder last year after it failed inspection.

"There's no point in spending three-quarters of a million dollars to replace it because we don't have the staff to man it anyway," Lyons said. "The truth is, if my two guys are answering a call and a building catches fire, I'm [in trouble]. There's

no pretty way to put it."

In Westford, a town that has been inhaled by developers in the last 10 years, response times are even slower. Firefighters responded to calls within 6 minutes 53 percent of the time, according to the Globe investigation, and in the short term at least, it appears those delays are going to grow. Houses are being built in the far corners of the town -- 10- and 12-minute drives away from the nearest fire station.

In recognition of this problem, Westford in 2000 invested in a new $1.8 million fire substation in the underserved Graniteville section, where 19 percent of all the town's calls originate. The drawback? The station has been empty ever since it was built, said Westford Fire Chief Richard Rochon. The town hasn't approved the money to staff it.

"We've had it in the budget before, but we've had to cut it at the 11th hour," said Town Manager Steven Ledoux. "Financially we're just not in the position to add new bodies."

As a result, engines from Westford's only operating substation have to race a minimum of 10 minutes across town to reach a call in Graniteville. The trip is so laborious and made so frequently, the engines garaged in the substation have thousands more miles on them than engines garaged in the Fire Department's headquarters, Rochon said.

In the near term, the strain on resources is likely to worsen. Westford is on the cusp of approving a development that straddles the Acton border on the southern edge of the town. The shortest route from the nearest Westford station winds through three towns and takes 10 minutes with no traffic.

"We're stretched really thin," says Rochon. Even though the department has grown from nine full-time firefighters in 1987 to 27 today, Rochon said the department is understaffed and could use about 40 full-timers to keep up with the call volume, which has tripled during that same period. "The hardest thing for us to do is to keep up with development," he said.

Earlier this month, during a sleet storm, response times were substantially longer and Rochon was anticipating a very busy evening.

"On a night like this, I won't really sleep," he said. "I think there's a lot of chiefs saying a lot of prayers around this area."

Part of the problem in Westford, as in many other bedroom communities, is that while call volumes are increasing, the ranks of volunteer firefighters who bolster small and medium-sized departments, are decreasing.

In 1995, five volunteer firefighters showed up, on average, on calls. By 2003 that number had dropped to three, according to the chief.

"It's a demographics thing," Rochon said. The people moving into towns like Westford and Boxborough are increasingly professionals, working long hours and commuting into Boston to make payments on big mortgages. The blue-collar workers, who tend to gravitate toward the volunteer fire service, are being priced out of town, he said.

Despite longer response times, chiefs in the area said their concerns do not appear to be generally shared by their communities. Even in Carlisle, where the average home price is nearly $500,000 and the median household income is almost $160,000, Fire Chief David Flannery said response time is a nonissue. And this is in a community with an all-volunteer department that met the national standard of 6 minutes only 24 percent of the time between 1986 and 2002.

It has simply not been a priority in Carlisle, said Flannery. Fire spending is $30 per capita per year, or one-eighth of what is spent in Boston and one-fifth of what is spent in neighboring Bedford.

"We've never had a debate here," said Flannery. "Carlisle accepts what they have. Our budget is $240,000. Full-time staffing would cost between $800,000 and $900,000, and in Carlisle, the tax dollars go to the schools."

For that $240,000, residents get a staff that Flannery said is well trained, but that takes an average of two to three minutes to get from their homes to the station. Add to that the two to three minutes to get out the door, and the three to four minutes to get to the scene of a fire.

If the roads are icy or the volunteers have to shovel out their own cars before they drive to the station, that response time can quickly double, as it did one night a few years ago during a December snowstorm. A pet had kicked over a light on a porch while the owners were away, Flannery said. A neighbor saw smoke and called the Fire Department.

If the engines had been able to respond in 6 minutes to the ensuing fire, Flannery estimates that just the porch would have been lost. But because it took firefighters about 14 minutes to reach the scene, half the house was destroyed.

"It's worked this way in Carlisle for 77 years," said Flannery. "It's the community's decision . . . to go to full-time staffing, but it's not free and they know that." ■

Racing the clock

The Boston Globe

As fire departments' resources are stretched, response times suffer

By Emily Shartin, Globe Staff | January 30, 2005

Parked in their high-ceilinged bays at the Berlin firehouse, the big red engines are ready to roll. Safety gear lines the walls, waiting to be grabbed.

When a fire breaks out, everything will be here -- except firefighters.

Volunteers will have to race to the station from their jobs or homes to jump on the trucks. And that takes time, which is precious when flames are spreading.

Fire Chief Robert Tervo, who commands a $78,000 budget, says his volunteers are dedicated and well trained. He also acknowledges that the town, which is feeling the strains of growth, could use some full-time firefighters.

"I can only give you the best fire department you're willing to pay for," he said.

Berlin, a small town that still fights fires the old-fashioned volunteer way, fell short of national standards for fire department response times in a Boston

A map depicting fires and response times in local communities. Page 10

Globe analysis. But it was far from alone among communities west of Boston. Fourteen other communities also did not make the grade, including some that have full-time firefighters.

The analysis took 17 years of reports on fires and checked communities against National Fire Protection Association standards, which call for firefighters to arrive at 90 percent of fires within six minutes or less.

The analysis also found that fire response times, even among communities with a passing grade, are getting longer, raising questions about the local commitment to rapid response as more houses are built and population grows in the region. About half of the Globe West fire departments saw declines in their on-time rates in the most recent four years of the study.

"We've been getting by with the skin of our teeth," said Plainville Fire Chief Edwin Harrop, whose department is expanding from eight firefighters to 12.

The reports were submitted by cities and towns to the state and federal governments. The analysis focused on building fires from 1986 to 2002 and did not include incidents such as false alarms or ambulance calls. The six-minute standard allows one minute for the dispatcher to collect information, one minute for firefighters to get their gear and get to the truck, and four minutes to drive to the fire.

Twenty-two of the 37 communities in the Globe West circulation area met the standards.

A number of factors appeared to be responsible for the widely varying response times. Departments with full-time firefighters, who can immediately hop onto their trucks when an alarm is sounded, generally perform better.

Departments with fire stations that cover smaller areas also typically perform well, apparently because firefighters start that much closer to the scene. When plotted on a map, some of the fires with the worst response times are located near the edges of towns, far from a centrally located station.

Berlin firefighters arrived on time, or within six minutes, to about 44 percent of the fire calls they received between 1986 and 2002.

Officials in the small town of about 2,500 people say the volunteers do a difficult job, first undergoing extensive training, then dropping whatever they are doing to rush to fires and risk their lives. Many have served for decades.

"You do it because you want to help people," said Deputy Chief Bruce Ricard.

But the officials also acknowledge the limitations inherent in a "call" department.

Jack Peltier, the department safety officer, said Berlin has tried to compensate with up-to-date equipment, including trucks that carry water and firefighting foam that helps suppress fires faster than water does.

And with two commercial developments now being planned in town, Tervo is seeking funds for several full-time firefighters to staff the station during daylight hours.

Geography is a factor In Hopkinton, which has full-time firefighters, the on-time rate was just over 69 percent, according to the analysis. In this case, the town's geography appeared to be a major factor.

Hopkinton has only one regularly staffed station in the center of a town of about 28 square miles, a much larger area than stations usually cover, according to the Globe analysis. A second station in the town's Woodville section is staffed only occasionally.

Hopkinton officials say they have been taking steps to improve fire service, despite tight budget times.

Eric Sonnet, chairman of Hopkinton's Board of Selectmen, and Fire Chief Gary Daugherty said they were pleased with the progress that has been made. Eight years ago, Daugherty oversaw eight full-time firefighters. Today, that number is up to 23.

"We'll cut almost anything before public safety," said Sonnet.

Why is response time important? Fires generally double in size every minute they are allowed to burn out of control.

Many fire departments point to sprinklers and smoke detectors, as well as public education, saying they have all helped cut down on the number of serious fires in recent years.

Southborough Fire Chief John Mauro noted, however, that those devices do not excuse firefighters from showing up promptly.

"It keeps the fires smaller, but somebody still has to respond to them," said Mauro, whose firefighters arrived on time to 88 percent of fires.

Catastrophes do happen. Three elderly siblings, including one with Alzheimer's disease, died in a Boylston house fire in 1994 that was caused by discarded pipe tobacco. Their 84-year-old sister was the sole survivor. According to an incident report, it took the town's volunteer department 10 minutes to arrive.

Fire Chief Joe Flanagan said firefighters later determined that 45 minutes had elapsed before the family had even called 911. "By the time we left the station, we could see the glow in the sky," he said.

Recognizing that the town's needs are expanding, Boylston has recently taken steps to bulk up its fire services, making the chief's job a full-time position. This spring, Flanagan said, he intends to ask Town Meeting for money to hire another full-time staffer.

"The more permanent people you can put on, the better you can do on response times," said Flanagan. He said the six-minute standard would be tough for any volunteer department to reach.

Boylston had an on-time rate of 17.6 percent, but that was based on only a small number of fires -- 17 over the 17-year study period.

Financial losses add up Even fires that are not fatal can still lead to heavy financial losses.

A 2001 house fire on Derby Road in Berlin caused $750,000 in damage. It took firefighters 10 minutes to show up. Tervo said he believes that, because it was a windy day, the house could not have been saved no matter how fast firefighters responded. The homeowner said he was satisfied with the Fire Department's response.

That same year in neighboring Bolton, which also has a volunteer department, a home sustained $300,000 in damage after teenagers living there stoked a fireplace with gasoline. Firefighters did not arrive for 12 minutes.

The Globe analysis found that Bolton arrived to only half of its fires within six minutes. But Bolton Fire Chief John Stephenson, who has been a firefighter for 45 years, said there has been no movement locally to change the call tradition. "It is a time-consuming process, but that's the way we live," he said.

Newton, a city of about 85,000, was the highest-scoring department in the Globe West circulation area, with a 99.3 percent on-time rate. Its score is understandable, given that the city spends some $13 million annually on its fire department, or about $700,000 per square mile, far more than most other departments.

Money does not guarantee a perfect on-time record, however.

Watertown, a city of about 33,000, spent $6.3 million on fire protection, or roughly $1.5 million per square mile. With a 94.4 percent on-time rate it was tied for 13th overall, behind other communities that spent less.

Watertown Fire Chief Mario Orangio said his is a densely populated city where traffic can snarl streets, slowing his trucks.

Simultaneous calls Multiple calls at the same time, including emergency medical calls when firefighters are called to assist, are a challenge for departments and can also mean slower response times.

"What we're geared for is one at a time," said Franklin Fire Chief Gary McCarraher, whose department had an 82.5 percent on-time rate.

A 2001 lightning storm in Franklin caused four house fires in one night, he said, including one that resulted in $200,000 worth of damage. It took firefighters 10 minutes to arrive at that blaze.

Many departments depend on aid from other communities or volunteers in such situations, but calls for assistance are often not made until the town's first responders arrive at the scene.

Even though his department can count on help from neighboring towns, Ricard, the Berlin deputy chief, said it is never certain how many local volunteers will respond to the call.

"In all honesty, I couldn't tell you at any given moment how many people would show up," he said.

"Whenever you're desperate for help, it always seems like, 'My God, what's taking so long?' "

David Marble, chairman of the Berlin selectmen, said public safety is a primary concern for his board, but he also noted an interest in preserving the town's character. When he was young, he said, residents from all over town showed up to help put out fires.

"I'm trying to hang on to that tradition without sacrificing anyone's safety," said Marble.

Some towns are trying to fix what they perceive as problems in their departments, even though the Globe analysis suggested that their response times were already satisfactory.

Plainville's on-time rate -- 96.4 percent -- ranks high among communities in the western suburbs. But the town is expanding its staff and budget anyway.

"To me, it's like a car insurance policy," said Harrop, the chief. "You're paying for your protection."

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Departing chief sees need for growth

The Boston Globe

By Megan Woolhouse, Globe Staff | January 30, 2005

John Kyle will leave his post as Marlborough fire chief in August "with a smile" on his face but with one hope: that the city does more to beef up staffing.

"My biggest concern is we're having more incidents," Kyle said. "We have to expand our base here and decrease our response times."

As Marlborough has grown, so have calls to the Fire Department, he said. According to census figures, since 1990 the city's population has grown by about 6,000 people to 38,000.

Local officials estimate that at least 20,000 people drive into Marlborough most weekdays, many to high-tech jobs and Solomon Pond Mall.

Two years ago, the City Council cut the number of firefighter positions, Kyle said. Six of the city's full-time firefighter positions were eliminated, although one position has since been reinstated. The Fire Department employs 75 people.

City Council president Robert Katz said the cuts were necessary because of declining state aid. He added that the Marlborough Police Department also cut three positions.

"I would love to do more, not only for the Fire Department but for the Police Department as well," Katz said. "Both are understaffed right now."

Katz called the level of fire protection "only adequate," adding that "adequate lends itself to problems in the future." He pointed to the fire station on the east side of the city, where he lives, which isn't fully staffed at night.

Katz said the city is caught in a financial squeeze. Revenues aren't keeping up with expenses. For example, he noted that the vacancy rate for commercial property has risen to nearly a third, eroding the tax base. Meanwhile, the cost of health insurance for city employees has soared.

This year, property taxes increased 12 percent for the average family, one of the largest tax increases in years. Mayor Dennis Hunt is expected to unveil his budget proposal in the spring. Hunt was on vacation and could not be reached for comment.

Kyle's current base salary is $84,613. The mayor will appoint a new fire chief and his selection must be approved by the City Council.

Kyle said he hoped to see firefighters reinstated, not only for public safety reasons but for their own safety. Some of the longest response times include the six to seven minutes it takes firefighters to get to the mall, he said, adding that he would like to see it reduced to three or four minutes. Kyle would like to see another station added in that part of the city.

Kyle joined the department full time at 22. He became acting chief in 1995 and permanent chief two years later. Now 55, he said it was "time to move on." He is considering becoming a consultant.

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Running out of time

The Boston Globe

More homes, fewer resources leave firefighters struggling to keep up

By Maria Cramer, Globe Staff | January 30, 2005

Patrick Kennedy got lucky. Four years ago, the firefighter was trying to get inside a smoldering Plymouth house when the garage door collapsed, knocking him to the ground.

Kennedy, who was wearing a helmet, was disoriented and in pain, but escaped with just a sprained knee.

The large house, in a remote spot on Cape Cod Bay, was destroyed.

"The first couple of minutes are crucial if you want to save anything," said Kennedy, 50, a lieutenant in Plymouth's department. By the time firefighters arrived on the scene -- nine minutes after the initial alarm -- the home was fully involved in fire, Kennedy said.

Slow response times by firefighters have become increasingly common in Plymouth, which at about 103 square miles is the largest community in Massachusetts. Because of the availability of land, and real estate prices that are still lower than those in communities closer to Boston, it is growing rapidly, with a population of about 55,000. But people who choose to build their dream homes far from traffic-clogged urban areas can also find themselves a long way from a fire station. The fire in which Kennedy was injured occurred in January 2001, about three years before Fire Chief James Pierson began cutting back fire station shifts to save money.

Regional comparisons, Page 6

The tactic has lowered morale and worried firefighters, who see more houses being built long distances from fire stations that are busier every year. Pierson had planned to pull firefighters from the Manomet Fire Station for a month or so beginning Wednesday, to keep Plymouth's other stations open and help close the department's budget shortfall. But when last weekend's blizzard and subsequent storms left the town buried under several feet of snow, he decided to put the plan on hold, the chief said Thursday.

According to a Globe review of structure fires extinguished between 1986 and 2002, 46 percent of communities south of Boston failed to meet national standards for response time. The National Fire Protection Association sets a goal of 6 minutes to respond to 90 percent of fires.

Plymouth and Middleborough, among the area towns falling short of the 90 percent goal, don't have the worst figures. But their declining performances in recent years are significant because of their large size and their population growth rates. Middleborough's on-time rate from 1986 to 2002 was about 83 percent, while Plymouth's hovered around 80 percent. Both towns improved slightly between 1999 and 2002, but figures for 2002 alone show Middleborough's rate at about 77 percent and Plymouth's at 65 percent.

"Offhand, I can't indicate anything that we have in place that would improve those responses," Pierson said. "So long as we continue to see growth in areas away from fire stations, it's going to take increasingly longer to get to those dwellings. Sometimes the only route to another section of Plymouth is through two other towns."

In Middleborough, the town spent $4.5 million to rebuild its Central Station in 2003 and to build North Station in 2002. Including South Station, which was built in the 1940s, the town of about 72 square miles and 20,000 residents now has three active fire stations. Chief Robert Silva said that should improve response times. But reaching the recommended 90 percent response rate could remain an elusive goal, said Deputy Fire Chief Scott Seifert. "We'll never make that until we get an East Middleborough station. Honestly, I don't think we'll see [that station] in my career."

On a recent drive along Route 105, where construction is booming, Seifert pointed to the area where Thompson and Plympton streets cross. "If I had my druthers, we'd have the station at that intersection," he said. A station there would put firefighters closer to Oak Point, a 1,150-unit development for people age 55 and older that is under construction.

From Central Station on North Main Street to the Oak Point gate, the drive is 7 to 8 minutes on a good-weather day, Seifert said, and it takes another 3 to 4 minutes to get to the deepest parts of the complex.

"It does bother me that there [could be] problems that far away," Silva said.

Fatal fires in both towns are rare. In its analysis, the Globe did not find any deaths that resulted from lagging response times, but firefighters attribute much of that to luck.

In Plymouth, where the intermittent station closings have caused tension between Pierson and firefighters, union official Shawn Harmon said it is only a matter of time before a slow response causes the death of a firefighter or civilian. "They want to play the lottery with people's lives," the Firefighters Local 1768 vice president said of town officials.

Pierson said it is unfair to judge the department only on figures through 2002 -- the Globe studied numbers until that year because it was the last with fire data. The town's seventh station was built in 2002 to serve the massive Pinehills development, an upscale housing area that covers 5 square miles -- about the size of the town of Belmont. The station should improve the department's response times, Pierson said. "I think the town is getting their arms around this problem," he said.

But Captain Ed Bradley is not so sure. He cited a Nov. 14 incident in the Pinehills in which the parents of a young boy who had hit his head called the department eight minutes after dialing 911 to say they were driving their son to the hospital themselves. "They said, 'We can't wait anymore,' " Bradley said. The Pinehills station was closed that day, as part of the rotation of coverage, and personnel from the Manomet station, about 7 miles away, had to respond, he said.

Plymouth Town Manager Mark Sylvia said he is asking all town departments, including police and fire, to draw up plans for the next seven years on how to improve services.

Pierson said more fire stations probably will be needed, especially since 60 percent of calls to the department are for medical emergencies, but he also suggested measures that could reduce the possibility of devastating fires, like a law requiring sprinklers in new homes.

"We're not going to be able to replicate the neighborhood station . . . The reality is I don't know if there is enough money," he said. "We're always going to need firefighter protection . . . but when you really want to talk about saving lives . . . put residential sprinklers in."

Town Planner Valerie Massard said developers in Plymouth are asked to install sprinklers and use fire-resistant materials in new home construction, as well as to build better access roads to subdivisions. But a failing response rate in a booming town is disconcerting, she acknowledged.

"If you're suggesting we're not providing sufficient services to the people who are already here, what can I say?" Massard said. "It's a big concern."

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When fire is faster than help

The Boston Globe

By Maria Cramer, Globe Staff | January 30, 2005

In minutes, the flames spread from the bedspread to the curtains and engulfed the second floor of the house on the bluff.

