From:	Kimball, Amanda
To:	Hamins, Anthony; Bruce Johnson; Carl Wren; Greg Miller; Hall, John; Harold Hansen; Jeff Tubbs; Jon Nisja; Kelly Nicolello; Dohne, A Kirk; Larry McKenna; Phan, Long Dr.; McNabb, Nancy; Bryner, Nelson P.; Ralph Gerdes; Fahy, Rita; Scott Adams; Shawn Kelley; Solomon, Robert
Subject:	RE: NCST Recommendation Impact Pilot Study
Date:	Friday, April 11, 2014 4:40:08 PM
Attachments:	NCST The Station Pilot - Task 2 3-31-14 with Comments Included.docx

All,

I am still working on pulling together the draft final report, but I am sending the revised Task 2 report out to you so I can collect the final comments related to this report ahead of the call. John has made revisions based on the comments received on the first draft. Please provide your final comments on the attached Task 2 report by Friday, April 18th. We can then discuss them on the conference call on the 25th. I will send along the whole draft report soon.

Thanks,
Amanda

From: Kimball, Amanda
Sent: Tuesday, April 01, 2014 3:31 PM
To: Anthony Hamins; Bruce Johnson; Carl Wren; Greg Miller; Hall, John; Harold Hansen; Jeff Tubbs; Jon Nisja; Kelly Nicolello; Kirk Dohne; Larry McKenna; Long Phan; Nancy McNabb; Nelson Bryner; Ralph Gerdes; Rita Fahy; Scott Adams; Shawn Kelley; Solomon, Robert
Subject: NCST Recommendation Impact Pilot Study

Panel Members,

I would like to set up a Panel teleconference to review the draft report in mid-April (ahead of John's retirement at the end of April). The draft report will include a revised Task 2 report (based on comments received from the Panel) and draft Task 3 and 4 reports. The draft report will be circulated next week. Please fill in your availability in the following scheduling poll by Friday, April 4th: https://researchfoundation.doodle.com/yibhg7fty7bfqzhz.

Thank you,
Amanda

Amanda Kimball, P.E.
Research Project Manager

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Pilot Demonstration of an Impact Evaluation Protocol: NIST NCST Recommendations Arising from The Station Nightclub Fire

Draft Task 2 Report: Analysis of Data from Fire Departments Regarding Recommendations on Adoption and Enforcement

Prepared by:

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FOREWORD

Under the authority of the National Construction Safety Team (NCST) Act, the National Institute of Standards and Technology (NIST) establishes a National Construction Safety Team to determine the likely technical cause(s) of building failures. These reports include recommendations, but there has been no systematic method available to evaluate the impact of these recommendations. In a time of tight budgets, decisions about the size and even the continuation of the NCST program require information about impact.

A general protocol for conducting such evaluations cannot be created from scratch and still be detailed enough and validated enough to be useful for NIST's purposes. Therefore, the Fire Protection Research Foundation and the National Fire Protection Association (NFPA) is conducting an evaluation of the impact of recommendations from the NCST report on a single incident, to be documented and conducted in such a way that the specific evaluation will also form the basis for defining a general protocol.

The content, opinions and conclusions contained in this report are solely those of the authors.

About the Fire Protection Research Foundation

The Fire Protection Research Foundation plans, manages, and communicates research on a broad range of fire safety issues in collaboration with scientists and laboratories around the world. The Foundation is an affiliate of NFPA.

About the National Fire Protection Association (NFPA)

NFPA is a worldwide leader in fire, electrical, building, and life safety. The mission of the international nonprofit organization founded in 1896 is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA develops more than 300 codes and standards to minimize the possibility and effects of fire and other hazards. All NFPA codes and standards can be viewed at no cost at www.nfpa.org/freeaccess.

Keywords: [Insert keywords]

Contents

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Background

The Station Nightclub Fire occurred on the night of 20 February 2003 in West Warwick, Rhode Island, and resulted in 100 fatalities. A NIST NCST report was issued in June 2005 and included 10 recommendations. These 10 recommendations are the focus of this pilot study[1]:

Recommendation 1. Model Code Adoption and Enforcement: NIST recommends that all state and local jurisdictions:

a) adopt a building and fire code covering nightclubs based on one of the national model codes (as a minimum requirement) and update local codes as the model codes are revised;

b) implement aggressive and effective fire inspection and enforcement programs that address: (i) all aspects of those codes; (ii) documentation of building permits and alterations; (iii) means of egress inspection and record keeping; (iv) frequency and rigor of fire inspections, including follow-up and auditing procedures; and (v) guidelines on recourse available to the inspector for identified deviations from code provisions; and

c) ensure that enough fire inspectors and building plan examiners are on staff to do the job and that they are professionally qualified to a national standard such as NFPA 1031 (Professional Qualifications for Fire Inspector and Plan Examiner).

Recommendation 2. Sprinklers: NIST recommends that model codes require sprinkler systems according to NFPA 13 (Standard for the Installation of Sprinkler Systems), and that state and local authorities adopt and aggressively enforce this provision:

a) for all new nightclubs regardless of size, and

b) for existing nightclubs with an occupancy limit greater than 100 people.

Recommendation 3. Finish Materials and Building Contents: NIST recommends that:

a) state and local authorities adopt and aggressively enforce the existing provisions of the model codes;

b) non-fire retarded flexible polyurethane foam, and other materials that ignite as easily and propagate flames as rapidly as non-fire retarded flexible polyurethane foam: (i) be clearly identifiable to building owners, operators, contractors and authorities having jurisdiction (regulatory agencies); and (ii) be specifically forbidden, with no exceptions, as finish materials from all new and existing nightclubs;

c) NFPA 286 (Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth) be modified to provide more explicit

[1] Grosshandler, et. al., Report of the Technical Investigation of The Station Nightclub Fire, National Institute of Standards and Technology, NIST NCSTAR2, June 2005.

guidance for when large-scale tests are required to demonstrate that materials (other than those already forbidden in b above) do not pose an undue hazard for the use intended; and

d) ASTM E-84 (Standard Test Method for Surface Burning Characteristics of Building Materials), NFPA 255 (Standard Method of Test of Surface Burning Characteristics of Building Materials), and NFPA 286 be modified to ensure that product classification and the pass/fail criteria for flame spread tests and large-scale tests are established using the best measurement and prediction practices available.

Recommendation 4. Indoor Use of Pyrotechnics: NIST recommends that NFPA 1126 (Use of Pyrotechnics before a Proximate Audience) be strengthened as described below, and that state and local authorities adopt and aggressively enforce the revised standard.

a) Pyrotechnic devices should be banned from indoor use in new and existing nightclubs not equipped with an NFPA 13 compliant automatic sprinkler system.

b) NFPA 1126 should be modified to include a minimum occupancy and/or area for a nightclub below which pyrotechnic devices should be banned from indoor use, irrespective of the installation of an automatic sprinkler system.

c) Plans for the use of indoor pyrotechnics in new and existing nightclubs should be posted on site; and in addition to the items listed in paragraph 4.3.2 of NFPA 1126, should describe the measures that have been established to provide crowd management, security, fire protection, and other emergency services.

d) Section 6.6.2 of NFPA 1126 should be modified to require the minimum clearance between (i) the nearest fixed or moveable contents, and (ii) any part or product (igniter, spark, projectile, or debris) of a pyrotechnic device permitted for indoor use in new and existing places of assembly, to be twice the designed projection of the device, until such time that studies show that a smaller minimum clearance can guarantee safe operation in spite of the possibility that building decorations or temporary features that greatly exceed flame spread or fire load provisions of the fire code may occur.

Recommendation 5. Occupancy Limits and Emergency Egress: NIST recommends that the factor of safety for determining occupancy limits of all new and existing nightclubs be increased in the model codes in the following manner, and that state and local authorities adopt and aggressively enforce the following provisions:

a) Within the model codes, establish the threshold building area and occupant limits for egress provisions using best practices for estimating tenability and evacuation time; and, unless further studies indicate another value is more appropriate, use 1-1/2 minutes as the maximum permitted evacuation time for nightclubs similar to or smaller than The Station.

b) Compute the number of required exits and the permitted occupant loads assuming at least one exit (including the main entrance) will be inaccessible in an emergency evacuation.

c) For nightclubs with one clearly identifiable main entrance, increase the minimum capacity of the main entrance to accommodate two-thirds of the maximum permitted occupant level (based upon standing space or festival seating, if applicable) during an emergency.

d) Eliminate trade-offs between sprinkler installation and factors that impact the time to evacuate buildings.

e) Require staff training and evacuation plans for nightclubs that cannot be evacuated in less than 1-1/2 minutes.

f) Provide improved means for occupants to locate emergency routes—such as explicit evacuation directions prior to the start of any public event, exit signs near the floor, and floor lighting—for when standard exit signs become obscured by smoke.

Recommendation 6. Portable Fire Extinguishers: NIST recommends that a study be performed to determine the minimum number and appropriate placement (based upon the time required for access and application in a fully occupied building) of portable fire extinguishers for use in new and existing nightclubs, and the level of staff training required to ensure their proper use.

Recommendation 7. Emergency Response: To ensure an effective response to a rapidly developing mass casualty event, NIST recommends that state and local authorities adopt and adhere to existing model standards on communications, mutual aid, command structure and staffing, such as:

a) NFPA 1221, Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems

b) NFPA 1561, Standard on Emergency Services Incident Management Systems

c) 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

d) 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

Recommendation 8. Research on Human Behavior: NIST recommends that research be conducted to better understand human behavior in emergency situations, and to predict the impact of building design on safe egress in fires and other emergencies (real or perceived), including the following:

a) the impact of fire products (gases, heat, and obscuration) on occupant decisions and egress speeds;

b) exit number, placement, size and signage;

c) conditions leading to and mitigating crowd crush;

d) the role of crowd managers and group interactions;

e) theoretical models of group behavior suitable for coupling to fire and smoke movement simulations; and

f) the level of safety that model codes afford occupants of buildings.

Recommendation 9. Research on Fire Spread and Suppression: NIST recommends that research be conducted to understand fire spread and suppression better in order to provide the tools needed by the design profession to address recommendations 2, 3 and 5, above. The following specific capabilities require research:

a) prediction of flame spread over actual wall, ceiling and floor lining materials, and room furnishings;

b) quantification of smoke and toxic gas production in realistic room fires; and

c) development of generalized models for fire suppression with fixed sprinklers and for firefighter hose streams.

Recommendation 10. Research on Computer-aided Decision Tools: NIST recommends that research be conducted to:

a) refine computer-aided decision tools for determining the costs and benefits of alternative code changes and fire safety technologies; and

b) develop computer models to assist communities in allocating resources (money and staff) to ensure that their response to an emergency with a large number of casualties is effective.

For purposes of generating a protocol, the 10 recommendations can be assigned to two groups:

A. Legislation/Adoption/Enforcement (includes Report Recommendations 1-5 & 7): recommendations for changes in the rules and practices that define local environments and fire department effectiveness; and

B. Research (includes Report Recommendations 6 & 8-10): recommendations for research on fire-related phenomena and mitigation methods that will lead to recommendations for changes in rules.

