# THIRD NEEDS ASSESSMENT OF THE U.S. FIRE SERVICE



## CONDUCTED IN 2010 AND INCLUDING COMPARISONS TO THE 2001 AND 2005 NEEDS ASSESSMENT SURVEYS

**June 2011**

**NFPA**

**National Fire Protection Association**
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## Abstract

Fire service needs are extensive across the board, and in nearly every area of need, the smaller the community protected, the greater the need.  Needs have declined to a considerable degree in a number of areas, particularly personal protective and firefighting equipment, two types of resource that received the largest shares of funding from the Assistance to Firefighters grants (AFG).   Declines in needs have been more modest in some other important areas, such as training, which have received much smaller shares of AFG grant funds.  In all areas emphasized by the AFG and SAFER grants, there is ample evidence of impact from the grants but also considerable residual need still to be addressed, even for needs that have seen considerable need reduction in the past decade. There has been little change in the ability of departments, using only local resources, to handle certain types of unusually challenging incidents, including two types of homeland security scenarios (structural collapse and chem/bio agent attack) and two types of large-scale emergency responses (a wildland/urban interface fire and a developing major flood).  However, the surveys have indicated improvement in the development of written agreements to help in the use of outside resources. This may provide the strongest base on which to build, namely, the creation of regional and national agreements to allow costs of shared resources to be shared across a much wider area while also providing a protocol for any community to respond to an unusually challenging incident that is very unlikely within the community but not so unlikely within the entire region.

## Acknowledgements

For more information about the National Fire Protection Association, visit www.nfpa.org or call 617-770-3000. To learn more about the One-Stop Data Shop go to www.nfpa.org/osds or call 617-984-7443.

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# EXECUTIVE SUMMARY

This third Fire Service Needs Assessment Survey was conducted by NFPA in 2010 and follows two earlier surveys in 2001 and 2005, the latter two conducted under grants from the U.S. Fire Administration. These surveys have been linked from their inception to the DHS/FEMA grant programs, including the broad spectrum grants set up under Public Law 108-767, Title XXXVI – Assistance to Firefighters, and the staffing-focused program called SAFER.

The goal has been to identify major gaps in the needs of the U.S. fire service, where needs are identified by comparing what departments have with what existing consensus standards, government regulations, and other nationally recognized guidance documents say they need to have in order to be safe and effective in conducting their many responsibilities. Once the grant programs began, targeted on many of these identified needs, a second major goal became to measure the success of the grant program in reducing these needs.

This executive summary therefore includes not only a summary of the findings of the three needs assessment surveys but also a summary of the implications of those findings for the grant programs.

**Structure of the Survey and This Report**

The Second and Third Fire Service Needs Assessment Survey were conducted as stratified random-sample surveys, while the First Needs Assessment Survey had been conducted as a census with partial participation. (See Appendix 1.) The NFPA used its own list of local fire departments as the mailing list and sampling frame of all fire departments in the US that report on fire incidents attended.

In all, 19,992 fire departments – three-fourths of all the departments in the system, including all departments protecting communities of at least 50,000 population – were mailed survey forms, and 4,660 responded, for a 23% response rate.

The content of the survey was developed by NFPA in the first survey, in collaboration with an ad hoc technical advisory group consisting of representatives of the full spectrum of national organizations and related disciplines associated with the management of fire and related hazards and risks in the U.S. The survey form was used with only a couple additions and deletions in order to maximize comparability of results and development of valid timelines.

The report is organized around the following groups of needs:
- Personnel and their capabilities, including staffing, training, certification, and wellness/fitness
- Facilities and apparatus

- ➢ Personal protective equipment, including some of what may have been categorized as firefighting equipment in the DHS/FEMA grants program
- ➢ Fire prevention and code enforcement
- ➢ Ability to handle unusually challenging incidents, including personnel, equipment, and plans or agreements to facilitate working with others
- ➢ Communications and new technologies

The first last three groups have some important differences. Some fire prevention programs are primarily led or conducted at a national or state level. The DHS/FEMA Assistance to Firefighters grant program

**Measuring Size of Need vs. Lack of Success in Meeting Need**

In the report, it will sometimes be helpful to express the same need in two different measures reflecting two different contexts. In Figure ES-1, the interest is always in the brown area (the middle circle minus the inner or smallest circle). These are departments lacking a resource (e.g., equipment, training) that they need (based on a standard or other guidance) in order to perform a service that is within their responsibility.

**Size of Need vs. Success in Meeting Need**

**Figure ES-1. Departments Providing a Service vs. Departments Having a Resource for a Service They Provide**



If the focus is on that particular resource, then the most useful measure might be "lack of success in meeting need", which could be defined as the brown area as a fraction of the middle circle, or percent of departments providing service that lack the resource. In this approach, the green circle shows "met need" and the brown area shows "unmet need"

with the middle circle as a whole showing "total need, met or unmet" and the red area showing departments that have no need because they have no such responsibility.

This report examines dozens of different needs for dozens of different resources, and it is intended to help inform grant and support programs that could be directed to some or all of those different needs. For that purpose, the most useful measure could be "size of (unmet) need", which could be defined as the brown area as a fraction of the outer or all-departments circle.

You can also show these two measures as ratio formulas. The measure of lack of success in meeting need would have the following formula:

(Departments that provide service and lack resource) / (Departments that provide service)

The measure of size of (unmet) need would have the following ratio formula, which can be related to the first measure by the following equation:

(Departments that provide service and lack resource) / (All departments) =

(Departments that provide service and lack resource) / (Departments that provide service) x (Departments that provide service) / (All departments)

The measure of size of need will be more useful in comparing needs between different resources. The equation above also shows that when the two measures seem to go in different directions, it will be because there has been a change in the percent of all departments that have the responsibility, a measure that is also provided in this report.

**Program Evaluation Concepts and Linking the Findings on Needs to Implications for the Grants Programs**

Evaluation of a program like the Assistance to Firefighters grant program or the SAFER grant program should proceed in stages, consistent with the identified stages of program evaluation. For example:

➢ Formative evaluation (feasibility, appropriateness, acceptability, and applicability): This kind of evaluation was already conducted as part of the justification that led to the creation of the grants program. It need not be revisited here.

➢ Process evaluation (whether the program is reaching the target population): By comparing the grants awarded to the needs reported by the grantee fire departments, it is possible to evaluate the grants program process. NFPA has conducted two such matching studies. The first compared grants in 2001-2004 to needs reported in 2001, for those departments whose grant applications and needs

survey responses could be "matched."[1]  The second compared grants in 2005-2008 to needs reported in 2005.[2]  Only the first matching study included grants for apparatus or fire prevention in the analysis.  In addition to providing information on whether grants are well-targeted to real needs in the grantee departments, it is also possible to use these results to assess which what shares of grants and grant funds went to each of the six groups of needs cited above.  That information will be provided in this executive summary.

  ➢ Impact evaluation (whether program is changing the targeted conditions):  This is where the Needs Assessment Surveys are most valuable, because they can confirm or disconfirm reductions in needs of various kinds and compare the patterns of large vs. small reductions in needs with the areas of focus of the grants program.

  ➢ Outcome evaluation (whether program is changing the targeted outcomes):  An evaluation of changes in the targeted outcomes – fewer fires, fewer civilian or firefighter deaths or injuries, less loss, less cost, whatever the outcomes might be – is understood to be the final and defining test of a program's success but also, for most programs, a judgment that requires many years to make.  Deaths are so rare nationally that it can take a decade for a nationally implemented program to show a statistically significant result.  Injuries are so rare in a single department or even a group of departments that multiple years are likely required.  Also, the outcomes of interest are normally driven by many factors in addition to the program being evaluated.  Sorting out the differential effect of the program can be complex and require even more data.

    It is important to avoid rushed judgments under these conditions.

Instead, it is better to see how well the facts support the following argument:

  1. If the grant funds appear to have been well-matched to significant needs of the fire service, and
  2. If the needs addressed by significant funding appear to be significantly declining, even if there may still be significant residual need, and
  3. If the expertise and consensus processes employed by the sources of the standards, codes, regulations and other guidance used to define needs are considered sufficiently strong as to make a basic case that meeting needs will lead to improved outcomes in time, then
  4. The Needs Assessment Survey will support a conclusion that the grant program is effective but not *yet* applied on the scale required to eliminate most critical needs and to produce significant changes in targeted outcomes.

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[1] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration and NFPA, October 2006.
[2] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service – Second Analysis Report*, NFPA, December 2010.

## Personnel and Their Capabilities

There have been slight improvements in measures of need for training:

➢ **Lack of success in meeting need:** Half (46%) of all fire departments that are responsible for structural firefighting have not formally trained all their personnel involved in structural firefighting, down from 55% in 2001 and 53% in 2005.

➢ **Lack of success in meeting need:** Half (48%) of all fire departments that are responsible for emergency medical service (EMS) have not formally trained all their personnel involved in EMS, down from 54% in 2001 and 53% in 2005.

➢ **Lack of success in meeting need:** Two-thirds (65%) of all fire departments that are responsible for hazardous material response (Hazmat) have not formally trained all their personnel involved in Hazmat, down from 73% in 2001 and 71% in 2005.

➢ **Lack of success in meeting need:** Two-thirds (68%) of all fire departments that are responsible for wildland firefighting have not formally trained all their personnel involved in wildland firefighting, down from 75% in 2001 and 74% in 2005.

➢ **Lack of success in meeting need:** Six out of seven (85%) fire departments that are responsible for technical rescue have not formally trained all their personnel involved in technically unchanged, largely unchanged from 88% in 2001 and 2005.

There has been improvement in the measure of need for wellness/fitness programs.

➢ Seven out of ten (70%) fire departments have no program to maintain basic firefighter fitness and health, down from 80% in 2001 and 76% in 2005.

**Staffing**

**Except for cities protecting at least 250,000 population, most cities do not assign at least 4 career firefighters to an engine or pumper and so are probably not in compliance with NFPA 1710,** *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, **which requires a minimum of 4 firefighters on an engine or pumper.** Results are not provided for smaller communities, because the volunteer share of firefighters is large enough that it is no longer safe to assume that the responding career firefighters are a good estimate of the total responding firefighters.

The percentage of departments with fewer than four career firefighters assigned to an engine or pumper is:

- 20% for departments protecting at least 500,000 population (in 2010, when 95% of firefighters protecting communities of this size were career)
    - down from 30% in 2001 (when 92% of firefighters protecting communities of this size were career)
    - and largely unchanged from 22% in 2005 (when 93% of firefighters protecting communities of this size were career)
- 26% for departments protecting 250,000 to 499,999 population (in 2010, when 88% of firefighters protecting communities of this size were career)
    - down from 41% in 2001 (when 86% of firefighters protecting communities of this size were career)
    - and down from 44% in 2005 (when 80% of firefighters protecting communities of this size were career)
- 60% for departments protecting 100,000 to 249,999 population (in 2010, when 92% of firefighters protecting communities of this size were career)
    - largely unchanged from 56% in 2001 (when 82% of firefighters protecting communities of this size were career)
    - and largely unchanged from 59% in 2005 (when 91% of firefighters protecting communities of this size were career)
- 71% for departments protecting 50,000 to 99,999 population (in 2010, when 87% of firefighters protecting communities of this size were career)
    - largely unchanged from 76% in 2001 (when 77% of firefighters protecting communities of this size were career)
    - and largely unchanged from 71% in 2005 (when 86% of firefighters protecting communities of this size were career)

**Over the three Needs Assessment Surveys, except for the largest communities, protecting at least 250,000 population, there is no evidence of a broad trend toward more frequent assignment of at least 4 career firefighters to an engine or pumper and so no evidence of a trend toward greater compliance with NFPA 1710.**

This category of need has received small shares of grants and grant dollars. Training received 9% of grants and 4% of grant funds in the first matching study, when apparatus and fire prevention grants were included in the analysis, and received 9% of grants and 7% of grant funds in the second matching study, when apparatus and fire prevention grants were not included in the analysis. Wellness/fitness programs received 4% of grants and 4% of grant funds in the first matching study, and 4% of grants and 6% of grant funds in the second matching study.

**These statistics are consistent with a characterization of the training and wellness/ fitness parts of the AFG program grants as modestly successful, consistent with the small scale of this part of the program. The grants must continue and grow if the large remaining need is to be addressed as well.**

The survey was conducted before significant impacts from the reported reductions in fire department budgets, due to ripple effects from the financial crisis that began in 2007-2008. Therefore, it is quite likely that any changes in these measured levels of need have

been in the direction of increased need.  It also is likely that the SAFER grants have more often gone not to reduce need but to prevent need from growing.

## Facilities and Apparatus

### Vehicles and Apparatus

➢ Nearly half (46%) of all fire department <u>engines and pumpers</u> were <u>at least 15 years old</u>, and this is down from 51% in 2001 and 50% in 2005.

- If there had been no replacement of engines and pumpers, nearly all of the 51% of engines that were at least 15 years old in 2001 would have been at least 20 years old in 2005, but in fact only 32% of engines were at least 20 years old in 2005.

- If there had been no replacement of engines and pumpers, nearly all of the 35% of engines that were at least 20 years old in 2001 would have been at least 30 years old in 2010, but in fact only 11% of engines were at least 30 years old in 2010, down from 13% in 2001.

The DHS/FEMA grants appear to have helped departments to hold the line on the age distribution of the apparatus inventory and do a little better (46% is lower than 51%).  The fact that the newly acquired apparatus probably were in most cases not only newer but also more capable is a benefit that the survey did not capture.

Holding the line on age by itself is no small accomplishment.  There were roughly 9,000 engines that were at least 30 years old in 2010, and whatever age criterion is used, another 1,000 to 2,000 engines cross that threshold each year.  Getting ahead of that relentless aging process would take all or nearly all of the grant dollars at the levels recently appropriated, but the caps on grants for use on apparatus mean that only a fraction of the grant dollars have gone to this purpose.  The fact that the line has been held on vehicle age and even reduced by a little means that many, probably most, replacements were made without grant funds.

In 2010, nearly two-thirds of the engines that were 30 years or older were in use in departments serving rural communities, under 2,500 population protected.  These are nearly all volunteer fire departments.  Not surprisingly, the percentage of grants and grant funds devoted to vehicles was highest for the smaller communities.  It is likely that these grants contributed to the decline in rural communities in the share of apparatus that were converted vehicles (10% in 2010, down from 16% in 2001 and 14% in 2005).

### Stations and Facility Modification

The most expensive fire-department-related purchase a community can make is an additional fire station (and the additional personnel and equipment costs to operate it),

followed closely by a replacement fire station. There are no grant programs to cover these costs, although there are grants available to pay for improvements and modifications to an existing station.

In light of this, it is not surprising that needs related to the number and age of fire stations have been growing over the past decade, while needs related to facility modification have showed some progress.

➢ Two out of five (38%) fire stations are at least 40 years old, up from 32% in 2001 and 36% in 2005.

➢ Both the largest and the smallest communities have seen increases, between the first and third needs surveys, in the percent of departments needing more stations, based on coverage area, ISO guidance, and modeled response distances:
  • Up from 73% to 77% for communities of 500,000 or more population protected;
  • Up from 64% to 82% for communities of 250,000 to 499,999 population protected;
  • Up from 67% to 72% for communities of 100,000 to 249,999 population protected;
  • Up from 73% to 76% for communities of 2,500 to 4,999 population protected; and
  • Up from 73% to 76% for communities under 2,500 population.

➢ Two out of five (44%) fire stations do not have backup power, down from 57% in 2001 and 54% in 2005.

➢ Two-thirds (66%) of fire departments are not equipped for exhaust emission control, down from 78% in 2001 and 72% in 2005.

It is possible to achieve better coverage without adding stations and companies by designing first-response areas with more use of reciprocal cross-border responses, where any address receives first response from the nearest fire station, even if that station is not in the same community as the address of the emergency. Such an arrangement can be made informally through mutual aid or more formally through regionalization. It is possible that coverage is better than the survey analysis suggests because of widespread use of mutual aid in this manner. It is also possible that assumptions of optimal station location have understated the need for more and better coverage. In any event, it appears that most departments are not now achieving the response goals of ISO.

This category of need has received large shares of grant dollars, particularly for apparatus grants to rural communities with less than 2,500 population. Vehicles and apparatus received 8% of grants and 20% of grant funds in the first matching study, when apparatus and fire prevention grants were included in the analysis, and received 13% of grants and 40% of grant funds to communities of less than 2,500 population. Facility modification programs received 5% of grants and 7% of grant funds in the first matching study, and

11% of grants and 13% of grant funds in the second matching study, when apparatus and fire prevention grants were not included in the analysis.

**These statistics are consistent with a characterization of this part of the AFG program grants as modestly successful, primarily for rural community needs for apparatus, for keeping pace with the need to retire the oldest vehicles and converted vehicles, and for identified facility modification needs, such as the addition of backup power and exhaust emission control.**

## Personal Protective (and Possibly Firefighting) Equipment

➢ Half (51%) of all fire departments do not have enough portable <u>radios</u> to equip all emergency responders on a shift, but this is down from 77% in 2001 and 65% in 2005.

- Nearly two-thirds (65%) of <u>radios</u> do not have <u>water resistance</u>, but this is down from 77% in 2001 and 75% in 2005.

- About three-fourths (74%) of <u>radios</u> are not <u>intrinsically safe in an explosive atmosphere</u>, but this is down from 85% in 2001 and 82% in 2005.

- More than two-thirds (71%) of departments do not have enough <u>radios</u> to provide a <u>reserve</u> equal to or greater than 10% of in-service radios, but this is down from 82% in 2001 and 78% in 2005.

➢ Half (51%) of all fire departments cannot equip all firefighters on a shift with <u>self-contained breathing apparatus (SCBA)</u>, but this is down from 70% in 2001 and 60% in 2005.

- Just over half (55%) of departments have some SCBA that is at least 10 years old, but this is down from 75% in 2001 and 59% in 2005.

➢ Two out of five (39%) fire departments do not have enough <u>personal alert safety system devices (PASS)</u> to equip all emergency responders on a shift, but this is down from 62% in 2001 and 48% in 2005.

➢ Only 9% of all fire departments cannot provide all emergency responders with their own <u>personal protective clothing</u>, and this is down from 15% in 2001 and 11% in 2005.

- Three out of five (63%) departments have some personal protective clothing that is at least 10 years old, but this is down from 74% in 2001 and up from 59% in 2005.

- Half (53%) of departments do not have enough reserve personal protective clothing to equip 10% of emergency responders, but this is down from 62% in 2001 and 57% in 2005.

In every identifiable category of personal protective equipment, hundreds, even thousands, of departments have moved from a condition of need to a condition of no need, under the criteria used here. Even so, thousands more departments remain in need. Needs related to a sufficiency of equipment have seen the greatest reductions, while needs related to advanced capabilities of equipment have seen smaller but still noteworthy reductions.

This category of need has received the largest shares of grants and grant dollars. Personal protective equipment received 37% of grants and 39% of grant funds in the first matching study, when apparatus and fire prevention grants were included in the analysis, and received 34% of grants and 38% of grant funds in the second matching study, when apparatus and fire prevention grants were not included in the analysis. Firefighting equipment, which may constitute some of the equipment captured in the survey under personal protective equipment, received 34% of grants and 25% of grant funds in the first matching study, and 42% of grants and 36% of grant funds in the second matching study.

**These statistics are consistent with a characterization of the AFG program grants as very successful, with success limited only by the scale of the program. The grants have achieved huge reductions in need for personal protective equipment but must continue if the large remaining need is to be addressed as well.**

Some other technologies have not been identified as necessary in consensus standards, regulations, or other national guidance, but have been generally regarded as useful and have seen considerable increases in usage over the past decade. The DHS/FEMA grants may played a role in this increased usage:

➢ Five out of six (84%) departments had Internet access, up from 58% in 2001 and 76% in 2005. 20% had Internet access for each individual, up from 7% in 2001 and 14% in 2005. This has relevance for remote learning and training.

➢ Three out of four (73%) departments had thermal imaging cameras, up from 24% in 2001 and 55% in 2005.

## Fire Prevention and Code Enforcement

➢ 35% of departments reported that they do not provide a school fire safety education program based on a national model curriculum, down from 47% in 2001 and unchanged from 35% in 2005. Available independent data on the use of national model curricula suggest that the actual need is far greater.
  - 27% of the U.S. population live in communities protected by departments that reported they do not provide a school fire safety education program

based on a national model curriculum, largely unchanged from 27% in 2001 and 28% in 2005.

➢ 49% of departments reported that they <u>do not provide plans review</u>, down from 62% in 2001 and 50% in 2005.
  • 19% of the U.S. population live in communities protected by departments that reported they do not provide plans review, down from 29% in 2001 and 23% in 2005.

➢ 52% of departments reported that they <u>do not provide a program of free smoke alarm distribution</u>, down from 69% in 2001 and 57% in 2005.
  • 33% of the U.S. population live in communities protected by departments that reported they do not provide a program of free smoke alarm distribution, down from 42% in 2001 and 35% in 2005.

➢ 72% of departments reported that they <u>do not provide permit approval</u>, down from 79% in 2001 and 73% in 2005.
  • 36% of the U.S. population live in communities protected by departments that reported they do not provide permit approval, down from 45% in 2001 and 40% in 2005.

➢ 72% of departments reported that they <u>do not provide routine testing of active systems</u>, down from 78% in 2001 and unchanged from 72% in 2005.
  • 46% of the U.S. population live in communities protected by departments that reported they do not provide routine testing of active systems, down from 49% in 2001 and up from 44% in 2005.

➢ 81% of departments reported that they <u>do not provide a program for juvenile firesetters</u>, largely unchanged from 83% in 2001 and 80% in 2005.
  • 42% of the U.S. population live in communities protected by departments that reported they do not provide a program for juvenile firesetters, down from 48% in 2001 and largely unchanged from 41% in 2005.

➢ 24% of departments reported that <u>no one conducts fire-code inspections</u> in the community, down from 27% in 2001 and 25% in 2005.


## Ability to Handle Unusually Challenging Incidents

The survey identified four unusually challenging incidents and asked each department
  ➢ whether they were responsible for such incidents, and if they were responsible,
  ➢ whether they could handle such incidents with local trained personnel and local specialized equipment or not; and
  ➢ whether they had written agreements or other plans in place for working with others if that was necessary.

In every survey, the percentages of departments with responsibility for such incidents and sufficient local resources to handle them have been very low. This places much more importance on the existence of plans, and specifically of written agreements, for multiple departments and other entities to work together, because it is clear that that is the kind of response that will be needed in nearly all communities.

For the largest communities, it might be reasonable to work toward local preparedness, particularly for challenging incidents with the level of severity specified in the survey – a level of severity that is well below the level of severity we have seen in some real incidents.

With those exceptions, however, the emphasis here is on the need for written agreements, which is also the one area where there has been clear progress from first to third survey.

**Technical Rescue and EMS at a Structural Collapse with 50 Occupants**

In 2010, 38% of departments said they were *not* responsible for such incidents, down from 44% in 2001 but up from 34% in 2005. Here are the percentages of departments with some type of related need:

➢ **Lack of success in meeting need:** 84% of departments responsible for this type of incident cannot handle it with local trained people alone, largely unchanged from 80% in 2001 and 84% in 2005;

➢ **Size of need:** 52% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, showing no clear trend from 45% in 2001 and 55% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need:** 85% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, largely unchanged from 81% in 2001 and 85% in 2005;

➢ **Size of need:** 52% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, showing no clear trend from 46% in 2001 and 56% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need: 55% of departments responsible for this type of incident do not have written agreements to help work with others, down from 67% in 2001 and 60% in 2005; and**

➢ **Size of need:** 34% of all departments are responsible for this type of incident but do not have written agreements to help work with others, with no clear trend from 38% in 2001 and 40% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents).

**Hazmat and EMS at an Incident Involving Chemical/Biological Agents
and 10 Injuries**

In 2010, 36% of departments said they were *not* responsible for such incidents, down
from 42% in 2001 but up from 32% in 2005. Here are the percentages of departments
with some type of related need:

➢ **Lack of success in meeting need:** 81% of departments responsible for this type
of incident cannot handle it with local trained people alone, largely unchanged
from 78% in 2001 and 83% in 2005;

➢ **Size of need:** 51% of all departments are responsible for this type of incident and
cannot handle it with local trained people alone, showing no clear trend from 45%
in 2001 and 56% in 2005 (with any increase due in part to an increase from 2001
to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need:** 83% of departments responsible for this type
of incident cannot handle it with local specialized equipment alone, largely
unchanged from 81% in 2001 and 85% in 2005;

➢ **Size of need:** 53% of all departments are responsible for this type of incident and
cannot handle it with local specialized equipment alone, showing no clear trend
from 47% in 2001 and 58% in 2005 (with any increase due in part to an increase
from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need: 51% of departments responsible for this
type of incident do not have written agreements to help work with others,
down from 64% in 2001 and 57% in 2005; and**

➢ **Size of need:** 32% of all departments are responsible for this type of incident but
do not have written agreements to help work with others, with no clear trend from
37% in 2001 and 39% in 2005.

**Wildland/Urban Interface (WUI) Fire Affecting 500 Acres**

In 2010, 47% of departments said they were *not* responsible for such incidents, up from
31% in 2001 and 27% in 2005. Note that departments were not screened for whether
they had sufficient wildlands to support such a fire. Here are the percentages of
departments with some type of related need:

➢ **Lack of success in meeting need:** 65% of departments responsible for this type
of incident cannot handle it with local trained people alone, largely unchanged
from 63% in 2001 and 67% in 2005;

➢ **Size of need:** 35% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, down from 44% in 2001 and 49% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need:** 69% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, largely unchanged from 68% in 2001 and 71% in 2005;

➢ **Size of need:** 37% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, down from 47% in 2001 and 52% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need: 39% of departments responsible for this type of incident do not have written agreements to help work with others, down from 53% in 2001 and 45% in 2005; and**

➢ **Size of need:** 21% of all departments are responsible for this type of incident but do not have written agreements to help work with others, down from 37% in 2001 and 33% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents).

**Mitigation of a Major Developing Flood**

In 2010, 72% of departments said they were *not* responsible for such incidents, up from 54% in 2001 and 52% in 2005. Note that departments were not screened for whether they had nearby bodies of water to support such a flood. Here are the percentages of departments with some type of related need:

➢ **Lack of success in meeting need:** 66% of departments responsible for this type of incident cannot handle it with local trained people alone, with no clear trend from 73% in 2001 and 78% in 2005;

➢ **Size of need:** 19% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, down from 33% in 2001 and 38% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need:** 74% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, with no clear trend from 77% in 2001 and 81% in 2005;

➢ **Size of need:** 21% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, down from 35% in 2001

and 39% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

> **Lack of success in meeting need:  50% of departments responsible for this type of incident do not have written agreements to help work with others, down from 72% in 2001 and 62% in 2005; and**

> **Size of need:**  14% of all departments are responsible for this type of incident but do not have written agreements to help work with others, down from 33% in 2001 and 30% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents).

## Summary and Conclusions

Fire service needs are extensive across the board, and in nearly every area of need, the smaller the community protected, the greater the need.

Needs have declined to a considerable degree in a number of areas, particularly personal protective and firefighting equipment, two types of resource that received the largest shares of funding from the Assistance to Firefighters grants.

Some innovative technologies that have not been identified as necessary in existing standards but are known to be very useful to today's fire service – including Internet access and thermal imaging cameras – have also seen large increases in use.

Declines in needs have been more modest in some other important areas, such as training, which have received much smaller shares of AFG grant funds.

Still other areas of need, such as apparatus, stations, and the staffing required to support the stations, have seen either limited reductions in need (e.g., apparatus needs in rural areas) or no reductions at all (e.g., adequacy of stations and personnel to meet standards and other guidance on speed and size of response).

Fire prevention and code enforcement needs have shown no clear improvement over the past decade.  Some of these needs draw extensively on national agency or safety organization programs and resources that are not part of the AFG and SAFER grant programs and also are not designed to achieve national-scale reductions in need in the foreseeable future.  (The many different smoke alarm giveaway and installation programs are a good example.  Even though they are collectively significant in their funding, they would take decades to address the remaining 5-6 million homes without smoke alarms.)

In all areas emphasized by the AFG and SAFER grants, there is ample evidence of impact from the grants but also considerable residual need still to be addressed, even for needs that have seen considerable need reduction in the past decade.  In areas not emphasized by the AFG and SAFER grants, there does not appear to be a national plan or

vision on how to achieve significant progress on these needs on a national scale, let alone on how to reduce total need to negligible size.

There has been little change in the ability of departments, using only local resources, to handle certain types of unusually challenging incidents, including two types of homeland security scenarios (structural collapse and chem/bio agent attack) and two types of large-scale emergency responses (a wildland/urban interface fire and a developing major flood).

However, the surveys have indicated improvement in the development of written agreements to help in the use of outside resources. This may provide the strongest base on which to build, namely, the creation of regional and national agreements to allow costs of shared resources to be shared across a much wider area while also providing a protocol for any community to respond to an unusually challenging incident that is very unlikely within the community but not so unlikely within the entire region.

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xxx

# INTRODUCTION

The report that follows presents results based on data from US local fire departments participating in a needs assessment survey. See Appendix 1 for a more detailed discussion of the statistical methodology used.

The questionnaire principally involved multiple approaches to answering the question "what does a fire department need?". Most of the questions were intended to determine what fire departments have, in a form that could be compared to existing standards or formulas that set out what fire departments should have. Some of the questions asked what fire departments have with respect to certain cutting-edge technologies for which no standards yet exist and no determinations of need have yet been proposed.

The questionnaire also sought to define the emergency-response tasks that fire departments considered to be within their scope. For such tasks the survey asked how far departments would have to go to obtain the resources necessary to address those tasks or an illustrative incident of that type. Clearly, if departments believe the resources they would need are only available from sources separated from them by great distance – and the associated likelihood of significant delay in attaining those resources, then there may be a need for planning, training, or arrangements for equipment that can be more quickly accessed and deployed, to assure timely and effective response.

**Measuring Size of Need vs. Lack of Success in Meeting Need**

**Figure I-1. Departments Providing a Service vs.
Departments Having a Resource for a Service They Provide**
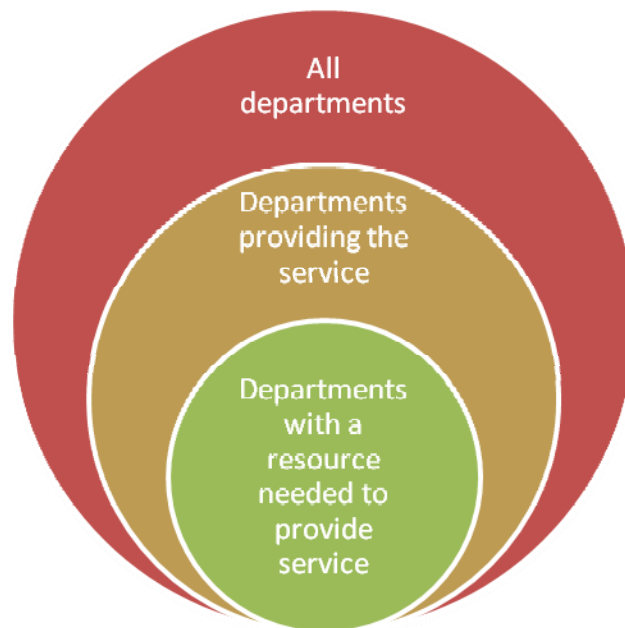
In the report, it will sometimes be helpful to express the same need in two different measures reflecting two different contexts. In Figure I-1, the interest is always in the brown area (the middle circle minus the inner or smallest circle). These are departments lacking a resource (e.g., equipment, training) that they need (based on a standard or other guidance) in order to perform a service that is within their responsibility.

If the focus is on that particular resource, then the most useful measure might be "lack of success in meeting need", which could be defined as the brown area as a fraction of the middle circle, or percent of departments providing service that lack the resource. In this approach, the green circle shows "met need" and the brown area shows "unmet need" with the middle circle as a whole showing "total need, met or unmet" and the red area showing departments that have no need because they have no such responsibility.

This report examines dozens of different needs for dozens of different resources, and it is intended to help inform grant and support programs that could be directed to some or all of those different needs. For that purpose, the most useful measure could be "size of (unmet) need", which could be defined as the brown area as a fraction of the outer or all-departments circle.

You can also show these two measures as ratio formulas. The measure of lack of success in meeting need would have the following formula:

(Departments that provide service and lack resource) / (Departments that provide service)

The measure of size of (unmet) need would have the following ratio formula, which can be related to the first measure by the following equation:

(Departments that provide service and lack resource) / (All departments) =

(Departments that provide service and lack resource) / (Departments that provide service) x (Departments that provide service) / (All departments)

The measure of size of need will be more useful in comparing needs between different resources. The equation above also shows that when the two measures seem to go in different directions, it will be because there has been a change in the percent of all departments that have the responsibility, a measure that is also provided in this report See Appendix 2 for a copy of the questionnaire.

## Glossary

Here are standard definitions for some of the specialized terms used in this report:

Advanced Life Support (ALS). Functional provision of advanced airway management, including intubation, advanced cardiac monitoring, manual defibrillation, establishment and maintenance of intravenous access, and drug therapy. [from NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency*

*Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.]

Basic Life Support (BLS).  Functional provision of patient assessment, including basic airway management; oxygen therapy; stabilization of spinal, musculo-skeletal, soft tissue, and shock injuries; stabilization of bleeding; and stabilization and intervention for sudden illness, poisoning and heat/cold injuries, childbirth, CPR, and automatic external defibrillator (AED) capability.  [from NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.]

Emergency Medical Care.  The provision of treatment to patients, including first aid, cardiopulmonary resuscitation (CPR), basic life support (EMT level), advanced life support (where there may or may not be a distinction made regarding ALS care that is or is not at the Paramedic level), and other medical procedures that occur prior to arrival at a hospital or other health care facility.  [from NFPA 1581, *Standard on Fire Department Infection Control Program*, 2000 edition]  In this report, reference is made to "EMS" or "emergency medical service," which is the service of providing emergency medical care.

First Responder (EMS).  Functional provision of initial assessment (i.e., airway, breathing, and circulatory systems) and basic first-aid intervention, including CPR and automatic external defibrillator (AED) capability.  [from NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2001 edition.]

Hazardous Material.  A substance that presents an unusual danger to persons due to properties of toxicity, chemical reactivity, or decomposition, corrosivity, explosion or detonation, etiological hazards, or similar properties.  [from NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1997 edition.]

Structural Fire Fighting.  The activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, aircraft interiors, vehicles, vessels, aircraft, or like properties that are involved in a fire or emergency situation.  [from NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, 1997 edition.]

Technical Rescue.  The application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations.  [from NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents*, 1999 edition.]

Wildland/Urban Interface (WUI).  The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. [from NFPA 295, *Standard for Wildfire Control*, 1998 edition]

# SECTION 1. PERSONNEL AND THEIR CAPABILITIES

**There has been a slight increase in the percentage of departments that are all- or mostly-career.**

Most US fire departments are volunteer fire departments, but most of the US is protected by career firefighters. Tables 1-1 and 1-2 provide summary overviews of US fire departments.

More than two-thirds of US fire departments (71%) are all-volunteer fire departments, but only one of every five US residents (21%) are protected by such a department. Only one in 14 fire departments (8%) is all-career, but nearly half of US residents (47%) are protected by such a department. Fire departments split roughly 7-to-1 between the all- or mostly-volunteer departments vs. the all- or mostly-career departments, but population protected splits roughly 2-to-1 the other way.

**Figure 1-1. Percent of Career vs. Volunteer Fire Departments, for Three Studies**
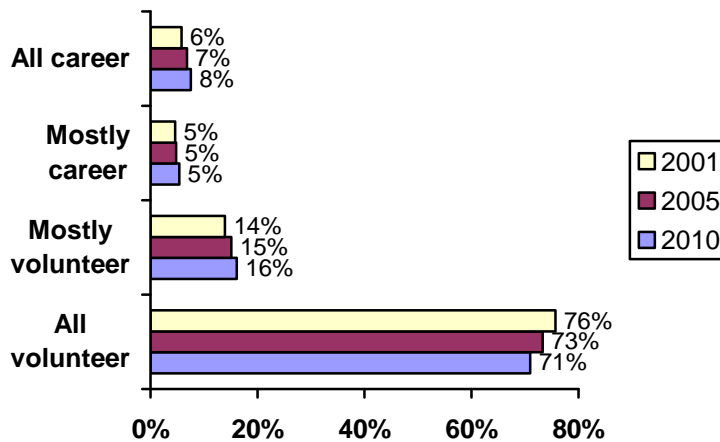


Figures 1-1 and 1-2 show that there has been a slight shift from volunteer fire departments to career fire departments, in terms of percent of departments and even more in terms of percent of population protected. The survey did not collect information on the reasons for this shift, but here are some possibilities:

➤ A trend that began after World War II and continues in modified form to this day has been a steady shift toward people living in one community and working in a different community. This makes it more difficult for volunteer firefighters to respond during the day to fires where they live.

➤ For this reason and others, volunteer fire departments have been reporting growing difficulty in recruiting and retaining volunteer firefighters.

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➤ As America has increased the diversity of responsibilities of fire departments, from fires to other hazards, from suppression to prevention, there has been a corresponding growth in needed skills and hours. Serving as a member of a fire department with a modern breadth of duties requires much more of a commitment from every firefighter.

**Figure 1-2. Percent of Population Protected by Career vs. Volunteer Fire Departments, for Three Studies**
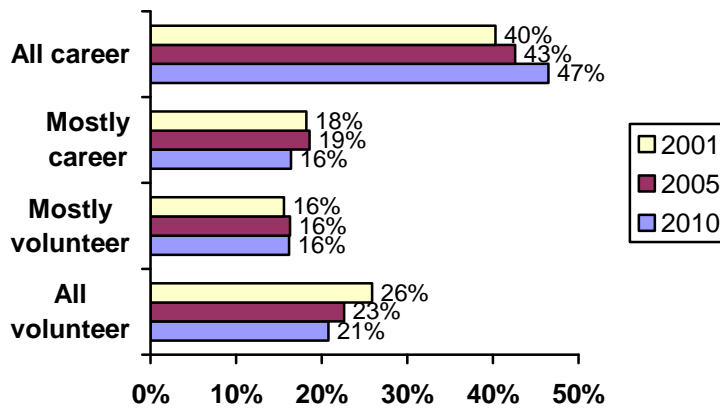


Volunteers are concentrated in rural communities, while career firefighters are found disproportionately in large communities. There are no all-volunteer departments protecting cities of at least 100,000 population, while all-volunteer departments constitute nearly all of the fire departments protecting communities of less than 5,000 population. All- or mostly-career departments account for a majority of departments down to communities of at least 25,000 population.

Rural communities, defined by the US Bureau of Census as communities with less than 2,500 population, are 99% protected by all- or mostly-volunteer departments and account for more than half (56%) of the all- or mostly-volunteer departments in the US.

Community size is related to the US fire service not only in terms of the relative emphasis on career vs. volunteer firefighters but also in terms of the challenges faced by local departments. However, it is possible to exaggerate those differences. Even a rural community can have a large factory complex, a large stadium, or even a high-rise building, with all the technical complexities and potential for high concentration of people or valued property that such a property entails. Even a large city can have a wildland/urban interface region and exposure to the unique fire dangers attendant on such an area.

At a minimum, every fire department should be prepared to respond to any type of incident they might encounter and be responsible for in their immediate response district as well as any incident throughout the neighboring regions where mutual aid might be requested.

In any community, fire burns the same way in a structure or other enclosure and the same way in an open space.  Fire harms people and property in the same ways.  And the resources and best practices required to safely address the fire problem – or any other major emergency – tend to be the same everywhere.  What may differ is the defined scope of responsibility of the local fire department and the quality and quantity of resources available to the department to perform those responsibilities.

**The total number of firefighters has been increasing, driven by an increase in career firefighters, which has more than offset a decrease in volunteer firefighters.**

Table 1-A indicates the number of career, volunteer, and total firefighters, by the size of the community their fire department protects.  These numbers will be used repeatedly throughout the report to convert survey responses phrased in terms of the fraction of a department's firefighters having a characteristic into estimates of the number of firefighters having that characteristic.

### Table 1-A.  Number of Career, Volunteer, and Total Firefighters
### by Size of Community
### (Q. 1, 7, 8)

| Population Protected | Career Firefighters | Volunteer Firefighters | Total Firefighters |
|---|---|---|---|
| 500,000 or more | 73,300 | 3,600 | 76,900 |
| 250,000 to 499,999 | 27,700 | 3,700 | 31,400 |
| 100,000 to 249,999 | 47,500 | 4,100 | 51,600 |
| 50,000 to 99,999 | 44,200 | 6,400 | 50,600 |
| 25,000 to 49,999 | 46,500 | 26,900 | 73,400 |
| 10,000 to 24,999 | 49,900 | 82,900 | 132,800 |
| 5,000 to 9,999 | 17,000 | 116,300 | 133,300 |
| 2,500 to 4,999 | 6,900 | 178,100 | 185,000 |
| Under 2,500 | 8,700 | 378,400 | 387,100 |
| Total | 321,700 | 800,400 | 1,122,100 |

Source:    NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,600 departments reporting on Questions 7 and 8.  Numbers are estimated to the nearest hundred and may not add to totals due to rounding.

Q. 1:    Population (number of permanent residents) your department has primary
             responsibility to protect (excluding mutual aid areas)
Q. 7:    Total number of full-time (career) uniformed firefighters
Q. 8:    Total number of active part-time (call or volunteer) firefighters

Figure 1-3 shows that there has been a steady increase in the number of active firefighters, combining an increasing number of career firefighters with a decreasing number of volunteer firefighters.  This is consistent with trends in all- or mostly-career vs. all- or mostly-volunteer departments, as noted in Section 1.

It should be noted that the number of career firefighters has increased in pace with increases in the protected population.  The number of career firefighters per 1,000 population protected has changed little since at least 1986.  Despite the slight decline in the all- or mostly-volunteer department share, there has been a definite downward trend in the number of volunteer firefighters per 1,000 population protected.[3]

**Figure 1-3. Number of Firefighters,
Career vs. Volunteer,
for Three Studies**
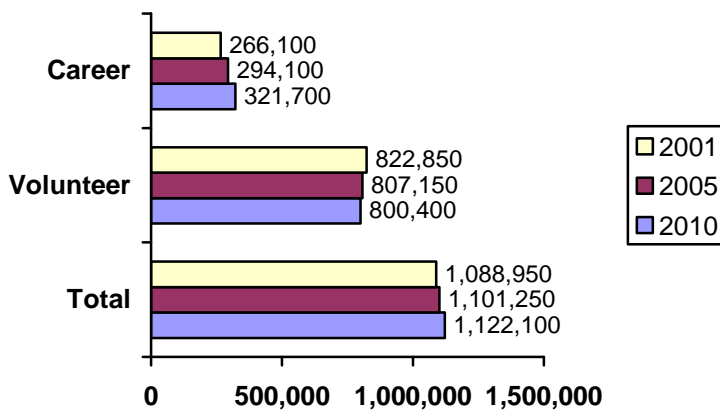


Figure 1-4 shows the career percent of firefighters has been increasing for every size of community, indicating that the shift from volunteer to career has been very broad-based.

As noted, the increase in total career firefighters reflects a combination of net changes in career firefighters per department with career firefighters and net changes in percent of departments that include career firefighters.

In this Needs Assessment Survey, a question was added regarding changes in the number of funded career positions at the responding department.  Two-thirds of departments protecting at least 25,000 population reported such a change, ranging from 60% of departments protecting 25,000 to 49,999 population up to 90% of departments protecting 500,000 or more population.

Gains exceeded losses, but the total net gains in personnel constituted only about a third of the total increase in career firefighters shown on Figure 1-3.  This suggests that

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[3] Michael J. Karter, Jr. and Gary P. Stein, *U.S. Fire Department Profile Through 2009*, NFPA Fire Analysis and Research Division, October 2010.

department conversions and increases in population protected have been at least as important as a driver of such gains as have staff increases within departments. It is likely that some of the gains and some averted losses were attributable to the SAFER grant program from the U.S. Fire Administration.

**Figure 1-4. Percent of Firefighters Who Are Career,
by Size of Community, for Three Studies**
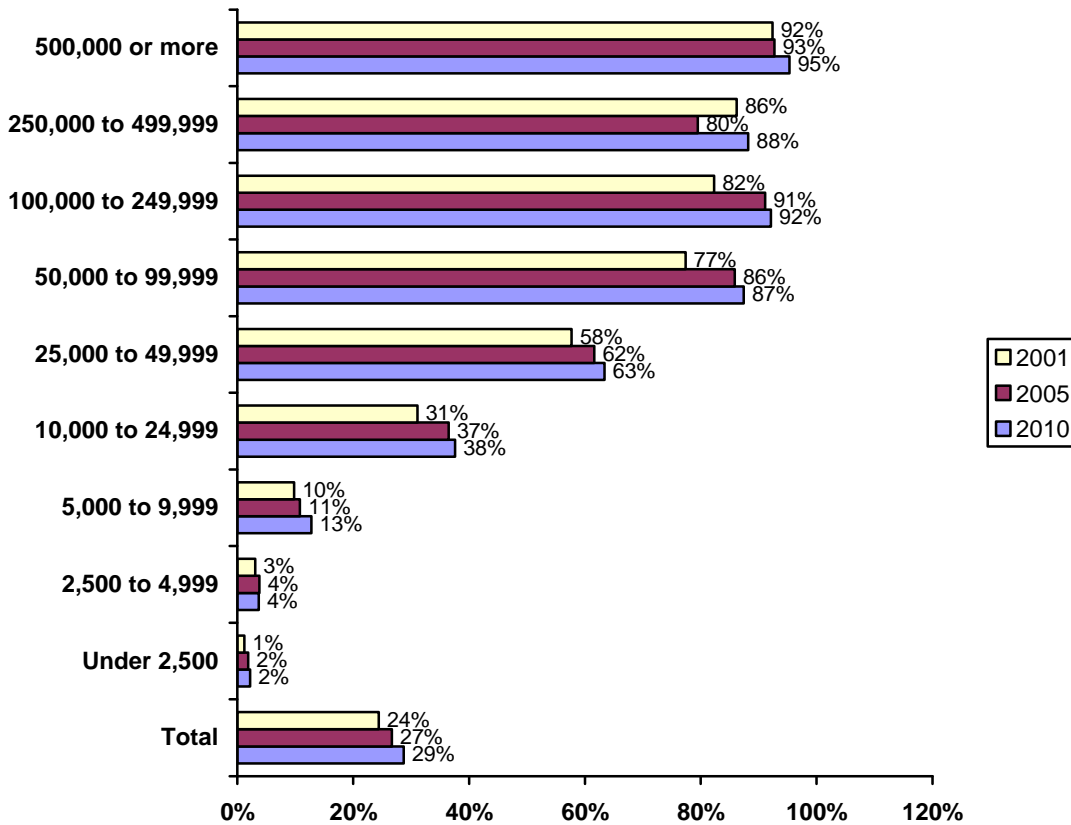


Table 1-A data on the number of firefighters by community size can be combined with needs-assessment survey results on the percent of firefighters, by community size, who have some need-related characteristic. The result is an estimate of the number of firefighters, by community size and by career/paid vs. volunteer, with that need-related characteristic.

Table 1-B indicates the average number of career/paid firefighters per department who are on duty available to respond to emergencies, by size of community the department protects. These figures do not indicate the average number of firefighters per department on duty, because volunteers are not included and every community-size interval has some departments that are not all-career departments.

**Table 1-B. Average Number of Career/Paid Firefighters per Department on Duty Available to Respond to Emergencies, by Size of Community (Q. 9)**

| Population Protected | Number of Firefighters |
|---|---|
| 500,000 or more | 350.1 |
| 250,000 to 499,999 | 120.3 |
| 100,000 to 249,999 | 55.0 |
| 50,000 to 99,999 | 25.4 |
| 25,000 to 49,999 | 11.7 |
| 10,000 to 24,999 | 5.0 |
| 5,000 to 9,999 | 1.5 |
| 2,500 to 4,999 | 0.5 |
| Under 2,500 | 0.2 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,457 departments reporting on Question 9.

Q. 9: Average number of career/paid firefighters on duty available to respond to emergencies.

## Adequacy of Number of Firefighters Responding

Tables 1-3 to 1-5 provide statistics on numbers of firefighters responding to fight fires under certain circumstances (e.g., as volunteer or career firefighters, to a certain type of fire or with a certain type of apparatus).

These indicators of response profiles can be compared to NFPA standards regarding the minimum complement of firefighters to permit an interior attack on a structural fire with adequate safeguards for firefighter safety. The comparisons are complicated, however, because many fire departments have both career and volunteer firefighters, while Questions 2-1 to 2-3 asked only about responses by career firefighters alone or volunteer firefighters alone.

Also, in considering the results below, keep in mind that "adequacy" is being assessed here relative to only one of the several objectives of a fire department confronted with a serious fire – the protection of the firefighters themselves from unreasonable risk of injury or death. Relative success in meeting this objective will not necessarily imply anything about the department's ability to reliably achieve the other departmental suppression objectives, whether those are preventing conflagrations, preventing fire from

involving an entire large structure, or intervening decisively before the onset of flashover in the room of fire origin.

**In addition, success in meeting any of these objectives involves more than a sufficiency of personnel. Equipment of many types is also needed, as are skills and knowledge, as achieved through training and certification.** Each of these areas of need is addressed in different parts of the survey.

### Volunteer Firefighters

Table 1-3 provides statistics on the average number of volunteer firefighters who respond to a mid-day house fire, for only the all- or mostly-volunteer fire departments in communities under 50,000 population. Note that a "mostly-volunteer" department might respond with some career firefighters as well, and those numbers are not included in Table 1-3.

NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*, calls for a minimum of 4 firefighters on-site before an interior attack on a structure fire is begun. There are difficulties in applying these standards to Table 1-3. As noted, responding career firefighters from mostly-volunteer departments are not shown, the statistics shown are average numbers responding rather than minimum numbers responding, and the threshold number of 4 is combined with averages from 3 to 4 in the questionnaire. Nevertheless, some limited observations are possible.

Departments that deliver an average of 1-2 volunteers to a mid-day house fire almost certainly fall below the minimum of 4 firefighters in most responses, at least for departments protecting communities with less than 5,000 population, because Table 1-B indicated that those departments average 0-2 career firefighters on duty for the department. Departments that deliver an average of 1-2 volunteers (and an unknown number of career firefighters) to a mid-day house fire constituted 1% of departments protecting communities with less than 4,999 population (see Table 1-3).

### Career Firefighters

Table 1-4 provides statistics for only the all- or mostly-career fire departments in communities with 10,000 or more population, on the number of career firefighters assigned to an engine or pumper. Note that a "mostly career" department might also respond with some volunteers, and those numbers are not reflected in Table 1-4. NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, requires a minimum of 4 firefighters on an engine or pumper.

**Except for cities protecting at least 250,000 population, most cities do not assign at least 4 career firefighters to an engine or pumper and so are probably not in compliance with NFPA 1710.**

The percentage of departments with fewer than 4 career firefighters assigned to an engine or pumper is:
- ➤ 20% for departments protecting at least 500,000 population (in 2010, when 95% of firefighters protecting communities of this size were career)
    - down from 30% in 2001 (when 92% of firefighters protecting communities of this size were career)
    - and largely unchanged from 22% in 2005 (when 93% of firefighters protecting communities of this size were career)
- ➤ 26% for departments protecting 250,000 to 499,999 population (in 2010, when 88% of firefighters protecting communities of this size were career)
    - down from 41% in 2001 (when 86% of firefighters protecting communities of this size were career)
    - and down from 44% in 2005 (when 80% of firefighters protecting communities of this size were career)
- ➤ 60% for departments protecting 100,000 to 249,999 population (in 2010, when 92% of firefighters protecting communities of this size were career)
    - largely unchanged from 56% in 2001 (when 82% of firefighters protecting communities of this size were career)
    - and largely unchanged from 59% in 2005 (when 91% of firefighters protecting communities of this size were career)
- ➤ 71% for departments protecting 50,000 to 99,999 population (in 2010, when 87% of firefighters protecting communities of this size were career)
    - largely unchanged from 76% in 2001 (when 77% of firefighters protecting communities of this size were career)
    - and largely unchanged from 71% in 2005 (when 86% of firefighters protecting communities of this size were career)

**Over the three Needs Assessment Surveys, except for the largest communities, protecting at least 250,000 population, there is no evidence of a broad trend toward more frequent assignment of at least 4 career firefighters to an engine or pumper and so no evidence of a trend toward greater compliance with NFPA 1710.**

Table 1-5 provides statistics comparable to those in Table 1-4 but for ladder apparatus. There is no comparable simple formula to use in assessing the adequacy of these numbers, so the table is presented without comment.

## Extent of Training and Certification, by Type of Duty

In this section, need will be described in terms of both of the following measures:

- Lack of success in meeting need (where need is compared to only departments providing the service) = (Departments that provide service and lack resource) / (Departments that provide service)

- Size of need (where need is compared to all departments) = (Departments that provide service and lack resource) / (All departments)

The first measure assesses departments with unmet need against departments who have responsibility for this type of incident. The second measure assesses departments with unmet need against all department.

The first measure is the measure to emphasize in terms of gauging the success of programs to meet the needs of departments that have a particular responsibility.

If instead, you are considering what mix of resources to fund, you need measures that are more closely tied to the cost of meeting a certain type of unmet need. The second measure is the one to use in this case, and it will need to be combined with estimates of the cost of meeting need per department, for departments of a particular size, in order to construct a unit of cost suitable for use in a comprehensive budgeting exercise.

### Structural Firefighting

**Only 0.9% of departments say that structural firefighting is *not* a role the department performs (see Table 1-6).** Nearly all of the departments that do not perform structural firefighting are in rural communities, serving less than 2,500 population. Even there, only 1.4% of departments do not perform structural firefighting.

Table 1-7 asks how many of the personnel responsible for structural firefighting have received formal training. Answers were solicited in the form of: All, Most, Some, and None.

**Lack of success in meeting need: Departments that perform structural firefighting but have not formally trained all their involved personnel constituted 47% of departments that provide structural firefighting, down from 56% in 2001 and 53% in 2005.**

**Size of need: Because so few departments do not provide structural firefighting, there is very little difference in the percentages of departments that perform structural firefighting and have not formally trained all their personnel as a percentage of all departments: 46% in 2010, down from 55% in 2001 and 53% in 2005.**

There has been considerable progress, but the remaining need is still extensive.

Figure 1-5 indicates what percentage of all departments perform structural firefighting and do not have all firefighters involved in structural firefighting formally trained, for each size of community and for each of the three Needs Assessment Studies.

**Figure 1-5. Percent of All Departments Where Not All Firefighters Involved in Structural Firefighting Are Formally Trained by Size of Community, for Three Studies**
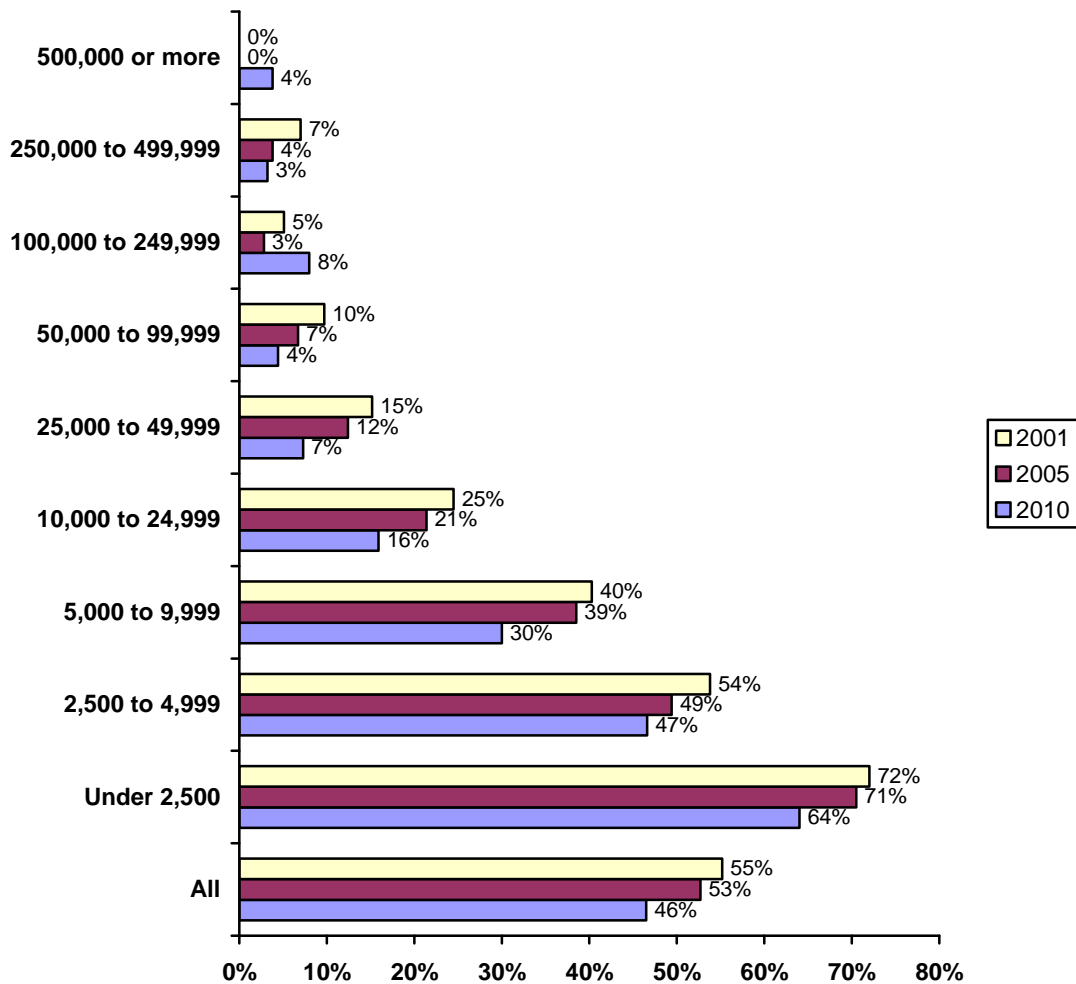


If you apply weights based on the average number of firefighters per department, separately for each community size group, you obtain an estimate of the percentage of firefighters working in departments where not all firefighters involved in structural firefighting have been formally trained.