While her husband tried to put out the fire, Michelle DuBois ran downstairs to search for their 15-year-old cat and to call 911 for the second time. The dispatcher on the phone ordered them out of their Cape Cod-style house and into the pouring rain that had no effect on the rising flames. There still was no sign of the Plymouth Fire Department.

"It seemed like it took forever before they came," DuBois said on Jan. 6, three days after the house was reduced to rubble. The cat is still missing. All of their possessions, including her PhD dissertation, were lost.

DuBois and her husband, Dr. David Gambill, a local radiologist, bought the house on Stage Point Road in 1996. The couple spent four years renovating it, and in 2000 began living there on weekends. Last February, they moved from their Back Bay apartment to Plymouth full time. Even though the closest fire hydrant was almost a mile away, the Manomet Fire Station was only about 2 miles from their new home, so the couple felt safe.

But moments before the fire broke out, started by a candle lighted by DuBois, firefighters at the Manomet station were called to a medical emergency. Crews from more distant stations, less familiar with the area's bumpy, narrow roads, had to respond.

The couple later learned the engines missed the turn to their house. When the firefighters arrived nine minutes after the first 911 call, they had to use about 3,000 feet of hose to pump water from a parking lot because the hydrant was so far away.

"They stayed all night," DuBois said. "They made a valiant effort."

In Plymouth, where the potential to build in remote locations is tremendous and tempting to those seeking privacy, firefighters are increasingly concerned they will not be able to reach a fire in time.

"When you bought the house, didn't you ever judge the distance from the house to the fire station?" Captain Ed Bradley said he often thinks when people complain about poor response time. "We don't fall out of the sky."

Gambill and DuBois said they learned about the distances to the fire hydrant and the Manomet station only when their insurance company requested the information. Response times and whether firefighters might have a difficult time putting out a fire at their house were not a priority, Gambill said.

"Like everybody else, unless you're really compulsive or paranoid, you never look at it," he said.

When showing a property to a prospective buyer, real estate agents do not have to disclose, or even know, where the nearest fire station is, its emergency response time, or whether it might be closed.

"Our mandate is to disclose our knowledge about the property . . . how the furnace is fueled . . . [if] there has been dampness in the basement," said Steve Asmond, with Exit TriStar Realty in Plymouth.

In his 10 years as a Middleborough real estate agent, Kyle Belken said, no one has ever asked about fire response times.

"I wouldn't even know how to answer it," said Belken, who works for Debbie Blais Real Estate. "It's not like I'm sitting on the back of the fire trucks making sure they're getting to fires on time. . . . The concern is with the school system, the recreation, 'Where do I take swimming lessons?' "

But the neighbors of DuBois and Gambill are thinking about it now, according to Susan McNichols, a Manomet Bluffs resident who watched their Stage Point Road house burn.

"We need fire services," she said. "To cut fire, police, emergency medical services is cutting your throat."

In a blow to the neighborhood just days after the fire, Plymouth Fire Chief James announced his decision to remove firefighting units from the Manomet station for 30 to 45 days, citing budget problems. With only two paramedics on duty at the station, the move would cut back on the need to close down other stations one shift at a time, he explained.

DuBois said her personal loss has opened her eyes to the Fire Department's limited resources.

"We didn't realize that they were not equipped to get in there, or that they close every other night due to funding," she said. "I thought, 'We're in an OK situation.' "

She and her husband plan to rebuild on the site, but the house won't look the same. "It would be too spooky," DuBois said. ■

Citing snow, chief delays Manomet shift

The Boston Globe

January 30, 2005

Plymouth Fire Chief James Pierson has decided to keep firefighters on duty at the Manomet station indefinitely, rather than redeploy them elsewhere in town, citing last week's snow emergency.

"The DPW is doing a Herculean effort, but there are still a lot of intersections that are tight and all of this is affecting our response times," he said on Thursday. "Access to homes even for the most mundane accidents is difficult, and I certainly wouldn't want to exacerbate that by responding from the outlying stations."

Citing budget issues, he had planned to redeploy Manomet's firefighting units for 30 to 45 days beginning Wednesday, leaving just two paramedics on duty there.

The Fire Department has been closing one or more of the town's seven stations intermittently since the start of the fiscal year in July, as a way to juggle money shortages and staffing needs. Pierson said withdrawing firefighters from one station for a longer period would help the department function more cohesively.

The Board of Selectmen voted, 3-2, on Jan. 18 to support Pierson's plan to cut the Manomet Fire Station's staffing.

MARIA CRAMER ■

FIRE SAFETY

The Boston Globe

Boston area scores well in fire response

By Ric Kahn, Globe Staff | January 30, 2005

Your car is stuck in traffic. Your train is behind schedule. Your plane is delayed.

But take heart, raw-nerved Bostonians: Your fire engines are running on time.

The national gold standard for communities is that they should respond to fires within at least six minutes 90 percent of the time.

Boston trumps that. A Globe review of public records from 1986 through 2002 shows that the Boston Fire Department has arrived at burning buildings within six minutes 97.7 percent of the time.

That's a percentage that many suburbs cannot match.

In fact, throughout eastern Massachusetts from 1999 through 2002, the median on-time rate was 89.3 percent, compared with the Hub's 96.6 percent.

And response times have been worsening nationwide. In 2002, the latest year for which figures are available, only 58 percent of departments with full-time firefighters met that standard -- getting to fires within six minutes 90 percent of the time -- down from 75 percent in 1986.

But the response rate of Boston, in the judgment of some fire-protection professionals interviewed, puts it in the top echelon of departments nationwide.

"I'm glad," said Boston Fire Commissioner Paul Christian, who has held that post since 2001. "We have good, well-trained, reliable firefighters."

Dorchester resident Phil Lindsay said he didn't need a survey to tell him that he was in good hands. Five years ago, he said, he fell off a ladder while fixing his roof and broke his leg. An EMT was in his yard within several minutes. "I don't think I could have found that, out in the suburbs," he said.

Lindsay, 48, should know: He grew up in Norwell, where his father was a volunteer firefighter.

In fiscal year 2003, Norwell spent $145 per person on fire protection; Boston spent $239. In Norwell, fire spending accounts for 5.2 percent of the municipal budget; in Boston it's 7.8 percent. In Norwell, there's an average of one fire station every 7.1 square miles; in Boston, there's one every 1.5 square miles. While Boston surpassed the 90 percent standard from 1986 to 2002, Norwell came in at only 83.5 percent.

Lindsay, who figures he pays less to live in the city than his friends do in suburbia even with higher auto rates here, believes he gets more public-safety bang for his buck in Boston.

"It's a misnomer how dangerous it is in the city," he said. "I've never felt unsafe in Dorchester. Never."

The local scorecard

City Weekly's other communities were also off the charts: Brookline, 98.9 percent; Cambridge, 97.1 percent; Somerville, 99.1 percent. Since 2002, Somerville has taken one engine off the street, according to city officials, who say that response time has not been seriously affected.

Yet public-safety analysts say that as people push out farther from the city, those who yearn for sprawling ranch houses on wide-open suburban acres may be paying for their privacy with fire coverage that's stretched too thinly.

The median for all the communities in Eastern Mass. breaks down like this: one fire station covering every 8.4 square miles; fire departments spending $117 a person annually; and fire-safety making up 5.3 percent of municipal budgets.

Even as some in suburbia were slashing their safety nets, Boston was pumping more money into its Fire Department, increasing its per capita spending by 25.5 percent from 1987 through 2003.

Fire-protection analysts say that it's money well spent in a city known for its three-deckers, where a high concentration of people are living in older wooden buildings that can burn more quickly than many other types of structures.

As they say in the fire-protection industry: "The investment in the level of effort should equal the level of service that meets the level of risk." In other words: the more people at risk, the more you should invest to make sure they're protected.

Money no panacea

Of course, specialists say, spending alone can't ensure speedy fire responses. At $265 and $250, both Wellfleet and Orleans invested more per person in fire safety during fiscal 2003 than did Boston. Yet with fire responses within six minutes a mere 66.7 percent and 69.2 percent of the time, respectively, both flunked the 90 percent test from 1986 through 2002.

Nor do budget cuts automatically translate into slower responses. In Boston, the Fire Department took nearly a $5 million hit in fiscal 2004, but no firehouses were closed, and Christian said response times remain excellent.

Not that Boston hasn't had its own bumpy rides. District 10 covering the sometimes-off-the-beaten-path roadways of West Roxbury and Readville clocked in with six-minute response times of 89.1 percent in 1995, 87.2 percent in 1996, and 83.3 percent in 2001, before rebounding to 98.2 percent in 2002.

Still, Stewart Gary, a fire chief in northern California who develops deployment methodology for the Commission on Fire Accreditation International, said Boston's overall response-time rate indicates a department as deep as the New England Patriots in being able to cover fires in a city with such heavy traffic and narrow streets.

Gary offers another firefighting bromide, this one with a military tone: "Deployment, said simply, has two measures: the speed and the weight of the attack."

Which, he says, means: "If I arrive too slowly, or too thinly staffed, the fire is going to beat me."

The jakes on the job know this. As they enswathe themselves in gear and hop aboard a fire engine, then hurtle toward a blaze, they say, their inner alarm clocks tell them: Get there. Get there. Get there.

"It's inbred," said Nick DiMarino, a 32-year veteran who now heads Boston Firefighters Local 718. "We do take pride in the fact that our response time is very good."

Tragedy in Southie

Bostonians know how precious are the hands of time. In 2002, firefighters said they arrived near the scene of a fire in South Boston within about four minutes of the first alarm. One hundred feet away from them, flames were flashing through a house on Bowen Street. Inside was Caitlin Orr, 8 years old.

But outside, a fire engine was trying to turn onto Bowen, only to be thwarted by illegally parked cars. By the time firefighters finally tore through and reached Orr, her body was limp. She was later pronounced dead.

Afterward, firefighters said that, as they were stuck on the street, they could almost feel the ethereal moments, at least 30 seconds of them, helplessly slip away.

"That breaks my heart, that little girl," Christian said recently when asked about the incident, and the importance of time.

"That's one we should never forget."

Globe correspondent Bill Dedman contributed to this report. ■

REGION

The Boston Globe

Fire times no surprise, officials say

By Maria Cramer, Globe Staff | February 6, 2005

They are among the richest towns south of Boston.

But Hingham's Fire Department is down 11 firefighters since 1989, the station in the center of Norwell will have only one firefighter on duty during ambulance calls, and Cohasset officials doubt they can reopen two stations closed in the 1980s, even though they say the Greenbush commuter rail line, now under construction, will probably slow response times.

These towns, along with Duxbury and Scituate, have high median household incomes and fire departments with full-time staff. But they also often fail to meet national standards for fire response times, according to a Boston Globe analysis of structure fires between 1986 and 2002.

The results did not surprise some officials.

In Cohasset, where the median household income in 2004 was $112,153, firefighters responded to structure fires during the period within 6 minutes 88.2 percent of the time, just below the 90 percent passing rate recommended by the National Fire Protection Association.

Construction of the Greenbush rail line in the middle of town is supposed to be finished by late 2006. The town used to have three fire stations, but only one remains open. Without another station on the other side of the tracks, response times could suffer, officials said. Finance Director Michael Buckley said he doubts a second station would open any time soon. The reason, he said, is money.

The town's two other stations closed soon after Proposition 2Â½, the state's property tax-limiting law, was adopted in 1980. One station was torn down, and the other was moved to Scituate, where it is being used as a garage.

Getting more public safety resources continues to be a struggle, said Paul Bilodeau, president of the Cohasset Permanent Firefighters Local 2804.

"This town typically runs with less police and fire than other towns do," Bilodeau said. "That's always the way it's been. I think it's like anything: The blue-collar towns are more for the blue-collar people, and the white-collar towns try to do as much as they can with less, and play the averages."

State aid is also a big factor, he said, adding that not everyone in Cohasset is wealthy. Neighboring Hull -- with a $69,769 median household income, lower property values, and a 98.8 percent response-time record from 1986 to 2002 -- stands to receive more help, Bilodeau said. The two main criteria for state aid are population and property values.

"This is something that sticks in my craw," Buckley said. "The perception is that the Duxburys, the Cohassets, and the Scituates have all the money in the world. . . . When Cohasset spends money, it's our own money."

In Norwell, public support for the Fire Department has grown in recent years. Chief Paul Rosebach has been able to beef up his department from 12 to 20 firefighters since he took the position nine years ago.

"The town of Norwell has been very proactive," he said.

Yet the department still does not have a deputy chief, said Tom Heaney, a firefighter and president of the Norwell Firefighters Local 2700. The department has three stations, but one is manned by call firefighters.

On an ambulance call, four of five firefighters on a shift must respond and could be gone for at least an hour, leaving one

person to cover the building.

One firefighter is "really not effective," Heany said. "It's not even close to effective. [If there is] a serious motor vehicle accident, a fire, he's going to be completely overwhelmed."

In Hingham, town and fire officials spoke positively about municipal support. Melissa Tully, chairwoman of the Board of Selectmen, said she is optimistic the town will be able to hire four more firefighters. The additions would bump up the department's staff to 59. At April Town Meeting, the department will ask for about $180,000 in fiscal 2006 for the firefighters, who will also be qualified as paramedics.

"I've always felt that we have a very strong Fire Department," Tully said. "They have been looking for additional people, and we are giving it to them."

Deputy Chief Mark Duff agreed that the town has been supportive. Hingham's response time was 87.3 percent between 1986 and 2002, according to the Globe analysis. Duff said that in 2004 the department had 3,485 emergency calls, up from 2,285 in 1989, when there were 66 firefighters in the department. The increase in calls sparked the request for more firefighters, he said.

Another argument that may sway Hingham's voters is that, with additional paramedics, the department will make more ambulance runs and collect more fees, Duff said. "We're really hopeful it's going to pass."

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Fire aid is not always mutual

The Boston Globe

By Kay Lazar, Globe Correspondent | February 6, 2005

Gloucester has routinely neglected its responsibility to help neighboring communities battle blazes, records show, even six months after the regional fire chief's association sent the city an unusual letter questioning the Fire Department's commitment.

Area fire chiefs say they understand Gloucester is struggling with severe budget cuts, but are concerned about its reliability in a mutual-aid system that depends on each department doing its fair share.

"The issue with Gloucester is, we feel that mutual aid should be mutual," said Beverly Fire Chief Richard Pierce, who coordinates the District Five mutual-aid system in southern Essex County, which includes Gloucester and 19 other communities.

A dispatcher from the district's central command in Beverly calls each fire department daily around 6:15 p.m. to find out how many staffed engines or ladders the department can send if a neighboring community needs help fighting a fire.

The Essex County Fire Chief's Association sent a letter to Gloucester dated Aug. 10 noting the city's Fire Department said it was unable to send any help 19 times during July. (A Globe review of those records indicated Gloucester was unavailable 15 times.) Two communities, Topsfield and Danvers, were logged unavailable three times that month. Others were unavailable a day or two.

Since then, Gloucester's record has improved. But a check of the handwritten log -- the system is not computerized -- shows Gloucester is routinely unavailable more than other departments. Gloucester reported zero availability six times in January and six times in December, in addition to not answering the daily check-in call another time. Danvers notched an unusual 18 zeros in December because one of its engines was being repaired, according to Fire Chief James Tutko.

Budget cuts and layoffs have strained many area fire departments. The squeeze has meant that departments routinely rely on neighboring towns, said Ronald Giovannacci, Topsfield Fire Chief and president of the Essex County Fire Chief's Association.

"Most of us cannot have a single house fire out here in the suburbs without depending on other towns," Giovannacci said. "The sad thing is, sometimes you have to call mutual aid for a car fire because you can't get adequate manpower."

Giovannacci said the association's August letter to Gloucester was the first time in more than a decade the organization has notified a community that it is not meeting its mutual-aid obligations. He said the organization would not cut a community out of the mutual-aid system for its lack of availability. The letter, he said, was an attempt to encourage Gloucester to improve its track record because other communities are counting on its department.

In July, Gloucester started closing two of its four fire stations at least half of the time after voters rejected a tax increase to fully staff them. A Globe North report last Sunday showed that Gloucester had the slowest response time between 1986 and 2002 among 19 full-time fire departments in the region.

Gloucester Fire Chief Barry McKay said he told the mayor and the City Council about the letter during a September meeting, where leaders reviewed the Fire Department's closure of stations and firefighter layoffs.

"I discussed the mutual-aid issue but I think it went over everybody's head because most people don't understand mutual aid," McKay said.

While Gloucester has been more able to help its neighbors lately, McKay said it will likely rack up a lot of zeros again this summer, from June through August, when firefighters take vacations and the city is scraping by to protect its residents.

"When we hit the summer vacations, we will be, at best, 30 to 50 percent [available for mutual-aid calls], unless something changes like the city gives us more money," McKay said.

The problem is, summer is a tough time for many other area fire departments as their staffers also go on vacation.

"The entire mutual-aid system is being taxed," said Pierce, Beverly's chief. "It's not just my cuts and Gloucester's cuts. The entire fire service has been hit pretty hard."

Budget cuts last year forced Beverly, for the first time, to say it could not provide a coveted ladder truck for mutual aid except during the winter. The ladder truck requires extra staffing. But the department still provides an engine for mutual aid.

Despite budget cuts regionwide, the Essex County Fire Chief's Association is poised to launch a major upgrade of its mutual-aid system, thanks to a $488,000 federal grant. Giovannacci, the association president, said the system, which covers 34 communities in the county, including 14 in Northern Essex, will finally be computerized. Once online, it will be able to instantly let dispatchers in the system's command centers know the availability of each piece of firefighting equipment in every department. It will also show them the closest available apparatus, helping to speed response times. The system is expected to go online in the next month or two, he said.

Kay Lazar can be reached at klazar@globe.com ■

In Lawrence, blazing a trail

The Boston Globe

City's changing face, fortunes pose new challenges for firefighters

By Angelica Medaglia, Globe Staff | February 20, 2005

There was the time in the 1980s when the mayor of Lawrence, in one of her frequent clashes with the Fire Department, publicly used a crude name to describe firefighters. Then there was the time in the 1990s when 600 striking firefighters came to City Hall to picket for a new contract, and the mayor ignored them as he walked by, smoking a cigar.

Those incidents came at the tail ends of two arson waves that left hundreds of buildings in Lawrence scorched. Those were the days when firefighters battled on two fronts: blazes in the city and mistrust in City Hall

Such stories are now secondhand knowledge to much of the Lawrence Fire Department, where nearly half of the 126 firefighters have been hired in the past 10 years. In that time, the number of fires has fallen and the department has gained the strong support of city managers. According to the National Fire Incident Reporting System, Lawrence firefighters arrive at fire scenes within the recommended six minutes of a call 99.4 percent of the time, one of the best response rates in the state.

But it was bad news that drew attention to the department last November, when two dispatchers were videotaped snorting cocaine and drinking beer. While the scandal made local and national news for nearly a week, it also set a precedent.

"We used to have a history of cleaning our laundry internally," said Lieutenant Sebastian Bongiorno, who retired last month after 32 years at the department. "But Chief [Joseph] Marquis acted decisively, quickly, rapidly, and gave full access to the media."

Lawrence appears on the cusp of an economic revitalization, while becoming the state's most Latino community. For the mostly white department, the changes mean more work and the challenge of helping residents in a city where Spanish is gaining dominance.