Evaluation of Group A recommendations requires examination of local rules and practices. NFPA will provide analysis of local data on local rules and practices as well as analysis of the related changes made to model codes and standards.

Evaluation of Group B recommendations as those recommendations are stated requires examination of published research results and ongoing or planned research programs. A literature review approach will be completed to assess the impact of these recommendations. The Group B recommendations are intended to lead to research that will in turn lead to new rules and practices. The literature review will pay particular attention to the degree of progress toward this ultimate goal.

In some cases, research may already have developed findings relevant to rules and practices, possibly some of the same rules and practices addressed by Group A recommendations. In a separate research task, the Foundation and NFPA will look at the results of its two primary evaluation tasks synergistically to provide an overall impact evaluation and complete the development and demonstration of a comprehensive general impact evaluation protocol.

Report on Task 2

Task 2 consists of the evaluation of the Group A recommendations (Recommendations 1-5 and 7) defined in the previous section. NFPA had its own interest in these same recommendations, dating back to the NFPA findings in NFPA's own investigation of The Station night club fire and NFPA consideration of proposals for changes in codes and standards arising from those findings. Before the NIST project was authorized and begun, NFPA had developed and conducted a survey of U.S. fire departments protecting populations of at least 50,000, with questions about local practices, local codes and standards, and local enforcement activities related to those local codes and standards, for each of six groups of issues:

- Adoption of current codes and standards and activities related to general enforcement of codes and standards
- Sprinkler requirements for nightclubs
- Interior finish requirements for nightclubs
- Indoor pyrotechnic requirements for nightclubs
- Occupancy limits and egress requirements for nightclubs
- Communications, incident management and deployment requirements for incident response

The goal of an exercise like Task 2 is to provide an evaluation of the degree of implementation of features and practices that were recommended – usually in the form of a new code or standard or changes to an existing code or standard. What is sought is information on:

- *adoption* of requirements (for those features and practices), which connects the gap between impact of recommendations at the national level (on model codes and standards) and impact at the local level (on local requirements and practices);

- *compliance* with requirements (for features of properties but not for fire department practices; if fire departments report adoption of requirements for fire department practices, then there is no point in asking fire departments about inspection and enforcement activities to check compliance); and

- *timing of changes* in requirements, as this is the most accessible information indicating a role on NIST recommendations and other national changes or guidance following a major incident in changing local practices (e.g., some localities may already have local practices that match the recommendations)

An evaluation exercise can be conducted using a number of different types of information:

- The exercise can be conducted using only local *information that is already routinely collected*, recorded and transmitted to a national body. Such an exercise will be very inexpensive, but it is very unlikely that such existing, nationally compiled data sources will be able to provide enough details for any significant evaluation.

- The exercise can be conducted using *site visits and/or special data collection protocols* that are set up to run for at least a year. Such an exercise will likely require a six-figure budget and still provide data on only a dozen or so communities. The detail obtained will be the most possible and will address the recommendations and their impacts in the greatest detail possible, but the lack of breadth of coverage will severely limit any conclusions that can be reached. Previous such studies have rarely incorporated smaller communities. Including these communities will add to the costs of the study, but not including these communities may limit the generalizability of any conclusions.

- The best balance of affordability and useful detail will probably be achieved through a *survey*. However, it is important to check costs, response rates, design bias, and resulting statistical significance of a particular survey proposal, and it is also important to check whether the level and type of detail obtainable from a survey will provide sufficient evaluative depth to be worth the cost. For this prototype application of an evaluation protocol, NFPA was able to use data collected in the earlier, independent NFPA survey because the issues addressed match well with the NIST recommendations on similar topics. In a normal application of the generic protocol, the people conducting the evaluation would have to review the considerations listed here for and against a survey as a source of evaluative information. They would also have to design a survey if they chose to conduct one. Appendix A contains the survey used by NFPA, which is offered here for its illustrative value to anyone seeking to develop a survey with the same structure for evaluation of any set of recommendations arising from investigation of a major incident.

In this report, comments about the general approach and comments about the nightclub fire example are interwoven. Comments about the example are indented to help the reader.

Although this protocol is limited to evaluation of local adoption of and compliance with particular recommendations, it may be useful to include information on the degree of success in having the recommendations adopted into national model codes or recognized best practices. A lack of success at the national model code stage will likely make the downstream questions moot.

The protocol sometimes uses “the community” and “the building or fire department” interchangeably when talking about adoption and activities to check compliance. The measurement of adoption and compliance proceeds in the same manner regardless of who has what role, authority or responsibility in achieving the desired results, but the application of the findings will depend very much on those roles and should be included in the evaluation.

The description of the protocol is fairly basic and could be refined for more ease of use. For example, there may be value in converting the evaluation scores to letter grades, which may convey the most important summary information more quickly than do the current formats.

Step 1. What is the Target?

A recommendation needs to be translated into a desired change in conditions in the field.

> In the example, the recommendations were intended to prevent or reduce the likelihood of a future multi-casualty fire at a nightclub. The target therefore is nightclubs, which should be made safer, and fire departments with nightclubs in their protected communities, which should be made better able to fight fires at nightclubs and maintain safety improvements at nightclubs. Although the target is nightclubs, it is reasonable to expect that other types of assembly occupancies would also benefit from the recommendations, whether they are aimed at changing behavior of the owners and managers (thereby increasing the safety of the buildings), the occupants (thereby reducing the risks they create or are exposed to), or the first responders (thereby better mitigating the losses in fires when they occur or reinforcing safer behaviors through inspection, enforcement, education or other means).

Targeting a group of properties. For recommendations defined by a class of properties, Step 1 starts with identifying the number of such establishments in the country, followed by looking for any clustering of establishments that would permit a narrower focus in the evaluation (e.g., most properties located in certain states or in communities of a certain size).

> For the example, this means starting with an estimate of the number of nightclubs.
>
> It will typically be the case that different data sources use different definitions or draw the boundaries differently, and that is the case in the example. In any evaluation, it will be important to examine these differences carefully so that the evaluation will be targeted on a group of properties that is appropriate for the evaluation. That is, if the evaluation is favorable or unfavorable for the group of properties selected for analysis, one can be reasonably sure that evaluation would have been similarly favorable or unfavorable for the precise group of properties targeted by the requirement or recommendation, if it had been possible to match the evaluation to that group exactly.
>
> The industry (which refers to itself variously as the bar, nightclub and drinking establishment industry or the nightlife and club industry trade organization industry) estimates roughly 65,000 establishments that derive their revenue primarily from the sale of alcoholic beverages.[2] However, only 8.6% of the revenue for these establishments is said to be from **nightclubs**, with taverns, bars and lounges, drinking

[2] NCIAA (which claims to be the Nightlife & Club Industry's Official Trade Organization), *Our Industry*, 2011-2012 statistics from diverse sources particularly IbisWorld studies conducted by MarketResearch.com, published at http://www.nciaa.com/content.aspx?page_id=22&club_id=160641&module_id=29898.

places, and cocktail lounges accounting for the rest. There does not appear to be a formal industry definition for "nightclub". Dictionary definitions typically mention nighttime operations and music and/or dancing as defining characteristics.[3] It is reasonable to expect that a nightclub will tend to be larger than a tavern or bar, with higher revenue per establishment, which means the night club share of establishments is likely smaller than the nightclub share of revenue. The actual number of true nightclubs is therefore probably lower than the 5,600 establishments estimated by applying 8.6% to 65,000.

At the same time, "nightclub" also is not specifically defined or separately addressed in either the national fire incident database or the principal model codes and standards. For example, NFIRS code 162 for Property Use includes all types of drinking establishments. In *NFPA 101®, Life Safety Code*, "nightclub" is not defined and requirements are stated not only for all drinking establishments but for all assembly properties, sometimes with a minimum occupancy threshold. Therefore, changes in response to the NIST recommendations and available data on fires and on local practices may address all drinking establishments. Certain non-drinking establishments such as concert halls are also likely to be impacted by some of the NIST recommendations.

The NFPA survey asked about the number of nightclubs in the community but only surveyed fire departments protecting communities with at least 50,000 population. This provided a manageable test of the survey protocols, while also offering the possibility of capturing a large share of the nightclubs or drinking establishments in the country. NFPA had not conducted an analysis of the distribution of nightclubs and drinking establishments by size of community prior to designing the survey.

For the analysis phase of this project, estimates of total nightclubs or drinking establishments in communities with at least 50,000 population were developed from the survey and compared to the national numbers developed from industry sources above (i.e., 65,000 total drinking establishments and less than 5,600 true nightclubs). The goal was twofold:

- Try to determine whether respondents were reporting on all drinking establishments or only true nightclubs, and
- Estimate what share of total U.S. nightclubs or drinking establishments are located in communities with at least 50,000 population.

Responses to the survey were given in terms of ranges for the number of nightclubs in the community. To estimate the number of nightclubs in these communities, it is necessary to pick a specific number to represent a range. For the closed-end ranges (2 to 5 and 6 to 10), one can run one set of analyses using the lower end of the range and one set using the upper end of the range. For the open-ended top range (11 or more), one can still run an analysis using the bottom end of the range, but it is necessary to select a number to represent the high end of the range.

[3] See, for example, *Merriam-Webster's Collegiate Dictionary*, Springfield (MA): Merriam-Webster, Incorporated, 10th edition, 1997.

An exploratory analysis was done in which the upper number for those open-ended top ranges was defined as 1 nightclub per 5,000 population combined with the high end of the population range. The figure of 1 nightclub per 5,000 population is roughly equivalent to 65,000 drinking establishments spread evenly over a U.S. population of around 320 million. For example, communities with populations in the range of 50,000 to 100,000 and reporting 11 or more nightclubs were estimated to have 20 nightclubs (20 = 100,000 x 1/5000). For the open-ended highest population range, which starts at 500,000 population, a figure of 1,000,000 population was used.

Using the bottom ends of the ranges produces an estimate of 6,700 nightclubs just from communities of 50,000 or more population, which is already higher than the nightclub-only portion of total establishments calculated above. Using the top ends of the ranges produces an estimate of 30,900 nightclubs, which is nearly half the total of 65,000 drinking establishments.

It seems clear that the survey respondents were using the drinking establishment definition rather than the narrower nightclub definition, because even the lowest estimate of total nightclubs in communities of 50,000 or more population is higher than the industry's estimate of total nightclubs in the country.

Also, as the population size of the communities declines, the number of nightclubs per community declines, but the number of such communities increases. Using the bottom ends of the ranges, the smaller communities account for more total nightclubs than the larger communities. Using the higher ends of the ranges, there is no clear relationship between size of community and share of total nightclubs.

The implications of this exploratory analysis are that a full evaluation of the impact of the NIST recommendations should include communities of all sizes. As further evidence of this point, The Station nightclub fire occurred in West Warwick, Rhode Island, a community of less than 30,000 population. The deadliest nightclub fire of the past half-century – the Beverly Hills Supper Club fire in 1977 – took place in Southgate, Kentucky, a town of less than 4,000 population. On the other hand, the deadliest U.S. nightclub fire of all time took place in Boston, Massachusetts, a large city with population protected in the top population group of the NFPA survey.