In the latest study, the percentage of all departments (46%) is higher than the percentage of firefighters (37%), because the smaller the department, the more likely it is that not all involved firefighters have received formal training.

The U.S. Fire Administration's Assistance to Firefighters grants provide part of the reason for the substantial decline in need for training of this type – from 55% of all departments to 46% of all departments and from an estimated 45% of all firefighters being in departments with need to an estimated 37% of all firefighters being in departments with need. Grants for training of any type accounted for 9% of 2001-2004 grants and 4% of funds awarded in grants.[4]

Training accounted for a larger share of grants for larger communities than for smaller communities, which used more of their grants to purchase apparatus.

### Table 1-C. Estimated Number of Firefighters Involved in Structural Firefighting Who Are Serving in Departments Where No One is Certified, by Size of Community Protected (Q. 13c)

| Population Protected | Estimated Firefighters Lacking Certification |
|---|---|
| 500,000 or more | 2,000 |
| 250,000 to 499,999 | 2,000 |
| 100,000 to 249,999 | 1,000 |
| 50,000 to 99,999 | 1,000 |
| 25,000 to 49,999 | 2,000 |
| 10,000 to 24,999 | 3,000 |
| 5,000 to 9,999 | 5,000 |
| 2,500 to 4,999 | 13,000 |
| Under 2,500 | 66,000 |
| Total | 96,000 |
| Percent of all firefighters | 9% |

The above projections are based on 4,624 departments reporting yes on Question 13a and reporting on Question 13c. Numbers are estimated to the nearest 1,000 and may not add to totals due to rounding. See Tables 1-6 and 1-8.

Q. 13c: [If structural firefighting is a role your department performs, yes on Q. 13a] have any of your personnel been certified to any of the following levels? Firefighter Level I and II.

Table 1-8 indicates what percentage of departments had any firefighters who perform structural firefighting certified to either or both of Firefighter Levels I and II. An

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[4] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

estimated 96,000 firefighters serve in fire departments where no one is certified as Firefighter Level I or II.

Most of the firefighters in departments with no certification for structural firefighting were in rural fire departments and so were almost certainly volunteer firefighters.

The breakdown by community size is shown in Table 1-C.

The 96,000 firefighters (9% of all firefighters) represent a decrease from 153,000 (14%) in 2001 and 128,000 (12%) in 2005.

Note that there may be other firefighters – possibly many other firefighters – who lack certification serving in departments where some firefighters are certified. These firefighters are not reflected in the 96,000 figure cited above.

Conversely, some departments where no one is certified may be providing a local equivalent of certification.


### Emergency Medical Service

**Roughly two-thirds (69%) of departments say that emergency medical service (EMS) is a role the department performs (see Table 1-9).**

The majority of departments that do not perform EMS serve rural communities, with less than 2,500 population protected. Even there, most departments (60%) now provide EMS.

Table 1-10 shows how many of the assigned personnel in departments responsible for EMS have received formal training.

**Lack of success in meeting need: Departments that perform EMS but have not formally trained all their involved personnel constituted 48% of departments that provide EMS, down from 54% in 2001 and 53% in 2005. (See Figure 1-6.)**

**Figure 1-6. Percent of Departments Performing EMS
for Which Not All Involved Personnel Are Formally Trained
by Size of Community, for Three Studies**
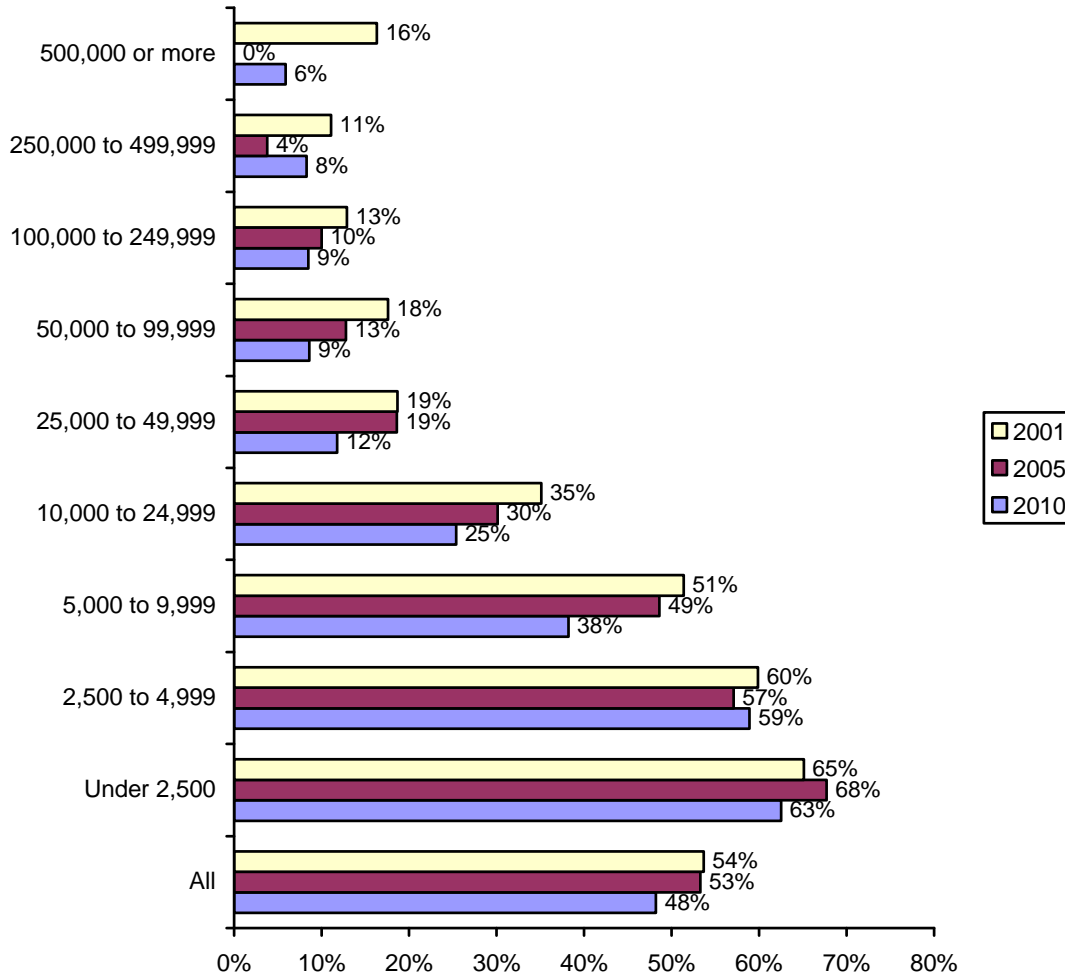


**Size of need:  An estimated 33% of all departments provide EMS but have not
formally trained all their personnel involved in EMS, down from 35% in 2001 and
36% in 2005.  (See Figure 1-7.)**

Progress in training involved personnel has been somewhat offset by a rise in the number
of assigned personnel, in part because the percent of departments performing EMS has
risen from 65% in 2001 to 67% in 2005 and to 69% in the latest survey.

**Figure 1-7. Percent of All Departments
That Provide EMS But Do Not Have
All Involved Personnel Formally Trained
by Size of Community, for Three Studies**

| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 16% | 0% | 6% |
| 250,000 to 499,999 | 11% | 4% | 8% |
| 100,000 to 249,999 | 13% | 10% | 8% |
| 50,000 to 99,999 | 16% | 12% | 8% |
| 25,000 to 49,999 | 17% | 16% | 11% |
| 10,000 to 24,999 | 27% | 24% | 21% |
| 5,000 to 9,999 | 35% | 35% | 28% |
| 2,500 to 4,999 | 39% | 38% | 41% |
| Under 2,500 | 37% | 41% | 38% |
| All | 35% | 36% | 33% |
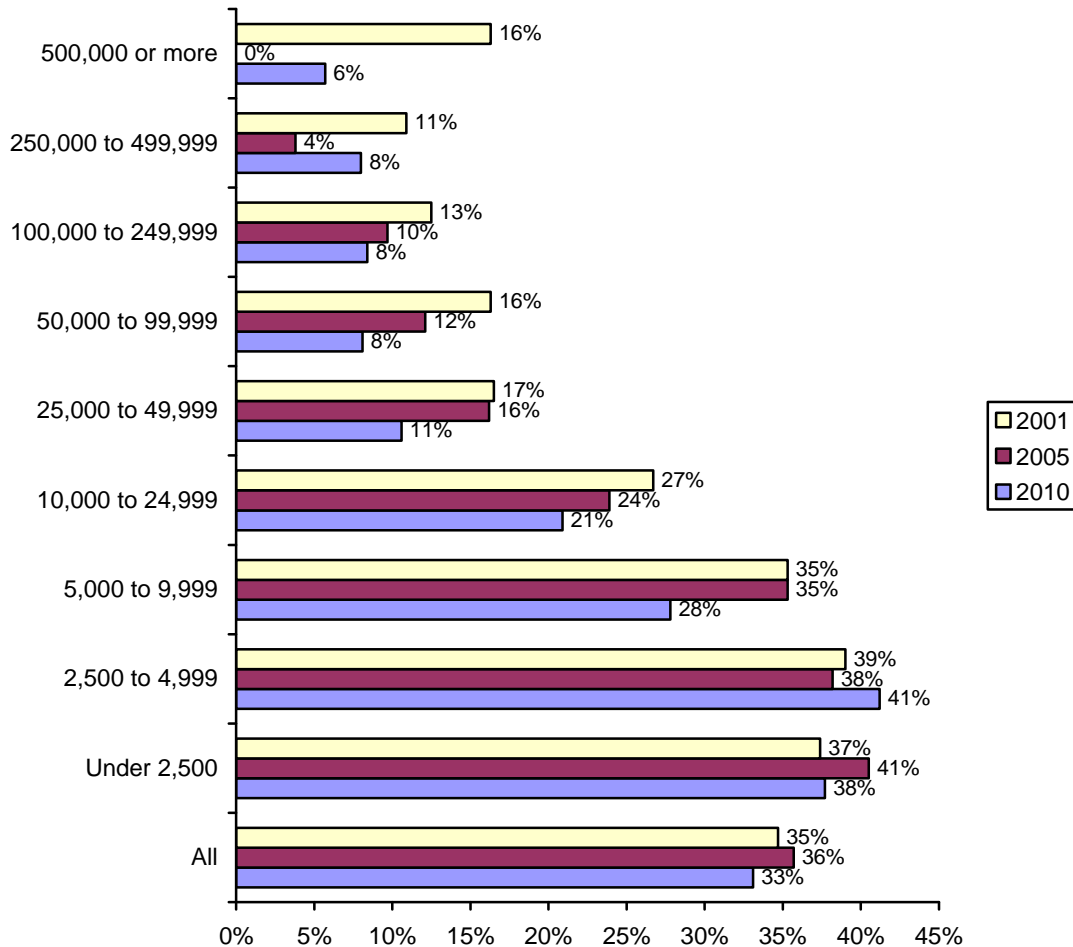
The difference between the two graphs partly reflects the change in the percent of departments that perform EMS.  Figure 1-6 shows how well departments that perform EMS are doing in providing formal training to all involved personnel.  Figure 1-7 shows the overall share of departments where there is a need for additional training so that all involved personnel will be formally trained.  A department that does not perform EMS is not included in the Figure 1-6 statistics but is counted as "no need" in the Figure 1-7 statistics.  The percentages in Figures 1-5, 1-7, 1-9, 1-11, and 1-13 can be compared with each other to see which service accounts for the largest share of departments needing formal training.

Because newly hired personnel and personnel newly assigned to EMS must be trained, the percentage of involved personnel with formal training can go down as well as up for an individual department.  Also, departments new to EMS may begin providing service

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before all involved personnel are formally trained.  These are some of the possible explanations for the cases in Figures 1-6 and 1-7 where a later survey shows a greater need than an earlier survey.

Figures 1-6 and 1-7 show that for the most part, the smaller communities have the greater need for additional formal training, and there has been progress in achieving formal training for all involved personnel for all sizes of communities.

Table 1-11 indicates certification of personnel who perform EMS.  The question asked whether any personnel had been certified to any of several possible levels – First Responder, Basic Life Support, Advanced Life Support, and Paramedic.  (In some departments, the last two may be the same.)  The columns of Table 1-11 are defined by combinations of the four levels of certification.

Because the four levels are progressive, with each level incorporating the skills and knowledge of the previous level, it is reasonable to assume that a combination answer (e.g., First Responder and Basic Life Support) indicates that some personnel in the department are certified to one of the levels and other personnel are certified to another level.  By contrast, a department that responds with only one level presumably has all its certified personnel certified to that one level.  In every case, it is possible that some assigned personnel are not certified to any level.

Table 1-11 indicates that almost no departments performing EMS are completely lacking in certified personnel (1.6%).  Conversely, very few departments (3.8% overall) reported that all their certified personnel were certified to at least the level of Advanced Life Support or Paramedic.

### Hazardous Material Response

**Roughly three-fourths (77%) of departments say that hazardous material response (Hazmat) is a role the department performs (see Table 1-12).**  The majority of departments that do not perform Hazmat serve rural communities, with less than 2,500 population protected.  Even there, most departments (68%) now provide Hazmat.  Table 1-13 shows how many of the assigned personnel in departments responsible for Hazmat have received formal training.

<u>Lack of success in meeting need</u>:  **Departments that perform hazardous material response but have not formally trained all their involved personnel constituted 65% of departments that provide hazardous material response, down from 73% in 2001 and 71% in 2005.  (See Figure 1-8.)**

**Figure 1-8. Percent of Departments Performing Hazmat
for Which Not All Involved Personnel Are Formally Trained
by Size of Community, for Three Studies**
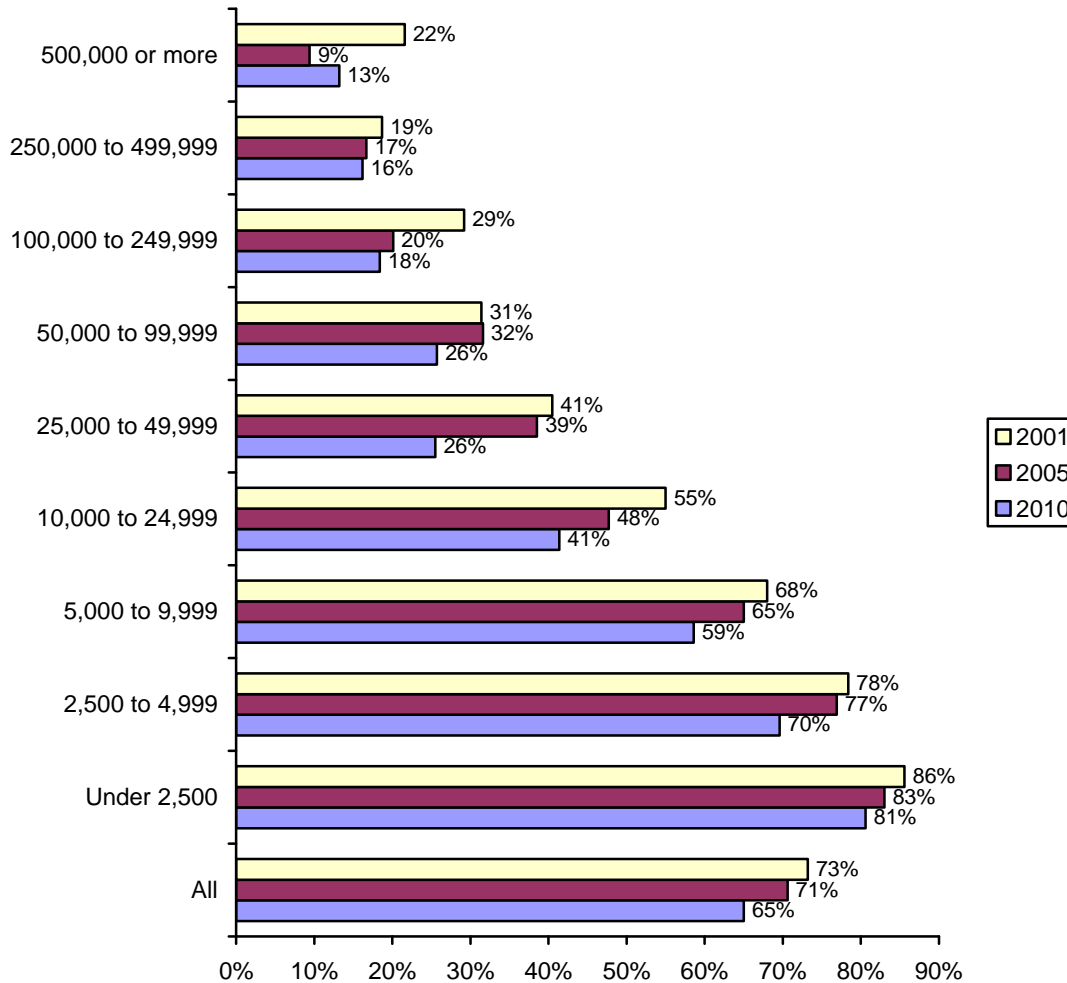


**Size of need:** **An estimated 50% of all departments provide Hazmat but have not formally trained all their personnel involved in Hazmat, down from 57% in 2001 and 56% in 2005. (See Figure 1-9.)**

There has been considerable progress, but the remaining need is still extensive.

In the latest survey, an estimated 77% of departments reported that they perform hazardous material response, the same as in 2001 but down from the 80% reporting Hazmat service in 2005.

**Figure 1-9. Percent of All Departments
That Provide Hazmat But Do Not Have
All Involved Personnel Formally Trained
by Size of Community, for Three Studies**
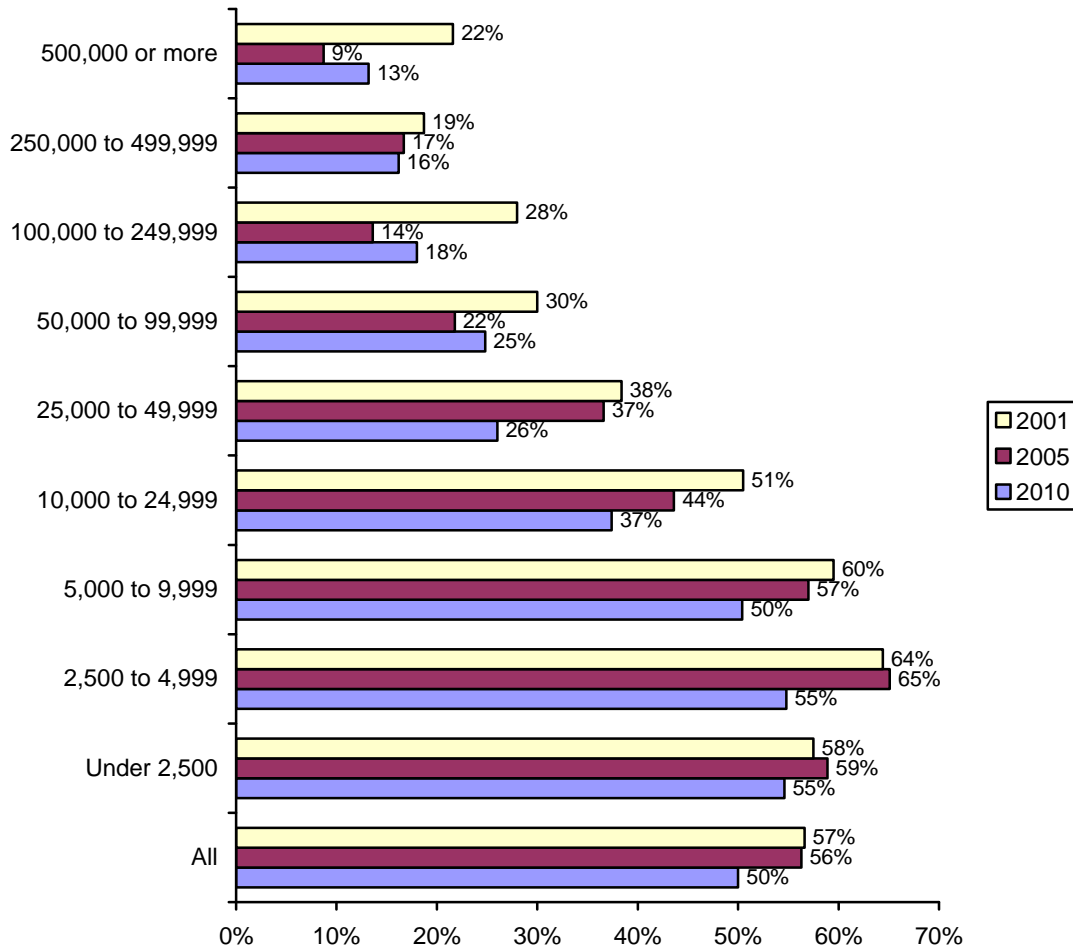


Requirements of the US Environmental Protection Agency (EPA) and the US Occupational Safety and Health Administration (OSHA) specify that all assigned personnel must have formal training.

The difference between the two graphs partly reflects the variations in the percent of departments that perform Hazmat. Figure 1-8 shows how well departments that perform Hazmat are doing in providing formal training to all involved personnel. Figure 1-9 shows the overall share of departments where there is a need for additional training so that all involved personnel will be formally trained. A department that does not perform Hazmat is not included in the Figure 1-8 statistics but is counted as "no need" in the Figure 1-9 statistics. The percentages in Figures 1-5, 1-7, 1-9, 1-11, and 1-13 can be compared with each other to see which service accounts for the largest share of departments needing formal training.

Because newly hired personnel and personnel newly assigned to Hazmat must be trained, the percentage of involved personnel with formal training can go down as well as up for an individual department. Also, departments new to Hazmat may begin providing service before all involved personnel are formally trained. These are some of the possible explanations for the cases in Figures 1-8 and 1-9 where a later survey showed a greater need than an earlier survey.

Figures 1-8 and 1-9 show that for the most part, the smaller communities have the greater need for additional formal training, and there has been progress in achieving formal training for all involved personnel for all sizes of communities.

Table 1-14 indicates certification of personnel who perform Hazmat. The question asked whether any personnel had been certified to any of several possible levels – Awareness, Operational, or Technician. The columns of Table 1-14 are defined by combinations of the three levels of certification.

Because the three levels are progressive, with each level incorporating the skills and knowledge of the previous level, it is reasonable to assume that a combination answer (e.g., Awareness and Operational) indicates that some personnel in the department are certified to one of the levels and other personnel are certified to another level. By contrast, a department that responds with only one level presumably has all its certified personnel certified to that one level. In every case, it is possible that some assigned personnel are not certified to any level.

Table 1-14 indicates that very few departments performing Hazmat are completely lacking in certified personnel (4%). Conversely, no departments reported that all their certified personnel were certified to the level of Technician, the highest level of certification, and few departments (19% overall) reported that all their certified personnel were certified to at least the level of Operational, the second highest level of certification.


**Wildland Firefighting**

**Most departments (86%) say that wildland firefighting is a role the department performs (see Table 1-15).** Unlike other services provided by departments, the percent of departments providing wildland firefighting is highest for the smallest communities. However, even for the largest communities (500,000 or more population protected), 59% of departments report providing this service. The estimated 86% of departments reporting that they perform wildland firefighting is nearly unchanged from 84% in 2001 and 85% in 2005. Table 1-16 shows how many of the assigned personnel in departments responsible for wildland firefighting have received formal training.

The survey does not does not define "wildland", which means it may not be clear whether a backyard brush fire qualifies, and the survey does not include any questions that would indicate the size, proximity or even existence of wildland/urban interface areas within, adjacent to, or near the department's coverage area. Therefore, while departments

reporting no activity in EMS or Hazmat could be safely assumed to be deferring responsibility for any incidents that occur to other parties, it is possible that some departments reporting no role in wildland firefighting may have no potential for incidents that would demand attention.

**Lack of success in meeting need:** Departments that perform wildland firefighting but have not formally trained all their involved personnel constituted 68% of departments that provide wildland firefighting, down from 75% in 2001 and 74% in 2005. (See Figure 1-10.)

**Figure 1-10. Percent of Departments
Performing Wildland Firefighting
for Which Not All Involved Personnel Are Formally Trained
by Size of Community, for Three Studies**
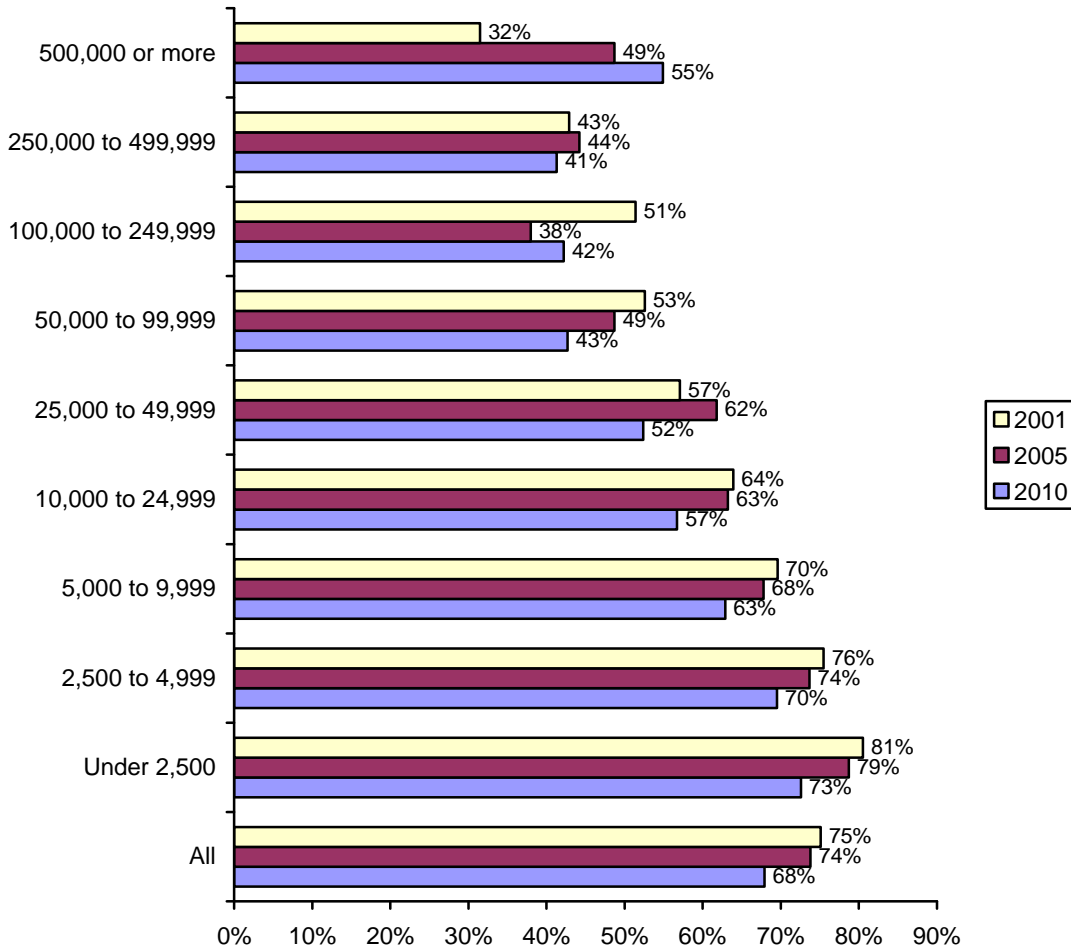


**Size of need:** An estimated 58% of all departments provide wildland firefighting but have not formally trained all their involved personnel, down from 63% in 2001 and 2005.

There has been some progress, but the remaining need is still extensive.

**Figure 1-11. Percent of All Departments
That Provide Wildland Firefighting But Do Not Have
All Involved Personnel Formally Trained
by Size of Community, for Three Studies**

| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 22% | 34% | 32% |
| 250,000 to 499,999 | 28% | 35% | 31% |
| 100,000 to 249,999 | 35% | 24% | 29% |
| 50,000 to 99,999 | 35% | 27% | 27% |
| 25,000 to 49,999 | 36% | 37% | 33% |
| 10,000 to 24,999 | 46% | 43% | 37% |
| 5,000 to 9,999 | 58% | 55% | 53% |
| 2,500 to 4,999 | 65% | 66% | 63% |
| Under 2,500 | 72% | 72% | 66% |
| All | 63% | 63% | 58% |
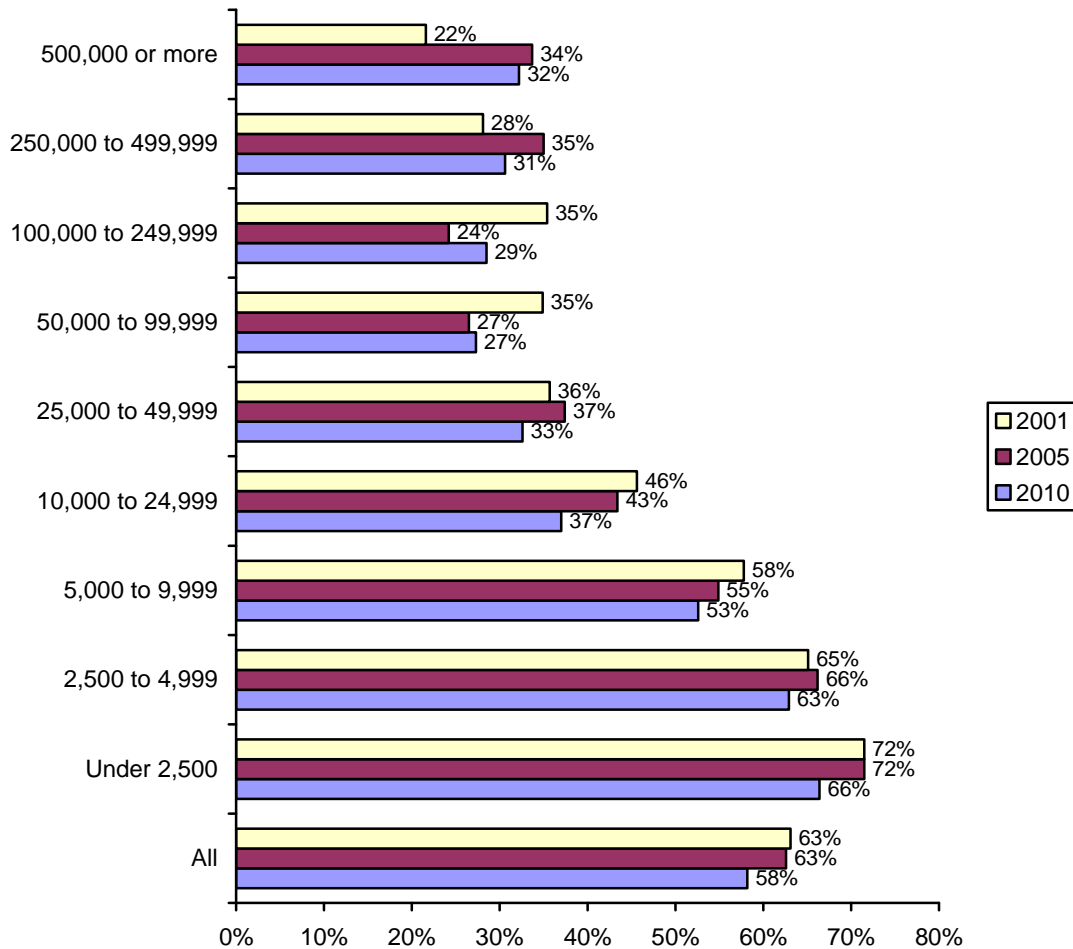
Figure 1-10 shows how well departments that perform wildland firefighting are doing in providing formal training to all involved personnel. Figure 1-11 shows the overall share of departments where there is a need for additional training so that all involved personnel will be formally trained. A department that does not perform wildland firefighting is not included in the Figure 1-10 statistics but is counted as "no need" in the Figure 1-11 statistics. The percentages in Figures 1-5, 1-7, 1-9, 1-11, and 1-13 can be compared with each other to see which service accounts for the largest share of departments needing formal training.

Because newly hired personnel and personnel newly assigned to wildland firefighting must be trained, the percentage of involved personnel with formal training can go down as well as up for an individual department. Also, departments new to wildland

firefighting may begin providing service before all involved personnel are formally trained.  These are some of the possible explanations for any cases in Figures 1-10 and 1-11 where a later survey shows a greater need than an earlier survey.

Figures 1-10 and 1-11 show some overall progress in reducing need for training for personnel involved in wildland firefighting.  However, need has grown for the largest communities.

A counter-trend as large as the one seen for communities of 500,000 or more population protected, which occurred despite little if any change in the percentage of departments performing wildland firefighting, suggests a very large number of personnel newly assigned or newly hired for this activity.  That could occur if a large urban community had long been responsible for wildland firefighting but had only recently become aware of how common and how complex such firefighting could be in their urban environment.

Such details go well beyond the level of detail captured by the survey but could be addressed in a more focused survey in the future.


### Technical Rescue

**More than half of departments (56%) say that technical rescue is a role the department performs (see Table 1-17).**

In the latest survey, an estimated 56% of departments reported that they perform technical rescue, nearly unchanged from 56% in 2001 and 57% in 2005.  Table 1-18 shows how many of the assigned personnel in departments responsible for technical rescue have received formal training.  Technical rescue is defined by NFPA 1670, *Standard on Operations and Training for Technical Rescue Incidents,* as the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations.  It is not distinguished from other rescue and EMS incidents in the NFIRS coding for incident type, and so it is not possible to calculate how many such incidents occur each year.

The smaller the population protected, the less likely it is that the department provides technical rescue.  However, even for the smallest communities (under 2,500 population protected), 46% of departments report providing this service.

<u>Lack of success in meeting need</u>:  **Departments that perform technical rescue but have not formally trained all their involved personnel constituted 85% of departments that provide technical rescue, down from 88% in 2001 and 2005.  (See Figure 1-12.)**

<u>Size of need</u>:  **An estimated 48% of all departments provide technical rescue but have not formally trained all their involved personnel, nearly unchanged from 49% in 2001 and 50% in 2005.**

Unlike most other services provided by fire departments, the need for formal training on technical rescue tends to be greater for larger communities.

Figure 1-12 shows how well departments that perform technical rescue are doing in providing formal training to all involved personnel. Figure 1-13 shows the overall share of departments where there is a need for additional training so that all involved personnel will be formally trained. A department that does not perform technical rescue is not included in the Figure 1-12 statistics but is counted as "no need" in the Figure 1-13 statistics.

**Figure 1-12. Percent of Departments
Providing Technical Rescue
for Which Not All Involved Personnel Are Formally Trained
by Size of Community, for Three Studies**
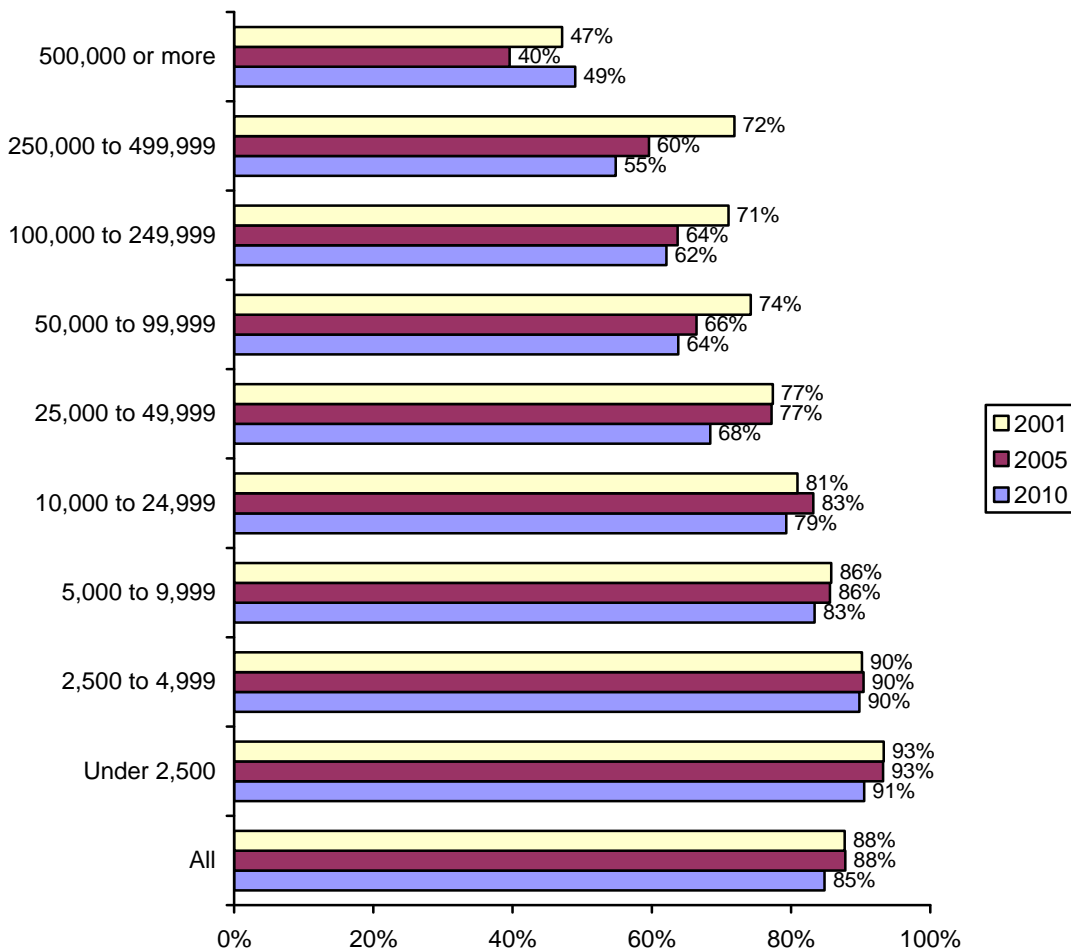


The percentages in Figures 1-5, 1-7, 1-9, 1-11, and 1-13 can be compared with each other to see which service accounts for the largest share of departments needing formal training.

Because newly hired personnel and personnel newly assigned to technical rescue must be trained, the percentage of involved personnel with formal training can go down as well as up for an individual department. Also, departments new to technical rescue may begin providing service before all involved personnel are formally trained. These are some of the possible explanations for any cases in Figures 1-12 and 1-13 where a later survey shows a greater need than an earlier survey.

**Figure 1-13. Percent of All Departments
That Perform Technical Rescue But Do Not Have
All Involved Personnel Formally Trained
by Size of Community, for Three Studies**
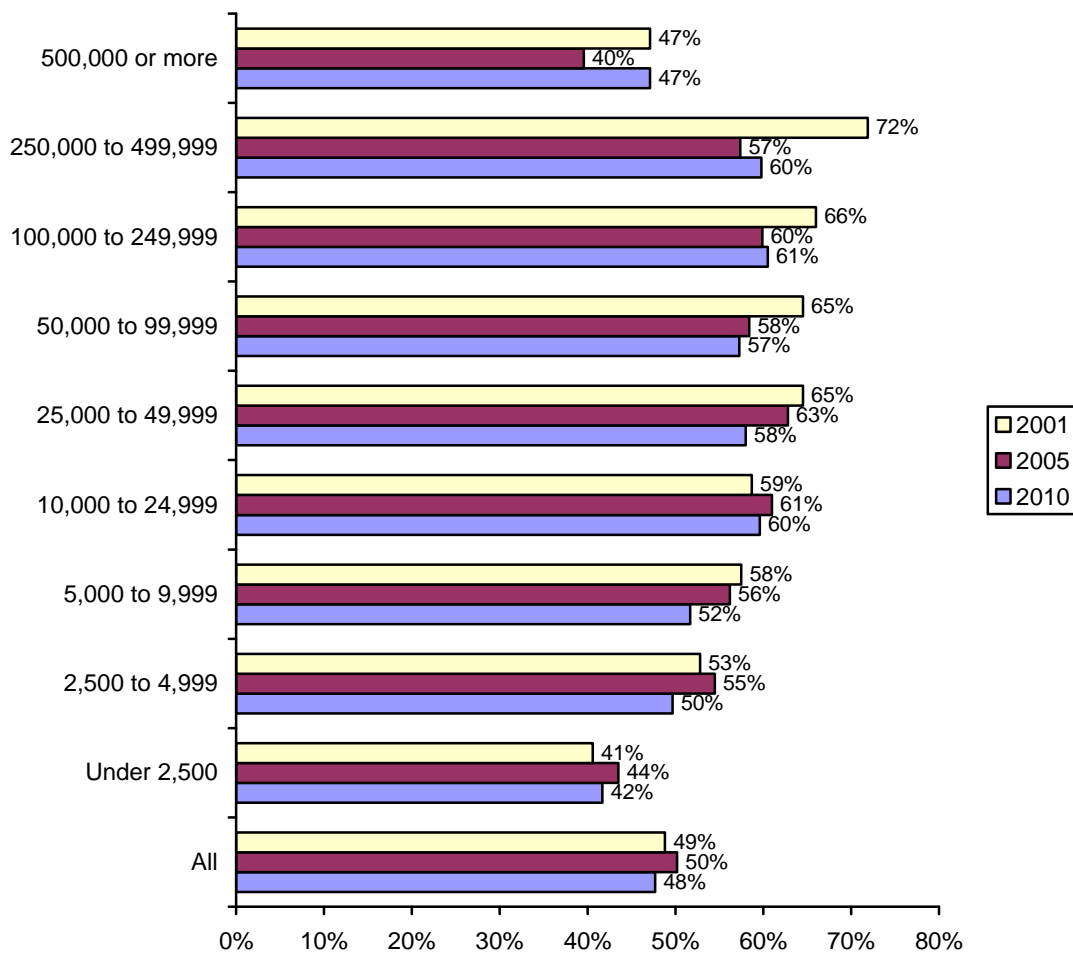


Figures 1-12 and 1-13 show little overall progress in reducing need for training for personnel involved in technical rescue.

It is possible that scarce training funds and federal grants for training for technical rescue have been given a lower priority than training for structural firefighting, EMS, hazardous material response, and wildland firefighting. This means that the evidence of need and priority may not be nearly so clear for technical rescue as it is for the other services.

**Programs to Maintain and Protect Firefighter Health**

Table 1-19 indicates whether departments have a program to maintain basic firefighter fitness and health, such as is required in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program.*

**Overall, 30% of departments have a program to maintain basic firefighter fitness and health, up from 20% in 2001 and 24% in 2005.**

**Figure 1-14. Percent of Departments
Without a Program to Maintain Basic Firefighter Fitness and Health
by Size of Community, for Three Studies**
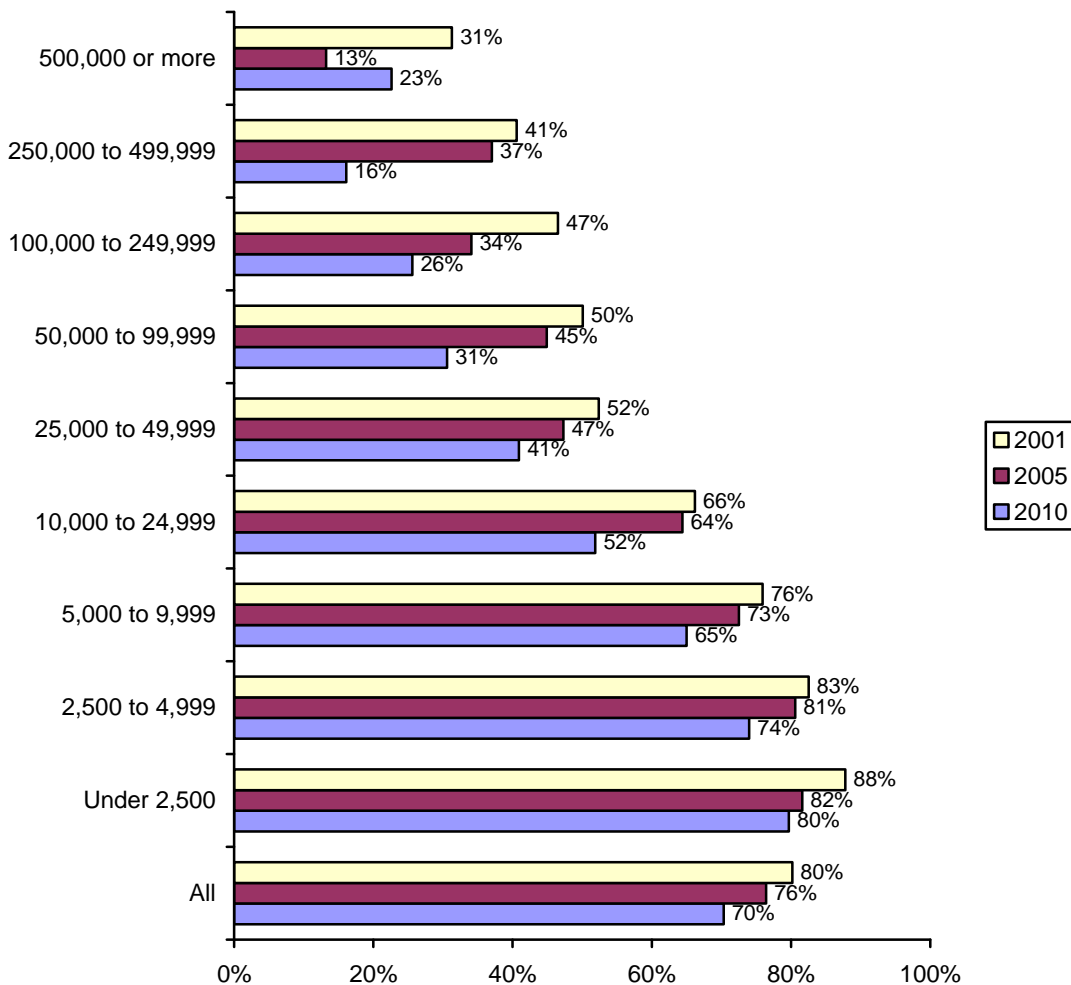


Figure 1-14 shows what percentage of departments have such programs, by size of population protected and for each of the three Needs Assessment Studies. There has been considerable progress in this area, but most departments protecting communities of less than 10,000 population – and therefore most overall – still do not have these programs.

The larger the population protected, the more likely a department is to have such a program. That means the estimated percent of firefighters working in departments without such programs is lower than the percent of departments without such programs.

In the latest survey, an estimated 682,000 firefighters worked in departments without programs to maintain basic firefighter fitness and health, down from 792,000 in 2001 and 737,000 in 2005.

In terms of percents, 61% of firefighters worked in departments without such programs in the latest survey, down from 73% in 2001 and 67% in 2005.

Table 1-D estimates how many firefighters, career or volunteer, are in departments without such programs, by size of population protected.

**Table 1-D. Estimated Number of Firefighters in Fire Departments With No Program to Maintain Basic Firefighter Fitness and Health by Size of Community Protected (Q. 18)**

| Population Protected | Estimated Firefighters Without Program to Maintain Fitness |
|---|---|
| 500,000 or more | 17,000 |
| 250,000 to 499,999 | 5,000 |
| 100,000 to 249,999 | 13,000 |
| 50,000 to 99,999 | 15,000 |
| 25,000 to 49,999 | 30,000 |
| 10,000 to 24,999 | 69,000 |
| 5,000 to 9,999 | 87,000 |
| 2,500 to 4,999 | 137,000 |
| Under 2,500 | 309,000 |
| Total | 682,000 |
| Percent of total firefighters | 61% |

The above projections are based on 4,609 departments reporting on Question 18. Numbers are shown to the nearest 1,000 and may not sum to totals due to rounding. See Table 1-19.

Q. 18: Does your department have a program to maintain basic firefighter fitness and health (e.g., as required in NFPA 1500)?

**Two-thirds (68%) of departments indicated they have a program for infectious disease control, up slightly from 64% in 2001 and 65% in 2005.** More than 95% of departments protecting at least 25,000 population have such programs. Even for the smallest communities (less than 2,500 population protected), 54% of departments reported having such programs.

**Table 1-1**
**Number of Departments and Percent of US Population Protected**
**by Type of Department**
**(Q. 1, 7, 8)**

| Type of Department | Number | Percent | Percent of US Population Protected |
|---|---|---|---|
| All Career | 1,988 | 7.5% | 46.5% |
| Mostly Career | 1,435 | 5.4% | 16.4% |
| Mostly Volunteer | 4,254 | 16.1% | 16.2% |
| All Volunteer | 18,753 | 71.0% | 20.8% |
| Total | 26,430 | 100.0% | 100.0% |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

Type of department is broken into four categories. All-career departments are comprised of 100% career firefighters. Mostly-career departments are comprised of 51 to 99% career firefighters, while mostly-volunteer departments are comprised of 1 to 50% career firefighters All-volunteer departments are comprised of 100% volunteer firefighters.

The above projections are based on 4,642 departments reporting on Questions 1, 7 and 8. Numbers may not add to totals due to rounding.

Q. 1:   Population (number of permanent residents) your department has primary responsibility to protect (excluding mutual aid areas)
Q. 7:   Total number of full-time (career) uniformed firefighters
Q. 8:   Total number of active part-time (call or volunteer) firefighters

**Table 1-2**
**Department Type, by Community Size**
**(Q. 1,7, 8)**

| Population of Community | All Career Number Depts | All Career Percent | Mostly Career Number Depts | Mostly Career Percent | Mostly Volunteer Number Depts | Mostly Volunteer Percent | All Volunteer Number Depts | All Volunteer Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 to 999,999 | 43 | 81.1% | 9 | 17.0% | 2 | 3.8% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 42 | 67.8 | 17 | 27.4 | 3 | 4.8 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 200 | 84.0 | 29 | 12.2 | 9 | 3.8 | 0 | 0.0 | 238 | 100.0 |
| 50,000 to 99,999 | 322 | 72.0 | 82 | 18.3 | 36 | 8.1 | 7 | 1.6 | 447 | 100.0 |
| 25,000 to 49,999 | 520 | 48.0 | 224 | 20.6 | 257 | 23.7 | 84 | 7.7 | 1,085 | 100.0 |
| 10,000 to 24,999 | 620 | 21.0 | 666 | 22.6 | 1,115 | 37.8 | 550 | 18.7 | 2,951 | 100.0 |
| 5,000 to 9,999 | 158 | 4.2 | 220 | 5.9 | 1,424 | 37.9 | 1,953 | 52.0 | 3,755 | 100.0 |
| 2,500 to 4,999 | 30 | 0.6 | 88 | 1.8 | 800 | 16.4 | 3,957 | 81.2 | 4,875 | 100.0 |
| Under 2,500 | 55 | 0.4 | 100 | 0.8 | 609 | 4.7 | 12,200 | 94.1 | 12,964 | 100.0 |
| Total | 1,988 | 7.5 | 1,435 | 5.4 | 4,254 | 16.1 | 18,753 | 70.9 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

Type of department is broken into four categories.  All-career departments are comprised of 100% career firefighters.  Mostly-career departments are comprised of 51 to 99% career firefighters, while mostly-volunteer departments are comprised of 1 to 50% career firefighters All-volunteer departments are comprised of 100% volunteer firefighters.

The above projections are based on 4,642 departments reporting on Questions 1, 7 and 8.  Numbers may not add to totals due to rounding.

Q. 1:    Population (number of permanent residents) your department has primary responsibility to protect (excluding mutual aid areas)
Q. 7:    Total number of full-time (career) uniformed firefighters
Q. 8:    Total number of active part-time (call or volunteer) firefighters

**Table 1-3**
**For All- or Mostly-Volunteer Departments**
**Average Number of Volunteer Firefighters Who Respond to a Mid-Day House Fire**
**Percent of Departments by Community Size**
**(Q. 10)**

**Average Number of Volunteer Firefighters Responding**

| Population of Community | 1-2 | 3-4 | 5-9 | 10-14 | 15-19 | 20 or More | Total |
|---|---|---|---|---|---|---|---|
| 25,000 to 49,999 | 4.2% | 13.3% | 21.7% | 28.3% | 10.8% | 21.7% | 100.0% |
| 10,000 to 24,999 | 3.3 | 9.0 | 23.9 | 26.3 | 16.4 | 21.1 | 100.0 |
| 5,000 to 9,999 | 2.6 | 7.5 | 28.4 | 33.0 | 16.7 | 11.8 | 100.0 |
| 2,500 to 4,999 | 1.4 | 7.0 | 34.7 | 32.6 | 16.6 | 7.8 | 100.0 |
| Under 2,500 | 0.9 | 8.9 | 45.5 | 31.0 | 10.8 | 2.9 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

A mostly-volunteer department might respond with some career firefighters as well, but this question asked only about volunteers responding.

The above projections are based on 2,873 departments reporting on Question 10 and comprised of all- or mostly volunteer firefighters. Numbers may not add to totals due to rounding.

Q. 10: Average number of call/volunteer personnel who respond to a mid-day house fire (blank for actual number).

Reference for definition of need: NFPA 1720.

**Table 1-4**
**For All- or Mostly-Career Departments**
**Number of Career Firefighters Assigned to an Engine/Pumper Apparatus**
**Percent of Departments by Community Size**
**(Q. 11)**


**Number of Career Firefighters Assigned to Engine/Pumper**

| Population of Community | 1 | 2 | 3 | 4 | 5 or more | Total |
|---|---|---|---|---|---|---|
| 500,000 or more | 0.0% | 0.05% | 20.0% | 70.0% | 10.0% | 100.0 |
| 250,000 to 499,999 | 0.0 | 0.0 | 25.7 | 71.4 | 2.9 | 100.0 |
| 100,000 to 249,999 | 0.0 | 5.3 | 54.9 | 33.8 | 6.0 | 100.0 |
| 50,000 to 99,999 | 0.9 | 3.8 | 66.7 | 26.1 | 2.6 | 100.0 |
| 25,000 to 49,999 | 1.3 | 14.6 | 61.4 | 19.9 | 2.8 | 100.0 |
| 10,000 to 24,999 | 2.6 | 25.1 | 48.2 | 21.7 | 2.4 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service


The above projections are based on 1,130 departments reporting on Question 11 and comprised of all- or mostly-career firefighters. Numbers may not add to totals due to rounding.

Q. 11: Number of on-duty career/paid personnel assigned to an engine/pumper (answers given as ranges shown).

Reference for definition of need: NFPA 1710.

**Table 1-5**
**For All- or Mostly-Career Departments**
**Number of Career Firefighters Assigned to a Ladder/Aerial Apparatus**
**Percent of Departments by Community Size**
**(Q. 12)**

| Population of Community | 1 | 2 | 3 | 4 | 5 or more | Not Applicable | Total |
|---|---|---|---|---|---|---|---|
| 500,000 or more | 0.0% | 0.0% | 16.7% | 63.3% | 20.0% | 0.0% | 100.0 |
| 250,000 to 499,999 | 0.0 | 0.0 | 31.4 | 65.7 | 2.9 | 0.0 | 100.0 |
| 100,000 to 249,999 | 0.0 | 9.0 | 37.3 | 43.3 | 7.5 | 3.0 | 100.0 |
| 50,000 to 99,999 | 3.0 | 13.2 | 40.9 | 32.3 | 2.6 | 8.1 | 100.0 |
| 25,000 to 49,999 | 9.5 | 26.6 | 32.6 | 16.8 | 1.6 | 13.0 | 100.0 |
| 10,000 to 24,999 | 16.2 | 29.5 | 21.4 | 8.6 | 0.3 | 24.0 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 1,133 departments reporting on Question 12 and comprised of all- or mostly-career firefighters. Numbers may not add to totals due to rounding.

Q. 12: Number of on-duty career/paid personnel assigned to a ladder/aerial (answers given as ranges shown).

**Table 1-6**
**Does Department Provide Structural Firefighting?**
**by Community Size**
**(Q. 13a)**

| Population of Community | Yes Number Depts | Percent | No Number Depts | Percent | Total Number Depts | Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 237 | 100.0 | 0 | 0.0 | 238 | 100.0 |
| 50,000 to 99,999 | 447 | 100.0 | 0 | 0.0 | 447 | 100.0 |
| 25,000 to 49,999 | 1,083 | 99.8 | 2 | 0.2 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,938 | 99.6 | 13 | 0.4 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,750 | 99.9 | 5 | 0.1 | 3,755 | 100.0 |
| 2,500 to 4,999 | 4,857 | 99.6 | 18 | 0.4 | 4,875 | 100.0 |
| Under 2,500 | 12,767 | 98.5 | 197 | 1.4 | 12,964 | 100.0 |
| Total | 26,195 | 99.1 | 235 | 0.9 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,651 departments reporting on Question 13a.  Numbers may not add to totals due to rounding.

Q. 13a: Is [structural firefighting] a role your department performs?

**Table 1-7**
**For Departments That Provide Structural Firefighting**
**How Many Personnel Who Perform This Duty Have Received Formal Training?**
**by Community Size**
**(Q. 13b)**

| Population of Community | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 51 | 96.2% | 2 | 3.8% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 60 | 96.8 | 2 | 3.2 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 218 | 92.0 | 17 | 7.2 | 2 | 0.8 | 0 | 0.0 | 237 | 100.0 |
| 50,000 to 99,999 | 427 | 95.5 | 17 | 3.1 | 5 | 1.1 | 1 | 0.2 | 447 | 100.0 |
| 25,000 to 49,999 | 1,004 | 92.7 | 63 | 5.8 | 14 | 1.3 | 2 | 0.2 | 1,083 | 100.0 |
| 10,000 to 24,999 | 2,470 | 84.1 | 423 | 14.4 | 45 | 1.6 | 0 | 0.0 | 2,938 | 100.0 |
| 5,000 to 9,999 | 2,624 | 70.0 | 879 | 23.4 | 243 | 6.5 | 5 | 0.1 | 3,751 | 100.0 |
| 2,500 to 4,999 | 2,584 | 53.2 | 1,607 | 33.1 | 655 | 13.5 | 12 | 0.2 | 4,858 | 100.0 |
| Under 2,500 | 4,477 | 35.1 | 4,666 | 36.5 | 3,269 | 25.6 | 355 | 2.8 | 12,767 | 100.0 |
| Total | 13,914 | 53.1 | 7,673 | 29.3 | 4,233 | 16.2 | 375 | 1.4 | 26,195 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,584 departments reporting yes to Question 13a and also reporting on this question.  Numbers may not add to totals due to rounding.