To get a picture of the everyday life of firefighters, a reporter spent a week with them, observing living conditions and emergency calls. These visits found a changing institution in a community where there are fewer fires, but more complex responsibilities. ■

When duty calls, worlds can collide

The Boston Globe

February 20, 2005

Engine 5, the busiest firetruck company in Lawrence, rumbles through a city enveloped by a blanket of silence during the night. Housed at the Lowell Street central station, Engine 5 is the queen bee that accompanies trucks called from the city's six other stations.

"Lawrence is only 7.7 square miles, but it packs a lot of punch," Eric Humphrey said one January night during his 24-hour shift at Engine 5.

For Humphrey and other firefighters, who work 24-hour shifts twice a week, the day moves in shifting rhythms, languorous at times, frenetic at others.

During the daytime, the men on duty run the department's administration, conduct fire inspections, train recruits, clean gear, wash floors, take medical classes, watch television, work out.

On a typical night, the activity boils down to one thing: the watchman-like quality of a lighthouse. Firefighters cook, eat together, walk across the street to the 7-Eleven, sleep.

But when the phone downstairs rings, a bell sounds a series of chimes, all of the lights in the building automatically turn on, and the dispatcher's voice blares a street address from speakers. The men rise from beds, chairs, or dining tables and scramble to the truck. In seconds, Engine 5 is blasting its sirens through the streets.

Beyond their obvious functions, firefighters in Lawrence play witness to the very life of the city they inhabit.

Tuesday, 6:32 p.m. David Reilly is on the truck, still chewing the Italian bread from his dinner. Engine 5 is headed toward Essex Street, where a man has been reported choking.

The truck -- with 40-pound oxygen tanks, hoses that fire 700 gallons of water a minute, and a ladder on top -- maneuvers like a whale through the streets. Tom Baggett, grandson of a former Lawrence fire chief, is at the wheel, pushing the truck at 35 miles an hour, but still managing to bring it smoothly to a halt at every stop sign.

When the truck arrives at a bar on Essex Street, an ambulance is already there. The city's procedures call for both an ambulance and firetruck on medical emergencies. Reilly and Humphrey climb off the truck and enter the bar to help the choking man.

Minutes later, a man strapped to a stretcher is taken into the ambulance, and the firefighters circle back to the station.

Tuesday, 10:09 p.m. The firefighters have been called to a Lowell Street building with a labyrinth of rooms, decrepit stairs, and abandoned floors. A

woman had called 911 after the smoke detector had gone off.

Just before they alight from the truck, the firefighters say to each other the building looks like a rooming house. It's the type that attracts people at low points in their lives -- drug addicts, young runaways, adults on the edge of homelessness, looking for shelter.

"Is this a rooming house?" Deputy Michael Bergeon asks the woman who called.

"No," she says with arms akimbo, "I live here." In the hallway behind her, an open door reveals glimpses of her stove, plants, and white cotton curtains.

Rooming houses are supposed to have sprinklers, but this place doesn't. Bergeon asks who the landlord is. The woman replies, "I don't know."

The men search for smoke, pointing flashlights into attics and hallways, but find none. Finally, Bergeon determines there is no fire, sending the firefighters back onto the truck.

At the station, Bergeon files a report to investigate what sort of housing this is, and whether it should have sprinklers. A month later, a fire inspector determines that the building is not a rooming house, and there are no code violations.

It's part of the department's fire-prevention efforts, which have contributed to the sharp decline in the number of emergency calls.

Friday, 7:30 a.m. The dispatcher says the call is medical. It's a minor car accident involving young people who seem to come from different worlds.

The morning air is crisp, but the frozen snow makes the streets slippery. When Engine 5 arrives at the intersection of Water Street and Broadway, two girls wearing pastel-colored pants and polo shirts with turned-up collars look distressed.

"Are you hurt?" a firefighter asks.

Yes, they say, they were hit hard. Their new white SUV has a dent in the back.

The 16-year-old students from Central Catholic High School are asked to go back into the car, and a firefighter asks questions from outside the window.

Another firefighter walks over to question the three teenagers standing next to the slightly rusted minivan that is nearly touching the SUV. The young man has baggy jeans; the two girls wear tight jeans and black jackets.

The driver is 17, her black hair pulled back in a ponytail. On her trembling hands, her long nails are adorned with a polish that sparkles. The three say they were on their way to Lawrence High School.

Soon the two girls go back into the minivan, which has a flag of the Dominican Republic hanging from a front window. The driver starts crying, while her friend consoles her in Spanish.

The firefighters turn over the questioning to the emergency medical technicians from Lawrence General Hospital, and to the police officer who arrives later.

As the firefighters linger, their driver that day, Alfredo Santiago, comes out of the truck with blue latex gloves in his hand. But it takes him 30 seconds to make his assessment that he's not needed. The firefighters follow him back to the truck and leave the scene.

The shift for firefighters always ends at 8 a.m. By 6 a.m., coffee is brewing in the kitchen, and an hour later, the relief shift begins to trickle in. Chief Joseph Marquis starts his routine at the station with stretching and push-ups with recent recruits who are being trained at the station as they await their turn at the state fire academy.

The trainees are expected to learn not only fire rescue, but the gamut of emergencies firefighters respond to. It includes calls such as the one that came in one afternoon in December 2002, when firefighters tried to save six boys who fell through ice into the Merrimack River.

The boys had formed a chain with their jackets in an attempt to rescue a friend who had first plunged through the ice. Four of the boys died.

On the day before the second anniversary of the accident, Marquis arranged a river rescue simulation on the banks of the river. In the frigid waters, firefighters learned to swim while wearing plastic suits that fit like heavy gloves and to pull one another back to shore.

"One never knows what can happen," Marquis says, expressing the tenor of the department, "but we try to keep the training up, and be prepared." ■

Language rift sparks ill will in district

The Boston Globe

February 20, 2005

The green plastic shades are always down, the door is locked, and the bulldog poster outside suggests that a sinister dog lives inside the station for Engine 7.

Squeegee, the American bulldog who rides on the firetruck whenever there is a call, is tame.

But Engine 7's three shifts of firefighters, who include the Lawrence Fire Department's only two female firefighters, work in one of the city's hottest fire districts.

The Arlington neighborhood still bears the scars of fires from years ago, as well as the outbreaks of recent months, like last summer's string of fires that caused two deaths and prompted some people to keep packed suitcases at the door.

The neighborhood also bears witness to the changing face of Lawrence.

To the right of the fire station, on Park Street, is Borinque Bodega, the scene of a shootout a couple of years ago. Across the street is La Escosesa seafood restaurant, and the doorway into a strip mall that houses a coin-operated laundry where the television is always playing programs in Spanish. A few blocks east on Park Street is a remnant of Lawrence's days as a textile capital, Malden Mills Industries Inc.

Decades ago, the neighborhood was Irish, Canadian, Italian, Greek -- the predominant ethnic groups in the Fire Department today. But by the time Malden Mills was devastated by a fire in 1995, the district's population had become nearly entirely Dominican and Puerto Rican -- its restaurants, homeowners, domino players, pigeon feeders, but not so much its firefighters.

These days, firefighters and residents cross paths mostly in an emergency. "They don't like us," Lieutenant Peter Bernard, half-joking, says of the neighbors.

But although Engine 7 serves a district who residents speak a language foreign to nearly all of the firefighters, the firehouse and the neighborhood have one thing in common: poverty.

Engine 7 has the most decrepit building in the Fire Department, with an assortment of leaks, mousetraps, faulty radiators, and old windows.

The Arlington district is Lawrence's poorest neighborhood, with per capita income of $8,243 to $10,632 in its three census tracts in 2000, compared with a statewide average of $25,952.

The love-hate relationship between the neighborhood and the firefighters goes both ways. "As a rule we keep the shades down," said Bernard. Next to the door is a burglar alarm, because the station house has been broken into several times before.

Still, the houses of the firefighters and residents have some similarities.

Dominicans have stamps and candles of San Miguel, an archangel in Roman-style clothes and boots, who holds a sword and a balance while casting down Satan. The firefighters have a small picture of St. Florian, a helmeted Roman soldier standing next to an angel, pouring water onto a burning house.

During the annual citywide Hispanic week, the firefighters say, neighbors enjoy seeing the crew hang plantains from a tree outside the station or Dominican and Puerto Rican flags from the firetruck.

But more often, firefighters get no response from the neighborhood.

When fire investigators canvassed the district looking for the suspects believed to be responsible for various fires last June, they hung posters announcing a $5,000 reward and broadcast the reward on the radio. Two residents -- a mother and her 3-month-old daughter -- had died in one of the fires.

In six months of intensive investigation, the department received only one phone call regarding the case, but the caller offered no information. Ultimately, an Arlington resident was charged with arson and murder.

The mistrust was felt more personally by firefighters when a young man was shot in the chest last summer. Firefighters recall that when they arrived on the scene at Bromfield Street, they met a hostile crowd of teenagers who cursed at them and shouted for them to save the boy.

Ana Luna, who has lived in the neighborhood for 20 years and is the director of a nonprofit group called Arlington Community Trabajando, said that while firefighters and the station are seen as a positive presence, it would be helpful to have more of them who speak Spanish.

"If they speak Spanish, it removes the communication barrier between the firefighters and the communities and takes away the possibility of misunderstanding," she said. "If someone is calling you and you don't speak the language, how are you going to help them?"

Despite the strained relationship with neighborhood residents, the members of Engine 7 are loyal to the 109-year-old firehouse.

For a time this winter, the firefighters would call Chief Joseph Marquis, complaining there was no heat. When Marquis asked them to move to the central station while the boiler could get repaired, the firefighters refused.

Why?

"We love it here," said Cyril Lane, a 13-year veteran of the department. "We would never leave. This is home." ■

Emerging from ashes of a scandal

The Boston Globe

February 20, 2005

When two emergency dispatchers were videotaped using drugs at work last November, the scandal marred the Fire Department and its emergency call center.

The tape, the result of an undercover investigation by Lawrence police, appeared repeatedly on the news and showed the pair, one a firefighter, snorting cocaine and drinking beer during their shift.

Three months later, the wounds haven't completely healed.

Both of the workers were dismissed, but the firefighter is scheduled to appear before the state Civil Service Commission next month to appeal for his job.

Meanwhile, firefighters still voice mixed feelings about the involvement of the Police Department in a misconduct case that could have avoided media attention if it had been handled internally. Others, however, say Fire Chief Joseph Marquis's decision to handle the situation openly set a precedent of fairness in the department.

Whatever the fallout, some firefighters see the emergency call center as an operation that is remote from the rest of the department. The dispatch center, on Bodwell Street, fields emergency calls that have been routed by the police and contacts the appropriate fire station.

The hidden cameras are gone, but deputy fire chiefs now are expected to visit the building and its dispatchers every night. In the past, deputy chiefs would call at irregular intervals.

Despite the recent bad publicity, the center will gain a new status as early as next month. The Essex County Fire Chiefs Association selected Lawrence as the county's second network center to coordinate mutual assistance between 34 fire departments during large-scale emergencies. (The other center is in Beverly.)

With the title comes new money. The Lawrence call center will receive a share of a $468,000 federal grant for the regional effort. Computer systems will be updated, and staffers will receive new training.

"This will be a feather in our cap," said Marquis. ■

Nature of emergencies has changed

The Boston Globe

February 20, 2005

The Lawrence Fire Department faces a far different landscape from a decade ago.

According to the latest state Fire Marshal records, the department received 6,958 calls in 2003, 93 percent of them false alarms, medical calls, and other non-life-threatening situations.

The leading cause of home fires was cooking, while arson accounted for 3 percent of the 256 building fires reported. Last year, the department received approximately 6,500 calls, and while the number hasn't been broken down, local officials expect the results to be similar.

The trend has been improving for some time. In 1991, fires that were ignited with malicious intent, including buildings and vehicles, numbered 223, a far cry from the 16 recorded for 2003.

"The decline finally took place after the department took a serious role in doing fire prevention and fire code enforcement," said Lieutenant Michael Bergeon. With the help of the police and the state a decade ago, he said, Lawrence launched tougher investigations of arson, and forced slumlords to correct violations or face fire officials in Land Court.

The current challenge is keeping pace with the city's changing ethnic population, and the conversion of old mill buildings into homes and businesses. But even as the city grew, the number of firefighters fell to as low as 110 in the early 1990s, from 217 in the late 1970s. The number has climbed back to 126 in the past decade, but trucks still answer calls with an average of three firefighters each, instead of the standard of four set by the National Fire Protection Association.

Chief Joseph Marquis, a 28-year veteran of the department, said it's time to reopen the fire station on Glenn Street, which was closed in the early 1980s, and hire about 24 more firefighters.

"It would be good for us to open another fire station," he said. "With the industrial park grown, a new high school, a new transportation center, and the redevelopment of the mills, we'd like to move from fire response to fire prevention" in that neighborhood. ■

On Scene
Firefighters should arrive at a fire within six minutes of an alarm, according to standards set by the National Fire Protection Association. The Globe calculated on-time rates for every community in the state ...

(Globe Graphic)

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BRIDGEWATER
Response rate: 92.8%
Bridgewater's new fire station is closed, with only a sign saying to call 911.

(Globe Staff Photo / John Tlumacki)

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BERLIN
Response rate: 44.1%
Berlin Deputy Fire Chief Bruce Richard (left) and Chief Robert Tervo command the town's call firefighters. Tervo says his volunteers are dedicated and well trained, but, he says, "I can only give you the best fire department you're willing to pay for."

(Globe Staff Photo / Bill Polo)

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WESTFORD
Response rate: 53.4%
Westford firefighter Dan Britko, Engine 8, returns from a call. In Westford response times lag well behind national standards.

(Globe Staff Photo / Joanne Rathe)

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MARLBOROUGH
Response rate: 91.1%
Firefighters at a blaze at the parish hall adjoining St. Anargyroi Church in Marlborough in 2001.

(Globe Staff Photo / Mark Wilson)

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FRANKLIN
Response rate: 82.5%
Firefighters working to put out a fire in a dormitory at Dean College in Franklin in 1997.

(Globe Staff Photo / Jonathan Wiggs)

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GLOUCESTER
Response rate: 90.3%
Gloucester firefighter Tom Savage is sometimes based out of the Bay View fire station, which is frequently closed.

(Globe Staff Photo / Mark Wilson)

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GLOUCESTER
Response rate: 90.3%
Gloucester's Central Station dispatcher Steve Cooney (above, at left) talks with firefighter Ted Bazdanes (right). Compared with full-time departments in other towns in the state, Gloucester had the slowest response rate to building fires.

(Globe Staff Photo / Mark Wilson)

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HAVERHILL
Response rate: 98.6%
Haverhill firefighter Brian Sawyer makes sure the medical supply bag is ready to go at the Bradford Fire Station, which was recently reopened.

(Globe Staff Photo / David Kamerman)

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GLOBE EDITORIAL

The Boston Globe

Fire alarm

January 31, 2005

THE HIGH public regard for firefighters is not always reflected in municipal budgets, especially in areas outside the big cities. The result is escalating response times to fires and medical emergencies, a dangerous condition uncovered by Globe correspondent Bill Dedman in a startling two-part series that concludes today.

Only 58 percent of full-time fire departments in the United States meet the National Fire Protection Association's recommended response time: six minutes from alert to arrival. In Massachusetts, two-thirds of full-time fire departments make the grade. But performance ratings have been sliding, along with personnel levels, since the mid-1980s. And departments that depend largely on volunteers generally fare worse.

From 1986 to 2002, more than 4,000 people died in fires with response times greater than six minutes. Unique factors, such as the mobility of residents, make it difficult to establish precise relations between response time and probability of death. But the potential for saving lives can be gleaned from data on property damage. Roughly $1 billion annually in house fire damages could have been averted if firefighters had responded within the six-minute window, according to the report.

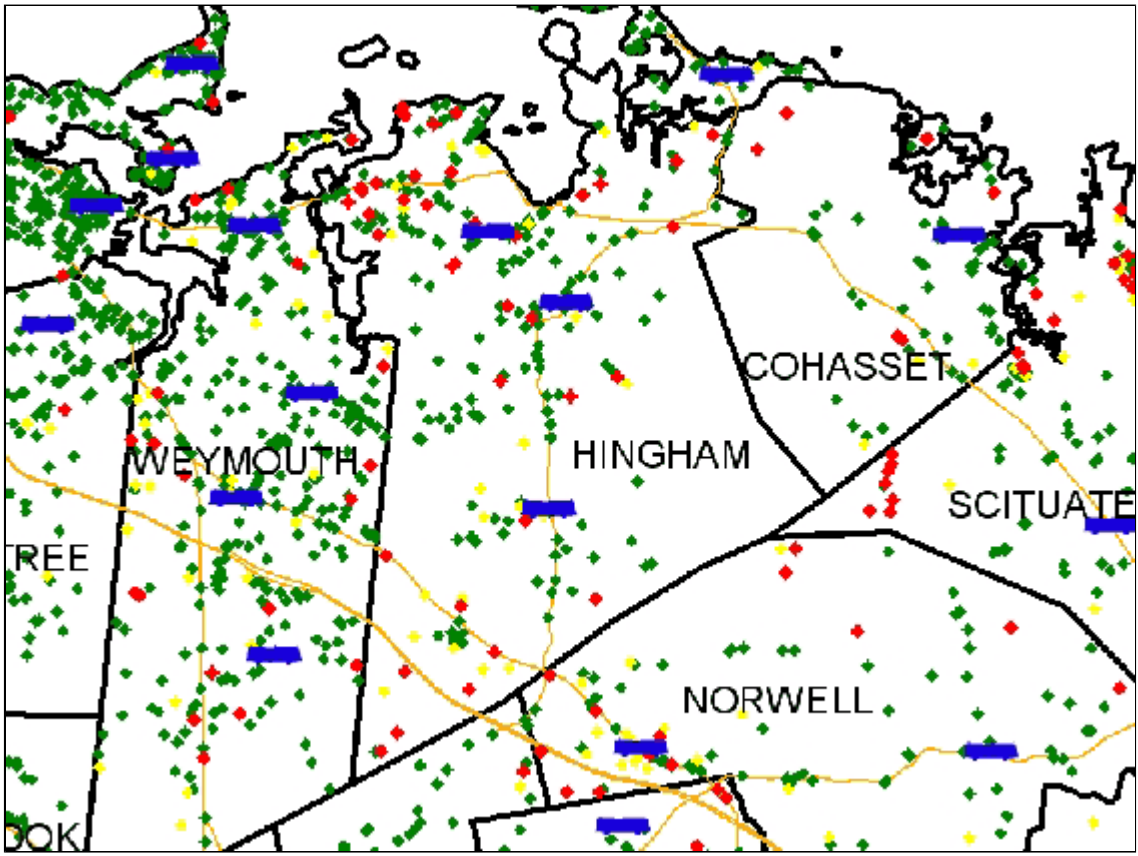
Some municipal managers and residents fear the certainty of property-tax increases more than they do the possibility of deadly blazes. A mother and her two young daughters perished in a 2001 house fire in Ipswich. Only three firefighters were covering the town of 33 square miles. A consultant had warned of understaffing, but nothing was done before the tragedy -- and nothing has been done since.

Wealthy communities with high standards for schools, libraries, roads, police, and municipal finance show an unhealthy tolerance for substandard fire service. Voluntary boards oversee practically every municipal function in Massachusetts towns, but not the fire department. The result is a dearth of debate and public policy analysis. Town managers and selectmen would do well to appoint committees to study local response time rates, staffing levels, fire losses, and other factors needed to arrive at rational decisions on firefighting service.