Success in implementation of recommendations will often be dependent on success in smaller communities. **Ideally, an evaluative survey should cover all sizes of communities.**

For the example, the argument in favor of including all communities is based on the fact that nightclubs can be found anywhere and appear to be very widely distributed. In general, the argument in favor of including all communities is based on the importance of capturing all or most of the targets and the fact that most of the targets may be spread across the many small communities where target density is quite low but share of total targets is collectively large.

There is a separate argument in favor of including all communities based on the possibility that new rules are less likely to be adopted, less likely to be adopted quickly, and less likely to be effectively enforced in smaller communities.

The fact that an all-community survey would be best for evaluation and may even be necessary for evaluation does not mean that such a survey will be practical or affordable.

The first concern is that response rates will drop with smaller communities.

Table A. Percent of Departments Responding to NFPA Nightclub Survey

Size of community	Percentage
500,000 or more	38%
250,000 to 499,999	42%
100,000 to 249,999	32%
50,000 to 99,999	33%
Total	34%

This looks like a fairly modest decline in response rate by size of community, but that is probably a reflection of the exclusion of communities with less than 50,000 population. For comparison's sake, consider the percent of departments responding to the third NFPA fire service needs assessment survey.[4]

Table B. Percent of Departments Responding to Third Fire Service Needs Assessment Survey

Size of community	Percentage
500,000 or more	58%
250,000 to 499,999	61%
100,000 to 249,999	59%
50,000 to 99,999	59%
25,000 to 49,999	48%
10,000 to 24,999	36%
5,000 to 9,999	23%
2,500 to 4,999	19%
Under 2,500	15%
Total	23%

As with the nightclub survey, response rates change little down to 50,000 population, but they decline sharply as community size shrinks below 50,000.

In addition, the smaller the community, the less likely it is to have any nightclubs. Table C presents results from Q1 of the nightclub survey, which asked how many nightclubs a responding community has. (See Table 1 for complete results from Q1.)

[4] *Third Needs Assessment of the U.S. Fire Service*, National Fire Protection Association, June 2011, p.179

Table C. Percent of Responding Departments Having No Nightclubs

Size of community	Percent
500,000 or more	0%
250,000 to 499,999	3%
100,000 to 249,999	11%
50,000 to 99,999	24%
Total	17%

As may be seen, the percentage of departments with no nightclubs rises rapidly as community size declines. Consider how this percent might continue to decline if the survey had included smaller communities. If the national average is 1 nightclub per 5,000 population, then more than half of communities under 2,500 population would have no nightclubs.

Put these two factors together. The response rates for the nightclub survey were roughly 2/3 the response rates for comparable sized communities in the third fire service needs assessment survey. This means that if the nightclub survey had pursued all communities, it might have achieved only a 10% response rate for communities with less than 2,500 population (10% = 2/3 of 15% response rate for those communities in the third needs assessment survey). There are about 13,000 communities (defined as fire department protection areas) with less than 2,500 population, and the average population for such communities is about 1,300. Therefore, communities of that size would average about 1 nightclub for every 4 communities (4 = 5,000/1,300), and only about 2-3% of communities with less than 2,500 population would be expected to respond to the survey and report having at least one nightclub. That translates into fewer than 300 communities. Survey forms would need to be mailed to most of the 13,000 communities to hope to obtain results from 200 rural departments with nightclubs.

These kinds of calculations would need to be made in order to determine the cost of a survey with sufficient statistical power to provide credible results for all sizes of communities.

Step 2. Evaluating Targeted Conditions

General protocol. An evaluation is built around best estimates of answers to three questions, for a particular recommended feature or practice that was called for in a recommendation.

Question 1. To what extent do communities have *requirements* related to the feature or practice?
Typically, a requirement will be set forth in an adopted code provision or standard or other legislative authorization. The "condition" could be a characteristic (e.g., system, feature) of the property that enhances safety, or it could be a practice of the fire department that reinforces the property characteristics (e.g., enforcement) or improves ability to mitigate incidents when they occur. Did we ask about a law or ordnance? I think Connecticut put their revision in a state law-not actually in the code.

Question 2. What is the degree of *compliance* with those requirements in the communities?
For property characteristics, there may be no existing basis for direct measurement of compliance because many, possibly most, communities do not have annual fire code inspections of all properties or of a representative sample of properties. A special survey of properties could be used, but in most cases, the only practical measurement will be best estimates by community authorities.

For fire department practices to improve mitigation ability (such as communications at the fire scene, deployment and staffing, incident management), the fire department is involved directly in adoption, which means the entity that needs to implement the requirements and assure compliance is not a separate entity, which might require more persuasion or motivation to comply with a requirement that they had nothing to do with creating.

In both case, an audit involving direct observation of practices and conditions by an independent third party would provide more evidence of compliance, but at considerably greater cost per community.

Question 3. Did the requirements *change after the major event* that led to the recommendations?
This is the best high-level indicator of impact of the recommendations. It is not necessarily the case that improvements in safety introduced after a major event were made in response to that event, let alone that they were made in accordance with specific recommendations emerging from that event, but it is a reasonable premise for a first-order evaluation of the impact of recommendations, and a more detailed evaluation would be much more expensive.

These three questions are associated with more detailed follow-up questions:

a) For question 1, *are the requirements in place well-aligned with the requirements that were recommended*? Data on this point will allow the evaluation to estimate relative success in implementation instead of a more rigid and inflexible either/or assessment.

b) For question 2, *are communities using inspections, tests and other means to achieve and assure compliance*? If no, then the best estimates by community authorities may not be accurate. Also if no, this points to programs where more active enforcement programs would be an obvious path to higher levels of compliance.

   Going to a deeper level of detail, are community estimates of compliance higher in places that are using particular means to achieve and assure compliance?

   If estimates are higher in places that are using more effective means, like inspections and tests, then that is evidence of the potential value of such means in improving compliance and can be used in designing follow-up programs and related advocacy arguments.

   If estimates are actually lower in places that are using more effective means, then that is evidence that community authorities may be overly optimistic about their levels of

compliance, in the absence of any real data. That supports a different kind of follow-up and different kinds of related arguments.

c) For questions 1 and 3, is adoption of requirements or full adoption of recommended requirements and practices associated more with one or another source of model codes and standards? This can be useful in designing follow-up programs to improve adoption rates.

Applying the three questions to the example.

Table D shows how specific survey questions are used to provide estimates for each of the three questions (row numbers 1 to 3) and each of the four nightclub features and practices identified for evaluation.

Table D. Questions Used in Estimating Evaluative Metrics, by [Nightclub] Feature or Practice

Question to be answered	Sprinklers	Interior finish	Indoor pyrotechnics	Occupancy limits and egress requirements
#1. Do communities have requirements? Yes/No	Q. 6	Q. 9	Q. 14	Q. 17
#1a. Which of several requirements do they have?	Q. 6, asks about occupancy threshold	Q. 11, on use of visual vs. testing confirmation	Q. 14, on use or non-use of NFPA 1126 in setting restrictions	Q. 17 on source of requirements, either local or a particular model code, which may imply different requirements
#2. How many [nightclubs] are in compliance? All, Most, Half, Some, None	Q. 8	Q. 13	Q 16	Q. 19
#2a. What enforcement activities with what frequencies and coverages are used to check compliance?	Q. 7	Q. 12	Q. 15	Q. 18
#3. Did the requirements change after [The Station nightclub fire occurred?] Yes/No	Q. 6a	Q. 9h	Q. 14e	Q. 17f

Table E shows how specific survey questions are used to provide estimates for each of the two questions (where as noted Question #2 is moot) and each of the three fire department practices identified for evaluation.

Table E. Questions Used in Estimating Evaluative Metrics, by Fire Department Practice

Question to be answered	Adoption of model code and existence of inspection program	Public emergency services communications systems re NFPA 1221	Emergency service incident management system re NIMS or NFPA 1561	Organizational, operational and deployment procedures re NFPA 1710 or 1720
#1. Does department follow indicated practice? Yes/No	Q. 2-4	Q. 20	Q. 21	Q. 22
#3. Did the requirements change after [The Station nightclub fire occurred?] Yes/No	Q. 5	Q. 20a	Q. 21a	Q. 22a

Adoption of Model Code and Enforcement Through Inspection

Part III in the NFPA survey asked about adoption of model codes, for new or existing occupancies, with or without amendments or other modifications, and the existence of an inspection program, for new or existing occupancies. These questions provide some information relevant to NIST Recommendation 1, which called for all state and local jurisdictions to:

a) adopt a building and fire code covering nightclubs based on one of the national model codes as a minimum requirement (and update local codes as the model codes are revised);
b) implement "aggressive and effective" fire inspection and enforcement programs that address:
   - all aspects of the codes,
   - documentation of building permits and alterations,
   - means of egress inspection and record keeping,
   - frequency and rigor of fire inspections, including follow-up and auditing procedures, and
   - guidelines on recourse available to the inspector for identified deviations from code provisions; and
c) ensure that enough fire inspectors and building plan examiners are on staff to do the job and that they are professionally qualified to a national standard such as NFPA 1031.

Question 1 (requirements) applied to code adoption and inspection program: Have building and fire codes based on national model codes been adopted? Table F is based on two columns each from Tables 2 and 3, which are based on Q's 2 and 3 from the NFPA nightclub survey. No department reported having no codes for either newly constructed or existing nightclubs, and so Table F is describing only communities with a local code not based on any national model code.

Table F. Percent of Departments Having No Local Code Based on National Model Code, for Newly Constructed and Existing Nightclubs

Size of community	Percentage of Departments Having No Code or A Local Code Not Based on a National Model Code	
	Newly Constructed Nightclubs	Existing Nightclubs
500,000 or more	15%	15%
250,000 to 499,999	0%	8%
100,000 to 249,999	7%	7%
50,000 to 99,999	8%	9%
Total	8%	9%

Note: Multiple responses were permitted, and that may affect the results. In the unlikely event that a department reported both "no code" and "local code not based on a model code", there will be double counting. This calculation also assumes that "local code not based on a model code" implies no local use of a model code, even if the department also checked off a model code as being in use.

Table 2 shows that 81% of departments (protecting communities of 50,000 or more population) use the *International Building Code*® (IBC) for newly constructed nightclubs, 35% use NFPA 101, *Life Safety Code*®, and 30% use an "other" model code, which when specified was almost always a state code based on one of the national model codes. (Note that multiple responses were permitted and communities could and often did select more than one code.)

Table 3 shows that 66% of departments (protecting communities of 50,000 or more population) use the *International Fire Code*® (IFC) for existing nightclubs, 45% use NFPA 101, *Life Safety Code*®, either as part of NFPA 1 (22%) or not as part of NFPA 1 (23%), and 18% use an "other" model code, which when specified was almost always a state code based on one of the national model codes. (Note that multiple responses were permitted and communities could and often did select more than one code.)