Q. 13b: If [structural firefighting is a role your department performs; yes on Q. 13a], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Reference for definition of need:  NFPA 1500 and 1001

## Table 1-8
## For Departments That Provide Structural Firefighting,
## Level That Personnel Who Perform This Duty Have Been Certified to
## Percent of Departments by Community Size
## (Q. 13c)

| Population of Community | No Certification | Firefighter Level 1 | Firefighter Level 2 | Both Levels | Total Departments |
|---|---|---|---|---|---|
| 500,000 or more | 3.2% | 6.5% | 35.5% | 54.8% | 100.0% |
| 250,000 to 499,999 | 5.4 | 8.1 | 27.0 | 59.5 | 100.0 |
| 100,000 to 249,999 | 2.9 | 7.9 | 32.4 | 56.8 | 100.0 |
| 50,000 to 99,999 | 1.5 | 3.1 | 40.1 | 55.3 | 100.0 |
| 25,000 to 49,999 | 2.2 | 5.0 | 38.7 | 54.2 | 100.0 |
| 10,000 to 24,999 | 2.2 | 6.4 | 31.1 | 60.2 | 100.0 |
| 5,000 to 9,999 | 4.0 | 13.3 | 20.5 | 62.2 | 100.0 |
| 2,500 to 4,999 | 7.3 | 21.8 | 13.8 | 57.1 | 100.0 |
| Under 2,500 | 17.3 | 34.3 | 9.9 | 38.5 | 100.0 |
| Total | 10.8 | 23.8 | 16.5 | 48.9 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,624 departments reporting yes to Question 13a and also reporting on Question 13c. Numbers may not add to totals due to rounding.

Q. 13c: If [structural firefighting is a role your department performs; yes on Q. 13a], have any of your personnel been certified to any of the following levels? Firefighter Level I, II

Reference for definition of need: NFPA 1500 and 1001

**Table 1-9**
**Does Department Provide Emergency Medical Service (EMS)?**
**by Community Size**
**(Q. 14a)**

| Population of Community | Yes Number Depts | Yes Percent | No Number Depts | No Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 51 | 96.2% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 60 | 96.8 | 2 | 3.2 | 62 | 100.0 |
| 100,000 to 249,999 | 235 | 98.7 | 2 | 1.3 | 238 | 100.0 |
| 50,000 to 99,999 | 421 | 94.2 | 26 | 5.8 | 447 | 100.0 |
| 25,000 to 49,999 | 978 | 90.1 | 107 | 9.9 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,427 | 82.2 | 524 | 17.8 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,723 | 72.5 | 1,032 | 27.5 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,409 | 69.9 | 1,466 | 30.1 | 4,875 | 100.0 |
| Under 2,500 | 7,816 | 60.3 | 5,148 | 39.7 | 12,964 | 100.0 |
| Total | 18,120 | 68.6 | 8,310 | 31.4 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,643 departments reporting on Question 14a. Numbers may not add to totals due to rounding.

Q. 14a: Is [emergency medical service] a role your department performs?

## Table 1-10
## For Departments That Provide Emergency Medical Service
## How Many Personnel Who Perform This Duty Have Received Formal Training?
## by Community Size
## (Q. 14b)

| Population of Community | All Number Depts | All Percent | Most Number Depts | Most Percent | Some Number Depts | Some Percent | None Number Depts | None Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 48 | 94.1% | 3 | 5.9% | 0 | 0.0% | 0 | 0.0% | 51 | 100.0% |
| 250,000 to 499,999 | 55 | 91.7 | 5 | 8.3 | 0 | 0.0 | 0 | 0.0 | 60 | 100.0 |
| 100,000 to 249,999 | 215 | 91.5 | 17 | 7.2 | 3 | 1.3 | 0 | 0.0 | 235 | 100.0 |
| 50,000 to 99,999 | 385 | 91.4 | 31 | 7.4 | 5 | 1.2 | 0 | 0.0 | 421 | 100.0 |
| 25,000 to 49,999 | 863 | 88.2 | 92 | 9.4 | 23 | 2.4 | 0 | 0.0 | 978 | 100.0 |
| 10,000 to 24,999 | 1,810 | 74.6 | 417 | 17.2 | 197 | 8.1 | 3 | 0.1 | 2,427 | 100.0 |
| 5,000 to 9,999 | 1,682 | 61.8 | 678 | 24.9 | 358 | 13.2 | 5 | 0.2 | 2,723 | 100.0 |
| 2,500 to 4,999 | 1,401 | 41.1 | 1,016 | 29.8 | 986 | 28.9 | 6 | 0.2 | 3,409 | 100.0 |
| Under 2,500 | 2,932 | 37.5 | 1,929 | 24.7 | 2,899 | 37.1 | 55 | 0.7 | 7,816 | 100.0 |
| Total | 9,390 | 51.8 | 4,188 | 23.1 | 4,473 | 24.7 | 69 | 0.4 | 18,120 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,452 departments reporting yes to Question 14a and also reporting on this question.  Numbers may not add to totals due to rounding.

Q. 14b: If [emergency medical service is a role your department performs; yes on Q. 14a], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Reference for definition of need:  NFPA 1500

| Population of Community | None | First Responder | Basic Life Support | First Responder Basic Life Support | First Responder Basic Life Support Advanced Life Support | Basic Life Support Advanced Life Support Paramedic | First Responder Advanced Life Support Paramedic | Advanced Life Support Paramedic | Total |
|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 0.0% | 3.3% | 10.0% | 10.0% | 40.0% | 23.3% | 3.3% | 10.0% | 100.0% |
| 250,000 to 499,999 | 0.0 | 2.7 | 2.7 | 0.0 | 35.1 | 51.4 | 2.7 | 5.4 | 100.0 |
| 100,000 to 249,999 | 0.7 | 3.6 | 7.2 | 4.3 | 30.4 | 38.4 | 0.0 | 15.2 | 100.0 |
| 50,000 to 99,999 | 0.8 | 2.8 | 10.9 | 9.3 | 29.1 | 35.6 | 0.0 | 11.3 | 100.0 |
| 25,000 to 49,999 | 1.0 | 4.5 | 9.8 | 9.3 | 23.2 | 34.8 | 0.7 | 16.7 | 100.0 |
| 10,000 to 24,999 | 0.5 | 4.7 | 11.5 | 15.4 | 27.1 | 30.9 | 0.5 | 9.3 | 100.0 |
| 5,000 to 9,999 | 0.5 | 6.3 | 9.7 | 20.7 | 32.0 | 25.0 | 0.5 | 5.2 | 100.0 |
| 2,500 to 4,999 | 1.9 | 10.7 | 10.2 | 29.4 | 31.3 | 13.6 | 0.7 | 2.2 | 100.0 |
| Under 2,500 | 2.1 | 17.1 | 13.8 | 36.4 | 20.8 | 7.9 | 0.8 | 1.1 | 100.0 |
| Total | 1.6 | 12.1 | 12.0 | 28.5 | 25.4 | 15.9 | 0.7 | 3.8 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,482 departments reporting yes to Question 14a, and also reporting on this question.  Numbers may not add to totals due to rounding.

Q. 14c:   If [emergency medical service is a role your department performs; yes on Q. 14a], have any of your personnel been certified to any of the following levels?    First Responder    Basic Life Support    Advanced Life Support    Paramedic

Reference for definition of need:  NFPA 1500

**Table 1-12**
**Does Department Provide Hazardous Material Response?**
**by Community Size**
**(Q. 15a)**

| Population of Community | Yes Number Depts | Yes Percent | No Number Depts | No Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 234 | 98.3 | 4 | 1.7 | 238 | 100.0 |
| 50,000 to 99,999 | 432 | 96.6 | 15 | 3.4 | 447 | 100.0 |
| 25,000 to 49,999 | 1,029 | 94.8 | 56 | 5.2 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,655 | 90.0 | 296 | 10.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,228 | 86.0 | 527 | 14.0 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,833 | 78.6 | 1,043 | 21.4 | 4,875 | 100.0 |
| Under 2,500 | 8,790 | 67.8 | 4,173 | 32.2 | 12,964 | 100.0 |
| Total | 20,315 | 76.9 | 6,115 | 23.1 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table projections are based on 4,626 departments reporting on Question 15a. Numbers may not add to totals due to rounding.

Q. 15a: Is [hazardous materials response] a role your department performs?

**Table 1-13**
**For Departments That Provide Hazardous Material Response**
**How Many Personnel Who Perform This Duty Have Received Formal Training?**
**by Community Size**
**(Q. 15b)**

| Population of Community | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 46 | 86.8% | 0 | 0.0% | 7 | 13.2% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 52 | 83.8 | 5 | 8.1 | 5 | 8.1 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 191 | 81.6 | 23 | 9.8 | 20 | 8.5 | 0 | 0.0 | 234 | 100.0 |
| 50,000 to 99,999 | 321 | 74.3 | 52 | 12.0 | 59 | 13.7 | 0 | 0.0 | 432 | 100.0 |
| 25,000 to 49,999 | 767 | 74.5 | 154 | 15.0 | 128 | 12.4 | 0 | 0.0 | 1,029 | 100.0 |
| 10,000 to 24,999 | 1,554 | 58.6 | 668 | 25.2 | 419 | 15.9 | 13 | 0.5 | 2,654 | 100.0 |
| 5,000 to 9,999 | 1,336 | 41.4 | 977 | 30.3 | 900 | 27.9 | 15 | 0.4 | 3,228 | 100.0 |
| 2,500 to 4,999 | 1,164 | 30.4 | 1,259 | 32.9 | 1,391 | 36.3 | 18 | 0.5 | 3,832 | 100.0 |
| Under 2,500 | 1,702 | 19.4 | 2,665 | 30.3 | 4,266 | 48.5 | 157 | 1.8 | 8,790 | 100.0 |
| Total | 7,114 | 35.0 | 5,802 | 28.6 | 7,196 | 35.4 | 202 | 1.0 | 20,315 | 100.0 |

Source:  NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,808 departments reporting yes to Questions 15a and also reporting on this question.  Numbers may not add to totals due to rounding.

Q. 15b:  If [hazardous materials response is a role your department performs; yes on Q. 15a], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Reference for definition of need:  NFPA 1500

**Table 1-14**
**For Departments That Provide Hazardous Material Response**
**Level That Personnel Who Perform This Duty Have Been Certified to**
**Percent of Departments by Community Size**
**(Q. 15b)**

| Population of Community | None | Awareness | Operational | Technician | Awareness Operational | Awareness Technician | Operational Technician | Awareness Operational Technician | Total |
|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 0.0% | 0.0% | 3.2% | 25.8% | 0.0% | 0.0% | 12.9% | 58.1% | 100.0% |
| 250,000 to 499,999 | 0.0 | 2.6 | 0.0 | 7.9 | 0.0 | 5.3 | 21.1 | 63.2 | 100.0 |
| 100,000 to 249,999 | 0.0 | 5.9 | 5.1 | 15.4 | 4.4 | 2.2 | 16.2 | 50.7 | 100.0 |
| 50,000 to 99,999 | 1.6 | 5.6 | 8.3 | 6.7 | 7.1 | 0.8 | 15.9 | 54.0 | 100.0 |
| 25,000 to 49,999 | 0.7 | 5.2 | 12.0 | 9.3 | 10.5 | 1.6 | 18.0 | 42.7 | 100.0 |
| 10,000 to 24,999 | 1.5 | 5.7 | 12.7 | 5.9 | 20.1 | 0.7 | 10.2 | 43.1 | 100.0 |
| 5,000 to 9,999 | 1.2 | 14.6 | 12.0 | 3.6 | 29.6 | 0.7 | 3.8 | 34.5 | 100.0 |
| 2,500 to 4,999 | 2.5 | 20.7 | 12.4 | 1.9 | 36.3 | 0.8 | 2.8 | 22.7 | 100.0 |
| Under 2,500 | 6.2 | 31.8 | 10.2 | 1.9 | 35.9 | 0.9 | 1.9 | 11.2 | 100.0 |
| Total | 3.9 | 22.5 | 11.1 | 3.1 | 31.4 | 0.9 | 4.4 | 22.8 | 100.0 |

Source:  NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,823 departments reporting yes to Question 15a and also reporting on this question.  Numbers may not add to totals due to rounding.

Q. 15c:  If [hazardous material response is a role your department performs], have any of your personnel been certified to any of the following levels?   Awareness   Operational   Technician

Reference for definition of need:  NFPA 472

**Table 1-15**
**Does Department Provide Wildland Firefighting?**
**by Community Size**
**(Q. 16a)**

| Population | Yes | | No | | Total | |
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 31 | 58.5% | 22 | 41.5% | 53 | 100.0% |
| 250,000 to 499,999 | 46 | 74.2 | 16 | 25.8 | 62 | 100.0 |
| 100,000 to 249,999 | 161 | 67.6 | 77 | 32.4 | 238 | 100.0 |
| 50,000 to 99,999 | 286 | 64.0 | 161 | 36.0 | 447 | 100.0 |
| 25,000 to 49,999 | 676 | 62.3 | 409 | 37.7 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,008 | 68.0 | 943 | 32.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,143 | 83.7 | 612 | 16.3 | 3,755 | 100.0 |
| 2,500 to 4,999 | 4,410 | 90.5 | 465 | 9.5 | 4,875 | 100.0 |
| Under 2,500 | 11,857 | 91.5 | 1,107 | 8.5 | 12,964 | 100.0 |
| Total | 22,618 | 85.6 | 3,812 | 14.4 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,636 departments reporting on Question 16a. Numbers may not add to totals due to rounding.

Q. 16a: Is [wildland firefighting] a role your department performs?

**Table 1-16**
**For Departments That Provide Wildland Firefighting**
**How Many Personnel Who Perform This Duty Have Received Formal Training?**
**by Community Size**
**(Q. 16b)**

| Population of Community | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 14 | 45.1% | 2 | 6.5% | 13 | 42.0% | 2 | 6.5% | 31 | 100.0% |
| 250,000 to 499,999 | 27 | 58.7 | 7 | 15.2 | 10 | 21.7 | 2 | 4.3 | 46 | 100.0 |
| 100,000 to 249,999 | 93 | 57.8 | 21 | 13.0 | 40 | 24.8 | 7 | 4.3 | 161 | 100.0 |
| 50,000 to 99,999 | 164 | 57.3 | 55 | 19.2 | 48 | 16.8 | 19 | 6.6 | 286 | 100.0 |
| 25,000 to 49,999 | 322 | 47.6 | 141 | 20.8 | 174 | 25.7 | 40 | 5.9 | 677 | 100.0 |
| 10,000 to 24,999 | 871 | 43.3 | 501 | 25.0 | 547 | 25.0 | 89 | 4.4 | 2,008 | 100.0 |
| 5,000 to 9,999 | 1,167 | 37.1 | 1,072 | 34.1 | 746 | 23.7 | 158 | 5.0 | 3,143 | 100.0 |
| 2,500 to 4,999 | 1,344 | 30.5 | 1,675 | 38.0 | 1,178 | 26.7 | 213 | 4.8 | 4,410 | 100.0 |
| Under 2,500 | 3,246 | 27.4 | 4,167 | 35.1 | 3,613 | 30.5 | 831 | 7.0 | 11,857 | 100.0 |
| Total | 7,249 | 32.1 | 7,639 | 33.8 | 6,370 | 28.2 | 1,360 | 6.0 | 22,618 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,674 departments reporting yes to Question 16a and also reporting on this question. Numbers may not add to totals due to rounding.

Q. 16b: If [wildland firefighting is a role your department performs], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Reference for definition of need: NFPA 1051 and 1143

**Table 1-17**
**Does Department Provide Technical Rescue Service?**
**by Community Size**
**(Q. 17a)**

| Population | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 51 | 96.2% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 232 | 97.5 | 6 | 2.5 | 238 | 100.0 |
| 50,000 to 99,999 | 401 | 89.7 | 46 | 10.3 | 447 | 100.0 |
| 25,000 to 49,999 | 919 | 84.7 | 166 | 15.3 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,212 | 75.0 | 739 | 25.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,327 | 62.0 | 1,428 | 38.0 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,702 | 55.4 | 2,173 | 44.6 | 4,875 | 100.0 |
| Under 2,500 | 5,971 | 46.1 | 6,993 | 53.9 | 12,964 | 100.0 |
| Total | 14,878 | 56.3 | 11,552 | 43.7 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,598 departments reporting on Question 17a.  Numbers may not add to totals due to rounding.

Q. 17a: Is [technical rescue] a role your department performs?

## Table 1-18
## For Departments That Provide Technical Rescue Service
## How Many Personnel Who Perform This Duty Have Received Formal Training?
## by Community Size
## (Q. 17b)

| Population of Community | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts Percent | | Number Depts Percent | | Number Depts Percent | | Number Dept Percent | | Number Depts Percent | |
| 500,000 or more | 26 | 51. | 10 | 19. | 15 | 29.4 | 0 | 0.0 | 51 | 100. |
| 250,000 to 499,999 | 28 | 45. | 7 | 16. | 27 | 43.5 | 0 | 0.0 | 62 | 100. |
| 100,000 to 249,999 | 88 | 37. | 53 | 22. | 91 | 39.2 | 0 | 0.0 | 232 | 100. |
| 50,000 to 99,999 | 145 | 36. | 104 | 25. | 150 | 37.5 | 2 | 0.5 | 401 | 100. |
| 25,000 to 49,999 | 290 | 31. | 233 | 25. | 387 | 42.1 | 9 | 1.0 | 919 | 100. |
| 10,000 to 24,999 | 457 | 20. | 657 | 29. | 1,078 | 48.7 | 20 | 1.0 | 2,212 | 100. |
| 5,000 to 9,999 | 386 | 16. | 666 | 28. | 1,223 | 52.6 | 52 | 2.2 | 2,327 | 100. |
| 2,500 to 4,999 | 274 | 10. | 781 | 28. | 1,557 | 57.6 | 90 | 3.3 | 2,702 | 100. |
| Under 2,500 | 566 | 9. | 1,662 | 27. | 3,528 | 59.1 | 215 | 3.6 | 5,971 | 100. |
| Total | 2,258 | 15. | 4,175 | 28. | 8,057 | 54.1 | 388 | 2.6 | 14,878 | 100. |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,438 departments reporting yes to Question 17a and also reporting on this question. Numbers may not add to totals due to rounding.

Q. 17b:  If [technical rescue is a role your department performs], how many of your personnel who perform this duty have received formal training (not just on-the-job)?

Reference for definition of need: NFPA 1500, 1670 and 1006

**Table 1-19**
**Does Department Have a Program**
**to Maintain Basic Firefighter Fitness and Health?**
**by Community Size**
**(Q. 18)**

| Population | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| **of Community** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** |
| 500,000 or more | 41 | 77.4% | 12 | 22.6% | 53 | 100.0% |
| 250,000 to 499,999 | 52 | 83.9 | 10 | 16.1 | 62 | 100.0 |
| 100,000 to 249,999 | 177 | 74.4 | 61 | 25.6 | 238 | 100.0 |
| 50,000 to 99,999 | 310 | 69.4 | 137 | 30.6 | 447 | 100.0 |
| 25,000 to 49,999 | 641 | 59.1 | 444 | 40.9 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,420 | 48.1 | 1,531 | 51.9 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,315 | 35.0 | 2,440 | 65.0 | 3,755 | 100.0 |
| 2,500 to 4,999 | 1,268 | 26.0 | 3,607 | 74.0 | 4,875 | 100.0 |
| Under 2,500 | 2,630 | 20.3 | 10,334 | 79.7 | 12,964 | 100.0 |
| Total | 7,855 | 29.7 | 18,574 | 70.3 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,609 departments reporting on Question 18. Numbers may not add to totals due to rounding.

Q. 18: Does your department have a program to maintain basic firefighter fitness and health (e.g., as required in NFPA 1500)?

Reference for definition of need: NFPA 1500 and 1583

## Table 1-20
## Does Department Have a
## Program for Infectious Disease Control?
## by Community Size
## (Q. 19)

| Population | Yes | | No | | Total | |
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
|---|---|---|---|---|---|---|
| 500,000 to 999,999 | 51 | 96.2% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 232 | 97.5 | 6 | 2.5 | 238 | 100.0 |
| 50,000 to 99,999 | 430 | 96.2 | 17 | 3.8 | 447 | 100.0 |
| 25,000 to 49,999 | 1,031 | 95.0 | 54 | 5.0 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,626 | 89.0 | 325 | 11.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,096 | 82.5 | 659 | 17.5 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,459 | 71.0 | 1,416 | 29.0 | 4,875 | 100.0 |
| Under 2,500 | 7,018 | 54.1 | 5,946 | 45.9 | 12,964 | 100.0 |
| Total | 18,005 | 68.1 | 8,425 | 31.9 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,583 departments reporting on Question 19.  Numbers may not add to totals due to rounding.

Q. 19:   Does your department have a program for infectious disease control?

Reference for definition of need:  NFPA 1581

# SECTION 2. FACILITIES AND APPARATUS

## Characteristics of Fire Stations Indicating Need

Table 2-1 describes the average number of fire stations per department by size of community. Note that a community may have two or more fire stations, and each fire station may have two or more firefighting companies, each attached to a particular apparatus, such as an engine/pumper.

Table 2-1 also describes the fraction of stations with characteristics that indicate potential needs, specifically age of station over 40 years, or a lack of need, such as the presence of backup power, or exhaust emission control equipment.

Table 2-A converts these figures to total numbers of fire stations with needs of three types, by size of community and overall. The "Total" line is based on summing up the totals for each community size and is used as the basis for the "percent of US total line"; these percentages differ from the Table 2-1 "Total" line.

### Table 2-A.  Number of Fire Stations With Characteristics Indicating Potential Need, by Size of Community Protected (Q. 23)

| Population Protected | Total Number of Fire Stations With Indicated Characteristics in Communities of This Population Size | | |
| --- | --- | --- | --- |
| | Over 40 Years Old | No Backup Power | Not Equipped for Exhaust Emission Control |
| 500,000 or more | 1,150 | 720 | 400 |
| 250,000 to 499,999 | 420 | 270 | 200 |
| 100,000 to 249,999 | 810 | 570 | 810 |
| 50,000 to 99,999 | 750 | 420 | 660 |
| 25,000 to 49,999 | 1,290 | 850 | 1,430 |
| 10,000 to 24,999 | 2,570 | 2,020 | 3,200 |
| 5,000 to 9,999 | 2,430 | 2,370 | 4,350 |
| 2,500 to 4,999 | 2,640 | 3,340 | 5,620 |
| Under 2,500 | 6,760 | 10,750 | 15,060 |
| Total | 18,820 | 21,310 | 31,740 |
| Percent of US total | 38% | 44% | 65% |

The above projections are based on 3,596 departments reporting on all four parts of Question 23. Numbers are shown to the nearest ten and may not add to totals due to rounding.  See Table 27.

Q. 23:  Number of fire stations, number over 40 years old, number having backup power, number equipped for exhaust emission control (e.g., diesel exhaust extraction).

Figures 2-1 to 2-3 show how the percentages of departments with these three characteristics have changed across the three surveys.

**Figure 2-1. Percent of Stations Over 40 Years Old
by Size of Community, for Three Studies**
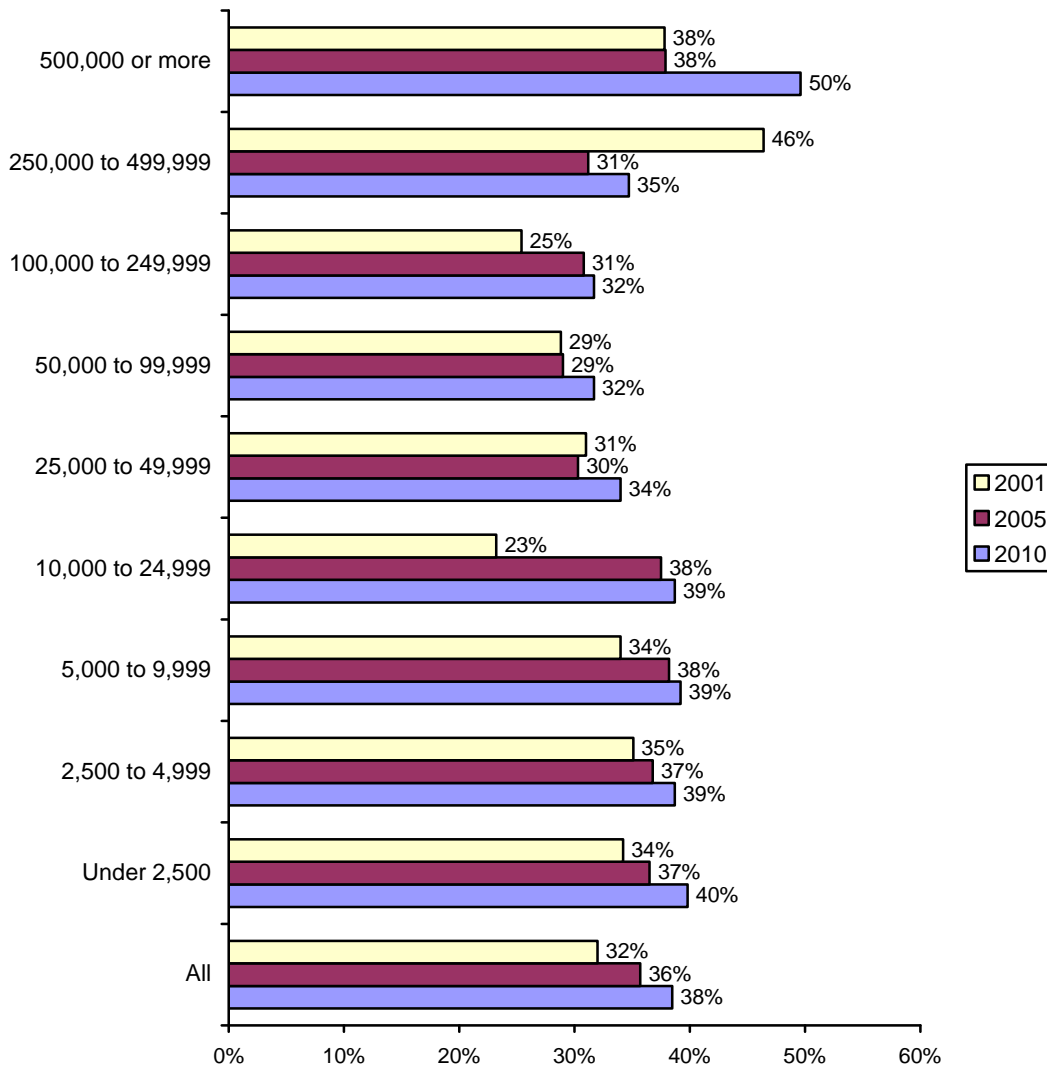


**Overall, the percentage of stations over 40 years old has increased over time, from 32% in 2001 to 36% in 2005 to 38% in 2010.**

Tight budgets and an absence of grants to support the building of entire new stations would explain these results.

The choice of 40 years is somewhat arbitrary. There is no standard or national guidance that points to 40 years as a recommended maximum age for a station. Nevertheless, the older a

building is, the more likely it is to have more problems, more serious problems, and some problems that cannot be addressed through repair or maintenance alone.

If the percentage of stations over 40 years old is steadily increasing, then it is likely that the percentage of stations over 50 years old or over 60 years old is also increasing. In fact, it is likely that a large share of the 32% of stations (more than 15,000 stations) that were over 40 years old in 2001 are still standing and are over 50 years old in 2011.

**Figure 2-2. Percent of Stations Without Backup Power by Size of Community, for Three Studies**
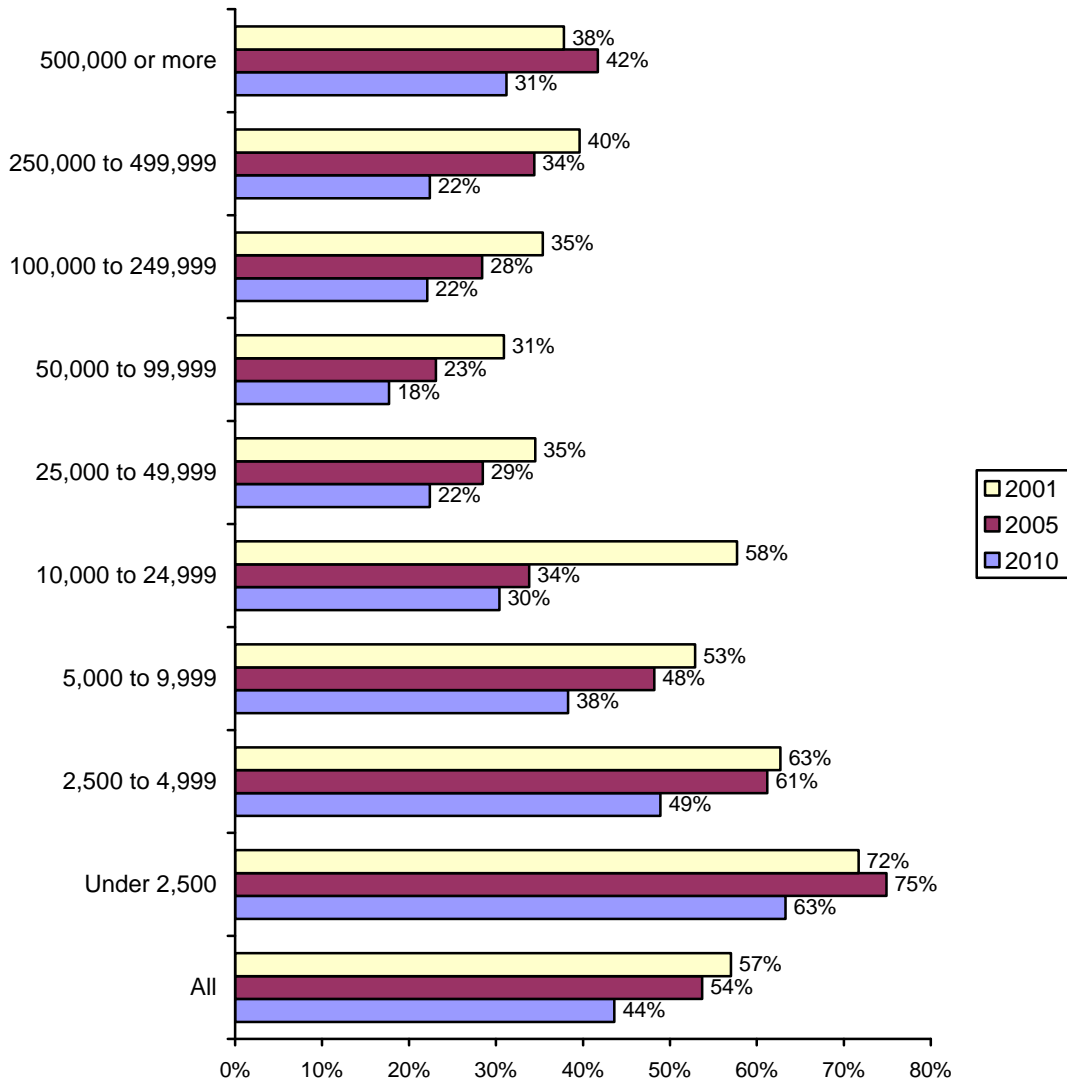


**Overall, there has been considerable progress, as the percent of stations needing backup power has declined from 57% in 2001 to 54% in 2005 to 44% in 2010.**

During 2001-2004, an estimated 5% of the Assistance to Firefighters grants and 7% of the grant funds were awarded for facility modification projects.[5] It is possible that some of the explanation for progress here lies with those grants.

There has been a counter-trend for communities with population protected of 500,000 or more. No obvious explanation for this counter-trend has been identified.

**Figure 2-3. Percent of Stations
Not Equipped for Exhaust Emission Control
by Size of Community, for Three Studies**
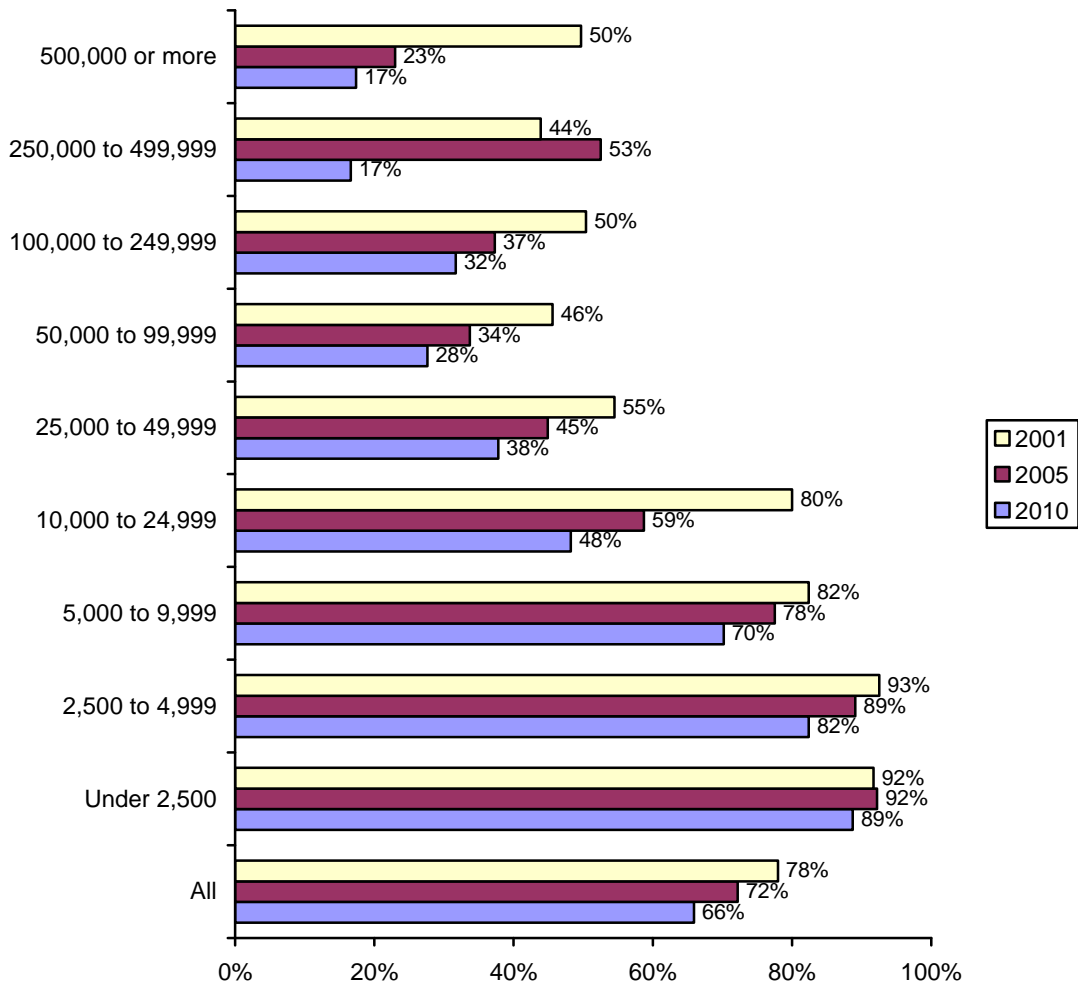


**There has been considerable progress with the percent of departments not equipped for exhaust emission control declining from 78% in 2001 to 72% in 2005 and 66% in 2010.**

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[5] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

During 2001-2004, an estimated 5% of the Assistance to Firefighters grants and 7% of the grant funds were awarded for facility modification projects. It is possible that some of the explanation for progress here lies with those grants.[6]

### Adequacy of Number and Coverage of Fire Stations

In addition to needs associated with the condition of fire stations, there are also questions about needs with respect to the number and coverage of fire stations. The number and coverage needed are those required to achieve response with sufficient fire suppression flow within a target period of time. The information contained in the Needs Assessment Survey is not sufficient to perform such a calculation, but a simplified version is possible.

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**Basis for Analysis of Adequacy of Fire Station Numbers and Coverage**

The *Fire Suppression Rating Schedule* of the Insurance Services Office includes a number of guidelines and formulas to use in performing a complete assessment of the adequacy of fire department resources, but for this simplified calculation on adequacy of number of fire stations, Item 560 has a basis: "The built-upon area of the city should have a first-due engine company within 1-½ miles and a ladder-service company within 2-½ miles." [*Fire Suppression Rating Schedule*, New York: Insurance Services Office, Inc., August 1998, p.28] For this simplified calculation, we can use these two numbers as a range for the maximum distance from any point in the community to the nearest fire station.

NFPA 1710 states its requirements in terms of time, specifically, a requirement that 90% of responses by the initial arriving company shall be within 4 minutes. If the first-response area is considered as a circle with the fire station in the middle, and if emergency calls are evenly distributed throughout the response area, then 90% of responses will be within 95% of the distance from the fire station to the boundary of the response area.[1] If the average speed of fire apparatus is 21 mph, as it might be in the downtown area of a city, then the 4-minute requirement corresponds to a 1.5-mile requirement. If the average speed of fire apparatus is 36 mph, as it might be in a suburban or rural area, then the 4-minute requirement corresponds to a 2.5-mile requirement. In a very rural community, the average speed could be even higher, and the allowable distance would be even greater.

Note the limitations in this assumption: Item 560 implies that a larger maximum distance is acceptable for parts of the community that are not "built-upon"; this will be especially relevant for smaller communities. This larger maximum distance may or may not be on the order of the 2 ½ miles cited for ladder-service companies responding in the built-upon area, so the use of 2 ½ miles as an upper bound for calculation is done for convenience rather than through any compelling logic. Item 560 does not reflect variations in local travel speeds or the need for adequate fire flow by the responding apparatus; those issues are addressed elsewhere in the *Fire Suppression Rating Schedule*. This guideline is not a mandatory government requirement or a consensus voluntary standard.

To use this guideline with the data available from the Needs Assessment Survey, it is necessary to have a formula giving the maximum distance from fire station to any point in the community as a function of data collected in the survey. The Rand Institute developed such a formula for expected (i.e., average) distance as part of its extensive research on fire deployment issues in the 1960s and 1970s. (If r is the distance from station to boundary, then the size of the response area is $\pi r^2$, and the radius of a circle with area equal to $0.9\pi r^2$ will be $r\sqrt{0.9}$ or approximately 0.95r.

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[6] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

The formula has been developed and tested against actual travel-distance data from selected fire departments for both straight-line travel and the more relevant right-angle travel that characterizes the grid layout of many communities. It has been developed assuming either a random distribution of fire stations throughout the community or an optimal placement of stations to minimize travel distances and times.

The formula is called the square root law: Expected distance = $k \sqrt{(A/n)}$
    where    k is a proportionality constant
                A is the community's area in square miles
                n is the number of fire stations

Note the limitations of this approach, cited by the Rand authors: Most importantly, it ignores the effect of natural barriers, such as rivers or railroad tracks. It assumes an alarm is equally likely from any point in the community. It assumes a unit is always ready to respond from the nearest fire station.

If one further assumes that response areas can be approximated by circles with fire stations at the center, then expected distance equals one-half of maximum distance. If response areas are more irregularly shaped, expected distance will be a smaller fraction of maximum distance.

With these assumptions, the number of fire stations will be sufficient to provide acceptable coverage, defined as a maximum travel distance that is less than the ISO-based value, if the following is true:

$$A - \frac{1}{2} (n)(D_{max})^2/(k^2) < 0$$
        where
                A is the community's area in square miles
                n is the number of fire stations
                $D_{max}$ is the maximum acceptable travel distance (1-½ miles or 2-½ miles)
                k is the Rand proportionality constant, which is assumed to be for right-angle
                    travel and is 0.6267 for random station location and 0.4714 for optimal

Table 2-B gives the estimates of need based on four calculations (i.e., two possible maximums for travel distance times two possible location protocols for fire stations).

It may be appropriate to use the shorter maximum distance for larger communities and the larger maximum distance for smaller communities. In fact, as noted, if the average speed achievable by fire apparatus is well above 36 mph, an even larger maximum distance is justified under NFPA 1710.

Note also that NFPA 1720, the standard for volunteer fire departments, has no speed of response or distance requirement, reflecting the fact that very low population densities in the smallest communities mean the number of people exposed to long response times may be very small.

Also, while few if any communities will have optimal station locations, it is likely that most will have placements that are considerably better than random.

**Table 2-B. Estimated Percent of Fire Departments Lacking Sufficient Fire Stations to Achieve Specified Maximum Travel Distance, by Size of Community Protected, Maximum Travel Distance Specified, and Assumption Regarding Optimality of Fire Station Placement (Q. 2, 23)**

| Population Protected | Estimated Percent of Departments With Too Few Stations | | | |
| | Random station location | | Optimal station location | |
| | Maximum distance of 1.5 miles | Maximum distance of 2.5 miles | Maximum distance of 1.5 miles | Maximum distance of 2.5 miles |
|---|---|---|---|---|
| 500,000 or more | 76.7% | 46.7% | 76.7% | 13.3% |
| 250,000 to 499,999 | 89.5% | 50.0% | 81.6% | 23.7% |
| 100,000 to 249,999 | 90.6% | 37.4% | 71.9% | 19.4% |
| 50,000 to 99,999 | 89.9% | 36.8% | 62.5% | 18.8% |
| 25,000 to 49,999 | 90.6% | 53.2% | 70.2% | 29.0% |
| 10,000 to 24,999 | 92.1% | 63.7% | 75.7% | 45.8% |
| 5,000 to 9,999 | 93.3% | 76.8% | 82.3% | 63.4% |
| 2,500 to 4,999 | 93.3% | 82.5% | 85.8% | 75.6% |
| Under 2,500 | 92.4% | 83.3% | 85.9% | 76.0% |

Source:   NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,629 departments reporting on Questions 2 and 23.
Q. 2:  Area (in square miles) your department has primary responsibility to protect (exclude mutual aid areas)
Q. 23:  Number of fire stations

**If 1.5 miles is used for communities of 10,000 or more and 2.5 miles is used for smaller communities, with optimal location used for both, then Table 2-B indicates that 62-76% of departments have too few stations, except for communities of at least 250,000 population, where the percentage is 77-82%.**

Remember the many limitations of this calculation procedure, however; a more complete calculation should be performed before drawing conclusions with regard to any particular community.

Figure 2-4 shows that the percentage of departments needing more stations is largely unchanged across the three surveys.  As in the discussion of Table 2-B, need has been defined based on (a) the use of Rand Corporation models and an assumption of optimal location to estimate travel distance distributions from coverage areas, and (b) the use of ISO guidance to set travel distance requirements, including a criterion of maximum travel distance of 1.5 miles for communities of at least 10,000 population and 2.5 miles for smaller communities.

**The percent of departments needing additional stations is around three-fourths for most population protected ranges, and the percentages are also largely unchanged across the surveys for most population protected ranges.  In much the same way that the percentages of older stations showed no evidence of significant station-building activity in the past ten**

**years, these results also show what one would expect if there were few stations being built around the country.**

**Figure 2-4. Percent of Departments Needing More Stations
Based on Coverage Area, ISO Guidance,
and Modeled Response Distance
by Size of Community, for Three Studies**

| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 73% | 84% | 77% |
| 250,000 to 499,999 | 64% | 70% | 82% |
| 100,000 to 249,999 | 67% | 68% | 72% |
| 50,000 to 99,999 | 64% | 61% | 63% |
| 25,000 to 49,999 | 70% | 75% | 70% |
| 10,000 to 24,999 | 76% | 74% | 76% |
| 5,000 to 9,999 | 65% | 65% | 63% |
| 2,500 to 4,999 | 73% | 74% | 76% |
| Under 2,500 | 73% | 74% | 76% |
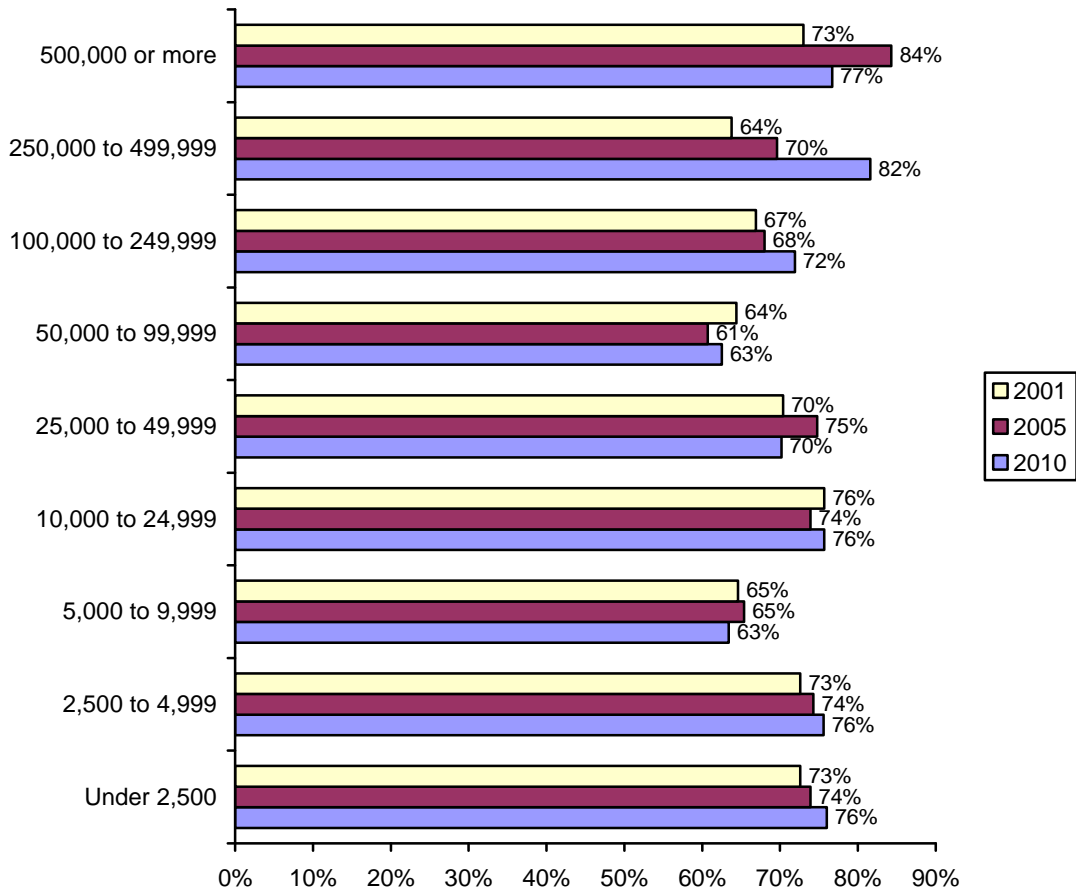
## Apparatus

Table 2-2 characterizes the size of the engine/pumper fleet inventory, overall and by age of vehicle.  Using the statistics from Table 1-2 on departments by population interval, one can identify the number of engines whose ages raise questions about the need for replacement.

Table 2-C provides those results by size of community.  Vehicle age alone is not sufficient to confirm a need for replacement, but it is indicative of a potential need, which should be examined.

**Table 2-C. Number of Engines in Service, Limited to
Engines At Least 15 Years Old
by Age of Equipment and Size of Community Protected (Q. 24)**

| Population Protected | Total Number of Engines in Service of This Age in Fire Departments Protecting Communities of This Population Size | | |
|---|---|---|---|
| | 15-19 Years Old | 20-29 Years Old | 30+ Years Old |
| 500,000 or more | 170 | 50 | 40 |
| 250,000 to 499,999 | 160 | 50 | 0 |
| 100,000 to 249,999 | 370 | 160 | 20 |
| 50,000 to 99,999 | 510 | 220 | 20 |
| 25,000 to 49,999 | 1,060 | 580 | 130 |
| 10,000 to 24,999 | 2,100 | 1,710 | 470 |
| 5,000 to 9,999 | 2,290 | 1,920 | 900 |
| 2,500 to 4,999 | 2,190 | 2,680 | 1,460 |
| Under 2,500 | 4,800 | 7,130 | 5,960 |
| Total | 13,650 | 14,510 | 9,010 |
| Percent of US total | 17% | 18% | 11% |

The above projections are based on 4,439 departments reporting on all parts of Question 24.  Numbers are shown to the nearest ten and may not add to totals due to rounding.  See Table 2-2.

Q. 24:  Number of engines/pumpers in service.  Total, 0-14 years old, 15-19 years old, 20-29 years old, 30 or more years old, unknown age

Figure 2-5 shows how the percent of engines 15 years old or older has changed across the three Needs Assessment Surveys.

Figure 2-5 shows some progress in reducing the age profile of the nation's engines and pumpers, particularly for departments protecting at least 250,000 population.  However, this display understates the size of the improvement, because it takes a significant amount of engine replacement just to keep pace with the normal aging of the apparatus.

For example, absent engine replacement nearly all of the 51% of engines that were at least 15 years old in 2001 would have been at least 20 years old in 2005, but the actual percentage of engines that were at least 20 years old in 2005 was 32%.

Similarly, with normal aging and no other changes, nearly all of the 35% of engines that were at least 20 years old in 2001 would have been at least 30 years old in 2010, but the actual percentage of engines that were at least 30 years old in 2010 was 11%.

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**Figure 2-5. Percent of Engines That Are At Least 15 Years Old
by Size of Community, for Three Studies**

| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 22% | 16% | 10% |
| 250,000 to 499,999 | 24% | 17% | 14% |
| 100,000 to 249,999 | 23% | 25% | 19% |
| 50,000 to 99,999 | 28% | 24% | 25% |
| 25,000 to 49,999 | 31% | 34% | 34% |
| 10,000 to 24,999 | 39% | 40% | 40% |
| 5,000 to 9,999 | 47% | 47% | 46% |
| 2,500 to 4,999 | 55% | 52% | 50% |
| Under 2,500 | 65% | 65% | 59% |
| All | 51% | 50% | 46% |
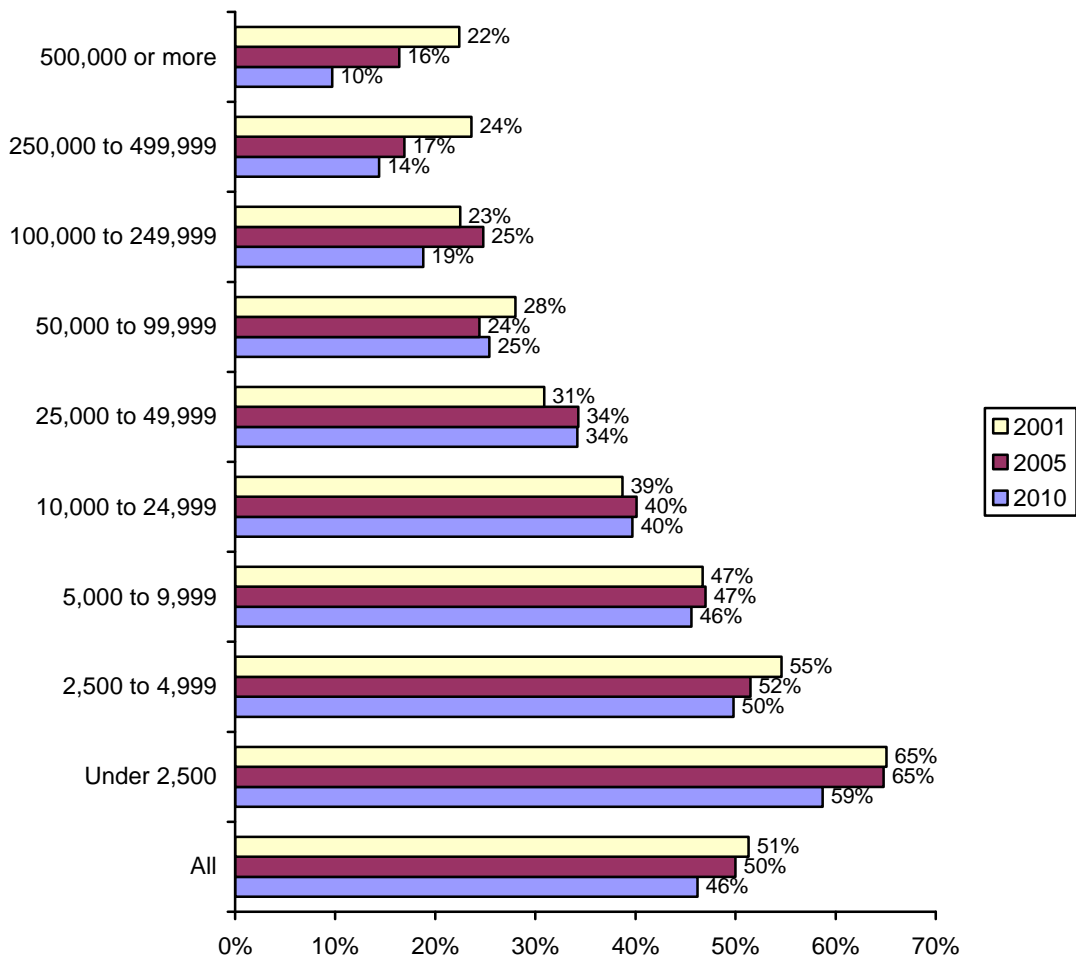
**An increasing share of fire departments (39%) have plans for apparatus replacement on a regular schedule, up from 35% in 2001 and 38% in 2005.**

Table 2-3 asked whether the department has a plan for apparatus replacement on a regular schedule. This is the kind of long-range, capital-budget type of plan that might be more likely in a community with established, institutionalized sources of revenue for the fire department, as one would expect to see in with a career fire department.

Table 2-3 shows that if you combine all departments protecting populations of at least 25,000, which is the population-protected dividing line at which the majority of departments are all- or mostly-career, then three-fourths (75%) of departments have such plans. Among rural communities, only one department in four (24%) has such a plan, roughly the same as in 2005 (25%) and up from 21% in 2001.

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**All- or mostly-volunteer departments are deriving a slightly larger share of their revenues from local taxes and a decreasing share from fund-raising.**

Because apparatus constitute by far the principal cost for volunteer departments, these results on the revenue sources for all- or mostly-volunteer departments are shown here. These questions were analyzed only for communities of less than 50,000 population, which is the maximum community size for which at least 30% of departments are all- or mostly-volunteer.

Table 2-4 shows that most revenues for all- or mostly-volunteer departments are covered by taxes, either a special fire district tax or some other tax. The share of revenues contributed in this way was 76-80% for communities of 5,000 to 49,999 population, 70% for communities of 2,500 to 4,999 population, and 65% for communities of less than 2,500 population. Other governmental payments – including reimbursements on a per-call basis, other local government payments, and state government payments – contributed 13% of revenues for communities under 2,500 population, and fund-raising contributed 17% of revenues for communities of less than 2,500 population.

Figure 2-6 shows how sources of revenue have shifted over the years for all- or mostly-volunteer fire departments protecting rural communities (communities of less than 2,500 population). There has been a slight shift out of fund-raising and into local taxes. This is consistent with a similar slight shift from all-volunteer to mostly-volunteer departments for these communities.

**Figure 2-6. Percent of Revenue by Source, for All- or Mostly-Volunteer Departments Protecting Populations of Less Than 2,500 for Three Studies**
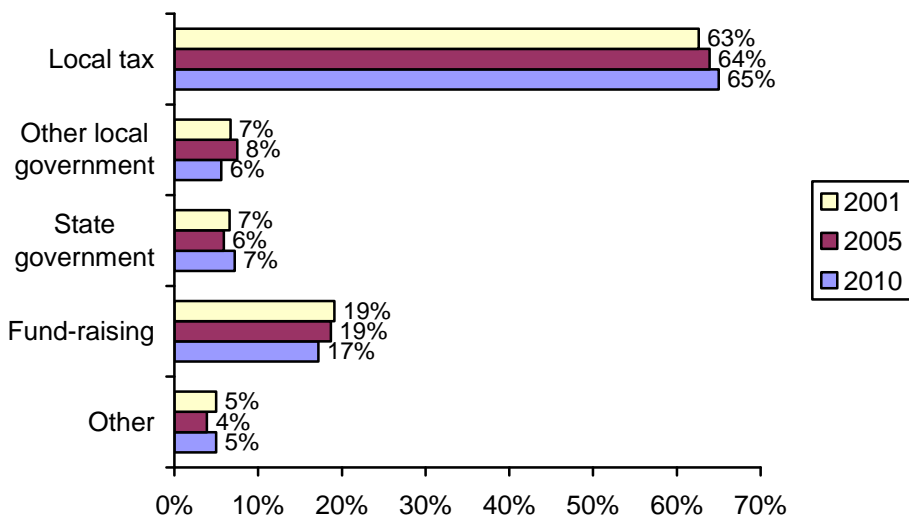


**All- or mostly-volunteer departments are acquiring more of their apparatus new, are acquiring fewer used vehicles, and are making less use of converted vehicles as apparatus.**

Table 2-5 shows that the smaller communities, with less certain sources of revenue, are more likely to obtain their apparatus either used or converted from a non-fire-department design and use. Vehicles that were purchased or, less often, donated used accounted for an average of 4% of apparatus for all- or mostly-volunteer departments protecting communities with 25,000 to 49,999 population but an average of 39% of apparatus for all- or mostly-volunteer departments protecting communities with less than 2,500 population.

The smaller the community, the higher the converted-vehicle percentage was. More specifically, converted vehicles accounted for an average of 2% of apparatus for all- or mostly-volunteer departments protecting communities with 25,000 to 49,999 population but an average of 10% of apparatus for all- or mostly-volunteer departments protecting communities with less than 2,500 population.

Because converted vehicles were not originally designed for fire department use, it can be especially challenging to assure that they are safe and effective, but it essential that any vehicle, converted or not, be evaluated for its compliance with applicable standards, in order to avoid undue hazard or risk to the firefighters who operate it. A starting point for such an evaluation can be NFPA 1912, *Standard for Fire Apparatus Refurbishing*.