The home-rule mentality that permeates Massachusetts contributes to the problem. Residents need to be confident that the nearest apparatus will respond to an emergency, regardless of the name of the town emblazoned on the truck. Today, such regional efforts differ greatly by area. The Legislature must also support longstanding efforts by the state fire marshal to create statewide mandatory training standards for firefighters and inspectors.

Firefighters appreciate public respect. But that alone can't keep the engines running. ■

To find your department > > Select a community ... > > Or browse complete list



THIS MAP shows locations and response times for building fires from 1990-2002

Building fires:
- 1-5 minute response
- 6 minute response
- 7-29 minute response

Fire stations:

SEE INTERACTIVE VERSION OF THIS MAP

Hingham Fire Department

- **Community served:** Hingham, Mass.
- **Department type:** Career firefighters
- **Fire stations** (department)[1]: 3
- **Fire stations** (town): 3
- **Square miles** (town): 22.7
- **Square miles per station** (town): 7.6 [See rankings]

The Boston Globe
Deadly delays
An exclusive Globe investigation into fire

[1] Some communities have more than one fire department.

response times.
Read the series

ON-TIME RESPONSE RATES

SUMMARY:

- **On-time rate, building fires receiving a response within 6 minutes, 1986-2002:** 87.3% [See rankings]
  On-time rate, early years, 1986-1998: 89.1%
  On-time rate, recent years, 1999-2002: 79.7%

DETAILS:

	1986-1998	1999-2002	1986-2002
Fires with on-time response	253	55	308
Fires with slower response	31	14	45
Total building fires studied	284	69	353

ISO INSURANCE RATINGS

Insurance companies use ratings from ISO, a New Jersey company, to help determine fire insurance premiums. ISO rates communities on a scale from 1 (best) to 10 (no protection). The ratings are based on the community's fire department, water supply, and dispatch communications. The ratings are not based at all on response times. The same scale of 1 to 10 is applied to the effectiveness of building codes. In a split fire rating, such as 4/9, the second number applies to properties more than 1,000 feet from a hydrant.

- **ISO fire protection rating, Nov. 2004:** 4/9
- **ISO building code rating, residential, Nov. 2004:** 5
- **ISO building code rating, commercial, Nov. 2004:** 5

MUNICIPAL SPENDING ON FIRE PROTECTION

- **Fire spending FY 2003** (town only): $3,172,786
- **Fire spending as percent of total budget, FY 2003** (town only): 6.0% [See rankings]
- **Fire spending as percent of total budget, FY 1987** (town only): 9.2%
- **Fire spending per capita, FY 2003** (town only): $159 [See rankings]
- **Fire spending per capita, FY 1987, in 2003 dollars** (town only): $176
- **Change in fire spending per capita, 1987-2003** (town only): -9.7%
- **Change in other municipal spending per capita, 1987-2003, adjusted for inflation** (town only): 42.6%
- **Fire spending per housing unit, FY 2003** (town only): $441
- **Fire spending per square mile, FY 2003** (town only): $139,671

COMMUNITY INFORMATION

- **County:** Plymouth
- **Population, 2004 (estimate):** 19,906
- **Occupied housing units, 2000:** 7,189
- **Median family income, 1999:** $98,598
- **Population growth, 1990-2000:** 0.3%
- **Population growth, 1980-1990:** -0.6%
- **Tax base (assessed value per capita), FY 2004:** $195,797
- **Total assessed value, FY 2004:** $3,897,620,840
- **Single-family tax rate, FY 2004:** $10.68

To find your department > > Select a community ... > > Or browse complete list

On-time response ratings

In this table The Boston Globe ranks fire departments in Massachusetts by on-time response to building fires from 1986 through 2002.

An on-time response was judged to be one in which the fire department arrived at the fire within 6 minutes of receiving the alarm. The table also breaks the years into two periods for comparison.

Fire departments reported these fires to a federal database, the National Fire Incident Reporting System. The Globe included only fires meeting certain criteria: only building fires that a fire department reported it extinguished, only those in the department's territory, and only those where the response time was greater than 0 minutes and less than 30 minutes. A rate was calculated only when at least 20 fires meeting the criteria were reported in the time period.

Please send any questions to Bill Dedman, at Dedman@Globe.com.

Read the complete series

Rank	Fire department	Community	On-time rate, building fires receiving a response in 6 minutes, 1986-2002	On-time rate, early years, 1986-1998	On-time rate, recent years, 1999-2002
1	Melrose Fire Department	Melrose	100.0%	100.0%	100.0%
1	Nahant Fire Department	Nahant	100.0%	100.0%	100.0%
1	South Hadley Fire District 1	South Hadley	100.0%	100.0%	100.0%
1	Tisbury Fire Department	Tisbury	100.0%	100.0%	100.0%
5	Salem	Salem	99.8%	100.0%	99.3%

	Fire Department				
6	Everett Fire Department	Everett	99.7%	100.0%	98.7%
7	Chelsea Fire Department	Chelsea	99.6%	99.5%	100.0%
8	Clinton Fire Department	Clinton	99.5%	99.4%	100.0%
9	Milton Fire Department	Milton	99.5%	99.3%	100.0%
10	Wakefield Fire Department	Wakefield	99.4%	100.0%	97.9%
11	Lawrence Fire Department	Lawrence	99.4%	99.3%	99.7%
12	Revere Fire Department	Revere	99.4%	99.5%	98.8%
13	Newton Fire Department	Newton	99.3%	99.4%	99.2%
14	Medford Fire Department	Medford	99.2%	99.6%	97.9%
15	Holbrook Fire Department	Holbrook	99.2%	100.0%	97.3%
16	Whitman Fire-Rescue	Whitman	99.2%	99.0%	100.0%
17	Somerville Fire Deparment	Somerville	99.1%	99.0%	99.4%
18	Randolph Fire Department	Randolph	99.1%	99.3%	98.8%
19	Swampscott Fire Department	Swampscott	99.0%	100.0%	97.4%
20	Quincy Fire Department	Quincy	99.0%	98.9%	99.5%
21	Malden Fire Department	Malden	99.0%	99.3%	96.5%
22	Dedham Fire Department	Dedham	99.0%	99.2%	98.1%
23	Winchester Fire Department	Winchester	99.0%	98.6%	100.0%
24	Brookline Fire Department	Brookline	98.9%	98.9%	98.8%
25	Reading Fire Department	Reading	98.8%	99.3%	97.2%
26	Winthrop Fire Department	Winthrop	98.8%	99.3%	96.0%
27	Braintree Fire Department	Braintree	98.8%	98.8%	98.7%
27	Hull	Hull	98.8%	100.0%	95.1%

	Fire Department				
29	Lynn Fire Department	Lynn	98.7%	98.7%	98.7%
30	Brockton Fire Department	Brockton	98.6%	98.5%	98.7%
31	Haverhill Fire Department	Haverhill	98.6%	98.5%	98.9%
32	Hudson Fire Department	Hudson	98.5%	99.5%	94.5%
33	Springfield Fire Department	Springfield	98.4%	98.3%	98.9%
34	Arlington Fire Department	Arlington	98.3%	99.5%	93.8%
35	Stoneham Fire Department	Stoneham	98.2%	99.3%	93.3%
36	Methuen Fire Department	Methuen	97.9%	97.3%	100.0%
37	Marblehead Fire Department	Marblehead	97.8%	98.6%	95.0%
37	Maynard Fire Department	Maynard	97.8%	98.5%	96.2%
39	New Bedford Fire Department	New Bedford	97.8%	98.1%	96.5%
40	Waltham Fire Department	Waltham	97.7%	98.7%	94.6%
41	Holyoke Fire Department	Holyoke	97.7%	97.4%	98.7%
42	Boston Fire Department	Boston	97.7%	97.9%	96.6%
43	Leominster Fire Department	Leominster	97.6%	97.7%	97.2%
44	Burlington Fire Department	Burlington	97.6%	97.4%	98.0%
45	Lowell Fire Department	Lowell	97.3%	97.8%	95.5%
46	Abington Fire Department	Abington	97.2%	97.7%	94.6%
47	Needham Fire Department	Needham	97.1%	97.6%	95.0%
48	Cambridge Fire Department	Cambridge	97.1%	98.1%	95.1%
49	Stoughton Fire Department	Stoughton	97.1%	98.9%	92.7%
50	Woburn Fire Department	Woburn	97.0%	97.9%	92.3%
51	Adams	Adams	96.8%	95.1%	100.0%

	Fire Department				
52	Newburyport Fire Department	Newburyport	96.8%	97.3%	94.0%
53	Norwood Fire Department	Norwood	96.8%	98.0%	86.7%
54	Peabody Fire Department	Peabody	96.7%	96.5%	98.0%
55	Medfield Fire Department	Medfield	96.7%	95.0%	100.0%
56	Fitchburg Fire Department	Fitchburg	96.4%	97.0%	94.4%
57	Plainville Fire Department	Plainville	96.4%	95.7%	100.0%
58	Middleton Fire Department	Middleton	96.4%	97.1%	93.3%
58	Rockland Fire Department	Rockland	96.4%	96.5%	96.1%
60	Pittsfield Fire Department	Pittsfield	96.3%	96.7%	94.0%
61	Auburn Fire Department	Auburn	96.3%	96.1%	96.9%
62	Provincetown Fire Department	Provincetown	96.1%	100.0%	88.6%
63	Fall River Fire Department	Fall River	96.1%	96.3%	95.4%
64	Attleboro Fire Department	Attleboro	96.1%	96.0%	96.3%
65	West Springfield Fire Department	West Springfield	96.0%	96.0%	96.2%
66	Danvers Fire Department	Danvers	96.0%	98.8%	88.9%
67	Belmont Fire Department	Belmont	95.8%	97.5%	93.1%
68	Natick Fire Department	Natick	95.8%	97.7%	91.4%
69	Ayer Fire Department	Ayer	95.8%	94.9%	100.0%
70	Westwood Fire Department	Westwood	95.7%	98.0%	89.3%
71	Saugus Fire Department	Saugus	95.7%	96.8%	90.9%
72	Manchester Fire Department	Manchester-by-the-Sea	95.7%	94.4%	100.0%
73	Lee Fire Department	Lee	95.6%	95.9%	94.1%
74	Milford	Milford	95.5%	95.9%	94.0%

	Fire Department				
75	Ashland Fire Department	Ashland	95.4%	96.1%	92.9%
76	Salisbury Fire-Rescue Department	Salisbury	95.3%	96.9%	90.2%
77	Wellesley Fire Department	Wellesley	95.3%	96.1%	91.2%
78	Bedford Fire Department	Bedford	95.2%	92.0%	100.0%
79	Chicopee Fire Department	Chicopee	95.2%	95.2%	95.4%
80	Lexington Fire Department	Lexington	95.1%	97.1%	87.9%
81	Avon Fire Department	Avon	94.9%	93.9%	100.0%
82	Beverly Fire Department	Beverly	94.8%	95.6%	93.1%
83	Hyannis Fire Department	Barnstable	94.7%	94.0%	97.1%
84	Gardner Fire Department	Gardner	94.7%	95.5%	91.7%
85	Rockport Fire Department	Rockport	94.6%	93.3%	100.0%
85	Upton Fire Department	Upton	94.6%	94.4%	95.5%
87	Southbridge Fire Department	Southbridge	94.6%	95.4%	91.8%
88	Marshfield Fire Department	Marshfield	94.5%	94.0%	100.0%
89	Templeton Fire Department	Templeton	94.4%	100.0%	93.8%
90	Framingham Fire Department	Framingham	94.4%	97.1%	85.7%
91	Watertown Fire Department	Watertown	94.4%	95.7%	89.1%
92	North Adams Fire Department	North Adams	94.3%	94.9%	90.9%
93	North Attleborough Fire Department	North Attleborough	94.2%	93.6%	97.8%
94	Chelmsford Fire Department	Chelmsford	94.2%	94.5%	92.6%
95	Canton Fire Department	Canton	94.1%	94.5%	91.4%
96	Weymouth Fire Department	Weymouth	93.9%	94.3%	92.7%

97	Tewksbury Fire Department	Tewksbury	93.4%	93.1%	95.2%
97	Weston Fire Department	Weston	93.4%	91.2%	100.0%
99	Amesbury Fire Department	Amesbury	93.3%	94.0%	89.2%
100	Williamstown Fire Department	Williamstown	93.2%	95.2%	88.3%
101	South Hadley Fire District 2	South Hadley	93.1%	92.9%	100.0%
102	Walpole Fire Department	Walpole	93.1%	92.2%	94.5%
103	Onset Fire Department	Wareham	93.1%	93.5%	91.7%
104	Northampton Fire Department	Northampton	93.1%	93.6%	91.1%
105	Millis Fire Department	Millis	93.0%	88.5%	100.0%
106	Foxborough Fire & Rescue	Foxborough	93.0%	93.1%	92.5%
107	Bridgewater Fire Department	Bridgewater	92.8%	92.9%	92.3%
108	Shrewsbury Fire Department	Shrewsbury	92.6%	92.2%	93.8%
109	Raynham Fire Department	Raynham	92.5%	91.9%	93.3%
110	Turners Falls Fire Department	Montague	92.2%	91.0%	96.3%
111	Hopedale Fire Department	Hopedale	92.1%	97.1%	86.2%
112	Oak Bluffs Fire Department	Oak Bluffs	92.0%	96.7%	44.4%
112	Sudbury Fire Department	Sudbury	92.0%	93.5%	83.3%
114	Holliston Fire Department	Holliston	91.9%	92.4%	90.0%
115	Norton Fire-Rescue Department	Norton	91.7%	92.5%	89.7%
116	Bondsville Fire District No. 3	Palmer	91.7%	91.3%	100.0%
117	Tyngsborough Fire Department	Tyngsborough	91.5%	87.8%	100.0%
118	Easton Fire & Rescue Department	Easton	91.3%	92.1%	88.5%
119	Medway Fire Department	Medway	91.2%	88.6%	95.8%

120	Marlborough Fire Department	Marlborough	91.1%	92.1%	84.9%
121	Fairhaven Fire Department	Fairhaven	91.0%	90.3%	95.3%
122	Lenox Fire Department	Lenox	90.9%	91.7%	89.5%
123	Billerica Fire Department	Billerica	90.8%	90.5%	92.1%
124	Taunton Fire Department	Taunton	90.6%	90.5%	91.1%
124	Westborough Fire Department	Westborough	90.6%	90.2%	92.2%
126	Athol Fire Department	Athol	90.5%	92.2%	83.0%
127	Acton Fire Department	Acton	90.5%	90.7%	88.9%
128	Gloucester Fire Department	Gloucester	90.3%	90.5%	89.3%
129	Worcester Fire Department	Worcester	90.2%	90.3%	89.9%
130	Hanover Fire Department	Hanover	89.6%	87.8%	95.9%
131	Wilmington Fire Department	Wilmington	89.5%	90.6%	85.3%
132	Wayland Fire Department	Wayland	89.3%	87.5%	100.0%
133	Ludlow Fire Department	Ludlow	89.1%	89.3%	88.7%
134	Scituate Fire Department	Scituate	89.1%	89.8%	86.3%
135	Dartmouth Fire District 1	Dartmouth	89.1%	92.0%	81.1%
136	Agawam Fire Department	Agawam	89.0%	89.1%	88.8%
137	Wenham Fire Department	Wenham	88.8%	91.0%	66.7%
138	Greenfield Fire Department	Greenfield	88.6%	88.2%	89.9%
139	Cohasset Fire Department	Cohasset	88.2%	88.9%	86.4%
140	Southborough Fire Department	Southborough	88.0%	88.4%	86.7%
141	Pembroke Fire Department	Pembroke	87.9%	88.3%	86.8%
142	Wrentham Fire Department	Wrentham	87.8%	87.4%	90.9%

143	Groveland Fire Department	Groveland	87.5%	88.6%	80.0%
144	Hingham Fire Department	Hingham	87.3%	89.1%	79.7%
145	Northborough Fire Department	Northborough	87.1%	88.0%	81.8%
146	Three Rivers Fire District No. 2	Palmer	86.7%	92.1%	57.1%
147	Massport Fire-Rescue	Boston	86.5%	84.0%	91.7%
148	North Reading Fire Department	North Reading	86.2%	84.0%	95.7%
149	Falmouth Fire Rescue Department	Falmouth	86.0%	87.0%	83.3%
149	Harwich Fire Department	Harwich	86.0%	85.8%	86.8%
151	Longmeadow Fire Department	Longmeadow	85.9%	83.8%	90.3%
152	Westfield Fire Department	Westfield	85.8%	86.9%	82.7%
153	Lynnfield Fire Department	Lynnfield	85.7%	90.2%	73.3%
154	West Brookfield Fire Department	West Brookfield	85.2%	90.9%	60.0%
155	Mansfield Fire Department	Mansfield	84.8%	87.1%	79.6%
156	Dover Fire Department	Dover	84.6%	84.6%	N/A
157	West Bridgewater Fire Department	West Bridgewater	84.3%	86.9%	80.9%
158	North Andover Fire Department	North Andover	84.2%	84.1%	85.0%
159	Westport Fire Department	Westport	84.2%	84.4%	83.3%
160	Andover Fire Department	Andover	84.2%	85.4%	79.0%
161	Yarmouth Fire Department	Yarmouth	84.1%	85.6%	79.1%
162	Georgetown Fire Department	Georgetown	84.0%	83.3%	87.5%
163	Dennis Fire Department	Dennis	83.8%	83.7%	84.0%
164	Chatham Fire Department	Chatham	83.8%	86.4%	74.3%
165	Norwell Fire Department	Norwell	83.5%	83.2%	84.6%

166	Aquinnah Volunteer Fire Department	Aquinnah	83.3%	83.3%	N/A
166	Middleborough Fire Department	Middleborough	83.3%	83.1%	84.2%
168	Blackstone Fire Department	Blackstone	82.9%	82.8%	83.8%
169	Leicester Fire Department	Leicester	82.7%	84.8%	71.4%
170	Franklin Fire Department	Franklin	82.5%	81.6%	84.6%
171	Carver Fire Department	Carver	81.8%	86.8%	61.5%
171	Monterey Fire Department	Monterey	81.8%	71.4%	100.0%
171	West Newbury Fire Department	West Newbury	81.8%	84.6%	71.4%
174	Sherborn Fire Department	Sherborn	81.5%	50.0%	90.5%
175	Essex Fire Department	Essex	81.3%	78.6%	100.0%
176	Lancaster Fire Department	Lancaster	81.1%	83.7%	70.0%
177	Amherst Fire Department	Amherst	81.1%	82.2%	74.6%
178	Somerset Fire Department	Somerset	81.1%	83.7%	69.6%
179	Seekonk Fire Department	Seekonk	81.1%	82.3%	77.1%
180	Plymouth Fire Department	Plymouth	80.9%	80.8%	81.2%
181	Easthampton Fire Department	Easthampton	80.3%	79.1%	87.8%
182	Acushnet Fire & Rescue	Acushnet	80.2%	81.8%	71.9%
183	Egremont Fire Department	Egremont	80.0%	80.0%	N/A
183	Erving Fire Department	Erving	80.0%	87.5%	50.0%
183	Hardwick Fire Department	Hardwick	80.0%	N/A	80.0%
186	Grafton Fire Department	Grafton	79.9%	77.8%	85.0%
187	Cotuit Fire Department	Barnstable	79.3%	77.3%	85.7%
188	Dracut Fire Department	Dracut	79.2%	78.2%	81.6%