Question 3 (change after the major event) for Recommendation 1a. The Station nightclub fire occurred in 2003. By the 2006 edition, both NFPA 101 and the *International Building Code* (IBC) had adopted requirements consistent with the NIST recommendations for newly constructed nightclubs (sprinklers regardless of occupancy), and NFPA 101 had adopted requirements consistent with the NIST recommendations for existing nightclubs (sprinklers for occupancy of 100 or more). It should be noted that the NFPA 101 changes were actually processed as Tentative Interim Amendments (TIA) for the 2003 edition of the code, a form of emergency code changes at NFPA, in July of 2003. The survey did not ask specifically about this TIA but instead asked about any changes made after 2003.

Table 4 indicates that only 3% of departments reporting use of the IBC for newly constructed buildings were using a 2003 or earlier edition. Table 5 indicates that 28% of departments reporting use of NFPA 101 for newly constructed buildings were using a 2003 or earlier edition. Note that 23% of departments use both documents.

Table 6 indicates that only 2% of departments reporting use of the IFC for existing buildings were using a 2003 or earlier edition. However, even the most current edition of the IFC does not include any specific sprinkler requirements for existing nightclubs. Table 7 indicates that 10% of departments reporting use of NFPA 101 for existing buildings (as part of NFPA 1) were using a 2003 or earlier edition. Note that 12% of departments use both documents.

Based on combining these results, **up to 20% of departments are in communities that have not fully implemented the NIST recommendations regarding use of an updated national model code for newly constructed buildings**, consisting of:

- 8% (from Table F) that have no local code based on a model code at all and

- up to another 12% whose local code may reference only model code editions that precede implementation of requirements like those called for by the NIST recommendations (3% of the 81% using IBC and 28% of the 35% using NFPA

101, assuming that the departments using an older edition of either the IBC or NFPA 101 are not departments that also use an updated edition of the other code).

Also, based on combining these results, **up to 60% of departments are in communities that have not fully implemented the NIST recommendations regarding use of an updated national model code for existing buildings**, consisting of:

- 9% (from Table F) that have no local code based on a model code at all,
- another 5% using an outdated edition of NFPA 101 (10% of the 45% using NFPA 101, assuming the distribution of edition ages for departments using NFPA 101 as part of NFPA 1 is the same as the distribution of edition ages for departments using NFPA 101 not as part of NFPA 1, the latter shown in Table 7), and
- up to all of the 46% of departments whose local code is based on a model code that has not (IFC) or is not known to have ("other" code) implemented requirements like those called for by the NIST recommendations (assuming that a local code based on the IFC or an "other" code is not also based on a current edition of NFPA 101).

Table 8 indicates that 32% of departments have local amendments in place, 9% that have not been changed since 2003, the year of The Station nightclub fire, and the other 23% with local amendments that have been changed since 2003. The remaining 68% of departments have no local amendments. Local amendments can be used to remove requirements from a model code or, much less often, to provide stricter requirements. Code and standard development bodies recommend against the use of local amendments or other modifications that make the requirements less stringent.

Question 1 for Recommendation 1b: Inspections. Before examining estimates of degree of compliance and programs intended to assure compliance for specific property requirements, it is useful to have an overview of the general provisions for compliance assurance in the communities. Specifically, it is useful to ask whether there are any provisions for inspections to check on compliance.

In the example, this is also the only information currently available for communities with less than 50,000 population. For comparison's sake, consider the percent of departments for which no one provides fire code inspections, according to the third NFPA fire service needs assessment survey.[5]

Table G indicates that 100% of departments in communities large enough to be included in the NFPA nightclub survey (i.e., at least 50,000 population) have someone who conducts fire code inspections. For smaller communities, particularly

[5] *Third Needs Assessment of the U.S. Fire Service*, National Fire Protection Association, June 2011, p.106

communities under 10,000 population, this is not the case. For rural communities (under 2,500 population), more than a third of communities have no one performing fire code inspections.

Also, while not shown in Table G, for communities under 5,000 population, the most frequently cited source of fire code inspections is "Other", not the fire department or a building department or a separate inspection department. "Other" might include inspections by the state fire marshal's office or an insurance service. "Other" might also include contract inspection personnel reporting to a local authority.

If the nightclub survey had been extended to smaller communities, it is likely that the majority of fire departments serving those communities would report no fire code inspections at all or no fire code inspections under the control and supervision of the fire department.

Table G. Percent of Departments Responding to Third Fire Service Needs Assessment Survey Reporting No One Provides Fire Code Inspections

Size of community	No Fire Code Inspections
500,000 or more	0%
250,000 to 499,999	0%
100,000 to 249,999	0%
50,000 to 99,999	0%
25,000 to 49,999	1%
10,000 to 24,999	3%
5,000 to 9,999	10%
2,500 to 4,999	24%
Under 2,500	36%
Total	24%

Table 9 indicates that no departments protecting communities with at least 50,000 population report that there are no inspections in their community. For building code inspections of buildings under construction, 64% of departments reported conducting such inspections, and for the other departments, most if not all may have had inspection programs conducted by the building department, a separate inspection department, or another entity. For fire code inspections of existing buildings, 77% of departments report conducting inspections with at least annual frequency, and 23% report conducting inspections with a less-than-annual frequency. A total of 66% report conducting inspections in response to complaints, which may be instead of or in addition to inspections on a defined schedule and frequency.

NFPA has conducted two major studies of measures of fire code inspection effectiveness, one published in 1979 and the other in 2008.[6] The first study found that none of the departments studied (all protecting populations of at least 250,000), all of which claimed to be achieving annual fire code inspections, were in fact conducting inspections at least once a year. The departments that came closest were using in-service firefighters – who did not have all the training normally required of full-time fire inspectors – to conduct most inspections, which would not comply with NIST Recommendation 1c

The second study found that requirements for professional certification of all inspectors had reduced the use of in-service firefighters, thereby also sharply reducing the volume of inspections conducted, and departments were increasingly reduced to inspections triggered by complaints and inspections only for special categories of properties (such as inspections in support of permits, where there was a revenue stream associated with the permits to offset costs).

The bottom line is that Table 9 (and Q.5 it is based on) do not show the extent of problems and shortfalls that more detailed studies have consistently and increasingly found.

Summary of evaluation of Recommendation 1.

1. 90+% of departments protecting communities of 50,000 or more have local codes based on national model codes for both newly constructed and existing nightclubs.

2. Up to 12% of departments fall short of Recommendation 1a for newly constructed nightclubs because they are using an older edition of the code, dating from a time before restrictions based on analysis of The Station nightclub fire became part of the code.

3. A large share of departments appear to fall short of Recommendation 1a for existing nightclubs because they are relying exclusively on a model fire code (the *International Fire Code*) which had not adopted the recommended requirements for existing nightclubs. In this context, the use of outdated codes appears to be of lesser importance.

4. 100% of departments protecting communities of 50,000 or more report having some inspections for newly constructed and/or existing buildings. However, other studies have indicated that the situation is sharply different for smaller communities, which were not included in the nightclub survey, or have indicated that the coverage and frequency of inspections are often much less than fire departments believe and report. Notwithstanding the favorable data

[6] *Fire Code Inspections and Fire Prevention: What Methods Lead to Success?*, NFPA and Urban Institute, 1979; and *Measuring Code Compliance Effectiveness for Fire-Related Portions of Codes*, NFPA and Fire Protection Research Foundation, 2008.

from the NFPA survey, the true rating on Recommendation 1b is probably quite low.

Summary of protocol for evaluation of recommendations like Recommendation 1.

1. Recommendations that are both very broad and very detailed are often difficult or impossible to evaluate using affordable data that can be obtained from a distance. This is especially true when the only available data consists of summary characterizations by local managers who may not have access to detailed records and analysis to support their estimates and characterizations.

2. An evaluation plan for NIST recommendations should begin by identifying data and analysis options for each recommendation and (often) each detailed sub-recommendation. For some sub-recommendations, meaningful evaluation may not be possible at any price. For others, it may be necessary to choose between (a) evaluating a less detailed version of the sub-recommendation using affordable survey data or other remotely available data, or (b) evaluating a more detailed version of the sub-recommendation using more expensive on-site methods applied to what will inevitably be a small sample of communities.

3. In many cases, it may be possible to distinguish major versus minor obstacles to successful implementation even when direct quantification of the degree of implementation is prohibitively difficult. For example, when a NIST recommendation has not been adopted by the most widely used national model code, questions about local adoption of the national model, use of updated editions, and compliance assurance through inspections, all become moot.

4. Evaluation is likely to be more expensive and more difficult in smaller communities. Programs to improve the level of implementation are also likely to be more difficult in smaller communities because of the lack of economies of scale in all aspects – much lower rates of targets per community, more distinct entities and steps to be dealt with per target reached, lower geographic density and the higher costs of contacting targets, and so forth. At the same time, smaller communities may account for a large share of the total problem to be addressed by the recommendations.

   Therefore, an evaluation plan should probably be set separately for large communities (like the communities included in the example, with populations of at least 50,000 each), middle-sized communities (say, in the 10,000 to 50,000 population range), and small communities (say, under 10,000 population). It may make sense to scale back the scope of the evaluation for smaller communities and to set less ambitious goals for degree of implementation in those communities.

Sprinklers

Part IV of the NFPA survey asked about requirements for, inspection of, and usage of sprinklers in nightclubs. The data from Part IV addresses part of Recommendation 2 was for sprinkler system requirements to be adopted by national model codes and then adopted and "aggressively" enforced by state and local authorities:

a) for all new nightclubs regardless of size; and
d) for existing nightclubs with an occupancy limit greater than 100 people.

This recommendation, like Recommendations 3-5, is well structured for evaluation using the three questions, as detailed in Table D.

Question 1 (requirements) for Sprinklers: Are there sprinkler requirements, and how do they compare to Recommendation 2? Table D refers to Q.6 for an evaluation of the existence of sprinkler requirements and for characteristics of those requirements.

Q.6 does not distinguish newly constructed nightclubs from existing nightclubs. In hindsight, it would have been better to split Q.6 to provide information directly for these two situations.

For newly constructed nightclubs, the requirements in both major national model codes correspond to the NIST recommendations, requiring sprinklers in all such nightclubs. As noted in the evaluation of Recommendation 1 (Table F), only 8% of the departments have a local code that is not based on one of these two codes. Some of the 8% may have the same requirements in their local code, however, and some of the other departments may have removed that requirement through local amendment.

Table 10 shows that 9% of departments have no sprinkler requirements for nightclubs, and another 11% have requirements that do not apply below an occupancy load of 200. Therefore, 20% of departments do not have requirements that conform to the NIST recommendations. Table H provides the same statistics by size of community.

Table H. Percent of Departments Without Sprinkler Requirements Consistent With NIST Recommendation 2

Size of community	Percentage of Departments Without Sprinkler Requirements Consistent with Recommendation 2		
	Combined No or Less Strict Requirements	No Requirements	Requirements Less Strict Than in Recommendation 2
500,000 or more	38%	9%	29%
250,000 to 499,999	12%	3%	8%
100,000 to 249,999	17%	9%	8%
50,000 to 99,999	20%	9%	11%
Total	20%	9%	11%

Question 2 (compliance) for Sprinklers: What is the perceived level of compliance with the local requirements? Table D refers to Q.8 for an evaluation of the estimated level of compliance with the requirements in place. Q.7 can be used for estimation of the extent of enforcement programs (e.g., inspections) specifically directed at compliance assurance for these requirements. Some additional analysis has been conducted to check whether the estimated level of compliance varies depending on the strictness of the requirements.