**Figure 2-7. Percent of Apparatus by How Acquired, for All- or Mostly-Volunteer Departments Protecting Populations of Less Than 2,500 for Three Studies**
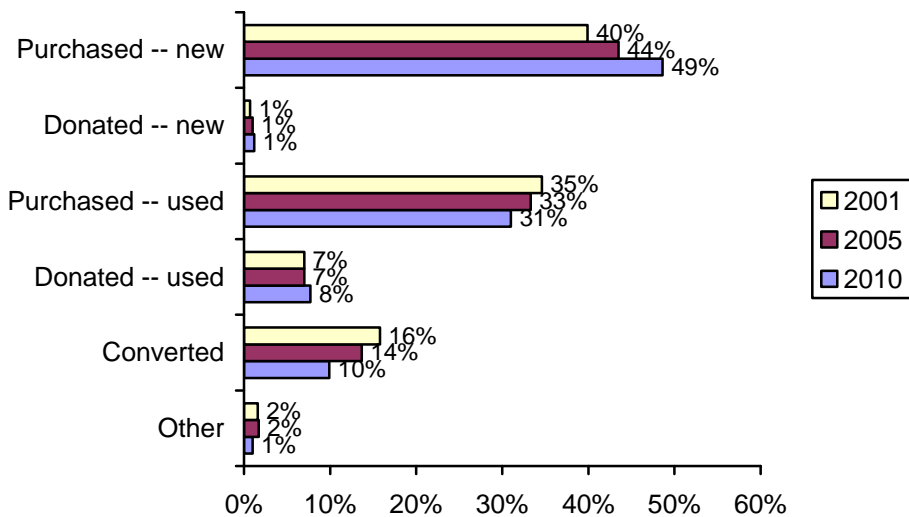


Figure 2-7 shows that there has been a strong shift away from converted vehicles in the manner of purchase of apparatus by all- or mostly-volunteer departments in rural communities. There has been a corresponding strong shift toward new vehicles, usually purchased but sometimes donated.

This shift may in part reflect the influence of the apparatus portion of the U.S. Fire Administration grants. For grants during 2001-2004, grants to purchase apparatus accounted for an estimated 8% of total grants and 20% of total dollars granted for all grant recipient departments, but for an estimated 13% of total grants and 40% of total dollars granted for grant recipient departments protecting populations of less than 2,500.[7]

Table 2-2 also indicates the average number of ambulances or other patient transport vehicles per department, by community size. Communities of less than 25,000 population average less than one such vehicle per department; and communities with 25,000 to 99,999 population average less than two. Averages are calculated over all departments, but larger shares of small communities have departments that do not provide EMS; this partially explains their lower numbers of ambulances per department.

Table 2-6 provides information on the percentage of departments with ladder/aerial apparatus. This type of apparatus is of use for buildings at least four stories in height, although it can also be used for shorter buildings with access problems for ground ladders.

Therefore, it is useful to compare the percentage of departments, by community size, having no ladder/aerial apparatus with the percentage having buildings 4 stories high or higher. (See Table 2-7.)

If the percentage of departments without ladder/aerial apparatus is greater than the percentage of departments with no buildings of at least 4 stories in height, then the difference is a measure of the minimum percentage of departments that could justify acquiring a ladder/aerial apparatus but do not have one. Table 2-D provides that comparison.

Table 2-D indicates that at least 2% of departments (5% minus 3%) protecting communities of 50,000 to 99,999 population have ladder/aerial apparatus but have no building tall enough to justify such apparatus. This is also true for at least 6% of departments protecting communities of 25,000 to 49,999 population and at least 5% of departments protecting communities of 10,000 to 24,999.

In the other direction, the minimum percentage of departments having no ladder/aerial apparatus but having at least one building tall enough to justify such apparatus is 3% for departments protecting communities of 5,000 to 9,999 population; 7% for departments protecting communities of 2,500 to 4,999 population; and 9% of departments protecting communities of less than 2,500 population.

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[7] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

**Table 2-D. Departments With No Ladder/Aerial Apparatus vs.
Departments With No Buildings of At Least 4 Stories in Height
Percent of Departments, by Size of Community Protected (Q. 25)**

| Population Protected | No Ladder/Aerial Apparatus | No Buildings At Least 4 Stories in Height |
|---|---|---|
| 500,000 or more | 0% | 0% |
| 250,000 to 499,999 | 0% | 0% |
| 100,000 to 249,999 | 2% | 2% |
| 50,000 to 99,999 | 3% | 5% |
| 25,000 to 49,999 | 6% | 12% |
| 10,000 to 24,999 | 19% | 24% |
| 5,000 to 9,999 | 49% | 46% |
| 2,500 to 4,999 | 79% | 72% |
| Under 2,500 | 94% | 85% |
| Total | 70% | 65% |

The above projections are based on 3,785 departments reporting on the first part of Question 25 and 3,884 reporting on the second part. See Tables 2-6 and 2-7.

Q. 25:  Number of ladders/aerials in service.  Number of buildings in community that are 4 or more stories in height.  None, 1-5, 6-10, 11 or more

**Table 2-1**
**Number of Fire Stations and Selected Characteristics**
**by Community Size**
**(Q. 23)**

| Population of Community | Average Number of Stations | Percent Stations Over 40 Years Old | Percent Stations Having Backup Power | Percent Stations Equipped for Exhaust Control |
|---|---|---|---|---|
| 500,000 or more | 43.78 | 49.6% | 68.8% | 82.6% |
| 250,000 to 499,999 | 19.43 | 34.7 | 77.6 | 83.4 |
| 100,000 to 249,999 | 10.77 | 31.7 | 77.9 | 68.3 |
| 50,000 to 99,999 | 5.31 | 31.7 | 82.3 | 72.4 |
| 25,000 to 49,999 | 3.49 | 34.0 | 77.6 | 62.2 |
| 10,000 to 24,999 | 2.25 | 38.7 | 69.6 | 51.8 |
| 5,000 to 9,999 | 1.65 | 39.2 | 61.7 | 29.8 |
| 2,500 to 4,999 | 1.40 | 38.7 | 51.1 | 17.6 |
| Under 2,500 | 1.31 | 39.8 | 36.7 | 11.3 |
| Total | 1.85 | 39.0 | 49.5 | 23.6 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,596 departments answering all four parts of Question 23. Numbers may not add to totals due to rounding.

Q. 23: Number of fire stations, number over 40 years old, number having backup power, number equipped for exhaust emission control (e.g., diesel exhaust extraction).

Reference for definition of need: NFPA 1500

**Table 2-2**
**Average Number of Engines/Pumpers and Ambulances* in Service**
**and Age of Engine/Pumper Apparatus**
**by Community Size**
**(Q. 24, 26)**

| Population of Community | Average Number of Engines | Engines 0-14 Years Old | Engines 15-19 Years Old | Engines 20-29 Years Old | Engines 30 or More Years Old | Average Number of Ambulances* |
|---|---|---|---|---|---|---|
| 500,000 or more | 50.74 | 45.81 | 3.15 | 1.00 | 0.78 | 33.67 |
| 250,000 to 499,999 | 24.81 | 21.25 | 2.63 | 0.88 | 0.06 | 11.50 |
| 100,000 to 249,999 | 12.35 | 10.03 | 1.57 | 0.68 | 0.07 | 4.23 |
| 50,000 to 99,999 | 6.61 | 4.93 | 1.14 | 0.50 | 0.04 | 2.47 |
| 25,000 to 49,999 | 4.76 | 3.14 | 0.98 | 0.53 | 0.12 | 2.01 |
| 10,000 to 24,999 | 3.65 | 2.20 | 0.71 | 0.58 | 0.16 | 1.23 |
| 5,000 to 9,999 | 2.98 | 1.62 | 0.61 | 0.51 | 0.24 | 0.77 |
| 2,500 to 4,999 | 2.61 | 1.30 | 0.45 | 0.55 | 0.30 | 0.49 |
| Under 2,500 | 2.35 | 0.96 | 0.37 | 0.55 | 0.46 | 0.32 |
| Total | 3.82 | 1.96 | 0.64 | 0.72 | 0.46 | 0.75 |

* "Ambulances" include other patient transport vehicles.

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown is based on 4,439 departments answering all parts of Question 24, except for the last column, which is based on 4,237 departments answering Question 26. Numbers may not add to totals due to rounding.

Q. 24: Number of engines/pumpers in service, number 0-14 years old, number 15-19 years old, number 20-29 years old, number 30 or more years old, number unknown age.

Q. 26: Number of ambulances or other patient transport vehicles

**Table 2-3**
**Does Department Have a Plan**
**for Apparatus Replacement on a Regular Schedule?**
**by Community Size**
**(Q. 3)**

| Population | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| | **Number** | | **Number** | | **Number** | |
| **of Community** | **Depts** | **Percent** | **Depts** | **Percent** | **Depts** | **Percent** |
| 500,000 or more | 51 | 96.2% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 53 | 85.5 | 9 | 14.5 | 62 | 100.0 |
| 100,000 to 249,999 | 194 | 81.5 | 44 | 18.5 | 238 | 100.0 |
| 50,000 to 99,999 | 358 | 80.1 | 89 | 19.9 | 447 | 100.0 |
| 25,000 to 49,999 | 766 | 70.6 | 319 | 29.4 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,800 | 61.0 | 1,151 | 39.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,908 | 50.8 | 1,847 | 49.2 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,068 | 42.4 | 2,807 | 57.6 | 4,875 | 100.0 |
| Under 2,500 | 3,105 | 24.0 | 9,859 | 76.0 | 12,964 | 100.0 |
| Total | 10,305 | 39.0 | 16,125 | 61.0 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,531 departments reporting on Question 3.  Numbers may not add to totals due to rounding.

Q. 3:   Do you have a plan for apparatus replacement on a regular schedule?

**Table 2-4**
**For All- or Mostly-Volunteer Departments**
**Sources of Budget Revenue**
**by Share (%) of Revenue and Community Size**
**(Q. 4)**

| Population of Community | Fire District or Other Tax | Payment per Call | Other Local Payment | State Government | Fund Raising | Other | Total |
|---|---|---|---|---|---|---|---|
| 25,000 to 49,999 | 79.9% | 1.7% | 1.2% | 5.3% | 6.1% | 5.7% | 100.0% |
| 10,000 to 24,999 | 79.8 | 1.7 | 3.4 | 4.6 | 5.7 | 4.6 | 100.0 |
| 5,000 to 9,999 | 75.9 | 2.1 | 3.0 | 4.3 | 9.1 | 4.6 | 100.0 |
| 2,500 to 4,999 | 69.9 | 1.7 | 4.6 | 4.4 | 14.6 | 4.6 | 100.0 |
| Under 2,500 | 65.0 | 1.6 | 4.0 | 7.2 | 17.2 | 5.0 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,923 departments reporting on Question 5.  Numbers may not add to totals due to rounding.

Q. 4:    What share (%) of your budgeted revenue is from [each of the listed alternatives]?

**Table 2-5**
**For All- or Mostly-Volunteer Departments**
**Manner of Purchase of Apparatus**
**by Share (%) of Apparatus and Community Size**
**(Q. 5)**

| Population of Community | Purchased New | Donated New | Purchased Used | Donated Used | Converted Vehicles | Other | Total |
|---|---|---|---|---|---|---|---|
| 25,000 to 49,999 | 93.8% | 0.3% | 4.0% | 0.1% | 1.6% | 0.1% | 100.0% |
| 10,000 to 24,999 | 87.6 | 0.5 | 7.9 | 1.0 | 2.7 | 0.2 | 100.0 |
| 5,000 to 9,999 | 79.7 | 0.5 | 12.7 | 2.4 | 4.1 | 0.4 | 100.0 |
| 2,500 to 4,999 | 65.2 | 1.0 | 21.0 | 4.1 | 8.0 | 0.2 | 100.0 |
| Under 2,500 | 48.6 | 1.2 | 31.0 | 7.7 | 9.9 | 1.0 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,870 departments reporting on Question 6.  Numbers may not add to totals due to rounding.

Q. 5:    What share (%) of your apparatus was [each of the listed alternatives]?

**Table 2-6**
**Number of Ladders/Aerials In-Service, by Community Size**
**(Q. 25)**

*For Departments Protecting Populations of 250,000 or More, Percent of Departments With*

| Population of Community | No Ladders/ Aerials | 1-5 Ladders/ Aerials | 6-9 Ladders/ Aerials | 10-19 Ladders/ Aerials | 20 or More Aerials/ Ladders | Total |
|---|---|---|---|---|---|---|
| 500,000 or more | 0.0% | 3.4% | 13.8% | 55.2% | 27.6% | 100.0% |
| 250,000 to 499,999 | 0.0 | 44.4 | 38.9 | 16.7 | 0.0 | 100.0% |

*For Departments Protecting Populations of Less Than 250,000, Percent of Departments With*

| Population of Community | No Ladders/ Aerials | 1 Ladder/ Aerial | 2 Ladders/ Aerials | 3-4 Ladders/ Aerials | 5 or More Ladders/ Aerials | Total |
|---|---|---|---|---|---|---|
| 100,000 to 249,999 | 1.5% | 18.3% | 27.5% | 31.3% | 21.4% | 100.0% |
| 50,000 to 99,999 | 2.8 | 33.1 | 41.1 | 21.4 | 1.6 | 100.0% |
| 25,000 to 49,999 | 6.2 | 61.1 | 28.7 | 3.9 | 0.0 | 100.0% |
| 10,000 to 24,999 | 18.7 | 69.7 | 11.0 | 0.5 | 0.0 | 100.0% |
| 5,000 to 9,999 | 48.7 | 48.1 | 2.4 | 0.5 | 0.0 | 100.0% |
| 2,500 to 4,999 | 78.5 | 20.8 | 0.6 | 0.0 | 0.0 | 100.0% |
| Under 2,500 | 93.7 | 6.1 | 0.2 | 0.0 | 0.0 | 100.0% |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown is based on 3,785 departments reporting on Question 25. Numbers may not add to totals due to rounding.

Q. 25: Number of ladders in service

**Table 2-7**
**Number of Buildings in Community That Are 4 or More Stories in Height**
**by Community Size**
**(Q. 25, second part)**

| Population of Community | None Number Depts | Percent | 1 to 5 Number Depts | Percent | 6 to 10 Number Depts | Percent | 11 or more Number Depts | Percent | Total Number Depts | Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 0 | 0.0% | 2 | 3.8% | 0 | 0.0% | 51 | 96.2% | 53 | 100.0% |
| 250,000 to 499,999 | 0 | 0.0 | 4 | 6.5 | 4 | 6.5 | 54 | 87.0 | 62 | 100.0 |
| 100,000 to 249,999 | 4 | 1.7 | 36 | 15.1 | 34 | 14.3 | 164 | 68.9 | 238 | 100.0 |
| 50,000 to 99,999 | 23 | 5.1 | 103 | 23.0 | 71 | 15.9 | 250 | 55.9 | 447 | 100.0 |
| 25,000 to 49,999 | 129 | 11.9 | 352 | 32.4 | 254 | 23.7 | 350 | 32.3 | 1,085 | 100.0 |
| 10,000 to 24,999 | 696 | 23.6 | 1,102 | 37.3 | 593 | 20.1 | 560 | 19.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,717 | 45.7 | 1,332 | 35.5 | 409 | 10.9 | 297 | 7.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,521 | 72.2 | 1,034 | 21.2 | 221 | 4.5 | 99 | 2.0 | 4,875 | 100.0 |
| Under 2,500 | 11,064 | 85.3 | 1,697 | 13.1 | 113 | 0.9 | 90 | 0.7 | 12,964 | 100.0 |
| Total | 17,153 | 64.9 | 5,662 | 21.4 | 1,700 | 6.4 | 1,915 | 7.2 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,884 departments reporting on the second part of Question 25. Numbers may not add to totals due to rounding.

Q. 25 (second part): Number of buildings in community that are 4 or more stories in height

# SECTION 3. PERSONAL PROTECTIVE EQUIPMENT

## Portable Radios

**Overall, half of all fire departments (51%) do not have enough portable radios to equip all emergency responders on a shift.  (See Table 3-1.)**  Table 3-1 indicates what percent of emergency responders on a single shift are equipped with portable radios. Tables 3-2 and 3-3 indicate what fractions of those radios are water-resistant and intrinsically safe in an explosive atmosphere, respectively.  Finally, Table 3-4 indicates whether departments have reserve radios at least equal to 10% of the in-service radios. Table 3-A translates the results of Tables 3-1 to 3-3 into estimated percentages of departments where not all emergency responders on a shift have radios and where not all radios have water-resistance or intrinsic safety in an explosive atmosphere.

**Table 3-A.  Departments Where Not All Emergency Responders
on a Shift Have Radios and Radios Lacking Water-Resistance
or Intrinsic Safety in an Explosive Atmosphere
by Size of Community Protected (Q. 27a, 27b, 27c)**

| Population Protected | Departments Where Not All Emergency Responders on a Shift Have Radios | Departments Where Not All Radios | |
|---|---|---|---|
| | | Have Water Resistance | Have Intrinsic Safety in Explosive Atmosphere |
| 500,000 or more | 9% | 28% | 46% |
| 250,000 to 499,999 | 0% | 12% | 41% |
| 100,000 to 249,999 | 13% | 33% | 32% |
| 50,000 to 99,999 | 11% | 29% | 36% |
| 25,000 to 49,999 | 19% | 39% | 45% |
| 10,000 to 24,999 | 25% | 47% | 52% |
| 5,000 to 9,999 | 45% | 57% | 58% |
| 2,500 to 4,999 | 55% | 61% | 67% |
| Under 2,500 | 62% | 66% | 71% |
| Total | 51% | 59% | 63% |

The above projections are based on 4,625 departments reporting on Question 27a, 4,602 reporting on Question 27b, and 4,596 reporting on Question 27c.  "Don't Know" responses are treated as unknowns.  See Tables 3-1 to 3-3.

Q. 27a:  How many of your emergency responders on-duty on a single shift can be equipped with portable radios?  All, Most, Some, None
Q. 27b:  How many of your portable radios are water-resistant?  All, Most, Some, None
Q. 27c:  How many of your portable radios are intrinsically safe in an explosive atmosphere? All, Most, Some, None

Figure 3-1 shows the shift across the years in percentages of departments where not all emergency responders on a shift have radios.

**Figure 3-1. Percent of Departments Where Not All
Emergency Responders on a Shift Have Portable Radios
by Size of Community, for Three Studies**
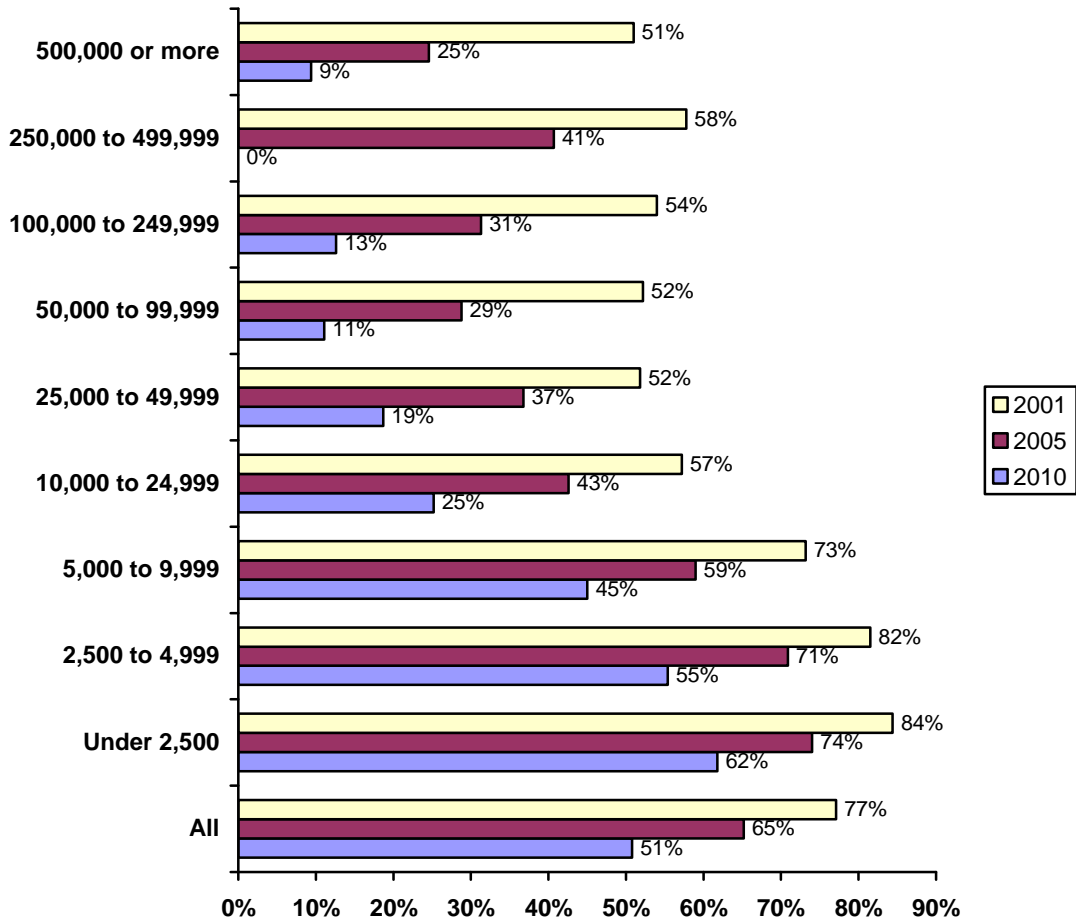


Between the first and third Needs Assessment Surveys, one-fourth of all departments switched from not having radios for all shift responders to having enough radios for all shift responders. That is roughly 7,000 fire departments that now have all the radios they need. For the largest communities, the improvement has been even more dramatic, with at least 40% of departments in each population group of 50,000 or more switching from need to no-need.

This shift may in part reflect the influence of the equipment portions of the U.S. Fire Administration grants. For grants during 2001-2004, grants to purchase firefighting or personal protective equipment accounted for an estimated 71% of total grants and 64% of total dollars granted for all grant recipient departments.[8] These percents applied across all population

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[8] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

protected groups, except for the smallest communities, where the percents of dollars granted used to purchase apparatus were by far the highest. Similarly, the reductions in need for radios were across-the-board but were greatest for the largest communities.

**Overall, three out of five departments (59%) do not have all their radios equipped with water resistance. (See Table 3-A and Table 3-2.)**

Figure 3-2 shows the shift across the years in percentages of departments where not all radios have water resistance.

**Figure 3-2. Percent of Departments Where Not All Portable Radios Are Water Resistant by Size of Community, for Three Studies**
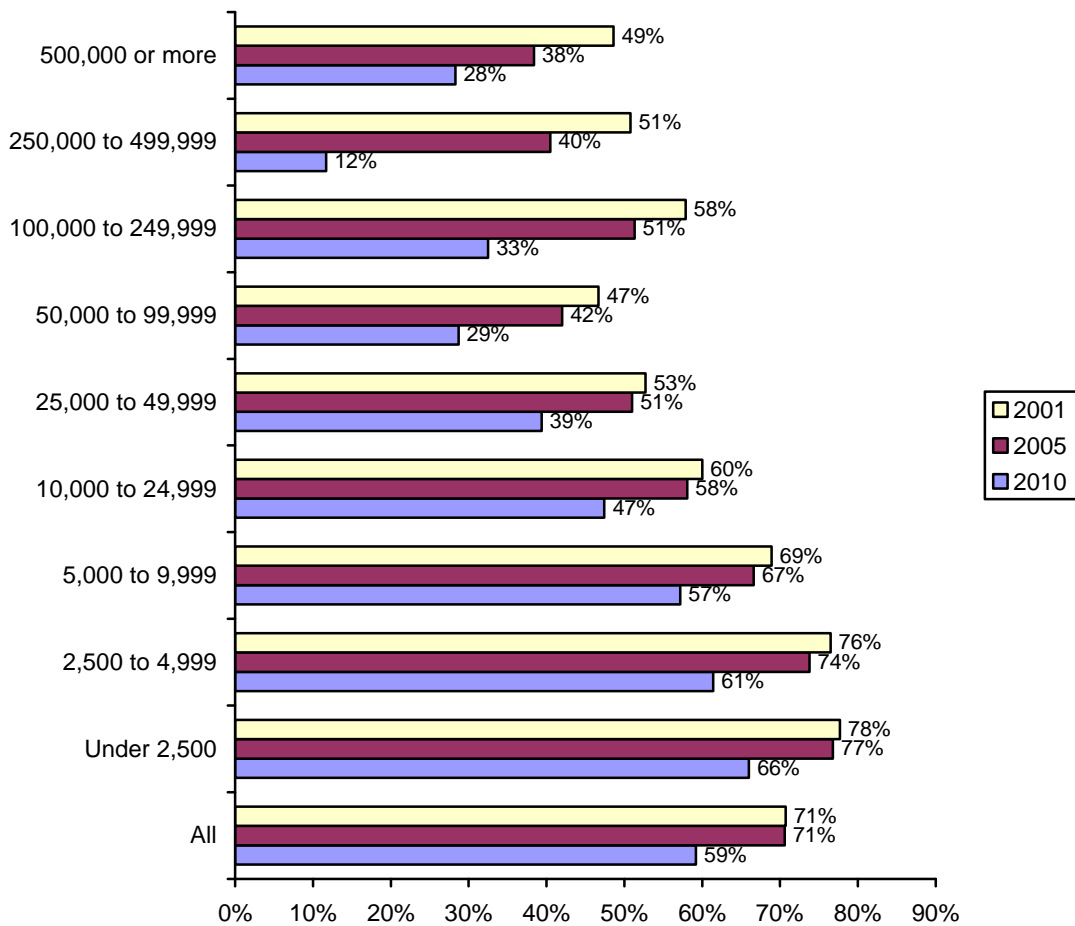


There has been some overall progress, especially for larger communities, except for communities of 50,000 or more, where there has been a great deal of survey-to-survey volatility with not so clear a trend.

**Overall, nearly two-thirds (63) of departments do not have all their radios set up as intrinsically safe in an explosive atmosphere. (See Table 3-A and Table 3-3.)**

Figure 3-3. Percent of Departments Where Not All Portable Radios
Are Intrinsically Safe in Explosive Atmosphere
by Size of Community, for Three Studies
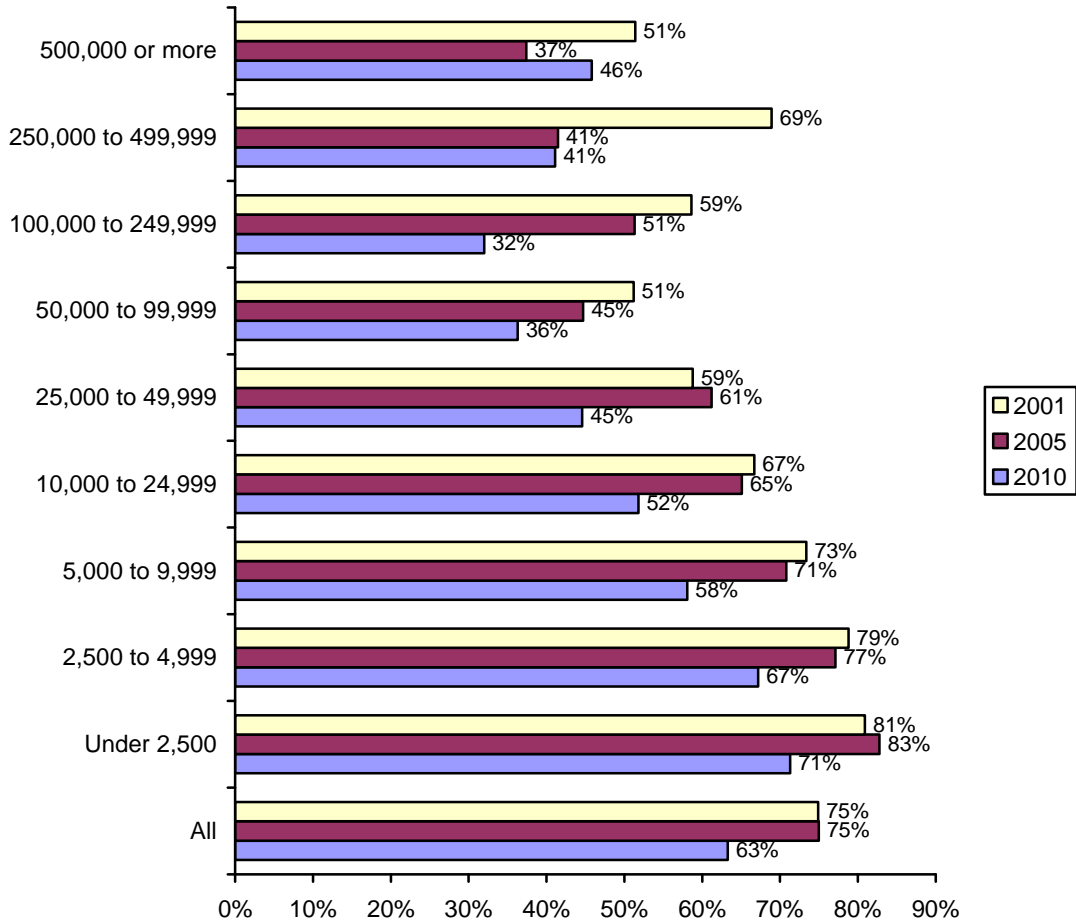


Figure 3-3 shows the shift across the years in percentages of departments that do not have all radios set up as intrinsically safe in an explosive atmosphere.

There has been some overall progress, except for communities of 500,000 or more, where the survey-to-survey variability overwhelms any trend.

**Overall, more than two-thirds (70%) of departments do not have enough reserve radios to equal or exceed 10% of in-service radios. (See Table 3-4.)**

**Figure 3-4. Percent of Departments Without a Reserve
of At Least 10% of In-Service Portable Radios
by Size of Community, for Three Studies**
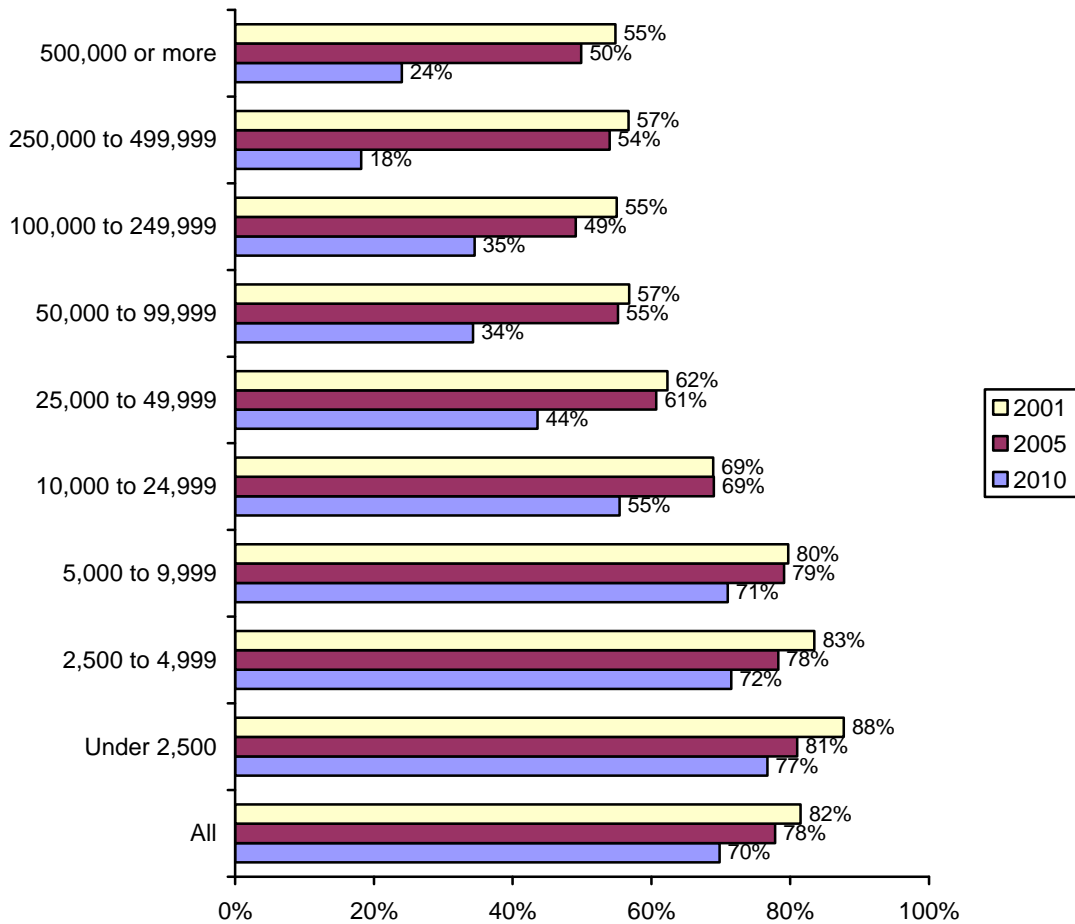


Figure 3-4 shows the shift across the years in percentages of departments where not all radios are intrinsically safe in an explosive atmosphere.

There has been some overall progress, especially for larger communities.

## Self-Contained Breathing Apparatus (SCBA)

**Overall, half (52%) of departments cannot equip all firefighters on a shift with their own self-contained breathing apparatus (SCBA). (See Table 3-5.)** Table 3-6 estimates what fraction of SCBA units are at least 10 years old. Table 3-B shows both measures of need together.

**Table 3-B.  Departments Where Not All Firefighters on a Shift Have SCBA
and Where At Least Some SCBA Units Are At Least 10 Years Old,
by Size of Community (Q. 28a, 28b)**

| Population Protected | Departments Where Not All Firefighters on a Shift Are Equipped With SCBA | Departments Where At Least Some SCBA Units Are At Least 10 Years Old |
|---|---|---|
| 500,000 or more | 0% | 40% |
| 250,000 to 499,999 | 0% | 54% |
| 100,000 to 249,999 | 2% | 33% |
| 50,000 to 99,999 | 1% | 41% |
| 25,000 to 49,999 | 8% | 41% |
| 10,000 to 24,999 | 16% | 45% |
| 5,000 to 9,999 | 36% | 50% |
| 2,500 to 4,999 | 56% | 53% |
| Under 2,500 | 70% | 61% |
| Total | 52% | 55% |

The above projections are based on 4,627 departments reporting on Question 28a and 4,582 reporting on Question 28b.  "Don't Know" responses to Question 28b are proportionally allocated.  See Tables 3-5 to 3-6.

Q. 28a:  How many emergency responders on-duty on a single shift can be equipped with self-contained breathing apparatus (SCBA)?  All, Most, Some, None
Q. 28b:  How many of your SCBA are 10 years old or older?  All, Most, Some, None

Figure 3-5 shows how the percentages of departments where not all firefighters on a shift are equipped with SCBA have changed over the years.  There has been considerable progress, with the overall percentage of departments in need declining from 70% in 2001 to 60% in 2005 and 52% in 2010.  That is about 5,000 departments moving from need to not-need between the first and third surveys.  Progress has occurred across the board.

This shift may in part reflect the influence of the equipment portions of the U.S. Fire Administration grants.  For grants during 2001-2004, grants to purchase firefighting or personal protective equipment accounted for an estimated 71% of total grants and 64% of total dollars granted for all grant recipient departments.[9]  These percents applied across all population protected groups, except for the smallest communities, where the percents of dollars granted used to purchase apparatus were by far the highest.

**Overall, half of departments (55%) reported that some of their SCBA equipment was at least 10 years old.  (See Table 3-6.)**

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[9] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

**Figure 3-5. Percent of Departments Where Not All Firefighters
on a Shift Are Equipped With SCBA
by Size of Community, for Three Studies**
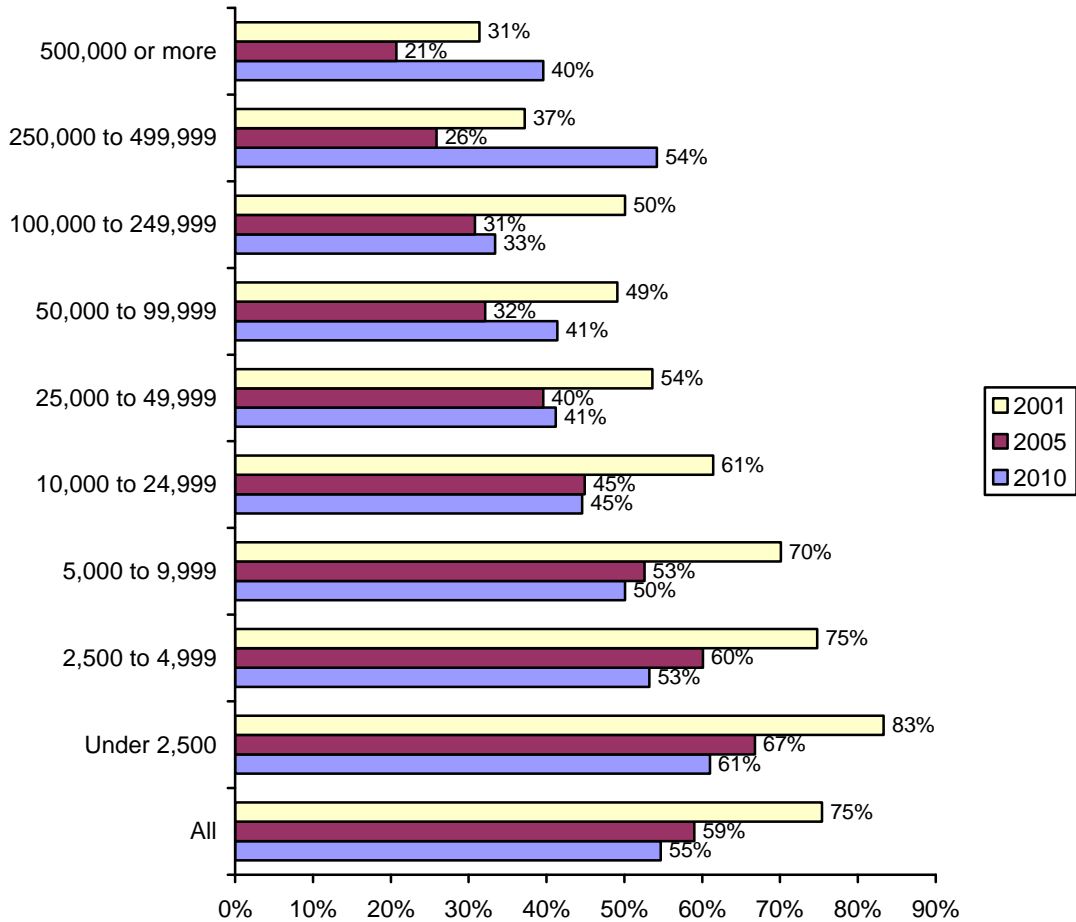


Figure 3-6 shows how the percentages of departments have changed over the years with respect to having no SCBA that is at least 10 years old.

There has been considerable progress overall, dominated by progress in the smaller communities, under 25,000 population.

For communities between 25,000 and 249,999, there has been net progress from first survey to third survey but not from second survey to third survey.

For communities with at least 250,000 population, there was progress from the first to the second survey, but it was more than reversed by increases in estimated need going from the second to the third survey.

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**Figure 3-6. Percent of Departments Where Some SCBA
Is At Least 10 Years Old
by Size of Community, for Three Studies**
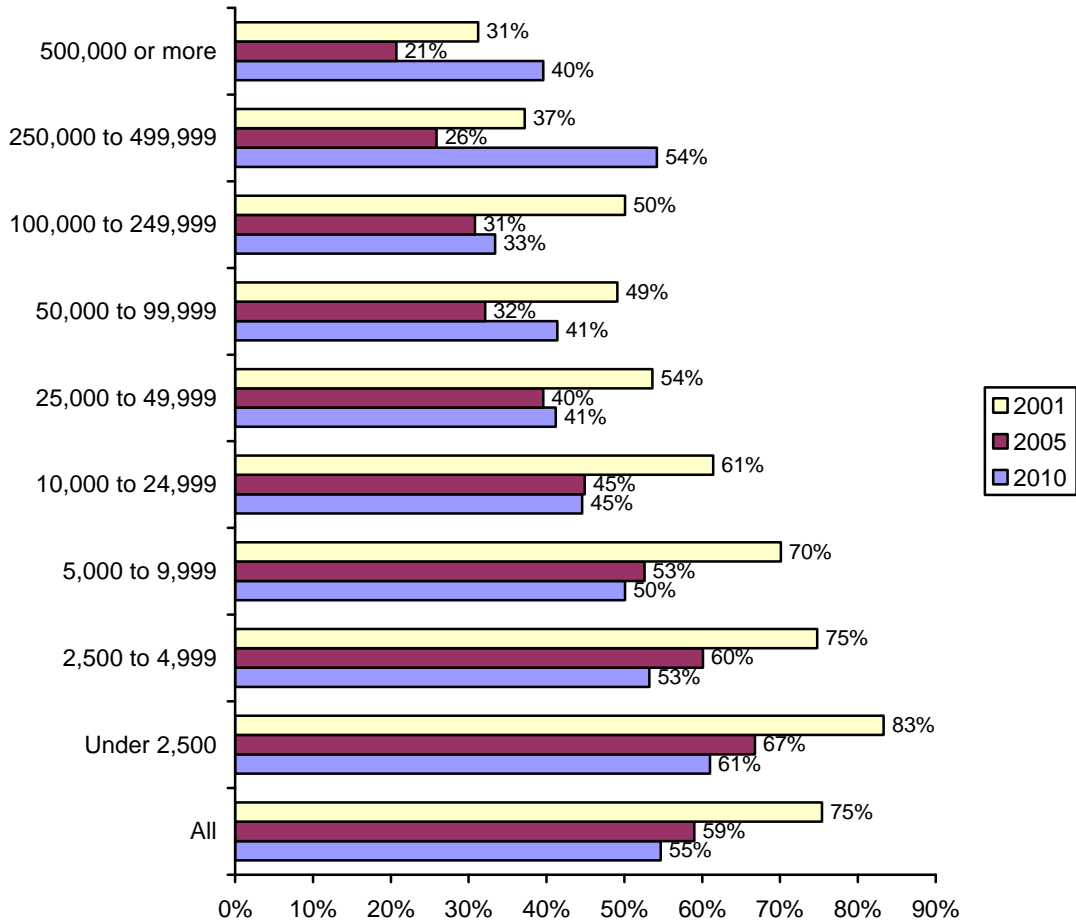


It may be that smaller communities are less likely to have old SCBA, because smaller communities tended to be later in obtaining sufficient SCBA to begin with.


## Personal Alert Safety System (PASS) Devices

**Overall, two out of five (39%) departments cannot equip all emergency responders on a shift with their own personal alert safety system devices (PASS).  (See Table 3-7.)**  Table 3-C shows level of need by size of community.

**Table 3-C.  Percent of Departments for Which Not All
Emergency Responders per Shift Are Provided With PASS Devices,
by Size of Community (Q. 29)**

| Population Protected | Departments Where Not All Emergency Responders on a Shift Are Equipped With PASS Devices |
|---|---|
| 500,000 to 999,999 | 0% |
| 250,000 to 499,999 | 0% |
| 100,000 to 249,999 | 1% |
| 50,000 to 99,999 | 2% |
| 25,000 to 49,999 | 6% |
| 10,000 to 24,999 | 12% |
| 5,000 to 9,999 | 25% |
| 2,500 to 4,999 | 40% |
| Under 2,500 | 54% |
| Total | 39% |

The above projections are based on 4,613 departments reporting on
Question 29.  See Table 37.

Q. 29:  How many of your emergency responders on-duty on a single
shift are equipped with Personal Alert Safety System (PASS)
devices?  All, Most, Some, None

Figure 3-7 shows how the percentages of departments where not all emergency
responders on a shift are equipped with PASS devices have changed over the years.

There has been considerable progress, with the overall percentage of departments in need
declining from 62% in 2001 to 48% in 2005 and 39% in 2010.  That is about 6,000
departments moving from need to not-need between the first and third surveys.  Progress
has occurred across the board.

This shift may in part reflect the influence of the equipment portions of the U.S. Fire
Administration grants.  For grants during 2001-2004, grants to purchase firefighting or
personal protective equipment accounted for an estimated 71% of total grants and 64% of
total dollars granted for all grant recipient departments.[10]  These percents applied across
all population protected groups, except for the smallest communities, where the percents
of dollars granted used to purchase apparatus were by far the highest.

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[10] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire
Administration, October 2006.

**Figure 3-7. Percent of Departments Where Not All
Emergency Responders on a Shift Are Equipped With PASS Devices
by Size of Community, for Three Studies**



| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 2% | 0% | 0% |
| 250,000 to 499,999 | 5% | 4% | 0% |
| 100,000 to 249,999 | 4% | 5% | 1% |
| 50,000 to 99,999 | 8% | 5% | 2% |
| 25,000 to 49,999 | 14% | 9% | 6% |
| 10,000 to 24,999 | 26% | 19% | 12% |
| 5,000 to 9,999 | 49% | 35% | 25% |
| 2,500 to 4,999 | 66% | 54% | 40% |
| Under 2,500 | 79% | 62% | 54% |
| All | 62% | 48% | 39% |
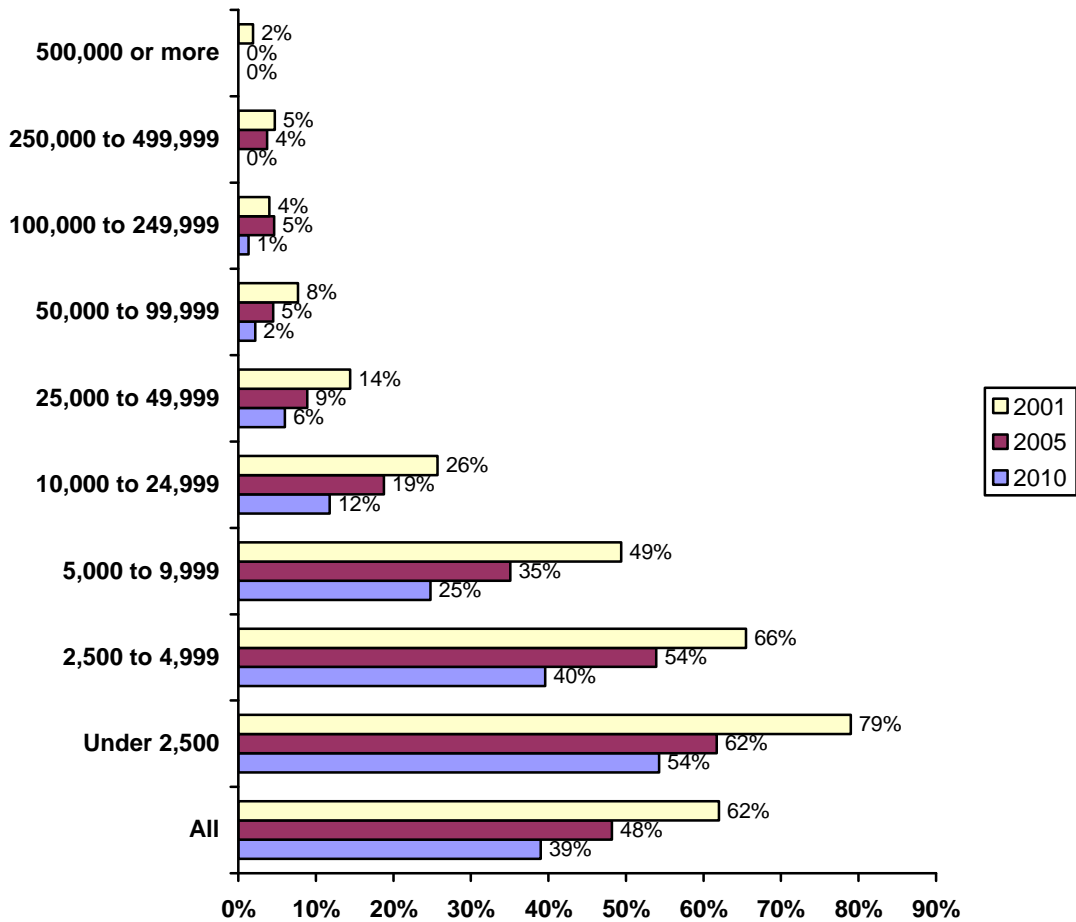
## Personal Protective Clothing

**Overall, 9% of departments cannot provide all emergency responders with their
own personal protective clothing. (See Table 3-8.)** Table 3-9 estimates what fraction
of personal protective clothing is at least 10 years old. Table 3-10 indicates what fraction
of departments have a reserve of personal protective clothing equal to at least 10% of
emergency responders.

Table 3-D converts the results of Table 3-8 into estimates of the number of firefighters in
departments that cannot provide all emergency responders with their own personal
protective clothing. Table 3-D also shows from Table 3-9 what percent of departments
have at least some personal protective clothing that is at least 10 years old.

**Table 3-D.  Firefighters in Departments Where Not All Firefighters
Are Equipped With Personal Protective Clothing and
Percent of Personal Protective Clothing That Is At Least 10 Years Old
by Size of Community (Q. 30a, 30b)**

| Population Protected | Estimated Firefighters in Departments That Do Not Have Personal Protective Clothing for All Firefighters | Estimated Percent of Departments With At Least Some Personal Protective Clothing That Is At Least 10 Years Old |
|---|---|---|
| 500,000 to 999,999 | 0 | 47% |
| 250,000 to 499,999 | 0 | 37% |
| 100,000 to 249,999 | 1,000 | 38% |
| 50,000 to 99,999 | 0 | 35% |
| 25,000 to 49,999 | 1,000 | 44% |
| 10,000 to 24,999 | 2,000 | 53% |
| 5,000 to 9,999 | 6,000 | 58% |
| 2,500 to 4,999 | 16,000 | 65% |
| Under 2,500 | 52,000 | 69% |
| Total | 77,000 | 63% |

The above projections are based on 4,648 departments reporting on Question 30a and 4,617 reporting on Question 30b.  "Don't Know" responses are treated as unknowns.  Numbers are shown to nearest thousand and may not sum to totals because of rounding.  See Tables 3-8 and 3-9.

Q. 30a:    How many of your emergency responders are equipped with personal protective clothing?  All, Most, Some, None

Q. 30b:    How much of your personal protective clothing is at least 10 years old?  All, Most, Some, None

Figure 3-8 shows how the percentages of departments where not all emergency responders have their own personal protective clothing have changed over the years.

There has been considerable progress, with the overall percentage of departments in need declining from 15% in 2001 to 11% in 2005 and 9% in 2010.  That is nearly 2,000 departments moving from need to not-need between the first and third surveys, with just over 2,000 departments still in need.  Progress has occurred across the board.

This shift may in part reflect the influence of the equipment portions of the U.S. Fire Administration grants.  For grants during 2001-2004, grants to purchase firefighting or personal protective equipment accounted for an estimated 71% of total grants and 64% of total dollars granted for all grant recipient departments.[11]  These percents applied across all population protected groups, except for the smallest communities, where the percents of dollars granted used to purchase apparatus were by far the highest.

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[11] *Matching Assistance to Firefighters Grants to the Reported Needs of the U.S. Fire Service*, FA-304, U.S. Fire Administration, October 2006.

**Figure 3-8. Percent of Departments Where Not All Emergency
Responders Have Their Own Personal Protective Clothing
by Size of Community, for Three Studies**
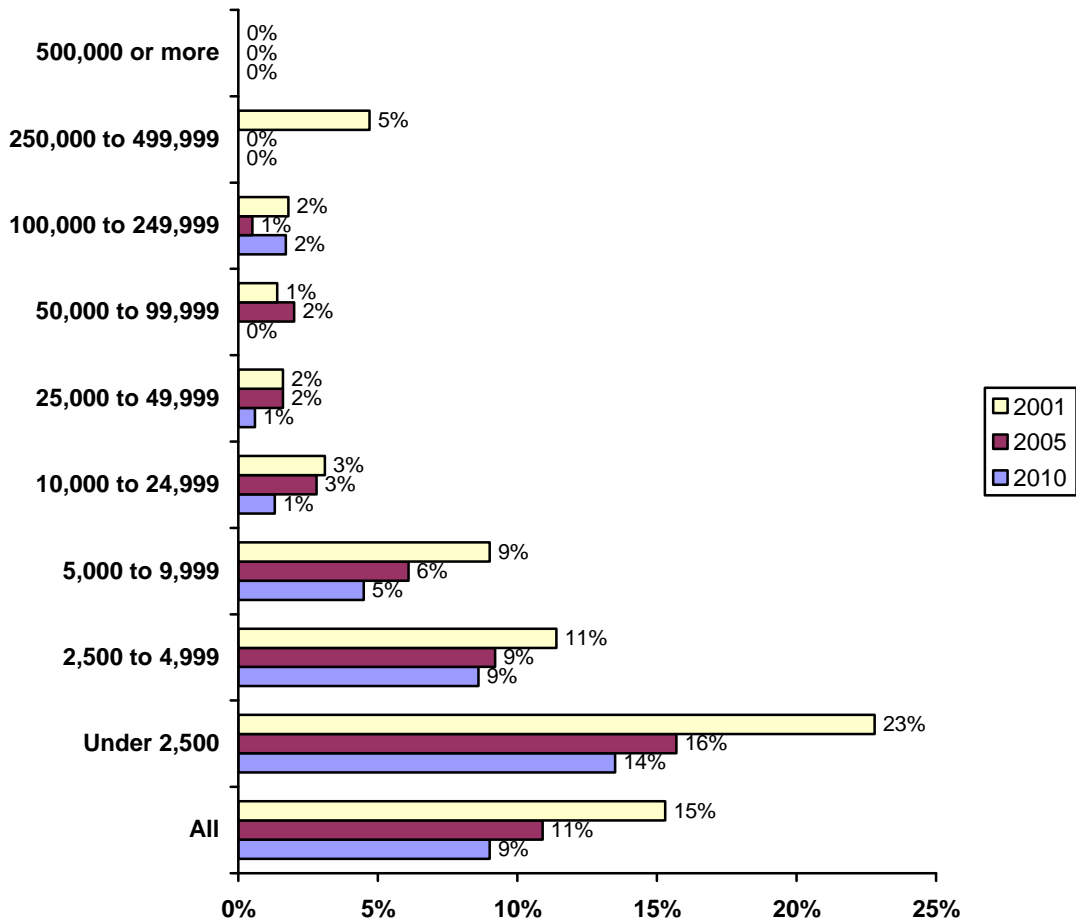


**Overall, nearly two-thirds (63%) of departments reported that some of their
personal protective clothing was at least 10 years old. (See Table 3-9.)**

Figure 3-9 shows changes over the years and surveys in the percentages of departments
with some personal protective clothing that is at least 10 years old.

There has been some progress overall from the first to the third surveys, but the picture is
muddied by many increases in need from the second to the third surveys.

**Figure 3-9. Percent of Departments Where Some
Personal Protective Clothing Is At Least 10 Years Old
by Size of Community, for Three Studies**



| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 35% | 21% | 57% |
| 250,000 to 499,999 | 100% | 26% | 37% |
| 100,000 to 249,999 | 46% | 31% | 38% |
| 50,000 to 99,999 | 40% | 32% | 35% |
| 25,000 to 49,999 | 47% | 40% | 44% |
| 10,000 to 24,999 | 58% | 45% | 53% |
| 5,000 to 9,999 | 68% | 53% | 58% |
| 2,500 to 4,999 | 76% | 60% | 65% |
| Under 2,500 | 82% | 67% | 69% |
| All | 74% | 59% | 63% |
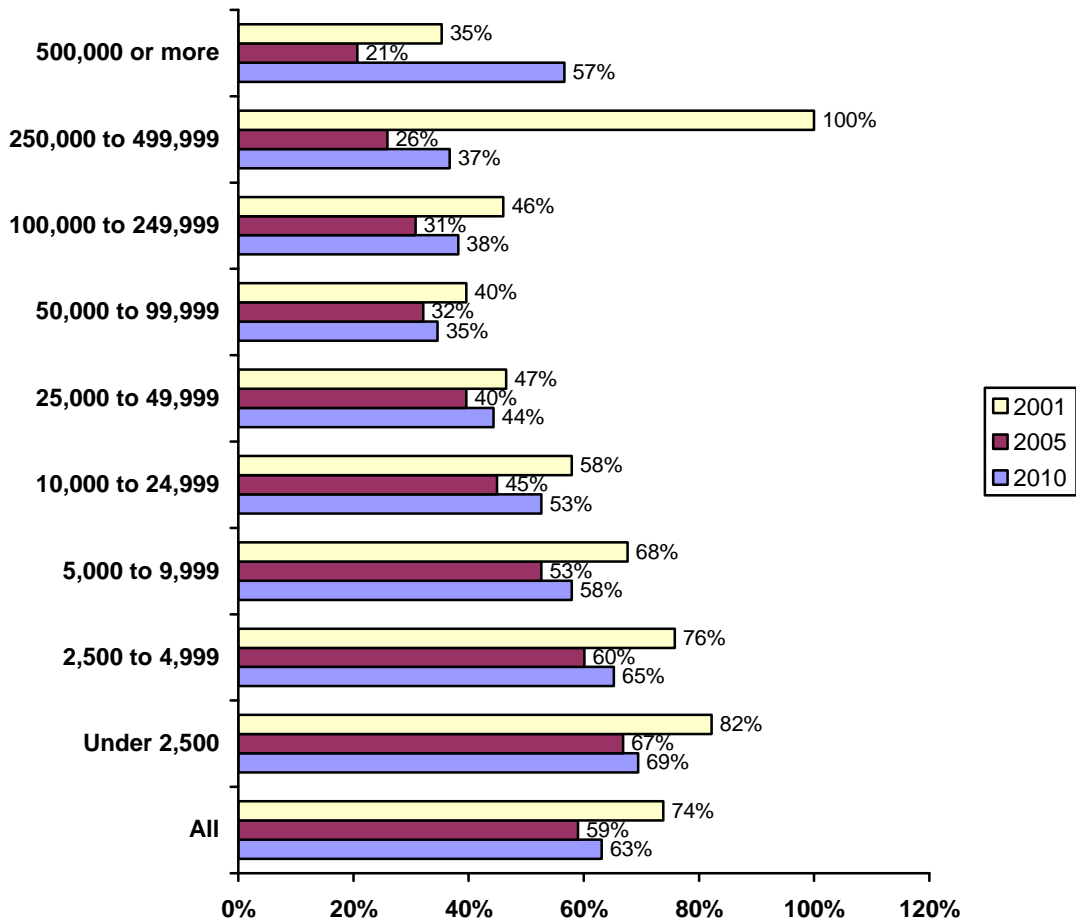
**Overall, half of departments do not have reserve personal protective clothing sufficient to equip 10% of emergency responders. (See Table 3-10.)**

Figure 3-10 shows how the percentages of departments have changed over the years with respect to not having reserve personal protective clothing sufficient to equip 10% of emergency responders. "Don't Know" entries in Table 3-10 have been allocated as unknowns.