189	Shirley Fire Department	Shirley	78.8%	81.3%	75.9%
190	Mattapoisett Fire Department	Mattapoisett	78.4%	80.4%	72.2%
191	Edgartown Fire Department	Edgartown	78.3%	75.0%	90.0%
192	Hamilton Fire Department	Hamilton	78.1%	80.4%	72.2%
193	Kingston Fire Department	Kingston	78.1%	78.3%	77.8%
194	Newbury Fire Department	Newbury	77.8%	82.1%	62.5%
195	Sharon Fire Department	Sharon	77.3%	70.2%	94.3%
196	Nantucket Fire Department	Nantucket	76.9%	78.1%	71.9%
197	Merrimac Fire Department	Merrimac	76.7%	74.3%	80.0%
198	Great Barrington Fire Department	Great Barrington	76.4%	78.2%	72.2%
199	Swansea Fire Department	Swansea	76.3%	76.5%	75.6%
200	Centerville-Osterville-Marstons Mills	Barnstable	76.3%	74.1%	82.3%
201	Duxbury Fire Department	Duxbury	76.0%	73.5%	80.6%
202	Concord Fire Department	Concord	75.8%	74.8%	78.6%
203	Wareham Fire District	Wareham	75.1%	75.3%	74.4%
204	West Barnstable Fire Department	Barnstable	75.0%	75.0%	75.0%
204	Barnstable Fire Department	Barnstable	75.0%	76.9%	66.7%
204	Clarksburg Volunter Fire Company	Clarksburg	75.0%	72.7%	100.0%
204	New Ashford Volunteer Fire Department	New Ashford	75.0%	100.0%	0.0%
204	Norfolk Fire Department	Norfolk	75.0%	81.4%	60.0%
204	Paxton Fire Department	Paxton	75.0%	64.0%	93.3%
204	Pepperell Fire Department	Pepperell	75.0%	72.4%	86.2%
204	Tyringham Volunteer Fire Company	Tyringham	75.0%	66.7%	100.0%

204	Williamsburg Fire Department	Williamsburg	75.0%	72.7%	100.0%
213	Ipswich Fire Department	Ipswich	73.7%	77.1%	60.7%
214	East Bridgewater Fire Department	East Bridgewater	73.3%	72.2%	75.7%
215	Ware Fire Department	Ware	73.2%	78.8%	65.2%
216	Winchendon Fire Department	Winchendon	73.2%	76.3%	61.9%
217	Lakeville Fire Department	Lakeville	72.6%	69.6%	86.4%
218	Dartmouth Fire District 2	Dartmouth	72.4%	73.1%	66.7%
219	Northbridge Fire Department	Northbridge	72.4%	73.3%	69.0%
220	Berkley Fire & Rescue	Berkley	72.2%	76.3%	60.0%
221	North Brookfield Fire Department	North Brookfield	71.9%	69.0%	100.0%
222	Westhampton Fire Department	Westhampton	71.4%	66.7%	100.0%
223	Bellingham Fire Department	Bellingham	70.9%	72.7%	64.1%
224	Eastham Fire Department	Eastham	70.1%	67.3%	80.0%
225	Hanson Fire Department	Hanson	70.1%	69.0%	73.7%
226	Orange Fire Department	Orange	69.4%	70.7%	61.1%
227	Rehoboth Fire Department	Rehoboth	69.4%	72.5%	62.7%
228	Hopkinton Fire Department	Hopkinton	69.2%	67.9%	80.0%
228	Orleans Fire Department	Orleans	69.2%	71.2%	63.2%
230	Blandford Fire Department	Blandford	68.8%	66.7%	80.0%
230	Shelburne Falls Fire/Rescue/EMS	Shelburne	68.8%	71.0%	64.7%
232	East Longmeadow Fire Department	East Longmeadow	68.6%	72.6%	58.8%
233	Millbury Fire Department	Millbury	68.4%	68.1%	69.2%
234	Phillipston Fire Department	Phillipston	67.9%	65.0%	75.0%

235	Topsfield Fire Department	Topsfield	67.5%	64.5%	76.2%
236	Wilbraham Fire Department	Wilbraham	67.3%	67.7%	64.3%
237	Marion Fire Department	Marion	66.7%	81.8%	42.9%
237	Warren Fire Department	Warren	66.7%	64.6%	70.8%
237	Wellfleet Fire Department	Wellfleet	66.7%	73.0%	30.8%
240	Palmer Fire District No. 1	Palmer	66.4%	76.0%	45.7%
241	Mashpee Fire & Rescue Department	Mashpee	65.9%	67.1%	58.3%
242	Barre Fire Department	Barre	65.5%	73.5%	43.3%
243	West Tisbury Fire Department	West Tisbury	65.0%	66.7%	60.0%
244	Bourne Fire Department	Bourne	64.8%	65.7%	60.3%
245	Ashfield Fire Department	Ashfield	64.3%	70.0%	50.0%
246	Lincoln Fire Department	Lincoln	64.0%	63.0%	75.0%
247	Cheshire Volunteer Fire Department	Cheshire	62.5%	68.2%	0.0%
248	Millville Fire & Rescue	Millville	62.2%	60.5%	71.4%
249	Boxborough Fire Department	Boxborough	61.9%	64.3%	57.1%
250	Huntington Fire Department	Huntington	61.0%	69.2%	46.7%
251	Granby Fire Department	Granby	59.3%	51.7%	76.9%
252	Sunderland Fire Department	Sunderland	59.1%	69.2%	44.4%
253	New Marlborough Fire & Rescue	New Marlborough	58.8%	58.8%	N/A
254	Sheffield Fire Department	Sheffield	58.3%	65.4%	40.0%
255	Oxford Fire Department	Oxford	58.2%	58.3%	57.9%
256	West Boylston Fire Department	West Boylston	57.9%	60.7%	50.0%
257	Sutton Fire Department	Sutton	57.1%	54.8%	61.9%

258	Chilmark Fire Department	Chilmark	56.3%	45.5%	80.0%
259	Hubbardston Fire Department	Hubbardston	55.8%	55.0%	61.1%
260	Townsend Fire Department	Townsend	55.6%	59.1%	31.6%
261	Bernardston Fire Department	Bernardston	55.3%	53.4%	61.1%
262	Halifax Fire Department	Halifax	55.2%	52.2%	66.7%
263	Sandwich Fire Department	Sandwich	55.0%	54.5%	56.9%
264	Sterling Fire Department	Sterling	54.7%	54.4%	56.3%
265	Deerfield Fire Department	Deerfield	54.5%	57.9%	33.3%
265	Hancock Fire Department	Hancock	54.5%	62.5%	33.3%
265	Stockbridge Fire Department	Stockbridge	54.5%	71.4%	25.0%
265	Windsor Volunteer Fire Department	Windsor	54.5%	50.0%	66.7%
269	West Stockbridge Fire Department	West Stockbridge	53.8%	56.3%	42.9%
270	Holden Fire Department	Holden	53.7%	61.3%	36.4%
271	Westford Fire Department	Westford	53.4%	52.6%	60.0%
272	Uxbridge Fire Department	Uxbridge	53.1%	54.7%	45.5%
273	Sandisfield Fire Department	Sandisfield	52.0%	54.5%	33.3%
274	Florida Volunteer Fire Department	Florida	51.0%	46.8%	100.0%
275	Ashby Fire Department	Ashby	50.0%	47.8%	57.1%
275	Bolton Fire Department	Bolton	50.0%	47.1%	66.7%
275	Pelham Fire Department	Pelham	50.0%	50.0%	50.0%
275	Richmond Fire Department	Richmond	50.0%	42.9%	55.6%
275	Rowe Fire Department	Rowe	50.0%	66.7%	0.0%
280	Littleton Fire Department	Littleton	49.3%	45.5%	66.7%

281	Rochester Fire Department	Rochester	48.8%	56.3%	44.4%
282	Stow Fire Department	Stow	48.4%	47.6%	50.0%
283	Russell Fire Department	Russell	47.4%	55.6%	40.0%
284	Ashburnham Fire Department	Ashburnham	46.6%	50.0%	37.1%
285	Boxford Fire Department	Boxford	46.5%	57.7%	29.4%
285	Lanesborough Fire Department	Lanesborough	46.5%	59.4%	9.1%
287	Dalton Fire Department	Dalton	46.5%	40.9%	71.4%
288	Worthington Fire-Rescue	Worthington	46.2%	45.5%	50.0%
289	Westminster Fire Department	Westminster	46.1%	42.9%	53.1%
290	Savoy Volunteer Fire Department	Savoy	45.0%	52.9%	0.0%
291	Brewster Fire Department	Brewster	44.4%	43.1%	47.8%
291	Spencer Fire Department	Spencer	44.4%	45.1%	42.1%
293	Freetown Fire Department	Freetown	44.3%	50.5%	31.1%
294	Berlin Fire Department	Berlin	44.1%	42.9%	47.4%
295	South Deerfield Fire Department	Deerfield	43.8%	55.0%	25.0%
296	Harvard Fire Department	Harvard	43.4%	48.6%	33.3%
297	Charlton Fire Department	Charlton	42.9%	46.8%	26.5%
297	Dighton Fire Department	Dighton	42.9%	46.5%	30.8%
297	Holland Fire Department	Holland	42.9%	41.7%	46.7%
297	Middlefield Fire Department	Middlefield	42.9%	66.7%	25.0%
301	Douglas Fire Department	Douglas	42.4%	40.5%	45.5%
302	Rutland Fire Department	Rutland	42.2%	35.3%	53.1%
303	Brookfield Fire Department	Brookfield	42.1%	33.3%	57.1%

303	Otis Fire Department	Otis	42.1%	43.8%	33.3%
303	Peru Volunteer Fire Department	Peru	42.1%	46.2%	33.3%
306	Lunenburg Fire Department	Lunenburg	41.5%	40.8%	45.2%
307	Petersham Fire Department	Petersham	41.3%	42.5%	33.3%
308	East Brookfield Fire Department	East Brookfield	41.2%	70.0%	0.0%
309	Plympton Fire Department	Plympton	40.6%	36.4%	48.0%
310	Sturbridge Fire Department	Sturbridge	40.3%	39.6%	42.1%
311	Southwick Fire Department	Southwick	40.1%	46.5%	20.9%
312	Chester Fire Department	Chester	40.0%	38.9%	50.0%
313	Brimfield Fire Department	Brimfield	39.1%	42.9%	0.0%
313	Charlemont Fire Department	Charlemont	39.1%	42.9%	33.3%
315	Hinsdale Fire Department	Hinsdale	38.9%	35.3%	100.0%
315	Montgomery Fire Department	Montgomery	38.9%	38.9%	N/A
317	Monson Fire Department	Monson	38.0%	40.0%	35.0%
318	Dartmouth Fire District 3	Dartmouth	37.9%	41.7%	36.6%
319	Royalston Fire Department	Royalston	37.7%	40.9%	22.2%
320	Oakham Fire Department	Oakham	37.1%	36.0%	40.0%
321	Dudley Fire Department	Dudley	36.1%	38.2%	28.6%
322	Becket Fire Department	Becket	35.9%	34.3%	50.0%
323	Truro Fire Department	Truro	34.2%	36.0%	30.8%
324	Conway Fire Department	Conway	33.3%	50.0%	0.0%
324	Dunstable Fire Department	Dunstable	33.3%	25.0%	50.0%
324	Granville Fire Department	Granville	33.3%	35.7%	0.0%

324	Hawley Fire Department	Hawley	33.3%	35.7%	28.6%
324	New Braintree Fire Department	New Braintree	33.3%	33.3%	N/A
324	New Salem Fire Department	New Salem	33.3%	27.3%	42.9%
330	Rowley Fire Department	Rowley	32.4%	25.0%	55.6%
331	Hadley Fire Department	Hadley	32.0%	27.8%	42.9%
332	Hatfield Fire Department	Hatfield	31.8%	42.4%	0.0%
332	Southampton Fire Department	Southampton	31.8%	31.1%	33.3%
334	Montague Center Fire Department	Montague	31.4%	38.3%	17.4%
335	Tolland Fire Department	Tolland	30.8%	40.0%	0.0%
336	Cummington Fire Department	Cummington	30.4%	20.0%	100.0%
337	Princeton Fire Department	Princeton	29.9%	31.6%	20.0%
338	Gill Fire Department	Gill	28.2%	29.6%	25.0%
339	Chesterfield Fire Department	Chesterfield	27.3%	22.2%	50.0%
339	Whately Fire Department	Whately	27.3%	33.3%	25.0%
341	Groton Fire Department	Groton	27.1%	33.3%	13.3%
342	Mendon Fire Department	Mendon	26.1%	27.3%	0.0%
343	Hampden Volunteer Fire Department	Hampden	25.0%	21.1%	100.0%
344	Carlisle Fire Department	Carlisle	23.8%	23.5%	25.0%
345	Belchertown Fire Department	Belchertown	22.0%	22.9%	18.2%
346	Alford Fire Department	Alford	21.1%	26.7%	0.0%
346	Plainfield Volunteer Fire Department	Plainfield	21.1%	23.1%	16.7%
348	Boylston Fire Department	Boylston	17.6%	17.6%	N/A
349	Buckland Fire District	Buckland	16.7%	25.0%	0.0%

350	Webster Fire Department	Webster	14.5%	10.5%	24.5%
351	Leverett Fire Department	Leverett	13.6%	12.5%	16.7%
352	Wales Fire Department	Wales	12.5%	0.0%	100.0%
352	Warwick Fire Department	Warwick	12.5%	25.0%	0.0%
354	Shutesbury Fire Department	Shutesbury	11.8%	15.4%	0.0%
355	Wendell Fire Department	Wendell	10.7%	11.1%	0.0%
356	Colrain Fire Department	Colrain	10.6%	14.1%	0.0%
357	Goshen Fire Department	Goshen	10.0%	10.0%	N/A
358	Leyden Volunteer Fire Department	Leyden	9.1%	11.1%	0.0%
359	Shelburne Volunteer Fire Department	Shelburne	3.7%	5.6%	0.0%
360	Cuttyhunk Fire Department	Gosnold	0.0%	0.0%	N/A
360	Heath Fire Department	Heath	0.0%	0.0%	0.0%
360	Northfield Fire Department	Northfield	0.0%	N/A	0.0%
--	Monroe Fire Department	Monroe	N/A	N/A	N/A
--	Mount Washington Fire Department	Mount Washington	N/A	N/A	N/A
--	Washington Fire Department	Washington	N/A	N/A	N/A

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Fire department's share of municipal budget

In this table The Boston Globe ranks communities in Massachusetts by the share of the municipal budget that went to the fire department in fiscal year 2003, as reported by communities to the state Department of Revenue.

The table also shows how that percentage changed from the 1987 budget. Towns that had not filed are marked "N/A." This table includes municipal spending only -- not spending by any separate entity, such as a volunteer fire protection district.

Please send any questions to Bill Dedman, at Dedman@Globe.com.

Read the complete series

Rank	Community	Fire spending as % of municipal budget, FY 2003	Fire spending as % of municipal budget, FY 1987	Fire spending, FY 2003
1	Athol	12.7%	11.7%	$1,370,441
2	Watertown	9.7%	8.7%	$7,061,264
3	Whitman	9.6%	4.8%	$1,749,691
4	Orleans	9.4%	6.9%	$1,638,458
5	Waltham	9.2%	8.8%	$10,673,281
6	Bridgewater	9.2%	7.0%	$2,926,277
7	Hull	8.8%	6.9%	$2,339,930
8	Scituate	8.7%	8.1%	$3,260,736
9	Braintree	8.7%	7.2%	$6,325,783
10	Dennis	8.4%	7.1%	$2,717,972
11	Lynn	8.2%	9.8%	$18,162,134
12	Medford	8.0%	8.3%	$8,375,289
13	Yarmouth	8.0%	4.3%	$3,610,491

14	Hanson	7.9%	5.5%	$1,174,563
15	Eastham	7.9%	7.4%	$1,098,744
16	Boston	7.8%	6.2%	$142,282,613
17	Quincy	7.7%	9.0%	$15,344,609
18	Worcester	7.6%	7.0%	$29,332,547
19	Revere	7.5%	8.1%	$6,520,101
20	Marlborough	7.5%	7.6%	$5,747,332
21	Leominster	7.5%	7.7%	$5,379,936
22	Raynham	7.5%	4.4%	$1,504,206
23	Somerville	7.4%	7.2%	$10,646,105
24	Woburn	7.4%	6.6%	$5,938,272
25	Salem	7.3%	8.1%	$6,534,650
26	Avon	7.3%	4.3%	$926,675
27	Chicopee	7.3%	7.6%	$7,611,507
28	Malden	7.2%	7.5%	$7,503,349
29	Taunton	7.1%	8.0%	$7,869,443
30	Fall River	7.1%	8.6%	$12,593,576
31	Needham	7.1%	6.0%	$4,987,917
32	Wellfleet	7.0%	3.5%	$756,860
33	Rockland	7.0%	6.9%	$2,395,759
34	Brookline	6.9%	9.5%	$10,762,265
35	Haverhill	6.9%	6.3%	$8,092,950
36	Canton	6.9%	6.1%	$3,356,915
37	Burlington	6.9%	6.7%	$4,867,000
38	Brockton	6.9%	8.4%	$16,831,495
39	Weymouth	6.8%	7.0%	$6,714,542
40	Newburyport	6.8%	6.5%	$2,576,558
41	Cohasset	6.7%	9.1%	$1,732,481
42	Holbrook	6.7%	7.4%	$1,570,978
43	Gloucester	6.7%	8.7%	$4,407,108
44	Nahant	6.6%	7.0%	$545,371
45	Fitchburg	6.6%	7.0%	$6,104,641
46	New Bedford	6.6%	7.6%	$14,136,388
47	Swampscott	6.6%	8.0%	$2,302,802
48	Salisbury	6.6%	4.1%	$756,709
49	Marshfield	6.5%	6.1%	$3,648,126
50	Amherst	6.5%	4.1%	$2,920,593
51	Natick	6.4%	6.3%	$5,202,677

52	Methuen	6.4%	7.8%	$5,875,914
53	Chelsea	6.4%	11.0%	$6,103,047
54	Everett	6.4%	7.8%	$6,336,647
55	Cambridge	6.3%	6.4%	$19,665,110
56	Attleboro	6.3%	6.4%	$5,131,270
57	Framingham	6.3%	8.5%	$9,771,397
58	West Bridgewater	6.3%	5.9%	$1,042,262
59	Pittsfield	6.3%	7.0%	$5,893,832
60	Mashpee	6.3%	8.2%	$2,288,856
61	Plymouth	6.3%	9.0%	$7,559,333
62	Holyoke	6.3%	10.2%	$7,355,924
63	Gardner	6.3%	9.4%	$2,252,132
64	Chatham	6.3%	5.8%	$1,527,154
65	Milton	6.3%	7.0%	$3,463,801
66	Stoughton	6.2%	6.0%	$3,332,264
67	Easthampton	6.1%	5.0%	$1,698,435
68	Dedham	6.1%	7.0%	$3,637,751
69	Harwich	6.1%	6.8%	$2,368,743
70	Wakefield	6.0%	3.9%	$3,016,028
71	Stoneham	6.0%	7.2%	$2,762,514
72	Hingham	6.0%	9.2%	$3,172,786
73	Winthrop	6.0%	6.4%	$1,925,551
74	Melrose	6.0%	7.5%	$3,149,040
75	Beverly	5.9%	8.8%	$4,731,610
76	Kingston	5.9%	6.3%	$1,404,150
77	Amesbury	5.9%	5.8%	$2,340,710
78	North Andover	5.9%	7.5%	$3,493,292
79	Norton	5.9%	6.1%	$2,073,622
80	Middleton	5.9%	3.0%	$971,972
81	Danvers	5.9%	3.1%	$3,423,471
82	Billerica	5.8%	6.9%	$5,653,319
83	Falmouth	5.8%	5.7%	$4,504,924
84	Charlton	5.8%	1.4%	$844,798
85	Arlington	5.8%	7.1%	$4,667,968
86	Newton	5.7%	7.6%	$12,367,337
87	Abington	5.7%	4.7%	$1,650,319
88	Andover	5.7%	5.3%	$5,721,790
89	Tewksbury	5.7%	6.5%	$3,876,979