After proportional allocation of "Don't Know" responses, Table 11 shows that 81% of responding departments estimate that all or most nightclubs are in compliance with local sprinkler requirements. Table I shows that this percentage does not vary much by size of community, but there is a clear trend toward higher estimated percentages of full compliance (All but not Most) as the size of the community declines.

Table I. Percent of Departments Estimating All or Most Nightclubs in Compliance with Sprinkler Requirements, by Size of Community

	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
Size of community	**All or Most**	**All**	**Most**
500,000 or more	78%	33%	46%
250,000 to 499,999	65%	35%	31%
100,000 to 249,999	77%	44%	33%
50,000 to 99,999	85%	60%	25%
Total	81%	51%	30%

Table J shows that estimated compliance declines as the requirements become less strict.

Table J. Percent of Departments Estimating All or Most Nightclubs in Compliance with Sprinkler Requirements, by Requirement

	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
Size of community	**All or Most**	**All**	**Most**
Regardless of occupancy	92%	67%	25%
Occupancy of 50 or more	88%	69%	19%
Occupancy of 100 or more	78%	49%	29%
Occupancy of 200 or more	81%	35%	46%
Total	81%	51%	30%

Table 12 shows that 35% of departments report they conduct inspections "just to check compliance with sprinkler requirements", and the other 65% report that they do not. There is no clear trend up or down in the percentages conducting inspections as community size shrinks. Therefore, the increase in estimated full compliance by

smaller communities in the survey is not a reflection of their having more or less direct information on compliance from inspections. It may be a reflection of smaller communities having only one or two true nightclubs (as opposed to 10-20 drinking establishments generally), making it possible for authorities to focus their attention on the status of only a couple establishments.

Question 3 (change after the major event) for Sprinklers: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table D refers to Q.6a for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it. Table 13 shows that half the communities changed their requirements after 2003 and half did not.

The NFPA nightclub survey was designed to test the ability of generic survey questions to provide useful evaluative information for diverse findings. This particular question may illustrate the limitations of such an approach, because the communities that reported no change could be reporting at least three very different developments:

- It is possible that the local requirements changed when the referenced model code or state code changed, but because that change was not initiated by the community, they do not think of it as a change within the scope of the question.

- It is possible that the local requirements did not change because the community already had stricter requirements in place, and so the changes to the model codes after The Station nightclub fire did not affect them and did not result in any changes to their local requirements.

- It is possible that the local requirements did not change because the community opted out of the changes to the referenced model or state code, through local amendments or failure to adopt updated editions.

- It is possible that communities were aware of the numerous code violations present at the time of The Station fire and they simply redoubled their enforcement efforts for the requirements in effect in their adopted code.

In all of these situations, the issuance of the NIST requirements would not have made any direct difference in the local requirements. However, NIST's goal is to have their recommendations in place in all communities, not to be the reason why those recommendations are in place. Therefore, the evaluation should focus primarily on the answers to Questions 1 and 2 and less on the answer to Question 3.

Summary of evaluation for sprinklers

- 80% of communities with at least 50,000 population have sprinkler requirements in place that are consistent with the NIST recommendations for existing nightclubs. It is likely that 90+% have sprinkler requirements in place

that are consistent with the NIST recommendations for newly constructed nightclubs.

- 81% of communities with at least 50,000 population estimate that All (51%) or Most (30%) nightclubs are in compliance with their local requirements. Most communities do not have inspections just to check on these requirements, and so the accuracy of these estimates is uncertain.

- Half of communities with at least 50,000 population and with sprinkler requirements report that their requirements changed after 2003, the year of The Station nightclub fire.

Summary of protocol for evaluation of recommendations like Recommendation 2.

1. Such evaluations are built around answers to three generic questions:
   - the existence of local requirements that are consistent with the NIST recommendations;
   - local estimates of the degree of compliance with local requirements; and
   - whether local requirements changed after the event that formed the basis for the NIST recommendations.

2. The NFPA nightclub survey represented an attempt to answer these questions for several recommendations using generic questions and affordable data collection methods.

3. Recommendation 2 is relatively short and clear-cut, which makes it relatively easy to assess the existence of local requirements that conform with NIST recommendations. Even then, going forward there should be more clear differentiation of newly constructed versus existing establishments.

4. If resources and priorities permit, there would be value in the use of a small sample of site visits or more detailed surveys (including requests for copies of supporting records) to elaborate and spot check local estimates of degree of compliance.

5. Direct questions about changes to requirements after the precipitating event have a very limited ability to assess the impact of NIST recommendations or any other information or actions triggered by the event. If resources and priorities permit, there would be value in the use of a small sample of site visits to produce more detailed and more fully verified descriptions of how requirements and compliance with requirements developed and the role of different factors in those developments.

Interior Finish

Part V of the NFPA survey asked about requirements for, inspection of, and status of interior finish in nightclubs. The data from Part V addresses part of Recommendation 3, which recommended appropriate authorities:

a) adopt and aggressively enforce [relevant] existing provisions of model codes;
b) make sure that non-FR flexible PU foam and any materials with similar ignition or fire propagation properties are clearly identifiable to building owners, operators, contractors, and authorities, and forbid their use in all newly constructed and existing nightclubs; and
c) review and revise the standard test procedures to assure that they will identify undue hazards and will incorporate best measurement and prediction practices.

Parts of this recommendation are directed to the standards development organizations and to the researchers who support their work. This project is concerned with the evaluation of conditions in targeted properties (nightclubs) and fire departments.

Therefore, this recommendation will be evaluated here using the three questions, as detailed in Table D, solely in terms of whether local enforcement actions are well designed to check on and remove hazardous materials even if they are not so identifiable as Recommendation 3 seeks to make them.

Question 1 (requirements) for Interior Finish: Are there interior finish requirements, and how do they compare to Recommendation 3? Table D refers to Q.9 for an evaluation of the existence of interior finish requirements and to Q.11 for analysis of the use of various measurement methods to check on compliance with the requirements.

Table 14 shows that all departments have interior finish requirements for nightclubs.

- 62% cite the *International Building Code* (which has requirements for newly constructed buildings only) as the source;
- 59% cite the *International Fire Code* (which references the IBC requirements for newly constructed buildings and has nothing specific for existing buildings) as the source;
- 32% cite NFPA 101, *Life Safety Code* (which has requirements for newly constructed and existing buildings) as the source;
- 17% cite NFPA 1 (which derives its requirements from NFPA 101) as the source;
- 10% cite "other" model codes as the source, and based on answers to other questions, those "other" codes are probably nearly all state codes; and
- 3% cite local requirements not based on any model code.

Table 14 provides results by community size. Table 15, based on Q.10, indicates that 93% of communities reference a standard test in their requirements, while 7% do not. No information was requested on how the 7% determine compliance, but it is possible that some or many of these communities require a certification of compliance with an

appropriate test but leave the choice of test or other proof of compliance to the discretion of the parties requesting approval.

Question 2 (compliance) for Interior Finish: What is the perceived level of compliance with the local requirements? Table D refers to Q.13 for an evaluation of the estimated level of compliance with the requirements in place. Q.12 can be used for estimation of the quality of the evidence used to check compliance for these requirements. Some additional analysis has been conducted to check whether the estimated level of compliance varies depending on the type of evidence used.

After proportional allocation of "Don't Know" responses, Table 16 shows that 88% of responding departments estimate that all or most nightclubs are in compliance with local interior finish requirements. Table K shows that this percentage does not vary much by size of community, but there is a clear trend toward higher estimated percentages of full compliance (All but not Most) as the size of the community declines.

Table K. Percent of Departments Estimating All or Most Nightclubs in Compliance with Interior Finish Requirements, by Size of Community

	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
Size of community	**All or Most**	**All**	**Most**
500,000 or more	90%	15%	75%
250,000 to 499,999	91%	25%	66%
100,000 to 249,999	87%	28%	58%
50,000 to 99,999	87%	42%	45%
Total	88%	34%	53%

Table 17 shows that 19% of departments report they conduct inspections "just to check compliance with interior finish requirements", and the other 81% report that they do not. There is a clear trend that conducting these inspections becomes more likely as community size shrinks.

Table 18 shows what percentage of departments are using each of four sources of fire performance information to identify compliant versus non-compliant interior finish.

- 51% of departments protecting populations of 50,000 or more report using visual inspection "only";
- 79% report using review of specification sheets and technical data for materials;
- 15% use routine testing of materials, and 12% conduct testing based on an initial visual screening, presumably of suspect materials.

A question that can probably be answered only with site visits or other more detailed conversations with communities would be how well these methods work to identify non-compliant materials that were installed in an existing nightclub, as was the case in The Station nightclub. It is not clear what would trigger visual screening or trigger

review of specification sheets and technical data if the inspectors have no indication that anything has changed.

Table L shows that estimated compliance does not vary much as the nature and quality of the evidence changes from visual inspection only to the use of testing data, from specification sheets, routine testing, or testing triggered by visual observation screening.

Table L. Percent of Departments Estimating All or Most Nightclubs in Compliance with Interior Finish Requirements, by Type of Evidence of Compliance

	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
Size of community	**All or Most**	**All**	**Most**
Visual inspection only	84%	32%	52%
Review of spec sheets and other technical data	90%	36%	54%
Testing based on visual screening	93%	35%	59%
Routine testing	91%	33%	58%
Total	88%	34%	53%

Question 3 (change after the major event) for Interior Finish: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table D refers to Q.9h for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it. Table 19 shows that 29% of the communities changed their requirements after 2003 and the other 71% did not.

The NFPA nightclub survey was designed to test the ability of generic survey questions to provide useful evaluative information for diverse findings. This particular question may illustrate the limitations of such an approach, because the communities that reported no change could be reporting at least three very different developments:

- It is possible that the local requirements changed when the referenced model code or state code changed, but because that change was not initiated by the community, they do not think of it as a change within the scope of the question.

- It is possible that the local requirements did not change because the community already had stricter requirements in place, and so the changes to the model codes after The Station nightclub fire did not affect them and did not result in any changes to their local requirements.

- It is possible that the local requirements did not change because the community opted out of the changes to the referenced model or state code, through local amendments or failure to adopt updated editions.

- It is possible that communities were aware of the numerous code violations present at the time of The Station fire and they simply redoubled their enforcement efforts for the requirements in effect in their adopted code.

In all of these situations, the issuance of the NIST requirements would not have made any direct difference in the local requirements. However, NIST's goal is to have their recommendations in place in all communities, not to be the reason why those recommendations are in place. Therefore, the evaluation should focus primarily on the answers to Questions 1 and 2 and less on the answer to Question 3.

Summary of evaluation for interior finish:

- All communities with at least 50,000 population have interior finish requirements in place, but more than half the departments (those not citing NFPA 101 or NFPA 1 as a source, assuming no overlap) appear to have no requirements in place for existing buildings. Nearly all (93%) reference a standard test, and the others may have requirements that indirectly reference a standard test, such as by referencing a certification requirement that will be handled by entities that use standard tests.