There has been some progress overall from 62% of departments reporting in the 2001 survey that they did not have a sufficient reserve of personal protective clothing, to 57% in 2005 and 53% in 2010. Progress has been across the board.

**Figure 3-10. Percent of Departments Without Enough Reserve
Personal Protective Clothing to Equip 10% of Emergency Responders
by Size of Community, for Three Studies**
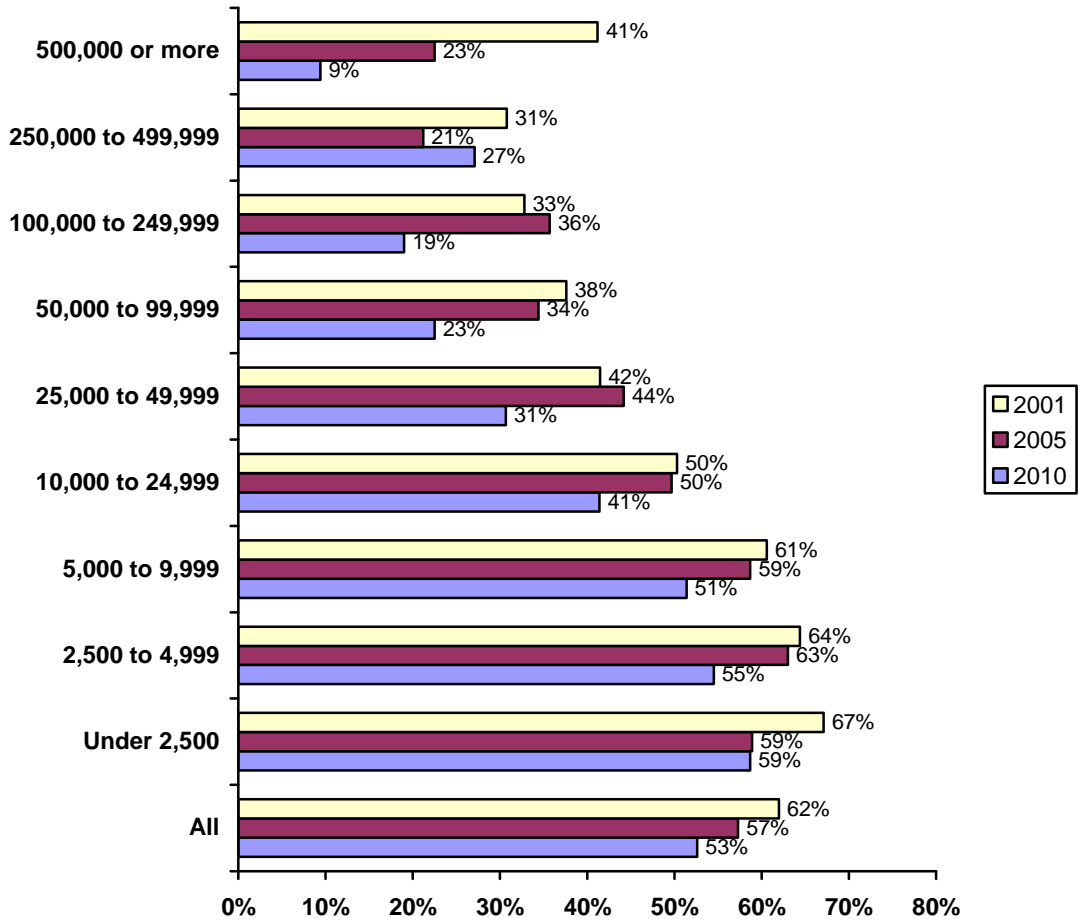
**Table 3-1**
**How Many of Department's Emergency Responders**
**on a Single Shift Are Equipped With Portable Radios?**
**by Community Size**
**(Q. 27a)**

| Population | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 48 | 90.6% | 3 | 5.7% | 2 | 3.7% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 208 | 87.4 | 17 | 7.1 | 10 | 4.2 | 3 | 1.3 | 238 | 100.0 |
| 50,000 to 99,999 | 397 | 88.9 | 45 | 10.0 | 5 | 1.1 | 0 | 0.0 | 447 | 100.0 |
| 25,000 to 49,999 | 882 | 81.3 | 147 | 13.5 | 54 | 5.0 | 2 | 0.2 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,206 | 74.8 | 484 | 16.4 | 255 | 8.6 | 6 | 0.2 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,065 | 55.0 | 1,021 | 27.2 | 650 | 17.3 | 19 | 0.5 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,177 | 44.6 | 1,435 | 29.4 | 1,180 | 24.2 | 83 | 1.7 | 4,875 | 100.0 |
| Under 2,500 | 4,947 | 38.2 | 3,754 | 29.0 | 3,931 | 30.3 | 331 | 2.6 | 12,964 | 100.0 |
| Total | 12,993 | 49.2 | 6,906 | 26.1 | 6,087 | 23.0 | 444 | 1.7 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,625 departments reporting on Question 27a.  Numbers may not add to totals due to rounding.

Q. 27a  How many of your emergency responders on-duty on a single shift can be equipped with portable radios?

Reference for definition of need:  NFPA 1221

**Table 3-2**
**What Fraction of Department's Portable Radios Are Water-Resistant?**
**by Community Size**
**(Q. 27b)**

| Population of Community | All Number Depts | All Percent | Most Number Depts | Most Percent | Some Number Depts | Some Percent | None* Number Depts | None* Percent | Don't Know Number Depts | Don't Know Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 38 | 71.6% | 5 | 9.4% | 7 | 13.2% | 3 | 5.7% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 53 | 85.5 | 5 | 8.1 | 0 | 0.0 | 2 | 3.2 | 2 | 3.2 | 62 | 100.0 |
| 100,000 to 249,999 | 156 | 65.5 | 23 | 9.7 | 14 | 5.9 | 38 | 16.0 | 7 | 2.9 | 238 | 100.0 |
| 50,000 to 99,999 | 305 | 68.2 | 53 | 11.9 | 18 | 4.0 | 52 | 11.6 | 19 | 4.3 | 447 | 100.0 |
| 25,000 to 49,999 | 616 | 56.7 | 113 | 10.4 | 102 | 9.3 | 186 | 17.2 | 68 | 6.3 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,436 | 48.7 | 434 | 14.7 | 378 | 12.8 | 480 | 16.3 | 223 | 7.6 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,431 | 38.1 | 611 | 16.3 | 563 | 15.0 | 740 | 19.7 | 410 | 10.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 1,631 | 33.5 | 792 | 16.2 | 804 | 16.5 | 1,010 | 20.7 | 638 | 13.1 | 4,875 | 100.0 |
| Under 2,500 | 3,680 | 28.4 | 1,835 | 14.2 | 1,702 | 13.1 | 3,603 | 27.8 | 2,144 | 16.5 | 12,964 | 100.0 |
| Total | 9,346 | 35.4 | 3,870 | 14.6 | 3,586 | 13.6 | 6,115 | 23.1 | 3,513 | 13.3 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

* Includes departments that reported in Table 3-1 that they had no radios.

The above projections are based on 4,602 departments reporting on Question 27b. Numbers may not add to totals due to rounding.

Q. 27b: How many of your portable radios are water-resistant?

Reference for definition of need: NFPA 1221

**Table 3-3**
**What Fraction of Department's Portable Radios**
**Are Intrinsically Safe in an Explosive Atmosphere?**
**by Community Size**
**(Q. 27c)**

| Population of Community | All Number Depts | All Percent | Most Number Depts | Most Percent | Some Number Depts | Some Percent | None* Number Depts | None* Percent | Don't Know Number Depts | Don't Know Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 27 | 50.9% | 4 | 7.6% | 14 | 26.4% | 5 | 9.4% | 3 | 5.7% | 53 | 100.0% |
| 250,000 to 499,999 | 35 | 56.5 | 10 | 16.1 | 12 | 19.4 | 3 | 4.8 | 2 | 3.2 | 62 | 100.0 |
| 100,000 to 249,999 | 153 | 64.3 | 23 | 9.7 | 18 | 7.6 | 28 | 11.8 | 16 | 6.7 | 238 | 100.0 |
| 50,000 to 99,999 | 270 | 60.4 | 47 | 10.5 | 35 | 7.8 | 62 | 13.9 | 33 | 7.4 | 447 | 100.0 |
| 25,000 to 49,999 | 563 | 51.9 | 99 | 9.2 | 132 | 12.2 | 206 | 19.0 | 85 | 7.8 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,273 | 43.1 | 369 | 12.5 | 414 | 14.0 | 543 | 18.4 | 352 | 11.9 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,314 | 35.0 | 435 | 11.6 | 516 | 13.7 | 798 | 21.2 | 693 | 18.4 | 3,755 | 100.0 |
| 2,500 to 4,999 | 1,168 | 24.0 | 623 | 12.8 | 617 | 12.7 | 1,109 | 22.7 | 1,358 | 27.9 | 4,875 | 100.0 |
| Under 2,500 | 2,666 | 20.6 | 1,139 | 8.8 | 1,416 | 10.9 | 3,086 | 23.8 | 4,657 | 35.9 | 12,964 | 100.0 |
| Total | 7,468 | 28.3 | 2,750 | 10.4 | 3,173 | 12.0 | 5,840 | 22.1 | 7,199 | 27.2 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

* Includes departments that reported in Table 3-1 that they had no radios.

The above projections are based on 4,596 departments reporting on Question 27c.  Numbers may not add to totals due to rounding.

Q. 27c:  How many of your portable radios are intrinsically safe in an explosive atmosphere?

Reference for definition of need:  NFPA 1221

**Table 3-4**
**Does Department Have Reserve Portable Radios**
**Equal to or Greater Than 10% of In-Service Radios?**
**by Community Size**
**(Q. 27d)**

| Population of Community | Yes Number Depts | Yes Percent | No* Number Depts | No* Percent | Don't Know Number Depts | Don't Know Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 38 | 71.7% | 12 | 22.6% | 3 | 5.7% | 53 | 100.0% |
| 250,000 to 499,999 | 45 | 72.6 | 10 | 16.1 | 7 | 11.3 | 62 | 100.0 |
| 100,000 to 249,999 | 150 | 63.0 | 79 | 33.2 | 9 | 3.8 | 238 | 100.0 |
| 50,000 to 99,999 | 283 | 63.3 | 148 | 33.1 | 16 | 3.6 | 447 | 100.0 |
| 25,000 to 49,999 | 590 | 54.4 | 457 | 42.1 | 38 | 3.5 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,297 | 43.9 | 1,608 | 54.5 | 46 | 1.6 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,065 | 28.4 | 2,618 | 69.7 | 72 | 1.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 1,353 | 27.8 | 3,392 | 69.6 | 130 | 2.7 | 4,875 | 100.0 |
| Under 2,500 | 2,865 | 22.1 | 9,413 | 72.6 | 685 | 5.3 | 12,964 | 100.0 |
| Total | 7,686 | 29.1 | 17,738 | 67.1 | 1,006 | 3.8 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

* Includes departments that reported in Table 3-1 that they had no radios.

The above projections are based on 4,608 departments reporting on Question 27d.  Numbers may not add to totals due to rounding.

Q. 27d: Do you have reserve portable radios equal to or greater than 10% of your in-service radios?

Reference for definition of need:  NFPA 1221

**Table 3-5**
**How Many Emergency Responders**
**on a Single Shift Are Equipped With**
**Self-Contained Breathing Apparatus (SCBA)?**
**by Community Size**
**(Q. 28a)**

| Population | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 234 | 98.4 | 2 | 0.8 | 2 | 0.8 | 0 | 0.0 | 238 | 100.0 |
| 50,000 to 99,999 | 442 | 98.9 | 5 | 1.1 | 0 | 0.0 | 0 | 0.0 | 447 | 100.0 |
| 25,000 to 49,999 | 997 | 91.9 | 76 | 7.0 | 5 | 0.5 | 7 | 0.6 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,467 | 83.6 | 422 | 14.3 | 55 | 1.9 | 7 | 0.2 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,389 | 63.6 | 1,095 | 29.2 | 261 | 6.9 | 10 | 0.3 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,136 | 43.8 | 1,905 | 39.1 | 787 | 16.1 | 47 | 1.0 | 4,875 | 100.0 |
| Under 2,500 | 3,916 | 30.2 | 5,121 | 39.5 | 3,695 | 28.5 | 232 | 1.8 | 12,964 | 100.0 |
| Total | 12,695 | 48.1 | 8,627 | 32.6 | 4,804 | 18.2 | 303 | 1.1 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,627 departments reporting on Question 28a.  Numbers may not add to totals due to rounding.

Q. 28a: How many emergency responders on-duty on a single shift can be equipped with self-contained breathing apparatus (SCBA)?

Reference for definition of need:  NFPA 1500

## Table 3-6
## How Much of Department's
## SCBA Equipment Is At Least 10 Years Old?
## by Community Size
## (Q. 28b)

| | All | | Most | | Some | | None* | | Don't Know | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Population of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 7 | 13.2% | 4 | 7.5% | 10 | 18.9% | 32 | 60.4% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 11 | 17.7 | 2 | 3.2 | 16 | 25.8 | 30 | 48.4 | 3 | 4.8 | 62 | 100.0 |
| 100,000 to 249,999 | 14 | 5.9 | 13 | 5.5 | 47 | 19.7 | 160 | 67.2 | 4 | 1.7 | 238 | 100.0 |
| 50,000 to 99,999 | 45 | 10.0 | 51 | 11.4 | 82 | 18.3 | 264 | 59.1 | 5 | 1.1 | 447 | 100.0 |
| 25,000 to 49,999 | 141 | 13.0 | 72 | 6.6 | 225 | 20.6 | 640 | 59.0 | 7 | 0.6 | 1,085 | 100.0 |
| 10,000 to 24,999 | 365 | 12.4 | 234 | 7.9 | 687 | 23.3 | 1,645 | 55.7 | 20 | 0.7 | 2,951 | 100.0 |
| 5,000 to 9,999 | 450 | 12.0 | 407 | 10.8 | 972 | 25.9 | 1,892 | 50.4 | 34 | 0.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 653 | 13.4 | 451 | 9.3 | 1,407 | 28.9 | 2,310 | 47.4 | 53 | 1.1 | 4,875 | 100.0 |
| Under 2,500 | 2,356 | 18.2 | 2,002 | 15.4 | 3,318 | 25.6 | 5,144 | 39.7 | 144 | 1.1 | 12,964 | 100.0 |
| Total | 4,044 | 15.3 | 3,234 | 12.2 | 6,765 | 25.6 | 12,115 | 45.8 | 270 | 1.0 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

* Includes departments that reported in Table 3-5 that they had no SCBA.

The above projections are based on 4,582 departments reporting on Question 28b.  Numbers may not add to totals due to rounding.

Q. 28b: How many of your self-contained breathing apparatus (SCBA) are 10 years old or older?

**Table 3-7**
**What Fraction of Emergency Responders on a Single Shift**
**Are Equipped With Personal Alert Safety System (PASS) Devices?**
**by Community Size**
**(Q. 29)**

| Population of Community | All Number of Depts | All Percent | Most Number of Depts | Most Percent | Some Number of Depts | Some Percent | None Number of Depts | None Percent | Total Number of Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 235 | 98.7 | 3 | 1.3 | 0 | 0.0 | 0 | 0.0 | 238 | 100.0 |
| 50,000 to 99,999 | 437 | 97.8 | 7 | 1.6 | 0 | 0.0 | 3 | 0.6 | 447 | 100.0 |
| 25,000 to 49,999 | 1,020 | 94.0 | 37 | 3.4 | 12 | 1.1 | 16 | 1.5 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,602 | 88.2 | 238 | 8.1 | 65 | 2.2 | 46 | 1.5 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,821 | 75.1 | 572 | 15.2 | 253 | 6.7 | 109 | 2.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,948 | 60.5 | 961 | 19.7 | 680 | 14.0 | 286 | 5.9 | 4,875 | 100.0 |
| Under 2,500 | 5,923 | 45.7 | 2,712 | 20.9 | 2,425 | 18.7 | 1,904 | 14.7 | 12,964 | 100.0 |
| Total | 16,101 | 60.9 | 4,529 | 17.1 | 3,434 | 13.0 | 2,366 | 8.9 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,613 departments reporting on Question 29. Numbers may not add to totals due to rounding.

Q. 29: How many of your emergency responders on-duty on a single shift are equipped with Personal Alert Safety System (PASS) devices?

Reference for definition of need: NFPA 1500

**Table 3-8**
**What Fraction of Emergency Responders**
**Are Equipped With Personal Protective Clothing?**
**by Community Size**
**(Q. 30a)**

| Population of Community | All | | Most | | Some | | None | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 234 | 98.3 | 0 | 0.0 | 0 | 0.0 | 4 | 1.7 | 238 | 100.0 |
| 50,000 to 99,999 | 447 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 447 | 100.0 |
| 25,000 to 49,999 | 1,078 | 99.4 | 5 | 0.5 | 2 | 0.2 | 0 | 0.0 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,912 | 98.7 | 33 | 1.1 | 3 | 0.1 | 3 | 0.1 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,585 | 95.5 | 137 | 3.6 | 23 | 0.6 | 10 | 0.3 | 3,755 | 100.0 |
| 2,500 to 4,999 | 4,456 | 91.4 | 366 | 7.5 | 41 | 0.8 | 12 | 0.2 | 4,875 | 100.0 |
| Under 2,500 | 11,214 | 86.5 | 1,422 | 11.0 | 252 | 1.9 | 76 | 0.6 | 12,964 | 100.0 |
| Total | 24,040 | 91.0 | 1,963 | 7.4 | 322 | 1.2 | 105 | 0.4 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,648 departments reporting on Question 30a.  Numbers may not add to totals due to rounding.

Q. 30a: How many of your emergency responders are equipped with personal protective clothing?

Reference for definition of need:  NFPA 1500

**Table 3-9**
**How Much of Department's Personal**
**Protective Clothing Is At Least 10 Years Old?**
**by Community Size**
**(Q. 30b)**

| Population of Community | All Number Depts | All Percent | Most Number Depts | Most Percent | Some Number Depts | Some Percent | None* Number Depts | None* Percent | Don't Know Number Depts | Don't Know Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 0 | 0.0% | 2 | 3.8% | 23 | 43.4% | 28 | 52.8% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 0 | 0.0 | 0 | 0.0 | 22 | 35.5 | 38 | 61.3 | 2 | 3.2 | 62 | 100.0 |
| 100,000 to 249,999 | 0 | 0.0 | 0 | 2.5 | 83 | 34.9 | 144 | 60.5 | 5 | 2.1 | 238 | 100.0 |
| 50,000 to 99,999 | 12 | 2.7 | 10 | 2.2 | 130 | 29.1 | 288 | 64.4 | 7 | 1.6 | 447 | 100.0 |
| 25,000 to 49,999 | 21 | 1.9 | 35 | 3.2 | 424 | 39.1 | 603 | 55.6 | 2 | 0.2 | 1,085 | 100.0 |
| 10,000 to 24,999 | 82 | 2.8 | 199 | 6.7 | 1,272 | 43.1 | 1,395 | 47.3 | 3 | 0.3 | 2,951 | 100.0 |
| 5,000 to 9,999 | 94 | 2.5 | 413 | 11.0 | 1,662 | 44.2 | 1,581 | 42.1 | 5 | 0.1 | 3,755 | 100.0 |
| 2,500 to 4,999 | 320 | 6.6 | 522 | 10.7 | 2,325 | 47.7 | 1,690 | 34.7 | 18 | 0.4 | 4,875 | 100.0 |
| Under 2,500 | 1,299 | 10.0 | 2,377 | 18.3 | 5,238 | 40.4 | 3,929 | 30.3 | 121 | 0.9 | 12,964 | 100.0 |
| Total | 1,829 | 6.9 | 3,564 | 13.5 | 11,177 | 42.3 | 9,697 | 36.7 | 163 | 0.6 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

* Includes departments that reported in Table 3-8 that they had no personal protective clothing.

The above projections are based on 4,617 departments reporting on Question 30b. Numbers may not add to totals due to rounding.

Q. 30b: How much of your personal protective clothing is at least 10 years old?

Reference for definition of need: NFPA 1851

**Table 3-10**
**Does Department Have Reserve Protective Clothing**
**Sufficient to Equip 10% of Emergency Responders?**
**by Community Size**
**(Q. 30c)**

| Population of Community | Yes Number Depts | Yes Percent | No* Number Depts | No* Percent | Don't Know Number Depts | Don't Know Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 48 | 90.6% | 5 | 9.4% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 43 | 69.4 | 16 | 25.8 | 3 | 4.8 | 62 | 100.0 |
| 100,000 to 249,999 | 184 | 77.3 | 43 | 18.1 | 11 | 4.6 | 238 | 100.0 |
| 50,000 to 99,999 | 341 | 76.2 | 99 | 22.1 | 7 | 1.6 | 447 | 100.0 |
| 25,000 to 49,999 | 739 | 68.2 | 327 | 30.1 | 19 | 1.8 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,698 | 57.5 | 1,198 | 40.6 | 56 | 1.9 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,799 | 47.9 | 1,904 | 50.7 | 52 | 1.4 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,177 | 44.6 | 2,609 | 53.5 | 89 | 1.8 | 4,875 | 100.0 |
| Under 2,500 | 5,170 | 39.9 | 7,320 | 56.5 | 474 | 3.7 | 12,964 | 100.0 |
| Total | 12,197 | 46.1 | 13,522 | 51.2 | 711 | 2.7 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

* Includes departments that reported in Table 3-8 that they had no personal protective clothing.

The above projections are based on 4,616 departments reporting on Question 30c. Numbers may not add to totals due to rounding.

Q. 30c: Do you have reserve personal protective clothing sufficient to equip 10% of your emergency responders?

# SECTION 4.
# FIRE PREVENTION AND CODE ENFORCEMENT

Some of the greatest value delivered by the US fire services comes in activities that prevent fires and other emergencies from occurring or that moderate their severity when they do occur.  Questions 20-22 provide information on a number of such programs.

**One-third of fire departments (35%) do not provide a school fire safety education program based on a national model curriculum.  Roughly half of departments do not provide free distribution of smoke alarms (52%) or plans review (49%).  Most departments do not provide permit approval (72%), routine testing of active systems (72%), or juvenile firesetter programs (81%).**

Table 4-1 indicates what percentage of fire departments, by community size, reported having each of six specific fire prevention or code enforcement programs.  Table 4-A indicates the number of fire departments lacking these programs and estimates the number of people living in communities protected by fire departments that do not conduct such programs.

### Table 4-A.  Number of Fire Departments and Estimated Total Population Protected by Those Fire Departments Where Selected Fire Prevention or Code Enforcement Programs Are NOT Provided, by Size of Community Protected (Q. 20)

## 1.  Plans Review

| Population Protected | Number of Departments Without Program | Population Protected by Departments Without Program |
|---|---|---|
| 500,000 or more | 2 | 1,900,000 |
| 250,000 to 499,999 | 7 | 2,200,000 |
| 100,000 to 249,999 | 5 | 800,000 |
| 50,000 to 99,999 | 36 | 2,600,000 |
| 25,000 to 49,999 | 117 | 4,300,000 |
| 10,000 to 24,999 | 649 | 10,600,000 |
| 5,000 to 9,999 | 1,476 | 10,900,000 |
| 2,500 to 4,999 | 2,706 | 12,600,000 |
| Under 2,500 | 7,934 | 12,300,000 |
| Total | 12,931 | 58,300,000 |
| Percent of US total | 49% | 19% |

The above projections are based on 4,196 departments reporting on Question 20.  Population estimates are shown to the nearest 100,000 and may not add to totals due to rounding.  See Table 4-1.

## 2. Permit Approval

| Population Protected | Number of Departments Without Program | Population Protected by Departments Without Program |
|---|---|---|
| 500,000 or more | 9 | 9,800,000 |
| 250,000 to 499,999 | 3 | 1,100,000 |
| 100,000 to 249,999 | 26 | 4,000,000 |
| 50,000 to 99,999 | 89 | 6,400,000 |
| 25,000 to 49,999 | 358 | 13,100,000 |
| 10,000 to 24,999 | 1,422 | 23,300,000 |
| 5,000 to 9,999 | 2,429 | 18,000,000 |
| 2,500 to 4,999 | 3,998 | 18,600,000 |
| Under 2,500 | 10,760 | 16,700,000 |
| Total | 19,095 | 111,000,000 |
| Percent of US total | 72% | 36% |

The above projections are based on 4,196 departments reporting on Question 20.  Population estimates are shown to the nearest 100,000 and may not add to totals due to rounding.  See Table 4-1.


## 3. Routine Testing of Active Systems (e.g., sprinkler, detection/alarm, smoke control)

| Population Protected | Number of Departments Without Program | Population Protected by Departments Without Program |
|---|---|---|
| 500,000 to 999,999 | 17 | 19,600,000 |
| 250,000 to 499,999 | 23 | 7,800,000 |
| 100,000 to 249,999 | 69 | 10,500,000 |
| 50,000 to 99,999 | 132 | 9,500,000 |
| 25,000 to 49,999 | 448 | 16,400,000 |
| 10,000 to 24,999 | 1,573 | 25,800,000 |
| 5,000 to 9,999 | 2,497 | 18,500,000 |
| 2,500 to 4,999 | 3,949 | 18,400,000 |
| Under 2,500 | 10,449 | 16,200,000 |
| Total | 19,157 | 142,700,000 |
| Percent of US total | 72% | 46% |

The above projections are based on 4,196 departments reporting on Question 20.  Population estimates are shown to the nearest 100,000 and may not add to totals due to rounding.  See Table 4-1.

## 4.  Free Distribution of Home Smoke Alarms

| Population Protected | Number of Departments Without Program | Population Protected by Departments Without Program |
|---|---|---|
| 500,000 or more | 14 | 15,600,000 |
| 250,000 to 499,999 | 8 | 2,800,000 |
| 100,000 to 249,999 | 52 | 7,900,000 |
| 50,000 to 99,999 | 110 | 7,900,000 |
| 25,000 to 49,999 | 314 | 11,500,000 |
| 10,000 to 24,999 | 1,089 | 17,900,000 |
| 5,000 to 9,999 | 1,810 | 13,400,000 |
| 2,500 to 4,999 | 2,535 | 11,800,000 |
| Under 2,500 | 7,908 | 12,300,000 |
| Total | 13,839 | 101,000,000 |
| Percent of US total | 52% | 33% |

The above projections are based on 4,196 departments reporting on Question 20.  Population estimates are shown to the nearest 100,000 and may not add to totals due to rounding.  See Table 4-1.


## 5.  Juvenile Firesetter Program

| Population Protected | Number of Departments Without Program | Population Protected by Departments Without Program |
|---|---|---|
| 500,000 or more | 7 | 7,800,000 |
| 250,000 to 499,999 | 8 | 2,800,000 |
| 100,000 to 249,999 | 47 | 7,100,000 |
| 50,000 to 99,999 | 120 | 8,600,000 |
| 25,000 to 49,999 | 443 | 16,200,000 |
| 10,000 to 24,999 | 1,688 | 27,700,000 |
| 5,000 to 9,999 | 2,925 | 21,700,000 |
| 2,500 to 4,999 | 4,275 | 19,900,000 |
| Under 2,500 | 11,771 | 18,300,000 |
| Total | 21,284 | 130,100,000 |
| Percent of US total | 81% | 42% |

The above projections are based on 4,196 departments reporting on Question 20.  Population estimates are shown to the nearest 100,000 and may not add to totals due to rounding.  See Table 4-1.

## 6. School Fire Safety Education Program Based on a National Model Curriculum

| Population Protected | Number of Departments Without Program | Population Protected by Departments Without Program |
|---|---|---|
| 500,000 or more | 14 | 15,600,000 |
| 250,000 to 499,999 | 18 | 6,100,000 |
| 100,000 to 249,999 | 64 | 9,700,000 |
| 50,000 to 99,999 | 105 | 7,500,000 |
| 25,000 to 49,999 | 291 | 10,600,000 |
| 10,000 to 24,999 | 723 | 11,900,000 |
| 5,000 to 9,999 | 1,059 | 7,800,000 |
| 2,500 to 4,999 | 1,414 | 6,600,000 |
| Under 2,500 | 5,575 | 8,600,000 |
| Total | 9,261 | 84,600,000 |
| Percent of US total | 35% | 27% |

The above projections are based on 4,196 departments reporting on Question 20. Population estimates are shown to the nearest 100,000 and may not add to totals due to rounding. See Table 4-1.

Q. 20: Which of the following programs or activities does your department conduct?

The program with the highest reported participation was school fire safety education programs based on a national model curriculum, where roughly two-thirds (65%) of US fire departments reported conducting such a program. This is one of the few programs in this section where there is some independent information regarding participation, and that information would suggest that implementation of a school-based fire safety curriculum following a national model is closer to 5-10% of fire departments than the reported 65%.

This large discrepancy may be a matter of interpretation. For example, many fire departments provide presentations to schools (e.g., puppet shows) in which the content is based on the content of some national model fire safety curriculum. Such presentations would qualify as a program of the sort asked about, but standing alone, they would in practice have limited educational value. Therefore, considerable caution should be shown when considering the reported practices for this particular program.

On the other hand, the question does not address the possibility that the schools are using a fire safety curriculum but not working through or with the fire department in doing so.

Figure 4-1 shows how the percent of fire departments lacking each of these six programs has changed over the three Needs Assessment Surveys. Figure 4-2 shows similar results for the percent of US resident population living in communities where the fire departments lack each of the six programs.

**Figure 4-1. Percent of Departments Lacking
Particular Fire Prevention or Code Enforcement Programs,
for Three Studies**

| Program | 2001 | 2005 | 2010 |
|---|---|---|---|
| Plans review | 62% | 50% | 49% |
| Permit approval | 79% | 73% | 72% |
| Active system testing | 78% | 72% | 72% |
| Smoke alarm distribution | 69% | 57% | 52% |
| Juvenile firesetter program | 83% | 80% | 81% |
| School program | 47% | 35% | 35% |

0%   20%   40%   60%   80%   100%
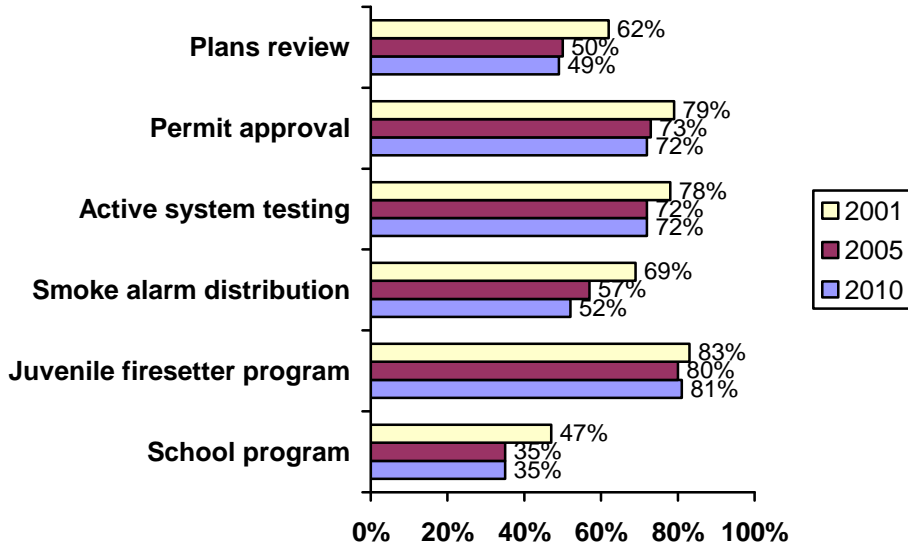
**Figure 4-2. Percent of US Resident Population
Living in Communities Protected by Departments Lacking
Particular Fire Prevention or Code Enforcement Programs
for Three Studies**

| Program | 2001 | 2005 | 2010 |
|---|---|---|---|
| Plans review | 29% | 23% | 19% |
| Permit approval | 45% | 40% | 36% |
| Active system testing | 49% | 44% | 46% |
| Smoke alarm distribution | 42% | 35% | 33% |
| Juvenile firesetter program | 48% | 41% | 42% |
| School program | 27% | 28% | 27% |

0%   10%   20%   30%   40%   50%   60%
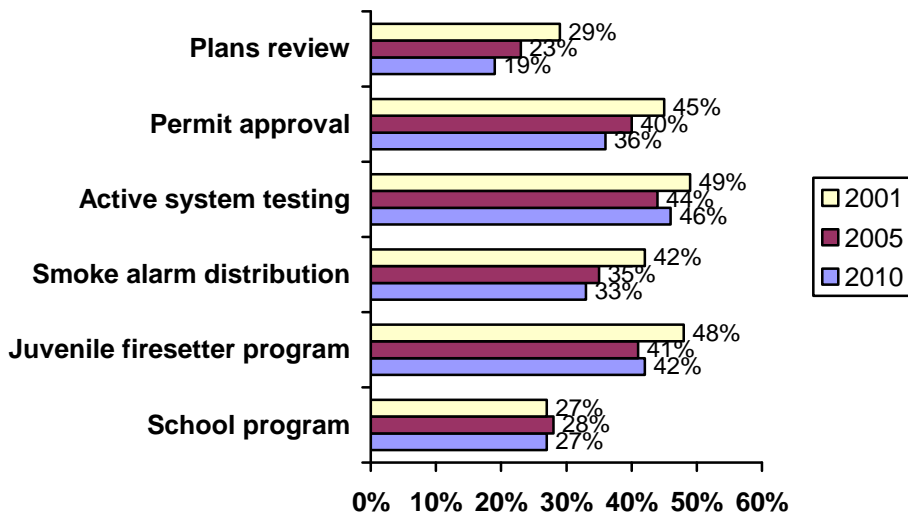
Figure 4-1 shows the need for fire prevention and code enforcement programs declining
between the 2001 and 2010 surveys for all programs except juvenile fire setter programs,
where the level of usage is largely unchanged.  Figure 4-2 shows a lack of progress in the

percent of population covered by school fire safety education programs based on a national model curriculum.

**One-quarter of fire departments (24%) do not have anyone conducting fire code inspections in the community, almost unchanged from 27% in 2001 and 25% in 2005.**

Table 4-2 indicates which of several groups conduct fire-code inspections in the community. In any one department, inspections may be performed by more than one agency, and so the percentages may add to more than 100%.

Figure 4-3 indicates what percent of departments reported each of the groups as responsible, in each of the three Needs Assessment Surveys. The percentages have slightly declined for "no one" and slightly increased for all other answers.

**Figure 4-3. Who Conducts Fire-Code Inspections in the Community, for Three Studies**
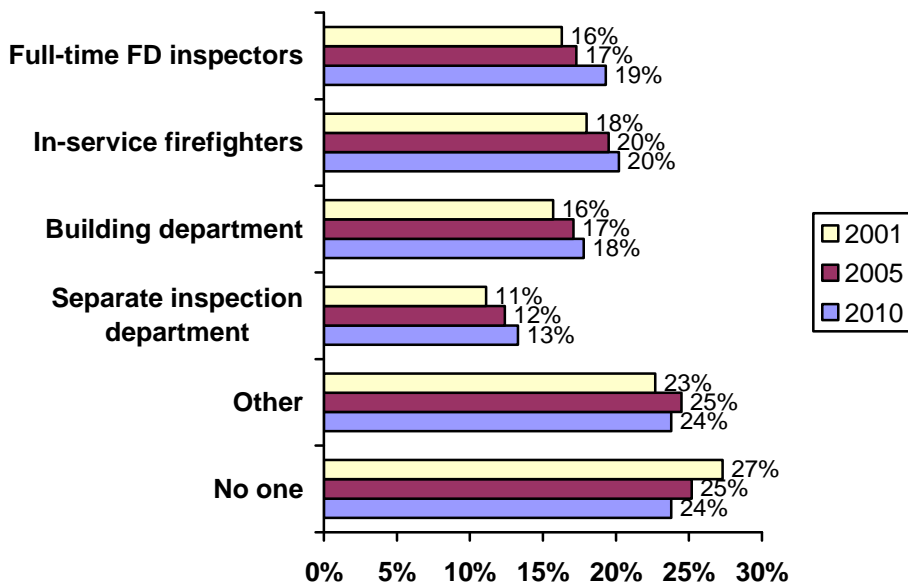


When fire-code inspections are conducted by someone, the most frequently cited party is "Other" (24%). Among the specified parties, the most frequently cited party conducting fire-code inspections was in-service firefighters (20%), followed by full-time fire department inspectors (19%), the building department (18%), and a separate inspection department (18%)

There was not sufficient space in the survey to ask which types of inspections are conducted by which parties or to try to measure coverage and frequency of inspections for the community. However, NFPA has some anecdotal information on trends, gained from discussions with a few fire departments in two fire-code inspection effectiveness

measurement studies, conducted three decades apart.[12]  In the earlier study, many departments were making extensive use of in-service firefighters to conduct fire-code inspections, and the departments not using in-service firefighters were also unable to come close to inspecting all or nearly all commercial properties once a year.  In the later study, many departments had cut back or eliminated use of in-service firefighters for inspections, because stricter certification requirements for anyone performing inspections had made it impractical to continue using in-service firefighters.  This shift also meant departments were not even attempting to inspect most properties subject to the fire code.

Figure 4-4 provides statistics as in Figure 4-3 but is limited to communities with under 2,500 population protected.  These small communities are much more likely to have no one conducting fire code inspections, and if someone is conducting such inspections, these communities are much less likely to have full-time fire department inspectors performing the inspections.  However, the percent of departments with full-time fire department inspectors performing inspections rose from 3.3% in 2001 to 5.5% in 2010, and that indicates a trend in the right direction.

**Figure 4-4. Who Conducts Fire Code Inspections in Communities with Less Than 2,500 Population Protected, for Three Studies**
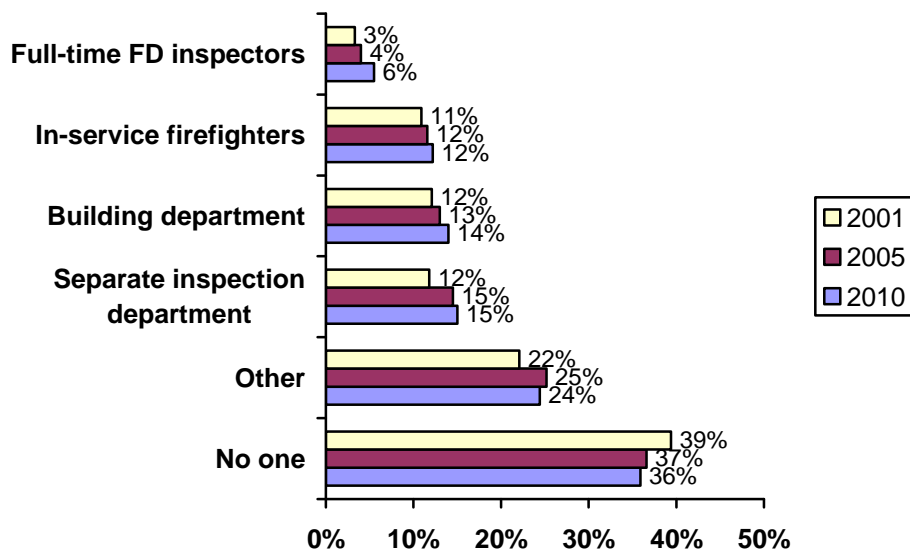


**One-third (33%) of departments have fire department arson investigators available to determine whether a fire was deliberately set, largely unchanged from 31% in 2001 and 32% in 2005.**

Table 4-3 indicates which of several parties determines that a fire was deliberately set. Multiple answers were permitted.  Most departments had access to a local, regional or

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[12] *Fire Code Inspections and Fire Prevention: What Methods Lead to Success?*, NFPA and Urban Institute, Quincy, MA, 1979; and *Measuring Code Compliance Effectiveness*, Fire Protection Research Foundation, 2008.

state arson investigator, but many departments also made use of determinations by incident commanders, police officers, or insurance investigators. Nearly all of the largest communities had local arson investigators (at least 90% for departments with population protected of at least 50,000).

Overall, 33% of departments cited fire department arson investigators, 72% cited state arson investigators, 16% cited regional arson task force investigators, 33% cited incident commanders, 19% cited police departments, 18% cited insurance investigators, 2% cited contract investigators, and 9% cited other parties.

## Table 4-1
## Which Programs or Activities Does Department Conduct?
## by Community Size
## (Q. 20)

| Population of Community | Plans Review | Permit Approval | Routine Testing of Active Systems | Free Distribution of Smoke Alarms | Juvenile Firesetter Program | School Fire Safety Education Program | Other Prevention Program |
|---|---|---|---|---|---|---|---|
| 500,000 or more | 96.8% | 83.9% | 67.7% | 74.2% | 87.1% | 74.2% | 22.6% |
| 250,000 to 499,999 | 89.5 | 94.7 | 63.3 | 86.8 | 86.8 | 71.1 | 30.6 |
| 100,000 to 249,999 | 97.8 | 89.1 | 71.0 | 78.3 | 80.4 | 73.2 | 31.2 |
| 50,000 to 99,999 | 91.9 | 80.0 | 70.4 | 75.4 | 73.1 | 76.5 | 21.5 |
| 25,000 to 49,999 | 89.2 | 67.0 | 58.7 | 71.1 | 59.2 | 73.2 | 20.5 |
| 10,000 to 24,999 | 78.0 | 51.8 | 46.7 | 63.1 | 42.8 | 75.5 | 21.7 |
| 5,000 to 9,999 | 60.7 | 35.3 | 33.5 | 51.8 | 22.1 | 71.8 | 18.0 |
| 2,500 to 4,999 | 44.5 | 18.0 | 19.0 | 48.0 | 12.3 | 71.0 | 17.0 |
| Under 2,500 | 38.8 | 17.0 | 19.4 | 39.0 | 9.2 | 57.0 | 17.3 |
| Total | 51.1 | 27.8 | 27.5 | 47.6 | 19.5 | 65.0 | 18.2 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown is based on 4,196 departments reporting on Question 20.  Departments were asked to circle all that apply, so departments could select multiple responses.  Numbers may not add to totals due to rounding.

Q. 20:  Which of the following programs or activities does your department conduct?  Plans review; permit approval; routine testing of active systems (e.g., fire sprinkler, detection/alarm, smoke control); free distribution of home smoke alarms; juvenile firesetter program; school fire safety education program based on a national model curriculum; other prevention program.

**Table 4-2**
**Who Conducts Fire-Code Inspections in the Community?**
**by Community Size**
**(Q. 21)**

| Population of Community | Full-Time Fire Department Inspectors | In-Service Firefighters | Building Department | Separate Inspection Department | Other | No One |
|---|---|---|---|---|---|---|
| 500,000 or more | 96.8% | 61.3% | 19.4% | 3.2% | 4.25% | 0.05% |
| 250,000 to 499,999 | 97.4 | 34.2 | 10.5 | 5.3 | 0.0 | 0.0 |
| 100,000 to 249,999 | 95.0 | 44.6 | 11.5 | 4.3 | 5.3 | 0.0 |
| 50,000 to 99,999 | 87.0 | 49.8 | 18.4 | 6.1 | 7.3 | 0.4 |
| 25,000 to 49,999 | 73.6 | 42.7 | 23.2 | 5.2 | 9.9 | 1.3 |
| 10,000 to 24,999 | 51.5 | 40.9 | 21.7 | 8.1 | 19.2 | 3.2 |
| 5,000 to 9,999 | 23.5 | 26.5 | 25.5 | 12.6 | 26.5 | 9.5 |
| 2,500 to 4,999 | 9.3 | 14.5 | 18.8 | 15.8 | 29.2 | 24.0 |
| Under 2,500 | 5.5 | 12.2 | 14.0 | 15.0 | 24.4 | 35.9 |
| Total | 19.3 | 20.2 | 17.8 | 13.3 | 23.8 | 23.8 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown is based on 4,595 departments reporting on Question 21.  Departments were asked to circle all that apply, so departments could select multiple responses.  Numbers may not add to totals due to rounding.

Q21:    Who conducts a fire code inspection in your community?

**Table 4-3**
**Who Determines That a Fire was Deliberately Set?**
**by Community Size**
**(Q. 22)**

| Population of Community | Fire Department Arson Investigator | Regional Arson Task Force Investigator | State Arson Investigator | Incident Commander | Police Department | Contract Investigator | insurance Investigator | Other |
|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 100.0% | 6.5% | 6.5% | 19.4% | 19.4% | 0.05% | 0.0% | 3.2% |
| 250,000 to 499,999 | 92.1 | 8.0 | 18.4 | 26.3 | 15.8 | 0.0 | 0.0 | 2.6 |
| 100,000 to 249,999 | 95.7 | 15.8 | 29.5 | 28.1 | 16.5 | 2.2 | 5.8 | 2.9 |
| 50,000 to 99,999 | 89.9 | 17.6 | 40.8 | 28.0 | 26.7 | 6.1 | 10.0 | 3.0 |
| 25,000 to 49,999 | 84.0 | 21.7 | 47.6 | 31.0 | 27.3 | 1.7 | 13.3 | 4.0 |
| 10,000 to 24,999 | 67.5 | 23.0 | 61.4 | 34.0 | 27.2 | 1.3 | 14.5 | 7.0 |
| 5,000 to 9,999 | 42.7 | 22.0 | 71.5 | 34.3 | 20.0 | 1.5 | 17.0 | 8.8 |
| 2,500 to 4,999 | 27.4 | 13.0 | 73.8 | 36.0 | 17.7 | 2.0 | 18.5 | 11.6 |
| Under 2,500 | 17.2 | 12.8 | 77.2 | 31.3 | 15.5 | 1.7 | 19.0 | 8.6 |
| Total | 33.3 | 15.7 | 71.5 | 32.8 | 18.5 | 1.8 | 17.5 | 8.6 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown is based on 4,644 departments reporting on Question 21. Departments were asked to circle all that apply, so departments could select multiple responses. Numbers may not add to totals due to rounding.

Q. 22: Who determines that a fire was deliberately set? "Incident commander" includes other first-in fire officer.

# SECTION 5. ABILITY TO HANDLE
# UNUSUALLY CHALLENGING INCIDENTS

Questions 36-39 were designed to check the capabilities of fire departments, in communities of various sizes, to handle unusually severe and challenging incidents, whether fire departments could handle such incidents with local personnel and equipment and whether a written agreement or other plan existed for working with others to address such incidents.

In this chapter, need will often be described in terms of both of the following measures:

- Lack of success in meeting need (where need is compared to only departments providing the service) = (Departments that provide service and lack resource) / (Departments that provide service)

- Size of need (where need is compared to all departments) = (Departments that provide service and lack resource) / (All departments)

The first measure assesses departments with unmet need against departments who have responsibility for this type of incident. The second measure assesses departments with unmet need against all department.

The first measure is the measure to emphasize in terms of gauging the success of programs to meet the needs of departments that have a particular responsibility.

If instead, you are considering what mix of resources to fund, you need measures that are more closely tied to the cost of meeting a certain type of unmet need. The second measure is the one to use in this case, and it will need to be combined with estimates of the cost of meeting need per department, for departments of a particular size, in order to construct a unit of cost suitable for use in a comprehensive budgeting exercise.

## Technical Rescue and EMS at Structural Collapse With 50 Occupants

**Overall, two of five departments (38%) are *not* responsible for technical rescue with EMS at a structural collapse of a building with 50 occupants.[13] (See Table 5-1.)**

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[13] Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations.

**Figure 5-1. Percent of All Departments
for Which Technical Rescue and EMS at Structural Collapse
with 50 Occupants is *Not* Within Department's Responsibility
by Size of Community, for Three Studies**
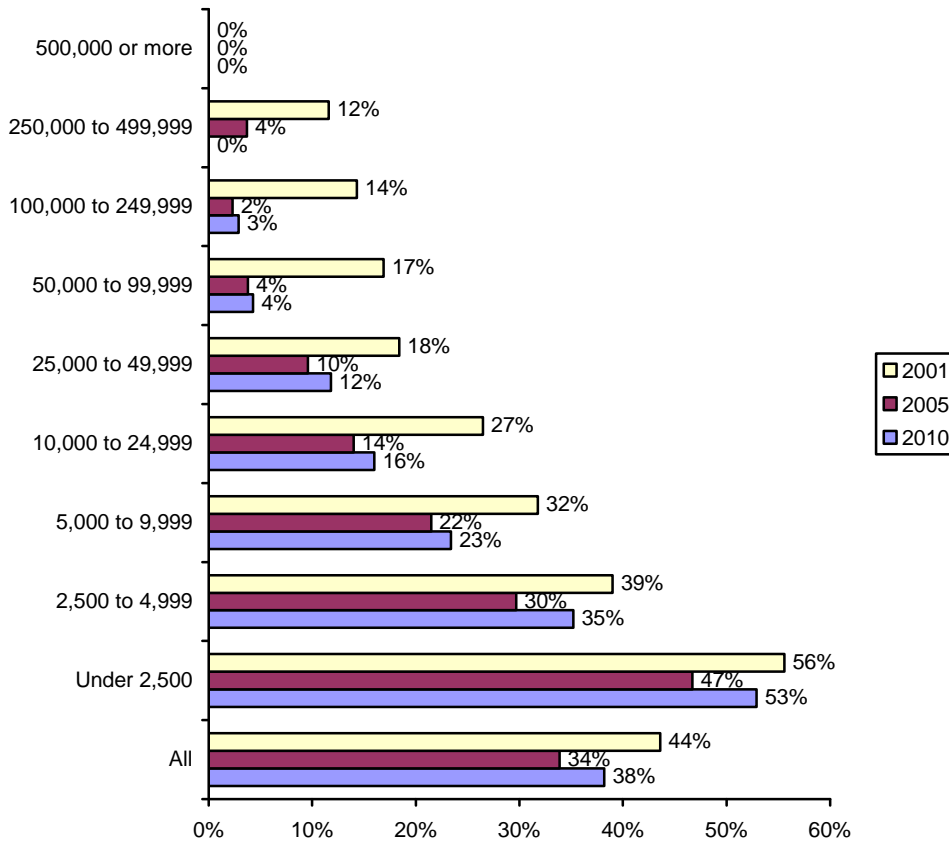


Figure 5-1 shows how these responses have changed over time.

The smaller the community, the less likely it is that departments have responsibility for this type of challenging incident. The percentages of departments reporting responsibility increased for all community sizes between the first and second surveys, but then decreased somewhat between the second and third surveys.

Tables 5-2 to 5-4 address, for the departments that consider such an incident part of their responsibility, how far they have to go for people and equipment and whether they have a written agreement or other plan to work with others on such an incident, respectively. By combining Table 5-1 with Tables 5-2 to 5-4, one can obtain combined statistics showing what percentage of departments do not have responsibility for incidents and, for departments that do have responsibility, what percentage of total departments have sufficient local resources or not, and what percentage have a written agreement for working with others or something less.

**Overall, 52% of departments reported they were responsible for technical rescue with EMS at a structural collapse of a building with 50 occupants but could not handle such an incident with local trained people. (See Table 5-A.)**

### Table 5-A. Departments by
### Whether Type of Incident Is Within Department's Responsibility,
### Where They Obtain Necessary Personnel With Specialized Training,
### and Size of Community (Q. 36b)

| Population Protected | Is Technical Rescue with EMS at Structural Collapse of a Building with 50 Occupants Within Department Responsibility? | | |
|---|---|---|---|
| | Yes and Can Handle With Local Trained People | Yes But Need Non-Local Trained People to Handle | No, Not Within Responsibility |
| 500,000 or more | 64% | 36% | 0% |
| 250,000 to 499,999 | 45% | 55% | 0% |
| 100,000 to 249,999 | 23% | 74% | 3% |
| 50,000 to 99,999 | 15% | 80% | 4% |
| 25,000 to 49,999 | 11% | 77% | 12% |
| 10,000 to 24,999 | 9% | 75% | 16% |
| 5,000 to 9,999 | 8% | 69% | 23% |
| 2,500 to 4,999 | 11% | 54% | 35% |
| Under 2,500 | 10% | 37% | 53% |
| Total | 10% | 52% | 38% |

The above projections are based on 4,613 departments reporting on Question 36a and 3,289 reporting on Question 36b.  See Tables 5-1 and 5-2.

Q. 36b:  If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department's responsibility; yes on Q. 36a], how far would you have to go to obtain enough people with specialized training for this incident?

Another 10% said this was part of their responsibility and they could handle it with local trained people, and 38% said such incidents were not part of their responsibility.

**Only communities of 500,000 or more population showed a majority of departments reporting that they were responsible for such incidents and local trained personnel would suffice to handle them.**

For communities with less than 50,000 population, only about a tenth of departments reported that they were responsible for such incidents and local trained personnel would suffice.  In these smaller communities, among departments that said they were responsible, less than one-fifth said that local trained personnel would suffice.

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Figure 5-2 shows how the percentages of departments responsible for such incidents but unable to handle them with local trained people have changed over the three surveys.

**Figure 5-2. Percent of All Departments Responsible
for Technical Rescue and EMS at Structural Collapse
With 50 Occupants But for Whom
Local Trained Personnel Would *Not* Be Sufficient
by Size of Community, for Three Studies**
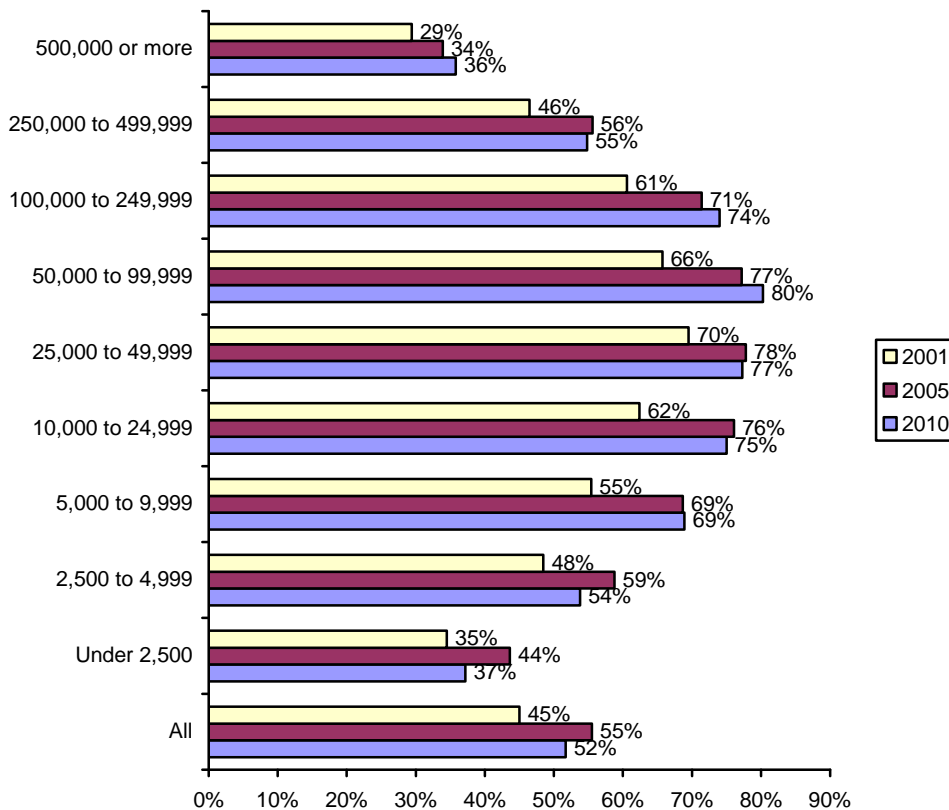


The percentages of departments that are both responsible for such incidents and *not* able to handle them with local trained personnel have generally increased, but this reflects an increase in the percentage of departments claiming responsibility in 2010 as well as a decline in the local resources of some departments with responsibility.

**Overall, 52% of departments reported they had responsibility for technical rescue with EMS at a structural collapse of a building with 50 occupants but could *not* handle such an incident with local specialized equipment. (See Table 5-B.)**

Another 9% said this was within their responsibility and they could handle it with local specialized equipment, and 38% said such incidents were not part of their responsibility.

## Table 5-B.  Departments by
## Whether Type of Incident Is Within Department's Responsibility,
## Where They Obtain Necessary Specialized Equipment,
## and Size of Community (Q. 36c)

| Population Protected | Is Technical Rescue with EMS at Structural Collapse of a Building with 50 Occupants Within Department Responsibility? | | |
| --- | --- | --- | --- |
| | Yes and Can Handle With Local Equipment | Yes But Need Non-Local Equipment to Handle | No, Not Within Responsibility |
| 500,000 or more | 47% | 53% | 0% |
| 250,000 to 499,999 | 40% | 60% | 0% |
| 100,000 to 249,999 | 22% | 75% | 3% |
| 50,000 to 99,999 | 16% | 80% | 4% |
| 25,000 to 49,999 | 10% | 79% | 12% |
| 10,000 to 24,999 | 9% | 75% | 16% |
| 5,000 to 9,999 | 7% | 69% | 23% |
| 2,500 to 4,999 | 10% | 55% | 35% |
| Under 2,500 | 9% | 38% | 53% |
| Total | 9% | 52% | 38% |

The above projections are based on 4,613 departments reporting on Question 36a and 3,275 reporting on Question 36c.  See Tables 5-1 and 5-3.