90	Sandwich	5.7%	4.9%	$2,834,195
91	Belmont	5.6%	7.8%	$3,536,452
92	Wilbraham	5.6%	6.3%	$1,293,456
93	Wrentham	5.6%	6.9%	$1,292,423
94	Westport	5.6%	5.1%	$1,285,292
95	Lawrence	5.5%	8.9%	$9,987,400
96	Ashland	5.5%	4.9%	$1,755,254
97	Brewster	5.4%	3.0%	$1,390,730
98	North Reading	5.4%	5.9%	$1,760,153
99	West Springfield	5.4%	7.8%	$3,431,259
100	Saugus	5.4%	5.2%	$2,826,437
101	Dracut	5.4%	4.8%	$2,430,120
102	Peabody	5.3%	5.7%	$6,009,242
103	Marblehead	5.3%	6.7%	$2,336,355
104	Millville	5.3%	3.7%	$189,618
105	Lowell	5.3%	9.5%	$13,324,397
106	Hubbardston	5.3%	5.6%	$244,239
107	Maynard	5.3%	6.4%	$1,337,180
108	North Attleborough	5.3%	5.8%	$3,064,214
109	Pembroke	5.2%	6.3%	$1,957,297
110	Norwell	5.2%	3.0%	$1,442,906
111	Randolph	5.2%	5.7%	$3,311,231
112	Northampton	5.2%	5.0%	$3,051,183
112	Southborough	5.2%	3.9%	$1,389,528
114	Wellesley	5.2%	6.4%	$3,720,322
115	Westminster	5.2%	1.0%	$585,894
116	Agawam	5.2%	6.3%	$2,939,808
117	Chelmsford	5.1%	7.7%	$3,895,841
118	Mendon	5.1%	0.7%	$422,636
119	Reading	5.1%	6.9%	$2,634,620
120	Acton	5.1%	6.8%	$2,557,431
121	Franklin	5.1%	3.6%	$3,354,611
122	Hudson	5.1%	2.5%	$2,067,652
123	Bourne	5.0%	7.4%	$1,938,771
124	Winchester	5.0%	5.5%	$2,766,372
125	Foxborough	5.0%	4.5%	$1,857,907
126	East Bridgewater	5.0%	3.8%	$1,422,252
127	Springfield	5.0%	6.7%	$19,800,339

128	Easton	4.9%	5.5%	$2,067,622
129	Dighton	4.8%	3.5%	$448,042
130	Concord	4.7%	5.3%	$2,436,731
131	Fairhaven	4.7%	3.4%	$1,300,952
132	Hanover	4.7%	2.0%	$1,600,201
133	Westwood	4.7%	7.0%	$2,096,187
134	Westfield	4.6%	6.2%	$4,142,743
135	Duxbury	4.6%	4.6%	$1,740,029
136	Lynnfield	4.6%	3.5%	$1,172,658
137	Norwood	4.6%	4.3%	$3,967,105
138	Warren	4.5%	2.1%	$212,262
139	Somerset	4.5%	3.7%	$1,507,735
140	Milford	4.5%	4.6%	$2,504,860
141	Clinton	4.5%	5.8%	$1,259,098
142	Manchester-by-the-Sea	4.4%	4.1%	$671,488
143	Freetown	4.4%	3.8%	$632,812
144	Southbridge	4.4%	5.2%	$1,518,583
145	Walpole	4.4%	3.2%	$2,087,716
146	Royalston	4.3%	4.7%	$57,632
147	Wilmington	4.2%	4.7%	$2,455,714
148	Weston	4.2%	6.9%	$2,052,507
149	Seekonk	4.2%	3.5%	$1,213,524
150	Greenfield	4.2%	4.6%	$1,546,834
151	Ayer	4.1%	1.8%	$705,828
152	Middleborough	4.1%	5.1%	$1,867,797
153	Wenham	4.0%	2.8%	$375,790
154	Wayland	4.0%	4.7%	$1,743,968
155	Ludlow	3.9%	4.7%	$1,560,361
156	Lakeville	3.9%	5.3%	$627,066
157	Blackstone	3.9%	2.7%	$435,877
158	Ipswich	3.9%	4.2%	$1,133,314
159	Lincoln	3.9%	4.1%	$774,639
160	Plainville	3.8%	6.1%	$590,058
161	Bedford	3.8%	4.4%	$1,876,207
162	Nantucket	3.8%	5.7%	$1,682,928
163	Westford	3.8%	1.6%	$2,324,758
164	Mansfield	3.8%	5.5%	$2,102,240
165	Newbury	3.8%	1.9%	$463,094

166	Sudbury	3.7%	5.4%	$2,268,042
167	North Adams	3.7%	6.0%	$1,237,914
168	Bellingham	3.7%	2.7%	$1,237,257
169	Rowley	3.7%	2.4%	$370,832
170	Upton	3.7%	0.9%	$399,637
171	Boxborough	3.5%	2.9%	$513,643
172	Hopkinton	3.5%	3.0%	$1,527,260
173	Sturbridge	3.4%	2.6%	$581,660
174	Lexington	3.4%	4.6%	$3,354,541
175	Shrewsbury	3.4%	4.7%	$2,110,921
176	Alford	3.4%	1.6%	$30,953
177	Sandisfield	3.3%	1.5%	$48,634
178	Ware	3.3%	3.7%	$658,090
179	Halifax	3.3%	4.1%	$435,384
180	Dudley	3.2%	1.7%	$328,327
181	Phillipston	3.2%	2.9%	$65,605
182	Ashburnham	3.2%	4.1%	$290,860
183	East Brookfield	3.1%	4.7%	$79,145
184	Norfolk	3.0%	1.4%	$657,697
185	Longmeadow	2.9%	2.8%	$1,082,417
186	Westborough	2.8%	3.4%	$1,523,265
187	Littleton	2.8%	2.6%	$600,929
188	Barre	2.8%	1.9%	$171,726
189	Topsfield	2.8%	1.8%	$443,868
190	Northborough	2.7%	3.1%	$893,043
191	Holden	2.7%	1.9%	$750,850
192	Shirley	2.7%	2.4%	$359,926
193	Northbridge	2.6%	2.9%	$775,625
194	Sharon	2.6%	3.8%	$1,262,279
195	Russell	2.5%	1.1%	$44,622
196	Stow	2.5%	0.8%	$369,565
197	Auburn	2.4%	1.5%	$747,274
198	Orange	2.4%	3.3%	$389,411
199	Townsend	2.4%	3.0%	$300,497
200	Charlemont	2.4%	2.1%	$46,141
201	Hopedale	2.4%	4.1%	$357,478
202	West Newbury	2.4%	1.9%	$170,910
203	Oakham	2.4%	2.5%	$43,055

204	Gill	2.4%	3.8%	$46,408
205	Hamilton	2.3%	0.8%	$392,555
206	Acushnet	2.3%	2.4%	$391,288
207	West Boylston	2.2%	1.2%	$337,688
208	Tolland	2.2%	0.0%	$15,913
209	Bernardston	2.2%	1.4%	$74,474
210	Worthington	2.2%	1.4%	$42,023
211	Egremont	2.2%	1.3%	$57,226
212	Great Barrington	2.2%	1.3%	$295,243
213	New Ashford	2.2%	2.9%	$7,301
214	Lunenburg	2.1%	1.8%	$401,209
215	Marion	2.1%	1.7%	$299,349
216	Otis	2.1%	0.9%	$53,990
217	Sterling	2.1%	1.8%	$289,643
218	Millbury	2.0%	1.1%	$472,713
219	New Salem	2.0%	1.7%	$31,684
220	Sherborn	2.0%	0.6%	$326,169
221	Chester	2.0%	1.7%	$43,262
222	Chilmark	1.9%	0.8%	$91,063
223	Hinsdale	1.9%	0.2%	$49,725
224	Savoy	1.9%	1.0%	$24,859
225	Rehoboth	1.9%	1.2%	$258,938
226	Leyden	1.9%	0.6%	$25,888
227	East Longmeadow	1.8%	1.7%	$566,906
228	Groton	1.8%	2.1%	$387,199
229	Uxbridge	1.8%	2.2%	$441,093
230	Merrimac	1.8%	1.3%	$183,274
231	Ashby	1.8%	1.8%	$67,555
232	New Marlborough	1.8%	1.0%	$43,269
233	Rutland	1.8%	1.6%	$160,410
234	Provincetown	1.8%	1.3%	$342,013
235	Rowe	1.8%	3.2%	$39,624
236	Plympton	1.8%	2.6%	$91,449
237	Groveland	1.8%	1.1%	$152,024
238	Millis	1.8%	0.9%	$301,249
239	Tyringham	1.7%	1.4%	$15,567
240	Truro	1.7%	3.7%	$150,169
241	Webster	1.7%	1.2%	$402,356

242	New Braintree	1.7%	2.1%	$22,871
243	Spencer	1.7%	3.9%	$193,494
244	Templeton	1.6%	1.9%	$121,367
245	Essex	1.6%	2.2%	$111,730
246	Hardwick	1.6%	1.7%	$51,774
247	Sutton	1.6%	0.7%	$288,259
248	Berkley	1.6%	2.9%	$199,281
249	West Brookfield	1.6%	1.4%	$62,689
250	Peru	1.6%	1.0%	$17,457
251	Hawley	1.6%	2.5%	$9,457
252	Boxford	1.5%	1.3%	$322,303
253	Monterey	1.5%	3.1%	$29,514
254	Erving	1.5%	0.7%	$76,711
255	Aquinnah	1.5%	0.7%	$31,342
256	Paxton	1.5%	1.0%	$146,022
257	West Tisbury	1.5%	1.7%	$138,355
258	Pelham	1.5%	1.1%	$41,294
259	Tyngsborough	1.5%	2.1%	$393,561
260	Ashfield	1.5%	1.2%	$37,784
261	Florida	1.4%	0.8%	$30,092
262	Princeton	1.4%	4.1%	$96,775
263	Heath	1.4%	1.4%	$20,966
264	Southampton	1.4%	2.2%	$140,179
265	Hancock	1.4%	2.3%	$16,613
266	Swansea	1.4%	1.2%	$365,352
267	Pepperell	1.4%	1.5%	$181,788
268	Mattapoisett	1.4%	1.0%	$202,739
269	Leverett	1.4%	0.9%	$48,270
270	Medfield	1.4%	1.1%	$462,780
271	Goshen	1.3%	1.0%	$21,547
272	Colrain	1.3%	1.5%	$30,781
273	Lancaster	1.3%	0.9%	$144,178
274	Blandford	1.3%	1.9%	$22,902
275	Hatfield	1.3%	0.0%	$81,003
276	Winchendon	1.3%	2.1%	$285,432
277	Harvard	1.3%	0.6%	$206,071
278	Carver	1.3%	0.9%	$326,337
279	Sunderland	1.3%	2.3%	$71,037

280	Holliston	1.3%	1.3%	$499,880
281	Brimfield	1.2%	0.8%	$87,390
282	Washington	1.2%	1.0%	$10,388
283	Dover	1.2%	1.5%	$225,184
284	Lenox	1.2%	0.5%	$169,379
285	Northfield	1.1%	1.6%	$60,315
286	Rochester	1.1%	0.2%	$122,895
287	Richmond	1.1%	0.7%	$42,792
288	Williamsburg	1.1%	1.3%	$46,949
289	Grafton	1.1%	1.5%	$281,006
290	Douglas	1.1%	0.6%	$170,004
291	Hadley	1.0%	2.2%	$100,519
292	Huntington	1.0%	1.5%	$25,804
293	Granby	1.0%	1.7%	$114,185
294	Edgartown	1.0%	2.3%	$190,623
295	Petersham	1.0%	1.0%	$22,904
296	Stockbridge	1.0%	1.8%	$44,965
297	Medway	1.0%	0.5%	$320,094
298	Southwick	1.0%	0.0%	$120,523
299	Holland	1.0%	1.1%	$47,726
300	Georgetown	1.0%	0.6%	$165,794
301	Brookfield	1.0%	0.7%	$61,205
302	Granville	0.9%	0.9%	$33,057
303	Leicester	0.9%	1.6%	$188,694
304	Cummington	0.9%	1.1%	$11,678
305	Berlin	0.9%	1.8%	$58,539
306	Oak Bluffs	0.9%	1.4%	$143,829
307	Warwick	0.9%	0.9%	$13,351
308	Boylston	0.9%	2.5%	$73,620
309	Lanesborough	0.9%	0.1%	$61,326
310	Shutesbury	0.8%	1.3%	$35,481
311	Rockport	0.8%	0.7%	$169,606
312	Belchertown	0.8%	1.1%	$252,599
313	Carlisle	0.8%	1.0%	$144,970
314	Windsor	0.8%	1.0%	$10,237
315	Monroe	0.8%	1.0%	$3,365
316	Monson	0.8%	1.9%	$149,558
317	Whately	0.8%	1.8%	$27,907

318	Cheshire	0.7%	0.6%	$25,299
319	Plainfield	0.7%	1.1%	$7,090
320	West Stockbridge	0.7%	0.9%	$20,818
321	Oxford	0.7%	1.5%	$161,295
322	Clarksburg	0.7%	0.4%	$18,644
323	Montgomery	0.7%	1.3%	$7,391
324	Middlefield	0.6%	0.9%	$5,225
325	North Brookfield	0.6%	0.9%	$55,166
326	Becket	0.6%	1.6%	$21,716
327	Wendell	0.6%	0.5%	$8,458
328	Conway	0.6%	1.0%	$21,246
329	Chesterfield	0.6%	0.1%	$10,895
330	Lee	0.6%	0.6%	$67,768
331	Bolton	0.6%	0.5%	$66,656
332	Tisbury	0.5%	1.3%	$68,805
333	Gosnold	0.5%	0.8%	$4,393
334	Westhampton	0.5%	0.8%	$14,918
335	Wales	0.4%	0.5%	$12,000
336	Hampden	0.3%	0.5%	$24,475
337	Sheffield	0.3%	0.6%	$17,869
338	Dunstable	0.3%	1.1%	$15,618
339	Adams	0.1%	N/A	$6,064
340	Williamstown	0.0%	0.0%	$3,675
--	Barnstable	N/A	N/A	N/A
--	Buckland	N/A	N/A	N/A
--	Dalton	N/A	0.0%	N/A
--	Dartmouth	N/A	N/A	N/A
--	Deerfield	N/A	0.1%	N/A
--	Montague	N/A	0.0%	N/A
--	Mount Washington	N/A	0.1%	N/A
--	Palmer	N/A	0.1%	N/A
--	Shelburne	N/A	0.0%	N/A
--	South Hadley	N/A	0.0%	N/A
--	Wareham	N/A	0.7%	N/A

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Square miles per fire station

In this table The Boston Globe ranks communities in Massachusetts by the territory that fire stations cover, as measured by square miles per station. Communities with the best coverage are ranked at the top.

To count the stations, the newspaper started with an old list from the state fire marshal's office, and then telephoned and faxed every fire department in the state. If you know of a change in the number of stations in any community, please let us know. The Globe counted as a fire station only buildings with a fire engine or ladder truck. Stations were included whether or not they were staffed; many of the stations listed here are not staffed, or are staffed only part time. Figures for the area of each town come from the US Census Bureau.

Please send any questions or corrections to Bill Dedman, at Dedman@Globe.com.

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Rank	Community	Square miles per station	Square miles	Fire stations
1	Chelsea	0.7	2.2	3
2	Somerville	0.8	4.1	5
3	Cambridge	0.9	7.1	8
4	Winthrop	1.0	2.0	2
5	Everett	1.1	3.4	3
6	Lawrence	1.2	7.4	6
7	Nahant	1.2	1.2	1
8	Brookline	1.4	6.8	5
9	Watertown	1.4	4.2	3
10	Medford	1.4	8.4	6
11	Lynn	1.4	11.4	8
12	Boston	1.5	49.6	34

13	Revere	1.5	6.0	4
14	Hull	1.6	3.1	2
15	Belmont	1.6	4.7	3
16	Malden	1.7	5.1	3
17	Lowell	1.8	14.5	8
18	Arlington	1.8	5.5	3
19	Salem	2.0	8.2	4
20	Quincy	2.1	16.9	8
21	Marblehead	2.3	4.5	2
22	Waltham	2.3	13.6	6
23	Melrose	2.4	4.8	2
24	Millville	2.5	5.0	2
25	Woburn	2.6	12.9	5
26	New Bedford	2.9	20.2	7
27	Newton	3.0	18.2	6
28	Swampscott	3.1	3.1	1
29	Hanover	3.1	15.7	5
30	Winchester	3.1	6.3	2
31	Provincetown	3.3	9.9	3
32	Peabody	3.4	16.8	5
33	Worcester	3.5	38.6	11
34	Rockport	3.6	7.2	2
35	Brockton	3.6	21.6	6
36	Springfield	3.7	33.2	9
37	Holbrook	3.7	7.4	2
38	Blackstone	3.7	11.2	3
39	Hudson	3.9	11.8	3
40	Wakefield	4.0	7.9	2
41	Chicopee	4.0	23.9	6
42	Natick	4.0	16.1	4
43	Wenham	4.0	8.1	2
44	Millbury	4.1	16.3	4
45	Somerset	4.2	8.4	2
46	Milton	4.4	13.1	3
47	Newburyport	4.4	8.8	2
48	Weymouth	4.5	17.8	4
49	Avon	4.6	4.6	1
50	Chelmsford	4.6	23.2	5

51	Groveland	4.7	9.4	2
52	Holliston	4.8	19.0	4
53	Braintree	4.8	14.4	3
54	Reading	5.0	9.9	2
55	Abington	5.1	10.2	2
56	Beverly	5.1	15.4	3
57	Lynnfield	5.2	10.5	2
58	Wellesley	5.2	10.5	2
59	Randolph	5.3	10.5	2
60	Billerica	5.3	26.4	5
61	Framingham	5.3	26.4	5
62	Dedham	5.3	10.6	2
63	Hopedale	5.3	5.3	1
64	Maynard	5.4	5.4	1
65	Westwood	5.6	11.1	2
66	Holyoke	5.7	22.8	4
67	Saugus	5.7	11.5	2
68	Medway	5.8	11.5	2
69	Aquinnah	5.8	5.8	1
70	Methuen	5.8	23.1	4
71	Scituate	5.8	17.4	3
72	Swansea	5.8	23.4	4
73	West Springfield	5.8	17.5	3
74	Pembroke	5.9	23.5	4
75	Burlington	5.9	11.9	2
76	Tyngsborough	6.0	18.1	3
77	Fall River	6.1	36.6	6
78	Seekonk	6.1	18.4	3
79	Fairhaven	6.2	12.4	2
80	Wareham	6.2	37.3	6
81	Bellingham	6.3	19.0	3
82	North Attleborough	6.4	19.1	3
83	Needham	6.4	12.7	2
84	Ashland	6.5	12.9	2
85	Tisbury	6.6	6.6	1
86	Georgetown	6.6	13.2	2
87	Gloucester	6.7	26.6	4
88	Stoneham	6.7	6.7	1