- 88% of communities with at least 50,000 population estimate that All (34%) or Most (53%) nightclubs are in compliance with their local requirements. Most (81%) communities do not have inspections just to check on these requirements, and so the accuracy of these estimates is uncertain. Most inspections are limited to visual inspection and/or review of spec sheets and other technical data on materials, but it is not clear that any departments have a reliable mechanism – or an applicable requirement – that will trigger identification of hazardous conditions added to an existing nightclub.

- 29% of communities with at least 50,000 population and with interior finish requirements report that their requirements changed after 2003, the year of The Station nightclub fire.

Summary of protocol for evaluation of recommendations like Recommendation 3.

1. Such evaluations are built around answers to three generic questions:
    - the existence of local requirements that are consistent with the NIST recommendations;
    - local estimates of the degree of compliance with local requirements; and
    - whether local requirements changed after the event that formed the basis for the NIST recommendations.

2. The NFPA nightclub survey represented an attempt to answer these questions for several findings using generic questions and affordable data collection methods.

3. Recommendation 3 is complex in that it can only be fully assessed through data that characterize the fire properties in all new and existing nightclubs. No community has such data or anything close to it. In terms of achieving the nightclub conditions intended by this recommendation, the key might be the recommendation that all interior finish materials be easily identifiable as to their compliance. Even that would not be sufficient to assure compliance in existing nightclubs unless there were a mandatory trigger – such as a permit requirement – for compliance assurance whenever interior finish is modified. In the absence of such a trigger and of a sub-recommendation that would have that effect, it is difficult to determine from available data how successfully a community is in monitoring interior finish in its nightclubs.

4. If resources and priorities permit, there would be value in the use of a small sample of site visits to elaborate and spot check local estimates of degree of compliance.

5. Direct questions about changes to requirements after the precipitating event have a very limited ability to assess the impact of NIST recommendations or any other information or actions triggered by the event. If resources and priorities permit, there would be value in the use of a small sample of site visits to produce more detailed and more fully verified descriptions of how requirements and compliance with requirements developed and the role of different factors in those developments.

Indoor Pyrotechnics

Part VI of the NFPA survey asked about requirements for, inspection of, and status of indoor use of pyrotechnics in nightclubs. The data from Part VI addresses part of Recommendation 4, which called for jurisdictions to adopt and aggressively enforce NFPA 1126. A further part of the recommendation centers around strengthening some of the provision in NFPA 1126. The recommendations for strengthening were directed at NFPA and are outside the scope of this project, which focuses on recommended changes in conditions in the field.

Therefore, this recommendation will be evaluated here using the three questions, as detailed in Table D, solely in terms of whether NFPA 1126 has been adopted and is being enforced through inspections.

Question 1 (requirements) for Indoor Pyrotechnics: Are there indoor pyrotechnics requirements, and how do they compare to Recommendation 4? Table D refers to Q.14 for an evaluation of the existence of indoor pyrotechnics requirements and for the conformance of those requirements to Recommendation 4 (i.e., specific reference to NFPA 1126).

Table 20 shows that 66% of departments protecting communities of 50,000 or more population have local restrictions based on NFPA 1126, and 98% have some kind of local restrictions on indoor use of pyrotechnics in nightclubs. Table 20 also provides results by community size.

Question 2 (compliance) for Indoor Pyrotechnics: What is the perceived level of compliance with the requirements? Table D refers to Q.16 for an evaluation of the estimated level of compliance with the requirements in place.

After proportional allocation of "Don't Know" responses, Table 21 shows that 97% of responding departments estimate that all or most nightclubs are in compliance with local indoor pyrotechnics requirements. Table M shows that this percentage does not vary much by size of community, but there is a clear trend toward higher estimated percentages of full compliance (All but not Most) as the size of the community declines.

Table M. Percent of Departments Estimating All or Most Nightclubs in Compliance with Indoor Pyrotechnics Requirements, by Size of Community

	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
Size of community	**All or Most**	**All**	**Most**
500,000 or more	100%	55%	45%
250,000 to 499,999	92%	60%	32%
100,000 to 249,999	96%	81%	15%
50,000 to 99,999	98%	85%	13%
Total	97%	79%	18%

Table 22 shows that 85% of departments report they conduct inspections "just to check compliance with indoor pyrotechnics requirements", and the other 15% report that they do not. There is a clear trend that conducting these inspections becomes more likely as community size increases.

Table 22 also shows what percentage of departments are using each of three triggers for inspections.

- 64% of departments protecting populations of 50,000 or more report conducting inspections at events;
- 50% report conducting inspections with managers in advance of events;
- 51% report conducting inspections based on complaints, concerns or requests received in advance of or at events.

Table N shows that estimated compliance does not vary much based on the use or non-use of inspections or the type of inspections used. Departments reporting no inspections were more likely to report "Don't Know" for compliance – 20% versus 2-4% for the three options with inspections – but when estimating, they were more likely to estimate full compliance by all nightclubs than the other three options.

Table N. Percent of Departments Estimating All or Most Nightclubs in Compliance with Interior Pyrotechnics Requirements, by When and Why Inspections Are Conducted

When or Why Inspection Conducted	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
	All or Most	All	Most
Inspections at events	97%	75%	22%
Inspections with managers in advance of events	97%	75%	22%
Inspections based on complaints, concerns or requests	97%	72%	25%
No inspections	96%	89%	7%
Total	97%	79%	18%

Question 3 (change after the major event) for Indoor Pyrotechnics: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table D refers to Q.14e for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it. Table 23 shows that 18% of the communities changed their requirements after 2003 and the other 82% did not.

The NFPA nightclub survey was designed to test the ability of generic survey questions to provide useful evaluative information for diverse recommendations. This particular question may illustrate the limitations of such an approach, because the communities that reported no change could be reporting at least three very different developments:

- It is possible that the local requirements changed when the referenced model code or state code changed, but because that change was not initiated by the community, they do not think of it as a change within the scope of the question.

- It is possible that the local requirements did not change because the community already had stricter requirements in place, and so the changes to the model codes after The Station nightclub fire did not affect them and did not result in any changes to their local requirements.

- It is possible that the local requirements did not change because the community opted out of the changes to the referenced model or state code, through local amendments or failure to adopt updated editions.

- It is possible that communities were aware of the numerous code violations present at the time of The Station fire and they simply redoubled their enforcement efforts for the requirements in effect in their adopted code.

In all of these situations, the issuance of the NIST requirements would not have made any direct difference in the local requirements. However, NIST's goal is to have their recommendations in place in all communities, not to be the reason why those recommendations are in place. Therefore, the evaluation should focus primarily on the answers to Questions 1 and 2 and less on the answer to Question 3.

Summary of evaluation for indoor pyrotechnics

- 98% of communities with at least 50,000 population have indoor pyrotechnics requirements in place, and 66% of communities specifically reference NFPA 1126.

- 97% of communities with at least 50,000 population estimate that All (79%) or Most (18%) nightclubs are in compliance with their local requirements. Most (85%) communities conduct inspections to reinforce compliance, using some combination of inspections at events, inspections with managers in advance of events, and inspections based on complaints, concerns or requests. Estimates of compliance show almost no difference based on the type of inspection conducted or even whether there are any inspections at all.

- 18% of communities with at least 50,000 population and with indoor pyrotechnics requirements report that their requirements changed after 2003, the year of The Station nightclub fire.

Summary of protocol for evaluation of recommendations like Recommendation 4.

1. Such evaluations are built around answers to three generic questions:
   - the existence of local requirements that are consistent with the NIST recommendations;
   - local estimates of the degree of compliance with local requirements; and
   - whether local requirements changed after the event that formed the basis for the NIST recommendations.

2. The NFPA nightclub survey represented an attempt to answer these questions for several recommendations using generic questions and affordable data collection methods.

3. Recommendation 4 is complex in that it seeks to control potentially hazardous practices and not fixed, installed hazards. Communities probably do not have databases that routinely track violations by monitoring of all or a representative sample of events, and so direct assessment of compliance is not possible with existing data. Even site visits would be unable to acquire this kind of data.

Occupancy Limits and Egress Requirements

Part VII of the NFPA survey asked about requirements for, inspection of, and status of occupancy limits and egress requirements in nightclubs. The data from Part VII addresses part of Recommendation 5, which recommended strengthening code and standard development organizations (which are outside the scope of this project, which focuses on recommended changes in conditions in the field), adopting model code requirements, and using inspections to achieve compliance with those requirements.

Question 1 (requirements) for Occupancy Limits and Egress Requirements: Are there occupancy limits for nightclubs, and how do they compare to Recommendation 5? Table D refers to Q.17 for an evaluation of the existence of occupancy limit requirements and for the sources of those requirements, which is the only information available on how those requirements compare to Recommendation 5.

Table 24 shows that all departments have egress requirements and/or occupancy limits requirements for nightclubs.

- 76% cite the *International Building Code* (which has requirements for newly constructed buildings only) as the source;
- 34% cite NFPA 101, *Life Safety Code* (which has requirements for newly constructed and existing buildings) as the source;
- 30% cite "other" model codes as the source, and based on answers to other questions, those "other" codes are probably nearly all state codes; and
- 5% cite local requirements not based on any model code.

Question 2 (compliance) for Occupancy Limits and Egress Requirements: What is the perceived level of compliance with the requirements? Table D refers to Q.19 for an evaluation of the estimated level of compliance with the requirements in place.

After proportional allocation of "Don't Know" responses, Table 25 shows that 96% of responding departments estimate that all or most nightclubs are in compliance with local occupancy requirements.

Table O. Percent of Departments Estimating All or Most Nightclubs in Compliance with Occupancy Requirements, by Size of Community

Size of community	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
	All or Most	All	Most
500,000 or more	100%	15%	85%
250,000 to 499,999	100%	33%	67%
100,000 to 249,999	92%	36%	56%
50,000 to 99,999	97%	51%	46%
Total	96%	42%	54%

Table O shows that this percentage does not vary much by size of community, but there is a clear trend toward higher estimated percentages of full compliance (All but not Most) as the size of the community declines.

Table 26 shows that 56% of departments report they conduct inspections "just to check compliance with egress requirements and/or occupancy limits for nightclubs ", and the other 44% report that they do not. There is a clear trend that conducting these inspections becomes more likely as community size increases.

Table 26 also shows the frequency of these special inspections:

- 1% of departments protecting populations of 50,000 or more report conducting inspections roughly every evening;
- 6% report conducting inspections at least weekly;
- 49% report conducting inspections on a less than weekly frequency.

Table P shows that estimated compliance is lower with less frequent inspections. Departments conducting no inspections gave estimates of compliance that were similar to those from departments with weekly inspections and better than those from departments with less than weekly inspections. This looks like a pattern of excessive optimism on the part of departments that do not conduct inspections. Departments reporting no inspections were more likely to report "Don't Know" for compliance – 12% versus 0-1% for the three options with inspections.