Q. 36c:  If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department's responsibility; yes on Q. 36a], how far would you have to go to obtain enough specialized equipment to handle this incident?

**There was no group by size of population protected for which a majority of departments reported that they were responsible for technical rescue with EMS at a structural collapse of a building with 50 occupants and could handle such incidents with local specialized equipment.**

For communities with less than 50,000 population, only about a tenth of departments at most reported that they were responsible for such incidents and local specialized equipment would suffice.  In these smaller communities, less than a fifth of departments that said they were responsible also said that local specialized equipment would suffice.

Figure 5-3 shows how the percentages of departments responsible for such incidents but not able to handle them with local specialized equipment have changed over the three surveys.

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**Figure 5-3. Percent of All Departments Responsible
for Technical Rescue and EMS at Structural Collapse
With 50 Occupants But for Whom
Local Specialized Equipment Would *Not* Be Sufficient
by Size of Community, for Three Studies**
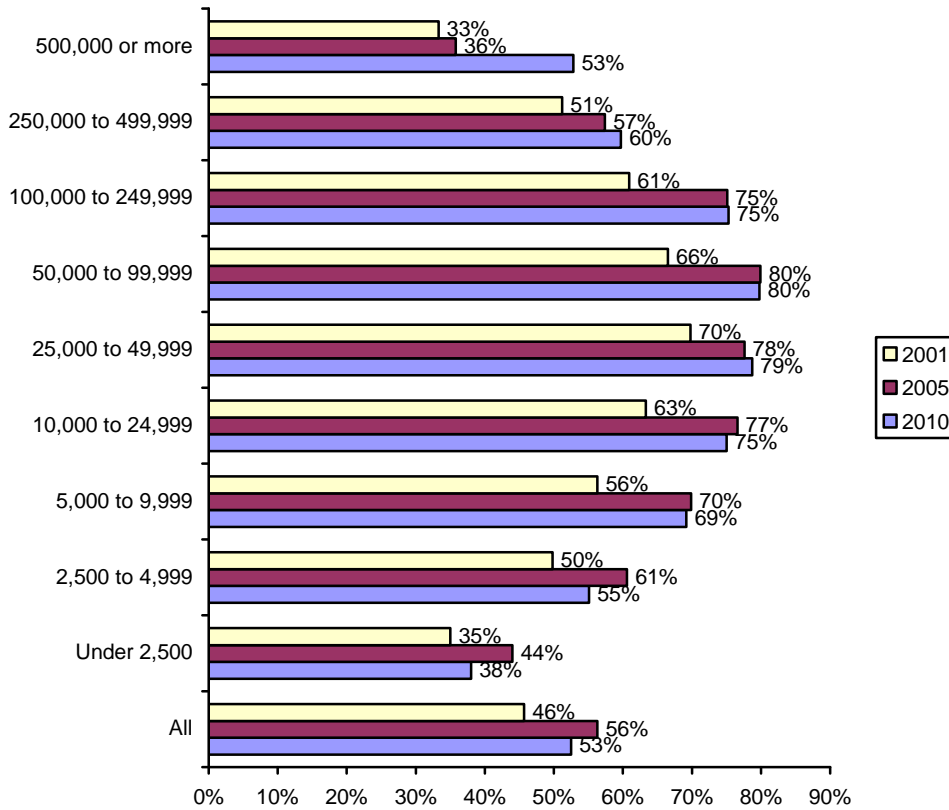


The percentages of departments that are both responsible for such incidents and unable to handle them with local specialized equipment have generally increased, but this reflects an increase in the percentage of departments claiming responsibility in 2010 as well as a decline in the local resources of some departments with responsibility.

In the aftermath of the World Trade Center attacks and the heightened concern over possible future terrorist attacks, homeland security planners have tended to prioritize larger communities, like the 115 fire departments with population protected of 250,000 or more. These are arguably the only communities large enough that one should expect they would be able to handle an incident like this with local resources alone.

Even with these priorities, however, what we see in the Needs Assessment Surveys is a declining total of departments with responsibility for such incidents and sufficient local personnel and equipment to handle such incidents. We see the majority of such departments lack either sufficient local personnel or sufficient local equipment or both.

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This puts added pressure on the existence of good plans supported by written agreements so that all responsible departments will be able to work effectively with the outside resources that most of them will need in order to handle such an incident.

**Overall, 34% of departments reported they had responsibility for technical rescue with EMS at a structural collapse of a building with 50 occupants but did not have a written agreement for working with other, non-local resources. (See Table 5-C.)** Another 28% said this was within their responsibility and they had a written agreement for working with others, and 38% said such incidents were not part of their responsibility. If percentages are calculated based not on all departments but only on departments that reported they were responsible for such incidents, 55% of responsible departments did not have written agreements for working with others.

## Table 5-C.  Departments by
## Whether Type of Incident Is Within Department's Responsibility,
## Written Agreement or Other Plan for Using Non-Local Resources,
## and Size of Community (Q. 36d)

| | Is Technical Rescue with EMS at Structural Collapse of a Building with 50 Occupants Within Department Responsibility? | | | |
|---|---|---|---|---|
| Population Protected | Yes and Have Written Agreement | Yes and Have Plan But Not Written Agreement | Yes But Have No Plan | No, Not Within Responsibility |
| 500,000 or more | 87% | 13% | 0% | 0% |
| 250,000 to 499,999 | 90% | 10% | 0% | 0% |
| 100,000 to 249,999 | 74% | 23% | 1% | 3% |
| 50,000 to 99,999 | 69% | 26% | 0% | 4% |
| 25,000 to 49,999 | 56% | 30% | 2% | 12% |
| 10,000 to 24,999 | 44% | 38% | 3% | 16% |
| 5,000 to 9,999 | 34% | 38% | 4% | 23% |
| 2,500 to 4,999 | 26% | 34% | 5% | 35% |
| Under 2,500 | 18% | 26% | 3% | 53% |
| Total | 28% | 30% | 4% | 38% |

The above table breakdown and projections are based on 4,613 departments reporting on Question 36a and 3,255 reporting on Question 36d.  See Tables 5-1 and 5-4.

Q. 36d:  If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department's scope; yes on Q. 36a], do you have a plan for working with others on this type of incident?

**A majority of departments protecting at least 25,000 population have responsibility and written agreements.**

Figure 5-4 shows how the percentages of responsible departments without written agreements have changed over the years.

**Figure 5-4. Percent of All Departments Responsible for
Technical Rescue and EMS at Structural Collapse
With 50 Occupants But Without
Written Agreement for Working With Others
by Size of Community, for Three Studies**
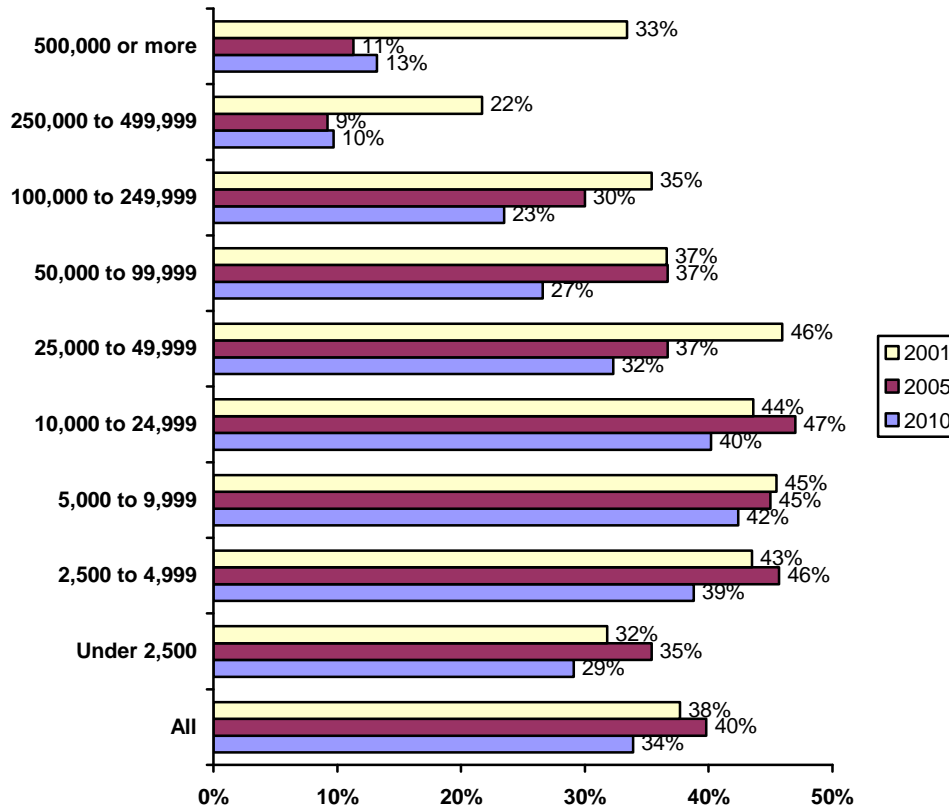


The percentages of departments that are both responsible for such incidents and do not have written agreements have shown no clear trend except for the larger communities (protecting 25,000 or more population), where there is a considerable net decline in need from 2001 to 2010.

The presence or absence of written agreements for working with others is probably the most important statement of need and capability related to a challenging incident. Most departments cannot reasonably plan to handle such incidents with local resources alone, and many of those that could plan a local-only solution do not currently have such resources. However, every department can reasonably plan to join and support a team response arrangement, made real by a written agreement and possibly by other elements (e.g., joint training exercises) that go beyond the level of detail covered by the surveys.

In addition, the many departments that say such incidents are not part of their responsibility still must consider how such an incident, if it were to occur, would be handled in their community. They, too, can plan to be part of a team response

arrangement, supported by a written agreement. The surveys did not ask whether those departments had a written agreement or other plan, even though all of those departments, by not having responsibility for such incidents, would need to rely on outside resources to address any such incident they might have.

To summarize the status for this type of incident – technical rescue and EMS at a structural collapse incident with 50 occupants in the building at the time of the incident – here are the percentages of departments with some type of related need:

➢ **Lack of success in meeting need:** 84% of departments responsible for this type of incident cannot handle it with local trained people alone, largely unchanged from 80% in 2001 and 84% in 2005;

➢ **Size of need:** 52% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, showing no clear trend from 45% in 2001 and 55% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need:** 85% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, largely unchanged from 81% in 2001 and 85% in 2005;

➢ **Size of need:** 52% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, showing no clear trend from 46% in 2001 and 56% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need: 55% of departments responsible for this type of incident do not have written agreements to help work with others, down from 67% in 2001 and 60% in 2005; and**

➢ **Size of need:** 34% of all departments are responsible for this type of incident but do not have written agreements to help work with others, with no clear trend from 38% in 2001 and 40% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents).

# Hazmat and EMS for Incident Involving Chemical/Biological Agents and 10 Injuries

**Overall, about one-third of departments (36%) said they are *not* responsible for hazmat response and EMS at an incident involving chemical/ biological agents and 10 injuries. (See Table 5-5.)** Note that casualty counts of 100 to 1,000 are not unusual in the kind of chemical/ biological agent weapons of mass destruction considered for planning purposes.

Figure 5-5 shows how these responses have changed over time.

**Figure 5-5. Percent of All Departments for Which
Hazmat and EMS at Incident Involving Chemical/Biological Agents
and 10 Injuries Is *Not* Within Department's Responsibility
by Size of Community, for Three Studies**
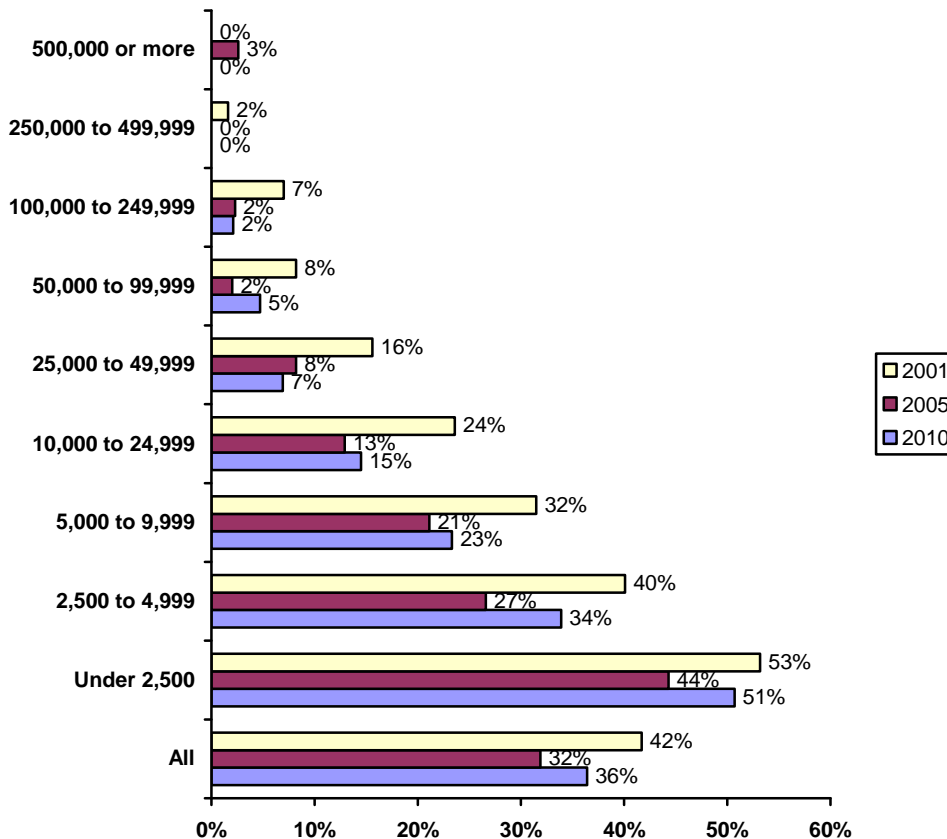


The smaller the community, the less likely it is that departments have responsibility for this type of challenging incident. The percentages of departments reporting responsibility increased for nearly all community sizes between the first and second surveys, but then decreased somewhat between the second and third surveys.

Tables 5-6 to 5-8 address, for the departments that consider such an incident part of their responsibility, how far they have to go for people and equipment and whether they have a written agreement or other plan to work with others on such an incident, respectively. By

combining Table 5-5 with Tables 5-6 to 5-8, one can obtain combined statistics showing what percentage of departments do not have responsibility for incidents and, for departments that do have responsibility, what percentage of total departments have sufficient local resources or not, and what percentage have a written agreement for working with others or something less.

**Overall, 51% of departments reported they were responsible for hazmat response and EMS at an incident involving chemical/ biological agents and 10 injuries but could not handle such an incident with local trained people. (See Table 5-D.)** Another 12% said this was part of their responsibility and they could handle such an incident with local trained people, and 36% said such incidents were not part of their responsibility.

### Table 5-D.  Departments by
### Whether Type of Incident Is Within Department's Responsibility,
### Where They Obtain Necessary Personnel With Specialized Training,
### and Size of Community (Q. 36b)

| Population Protected | Is Hazmat and EMS for an Incident Involving Chemical/Biological Agents and 10 Injuries Within Department Responsibility? | | |
| --- | --- | --- | --- |
| | Yes and Can Handle With Local Trained People | Yes But Need Non-Local Trained People to Handle | No, Not Within Responsibility |
| 500,000 or more | 91% | 9% | 0% |
| 250,000 to 499,999 | 61% | 39% | 0% |
| 100,000 to 249,999 | 53% | 45% | 2% |
| 50,000 to 99,999 | 35% | 60% | 5% |
| 25,000 to 49,999 | 26% | 67% | 7% |
| 10,000 to 24,999 | 18% | 68% | 15% |
| 5,000 to 9,999 | 12% | 64% | 23% |
| 2,500 to 4,999 | 12% | 54% | 34% |
| Under 2,500 | 8% | 41% | 51% |
| Total | 12% | 51% | 36% |

The above projections are based on 4,606 departments reporting on Question 37a and 3,363 reporting on Question 37b.  See Tables 5-5 and 5-6.

Q. 37b:  If [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries is within your department's responsibility; yes on Q. 37a], how far would you have to go to obtain enough people with specialized training for this incident?

**Only communities of 100,000 or more population showed a majority of departments reporting that they were responsible for such incidents and local trained personnel would suffice to handle them.**

For communities with less than 10,000 population, only about one-eighth of departments reported that they were responsible for such incidents and local trained personnel would suffice.  In these smaller communities, among the departments that said they were responsible, only one-sixth said that local trained personnel would suffice.

Figure 5-6 shows how the percentages of departments responsible for such incidents but unable to handle them with local trained people have changed over the three surveys.

**Figure 5-6. Percent of All Departments Responsible for
Hazmat and EMS at Incident Involving Chemical/Biological Agents
and 10 Injuries But for Whom
Local Trained Personnel Would *Not* Be Sufficient
by Size of Community, for Three Studies**
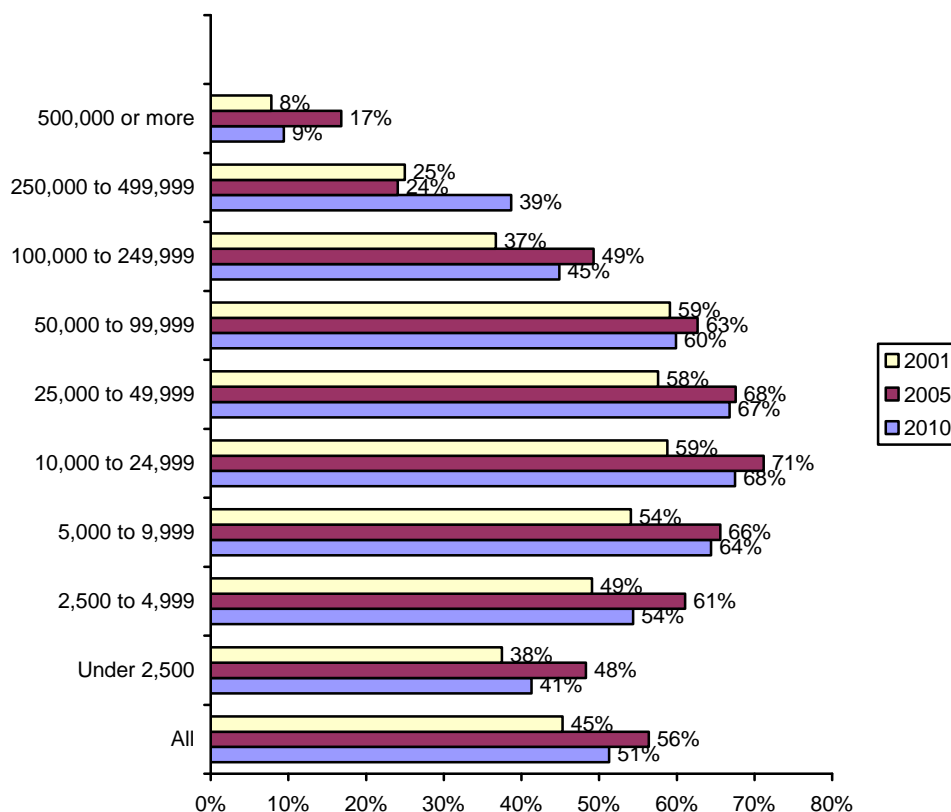


The percentages of departments that are both responsible for such incidents and unable to handle them with local trained personnel show no clear trend between the 2001 and 2010 surveys, with larger changes up or down in the second survey.  Note that the increase in need from first survey to third survey reflects a decline between the first and third surveys in the percentage of departments claiming responsibility as well as a decline in the local resources of some departments with responsibility.

**Overall, 53% of departments reported they had responsibility for hazmat and EMS for an incident involving chemical/biological agents and 10 injuries but could not**

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**handle such an incident with local specialized equipment. (See Table 5-E.)** Another 11% said such an incident was within their responsibility and they could handle it with local specialized equipment, and 36% said such incidents were not part of their responsibility.

### Table 5-E.  Departments by
### Whether Type of Incident Is Within Department's Responsibility,
### Where They Obtain Necessary Specialized Equipment,
### and Size of Community (Q. 36c)

| Population Protected | Is Hazmat and EMS for an Incident Involving Chemical/Biological Agents and 10 Injuries Within Department Responsibility? | | |
|---|---|---|---|
| | Yes and Can Handle With Local Equipment | Yes But Need Non-Local Equipment to Handle | No, Not Within Responsibility |
| 500,000 or more | 77% | 23% | 0% |
| 250,000 to 499,999 | 58% | 42% | 0% |
| 100,000 to 249,999 | 45% | 53% | 2% |
| 50,000 to 99,999 | 33% | 62% | 5% |
| 25,000 to 49,999 | 23% | 70% | 7% |
| 10,000 to 24,999 | 15% | 70% | 15% |
| 5,000 to 9,999 | 11% | 65% | 23% |
| 2,500 to 4,999 | 11% | 55% | 34% |
| Under 2,500 | 6% | 43% | 51% |
| Total | 11% | 53% | 36% |

The above projections are based on 4,606 departments reporting on Question 37a and 2,799 reporting on Question 37c.  See Tables 5-5 and 5-7.

Q. 37c:  If [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries is within your department's responsibility; yes on Q. 37a], how far would you have to go to obtain enough specialized equipment to handle this incident?

**Only communities with at least 250,000 population protected showed a majority of departments reporting that they were responsible for incidents involving chemical/biological agents and 10 injuries and could handle such incidents with local specialized equipment.**

For communities with less than 10,000 population, a tenth of departments reported that they were responsible for such incidents and local specialized equipment would suffice. In these smaller communities, among departments that said they were responsible, at most one-sixth said that local specialized equipment would suffice.

Figure 5-7 shows how the percentages of departments able to handle such incidents with local trained people have changed over the three surveys.

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**Figure 5-7. Percent of All Departments Responsible for
Hazmat and EMS at Incident Involving Chemical/Biological Agents
and 10 Injuries But for Whom
Local Specialized Equipment Would *Not* Be Sufficient
by Size of Community, for Three Studies**
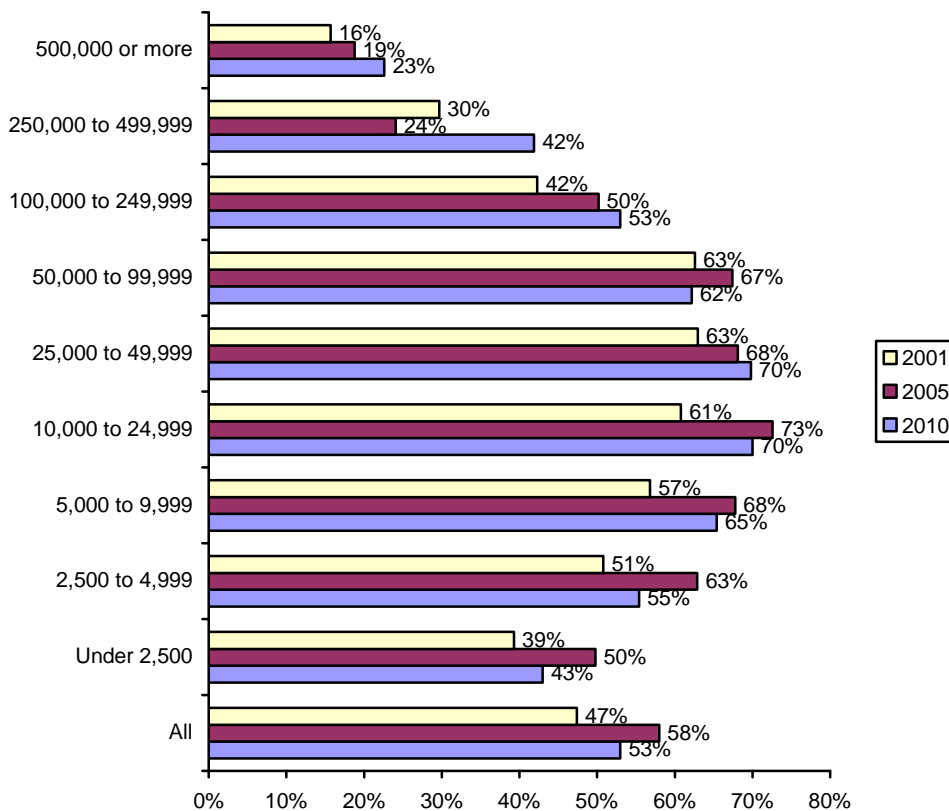


The percentages of departments that are both responsible for such incidents and unable to handle them with local specialized equipment have shown no clear trend. The net increase in need between the first and third surveys reflects in part decreases in the percent of departments with responsibility for such incidents as well as declines in the percent of responsible departments having sufficient local equipment.

In the aftermath of the World Trade Center attacks and the heightened concern over possible future terrorist attacks, homeland security planners have tended to prioritize larger communities, like the 115 fire departments with population protected of 250,000 or more. These are arguably the only communities large enough that one should expect they would be able to handle an incident like this with local resources alone.

Even with these priorities, however, what we see in the Needs Assessment Surveys is a declining total of departments with responsibility for such incidents and sufficient local personnel and equipment to handle such incidents. However, the majority of such

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departments report sufficient local personnel and sufficient local equipment to handle such incidents.

For most departments, however, preparedness for such incidents will depend critically on the existence of good plans supported by written agreements so that all responsible departments will be able to work effectively with the outside resources that most of them will need in order to handle such an incident.

**Overall, 33% of departments reported they had responsibility for hazmat and EMS for an incident involving chemical/biological agents and 10 injuries but did not have a written agreement for working with other, non-local resources. (See Table 5-F.)** Another 31% said such an incident was within their responsibility and they had a written agreement, and 36% said such incidents were not part of their responsibility.

### Table 5-F.  Departments by Whether Type of Incident Is Within Department's Responsibility, Written Agreement or Other Plan for Using Non-Local Resources, and Size of Community (Q. 36d)

| Population Protected | Is Hazmat and EMS for an Incident Involving Chemical/Biological Agents and 10 Injuries Within Department Responsibility? | | | |
| --- | --- | --- | --- | --- |
| | Yes and Have Written Agreement | Yes and Have Plan But Not Written Agreement | Yes But Have No Plan | No, Not Within Responsibility |
| 500,000 or more | 79% | 17% | 4% | 0% |
| 250,000 to 499,999 | 95% | 5% | 0% | 0% |
| 100,000 to 249,999 | 76% | 21% | 0% | 2% |
| 50,000 to 99,999 | 74% | 21% | 0% | 5% |
| 25,000 to 49,999 | 68% | 24% | 1% | 7% |
| 10,000 to 24,999 | 53% | 30% | 3% | 15% |
| 5,000 to 9,999 | 39% | 36% | 2% | 23% |
| 2,500 to 4,999 | 29% | 33% | 4% | 34% |
| Under 2,500 | 19% | 27% | 3% | 51% |
| Total | 31% | 30% | 3% | 36% |

The above table breakdown and projections are based on 4,606 departments reporting on Question 37a and 3,322 reporting on Question 37d.  See Tables 5-5 and 5-8.

Q. 37d:  If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department's scope; yes on Q. 37a], do you have a plan for working with others on this type of incident?

Figure 5-8 shows how the percentages of responsible departments without written agreements have changed over the years.

**Figure 5-8. Percent of All Departments Responsible for
Hazmat and EMS at Incident Involving Chemical/Biological Agents
and 10 Injuries But Without
Written Agreements for Working With Others
by Size of Community, for Three Studies**
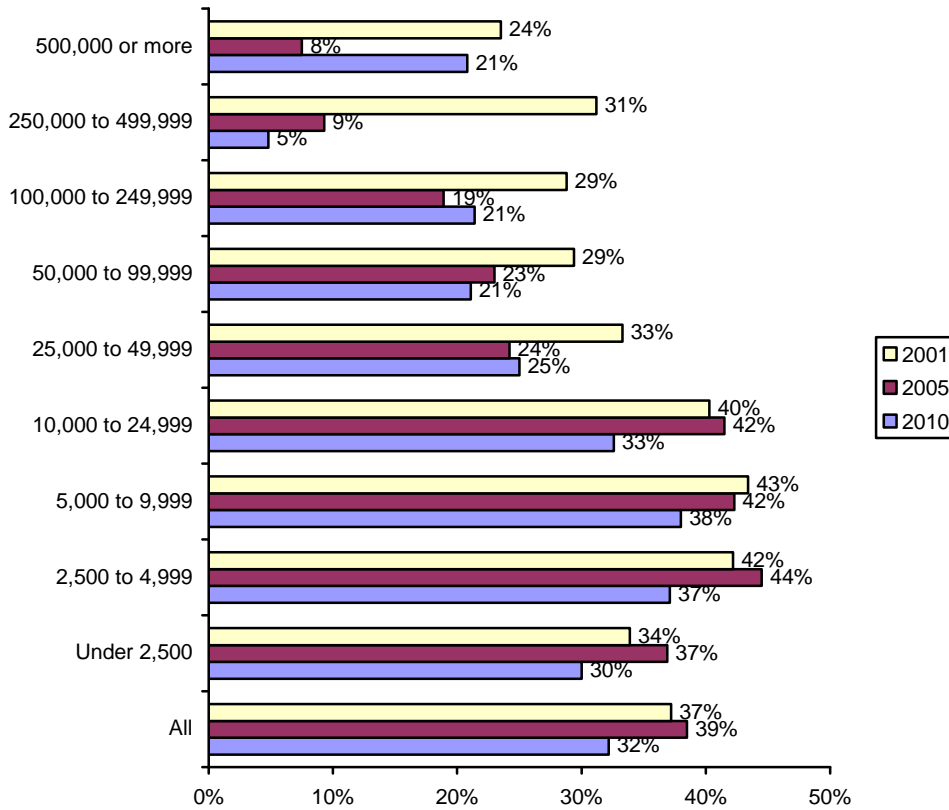


**The percentages of departments that are responsible for such incidents and do not
have written agreements slightly decreased between the first and third surveys.**

The presence or absence of written agreements for working with others is probably the
most important indicator of need and capability related to a challenging incident. Most
departments cannot reasonably plan to handle such incidents with local resources alone,
and many of those that could plan a local-only solution do not currently have such
resources. However, every department can reasonably plan to join and support a team
response arrangement, made real by a written agreement and possibly by other elements
(e.g., joint training exercises) that go beyond the level of detail covered by the surveys.

In addition, the many departments that say such incidents are not part of their
responsibility still must consider how such an incident, if it were to occur, would be
handled in their community. They, too, can plan to be part of a team response
arrangement, supported by a written agreement. The surveys did not ask whether those

departments had a written agreement or other plan, even though those departments would need to rely on outside resources to address any such incident they might have.

To summarize the status for this type of incident – hazmat response and EMS at an incident involving chemical/biological agents and 10 injuries – here are the percentages of departments with some type of related need:

> **Lack of success in meeting need:** 81% of departments responsible for this type of incident cannot handle it with local trained people alone, largely unchanged from 78% in 2001 and 83% in 2005;

> **Size of need:** 51% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, showing no clear trend from 45% in 2001 and 56% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents);

> **Lack of success in meeting need:** 83% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, largely unchanged from 81% in 2001 and 85% in 2005;

> **Size of need:** 53% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, showing no clear trend from 47% in 2001 and 58% in 2005 (with any increase due in part to an increase from 2001 to 2010 in departments claiming responsibility for such incidents);

> **Lack of success in meeting need: 51% of departments responsible for this type of incident do not have written agreements to help work with others, down from 64% in 2001 and 57% in 2005; and**

> **Size of need:** 32% of all departments are responsible for this type of incident but do not have written agreements to help work with others, with no clear trend from 37% in 2001 and 39% in 2005.

# Wildland/Urban Interface Fire Affecting 500 Acres

**Overall, about half of departments (47%) said they are *not* responsible for wildland/ urban interface (WUI) fires affecting 500 acres.  (See Table 5-9.)**  (It is not possible to determine which departments declaring such incidents outside their responsibility have no nearby wildland/urban interface areas and so have no potential for a fire of this type and size.)

Figure 5-9 shows how responses have changed over time.

**Figure 5-9. Percent of All Departments for Which
a Wildland/Urban Interface Fire Affecting 500 Acres
Is *Not* Within Department's Responsibility
by Size of Community, for Three Studies**
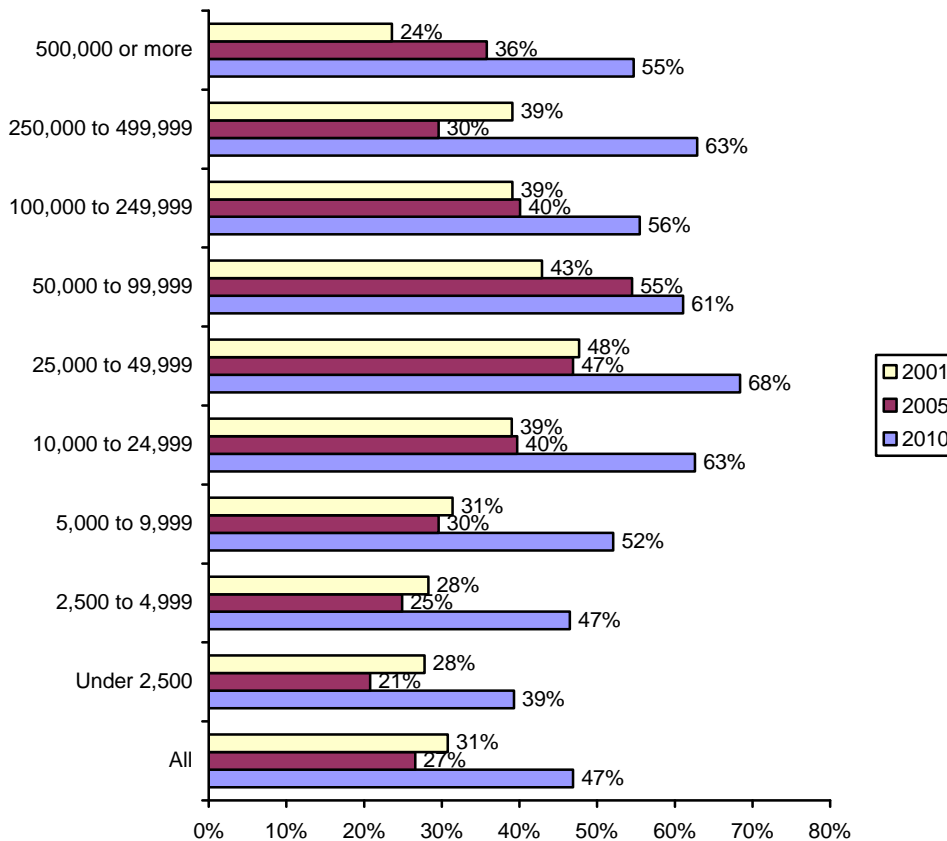


The smaller the community, the *more* likely it is that departments have responsibility for this type of challenging incident, unlike the other challenging incidents.  Percentages of departments reporting responsibility decreased for nearly all community sizes.

Tables 5-10 to 5-12 address, for the departments that consider such an incident part of their responsibility, how far they have to go for people and equipment and whether they have a written agreement or other plan to work with others on such an incident,

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respectively.  By combining Table 5-9 with Tables 5-10 to 5-12, one can obtain combined statistics showing what percentage of departments do not have responsibility for incidents and, for departments that do have responsibility, what percentage of total departments have sufficient local resources or not, and what percentage have a written agreement for working with others or something less.

**Overall, 34% of departments reported they were responsible for wildland/urban interface fires affecting 500 acres but could not handle them with local trained people. (See Table 5-G.)**  Another 19% said such an incident was part of their responsibility and they could handle it with local people, and 47% said such incidents were not part of their responsibility.  Most departments, regardless of size of community, reported that either they were not responsible for such incidents or local trained personnel would not suffice to handle such incidents.

### Table 5-G.  Departments by
### Whether Type of Incident Is Within Department's Responsibility,
### Where They Obtain Necessary Personnel With Specialized Training,
### and Size of Community (Q. 36b)

| Population Protected | Is a Wildland/Urban Interface Fire Affecting 500 Acres Within Department Responsibility? | | |
| --- | --- | --- | --- |
| | Yes and Can Handle With Local Trained People | Yes But Need Non-Local Trained People to Handle | No, Not Within Responsibility |
| 500,000 or more | 26% | 19% | 55% |
| 250,000 to 499,999 | 8% | 29% | 63% |
| 100,000 to 249,999 | 11% | 33% | 56% |
| 50,000 to 99,999 | 7% | 32% | 61% |
| 25,000 to 49,999 | 8% | 24% | 68% |
| 10,000 to 24,999 | 10% | 27% | 63% |
| 5,000 to 9,999 | 13% | 35% | 52% |
| 2,500 to 4,999 | 18% | 36% | 47% |
| Under 2,500 | 24% | 37% | 39% |
| Total | 19% | 34% | 47% |

The above projections are based on 4,626 departments reporting on Question 38a and 2,196 reporting on Question 38b.  See Tables 5-9 and 5-10.

Q. 38b:  If [a wildland/urban interface fire affecting 500 acres is within your department's responsibility; yes on Q. 38a], how far would you have to go to obtain enough people with specialized training for this incident?

Figure 5-10 shows how the percentages of departments able to handle such incidents with local trained people have changed over the three surveys.

**The percentages of departments that are responsible for wildland/urban interface fires affecting 500 acres but unable to handle them with local trained personnel generally declined between the first and third surveys.** Note that this reflects an often sharp decline between the first and third surveys in the percentage of departments claiming responsibility for such incidents more than an increase in the local resources of departments with responsibility.

Figure 5-10. Percent of All Departments Responsible for
a Wildland/Urban Interface Fire Affecting 500 Acres
But for Whom
Local Trained Personnel Would *Not* Be Sufficient
by Size of Community, for Three Studies

| Size of Community | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 41% | 39% | 19% |
| 250,000 to 499,999 | 36% | 46% | 29% |
| 100,000 to 249,999 | 43% | 42% | 33% |
| 50,000 to 99,999 | 41% | 32% | 32% |
| 25,000 to 49,999 | 38% | 41% | 24% |
| 10,000 to 24,999 | 44% | 44% | 28% |
| 5,000 to 9,999 | 47% | 49% | 35% |
| 2,500 to 4,999 | 48% | 51% | 36% |
| Under 2,500 | 42% | 51% | 37% |
| All | 44% | 49% | 35% |
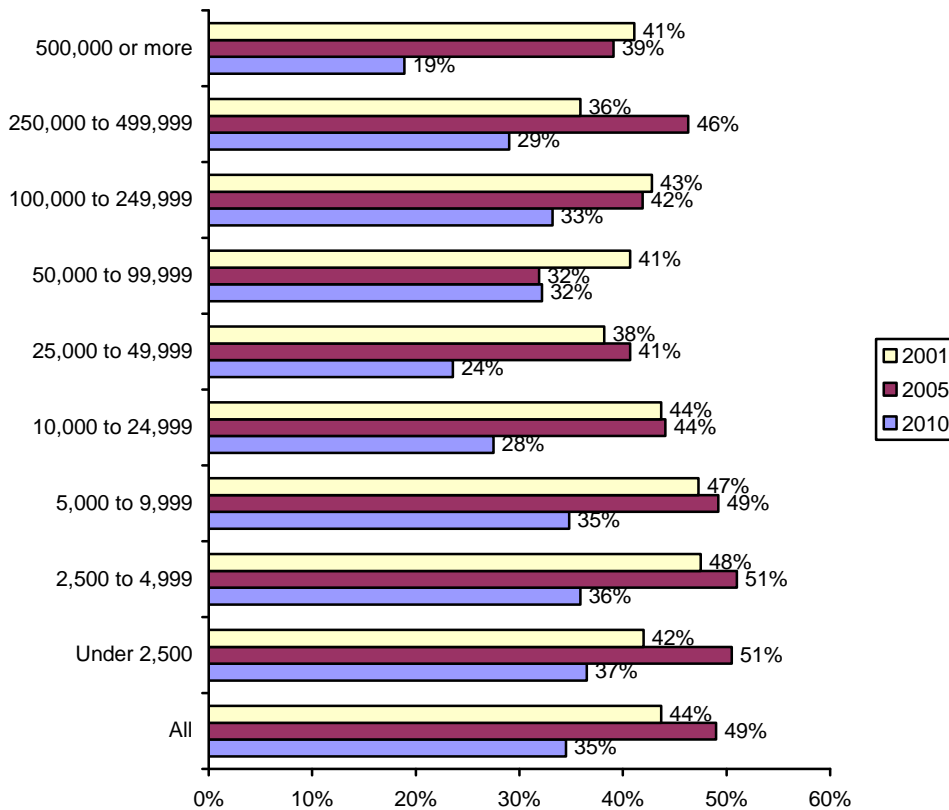
**Overall, 37% of departments reported they had responsibility for wildland/urban interface fires affecting 500 acres but could not handle them with local specialized equipment. (See Table 5-H.)** Another 16% said such an incident was within their responsibility and they could handle it with local specialized equipment, and 47% said such incidents were not part of their responsibility.

Most departments, regardless of size of community, reported that either they were not responsible for wildland/urban interface fires affecting 500 acres or local specialized equipment would not suffice to handle such incidents.

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**Table 5-H.  Departments by**
**Whether Type of Incident Is Within Department's Responsibility,**
**Where They Obtain Necessary Specialized Equipment,**
**and Size of Community (Q. 36c)**

| Population Protected | Is a Wildland/Urban Interface Fire Affecting 500 Acres Within Department Responsibility? | | |
| --- | --- | --- | --- |
| | Yes and Can Handle With Local Equipment | Yes But Need Non-Local Equipment to Handle | No, Not Within Responsibility |
| 500,000 or more | 26% | 19% | 55% |
| 250,000 to 499,999 | 5% | 32% | 63% |
| 100,000 to 249,999 | 6% | 38% | 56% |
| 50,000 to 99,999 | 5% | 34% | 61% |
| 25,000 to 49,999 | 6% | 26% | 68% |
| 10,000 to 24,999 | 9% | 29% | 63% |
| 5,000 to 9,999 | 11% | 37% | 52% |
| 2,500 to 4,999 | 15% | 38% | 47% |
| Under 2,500 | 21% | 39% | 39% |
| Total | 16% | 37% | 47% |

The above projections are based on 4,626 departments reporting on Question 38a and 2,190 reporting on Question 38c.  See Tables 5-9 and 5-11.

Q. 38c:  If [a wildland/urban interface fire affecting 500 acres is within your department's responsibility; yes on Q. 38a], how far would you have to go to obtain enough specialized equipment to handle this incident?

Figure 5-11 shows how the percentages of departments able to handle such incidents with local specialized equipment have changed over the three surveys.

**The percentages of departments that are responsible for wildland/urban interface fires affecting 500 acres but unable to handle them with local specialized equipment generally declined between the first and third surveys.**

Note that this reflects an often sharp decline between the first and third surveys in the percentage of departments claiming responsibility for such incidents as much as or more than an increase in the local resources of departments with responsibility.

**Figure 5-11. Percent of All Departments Responsible for
a Wildland/Urban Interface Fire Affecting 500 Acres
But for Whom
Local Specialized Equipment Would *Not* Be Sufficient
by Size of Community, for Three Studies**
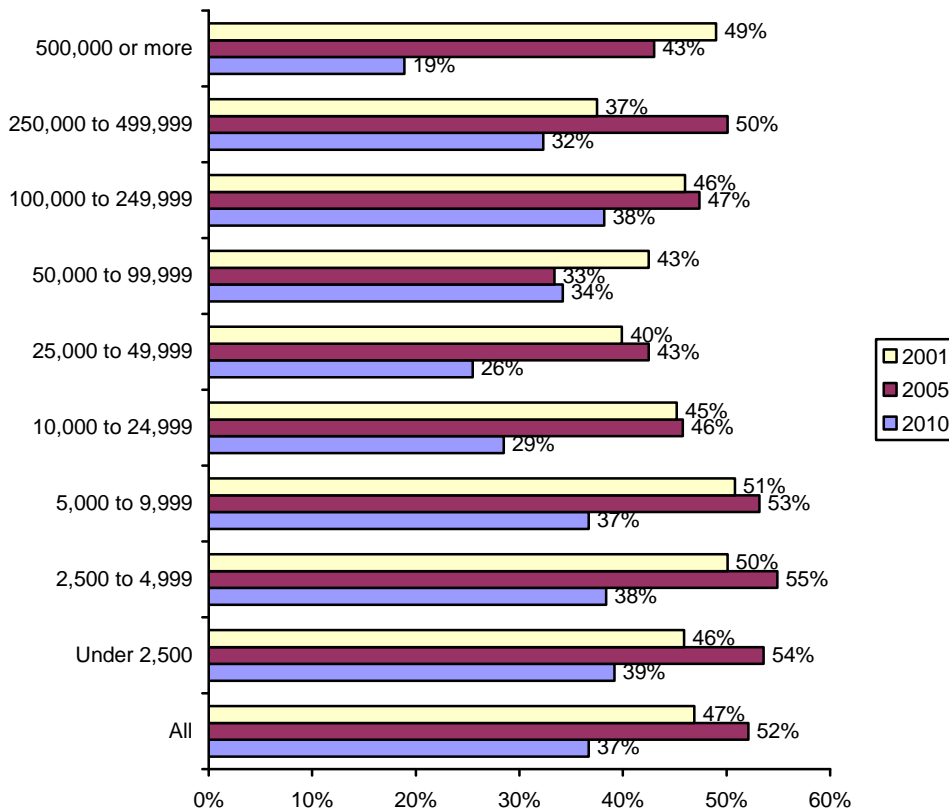


For most departments, preparedness for such incidents will depend critically on the existence of good plans supported by written agreements so that all responsible departments will be able to work effectively with the outside resources that most of them will need in order to handle such an incident.

**Overall, 21% of departments reported they had responsibility for wildland/urban interface fires affecting 500 acres but did not have a written agreement for working with other, non-local resources. (See Table 5-I.)**  Another 32% said such an incident was within their responsibility and they had a written agreement, and 47% said such incidents were not part of their responsibility.  If percentages are calculated based not on all departments but only on departments that reported they were responsible for such incidents, 61% of responsible departments had written agreements for working with others.

**Table 5-I.  Departments by
Whether Type of Incident Is Within Department's Responsibility,
Written Agreement or Other Plan for Using Non-Local Resources,
and Size of Community (Q. 36d)**

| Population Protected | Is a Wildland/Urban Interface Fire Affecting 500 Acres Within Department Responsibility? | | | |
| --- | --- | --- | --- | --- |
| | Yes and Have Written Agreement | Yes and Have Plan But Not Written Agreement | Yes But Have No Plan | No, Not Within Responsibility |
| 500,000 or more | 45% | 0% | 0% | 55% |
| 250,000 to 499,999 | 37% | 0% | 0% | 63% |
| 100,000 to 249,999 | 34% | 10% | 0% | 56% |
| 50,000 to 99,999 | 30% | 9% | 1% | 61% |
| 25,000 to 49,999 | 23% | 8% | 0% | 68% |
| 10,000 to 24,999 | 26% | 10% | 1% | 63% |
| 5,000 to 9,999 | 29% | 17% | 1% | 52% |
| 2,500 to 4,999 | 30% | 21% | 2% | 47% |
| Under 2,500 | 36% | 24% | 1% | 39% |
| Total | 32% | 20% | 1% | 47% |

The above table breakdown and projections are based on 4,626 departments reporting on Question 38a and 2,174 reporting on Question 38d.  See Tables 5-9 and 5-12.

Q. 38d:  If [a wildland/urban interface fire affecting 500 acres is within your department's responsibility; yes on Q. 38a], do you have a plan for working with others on this type of incident?

Of the four types of challenging incidents, associated efforts to create and support written agreements and regional preparedness have been underway for by far the longest time for wildland/urban interface fires.

The percentage of total departments having written agreements is actually quite comparable for wildland/urban interface fires (32%) and for the building collapse (28%) and chemical/biological agent (31%) scenarios.

However, the percentage of departments responsible for such incidents that have written agreements is much higher for wildland/urban interface fires (61%) than for the building collapse (45%) and chemical/biological agent (49%) scenarios.

Figure 5-12 shows how the percentages of departments with written agreements have changed over the years.

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**Figure 5-12. Percent of All Departments Responsible for
a Wildland/Urban Interface Fire Affecting 500 Acres
But Without a
Written Agreement for Working With Others
by Size of Community, for Three Studies**
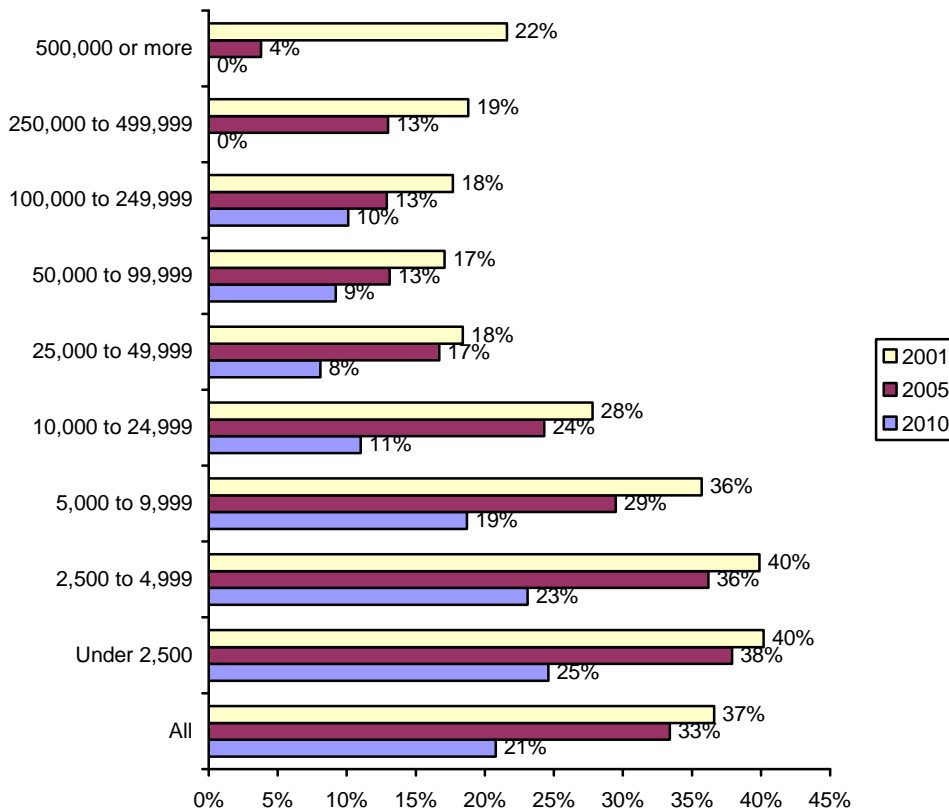


**The percentages of departments that are responsible for wildland/urban interface fires affecting 500 acres but do not have written agreements have decreased between the first and third surveys.** A large part of this decrease reflects a sharp decrease in the percent of departments saying they are responsible for such incidents rather than a sharp increase in written agreements for responsible departments.

More specifically, from the first to the second survey, the estimated number of departments with responsibility and written agreements increased by more than 2,000. From the second to the third survey, that number decreased to roughly the same total estimated in the first survey. This was accompanied by a large decline between the second and third surveys in the percentage of departments reporting responsibility for such incidents. The number of departments reporting responsibility dropped by more than 5,000 between the second and third surveys.

It is possible that many of the departments disowning responsibility between the second and third departments are still active participants in written agreements but have

reassessed their "responsibility" in light of their non-leadership roles in those agreements. That would be consistent with the changes in the numbers but would mean that the real goal of providing effective teamwork arrangements for all communities is still on track. The detail available in the survey does not allow us to determine whether the principal explanation is something like this or is something less encouraging, such as a widespread renunciation of participation in existing agreements.

The presence or absence of written agreements for working with others is probably the most important indicator of need and capability related to a challenging incident. Most departments cannot reasonably plan to handle such incidents with local resources alone, and many of those that could plan a local-only solution do not currently have such resources. However, every department can reasonably plan to join and support a team response arrangement, made real by a written agreement and possibly by other elements (e.g., joint training exercises) that go beyond the level of detail covered by the surveys.

Because the survey did not ask which departments had sufficient wildland areas to sustain a wildland/urban interface fire of 500 acres, it is not possible to determine how many of the departments reporting no responsibility for such incidents are departments that are not exposed to such fires vs. departments that are part of written agreements or other plans to address such fires but do not consider themselves responsible vs. departments that are at risk for such fires and do not have any other party taking responsibility for that risk. Therefore, it is not clear whether the job of protecting all communities from the wildland fire threats they realistically face through proper preparedness, including written agreements, is closer to 32% complete (the percent of total departments that report a written agreement and responsibility for such incidents) or 61% complete (the percent of responsible departments that report a written agreement).

To summarize the status for this type of incident – a wildland/urban interface fire affecting 500 acres – here are the percentages of departments with some type of related need:

 ➢ **Lack of success in meeting need:** 65% of departments responsible for this type of incident cannot handle it with local trained people alone, largely unchanged from 63% in 2001 and 67% in 2005;

 ➢ **Size of need:** 35% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, down from 44% in 2001 and 49% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

 ➢ **Lack of success in meeting need:** 69% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, largely unchanged from 68% in 2001 and 71% in 2005;

➤ **Size of need:** 37% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, down from 47% in 2001 and 52% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

➤ **Lack of success in meeting need: 39% of departments responsible for this type of incident do not have written agreements to help work with others, down from 53% in 2001 and 45% in 2005; and**

➤ **Size of need:** 21% of all departments are responsible for this type of incident but do not have written agreements to help work with others, down from 37% in 2001 and 33% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents).

# Mitigation of a Developing Major Flood

**Overall, about one-fourth of departments (28%) said they are responsible for mitigation of developing major floods. (See Table 5-13.)** It is not possible to determine from available data which departments among those declaring such incidents outside their responsibility have no nearby river, ocean shoreline, or other nearby body of water that could cause a major flood. It also is not possible to determine which departments do not have responsibility because some other local agency does, reflecting the fact that a flood is not a fire or other type of hazard requiring rapid emergency response from a fire department.

**A majority of departments protecting at least 100,000 population said they were responsible for mitigation of developing major floods. Percentages of departments reporting responsibility decreased for nearly all community sizes.**

Figure 5-13 shows how these responses have changed over time.

**Figure 5-13. Percent of All Departments
for Which Mitigation of a Developing Major Flood
Is *Not* Within Department's Responsibility
by Size of Community, for Three Studies**
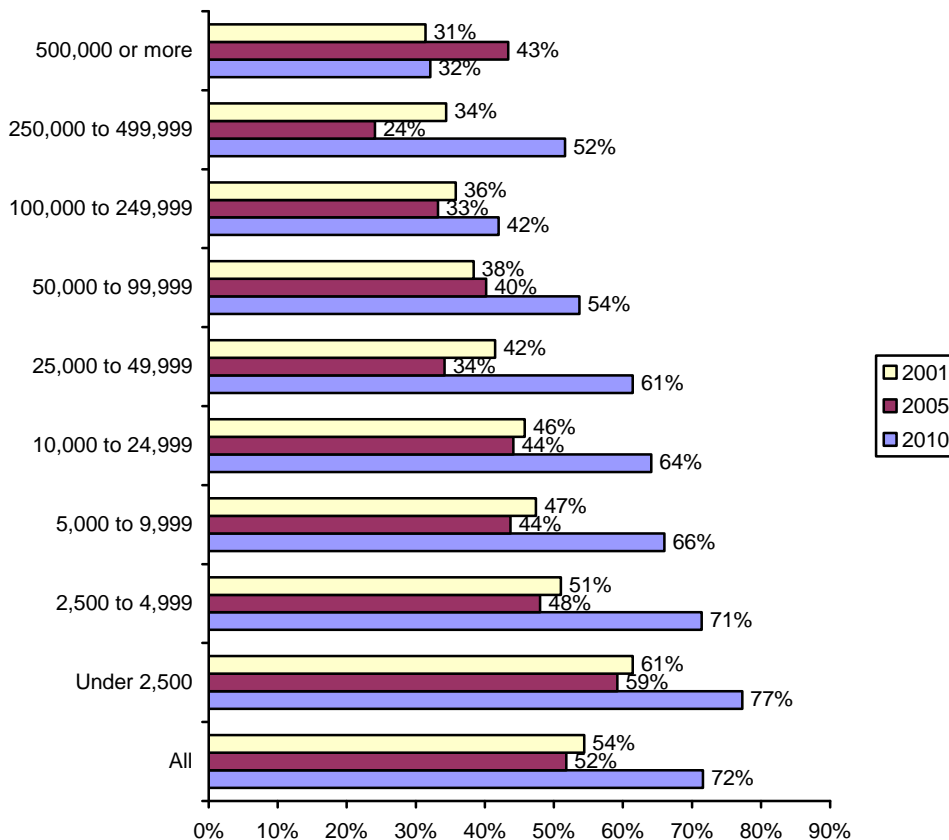
Tables 5-14 to 5-16 address, for the departments that consider such an incident part of their responsibility, how far they have to go for people and equipment and whether they have a written agreement or other plan to work with others on such an incident, respectively. By combining Table 5-13 with Tables 5-14 to 5-16, one can obtain combined statistics showing what percentage of departments do not have responsibility for incidents and, for departments that do have responsibility, what percentage of total departments have sufficient local resources or not, and what percentage have a written agreement for working with others or something less.

**Overall, 19% of departments reported they were responsible for mitigation of major developing floods but could not handle them with local trained people.**
**(See Table 5-J.)** Another 10% said this they were responsible for such incidents and could handle them with local trained people, and 72% said such incidents were not part of their responsibility.