89	Acton	6.8	20.3	3
90	Amesbury	6.8	13.6	2
91	Danvers	6.9	13.8	2
92	Whitman	7.0	7.0	1
93	Walpole	7.0	21.0	3
94	Tewksbury	7.0	21.1	3
95	Norwell	7.1	21.2	3
96	Attleboro	7.1	28.3	4
97	Dracut	7.1	21.4	3
98	Haverhill	7.1	35.6	5
99	Lenox	7.2	21.5	3
100	Erving	7.2	14.4	2
101	Shrewsbury	7.2	21.6	3
102	Webster	7.3	14.5	2
103	Clinton	7.3	7.3	1
104	West Newbury	7.3	14.6	2
105	Marion	7.3	14.7	2
106	Marlborough	7.4	22.2	3
107	Milford	7.4	14.9	2
108	Oak Bluffs	7.5	7.5	1
109	Hingham	7.6	22.7	3
110	Southborough	7.8	15.7	2
111	Manchester-by-the-Sea	7.9	7.9	1
112	Stockbridge	7.9	23.7	3
113	Wayland	8.0	15.9	2
114	Sherborn	8.1	16.2	2
115	Stoughton	8.1	16.3	2
116	Auburn	8.2	16.4	2
117	Sudbury	8.2	24.6	3
118	Lexington	8.3	16.5	2
119	Berkley	8.3	16.5	2
120	Yarmouth	8.4	25.3	3
121	Pittsfield	8.5	42.3	5
122	Chatham	8.5	17.1	2
123	Weston	8.7	17.3	2
124	Merrimac	8.8	8.8	1
125	Russell	8.9	17.9	2
126	Barnstable	8.9	62.6	7

127	Northbridge	9.0	18.1	2
128	Falmouth	9.2	45.9	5
129	South Hadley	9.2	18.4	2
130	Fitchburg	9.4	28.1	3
131	Acushnet	9.4	18.9	2
132	Kingston	9.5	18.9	2
133	Egremont	9.5	19.0	2
134	Longmeadow	9.5	9.5	1
135	Marshfield	9.5	28.6	3
136	Ayer	9.6	9.6	1
137	Taunton	9.6	47.9	5
138	Easton	9.7	29.2	3
139	Canton	9.8	19.6	2
140	Buckland	9.9	19.8	2
141	Leominster	9.9	29.8	3
142	Rockland	10.1	10.1	1
143	Uxbridge	10.1	30.4	3
144	Wellfleet	10.2	20.3	2
145	Cohasset	10.2	10.2	1
146	Chilmark	10.3	20.5	2
147	Bourne	10.3	41.3	4
148	Mansfield	10.4	20.7	2
149	East Brookfield	10.4	10.4	1
150	Boxborough	10.4	10.4	1
151	Westford	10.4	31.3	3
152	Norwood	10.5	10.5	1
153	Dennis	10.7	21.3	2
154	Palmer	10.7	32.0	3
155	Andover	10.7	32.1	3
156	Monroe	10.8	10.8	1
157	Townsend	11.0	33.1	3
158	Wilbraham	11.2	22.4	2
159	Groton	11.2	33.7	3
160	Dighton	11.3	22.5	2
161	Harwich	11.3	22.6	2
162	Sutton	11.3	33.9	3
163	Wrentham	11.5	22.9	2
164	Plainville	11.5	11.5	1

165	Alford	11.6	11.6	1
166	Pepperell	11.6	23.2	2
167	Duxbury	12.1	24.2	2
168	Agawam	12.1	24.2	2
169	Newbury	12.1	24.2	2
170	Rochester	12.1	36.4	3
171	Millis	12.3	12.3	1
172	Boxford	12.3	24.6	2
173	Hadley	12.4	24.7	2
174	Chester	12.4	37.1	3
175	Dartmouth	12.5	62.3	5
176	Freetown	12.5	37.4	3
177	Topsfield	12.8	12.8	1
178	Clarksburg	12.8	12.8	1
179	Williamsburg	12.9	25.7	2
180	Concord	12.9	25.9	2
181	East Longmeadow	13.0	13.0	1
182	Berlin	13.1	13.1	1
183	Holland	13.1	13.1	1
184	West Tisbury	13.2	26.4	2
185	Pelham	13.2	26.5	2
186	Carver	13.3	39.8	3
187	Huntington	13.5	26.9	2
188	Harvard	13.5	27.0	2
189	Franklin	13.5	27.0	2
190	North Reading	13.5	13.5	1
191	Lee	13.5	27.0	2
192	New Ashford	13.5	13.5	1
193	Easthampton	13.6	13.6	1
194	Gosnold	13.6	13.6	1
195	Oxford	13.8	27.5	2
196	Warren	13.8	27.6	2
197	West Boylston	13.8	13.8	1
198	Bedford	13.9	13.9	1
199	Amherst	13.9	27.8	2
200	North Andover	13.9	27.8	2
201	Lancaster	14.1	28.2	2
202	Eastham	14.4	14.4	1

203	Essex	14.4	14.4	1
204	Middleton	14.4	14.4	1
205	Orleans	14.5	14.5	1
206	Edgartown	14.5	29.0	2
207	Southampton	14.5	29.1	2
208	Medfield	14.6	14.6	1
209	Sandwich	14.7	44.0	3
210	Plymouth	14.7	102.7	7
211	Sunderland	14.8	14.8	1
212	Gill	14.8	14.8	1
213	Norton	14.9	29.8	2
214	Hamilton	14.9	14.9	1
215	Lincoln	15.0	15.0	1
216	Plympton	15.1	15.1	1
217	Montgomery	15.2	15.2	1
218	Norfolk	15.2	15.2	1
219	Dover	15.4	15.4	1
220	Paxton	15.5	15.5	1
221	Carlisle	15.5	15.5	1
222	Rehoboth	15.6	46.8	3
223	Hanson	15.7	15.7	1
224	Montague	15.7	31.4	2
225	Westfield	15.8	47.3	3
226	Salisbury	15.8	15.8	1
227	West Bridgewater	15.8	15.8	1
228	Shirley	15.9	15.9	1
229	Wales	16.0	16.0	1
230	Templeton	16.2	32.4	2
231	Nantucket	16.4	49.2	3
232	Ipswich	16.5	32.9	2
233	Mattapoisett	16.5	16.5	1
234	Brookfield	16.6	16.6	1
235	Deerfield	16.7	33.4	2
236	Athol	16.7	33.4	2
237	Dunstable	16.7	16.7	1
238	Hatfield	16.8	16.8	1
239	Wilmington	17.2	17.2	1
240	Halifax	17.3	17.3	1

241	East Bridgewater	17.5	17.5	1
242	Littleton	17.6	17.6	1
243	Goshen	17.7	17.7	1
244	Northampton	17.8	35.6	2
245	Princeton	17.9	35.8	2
246	Orange	18.0	36.0	2
247	Leyden	18.0	18.0	1
248	Stow	18.1	18.1	1
249	Holden	18.1	36.2	2
250	Mendon	18.3	18.3	1
251	West Stockbridge	18.6	18.6	1
252	Northborough	18.7	18.7	1
253	Rowley	18.8	18.8	1
254	Tyringham	18.9	18.9	1
255	Richmond	19.2	19.2	1
256	Hampden	19.6	19.6	1
257	Boylston	19.7	19.7	1
258	Bolton	20.0	20.0	1
259	Ashburnham	20.5	41.0	2
260	North Adams	20.6	20.6	1
261	Whately	20.7	20.7	1
262	New Braintree	20.9	20.9	1
263	Raynham	20.9	20.9	1
264	Southbridge	20.9	20.9	1
265	Foxborough	20.9	20.9	1
266	Hubbardston	21.0	41.9	2
267	West Brookfield	21.1	21.1	1
268	Plainfield	21.3	21.3	1
269	Oakham	21.5	21.5	1
270	Westborough	21.6	21.6	1
271	Hinsdale	21.7	21.7	1
272	Truro	21.7	21.7	1
273	Upton	21.7	21.7	1
274	North Brookfield	21.7	21.7	1
275	Dalton	21.9	21.9	1
276	Charlton	21.9	43.8	2
277	Greenfield	21.9	21.9	1
278	Dudley	22.1	22.1	1

279	Barre	22.3	44.6	2
280	Great Barrington	22.8	45.7	2
281	Adams	22.9	22.9	1
282	Leverett	23.0	23.0	1
283	Gardner	23.0	23.0	1
284	Cummington	23.1	23.1	1
285	Grafton	23.3	23.3	1
286	Bernardston	23.4	23.4	1
287	Shelburne	23.4	23.4	1
288	Becket	23.9	47.8	2
289	Rowe	24.1	24.1	1
290	Middleborough	24.1	72.3	3
291	Middlefield	24.2	24.2	1
292	Ashby	24.2	24.2	1
293	Sharon	24.2	24.2	1
294	Florida	24.6	24.6	1
295	Phillipston	24.6	24.6	1
296	Leicester	24.7	24.7	1
297	Heath	24.9	24.9	1
298	Brewster	25.4	25.4	1
299	Westport	25.7	51.5	2
300	Mashpee	25.8	25.8	1
301	Peru	26.0	26.0	1
302	Charlemont	26.4	26.4	1
303	Sandisfield	26.5	53.0	2
304	Shutesbury	27.2	27.2	1
305	Monterey	27.3	27.3	1
306	Westhampton	27.3	27.3	1
307	Cheshire	27.6	27.6	1
308	Lunenburg	27.7	27.7	1
309	Granby	28.1	28.1	1
310	Hopkinton	28.2	28.2	1
311	Bridgewater	28.2	28.2	1
312	Ludlow	28.2	28.2	1
313	Lanesborough	29.7	29.7	1
314	Hawley	30.9	30.9	1
315	Chesterfield	31.3	31.3	1
316	Sterling	31.6	31.6	1

317	Southwick	31.7	31.7	1
318	Worthington	32.1	32.1	1
319	Wendell	32.2	32.2	1
320	Tolland	32.8	32.8	1
321	Spencer	34.0	34.0	1
322	Windsor	35.1	35.1	1
323	Brimfield	35.2	35.2	1
324	Northfield	35.4	35.4	1
325	Hancock	35.8	35.8	1
326	Savoy	36.0	36.0	1
327	Lakeville	36.1	36.1	1
328	Rutland	36.4	36.4	1
329	Westminster	37.3	37.3	1
330	Warwick	37.6	37.6	1
331	Douglas	37.7	37.7	1
332	Conway	37.8	37.8	1
333	Otis	38.0	38.0	1
334	Washington	38.7	38.7	1
335	Sturbridge	38.9	38.9	1
336	Ware	40.0	40.0	1
337	Ashfield	40.4	40.4	1
338	Hardwick	40.8	40.8	1
339	Royalston	42.5	42.5	1
340	Granville	43.0	43.0	1
341	Colrain	43.5	43.5	1
342	Winchendon	44.1	44.1	1
343	Monson	44.8	44.8	1
344	Williamstown	46.9	46.9	1
345	New Marlborough	47.9	47.9	1
346	Sheffield	48.5	48.5	1
347	Blandford	53.6	53.6	1
348	Belchertown	55.4	55.4	1
349	New Salem	58.7	58.7	1
350	Petersham	68.3	68.3	1
--	Mount Washington	N/A	22.4	N/A

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Per capita spending on fire protection

In this table The Boston Globe ranks communities in Massachusetts by per capita spending on fire protection in fiscal year 2003. It also shows spending for 1987, adjusted for inflation and expressed in 2003 dollars.

The information came from reports filed by the communities with the state Department of Revenue. Towns that had not filed are marked "N/A." This table includes municipal spending only -- not spending by any separate entity, such as a volunteer fire protection district.

Please send any questions to Bill Dedman, at Dedman@Globe.com.

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Rank	Community	Fire spending per capita, FY 2003	Fire spending per capita, FY 1987, in 2003 dollars	Change in fire spending per capita, 1987-2003	Change in other municipal spending per capita, 1987-2003	Fire spending per housing unit, FY 2003	Fire spending per square mile, FY 2003
1	Wellfleet	$265	$81	228.5%	59.3%	$582	$37,238
2	Orleans	$250	$123	103.3%	48.5%	$531	$113,195
3	Boston	$239	$191	25.5%	-1.7%	$594	$2,871,415
4	Cohasset	$236	$199	18.8%	64.4%	$648	$169,287
5	Chatham	$230	$113	104.3%	92.6%	$483	$89,554
6	Watertown	$215	$167	28.3%	13.7%	$483	$1,696,278
7	Burlington	$214	$159	35.0%	29.6%	$587	$409,684
8	Avon	$211	$89	137.2%	35.3%	$544	$202,667
9	Hull	$207	$203	2.3%	-20.5%	$517	$746,342
10	Lynn	$197	$186	6.0%	30.2%	$542	$1,586,711
11	Holyoke	$192	$182	5.8%	77.3%	$491	$322,347
12	Cambridge	$190	$192	-1.0%	0.4%	$461	$2,758,699
13	Eastham	$188	$122	53.5%	45.1%	$459	$76,550
14	Braintree	$187	$131	42.8%	16.0%	$500	$439,739

15	Brookline	$185	$206	-10.2%	27.1%	$420	$1,576,704
16	Harwich	$179	$139	29.0%	49.2%	$433	$104,911
17	Waltham	$179	$142	25.5%	19.7%	$460	$784,195
18	Andover	$178	$124	43.4%	33.0%	$506	$178,114
19	Scituate	$178	$160	11.4%	3.1%	$487	$187,287
20	Brockton	$177	$158	12.2%	38.4%	$500	$779,532
21	Quincy	$172	$167	2.7%	22.3%	$395	$909,580
22	Weston	$171	$214	-19.8%	36.9%	$552	$118,432
23	Needham	$169	$168	1.0%	-15.4%	$470	$392,499
24	Worcester	$169	$128	32.0%	20.9%	$438	$760,642
25	Everett	$163	$148	10.0%	37.7%	$411	$1,871,260
26	Chelsea	$162	$212	-23.4%	40.0%	$513	$2,782,840
27	Dennis	$162	$111	45.8%	23.7%	$362	$127,482
28	Fitchburg	$160	$101	58.2%	65.9%	$409	$217,540
29	Hingham	$159	$176	-9.7%	42.6%	$441	$139,671
30	Natick	$158	$127	24.4%	22.4%	$398	$324,138
31	Salem	$158	$135	17.3%	30.8%	$374	$797,979
32	Woburn	$157	$116	35.6%	20.5%	$396	$460,592
33	Swampscott	$156	$166	-5.9%	16.8%	$403	$745,992
34	Dedham	$156	$126	24.1%	43.3%	$420	$341,749
35	Canton	$155	$118	30.8%	16.5%	$422	$171,488
36	New Bedford	$155	$117	32.9%	63.5%	$370	$700,852
37	West Bridgewater	$155	$103	50.1%	38.8%	$426	$65,853
38	Nantucket	$154	$249	-38.1%	N/A	$455	$34,217
39	Nahant	$153	$123	24.6%	30.8%	$335	$438,260
40	Mashpee	$153	$180	-15.3%	17.6%	$435	$88,730
41	Medford	$152	$133	14.1%	18.3%	$380	$991,534
42	Marlborough	$151	$139	9.1%	12.7%	$396	$259,253
43	Bedford	$151	$107	41.4%	62.3%	$406	$135,280
44	Belmont	$147	$155	-4.8%	34.9%	$363	$751,397
45	Holbrook	$147	$113	29.7%	44.2%	$385	$212,160
46	Newburyport	$147	$114	28.6%	23.5%	$343	$293,428
47	Newton	$147	$168	-12.8%	18.7%	$396	$679,453
48	Norwell	$145	$65	124.0%	27.5%	$444	$68,169
49	Framingham	$144	$155	-6.9%	28.6%	$374	$369,562
50	Southborough	$144	$89	62.1%	22.7%	$471	$88,759
51	Concord	$144	$110	30.5%	47.1%	$410	$94,120
52	Marshfield	$143	$123	16.9%	10.9%	$410	$127,645
53	Billerica	$143	$126	13.2%	36.4%	$438	$214,269
54	Gloucester	$143	$149	-4.5%	28.1%	$350	$165,477
55	Westwood	$142	$171	-17.0%	28.0%	$409	$188,545
56	Chicopee	$141	$103	36.8%	42.3%	$329	$318,505
57	Wellesley	$140	$132	6.1%	31.8%	$433	$354,732

58	Plymouth	$140	$137	1.7%	51.9%	$410	$73,600
59	Norwood	$139	$118	17.3%	11.2%	$341	$376,093
60	Yarmouth	$137	$61	124.6%	17.9%	$313	$142,581
61	Amesbury	$137	$95	45.4%	42.3%	$367	$171,502
62	Fall River	$137	$119	15.5%	41.4%	$325	$344,335
63	Lawrence	$137	$139	-1.1%	64.3%	$408	$1,347,245
64	Somerville	$137	$115	18.8%	15.2%	$337	$2,589,159
65	Taunton	$135	$109	23.5%	41.5%	$357	$164,329
66	Danvers	$134	$116	14.9%	-40.7%	$358	$248,703
67	Revere	$133	$147	-9.9%	-1.3%	$335	$1,090,172
68	Milton	$132	$128	3.7%	17.2%	$386	$263,625
69	Pittsfield	$132	$117	13.2%	24.5%	$299	$139,276
70	Springfield	$132	$120	10.2%	51.5%	$347	$596,387
71	Winchester	$132	$131	0.6%	11.2%	$359	$439,602
72	Tewksbury	$131	$109	20.4%	40.6%	$389	$184,095
73	Rockland	$131	$111	18.3%	17.1%	$366	$237,185
74	Malden	$131	$133	-1.2%	2.9%	$326	$1,475,237
75	Haverhill	$131	$122	7.1%	-2.3%	$352	$227,123
76	Falmouth	$130	$113	15.0%	14.3%	$325	$98,082
77	Methuen	$130	$121	7.3%	33.4%	$355	$254,564
78	Brewster	$129	$49	162.1%	40.6%	$337	$54,690
79	Manchester-by-the-Sea	$129	$89	45.2%	34.8%	$310	$85,520
80	Sandwich	$129	$80	61.8%	42.6%	$386	$64,395
81	Wayland	$128	$118	8.7%	32.4%	$377	$109,646
82	Maynard	$128	$120	6.7%	31.1%	$312	$249,130
83	Sudbury	$127	$129	-1.1%	48.6%	$412	$92,089
84	Leominster	$126	$99	27.1%	32.7%	$326	$180,798
85	Lowell	$126	$158	-20.3%	50.1%	$352	$916,654
86	Weymouth	$124	$112	11.3%	16.1%	$305	$377,024
87	Stoneham	$124	$126	-1.6%	18.4%	$305	$411,664
88	Whitman	$124	$79	56.7%	-24.7%	$350	$251,147
89	Peabody	$124	$107	15.6%	23.8%	$323	$356,805
90	West Springfield	$122	$113	8.4%	61.4%	$290	$195,664
91	Stoughton	$122	$93	31.0%	27.8%	$325	$204,813
92	Athol	$122	$79	53.5%	39.8%	$305	$41,045
93	Wakefield	$122	$102	19.6%	-24.8%	$309	$381,274
94	Hanson	$121	$78	55.8%	5.6%	$376	$74,946
95	Duxbury	$121	$102	18.1%	18.6%	$352	$71,916
96	North Reading	$121	$112	8.1%	20.1%	$367	$130,321
97	North Andover	$121	$124	-3.1%	26.4%	$359	$125,459
98	Raynham	$120	$60	101.2%	15.9%	$363	$72,107
99	Acton	$120	$131	-8.2%	26.2%	$341	$126,100