Table P. Percent of Departments Estimating All or Most Nightclubs in Compliance with Occupancy Requirements, by Frequency of Inspections

Frequency of Inspections	Percentage of Departments Estimating All or Most Nightclubs in Compliance		
	All or Most	All	Most
Inspections roughly every evening	100%	67%	33%
Inspections at least weekly	100%	54%	46%
Inspections with less than weekly frequency	95%	33%	62%
No special inspections	98%	51%	47%
Total	96%	42%	54%

Question 3 (change after the major event) for Occupancy Limits and Egress Requirements: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table D refers to Q.17f for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it. Table 27 shows that 12% of the communities changed their requirements after 2003 and the other 88% did not.

- It is possible that communities were aware of the numerous code violations present at the time of The Station fire and they simply redoubled their enforcement efforts for the requirements in effect in their adopted code.

Summary of evaluation for occupancy limits and egress requirements

- 100% of communities with at least 50,000 population have occupancy limits in place, and 95% of communities reference a model code, either directly or indirectly. However, Recommendation 5 anticipated changes to the rules used to calculate occupancy limits, and those changes, other than sizing of the main entrance/exit to be of a width that accommodates two-thirds of the total occupant load do not appear to have made their way into the model codes and standards, let alone local requirements and practices.

- 96% of communities with at least 50,000 population estimate that All (42%) or Most (54%) nightclubs are in compliance with their local occupancy limit requirements. The majority (56%) of communities conduct inspections to reinforce compliance, but most (49% of the 56%) conduct these inspections less often than weekly. More frequent inspections are associated with higher estimates of full compliance, and departments with no inspections appear to be over-estimating levels of compliance because they are estimating compliance levels better than those achieved with less-than-weekly special inspections. 12% of communities with at least 50,000 population and with occupancy limit requirements report that their requirements changed after 2003, the year of The Station nightclub fire.

Summary of protocol for evaluation of recommendations like Recommendation 5.

1. Such evaluations are built around answers to three generic questions:
   - the existence of local requirements that are consistent with the NIST recommendations;
   - local estimates of the degree of compliance with local requirements; and
   - whether local requirements changed after the event that formed the basis for the NIST recommendations.

   When the model codes have not changed in all of the areas yet to better align with the NIST recommendations, all three of these questions about local conditions become moot.

2. Recommendation 5 is complex in that it seeks to control potentially hazardous practices and not fixed, installed hazards. Most communities do not check all or a representative sample of daily practices, and so direct assessment of compliance is not possible with existing data.

Fire Department Emergency Response

Part VIII of the NFPA survey asked about adoption of and adherence to four NFPA standards for emergency response – NFPA 1221, *Standard for the Installation, Maintenance, and Use of Emergency Communications Systems*; NFPA 1561, *Standard on Emergency Services Incident Management Systems*; 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*; and 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*. Because these recommendations are for changes in fire department practices, the adoption and compliance steps are not separate.

Question 1 (requirements) for Emergency Communications Systems: Does the department adopt and adhere to NFPA 1221? Table E refers to Q.20 for information on the use of NFPA 1221. Table 28 indicates that 55% of departments protecting communities of 50,000 or more population are using NFPA 1221, and the percentage does not vary much as the size of community decreases.

Question 3 (change after the major event) for Emergency Communications Systems: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table E refers to Q.20a for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it. Table 29 shows that 14% of the communities changed their requirements after 2003 and the other 86% did not.

Question 1 (requirements) for Incident Management Systems: Does the department adopt and adhere to NFPA 1561? Table E refers to Q.21 for information on the use of NFPA 1561 or the National Emergency Management System (NIMS). Table 30 indicates that 94% of departments protecting communities of 50,000 or more population are using NFPA 1561 or NIMS, and the percentage does not vary much as the size of community decreases.

Question 3 (change after the major event) for Incident Management Systems: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table E refers to Q.21a for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it.. Table 31 shows that 15% of the communities changed their requirements after 2003 and the other 85% did not.

Question 1 (requirements) for Organization and Deployment for Career and Volunteer Departments: Does the department adopt and adhere to NFPA 1710 or 1720? Table E refers to Q.22 for information on the use of NFPA 1710 or 1720. Table 32 indicates that 80% of departments protecting communities of 50,000 or more

population are using NFPA 1710 or 1720, and the percentage does not vary much as the size of community decreases.

Question 3 (change after the major event) for Organization and Deployment for Career and Volunteer Departments: Did the requirements change after 2003 (the year of The Station nightclub fire)? Table E refers to Q.22a for a determination of the timing of changes to the requirements, which is the only direct information available from a distance that would suggest a change based on reaction to The Station nightclub fire and the lessons learned from it.. Table 33 shows that 12% of the communities changed their requirements after 2003 and the other 88% did not.

Summary of evaluation for fire department emergency response practices

- 55% of communities with at least 50,000 population are using NFPA 1221.
- 94% of communities with at least 50,000 population are using NFPA 1561 or NIMS.
- 80% of communities with at least 50,000 population are using NFPA 1710 or 1720.
- 12-15% of communities with at least 50,000 population report that their use of these standards changed after 2003, the year of The Station nightclub fire.

Summary of protocol for evaluation of recommendations like Recommendation 7.

1. Such evaluations are built around answers to two generic questions:
    - whether local departments have adopted the standards and practices recommended by NIST (or more likely, incorporated them into fire department standard operating practices);
    - whether local requirements changed after the event that formed the basis for the NIST recommendations.

Table 1
How many nightclubs are in your community? [Q.1]

Size of community	None		1		2 to 5		6 to 10		More than 10		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	0	0.0	0	0.0	3	5.5	52	94.5	55	100.0
250,000 to 499,999	2	3.2	3	4.8	5	8.1	4	6.4	48	77.4	62	100.0
100,000 to 249,999	26	10.5	0	0.0	0	0.0	34	13.8	186	75.3	247	100.0
50,000 to 99,999	113	23.9	13	2.7	0	0.0	101	21.4	246	52.0	473	100.0
Total	141	16.8	16	1.9	5	0.6	142	17.0	532	63.6	837	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Note that the departments that reported no nightclubs were excluded from the remainder of the analyses in this report, and the analyses in the remainder of this report are based on an estimated 696 departments that protect 50,000 population or more and have at least one nightclub,

Table 2
What codes apply to newly constructed nightclubs in a community? [Q.2]

Size of community	NFPA 101 Life Safety Code		International Building Code		Local code not based on model code		Other model code*		None	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	18	32.7	47	85.5	8	14.5	18	32.7	0	0.0
250,000 to 499,999	12	20.0	46	76.7	0	0.0	22	36.7	0	0.0
100,000 to 249,999	74	33.3	176	79.7	16	7.2	80	36.2	0	0.0
50,000 to 99,999	142	39.4	292	81.1	28	7.9	85	23.6	0	0.0
Total	246	35.3	561	80.6	52	7.5	205	29.5	0	0.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

*This category is comprised almost entirely of state codes that were based on national model codes.

Table 3
What codes apply to existing nightclubs in the community? [Q.3]

Size of community	NFPA 1		NFPA 101 not as part of adoption of NFPA 1		International Fire Code		Local code not based on model code		Other model code*		No code	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	13	23.6	16	29.1	31	56.3	8	14.5	16	29.0	0	0.0
250,000 to 499,999	7	11.7	12	20.0	38	63.3	5	8.3	16	26.7	0	0.0
100,000 to 249,999	51	23.2	45	20.3	147	66.5	16	7.2	39	17.7	0	0.0
50,000 to 99,999	82	22.8	91	25.3	241	66.9	34	9.4	58	16.1	0	0.0
Total	154	22.1	163	23.4	458	65.8	63	9.1	128	18.4	0	0.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

*This category is comprised almost entirely of state codes that were based on national model codes.

Table 4
(For departments that use the International Building Code, for newly constructed nightclubs in their community)
What edition of the code is used? [Q.2b]

	Prior to 2003		2003		2006		2009		2012		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	3	6.4	16	34.0	19	40.4	9	19.1	47	100.0
250,000 to 499,999	0	0.0	0	0.0	10	21.7	29	63.0	7	15.2	46	100.0
100,000 to 249,999	4	2.3	0	0.0	35	19.9	74	42.0	63	35.8	176	100.0
50,000 to 99,999	3	0.9	6	2.1	68	23.2	158	54.1	56	19.2	292	100.0
Total	7	1.2	9	1.6	129	23.0	280	50.0	136	24.2	561	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 5
(For departments that use the NFPA 101, Life Safety Code for newly constructed nightclubs in their community)
What edition of the code is used? [Q.2a]

	Prior to 2003		2003		2006		2009		2012		Total	
Size 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	38.9	0	0.0	0	0.0	7	38.9	4	22.2	18	100.0
250,000 to 499,999	12	100.0	0	0.0	0	0.0	0	0.0	0	0.0	12	100.0
100,000 to 249,999	7	9.5	0	0.0	7	9.5	45	60.8	15	20.3	74	100.0
50,000 to 99,999	36	25.3	7	4.9	0	0.0	74	52.1	26	18.3	142	100.0
Total	62	25.2	7	2.8	7	2.8	126	51.2	44	17.9	246	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 6
(For departments that use the International Fire Code for existing nightclubs in their community)
What edition of the code is used? [Q.3c]

	Prior to 2003		2003		2006		2009		2012		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	3	9.7	8	25.8	18	58.1	2	6.5	31	100.0
250,000 to 499,999	2	5.3	0	0.0	8	21.1	23	60.5	5	13.2	38	100.0
100,000 to 249,999	0	0.0	0	0.0	22	15.0	70	47.6	55	37.4	147	100.0
50,000 to 99,999	6	2.5	0	0.0	63	26.1	125	51.9	47	19.5	241	100.0
Total	8	1.8	3	0.6	100	21.9	236	51.6	110	24.1	458	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 7
(For departments that use NFPA 1 for existing nightclubs in their community)
What edition of the code is used? [Q.3a]

	Prior to 2003		2003		2006		2009		2012		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	0	0.0	3	23.1	6	53.8	4	23.1	13	100.0
250,000 to 499,999	3	42.9	0	0.0	0	0.0	4	57.1	0	0.0	7	100.0
100,000 to 249,999	0	0.0	0	0.0	5	9.8	31	60.8	15	29.4	51	100.0
50,000 to 99,999	8	9.8	4	4.8	4	4.8	55	67.1	12	13.4	82	100.0
Total	11	7.2	4	2.6	12	7.9	96	62.5	31	19.7	154	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 8
Are there any local amendments or other requirements applicable to nightclubs? [Q.4]

Size of community	Yes, changed after 2003 Number Depts	Percent	Yes, not changed after 2003 Number Depts	Percent	No Number Depts	Percent	Total Number Depts	Percent
500,000 or more	19	34.5	8	14.5	28	50.9	55	100.0
250,000 to 499,999	14	23.3	5	8.3	41	68.3	60	100.0
100,000 to 249,999	46	20.8	11	5.0	164	74.2	221	100.0
50,000 to 99,999	80	22.2	42	11.7	238	66.1	360	100.0
Total	160	23.0	65	9.3	471	67.7	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 9
How are inspections used for enforcement? [Q5]