**Table 5-J.  Departments by**
**Whether Type of Incident Is Within Department's Responsibility,**
**Where They Obtain Necessary Personnel With Specialized Training,**
**and Size of Community (Q. 36b)**

| Population Protected | Is Mitigation of a Developing Major Flood Within Department Responsibility? | | |
| --- | --- | --- | --- |
| | Yes and Can Handle With Local Trained People | Yes But Need Non-Local Trained People to Handle | No, Not Within Responsibility |
| 500,000 or more | 41% | 26% | 32% |
| 250,000 to 499,999 | 19% | 29% | 52% |
| 100,000 to 249,999 | 18% | 40% | 42% |
| 50,000 to 99,999 | 11% | 36% | 54% |
| 25,000 to 49,999 | 8% | 30% | 61% |
| 10,000 to 24,999 | 9% | 26% | 64% |
| 5,000 to 9,999 | 9% | 25% | 66% |
| 2,500 to 4,999 | 10% | 19% | 71% |
| Under 2,500 | 9% | 14% | 77% |
| Total | 10% | 19% | 72% |

The above projections are based on 4,615 departments reporting on Question 39a and 1,487 reporting on Question 39b.  See Tables 5-13 and 5-14.

Q. 39b:  If [mitigation (confining, slowing, etc.) of a developing major flood is within your department's responsibility; yes on Q. 39a], how far would you have to go to obtain enough people with specialized training for this incident?

Most departments, regardless of size of community, reported that either they were not responsible for mitigation of major developing floods or local trained personnel would not suffice to handle such incidents.  Only departments protecting populations of 500,000 or more showed more than one-fifth of departments having responsibility for mitigation

of a major developing flood and being able to handle such an incident with local trained people.

Figure 5-14 shows how the percentages of departments able to handle such incidents with local trained people have changed over the three surveys.

**Figure 5-14. Percent of All Departments Responsible for Mitigation of a Developing Major Flood But for Whom Local Trained Personnel Would *Not* Be Sufficient by Size of Community, for Three Studies**
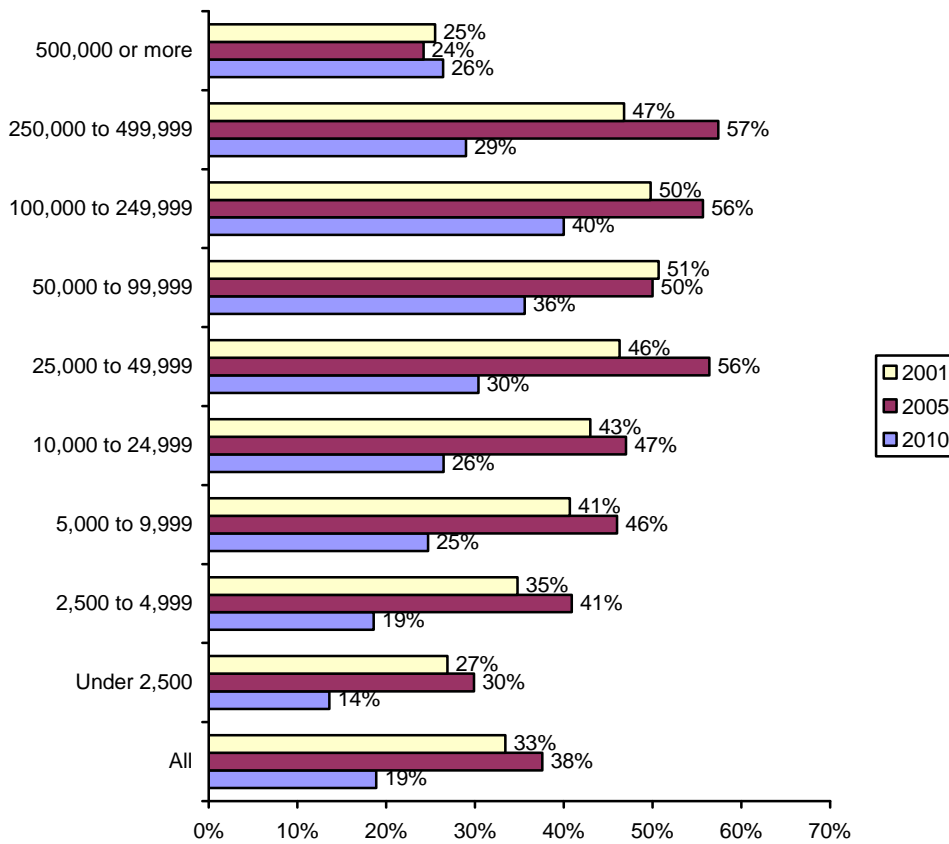


**The percentages of departments that are responsible for mitigation of major developing floods but unable to handle them with local trained personnel have generally declined between the first and third surveys.** Note that this reflects an often sharp decline between the first and third surveys in the percentage of departments claiming responsibility for such incidents, as well as a decline in the local resources of some responsible departments.

**Overall, 21% of departments reported they had responsibility for mitigation of major developing floods but could not handle them with local specialized equipment. (See Table 5-K.)** Another 7% said such an incident was within their

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responsibility and could handle it with local specialized equipment, and 72% said such incidents were not part of their responsibility.

Most departments, regardless of size of community, reported that either they were not responsible for mitigation of major developing floods or local specialized equipment would not suffice to handle such incidents.

**Table 5-K.  Departments by
Whether Type of Incident Is Within Department's Responsibility,
Where They Obtain Necessary Specialized Equipment,
and Size of Community (Q. 36c)**

| Population Protected | Is Mitigation of a Developing Major Flood Within Department Responsibility? | | |
|---|---|---|---|
| | Yes and Can Handle With Local Equipment | Yes But Need Non-Local Equipment to Handle | No, Not Within Responsibility |
| 500,000 or more | 38% | 30% | 32% |
| 250,000 to 499,999 | 11% | 37% | 52% |
| 100,000 to 249,999 | 14% | 44% | 42% |
| 50,000 to 99,999 | 7% | 39% | 54% |
| 25,000 to 49,999 | 6% | 33% | 61% |
| 10,000 to 24,999 | 7% | 29% | 64% |
| 5,000 to 9,999 | 7% | 27% | 66% |
| 2,500 to 4,999 | 8% | 21% | 71% |
| Under 2,500 | 7% | 15% | 77% |
| Total | 7% | 21% | 72% |

The above projections are based on 4,615 departments reporting on Question 39a and 1,483 reporting on Question 39c.  See Tables 5-13 and 5-15.

Q. 39c:  If [mitigation of a developing major flood (confining, slowing, etc.) is within your department's responsibility; yes on Q. 39a], how far would you have to go to obtain enough specialized equipment to handle this incident?

Only departments protecting populations of 500,000 or more showed more than 15% of departments having responsibility for mitigation of a major developing flood and being able to handle such an incident with local specialized equipment.  These larger communities were also the only ones for which more than half the responsible departments could handle such an incident with local trained people.

Figure 5-15 shows how the percentages of departments able to handle such incidents with local specialized equipment have changed over the three surveys.

**The percentages of departments that are both responsible for major developing floods and able to handle them with local specialized equipment have generally**

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**declined from the first to the third survey.** Note that this reflects an often sharp decline between the first and third surveys in the percentage of departments claiming responsibility for such incidents, as much as or more than a decline in the local resources of some departments with responsibility.

**Figure 5-15. Percent of All Departments Responsible for Mitigation of a Major Developing Flood But for Whom Local Specialized Equipment Would *Not* Be Sufficient by Size of Community, for Three Studies**

| Community Size | 2001 | 2005 | 2010 |
|---|---|---|---|
| 500,000 or more | 39% | 24% | 30% |
| 250,000 to 499,999 | 48% | 61% | 37% |
| 100,000 to 249,999 | 53% | 60% | 44% |
| 50,000 to 99,999 | 53% | 51% | 39% |
| 25,000 to 49,999 | 49% | 58% | 33% |
| 10,000 to 24,999 | 44% | 49% | 29% |
| 5,000 to 9,999 | 43% | 48% | 27% |
| 2,500 to 4,999 | 37% | 43% | 21% |
| Under 2,500 | 29% | 31% | 15% |
| All | 35% | 39% | 21% |
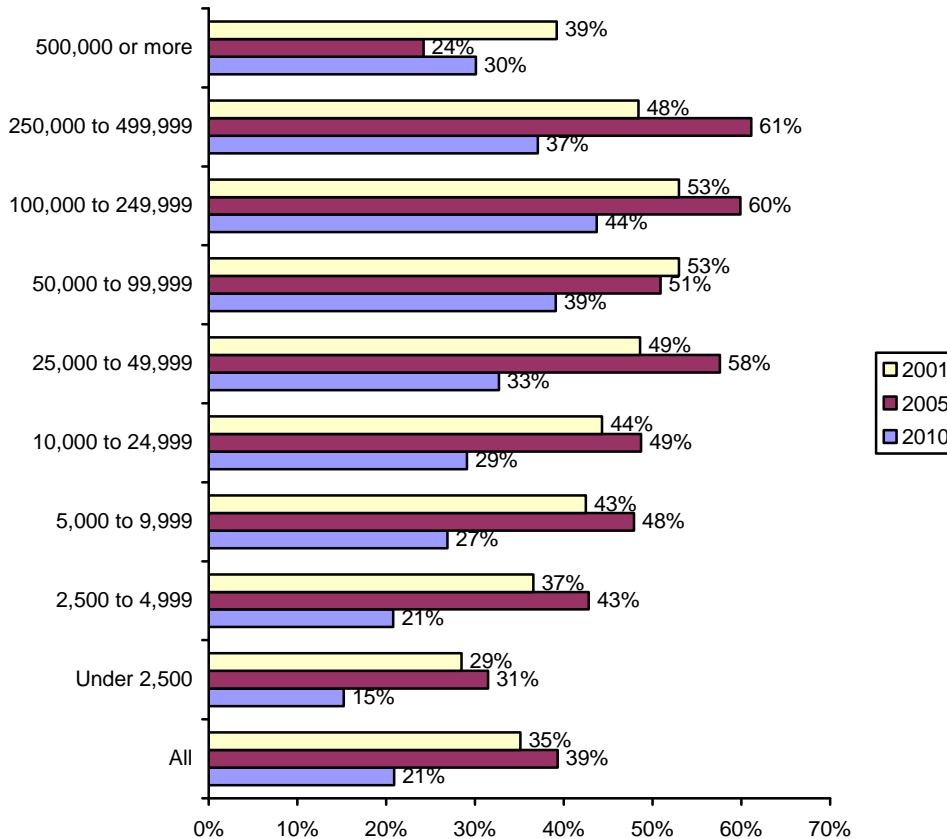
For most departments, preparedness for such incidents will depend critically on the existence of good plans supported by written agreements so that all responsible departments will be able to work effectively with the outside resources that most of them will need in order to handle such an incident.

**Overall, 14% of departments reported they had responsibility for mitigation of major developing floods but did not have written agreements for working with other, non-local resources. (See Table 5-L.)** Another 14% said such an incident was within their responsibility and they had a written agreement for use on such incidents, and 72% said such incidents were not part of their responsibility.

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**The overall percent of departments with responsibility and written agreements is much lower for flood (14%) than for any of the other three challenging scenarios (28-32%), but that is not surprising, because the percent of departments saying floods are not part of their responsibilities is much higher for flood (72%) than for any of the other three scenarios (36-47%).**

### Table 5-L.  Departments by
### Whether Type of Incident Is Within Department's Responsibility,
### Written Agreement or Other Plan for Using Non-Local Resources,
### and Size of Community (Q. 36d)

| Population Protected | Is Mitigation of a Developing Major Flood Within Department Responsibility? | | | |
| --- | --- | --- | --- | --- |
| | Yes and Have Written Agreement | Yes and Have Plan But Not Written Agreement | Yes But Have No Plan | No, Not Within Responsibility |
| 500,000 or more | 55% | 9% | 4% | 32% |
| 250,000 to 499,999 | 42% | 6% | 0% | 52% |
| 100,000 to 249,999 | 41% | 16% | 1% | 42% |
| 50,000 to 99,999 | 35% | 10% | 1% | 54% |
| 25,000 to 49,999 | 25% | 13% | 1% | 61% |
| 10,000 to 24,999 | 19% | 16% | 1% | 64% |
| 5,000 to 9,999 | 18% | 15% | 1% | 66% |
| 2,500 to 4,999 | 12% | 15% | 2% | 71% |
| Under 2,500 | 11% | 11% | 1% | 77% |
| Total | 14% | 13% | 1% | 72% |

The above table breakdown and projections are based on 4,615 departments reporting on Question 38a and 1,469 reporting on Question 38d.  See Tables 5-13 and 5-16.

Q. 38d:  If [mitigation (confining, slowing, etc.) of a developing major flood is within your department's responsibility; yes on Q. 38a], do you have a plan for working with others on this type of incident?

Figure 5-16 shows how the percentages of departments with written agreements have changed over the years.

**The percentages of departments that are responsible for mitigation of major developing floods but do not have written agreements generally decreased between the first and third surveys for communities with at least 5,000 population protected.** From the first to the second survey, the estimated number of departments with responsibility and written agreements increased by more than 1,600.  From the second to the third survey, that number decreased by nearly 1,200.  The decrease was associated with a drop of roughly 6,500 in departments reporting responsibility for such incidents, which is why a smaller number of departments reporting responsibility and written agreements could mean a much larger percentage of responsible departments having written agreements (up from 38% to 50%).

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**Figure 5-16. Percent of All Departments Responsible for
Mitigation of a Major Developing Flood But Without
Written Agreements for Working With Others
by Size of Community, for Three Studies**
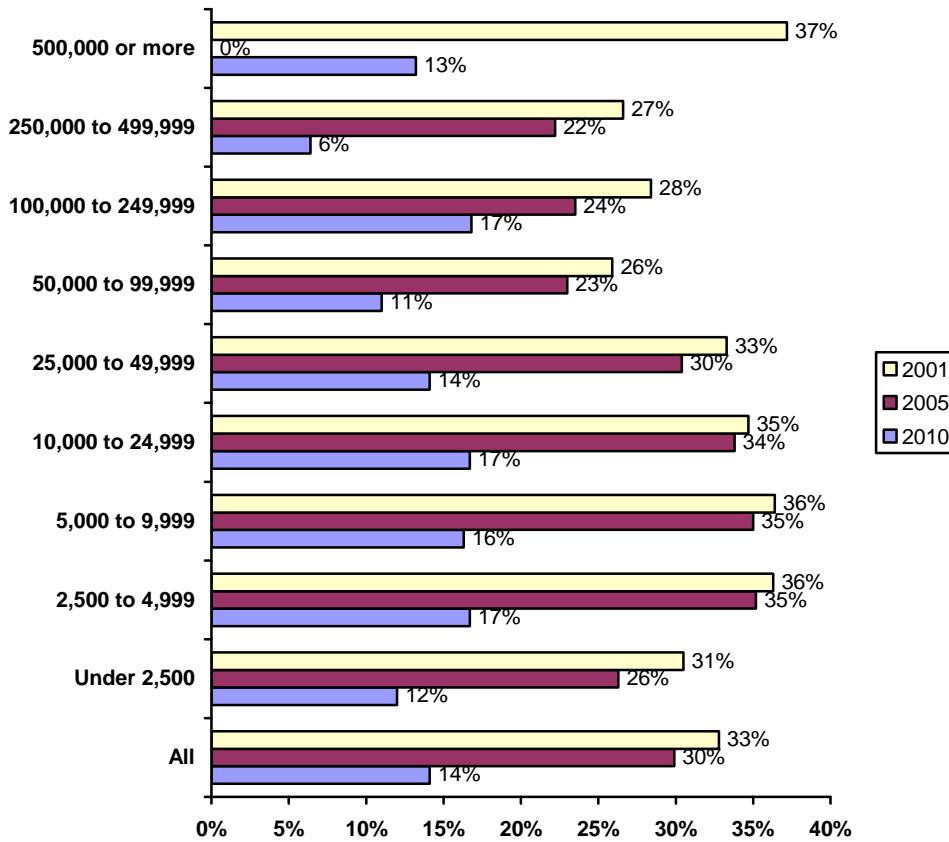


It is possible that many of the departments disowning responsibility are still active participants in written agreements but have reassessed their "responsibility" in light of their non-leadership roles in those agreements. That would be consistent with the changes in the numbers but would mean that the real goal of providing effective teamwork arrangements for all communities is still on track. The detail available in the survey does not allow us to determine whether the principal explanation is something like this or is something less encouraging, such as a widespread renunciation of participation in existing agreements.

The presence or absence of written agreements for working with others is probably the most important indicator of need and capability related to a challenging incident. Most departments cannot reasonably plan to handle such incidents with local resources alone, and many of those that could aspire to a local-only solution do not currently have such resources. However, every department can reasonably plan to join and support a team response arrangement, made real by a written agreement and possibly by other elements (e.g., joint training exercises) that go beyond the level of detail covered by the surveys.

Because the survey did not ask which departments had nearby bodies of water that could support a major flood, it is not possible to determine how many of the departments reporting no responsibility for such incidents are departments that are not exposed to major floods vs. departments that are part of written agreements or other plans to address major floods but do not consider themselves responsible vs. departments that are at risk for major floods and do not have any other party taking responsibility for that risk. Therefore, it is not clear whether the job of protecting all communities from the flooding threats they realistically face through proper preparedness, including written agreements, is closer to 14% complete (the percent of total departments that report a written agreement and responsibility for such incidents) or 50% complete (the percent of departments with responsibility that report a written agreement).

To summarize the status for this type of incident – mitigation of a developing major flood – here are the percentages of departments with some type of related need:

➢ **Lack of success in meeting need:** 66% of departments responsible for this type of incident cannot handle it with local trained people alone, with no clear trend from 73% in 2001 and 78% in 2005;

➢ **Size of need:** 19% of all departments are responsible for this type of incident and cannot handle it with local trained people alone, down from 33% in 2001 and 38% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need:** 74% of departments responsible for this type of incident cannot handle it with local specialized equipment alone, with no clear trend from 77% in 2001 and 81% in 2005;

➢ **Size of need:** 21% of all departments are responsible for this type of incident and cannot handle it with local specialized equipment alone, down from 35% in 2001 and 39% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents);

➢ **Lack of success in meeting need: 50% of departments responsible for this type of incident do not have written agreements to help work with others, down from 72% in 2001 and 62% in 2005; and**

➢ **Size of need:** 14% of all departments are responsible for this type of incident but do not have written agreements to help work with others, down from 33% in 2001 and 30% in 2005 (with the decrease due more to a sharp decrease from 2001 to 2010 in departments claiming responsibility for such incidents).

**Table 5-1**
**Is Technical Rescue and EMS for a Building**
**With 50 Occupants After Structural Collapse**
**Within the Responsibility of Department?**
**by Community Size**
**(Q. 36a)**

| Population | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| | Number | | Number | | Number | |
| of Community | Depts | Percent | Depts | Percent | Depts | Percent |
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 231 | 97.1 | 7 | 2.9 | 238 | 100.0 |
| 50,000 to 99,999 | 428 | 95.7 | 19 | 4.3 | 447 | 100.0 |
| 25,000 to 49,999 | 957 | 88.2 | 128 | 11.8 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,480 | 84.0 | 471 | 16.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,877 | 76.6 | 878 | 23.4 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,157 | 64.8 | 1,718 | 35.2 | 4,875 | 100.0 |
| Under 2,500 | 6,099 | 47.1 | 6,865 | 52.9 | 12,964 | 100.0 |
| Total | 16,344 | 61.8 | 10,085 | 38.2 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,613 departments reporting on Question 36a.
Numbers may not add to totals due to rounding.

Q. 36a: Is [technical rescue and EMS for a building with 50 occupants after structural collapse] within your department's responsibility?

**Table 5-2**
**For Departments Where Technical Rescue and EMS For a Building**
**With 50 Occupants After Structural Collapse Is Within Their Responsibility,**
**How Far Do They Have to Go to Obtain Sufficient People**
**With Specialized Training to Handle Such an Incident?**
**by Community Size**
**(Q. 36b)**

| Population | Local | | Regional | | State | | National | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Number** | | **Number** | | **Number** | | **Number** | | **Number** | |
| of Community | Depts | Percent | Depts | Percent | Depts | Percent | Depts | Percent | Depts | Percent |
| 500,000 or more | 34 | 64.2% | 17 | 32.1% | 0 | 0.0% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 28 | 45.2 | 28 | 45.2 | 5 | 8.0 | 1 | 1.6 | 62 | 100.0 |
| 100,000 to 249,999 | 55 | 23.8 | 145 | 62.8 | 29 | 12.6 | 2 | 0.9 | 231 | 100.0 |
| 50,000 to 99,999 | 69 | 16.1 | 256 | 59.8 | 96 | 22.4 | 7 | 1.6 | 428 | 100.0 |
| 25,000 to 49,999 | 119 | 12.4 | 594 | 62.1 | 232 | 24.2 | 12 | 1.3 | 957 | 100.0 |
| 10,000 to 24,999 | 265 | 10.7 | 1,527 | 61.6 | 655 | 26.4 | 33 | 1.3 | 2,480 | 100.0 |
| 5,000 to 9,999 | 288 | 10.0 | 1,822 | 63.3 | 700 | 24.3 | 67 | 2.3 | 2,877 | 100.0 |
| 2,500 to 4,999 | 533 | 16.9 | 1,899 | 60.2 | 707 | 22.4 | 18 | 0.6 | 3,157 | 100.0 |
| Under 2,500 | 1,281 | 21.0 | 3,650 | 59.9 | 1,146 | 18.8 | 23 | 0.4 | 6,099 | 100.0 |
| Total | 2,672 | 16.3 | 9,938 | 60.8 | 3,570 | 21.8 | 164 | 1.0 | 16,344 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,289 departments reporting yes to Question 36a and also reporting on Question 36b. Numbers may not add to totals due to rounding.

Q. 36b: If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department's responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

**Table 5-3**
**For Departments Where Technical Rescue and EMS For a Building**
**With 50 Occupants After Structural Collapse Is Within Their Responsibility,**
**How Far Do They Have to Go to Obtain Sufficient**
**Specialized Equipment to Handle Such an Incident?**
**by Community Size**
**(Q. 36c)**

| | Local | | Regional | | State | | National | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Population of Community** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** |
| 500,000 or more | 25 | 47.2% | 21 | 39.6% | 5 | 9.4% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 25 | 40.3 | 29 | 46.8 | 6 | 9.7 | 2 | 3.2 | 62 | 100.0 |
| 100,000 to 249,999 | 52 | 22.5 | 139 | 60.1 | 38 | 16.4 | 2 | 0.9 | 231 | 100.0 |
| 50,000 to 99,999 | 71 | 16.6 | 247 | 57.8 | 100 | 23.4 | 10 | 2.3 | 428 | 100.0 |
| 25,000 to 49,999 | 103 | 10.8 | 587 | 61.3 | 260 | 27.2 | 7 | 0.7 | 957 | 100.0 |
| 10,000 to 24,999 | 266 | 10.7 | 1,470 | 59.3 | 701 | 28.2 | 43 | 1.7 | 2,480 | 100.0 |
| 5,000 to 9,999 | 279 | 9.7 | 1,698 | 59.0 | 823 | 28.6 | 77 | 2.7 | 2,877 | 100.0 |
| 2,500 to 4,999 | 471 | 14.9 | 1,817 | 57.6 | 857 | 27.2 | 12 | 0.4 | 3,157 | 100.0 |
| Under 2,500 | 1,182 | 19.4 | 3,511 | 57.6 | 1,361 | 22.3 | 45 | 0.7 | 6,099 | 100.0 |
| Total | 2,473 | 15.1 | 9,519 | 58.2 | 4,153 | 25.4 | 199 | 1.2 | 16,344 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,275 departments reporting yes to Question 36a and also reporting on Question 36c. Numbers may not add to totals due to rounding.

Q. 36c: If [technical rescue and EMS for a building with 50 occupants after structural collapse is within your department's responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

**Table 5-4**
**For Departments Where Technical Rescue and EMS for a Building**
**With 50 Occupants After Structural Collapse Is Within Their Responsibility,**
**Do They Have a Plan for Obtaining Assistance From Others?**
**by Community Size**
**(Q. 36d)**

| Population of Community | Yes-Written Agreement | | Yes-Informal | | Yes-Other | | No | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 46 | 86.8% | 7 | 13.2% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 56 | 90.3 | 3 | 4.8 | 3 | 4.8 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 175 | 75.8 | 40 | 17.3 | 14 | 6.1 | 2 | 0.9 | 231 | 100.0 |
| 50,000 to 99,999 | 309 | 72.2 | 87 | 20.3 | 30 | 7.0 | 2 | 0.5 | 428 | 100.0 |
| 25,000 to 49,999 | 607 | 63.4 | 244 | 25.5 | 80 | 8.4 | 26 | 2.7 | 957 | 100.0 |
| 10,000 to 24,999 | 1,291 | 52.1 | 887 | 35.8 | 222 | 8.9 | 80 | 3.2 | 2,480 | 100.0 |
| 5,000 to 9,999 | 1,283 | 44.6 | 1,162 | 40.4 | 272 | 9.5 | 160 | 5.6 | 2,877 | 100.0 |
| 2,500 to 4,999 | 1,270 | 40.2 | 1,367 | 43.3 | 284 | 9.0 | 236 | 7.5 | 3,157 | 100.0 |
| Under 2,500 | 2,334 | 38.3 | 2,762 | 45.3 | 552 | 9.1 | 451 | 7.4 | 6,099 | 100.0 |
| Total | 7,369 | 45.1 | 6,561 | 40.1 | 1,458 | 8.9 | 956 | 5.8 | 16,344 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,255 departments reporting yes to Question 36a and also reporting on Question 36d.
Numbers may not add to totals due to rounding.

Q. 36d: [If such incidents are within department responsibility] do you have a plan for obtaining assistance from others on [technical rescue and EMS for a building with 50 occupants after structural collapse]?

**Table 5-5**
**Is a Hazmat and EMS Incident Involving Chemical/Biological Agents**
**and 10 Injuries Within the Responsibility of Department?**
**by Community Size**
**(Q. 37a)**

| Population of Community | Yes Number Depts | Yes Percent | No Number Depts | No Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 233 | 97.9 | 5 | 2.1 | 238 | 100.0 |
| 50,000 to 99,999 | 426 | 95.3 | 21 | 4.7 | 447 | 100.0 |
| 25,000 to 49,999 | 1,010 | 93.1 | 75 | 6.9 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,523 | 85.5 | 428 | 14.5 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,881 | 76.7 | 874 | 23.3 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,220 | 66.1 | 1,655 | 33.9 | 4,875 | 100.0 |
| Under 2,500 | 6,393 | 49.3 | 6,571 | 50.7 | 12,964 | 100.0 |
| Total | 16,800 | 63.6 | 9,629 | 36.4 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,606 departments reporting on Question 37a. Numbers may not add to totals due to rounding.

Q. 37a: Is [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries] within your department's responsibility?

**Table 5-6**
**For Departments Where a Hazmat and EMS Incident**
**Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility**
**How Far Do They Have to Go to Obtain Sufficient People**
**With Specialized Training to Handle Such an Incident?**
**by Community Size**
**(Q. 37b)**

| Population | Local | | Regional | | State | | National | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 48 | 90.6% | 5 | 9.4% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 38 | 61.3 | 16 | 25.8 | 8 | 12.9 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 126 | 54.1 | 94 | 40.3 | 9 | 3.9 | 4 | 1.7 | 233 | 100.0 |
| 50,000 to 99,999 | 158 | 37.1 | 220 | 51.6 | 41 | 9.6 | 7 | 1.6 | 426 | 100.0 |
| 25,000 to 49,999 | 286 | 28.3 | 600 | 59.4 | 120 | 11.9 | 5 | 0.5 | 1,010 | 100.0 |
| 10,000 to 24,999 | 529 | 21.0 | 1,544 | 61.2 | 440 | 17.4 | 10 | 0.4 | 2,523 | 100.0 |
| 5,000 to 9,999 | 462 | 16.0 | 1,823 | 63.3 | 567 | 19.7 | 29 | 1.0 | 2,881 | 100.0 |
| 2,500 to 4,999 | 571 | 17.7 | 2,024 | 62.9 | 619 | 19.2 | 6 | 0.2 | 3,220 | 100.0 |
| Under 2,500 | 1,043 | 16.3 | 3,929 | 61.5 | 1,399 | 21.9 | 27 | 0.3 | 6,393 | 100.0 |
| Total | 3,260 | 19.4 | 10,255 | 61.0 | 3,202 | 19.1 | 82 | 0.5 | 16,800 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,363 departments reporting yes to Question 37a and also reporting on Question 37b. Numbers may not add to totals due to rounding.

Q. 37b: If [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries is within your department's responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

**Table 5-7**
**For Departments Where a Hazmat and EMS Incident**
**Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility**
**How Far Do They Have to Go to Obtain Sufficient**
**Specialized Equipment to Handle Such An Incident?**
**by Community Size**
**(Q. 37c)**

| Population | Local | | Regional | | State | | National | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 41 | 77.4% | 11 | 20.8% | 2 | 3.8% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 36 | 58.1 | 18 | 29.0 | 8 | 12.9 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 107 | 45.9 | 106 | 45.5 | 17 | 7.3 | 2 | 0.9 | 233 | 100.0 |
| 50,000 to 99,999 | 148 | 34.7 | 222 | 52.1 | 53 | 12.4 | 3 | 0.7 | 426 | 100.0 |
| 25,000 to 49,999 | 252 | 25.0 | 595 | 58.9 | 156 | 15.4 | 7 | 0.7 | 1,010 | 100.0 |
| 10,000 to 24,999 | 457 | 18.1 | 1,579 | 62.6 | 467 | 18.5 | 20 | 0.8 | 2,523 | 100.0 |
| 5,000 to 9,999 | 424 | 14.7 | 1,744 | 60.5 | 679 | 23.6 | 34 | 1.2 | 2,881 | 100.0 |
| 2,500 to 4,999 | 520 | 16.2 | 1,913 | 59.4 | 775 | 24.1 | 12 | 0.4 | 3,220 | 100.0 |
| Under 2,500 | 813 | 12.7 | 3,920 | 61.3 | 1,626 | 25.4 | 33 | 0.5 | 6,393 | 100.0 |
| Total | 2,799 | 16.7 | 10,106 | 60.2 | 3,784 | 22.5 | 111 | 0.7 | 16,800 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,799 departments reporting yes to Question 37a and also reporting on Question 37c. Numbers may not add to totals due to rounding.

Q. 37c: If [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries is within your department's responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

**Table 5-8**
**For Departments Where a Hazmat and EMS Incident**
**Involving Chemical/Biological Agents and 10 Injuries Is Within Their Responsibility**
**Do They Have a Plan for Obtaining Assistance From Others?**
**by Community Size**
**(Q. 37d)**

| Population of Community | Yes - Written Agreement Number Depts | Percent | Yes - Informal Number Depts | Percent | Yes - Other Number Depts | Percent | No Number Depts | Percent | Total Number Depts | Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 42 | 79.2% | 9 | 17.0% | 0 | 0.0% | 2 | 3.8% | 53 | 100.0% |
| 250,000 to 499,999 | 59 | 95.2 | 3 | 4.8 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 182 | 78.1 | 40 | 17.2 | 11 | 4.7 | 0 | 0.0 | 233 | 100.0 |
| 50,000 to 99,999 | 332 | 77.9 | 75 | 17.6 | 19 | 4.5 | 0 | 0.0 | 426 | 100.0 |
| 25,000 to 49,999 | 738 | 73.1 | 201 | 19.9 | 59 | 5.9 | 12 | 1.1 | 1,010 | 100.0 |
| 10,000 to 24,999 | 1,563 | 61.9 | 722 | 28.6 | 155 | 6.2 | 83 | 3.3 | 2,523 | 100.0 |
| 5,000 to 9,999 | 1,452 | 50.4 | 1,141 | 39.6 | 215 | 7.4 | 73 | 2.5 | 2+++,881 | 100.0 |
| 2,500 to 4,999 | 1,415 | 43.9 | 1,403 | 43.6 | 226 | 7.0 | 176 | 5.5 | 3,220 | 100.0 |
| Under 2,500 | 2,497 | 39.1 | 3,079 | 48.2 | 448 | 7.0 | 369 | 5.8 | 6,393 | 100.0 |
| Total | 8,281 | 49.3 | 6,671 | 39.7 | 1,132 | 6.7 | 716 | 4.3 | 16,800 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,322 departments reporting yes to Question 37a and also reporting on Question 37d. Numbers may not add to totals due to rounding.

Q. 37d: [If such incidents are within department responsibility] do you have a plan for obtaining assistance from others on [hazmat and EMS for an incident involving chemical/biological agents and 10 injuries]?

**Table 5-9**
**Is a Wildland/Urban Interface Fire Affecting 500 Acres**
**Within the Responsibility of Department?**
**by Community Size**
**(Q. 38a)**

| Population of Community | Yes Number Depts | Yes Percent | No Number Depts | No Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 24 | 45.3% | 29 | 54.7% | 53 | 100.0% |
| 250,000 to 499,999 | 23 | 37.1 | 39 | 62.9 | 62 | 100.0 |
| 100,000 to 249,999 | 106 | 44.5 | 132 | 55.5 | 238 | 100.0 |
| 50,000 to 99,999 | 174 | 38.9 | 273 | 61.1 | 447 | 100.0 |
| 25,000 to 49,999 | 343 | 31.6 | 742 | 68.4 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,105 | 37.4 | 1,846 | 62.6 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,797 | 47.9 | 1,958 | 52.1 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,606 | 53.5 | 2,269 | 46.5 | 4,875 | 100.0 |
| Under 2,500 | 7,869 | 60.7 | 5,095 | 39.3 | 12,964 | 100.0 |
| Total | 14,046 | 53.1 | 12,384 | 46.9 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,626 departments reporting on Question 38a.
Numbers may not add to totals due to rounding.

Q. 38a: Is [a wildland/urban interface fire affecting 500 acres] within your
department's responsibility?

**Table 5-10**
**For Departments Where a Wildland/Urban**
**Interface Fire Affecting 500 Acres Is Within Their Responsibility**
**How Far Do They Have to Go to Obtain Sufficient People**
**With Specialized Training to Handle Such an Incident?**
**by Community Size**
**(Q. 38b)**

| Population of Community | Local Number Depts | Local Percent | Regional Number Depts | Regional Percent | State Number Depts | State Percent | National Number Depts | National Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 14 | 58.3% | 7 | 29.2% | 2 | 8.3% | 1 | 4.2% | 24 | 100.0% |
| 250,000 to 499,999 | 5 | 21.7 | 10 | 43.5 | 8 | 34.8 | 0 | 0.0 | 23 | 100.0 |
| 100,000 to 249,999 | 27 | 25.5 | 58 | 54.7 | 19 | 17.9 | 2 | 1.9 | 106 | 100.0 |
| 50,000 to 99,999 | 30 | 17.2 | 100 | 57.5 | 44 | 25.3 | 0 | 0.0 | 174 | 100.0 |
| 25,000 to 49,999 | 87 | 25.4 | 157 | 45.9 | 92 | 26.7 | 7 | 2.0 | 343 | 100.0 |
| 10,000 to 24,999 | 293 | 26.5 | 487 | 44.0 | 309 | 28.0 | 16 | 1.5 | 1,105 | 100.0 |
| 5,000 to 9,999 | 492 | 27.4 | 755 | 42.0 | 516 | 28.7 | 34 | 1.9 | 1,797 | 100.0 |
| 2,500 to 4,999 | 857 | 32.9 | 1,053 | 40.4 | 660 | 25.3 | 36 | 1.4 | 2,606 | 100.0 |
| Under 2,500 | 3,132 | 39.8 | 3,054 | 38.8 | 1,583 | 20.1 | 100 | 1.3 | 7,869 | 100.0 |
| Total | 4,936 | 35.1 | 5,682 | 40.4 | 3,232 | 23.0 | 196 | 1.4 | 14,046 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,196 departments reporting yes to Question 38a and also reporting on Question 38b.  Numbers may not add to totals due to rounding.

Q. 38b: If [wildland/urban interface fire affecting 500 acres is within your department's responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

**Table 5-11**
**For Departments Where a Wildland/Urban**
**Interface Fire Affecting 500 Acres Is Within Their Responsibility**
**How Far Do They Have to Go to Obtain Sufficient**
**Specialized Equipment to Handle Such An Incident?**
**by Community Size**
**(Q. 38c)**

| | Local | | Regional | | State | | National | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Population of Community** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** |
| 500,000 or more | 14 | 58.3% | 3 | 12.5% | 5 | 20.8% | 2 | 0.3% | 24 | 100.0% |
| 250,000 to 499,999 | 3 | 13.0 | 8 | 34.8 | 12 | 52.2 | 0 | 0.0 | 23 | 100.0 |
| 100,000 to 249,999 | 15 | 14.2 | 67 | 63.2 | 22 | 20.8 | 2 | 1.9 | 106 | 100.0 |
| 50,000 to 99,999 | 21 | 12.1 | 93 | 53.4 | 60 | 34.5 | 0 | 0.0 | 174 | 100.0 |
| 25,000 to 49,999 | 66 | 19.2 | 183 | 43.7 | 87 | 25.4 | 7 | 2.0 | 343 | 100.0 |
| 10,000 to 24,999 | 261 | 23.7 | 483 | 43.7 | 344 | 31.1 | 17 | 1.5 | 1,105 | 100.0 |
| 5,000 to 9,999 | 421 | 23.4 | 763 | 42.6 | 583 | 32.4 | 29 | 1.6 | 1,797 | 100.0 |
| 2,500 to 4,999 | 735 | 28.2 | 1,082 | 41.5 | 741 | 28.4 | 48 | 1.8 | 2,606 | 100.0 |
| Under 2,500 | 2,785 | 35.4 | 3,152 | 40.1 | 1,776 | 22.6 | 156 | 2.0 | 7,869 | 100.0 |
| Total | 4,322 | 30.8 | 5,836 | 41.5 | 3,629 | 25.8 | 259 | 1.8 | 14,046 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,190 departments reporting yes to Question 38a and also reporting on Question 38c.  Numbers may not add to totals due to rounding.

Q. 38c:  If [wildland/urban interface fire affecting 500 acres is within your department's responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

**Table 5-12**
**For Departments Where a Wildland/Urban**
**Interface Fire Affecting 500 Acres Is Within Their Responsibility**
**Do They Have a Plan for Obtaining Assistance From Others?**
**by Community Size**
**(Q. 38d)**

| Population of Community | Yes - Written Agreement Number Depts | Percent | Yes - Informal Number Depts | Percent | Yes - Other Number Depts | Percent | No Number Depts | Percent | Total Number Depts | Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 24 | 100.0% | 0 | 100.0% | 0 | 0.0% | 0 | 0.0% | 24 | 100.0% |
| 250,000 to 499,999 | 23 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 23 | 100.0 |
| 100,000 to 249,999 | 82 | 77.4 | 17 | 16.0 | 7 | 6.6 | 0 | 0.0 | 106 | 100.0 |
| 50,000 to 99,999 | 133 | 76.4 | 34 | 19.5 | 4 | 2.3 | 3 | 1.7 | 174 | 100.0 |
| 25,000 to 49,999 | 255 | 74.3 | 71 | 20.7 | 17 | 5.0 | 0 | 0.0 | 343 | 100.0 |
| 10,000 to 24,999 | 780 | 70.6 | 258 | 23.3 | 47 | 4.3 | 20 | 1.8 | 1,105 | 100.0 |
| 5,000 to 9,999 | 1,097 | 61.0 | 565 | 31.5 | 82 | 4.6 | 53 | 3.0 | 1,797 | 100.0 |
| 2,500 to 4,999 | 1,483 | 56.9 | 889 | 34.1 | 156 | 6.0 | 78 | 3.0 | 2,606 | 100.0 |
| Under 2,500 | 4,681 | 59.5 | 2,730 | 34.7 | 346 | 4.4 | 112 | 1.4 | 7,869 | 100.0 |
| Total | 8,558 | 60.9 | 4,564 | 32.5 | 658 | 4.7 | 266 | 1.9 | 14,046 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,174 departments reporting yes to Question 38a and also reporting on Question 38d.  Numbers may not add to totals due to rounding.

Q. 38d: [If such incidents are within department responsibility] do you have a plan for obtaining assistance from others on [wildland/urban interface fire affecting 500 acres]?

**Table 5-13**
**Is Mitigation of a Developing Major Flood**
**Within the Responsibility of Department?**
**by Community Size**
**(Q. 39a)**

| Population of Community | Yes Number Depts | Yes Percent | No Number Depts | No Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|
| 500,000 or more | 36 | 67.9% | 17 | 32.1% | 53 | 100.0% |
| 250,000 to 499,999 | 30 | 48.4 | 32 | 51.6 | 62 | 100.0 |
| 100,000 to 249,999 | 138 | 58.0 | 100 | 42.0 | 238 | 100.0 |
| 50,000 to 99,999 | 207 | 46.3 | 240 | 53.7 | 447 | 100.0 |
| 25,000 to 49,999 | 419 | 38.6 | 666 | 61.4 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,059 | 35.9 | 1,892 | 64.1 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,277 | 34.0 | 2,478 | 66.0 | 3,755 | 100.0 |
| 2,500 to 4,999 | 1,392 | 28.6 | 3,483 | 71.4 | 4,875 | 100.0 |
| Under 2,500 | 2,938 | 22.7 | 10,026 | 77.3 | 12,964 | 100.0 |
| Total | 7,495 | 28.4 | 18,935 | 71.6 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,615 departments reporting yes on Question 39a. Numbers may not add to totals due to rounding.

Q. 39a: Is [mitigation (confining, slowing, etc.) of a developing major flood] within your department's responsibility?

**Table 5-14**
**For Departments Where Mitigation of a Major Flood Is Within Their Responsibility**
**How Far Do They Have to Go to Obtain Sufficient People**
**With Specialized Training to Handle Such an Incident?**
**by Community Size**
**(Q. 39b)**

| Population of Community | Local Number Depts | Local Percent | Regional Number Depts | Regional Percent | State Number Depts | State Percent | National Number Depts | National Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 to 999,999 | 22 | 61.1% | 9 | 25.0% | 5 | 13.9% | 0 | 0.0% | 36 | 100.0% |
| 250,000 to 499,999 | 12 | 40.0 | 13 | 43.3 | 5 | 16.7 | 0 | 0.0 | 30 | 100.0 |
| 100,000 to 249,999 | 43 | 31.1 | 62 | 44.9 | 31 | 22.5 | 2 | 1.4 | 138 | 100.0 |
| 50,000 to 99,999 | 48 | 23.2 | 113 | 54.6 | 41 | 19.8 | 5 | 2.4 | 207 | 100.0 |
| 25,000 to 49,999 | 89 | 21.2 | 212 | 50.6 | 113 | 27.0 | 5 | 1.2 | 419 | 100.0 |
| 10,000 to 24,999 | 277 | 26.2 | 492 | 46.4 | 264 | 24.9 | 26 | 2.5 | 1,059 | 100.0 |
| 5,000 to 9,999 | 352 | 27.5 | 651 | 50.9 | 245 | 19.2 | 29 | 2.3 | 1,277 | 100.0 |
| 2,500 to 4,999 | 485 | 34.8 | 613 | 44.1 | 282 | 20.3 | 12 | 0.9 | 1,392 | 100.0 |
| Under 2,500 | 1,182 | 40.2 | 1,182 | 40.2 | 551 | 18.8 | 23 | 0.8 | 2,938 | 100.0 |
| Total | 2,510 | 33.5 | 3,345 | 44.6 | 1,538 | 20.5 | 102 | 1.3 | 7,495 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 1,487 departments reporting yes to Question 39a and also reporting on Question 39b. Numbers may not add to totals due to rounding.

Q. 39b: If [mitigation (confining, slowing, etc.) of a developing major flood is within your department's responsibility], how far would you have to go to obtain enough people with specialized training for this incident?

## Table 5-15
## For Departments Where Mitigation of a Major Flood Is Within Their Responsibility
## How Far Do They Have to Go to Obtain Sufficient
## Specialized Equipment to Handle Such An Incident?
## by Community Size
## (Q. 39c)

| Population of Community | Local Number Depts | Local Percent | Regional Number Depts | Regional Percent | State Number Depts | State Percent | National Number Depts | National Percent | Total Number Depts | Total Percent |
|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 20 | 55.6% | 4 | 11.1% | 12 | 33.3% | 0 | 0.0% | 36 | 100.0% |
| 250,000 to 499,999 | 7 | 23.3 | 15 | 50.0 | 8 | 26.7 | 0 | 0.0 | 30 | 100.0 |
| 100,000 to 249,999 | 34 | 24.6 | 65 | 47.1 | 35 | 25.4 | 4 | 2.9 | 138 | 100.0 |
| 50,000 to 99,999 | 32 | 15.5 | 116 | 56.0 | 55 | 26.6 | 4 | 1.9 | 207 | 100.0 |
| 25,000 to 49,999 | 64 | 15.3 | 221 | 52.7 | 127 | 30.3 | 7 | 1.7 | 419 | 100.0 |
| 10,000 to 24,999 | 201 | 19.0 | 492 | 46.4 | 343 | 32.4 | 23 | 2.2 | 1,059 | 100.0 |
| 5,000 to 9,999 | 267 | 20.9 | 670 | 52.5 | 301 | 23.6 | 39 | 3.0 | 1,277 | 100.0 |
| 2,500 to 4,999 | 382 | 27.4 | 671 | 48.2 | 320 | 23.0 | 19 | 1.3 | 1,392 | 100.0 |
| Under 2,500 | 968 | 32.9 | 1,205 | 41.0 | 686 | 23.3 | 79 | 2.7 | 2,938 | 100.0 |
| Total | 1,975 | 26.3 | 3,458 | 46.1 | 1,889 | 25.2 | 173 | 2.3 | 7,495 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 1,483 departments reporting yes to Question 39a and also reporting on Question 39c. Numbers may not add to totals due to rounding.

Q. 39c:  If [mitigation (confining, slowing, etc.) of a developing major flood is within your department's responsibility], how far would you have to go to obtain enough specialized equipment to handle this incident?

## Table 5-16
## For Departments Where Mitigation of a Major Flood Is Within Their Responsibility
## Do They Have a Plan for Obtaining Assistance From Others?
## by Community Size
## (Q. 39d)

| Population of Community | Yes - Written Agreement | | Yes - Informal | | Yes - Other | | No | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 29 | 80.6% | 3 | 8.3% | 2 | 5.5% | 2 | 5.5% | 36 | 100.0% |
| 250,000 to 499,999 | 26 | 86.7 | 4 | 13.3 | 0 | 0.0 | 0 | 0.0 | 30 | 100.0 |
| 100,000 to 249,999 | 98 | 71.0 | 31 | 22.5 | 7 | 5.1 | 2 | 1.4 | 138 | 100.0 |
| 50,000 to 99,999 | 158 | 76.3 | 40 | 19.3 | 6 | 2.9 | 3 | 1.4 | 207 | 100.0 |
| 25,000 to 49,999 | 266 | 63.5 | 115 | 27.4 | 31 | 7.4 | 7 | 1.7 | 419 | 100.0 |
| 10,000 to 24,999 | 566 | 53.5 | 390 | 36.8 | 70 | 6.6 | 33 | 3.1 | 1,059 | 100.0 |
| 5,000 to 9,999 | 666 | 52.1 | 513 | 40.2 | 59 | 4.6 | 39 | 3.1 | 1,277 | 100.0 |
| 2,500 to 4,999 | 580 | 41.7 | 623 | 44.7 | 86 | 6.1 | 103 | 7.5 | 1,392 | 100.0 |
| Under 2,500 | 1,384 | 47.1 | 1,350 | 45.9 | 91 | 3.1 | 113 | 3.9 | 2,938 | 100.0 |
| Total | 3,772 | 50.3 | 3,068 | 40.9 | 351 | 4.7 | 304 | 4.1 | 7,495 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 1,469 departments reporting yes to Question 39a and also reporting on Question 39d. Numbers may not add to totals due to rounding.

Q. 39d: [If such incidents are within department responsibility] do you have a plan for obtaining assistance from others on [mitigation (confining, slowing, etc.) of a developing major flood]?

# SECTION 6. COMMUNICATIONS AND NEW TECHNOLOGY

## Communications and Communications Technology

**Of the fire departments that said they knew whether they could communicate by radio at an incident scene with at least some of their federal, state or local partners, 13% of departments said they could *not*, lower than 18% in 2001 and 23% in 2005.**

Table 6-1 indicates what fraction of departments can communicate by radio at incident scenes with their Federal, state or local partners, by size of community.  Ability to communicate is quite comparable across different population protected sizes, as was also true in the first two surveys.

Table 6-2 indicates what fraction of partners departments can communicate with, for those departments that indicated in the previous question that they can communicate with partners.  There was little variation by community size, with smaller communities being slightly more likely to say they could not communicate with all partners.

Tables 6-3 and 6-4 collectively address the ability of fire departments to access a map coordinate system with sufficient standardization of format to provide effective functionality in directing the movements of emergency response partners.

Table 6-3 indicates that roughly half of all fire departments have no map coordinate system (48% of departments that said they knew whether they had a system), roughly unchanged from 45% in 2001 and 50% in 2005.  There are some indications that national authorities are more supportive of the need for standardization in this area, particularly in the aftermath of Hurricane Katrina, but there is no evidence of progress at the local level.

Table 6-4 indicates that the vast majority of departments with a map coordinate system have only a local system, which means the system they have is unlikely to be usable with global positioning systems (GPS) or familiar to, or easily used by, non-local emergency response partners, such as Urban Search and Rescue Teams, the National Guard, and state or national response forces.  Moreover, interoperability of spatial-based plans, information systems, equipment, and procedures will likely be rendered impossible beyond the local community under these circumstances.  This reliance almost exclusively on local systems exists across-the-board, in all sizes of communities.

The U. S. National Grid (USNG-NAD83) standard, based on the grid system used by U.S. military units and National Guard forces around the world, was adopted as the system best suited for eventual national standardization.  Nearly all departments (99%) indicated no use of the U.S. National Grid (called Military Grid in the survey and Table 6-4). (http://www.fgdc.gov/usng/index.html)

**Only 1% of departments reported no 911 or similar system in the latest survey, down from 6% in 2001 and unchanged from 1% in 2005.  (See Table 6-5.)**

Three-quarters (75%) of fire departments have the 911 Enhanced system, up from 69% in 2001 and 71% in 2005. Table 6-5 also indicates that most departments without 911 Enhanced have 911 Basic, reported by 24% of departments in the latest Needs Assessment Survey, down from 25% in 2001 and 28% in 2005. Departments with another three-digit system accounted for 0.3% of departments in 2001 and 2005 and for 0.1% in 2010.

**Overall in 2010, 42% of fire departments had dispatch operation responsibility primarily assigned to a combined public safety agency, up from 34% in 2001 and 39% in 2005.**

Table 6-6 also indicates that police departments were five times as likely as fire departments (27% vs. 5%) to have primary dispatch responsibility, compared to 33% vs. 9% in 2001 and 30% vs. 7% in 2005. The police share has grown even as dispatch operation responsibility has moved from both police and fire departments to combined public safety agencies. Private companies had primary dispatch responsibility for 1% of departments, largely unchanged from 2% in 2001 and 1% in 2005. "Other" parties had primary dispatch responsibility for 25% of departments, largely unchanged from 23% in 2001 and 24% in 2005.

**Overall, 35% of fire departments have *no* backup dispatch facility, up from 39% in 2001 and 2005.** Table 6-7 shows that even for the smallest communities, with less than 2,500 population protected, less than half of departments (43%) have no backup dispatch facilities.

**Overall, 16% of fire departments lack Internet access, down from 42% in 2001 and 24% in 2005.** Table 6-8 shows Internet access by size of community, and Table 6-9 shows how much Internet access departments have, by size of community.

Figures 6-1 to 6-7 show whether departments have Internet access, and if so what kind, by size of community and for each of the three Needs Assessment Surveys.

For communities with at least 25,000 population protected, there has been a large shift from Internet access at headquarters to individual access (now provided in about half the departments), with station access, mostly at each station, for roughly one-third of departments. For communities with 10,000 to 24,999 population protected, it is more likely that headquarters is the only station. There is individual access in about half the departments and a shift to station access in each station, if there is more than one station.

For communities with 2,500 to 9,999 population protected, the most important shift is access in any form, which nearly all departments now have. Individual access is only available for one-third of departments for communities of 5,000 to 9,999 and one-fifth for communities of 2,500 to 4,999. For communities with less than 2,500 population, 29% of departments still do not have Internet access at all, and only 9% of departments have individual access.