100	Attleboro	$118	$99	19.1%	21.0%	$320	$181,446
101	Melrose	$118	$124	-4.8%	20.8%	$287	$662,928
102	Hanover	$117	$40	192.9%	23.8%	$368	$101,808
103	Beverly	$117	$148	-21.1%	21.0%	$300	$307,210
104	Rowe	$116	$184	-36.7%	16.7%	$257	$1,646
105	Wrentham	$116	$90	28.1%	61.9%	$380	$56,387
106	Marblehead	$114	$123	-7.8%	17.4%	$274	$517,465
107	Chelmsford	$113	$132	-14.2%	33.5%	$304	$168,076
108	Arlington	$113	$109	3.2%	27.7%	$246	$846,904
109	Hudson	$112	$83	34.6%	-35.4%	$296	$174,634
110	Ashland	$112	$85	30.9%	18.6%	$307	$135,853
111	Abington	$111	$82	34.7%	11.1%	$314	$162,356
112	Foxborough	$110	$74	48.3%	34.0%	$303	$88,962
113	Middleton	$110	$125	-12.1%	-54.6%	$422	$67,295
114	North Attleborough	$109	$79	37.8%	52.7%	$295	$160,836
115	Pembroke	$109	$88	24.5%	54.7%	$340	$83,393
116	Bridgewater	$109	$79	38.2%	3.9%	$389	$103,654
117	Kingston	$109	$101	8.0%	19.3%	$331	$74,181
118	Reading	$109	$125	-13.1%	19.5%	$303	$265,410
119	Lexington	$109	$110	-1.6%	36.5%	$302	$202,815
120	Saugus	$108	$95	13.7%	9.2%	$283	$246,775
121	Wilmington	$107	$114	-5.4%	8.5%	$349	$142,670
122	Gardner	$107	$124	-13.9%	34.7%	$272	$97,924
123	Norton	$106	$97	9.4%	16.2%	$353	$69,546
124	Randolph	$106	$91	15.6%	27.6%	$293	$315,250
125	Northampton	$106	$79	34.1%	27.2%	$257	$85,718
126	Easthampton	$105	$69	51.9%	22.7%	$248	$124,853
127	Winthrop	$105	$96	8.8%	12.6%	$246	$958,701
128	East Bridgewater	$104	$66	56.2%	20.5%	$327	$81,252
129	Westford	$103	$29	262.3%	50.1%	$341	$74,206
130	Agawam	$103	$90	14.4%	41.1%	$261	$121,336
131	Franklin	$103	$55	85.7%	33.9%	$330	$124,189
132	Hopkinton	$102	$52	96.1%	70.4%	$344	$54,231
133	Westfield	$102	$92	10.1%	51.0%	$280	$87,560
134	Provincetown	$101	$51	99.0%	40.4%	$186	$34,715
135	Lynnfield	$101	$65	56.0%	18.7%	$280	$111,880
136	Chilmark	$99	$27	271.8%	58.3%	$238	$4,435
137	Bourne	$98	$112	-12.6%	35.2%	$261	$46,951
138	Ayer	$95	$53	79.5%	-21.0%	$237	$73,762
139	Lincoln	$94	$71	33.1%	44.0%	$278	$51,610
140	Boxborough	$94	$53	76.2%	49.3%	$277	$49,328
141	Wilbraham	$94	$93	0.9%	15.2%	$264	$57,685
142	Clinton	$93	$81	14.7%	49.1%	$225	$172,619

143	Salisbury	$92	$59	56.3%	-3.8%	$246	$47,832
144	Milford	$91	$75	22.6%	26.0%	$240	$168,489
145	Middleborough	$90	$80	12.7%	43.8%	$268	$25,834
146	Westport	$90	$67	33.2%	21.8%	$239	$24,972
147	North Adams	$89	$85	4.9%	71.7%	$196	$60,192
148	Southbridge	$89	$69	28.8%	52.6%	$215	$72,796
149	Seekonk	$89	$52	71.6%	44.7%	$251	$65,882
150	Easton	$89	$83	7.5%	23.7%	$276	$70,877
151	Walpole	$87	$54	61.5%	17.8%	$259	$99,401
152	Greenfield	$86	$69	23.9%	37.1%	$195	$70,570
153	Mansfield	$85	$88	-3.2%	46.5%	$265	$101,439
154	Ipswich	$84	$65	30.3%	42.9%	$214	$34,442
155	Amherst	$84	$35	140.4%	48.1%	$318	$105,228
156	Wenham	$83	$35	136.9%	63.3%	$292	$46,462
157	Dracut	$82	$68	20.3%	8.6%	$233	$113,768
158	Somerset	$82	$73	11.7%	-8.8%	$216	$180,545
159	Westminster	$81	$9	785.5%	61.4%	$232	$15,693
160	Fairhaven	$80	$52	56.0%	13.0%	$196	$104,754
161	Bellingham	$80	$39	107.1%	47.5%	$223	$65,145
162	Alford	$79	$19	320.1%	88.7%	$181	$2,678
163	Aquinnah	$78	$37	113.7%	3.1%	$222	$5,432
164	Westborough	$78	$77	1.5%	25.8%	$233	$70,429
165	Sherborn	$76	$16	374.5%	48.7%	$229	$20,151
166	Freetown	$75	$42	76.2%	52.2%	$216	$16,925
167	Sturbridge	$74	$33	123.5%	69.5%	$190	$14,935
168	Plainville	$74	$76	-2.7%	59.8%	$196	$51,105
169	Mendon	$73	$8	858.5%	33.6%	$233	$23,143
170	Charlton	$71	$8	775.0%	98.5%	$223	$19,300
171	Topsfield	$71	$29	145.2%	55.8%	$211	$34,581
172	Ludlow	$70	$67	4.6%	28.1%	$204	$55,271
173	Dighton	$70	$48	46.6%	4.9%	$204	$19,907
174	Littleton	$70	$46	49.9%	39.5%	$203	$34,236
175	Sharon	$69	$66	5.8%	59.0%	$213	$52,228
176	Longmeadow	$69	$56	24.1%	23.6%	$189	$113,867
177	Ware	$68	$54	25.7%	42.2%	$163	$16,463
178	Upton	$66	$9	621.2%	78.8%	$196	$18,394
179	Truro	$66	$101	-34.9%	45.7%	$166	$6,918
180	Millville	$65	$25	162.3%	84.5%	$205	$37,932
181	Newbury	$65	$23	176.6%	41.4%	$184	$19,099
182	Rowley	$63	$34	83.8%	21.0%	$189	$19,745
183	Shrewsbury	$61	$77	-20.9%	14.1%	$171	$97,606
184	Stow	$60	$14	330.5%	32.2%	$178	$20,429
185	Northborough	$60	$56	7.3%	23.1%	$182	$47,636

186	Norfolk	$60	$16	274.1%	70.0%	$233	$43,312
187	Harvard	$60	$5	1148.0%	427.4%	$114	$7,641
188	Hopedale	$60	$50	20.2%	113.3%	$160	$67,164
189	Northbridge	$59	$38	56.2%	77.9%	$162	$42,951
190	Lakeville	$59	$56	4.7%	45.9%	$190	$17,349
191	Hubbardston	$56	$44	26.3%	37.7%	$187	$5,822
192	Shirley	$56	$27	109.4%	89.7%	$174	$22,636
193	Marion	$56	$27	103.9%	62.0%	$150	$20,411
194	Halifax	$55	$53	4.9%	35.7%	$158	$25,122
195	Sandisfield	$55	$31	79.6%	-17.3%	$149	$917
196	Gosnold	$54	$31	73.0%	165.5%	$96	$323
197	Ashburnham	$52	$38	36.1%	75.6%	$151	$7,094
198	Orange	$51	$40	28.1%	75.5%	$128	$10,821
199	Erving	$51	$16	222.8%	48.8%	$128	$5,330
200	West Tisbury	$50	$46	8.9%	23.6%	$134	$5,246
201	Blackstone	$48	$19	157.5%	75.5%	$135	$38,801
202	Edgartown	$47	$67	-30.5%	66.8%	$120	$6,576
203	Holden	$47	$27	73.3%	22.4%	$131	$20,729
204	Florida	$46	$13	259.9%	98.4%	$114	$1,225
205	Auburn	$46	$23	101.3%	20.0%	$118	$45,560
206	Tyringham	$45	$24	87.3%	49.6%	$117	$822
207	Hamilton	$45	$13	254.1%	28.6%	$147	$26,276
208	Royalston	$44	$37	21.3%	32.7%	$128	$1,357
209	Warren	$43	$25	71.7%	-22.6%	$112	$7,685
210	West Boylston	$43	$17	148.1%	31.7%	$140	$24,392
211	Lunenburg	$42	$27	56.0%	28.2%	$113	$14,488
212	Egremont	$41	$18	129.8%	34.8%	$94	$3,019
213	Monroe	$40	$29	38.1%	70.9%	$78	$312
214	Great Barrington	$40	$16	141.8%	44.0%	$98	$6,461
215	East Longmeadow	$39	$25	54.8%	42.4%	$108	$43,586
216	Phillipston	$39	$21	90.2%	71.6%	$113	$2,662
217	Dover	$39	$29	32.3%	65.6%	$122	$14,615
218	Uxbridge	$39	$27	42.5%	77.7%	$111	$14,524
219	West Newbury	$38	$36	7.1%	-11.7%	$123	$11,709
220	Sterling	$38	$39	-2.1%	-16.8%	$113	$9,166
221	Acushnet	$38	$29	28.2%	35.4%	$103	$20,754
222	Millis	$38	$14	161.0%	31.2%	$100	$24,565
223	Boxford	$38	$19	101.5%	69.0%	$126	$13,119
224	Groton	$37	$27	38.2%	67.2%	$118	$11,485
225	East Brookfield	$37	$23	62.3%	151.2%	$102	$7,628
226	Otis	$36	$18	105.9%	-12.1%	$95	$1,420
227	Gill	$36	$27	36.0%	115.2%	$86	$3,131
228	Millbury	$36	$15	135.9%	26.2%	$96	$29,079

229	Medfield	$36	$21	72.4%	39.8%	$116	$31,706
230	Holliston	$35	$24	49.1%	48.7%	$104	$26,260
231	Oak Bluffs	$35	$38	-8.0%	53.7%	$90	$19,254
232	Essex	$34	$34	1.7%	39.3%	$85	$7,768
233	Savoy	$34	$13	151.4%	36.0%	$87	$690
234	Bernardston	$34	$16	116.9%	34.8%	$88	$3,181
235	Plympton	$33	$33	0.1%	48.2%	$107	$6,042
236	Lenox	$33	$7	361.4%	77.2%	$77	$7,884
237	Tolland	$33	N/A	N/A	-45.3%	$94	$486
238	Charlemont	$33	$23	40.9%	22.2%	$88	$1,750
239	Chester	$33	$16	99.3%	67.8%	$87	$1,165
240	Sutton	$33	$9	257.3%	46.0%	$103	$8,496
241	Tyngsborough	$33	$27	22.4%	79.2%	$105	$21,799
242	New Salem	$32	$16	105.9%	78.0%	$84	$539
243	Paxton	$32	$20	64.0%	11.4%	$102	$9,436
244	Barre	$32	$13	149.6%	68.3%	$91	$3,850
245	Dudley	$32	$11	195.5%	50.6%	$88	$14,885
246	Worthington	$32	$14	134.0%	48.6%	$84	$1,309
247	Leyden	$32	$8	318.7%	12.4%	$93	$1,438
248	Townsend	$32	$25	26.3%	57.8%	$97	$9,075
249	Mattapoisett	$32	$14	120.6%	62.2%	$80	$12,282
250	Berkley	$31	$32	-1.1%	88.4%	$108	$12,045
251	Monterey	$30	$47	-35.8%	34.5%	$76	$1,080
252	Leverett	$30	$9	250.6%	121.8%	$76	$2,100
253	Carlisle	$30	$22	33.8%	71.5%	$90	$9,334
254	Pelham	$29	$12	137.5%	73.0%	$76	$1,558
255	Winchendon	$29	$27	4.6%	74.4%	$83	$6,478
256	Carver	$29	$10	177.4%	99.4%	$82	$8,196
257	Princeton	$28	$76	-62.8%	11.3%	$83	$2,700
258	Merrimac	$28	$16	70.5%	20.7%	$82	$20,758
259	Hawley	$28	$45	-39.4%	-1.1%	$69	$306
260	Richmond	$27	$11	155.9%	77.9%	$67	$2,225
261	New Ashford	$27	$42	-35.1%	-10.2%	$78	$539
262	New Marlborough	$27	$14	87.1%	5.6%	$74	$904
263	Hinsdale	$27	$2	1532.2%	43.4%	$67	$2,292
264	Russell	$27	$12	113.1%	-6.7%	$73	$2,495
265	Rochester	$25	$2	1148.8%	85.9%	$78	$3,377
266	Brimfield	$25	$9	179.5%	82.6%	$70	$2,482
267	Hatfield	$25	N/A	N/A	40.8%	$59	$4,815
268	Heath	$25	$19	29.6%	32.8%	$72	$841
269	Oakham	$25	$25	-1.2%	6.0%	$74	$2,000
270	Webster	$24	$16	54.1%	7.2%	$58	$27,681
271	Southampton	$24	$28	-14.2%	36.2%	$71	$4,821

272	Berlin	$24	$25	-4.3%	91.0%	$67	$4,472
273	New Braintree	$24	$17	46.5%	85.3%	$72	$1,097
274	Rehoboth	$24	$15	58.3%	3.2%	$73	$5,536
275	Groveland	$24	$20	18.3%	-24.8%	$74	$16,151
276	Medway	$24	$9	158.9%	38.1%	$77	$27,746
277	Ashby	$23	$17	39.8%	44.8%	$69	$2,795
278	Rutland	$23	$20	14.7%	1.9%	$71	$4,406
279	Swansea	$23	$17	33.7%	15.9%	$62	$15,636
280	Goshen	$23	$14	64.1%	25.3%	$59	$1,216
281	Douglas	$22	$8	161.2%	42.0%	$69	$4,509
282	Hancock	$22	$32	-31.6%	12.4%	$56	$465
283	Rockport	$22	$13	66.0%	48.0%	$49	$23,715
284	Georgetown	$21	$14	53.3%	3.1%	$65	$12,590
285	Granville	$21	$13	58.8%	55.6%	$59	$769
286	Peru	$21	$12	79.2%	10.1%	$59	$671
287	Lanesborough	$21	$1	2249.4%	72.3%	$51	$2,062
288	Ashfield	$21	$14	42.7%	13.0%	$51	$935
289	Stockbridge	$20	$28	-28.0%	30.2%	$45	$1,897
290	Washington	$20	$11	84.0%	50.6%	$51	$269
291	Northfield	$20	$19	7.6%	47.7%	$52	$1,706
292	Hadley	$20	$33	-39.7%	33.4%	$53	$4,066
293	Brookfield	$20	$7	188.4%	101.8%	$51	$3,693
294	Williamsburg	$20	$14	35.6%	65.7%	$46	$1,826
295	Holland	$19	$12	55.6%	76.9%	$53	$3,645
296	Petersham	$19	$13	48.9%	44.3%	$52	$335
297	Hardwick	$19	$14	34.4%	41.2%	$52	$1,268
298	Lancaster	$19	$12	59.1%	14.3%	$70	$5,114
299	Blandford	$19	$21	-11.8%	30.9%	$50	$428
300	Shutesbury	$19	$13	38.5%	109.6%	$54	$1,306
301	Belchertown	$18	$15	23.7%	67.3%	$52	$4,563
302	Sunderland	$18	$19	-3.8%	73.8%	$44	$4,800
303	Grafton	$18	$19	-7.6%	36.0%	$49	$12,074
304	Granby	$18	$24	-24.9%	28.3%	$51	$4,069
305	Leicester	$18	$19	-5.0%	64.8%	$51	$7,646
306	Warwick	$18	$10	81.6%	78.5%	$46	$355
307	Boylston	$18	$35	-50.4%	44.4%	$47	$3,737
308	Templeton	$17	$13	30.0%	51.9%	$50	$3,744
309	Monson	$17	$25	-30.0%	72.5%	$48	$3,337
310	Tisbury	$17	$30	-43.2%	47.2%	$42	$10,458
311	Whately	$17	$23	-26.5%	81.3%	$44	$1,351
312	Colrain	$17	$17	-2.1%	13.6%	$45	$708
313	Spencer	$17	$25	-33.0%	60.5%	$42	$5,684
314	West Brookfield	$16	$15	9.1%	0.4%	$46	$2,969

315	Pepperell	$16	$12	29.4%	41.4%	$47	$7,845
316	West Stockbridge	$15	$10	42.9%	85.3%	$35	$1,117
317	Bolton	$15	$8	77.0%	60.7%	$47	$3,333
318	Southwick	$13	N/A	N/A	-10.7%	$36	$3,802
319	Montgomery	$12	$13	-4.9%	84.9%	$29	$487
320	Plainfield	$12	$16	-26.9%	5.2%	$29	$333
321	Oxford	$12	$20	-42.0%	25.2%	$32	$5,864
322	North Brookfield	$12	$11	3.1%	40.4%	$30	$2,539
323	Becket	$12	$24	-51.6%	27.2%	$31	$455
324	Huntington	$11	$15	-22.5%	13.8%	$32	$959
325	Lee	$11	$10	11.0%	26.6%	$28	$2,507
326	Clarksburg	$11	$5	132.0%	43.3%	$28	$1,452
327	Windsor	$11	$13	-11.1%	16.0%	$31	$291
328	Cummington	$11	$15	-25.4%	-7.9%	$31	$507
329	Conway	$11	$11	-1.6%	74.4%	$31	$562
330	Westhampton	$10	$10	-1.7%	73.1%	$28	$546
331	Middlefield	$9	$16	-45.4%	-25.0%	$25	$216
332	Chesterfield	$9	$1	967.9%	0.1%	$24	$348
333	Wendell	$8	$6	46.2%	28.9%	$22	$263
334	Cheshire	$8	$4	85.9%	51.1%	$19	$918
335	Wales	$7	$6	11.6%	56.6%	$18	$752
336	Sheffield	$5	$7	-31.8%	32.3%	$13	$368
337	Dunstable	$5	$12	-56.4%	78.9%	$17	$933
338	Hampden	$5	$7	-36.4%	6.0%	$13	$1,246
339	Adams	$1	N/A	N/A	42.1%	$2	$264
340	Williamstown	$0	N/A	N/A	34.3%	$1	$78
--	Barnstable	N/A	N/A	N/A	32.7%	N/A	N/A
--	Buckland	N/A	N/A	N/A	6.3%	N/A	N/A
--	Dalton	N/A	N/A	N/A	23.9%	N/A	N/A
--	Dartmouth	N/A	N/A	N/A	11.4%	N/A	N/A
--	Deerfield	N/A	$1	N/A	78.3%	N/A	N/A
--	Montague	N/A	N/A	N/A	31.6%	N/A	N/A
--	Mount Washington	N/A	$2	N/A	-35.6%	N/A	N/A
--	Palmer	N/A	$1	N/A	75.3%	N/A	N/A
--	Shelburne	N/A	N/A	N/A	10.6%	N/A	N/A
--	South Hadley	N/A	N/A	N/A	46.5%	N/A	N/A
--	Wareham	N/A	$10	N/A	46.0%	N/A	N/A