**Figure 6-1. Percent of Departments
by Whether They Have Internet Access and What Kind
for All Sizes of Communities, for Three Studies**
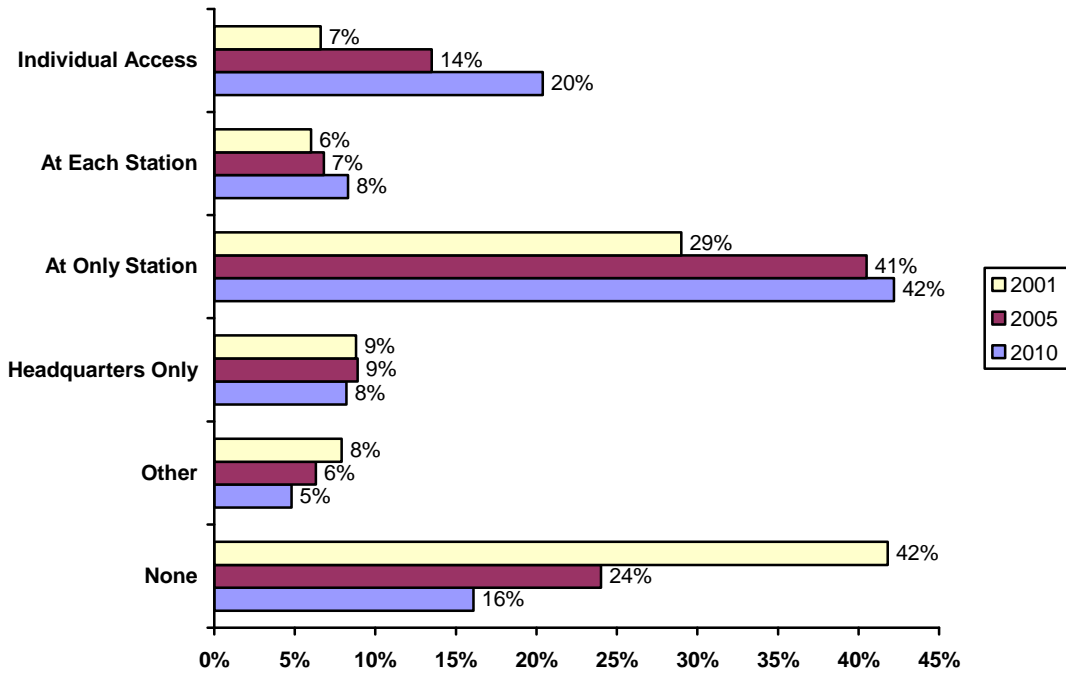


**Figure 6-2. Percent of Departments
by Whether They Have Internet Access and What Kind
for Population Protected 250,000 or More, for Three Studies**
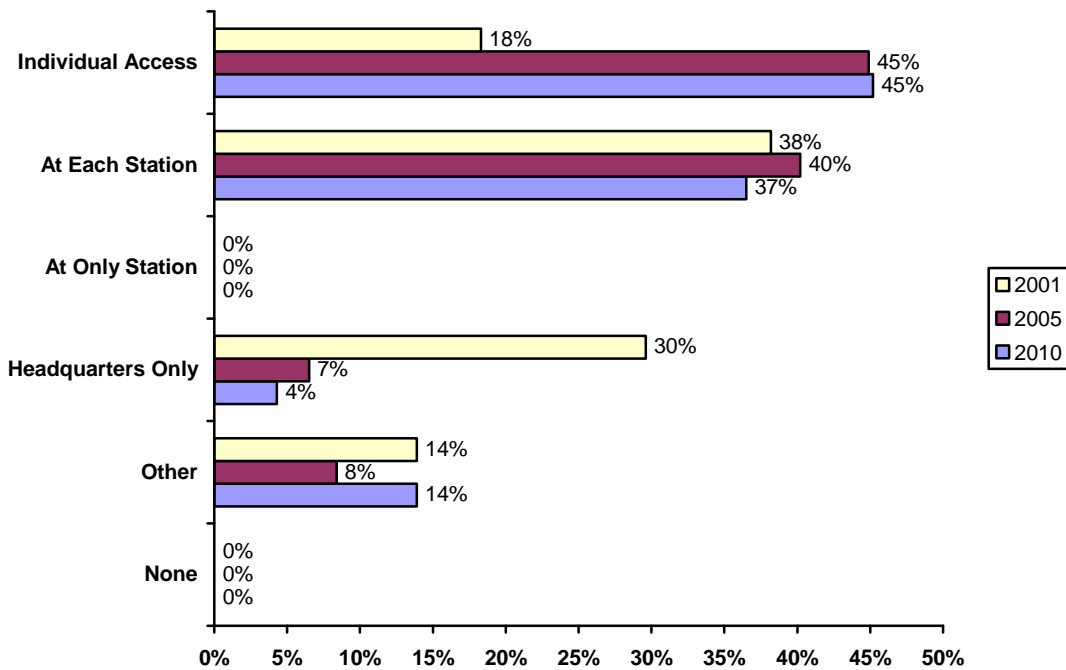
**Figure 6-3. Percent of Departments
by Whether They Have Internet Access and What Kind
for Population Protected 25,000 to 249,999, for Three Studies**



| | 2001 | 2005 | 2010 |
|---|---|---|---|
| Individual Access | 26% | 43% | 57% |
| At Each Station | 29% | 34% | 30% |
| At Only Station | 6% | 4% | 2% |
| Headquarters Only | 29% | 15% | 7% |
| Other | 6% | 4% | 3% |
| None | 5% | 0% | 0% |
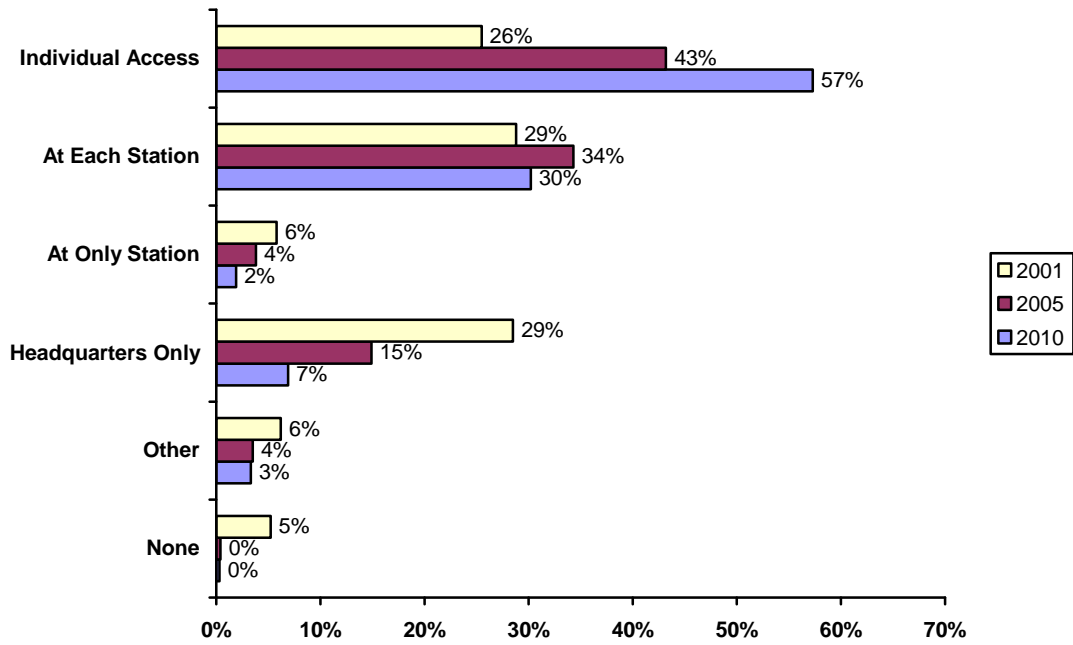
**Figure 6-4. Percent of Departments
by Whether They Have Internet Access and What Kind
for Population Protected 10,000 to 24,999, for Three Studies**



| | 2001 | 2005 | 2010 |
|---|---|---|---|
| Individual Access | 14% | 32% | 52% |
| At Each Station | 16% | 18% | 16% |
| At Only Station | 28% | 22% | 12% |
| Headquarters Only | 24% | 20% | 16% |
| Other | 5% | 5% | 3% |
| None | 13% | 3% | 1% |

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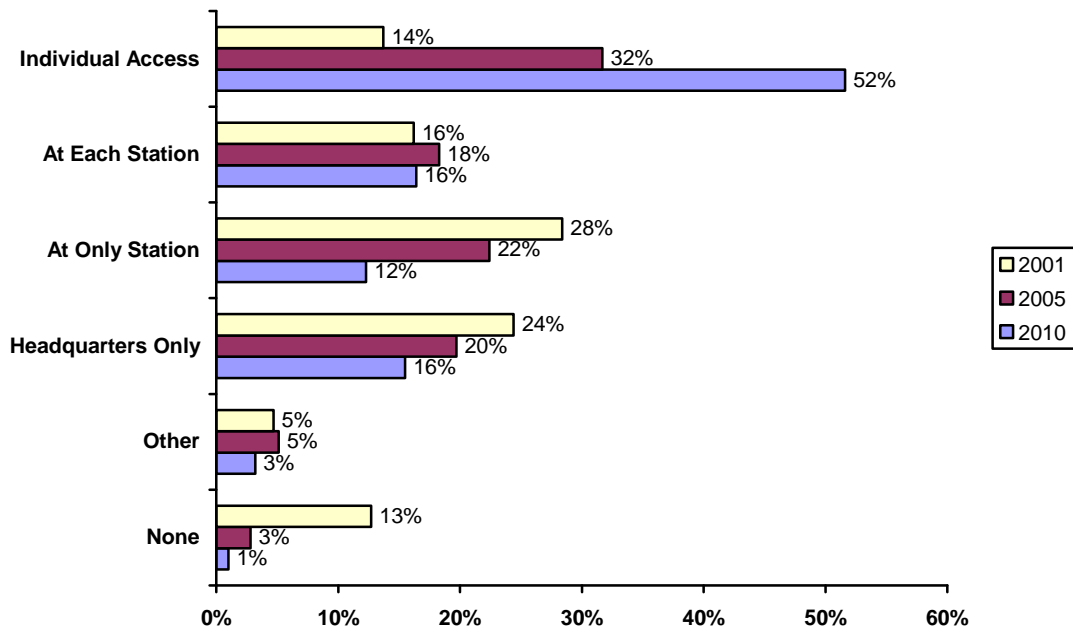
**Figure 6-5. Percent of Departments
by Whether They Have Internet Access and What Kind
for Population Protected 5,000 to 9,999, for Three Studies**



| Category | 2001 | 2005 | 2010 |
|---|---|---|---|
| Individual Access | 8% | 19% | 33% |
| At Each Station | 7% | 7% | 12% |
| At Only Station | 45% | 45% | 35% |
| Headquarters Only | 12% | 15% | 13% |
| Other | 5% | 5% | 4% |
| None | 24% | 9% | 3% |
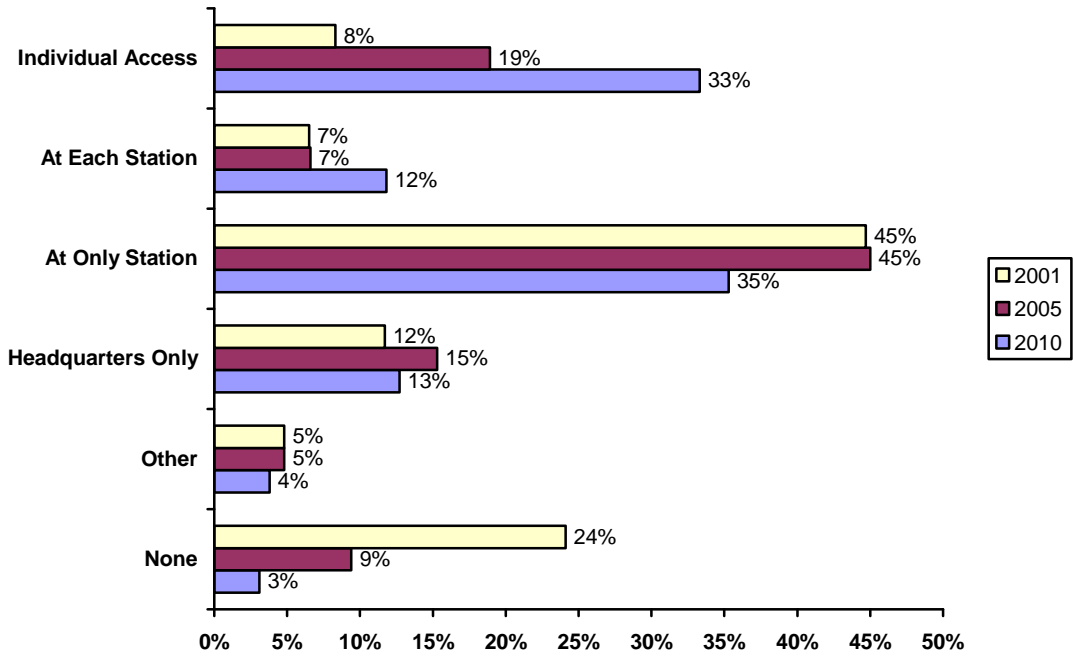
**Figure 6-6. Percent of Departments
by Whether They Have Internet Access and What Kind
for Population Protected 2,500 to 4,999, for Three Studies**



| Category | 2001 | 2005 | 2010 |
|---|---|---|---|
| Individual Access | 4% | 10% | 18% |
| At Each Station | 3% | 4% | 7% |
| At Only Station | 42% | 55% | 52% |
| Headquarters Only | 7% | 9% | 12% |
| Other | 7% | 5% | 4% |
| None | 37% | 18% | 8% |

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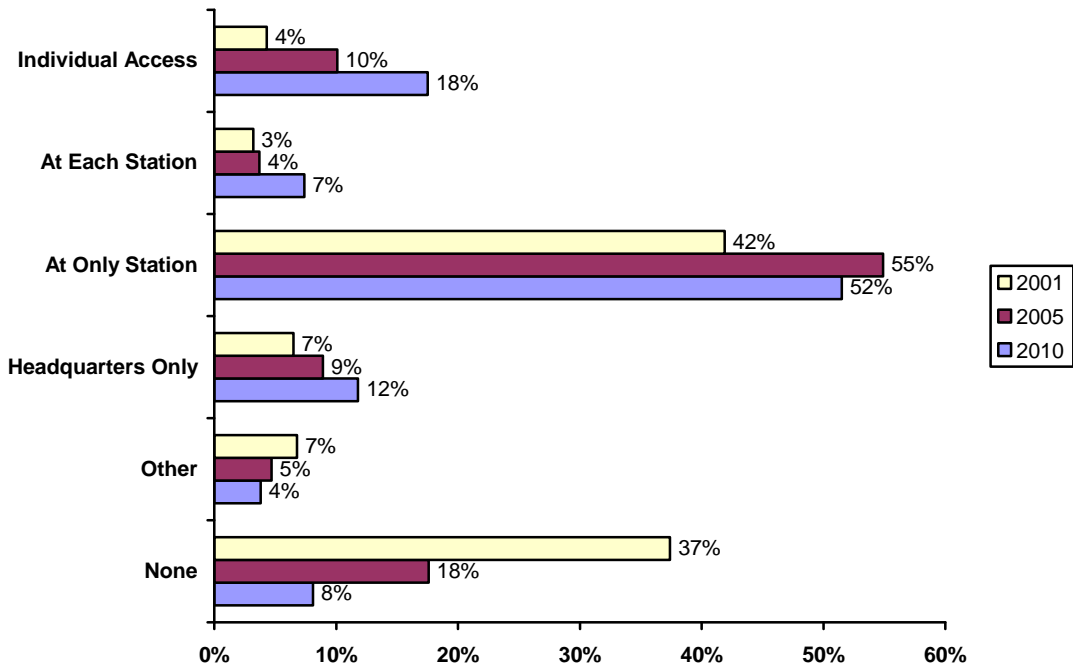
**Figure 6-7. Percent of Departments
by Whether They Have Internet Access and What Kind
for Population Protected Under 2,500, for Three Studies**
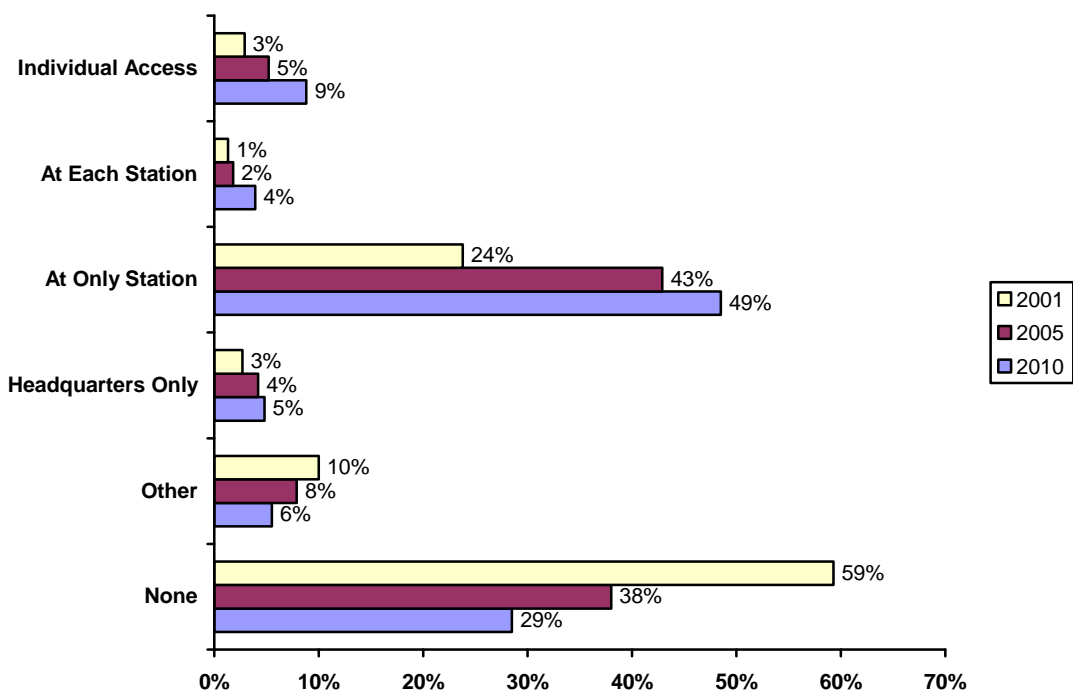


Three-fourths (73%) of fire departments now own thermal imaging cameras, up from 24% in 2001 and 55% in 2005. This is one of the steepest acquisition rates ever seen for any technology in the fire service.

Of the 27% of departments that still have no thermal imaging camera, half plan to acquire one within the next five years, mostly not in the coming year, and the other half have no plans to acquire a thermal imaging camera.

However, in both the second and third Needs Assessment Surveys, many more departments had acquired thermal imaging cameras since the previous survey than had reported plans to do so. (See Table 6-10.)

Figure 6-8 shows the growth in ownership of thermal imaging cameras across the three Needs Assessment Surveys, for each size of population protected.

**Figure 6-8. Percent of Departments**
**Owning a Thermal Imaging Camera**
**by Size of Community, for Three Studies**
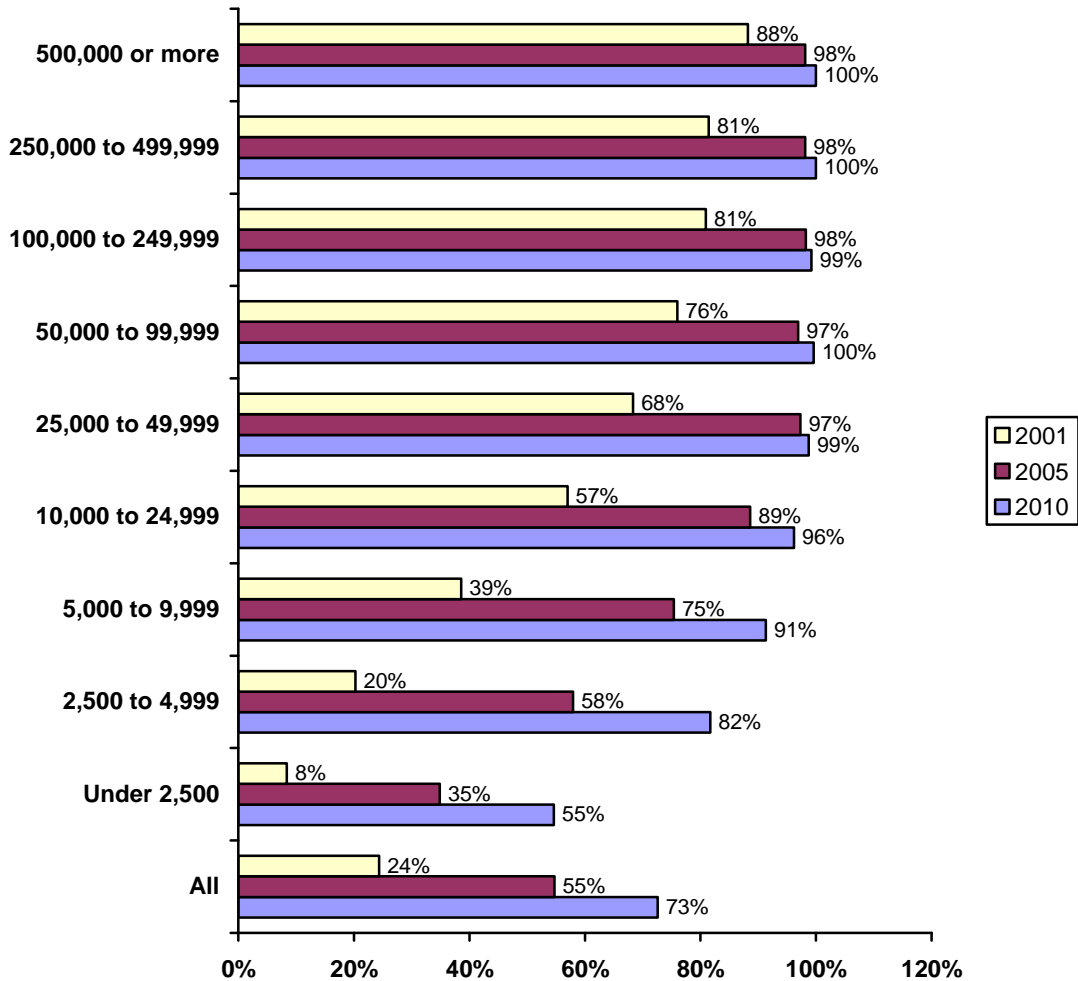


Overall, 9% of departments now own advanced personnel location equipment, up from 2% in 2001 and 3% in 2005.  (See Table 6-11.)

Overall, 7% of departments now own equipment to collect chemical or biological samples for remote analysis, up from 4% in 2001 and 6% in 2005.  (See Table 6-12.)  Most departments protecting populations of 100,000 or more have such equipment.

**Table 6-1**
**Can Department Communicate by Radio at an Incident Scene**
**With Federal, State or Local Partners?**
**by Community Size**
**(Q. 31a)**

|                           | Yes              |         | No               |         | Don't Know       |         | Total            |         |
| ------------------------- | ---------------- | ------- | ---------------- | ------- | ---------------- | ------- | ---------------- | ------- |
| Population of Community    | Number of Depts  | Percent | Number of Depts  | Percent | Number of Depts  | Percent | Number of Depts  | Percent |
| 500,000 or more           | 48               | 90.6%   | 3                | 5.7%    | 2                | 3.7%    | 53               | 100.0   |
| 250,000 to 499,999        | 60               | 96.8    | 2                | 3.2     | 0                | 0.0     | 62               | 100.0   |
| 100,000 to 249,999        | 229              | 96.2    | 9                | 3.8     | 0                | 0.0     | 238              | 100.0   |
| 50,000 to 99,999          | 394              | 88.1    | 43               | 9.6     | 10               | 2.2     | 447              | 100.0   |
| 25,000 to 49,999          | 914              | 84.2    | 138              | 12.7    | 33               | 3.0     | 1,085            | 100.0   |
| 10,000 to 24,999          | 2,478            | 84.0    | 388              | 13.1    | 85               | 2.9     | 2,951            | 100.0   |
| 5,000 to 9,999            | 3,049            | 81.2    | 587              | 15.7    | 119              | 3.2     | 3,755            | 100.0   |
| 2,500 to 4,999            | 3,925            | 80.5    | 738              | 15.1    | 212              | 4.4     | 4,875            | 100.0   |
| Under 2,500               | 11,003           | 84.9    | 1,490            | 11.5    | 471              | 3.6     | 12,964           | 100.0   |
| Total                     | 22,099           | 83.6    | 3,399            | 12.9    | 932              | 3.5     | 26,430           | 100.0   |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,639 departments reporting on Question 31a. Numbers may not add to totals due to rounding.

Q. 31a: Can you communicate by radio on an incident scene with your federal, state and local emergency response partners (includes frequency compatability)?

## Table 6-2
## For Departments That Can Communicate With Partners at an Incident Scene
## What Fraction of Partners Can They Communicate With?
## by Community Size
## (Q. 31b)

| | All | | Most | | Some | | Total | |
|---|---|---|---|---|---|---|---|---|
| Population of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 22 | 45.8% | 24 | 50.0% | 2 | 4.2% | 48 | 100.0% |
| 250,000 to 499,999 | 25 | 41.7 | 30 | 50.0 | 5 | 8.3 | 60 | 100.0 |
| 100,000 to 249,999 | 114 | 49.8 | 98 | 42.8 | 17 | 7.4 | 229 | 100.0 |
| 50,000 to 99,999 | 191 | 48.5 | 173 | 43.9 | 30 | 7.6 | 394 | 100.0 |
| 25,000 to 49,999 | 436 | 47.7 | 377 | 41.2 | 101 | 11.1 | 914 | 100.0 |
| 10,000 to 24,999 | 1,190 | 48.0 | 1,048 | 42.3 | 240 | 9.7 | 2,478 | 100.0 |
| 5,000 to 9,999 | 1,334 | 43.8 | 1,334 | 43.8 | 381 | 12.5 | 3,049 | 100.0 |
| 2,500 to 4,999 | 1,885 | 48.0 | 1,484 | 37.8 | 556 | 14.2 | 3,925 | 100.0 |
| Under 2,500 | 5,357 | 48.7 | 4,187 | 38.1 | 1,459 | 13.3 | 11,003 | 100.0 |
| Total | 10,553 | 47.7 | 8,756 | 39.6 | 2,790 | 12.6 | 22,099 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,851 departments reporting yes to Question 31a and also reporting on Question 31b.  Numbers may not add to totals due to rounding.

Q. 31b: If [you can communicate by radio on an incident scene with your federal, state, and local emergency response partners], how many of your partners can you communicate with at an incident scene?

**Table 6-3**
**Does Department Have a Map Coordinate System**
**to Help Direct Emergency Response Partners?**
**by Community Size**
**(Q. 32a)**

| Population | Yes | | No | | Don't Know | | Total | |
|---|---|---|---|---|---|---|---|---|
| of Community | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 50 | 94.3% | 3 | 5.7% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 55 | 88.7 | 5 | 8.1 | 2 | 3.2 | 62 | 100.0 |
| 100,000 to 249,999 | 189 | 79.4 | 42 | 17.6 | 7 | 2.9 | 238 | 100.0 |
| 50,000 to 99,999 | 308 | 68.9 | 134 | 30.0 | 5 | 11.1 | 447 | 100.0 |
| 25,000 to 49,999 | 582 | 53.5 | 473 | 43.6 | 30 | 2.8 | 1,085 | 100.0 |
| 10,000 to 24,999 | 1,378 | 46.7 | 1,505 | 51.0 | 68 | 2.3 | 2,951 | 100.0 |
| 5,000 to 9,999 | 1,727 | 46.0 | 1,918 | 51.1 | 110 | 2.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 2,396 | 49.2 | 2,272 | 46.6 | 207 | 4.2 | 4,875 | 100.0 |
| Under 2,500 | 6,592 | 50.8 | 5,846 | 45.1 | 526 | 4.1 | 12,964 | 100.0 |
| Total | 13,277 | 50.2 | 12,197 | 46.1 | 955 | 3.6 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,630 departments reporting on Question 32a. Numbers may not add to totals due to rounding.

Q. 32a: Do you have a map coordinate system you would use to help direct your emergency response partners to specific locations?

**Table 6-4**
**For Departments That Have a Map Coordinate System**
**What System Do They Use?**
**by Community Size**
**(Q. 32b)**

| Population of Community | Longitude/ Latitude Number Depts | Percent | Local Number Depts | Percent | Military Grid Number Depts | Percent | State Plane Coordinate Number Depts | Percent | Other Number Depts | Percent | Total Number Depts | Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 13 | 26.0% | 29 | 58.0% | 2 | 4.0% | 4 | 8.0% | 2 | 4.0% | 50 | 100.0% |
| 250,000 to 499,999 | 9 | 16.4 | 34 | 61.8 | 5 | 9.1 | 4 | 7.3 | 3 | 5.5 | 55 | 100.0 |
| 100,000 to 249,999 | 40 | 21.2 | 123 | 65.1 | 6 | 3.2 | 9 | 4.8 | 11 | 5.8 | 189 | 100.0 |
| 50,000 to 99,999 | 36 | 11.7 | 246 | 79.9 | 11 | 3.6 | 4 | 1.3 | 11 | 3.6 | 308 | 100.0 |
| 25,000 to 49,999 | 77 | 13.2 | 452 | 77.7 | 12 | 2.1 | 7 | 1.2 | 34 | 5.8 | 582 | 100.0 |
| 10,000 to 24,999 | 207 | 15.0 | 1,067 | 77.5 | 17 | 1.2 | 10 | 0.7 | 77 | 5.6 | 1,378 | 100.0 |
| 5,000 to 9,999 | 215 | 12.4 | 1,361 | 78.8 | 39 | 2.3 | 24 | 1.4 | 88 | 5.1 | 1,727 | 100.0 |
| 2,500 to 4,999 | 229 | 9.5 | 1,988 | 83.0 | 37 | 1.5 | 19 | 0.8 | 124 | 5.2 | 2,396 | 100.0 |
| Under 2,500 | 862 | 13.1 | 5,162 | 78.3 | 57 | 0.9 | 114 | 1.7 | 397 | 6.0 | 6,592 | 100.0 |
| Total | 1,688 | 12.7 | 10,465 | 78.9 | 185 | 1.4 | 194 | 1.5 | 746 | 5.6 | 13,277 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 2,310 departments reporting yes to Questions 32a and also reporting on Question 32b. Numbers may not add to totals due to rounding.

Q. 32b: If [you have a map coordinate system you would use to help direct your emergency response partners to specific locations}, what system do you use? "Local system" includes map grid, street address, and box alarm number.

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## Table 6-5
## Does Department Have 911 or Similar System?
## by Community Size
## (Q. 33)

| Population of Community | Yes – 911 Basic | | Yes – 911 Enhanced | | Yes – Other 3-Digit System | | No | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 3 | 5.7% | 50 | 94.3% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 0 | 0.0 | 62 | 100.0 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 26 | 10.9 | 208 | 87.4 | 0 | 0.0 | 4 | 1.7 | 238 | 100.0 |
| 50,000 to 99,999 | 34 | 7.6 | 407 | 91.1 | 2 | 0.4 | 4 | 0.8 | 447 | 100.0 |
| 25,000 to 49,999 | 96 | 8.8 | 980 | 90.3 | 2 | 0.2 | 7 | 0.6 | 1,085 | 100.0 |
| 10,000 to 24,999 | 376 | 12.7 | 2,555 | 86.6 | 7 | 0.2 | 13 | 0.4 | 2,951 | 100.0 |
| 5,000 to 9,999 | 580 | 15.4 | 3,156 | 84.1 | 5 | 0.1 | 14 | 0.4 | 3,755 | 100.0 |
| 2,500 to 4,999 | 1,011 | 20.7 | 3,823 | 78.4 | 6 | 0.1 | 35 | 0.7 | 4,875 | 100.0 |
| Under 2,500 | 4,197 | 32.4 | 8,558 | 66.0 | 11 | 0.1 | 198 | 1.5 | 12,964 | 100.0 |
| Total | 6,323 | 23.9 | 19,800 | 74.9 | 32 | 0.1 | 275 | 1.0 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,626 reporting on Question 33.  Numbers may not add to totals due to rounding.

Q. 33:   Do you have 911 or similar system?

**Table 6-6**
**Who Has Primary Responsibility for Dispatch Operations?**
**by Community Size**
**(Q. 34a)**

| Population of Community | Fire Department Number Depts | Percent | Police Department Number Depts | Percent | Private Company Number Depts | Percent | Combined Public Safety Agency Number Depts | Percent | Other Number Depts | Percent | Total Number Depts | Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500,000 or more | 25 | 47.2% | 9 | 17.0% | 0 | 0.0% | 16 | 30.2% | 3 | 5.7% | 53 | 100.0% |
| 250,000 to 499,999 | 21 | 33.9 | 7 | 11.3 | 0 | 0.0 | 26 | 46.9 | 8 | 12.9 | 62 | 100.0 |
| 100,000 to 249,999 | 57 | 23.9 | 77 | 32.4 | 2 | 0.8 | 76 | 31.9 | 26 | 10.9 | 238 | 100.0 |
| 50,000 to 99,999 | 56 | 12.5 | 148 | 33.1 | 5 | 1.1 | 182 | 40.7 | 56 | 12.5 | 447 | 100.0 |
| 25,000 to 49,999 | 124 | 11.4 | 376 | 34.7 | 12 | 1.1 | 392 | 36.1 | 181 | 16.7 | 1,085 | 100.0 |
| 10,000 to 24,999 | 292 | 9.9 | 978 | 33.1 | 30 | 1.0 | 1,151 | 39.0 | 500 | 17.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 148 | 4.0 | 963 | 25.6 | 77 | 2.0 | 1,580 | 42.1 | 987 | 26.3 | 3,755 | 100.0 |
| 2,500 to 4,999 | 155 | 3.2 | 1,012 | 20.8 | 71 | 1.5 | 2,250 | 46.2 | 1,387 | 28.4 | 4,875 | 100.0 |
| Under 2,500 | 501 | 3.9 | 3,461 | 26.7 | 178 | 1.4 | 5,330 | 41.1 | 3,494 | 27.0 | 12,964 | 100.0 |
| Total | 1,379 | 5.2 | 7,030 | 26.6 | 375 | 1.4 | 11,003 | 41.6 | 6,643 | 25.1 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown and projections are based on 4,582 reporting on Question 34a.  Numbers may not add to totals due to rounding.

Q. 34a: Who has primary responsibility for dispatch operations?

**Table 6-7**
**Does Department Have a Backup Dispatch Facility?**
**by Community Size**
**(Q. 34b)**

| Population | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| | **Number** | | **Number** | | **Number** | |
| **of Community** | **Depts** | **Percent** | **Depts** | **Percent** | **Depts** | **Percent** |
| 500,000 or more | 42 | 79.2% | 11 | 20.8% | 53 | 100.0% |
| 250,000 to 499,999 | 48 | 77.4 | 14 | 22.6 | 62 | 100.0 |
| 100,000 to 249,999 | 193 | 81.0 | 45 | 18.9 | 238 | 100.0 |
| 50,000 to 99,999 | 348 | 77.9 | 99 | 22.1 | 447 | 100.0 |
| 25,000 to 49,999 | 811 | 74.7 | 274 | 25.3 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,293 | 77.7 | 658 | 22.3 | 2,951 | 100.0 |
| 5,000 to 9,999 | 2,781 | 74.1 | 974 | 25.9 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,337 | 68.5 | 1,538 | 31.5 | 4,875 | 100.0 |
| Under 2,500 | 7,350 | 56.7 | 5,614 | 43.3 | 12,964 | 100.0 |
| Total | 17,205 | 65.1 | 9,225 | 34.9 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 3,817 departments reporting on Question 34a. Numbers may not add to totals due to rounding.

Q. 34a: Who has primary responsibility for dispatch operations?

**Table 6-8**
**Does Department Have Internet Access?**
**by Community Size**
**(Q. 35a)**

| | Yes | | No | | Total | |
|---|---|---|---|---|---|---|
| **Population of Community** | **Number Depts** | **Percent** | **Number Depts** | **Percent** | **Number Depts** | **Percent** |
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 238 | 100.0 | 0 | 0.0 | 238 | 100.0 |
| 50,000 to 99,999 | 447 | 100.0 | 0 | 0.0 | 447 | 100.0 |
| 25,000 to 49,999 | 1,080 | 99.5 | 5 | 0.5 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,922 | 99.0 | 29 | 1.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,637 | 96.9 | 118 | 3.1 | 3,755 | 100.0 |
| 2,500 to 4,999 | 4,478 | 91.9 | 397 | 8.1 | 4,875 | 100.0 |
| Under 2,500 | 9,263 | 71.5 | 3,701 | 28.5 | 12,964 | 100.0 |
| Total | 22,178 | 83.9 | 4,252 | 16.1 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above table breakdown and projections are based on 4,640 departments reporting on Question 35a. Numbers may not add to totals due to rounding.

Q. 35a: Does your department have Internet access?

**Table 6-9**
**For Departments That Have Internet Access**
**What Kind of Access Do They Have?**
**by Community Size**
**(Q. 35b)**

| Population of Community | All Personnel Have Individual Access | | One Access Point per Station – Multiple Stations | | One Access Point at the Only Station | | Access at Headquarters – Multiple Stations | | Other | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 22 | 41.5% | 20 | 37.7% | 0 | 0.0% | 2 | 3.8% | 9 | 17.0% | 53 | 100.0% |
| 250,000 to 499,999 | 30 | 48.4 | 22 | 35.5 | 0 | 0.0 | 3 | 4.8 | 7 | 11.3 | 62 | 100.0 |
| 100,000 to 249,999 | 136 | 57.1 | 81 | 34.0 | 0 | 0.0 | 9 | 3.8 | 12 | 5.0 | 238 | 100.0 |
| 50,000 to 99,999 | 260 | 58.2 | 140 | 31.3 | 5 | 1.1 | 21 | 4.7 | 21 | 4.7 | 447 | 100.0 |
| 25,000 to 49,999 | 620 | 57.4 | 312 | 28.9 | 29 | 2.6 | 93 | 8.6 | 26 | 2.4 | 1,080 | 100.0 |
| 10,000 to 24,999 | 1,524 | 52.1 | 485 | 16.6 | 363 | 12.4 | 458 | 15.7 | 92 | 3.2 | 2,922 | 100.0 |
| 5,000 to 9,999 | 1,251 | 34.4 | 445 | 12.2 | 1,323 | 36.4 | 478 | 13.1 | 140 | 3.9 | 3,637 | 100.0 |
| 2,500 to 4,999 | 853 | 19.0 | 360 | 8.0 | 2,509 | 56.0 | 576 | 12.9 | 180 | 4.0 | 4,478 | 100.0 |
| Under 2,500 | 1,142 | 12.3 | 498 | 5.4 | 6,288 | 67.9 | 622 | 6.7 | 713 | 7.7 | 9,263 | 100.0 |
| Total | 5,837 | 26.3 | 2,363 | 10.7 | 10,518 | 47.4 | 2,263 | 10.2 | 1,200 | 5.4 | 22,178 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,120 departments reporting yes to Question 35a and also reporting on Question 35b. Numbers may not add to totals due to rounding.

Q. 35b: If [your department has Internet access; yes on Q. 35a], describe the access you have.

# Table 6-10
## Plans to Acquire Thermal Imaging Cameras
## by Community Size
## (Q. 41)

| Population of Community | Now Own | | Plan to Have in One Year | | Plan to Have in Five Years | | No Plans | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts Percent | | Number Depts Percent | | Number Depts | Percent |
| 500,000 or more | 53 | 100.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 53 | 100.0% |
| 250,000 to 499,999 | 62 | 100.0 | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 | 62 | 100.0 |
| 100,000 to 249,999 | 236 | 99.2 | 0 | 0.0 | 2 | 0.8 | 0 | 0.0 | 238 | 100.0 |
| 50,000 to 99,999 | 445 | 99.6 | 0 | 0.0 | 2 | 0.4 | 0 | 0.0 | 447 | 100.0 |
| 25,000 to 49,999 | 1,071 | 98.7 | 7 | 0.6 | 2 | 0.2 | 5 | 0.5 | 1,085 | 100.0 |
| 10,000 to 24,999 | 2,840 | 96.2 | 26 | 0.9 | 26 | 0.9 | 59 | 2.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 3,427 | 91.3 | 114 | 3.0 | 128 | 3.4 | 86 | 2.3 | 3,755 | 100.0 |
| 2,500 to 4,999 | 3,983 | 81.7 | 143 | 2.9 | 357 | 7.3 | 392 | 8.0 | 4,875 | 100.0 |
| Under 2,500 | 7,079 | 54.6 | 620 | 4.8 | 2,223 | 17.2 | 3,042 | 23.5 | 12,964 | 100.0 |
| Total | 19,196 | 72.6 | 910 | 3.4 | 2,741 | 10.4 | 3,583 | 13.6 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,618 departments reporting on Question 40.  Numbers may not add to totals due to rounding.

Q. 41:   Do you have any [thermal imaging cameras] now or plan to acquire any?

**Table 6-11**
**Plans to Acquire Advanced Personnel Location Equipment**
**by Community Size**
**(Q. 42)**

| Population of Community | Now Own | | Plan to Have in One Year | | Plan to Have in Five Years | | No Plans to Acquire | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 17 | 32.1% | 0 | 0.0% | 19 | 35.8% | 17 | 32.1% | 53 | 100.0% |
| 250,000 to 499,999 | 14 | 22.6 | 2 | 3.2 | 12 | 19.4 | 34 | 54.8 | 62 | 100.0 |
| 100,000 to 249,999 | 41 | 17.2 | 14 | 5.9 | 79 | 33.2 | 104 | 43.7 | 238 | 100.0 |
| 50,000 to 99,999 | 55 | 12.3 | 16 | 3.6 | 129 | 28.9 | 248 | 55.5 | 447 | 100.0 |
| 25,000 to 49,999 | 185 | 17.1 | 45 | 4.1 | 209 | 19.3 | 646 | 59.5 | 1,085 | 100.0 |
| 10,000 to 24,999 | 397 | 13.4 | 93 | 3.2 | 574 | 19.4 | 1,887 | 64.0 | 2,951 | 100.0 |
| 5,000 to 9,999 | 333 | 8.9 | 83 | 2.2 | 650 | 17.3 | 2,689 | 71.6 | 3,755 | 100.0 |
| 2,500 to 4,999 | 414 | 8.5 | 104 | 2.1 | 676 | 13.9 | 3,682 | 75.5 | 4,875 | 100.0 |
| Under 2,500 | 876 | 6.8 | 202 | 1.6 | 1,775 | 13.7 | 10,111 | 78.0 | 12,964 | 100.0 |
| Total | 2,330 | 8.8 | 560 | 2.1 | 4,122 | 15.6 | 19418 | 73.5 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,518 departments reporting on Question 42.  Numbers may not add to totals due to rounding.

Q. 42:   Do you have any [advanced personnel location equipment] now or plan to acquire any?

**Table 6-12**
**Plans to Acquire Equipment to Collect**
**Chemical/Biological Samples for Analysis Elsewhere**
**by Community Size**
**(Q. 43)**

| Population of Community | Now Own | | Plan to Have in One Year | | Plan to Have in Five Years | | No Plans to Acquire | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent | Number Depts | Percent |
| 500,000 or more | 47 | 88.7% | 2 | 3.8% | 0 | 0.0% | 4 | 7.5% | 53 | 100.0% |
| 250,000 to 499,999 | 57 | 91.9 | 0 | 0.0 | 2 | 3.2 | 3 | 4.8 | 62 | 100.0 |
| 100,000 to 249,999 | 168 | 70.6 | 2 | 0.8 | 9 | 3.8 | 58 | 24.4 | 238 | 100.0 |
| 50,000 to 99,999 | 216 | 48.3 | 12 | 2.7 | 17 | 3.8 | 202 | 45.0 | 447 | 100.0 |
| 25,000 to 49,999 | 312 | 28.8 | 12 | 11.1 | 67 | 6.2 | 694 | 64.0 | 1,085 | 100.0 |
| 10,000 to 24,999 | 377 | 12.8 | 33 | 1.1 | 119 | 4.1 | 2,422 | 82.1 | 2,951 | 100.0 |
| 5,000 to 9,999 | 214 | 5.7 | 29 | 0.8 | 170 | 4.6 | 3,342 | 89.0 | 3,755 | 100.0 |
| 2,500 to 4,999 | 85 | 1.7 | 36 | 0.7 | 187 | 3.8 | 4,567 | 93.7 | 4,875 | 100.0 |
| Under 2,500 | 245 | 1.9 | 44 | 0.3 | 390 | 3.0 | 12,285 | 94.8 | 12,964 | 100.0 |
| Total | 1,722 | 6.5 | 171 | 0.6 | 961 | 3.6 | 23,576 | 89.1 | 26,430 | 100.0 |

Source: NFPA 2010 Survey of the Needs of the US Fire Service

The above projections are based on 4,548 departments reporting on Question 43. Numbers may not add to totals due to rounding.

Q. 43: Do you have any [equipment to collect chem/bio samples for analysis elsewhere] now or plan to acquire any?

# APPENDIX 1:  SURVEY METHODOLOGY

The 2010 Fire Service Needs Assessment survey was conducted as a stratified random sample by size of community.  A stratified sample was selected with all larger departments (protecting over 50,000 population) included, and a random sample of departments protecting smaller communities was also selected.  It was estimated that a response of approximately 4,800 fire departments would be sufficient to make reliable national estimates and state estimates as long as it included a good response from larger departments.

The NFPA used its own list of local fire departments as the sampling frame of all fire departments in the U.S.  In all, 26,430 fire departments were listed on the NFPA Fire Service Inventory (FSI).[14]  The following table includes sample size and number of fire departments responding by community size.

**Table A-1. Sample Size and Number of Fire Departments Responding by Community Size**

| Population of Community | (1) Number of Fire Departments on FSI | (2) Number of Fire Departments in Sample | Number of Fire Departments Responding | Response Rate (% of Sample) |
|---|---|---|---|---|
| 500,000 or more | 53 | 53 | 31 | 58 |
| 250,000 to 499,999 | 62 | 62 | 38 | 61 |
| 100,000 to 249,999 | 238 | 238 | 139 | 59 |
| 50,000 to 99,999 | 447 | 447 | 262 | 59 |
| 25,000 to 49,999 | 1,085 | 978 | 467 | 48 |
| 10,000 to 24,999 | 2,951 | 2,537 | 910 | 36 |
| 5,000 to 9,999 | 3,755 | 3,443 | 795 | 23 |
| 2,500 to 4,999 | 4,875 | 4,273 | 831 | 19 |
| Under 2,500 | 12,094 | 7,962 | 1,187 | 15 |
| Total | 26,430 | 19,992 | 4,660 | 23 |

Note:   The NFPA Fire Service Inventory (FSI) file was the sampling frame (column 1) for the stratified random sample (column 2).

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[14] The NFPA Fire Service Inventory (FSI) file is a listing of all known fire departments in the U.S. The file is continuously  maintained by a three year cycle survey which surveys one-third of the country each year. The survey is also updated by review of fire marshal listings by state, other NFPA mailings, and other data sources.

In all, 4,660 fire departments, or 23% responded to the 2010 Fire Service Needs Assessment Survey (the final response rate in the 2005 survey was 30%). Response rates varied considerably by size of community protected, with larger communities responding at a rate of 58% to 61%, medium sized communities at a rate of 36% to 48%, and smaller communities (less than 10,000) responding at a rate of 15% to 23%. The decrease in the overall response rate for the 2010 survey compared to the 2005 survey was due primarily to the decrease in the response rates for departments protecting smaller communities. Low response rates for smaller departments (comprised mostly of volunteers) occur for a number of reasons, including lack of personnel to complete surveys.

In the 2005 Fire Needs Survey, results were presented separately for departments that protect 1,000,000 people or more. In the 2010 Fire Needs Survey, because the response for departments that protect 1,000,000 people or more was not suffient to calculate reliable estimates, they were combined with the 500,000 to 999,999 population category into the 500,000 or more category

The fire departments selected for the survey were sent the 2010 Fire Service Needs Assessment Survey form the 2nd week of September 2010. A second mailing was sent the 2nd week of November to fire departments that had not responded to the first mailing. A total of 4,660 departments responded to the questionnaire 3,207 to the first mailing and 1,453 to the second. Of these responses 434 responded electronically. The 4,660 departments that did respond protect 126,741,800 people or 41% of the total U.S. population.

 The overall total response of 4,660 fire departments was sufficient for reliable results at the national and state levels, overall and by community size. Total national results in the survey report were made by summing up the weighted estimates for each stratum, and the stratification methodology adjusted for response rates by community size.

Most of the results in this report are for a proportion (e.g., percent of fire departments that provide EMS services). The results in this report are based on standard statistical methodology for a stratified random sample.[15] In general, the margin of error will not exceed +/-2% for national results (It will be smaller for proportions close to zero or one). Results for individual community size strata have larger margins of error that range between about +/-5% to +/-6% for communities with over 250,000 population to about +/-3% for communities of 100,000 to 249,999, about +/-2% for medium sized communities, and about +/-3% for smaller communities.[16] This margin of error accounts

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[15] William G. Cochran, *Sampling Techniques*, John Wiley & Sons, New York, NY, 1977.

[16] Because a census was conducted of communities over 50,000, there is technically no "sampling error" per se. However, as noted in the previous table, not all of the departments responded, so there is uncertainty in how well the sample estimate reflects the true population value due to weighting and potential bias. To estimate potential error for estimates by strata, we computed the margin of error if all of the respondents for these communities were in fact the random sample selected from that population (with finite population corrections applied). The margins of error for the other strata reflect standard calculations.

for sampling variability but not for other issues, e.g., bias due to non-response or other non-sampling errors.

# APPENDIX 2:  SURVEY FORM

The next four pages contain the Needs Assessment Survey form.

It was printed on legal size paper (8-1/2" x 14") but has been shrunk to fit letter size paper here.

# NATIONAL FIRE PROTECTION ASSOCIATION
# THIRD SURVEY OF THE NEEDS OF THE U.S. FIRE SERVICE

## PART I.  IDENTIFYING INFORMATION

Name of person completing form: _____     Date: _____

Title of person completing form: _____

Non-emergency phone number:  ( _____ ) _____     Fax:  ( _____ ) _____

E-mail address: _____

Please use enclosed postpaid envelope and return completed survey form to:

**NFPA®**

Fire Analysis and Research Division
1 Batterymarch Park
Quincy, MA 02169-7471  USA
Fax: (617) 984-7478

You can fax us the form at 617-984-7478, but please reduce it first to 8½" × 11".  If you would
like to fill it out electronically go to *http://www.nfpa.org/assets/files/FNSurvey2010.html*
or please email us at *fnsurvey@nfpa.org* stating that you would like this option.

## PART II.  BASIC INFORMATION

1. **Population** (Number of permanent residents) your department has primary
   responsibility to protect (exclude mutual aid areas):  _____

2. **Area** (in square miles) your department has primary responsibility to protect
   (exclude mutual aid areas): _____

## PART III.  BUDGET INFORMATION

3. **Do you have a plan for apparatus replacement on a regular schedule?**  ☐ Yes  ☐ No

   *(Questions 4 and 5 are for all or mostly volunteer or call departments ONLY.
   Indicate % for each, so percents sum to 100 for each question):*

4. **What share (%) of your budgeted revenue is from:**

   _____ Fire district or other taxes  _____ Payments per call  _____ Other local payments  _____ State government

   _____ Fund raising (e.g., donations, raffles, suppers, events)  _____ Other *(specify):* _____

5. **What share (%) of your apparatus was:**

   _____ Purchased new  _____ Donated new  _____ Purchased used  _____ Donated used

   _____ Converted vehicles not designed as FD apparatus  _____ Other *(specify):* _____

6. **Was there a change in total funded positions since 2006 in your department for all firefighters
   regardless of assignment?**  ☐ Yes  ☐ No

   If yes,  how many positions were:    Gained _____    Lost _____

## PART IV.  PERSONNEL AND THEIR CAPABILITIES

7. **Total number of full-time (career) uniformed fire fighters:** _____

8. **Total number of active part-time (call or volunteer) fire fighters:** _____

9. **Average number of career/paid firefighters on duty available to respond to emergencies**
   (total number for department): _____

10. **Average number of call/volunteer personnel who respond to emergencies:** _____

11. **Number of on-duty career/paid personnel assigned to an engine/pumper**
    *(Check one)*    ☐ 1  ☐ 2  ☐ 3  ☐ 4  ☐ 5+    ☐ Not applicable

12. **Number of on-duty career/paid personnel assigned to a ladder/aerial**
    *(Check one)*    ☐ 1  ☐ 2  ☐ 3  ☐ 4  ☐ 5+    ☐ Not applicable

13. **Structural firefighting.**

   a.  Is this a role your department performs? *(Check one)*   ☐ Yes  ☐ No

   b.  If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)?
   *(Check one)*  ☐ All   ☐ Most   ☐ Some   ☐ None

   c.  Have any of your personnel been certified to any of the following levels?
   *(Check all that apply)*   ☐ A. Firefighter Level I   ☐ B. Firefighter Level II

14. **Emergency medical service (EMS).**

   a.  Is this a role your department performs? *(Check one)*   ☐ Yes  ☐ No

   b.  If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)?
   *(Check one)*  ☐ All   ☐ Most   ☐ Some   ☐ None

   c.  If yes to a, have any of your personnel been certified to any of the following levels?
   *(Check all that apply)*   ☐ A. First responder   ☐ B. Basic Life Support (BLS)/EMTIntermediate (EMTI)
   ☐ C. Advanced Life Support (ALS)/EMTIntermediate (EMTI)    D. ALS/Paramedic

15. **Hazardous materials response (Hazmat).**

   a.  Is this a role your department performs? *(Check one)*   ☐ Yes  ☐ No

   b.  If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)?
   *(Check one)*  ☐ All   ☐ Most   ☐ Some   ☐ None

   c.  If yes to a, have any of your personnel been certified to any of the following levels?
   *(Check all that apply)*   ☐ A. Awareness   ☐ B. Operational   ☐ C. Technician

16. **Wildland firefighting.**

   a.  Is this a role your department performs? *(Check one)*   ☐ Yes  ☐ No

   b.  If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)?
   *(Check one)*  ☐ All   ☐ Most   ☐ Some   ☐ None

17. **Technical rescue.**

   a.  Is this a role your department performs? *(Check one)*   ☐ Yes  ☐ No

   b.  If yes, how many of your personnel who perform this duty have received formal training (not just on-the-job)?
   *(Check one)*  ☐ All   ☐ Most   ☐ Some   ☐ None

18. **Basic firefighter fitness and health.**

   Does your department have a program to maintain basic firefighter fitness and health (e.g., as required in NFPA 1500)?
   *(Check one)*  ☐ Yes  ☐ No

19. **Infectious disease control.**

   Does your department have a program for infectious disease control? *(Check one)*   ☐ Yes  ☐ No

## PART V.  FIRE PREVENTION AND CODE ENFORCEMENT

20. **Which of the following programs or activities does your department conduct?** *(Check all that apply)*

   ☐ A.  Plans review

   ☐ B.  Permit approval

   ☐ C.  Routine testing of active systems (e.g., fire sprinkler, detection/alarm, smoke control)

   ☐ D.  Free distribution of home smoke alarms

   ☐ E.  Juvenile firesetter program

   ☐ F.  School fire safety education program based on a national model curriculum

   ☐ G.  Other prevention program *(specify)* _____

21. **Who conducts fire code inspections in your community?** *(Check all that apply)*

   ☐ A.  Full-time fire department inspectors

   ☐ B.  In-service firefighters

   ☐ C.  Building department

   ☐ D.  Separate inspection bureau

   ☐ E.  Other *(specify)* _____

   ☐ F.  No one

22. **Who determines that a fire was deliberately set?** *(Check all that apply)*

   ☐ A.  Fire department arson investigator

   ☐ B.  Regional arson task force investigator

   ☐ C.  State arson investigator

   ☐ D.  Incident commander or other first-in fire officer

   ☐ E.  Police department

   ☐ F.  Contract investigator

   ☐ G.  Insurance investigator

   ☐ H.  Other *(specify)* _____

## PART VI.  FACILITIES, APPARATUS, AND EQUIPMENT

**23. Number of fire stations:** _____

Number over 40 years old: _____        Number having backup power: _____

Number equipped for exhaust emission control (e.g., diesel exhaust extraction): _____

**24. Number of engines/pumpers in service:** (Numbers by age should sum to total.)

Total: _____        0–14 years old: _____        15–19 years old: _____

20–29 years old: _____        30 or more years old: _____        Unknown age: _____

**25. Number of ladders/aerials in service:** _____

Number of buildings in community that are 4 or more stories in height:
*(Check one)*    ☐ None    ☐ 1–5    ☐ 6–10    ☐ 11 or more

**26. Number of ambulances or other patient transport vehicles:** _____

**27. Portable radios.**

a.  How many of your emergency responders on-duty on a single shift can be equipped with portable radios?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None

b.  How many of your portable radios are water-resistant?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None    ☐ Don't know

c.  How many of your portable radios are intrinsically safe in an explosive atmosphere?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None    ☐ Don't know

d.  Do you have reserve portable radios equal to or greater than 10% of your in-service radios?
*(Check one)*    ☐ Yes    ☐ No    ☐ Don't know

**28. Self-contained breathing apparatus (SCBA).**

a.  How many emergency responders on-duty on a single shift can be equipped with SCBA?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None

b.  How many of your SCBA are 10 years old or older?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None    ☐ Don't know

**29. Personal alert safety system (PASS) devices.**

How many of your emergency responders on-duty on a single shift are equipped with PASS devices?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None

**30. Personal protective clothing.**

a.  How many of your emergency responders are equipped with personal protective clothing?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None

b.  How much of your personal protective clothing is at least 10 years old?
*(Check one)*    ☐ All    ☐ Most    ☐ Some    ☐ None    ☐ Don't know

c.  Do you have reserve personal protective clothing sufficient to equip 10% of your emergency responders?
*(Check one)*    ☐ Yes    ☐ No    ☐ Don't know

## PART VII.  COMMUNICATIONS AND COMMUNICATIONS EQUIPMENT

**31. Multi-agency communication.**

a.  Can you communicate by radio on an incident scene with your federal, state, and local emergency response
partners (includes frequency compatibility)? *(Check one)*    ☐ Yes    ☐ No    ☐ Don't know

b.  If yes, how many of your partners can you communicate with at an incident scene?
*(Check one)*    ☐ All    ☐ Most    ☐ Some

**32. Map coordinate system.**

a.  Do you have a map coordinate system you would use to help direct your emergency response partners to
specific locations? *(Check one)*    ☐ Yes    ☐ No    ☐ Don't know

b.  If yes, what system do you use? *(Check one)*    ☐ Local system—Map Grid/Street Address/Box Alarm Number
☐ Based on longitude/latitude    ☐ Based on Military Grid Reference System (MGRS) or US National Grid (USNG)
☐ State Plane Coordinate System    ☐ Other *(specify)* _____

**33. Telephone communication.**

Do you have 911 or similar system? *(Check one)*    ☐ Yes, 911 basic    ☐ Yes, 911 enhanced
☐ Yes, other 3-digit system *(specify)* _____        ☐ No

**34. Dispatch.**

a.  Who has primary responsibility for dispatch operations? *(Check one)*    ☐ Fire department    ☐ Police department
☐ Private company    ☐ Combined public safety agency    ☐ Other *(specify)* _____

b.  Do you also have a backup dispatch facility? *(Check one)*    ☐ Yes    ☐ No

**35. Internet access.**

a.  Does your department have Internet access? *(Check one)*    ☐ Yes    ☐ No

b.  If yes, describe the access you have. *(Check one)*    ☐ All personnel have individual access
☐ One access point per station, multiple stations    ☐ One access point at the only station
☐ Access at headquarters, but there are multiple stations    ☐ Other *(specify)* _____

## PART VIII.  ABILITY TO HANDLE UNUSUALLY CHALLENGING INCIDENTS

Each question is based on an example incident. We want to know whether you have enough local resources to handle such an incident, and if not, how far you would have to go to obtain sufficient resources. Both the type and the size of the incident are specified to give you something specific to react to and a challenge that will often need more than local resources.

36. **Technical rescue and EMS for a building with 50 occupants after structural collapse.**

   a. Is this type of incident within your department's responsibility? *(Check one)*  ☐ Yes  ☐ No  *(If no, go to Question 37)*

   b. If yes, how far would you have to go to obtain enough people with specialized training for this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   d. If yes, do you have a plan for obtaining assistance from others on this type of incident?
      *(Check one)*  ☐ Yes, written agreement  ☐ Yes, informal  ☐ Yes, other *(specify)* _____  ☐ No

37. **Hazmat and EMS for an incident involving chemical/biological agents and 10 injuries.**

   a. Is this type of incident within your department's responsibility? *(Check one)*  ☐ Yes  ☐ No  *(If no, go to Question 38)*

   b. If yes, how far would you have to go to obtain enough people with specialized training for this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   d. If yes, do you have a plan for obtaining assistance from others on this type of incident?
      *(Check one)*  ☐ Yes, written agreement  ☐ Yes, informal  ☐ Yes, other *(specify)* _____  ☐ No

38. **Wildland/urban interface fire affecting 500 acres.**

   a. Is your department likely to experience a wildland/urban interface fire affecting 500 acres?
      *(Check one)*  ☐ Yes  ☐ No  *(if no, go to question 39)*

   b. If yes, how far would you have to go to obtain enough people with specialized training for this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   d. If yes, do you have a plan for obtaining assistance from others on this type of incident?
      *(Check one)*  ☐ Yes, written agreement  ☐ Yes, informal  ☐ Yes, other *(specify)* _____  ☐ No

39. **Mitigation (confining, slowing, etc.) of a developing major flood.**

   a. Does your department regularly prepare for a major flood in your jurisdiction that would result in extensive damage or require extensive evacuation of people? *(Check one)*  ☐ Yes  ☐ No  *(if no, go to question 40)*

   b. If yes, how far would you have to go to obtain enough people with specialized training for this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   c. If yes, how far would you have to go to obtain enough specialized equipment to handle this incident?
      *(Check one)*  ☐ Local would be enough  ☐ Regional  ☐ State  ☐ National

   d. If yes, do you have a plan for obtaining assistance from others on this type of incident?
      *(Check one)*  ☐ Yes, written agreement  ☐ Yes, informal  ☐ Yes, other *(specify)* _____  ☐ No

## PART IX.  NEW AND EMERGING TECHNOLOGY

40. **Chemical, Biological, Radiological, Nuclear (CBRN) Respirators.**

   How many NIOSH-certified CBRN respirators (air purifying respirator or self contained breathing apparatus/SCBA) are available for use by fire fighters in your fire department? _____ *(If none, enter a "0")*

41. **Thermal imaging cameras.** Do you have any now or plan to acquire any?

   *(Check one)*  ☐ Now own  ☐ Plan to have in 1 year  ☐ Plan to have in 5 years  ☐ No plan to acquire

42. **Advanced personnel location equipment.** Do you have any now or plan to acquire any?

   *(Check one)*  ☐ Now own  ☐ Plan to have in 1 year  ☐ Plan to have in 5 years  ☐ No plan to acquire

43. **Equipment to collect chem/bio samples for analysis elsewhere.** Do you have any now or plan to acquire any?

   *(Check one)*  ☐ Now own  ☐ Plan to have in 1 year  ☐ Plan to have in 5 years  ☐ No plan to acquire

## PART X.  YOUR TOP 3 NEEDS IN YOUR WORDS.

44. _____
    _____

45. _____
    _____

46. _____
    _____