Size of community	No inspections conducted		Building code inspections for new buildings		Fire code inspections at least annually		Fire code inspections less often than annually		Inspections in response to complaints	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	50	90.9	52	94.5	13	23.6	3	6.0
250,000 to 499,999	0	0.0	36	60.0	41	68.3	22	36.7	38	63.3
100,000 to 249,999	0	0.0	128	57.9	170	76.9	64	29.0	157	76.0
50,000 to 99,999	0	0.0	230	63.9	275	76.4	62	17.2	258	71.7
Total	0	0.0	443	63.6	538	77.3	161	23.1	456	65.5

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

Table 10
Are sprinklers required in nightclubs in the community? [Q.6]

Size of community	Yes, Regardless Of Occupancy		Yes, Occupancy of 50 or More		Yes, Occupancy of 100 or More		Yes, Occupancy of 200 or More		No		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	3	5.5	5	9.1	26	47.3	16	29.1	5	9.1	55	100.0
250,000 to 499,999	10	16.7	2	3.3	41	68.3	5	8.3	2	3.3	60	100.0
100,000 to 249,999	17	7.7	7	3.2	160	72.4	17	7.7	20	9.0	221	100.0
50,000 to 99,999	46	12.7	31	8.6	209	58.0	40	11.1	34	9.4	360	100.0
Total	76	10.9	45	6.5	437	62.8	77	11.1	61	8.9	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 11
How many nightclubs are in compliance with sprinkler requirements in the community? [Q.8]

	All		Most		Half		Some		None		Don't Know		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	18	32.7	25	45.5	0	0.0	12	21.8	0	0.0	0	0.0	55	100.0
250,000 to 499,999	19	31.7	17	28.3	10	16.7	9	15.0	0	0.0	5	8.3	60	100.0
100,000 to 249,999	88	39.8	66	29.9	15	6.8	30	13.6	0	0.0	22	10.0	221	100.0
50,000 to 99,999	208	57.8	88	24.4	16	4.4	36	10.0	0	0.0	13	3.6	360	100.0
Total	334	48.0	195	28.0	40	5.7	87	12.5	0	0.0	40	5.7	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 12

(For communities with sprinkler requirements)
Are inspections conducted just to check compliance with these requirements? [Q.7]

	Yes		No		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	17	30.9	38	69.1	55	100.0
250,000 to 499,999	24	40.0	36	60.0	60	100.0
100,000 to 249,999	101	45.7	120	54.3	221	100.0
50,000 to 99,999	104	28.9	256	71.1	360	100.0
Total	246	35.3	450	64.7	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 13
(For communities with sprinkler requirements)
Did requirements change after 2003 (year of The Station nightclub fire)? [Q.6a]

Size of community	Yes Requirements Changed		No Requirements Did Not Change		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	26	47.3	29	52.7	55	100.0
250,000 to 499,999	32	55.2	26	44.8	58	100.0
100,000 to 249,999	125	62.2	76	37.8	201	100.0
50,000 to 99,999	135	41.4	191	58.6	326	100.0
Total	317	49.5	323	50.5	640	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 14

Are there interior finish requirements for nightclubs in the community? [Q.9]

Size of community	Yes, from International Building Code		Yes, from NFPA 101, Life Safety Code		Yes, from NFPA 1		Yes, from International Fire Code		Yes, from other model code		Yes, local requirements not based on model code		No requirements	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	39	70.9	21	38.2	8	14.5	26	47.3	8	14.5	8	14.5	0	0.0
250,000 to 499,999	36	60.0	14	23.3	5	8.3	38	63.3	10	16.7	0	0.0	0	0.0
100,000 to 249,999	119	53.8	64	29.0	35	15.8	128	58.0	29	13.1	3	1.4	0	0.0
50,000 to 99,999	235	65.3	122	33.9	71	19.7	218	60.6	26	6.9	10	2.8	0	0.0
Total	429	61.6	221	31.8	119	17.1	411	59.1	72	10.3	21	3.0	0	0.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

Table 15
(For communities with interior finish requirements for nightclubs)
Do the requirements reference a standard test for product and material performance?
[Q.10]

	Yes		No		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	49	89.1	6	10.9	50	100.0
250,000 to 499,999	60	100.0	0	0.0	60	100.0
100,000 to 249,999	207	93.7	14	6.3	221	100.0
50,000 to 99,999	333	92.5	27	7.5	360	100.0
Total	648	93.1	48	6.9	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 16
How many nightclubs (do you think) are in compliance with interior finish requirements? [Q.13]

	All		Most		Half		Some		None		Don't Know		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	8	14.5	39	70.9	0	0.0	5	9.0	0	0.0	3	5.5	55	100.0
250,000 to 499,999	14	23.3	36	60.0	2	3.3	3	5.0	0	0.0	5	8.3	60	100.0
100,000 to 249,999	52	23.5	107	48.4	7	3.2	17	7.7	0	0.0	38	17.2	221	100.0
50,000 to 99,999	138	38.3	146	40.6	20	5.5	18	5.0	3	0.8	35	9.7	360	100.0
Total	212	30.4	329	47.3	29	4.2	43	6.2	3	0.4	81	11.6	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 17
(For communities with interior finish requirements)
Are some inspections conducted where the sole purpose is to check compliance with these requirements? [Q.12]

	Yes		No		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	5	9.1	50	90.9	55	100.0
250,000 to 499,999	5	8.3	55	91.7	60	100.0
100,000 to 249,999	33	14.9	188	85.1	221	100.0
50,000 to 99,999	86	23.9	274	76.1	360	100.0
Total	129	18.5	567	81.5	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 18
How do inspectors check for nightclub compliance with interior finish requirements? [Q.11]

Size of community	Visual Inspection Only		Routine Testing of Materials		Testing Based on Visual Screening		Review of Specification Sheets and Technical Data for Materials	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	32	58.2	16	29.1	16	29.1	47	85.5
250,000 to 499,999	38	63.3	14	23.3	5	8.3	55	91.7
100,000 to 249,999	87	39.4	35	15.8	19	8.6	176	79.6
50,000 to 99,999	201	55.8	37	10.3	45	12.5	269	74.7
Total	358	51.4	102	14.7	85	12.2	548	78.7

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

Table 19
(For communities with interior finish requirements)
Did requirements change after 2003 (year of The Station nightclub fire)? [Q.9h]

Size of community	Yes Requirements Changed		No Requirements Did Not Change		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	11	20.0	44	80.0	55	100.0
250,000 to 499,999	32	53.3	28	46.7	60	100.0
100,000 to 249,999	60	27.1	161	72.9	221	100.0
50,000 to 99,999	98	27.2	262	72.8	360	100.0
Total	201	28.9	495	71.1	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 20
Does the community have restrictions on indoor use of pyrotechnics by nightclubs? [Q.14]

Size of community	Yes, from NFPA 1126 Number Depts	Yes, from NFPA 1126 Percent	Yes, from other model code Number Depts	Yes, from other model code Percent	Yes, local restrictions not based on model code Number Depts	Yes, local restrictions not based on model code Percent	No restrictions Number Depts	No restrictions Percent
500,000 or more	39	70.9	18	32.7	21	38.2	0	0.0
250,000 to 499,999	46	76.7	17	28.3	14	23.3	0	0.0
100,000 to 249,999	151	68.3	80	36.2	58	26.2	3	1.4
50,000 to 99,999	221	61.4	74	20.6	139	38.6	9	2.5
Total	457	65.7	189	27.2	232	33.3	12	1.7

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

Table 21
How many nightclubs are in compliance with restrictions on indoor use of pyrotechnics at nightclubs? [Q.16]

	All		Most		Half		Some		None		Don't Know		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	30	54.5	25	45.4	0	0.0	0	0.0	0	0.0	0	0.0	55	100.0
250,000 to 499,999	36	60.0	19	31.7	5	8.3	0	0.0	0	0.0	0	0.0	60	100.0
100,000 to 249,999	162	73.3	31	14.0	0	0.0	4	1.8	4	1.8	21	9.5	221	100.0
50,000 to 99,999	283	78.6	45	12.5	0	0.0	0	0.0	6	1.7	27	7.5	360	100.0
Total	511	73.4	120	17.2	5	0.7	4	0.6	10	1.4	48	6.9	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 22
Does the community conduct inspections that just check compliance with the restrictions on indoor use of pyrotechnics by nightclubs? [Q.15]

Size of community	Yes, at events Number Depts	Percent	Yes, with managers in advance of event Number Depts	Percent	Yes, based on complaints, concerns or requests received before or during event Number Depts	Percent	No Number Depts	Percent
500,000 or more	45	81.8	37	67.3	34	61.8	3	5.4
250,000 to 499,999	50	83.3	29	48.3	31	51.6	5	8.3
100,000 to 249,999	138	62.4	106	48.0	112	50.6	32	14.5
50,000 to 99,999	210	58.3	176	48.9	176	48.9	62	17.2
Total	443	63.6	348	50.0	353	50.7	102	14.7

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

Table 23
(For communities with restrictions on indoor use of pyrotechnics in nightclubs) Did requirements change after 2003 (year of The Station nightclub fire)? [Q.14e]

Size of community	Yes Requirements Changed		No Requirements Did Not Change		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	5	9.1	50	90.9	55	100.0
250,000 to 499,999	27	45.0	33	55.0	60	100.0
100,000 to 249,999	23	10.4	198	89.6	221	100.0
50,000 to 99,999	69	19.2	291	80.8	360	100.0
Total	122	17.5	574	82.5	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 24
Does the community have egress requirements and/or occupancy limits for nightclubs? [Q.17]

Size of community	Yes, from International Building Code		Yes, from NFPA 101, Life Safety Code		Yes, from other model code		Yes, local requirements not based on model code		No requirements	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	37	67.3	21	38.2	24	43.6	8	14.5	0	0.0
250,000 to 499,999	43	71.7	12	20.0	19	31.7	0	0.0	0	0.0
100,000 to 249,999	163	73.8	61	27.6	67	30.0	10	4.5	0	0.0
50,000 to 99,999	283	78.7	142	39.4	96	26.7	20	5.5	0	0.0
Total	527	75.7	236	33.9	206	29.5	37	5.3	0	0.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Departments were asked to circle all that apply, so departments could select multiple responses, which means it is not appropriate to add percents for a particular size community.

Table 25
How many nightclubs are in compliance with occupancy and egress requirements? [Q.19]

Size of community	All		Most		Half		Some		None		Don't Know		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	8	14.5	45	81.8	0	0.0	0	0.0	0	0.0	2	3.6	55	100.0
250,000 to 499,999	20	33.3	40	66.7	0	0.0	0	0.0	0	0.0	0	0.0	60	100.0
100,000 to 249,999	75	33.9	116	52.5	3	1.4	13	5.9	0	0.0	14	6.3	221	100.0
50,000 to 99,999	171	47.5	156	43.3	3	0.8	6	1.6	0	0.0	24	6.7	360	100.0
Total	274	39.4	357	51.2	6	0.9	19	2.7	0	0.0	40	5.7	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013

Numbers may not add to totals due to rounding.

Table 26
Does a department conduct special inspections more frequent than fire code inspections just to check compliance with egress requirements and/or occupancy limits? [Q.18]

Size of community	Yes, Roughly Every Evening Nightclubs Are Open		Yes, At Least Weekly		Yes, But Not Weekly		No		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	5	9.1	33	60.0	17	30.9	55	100.0
250,000 to 499,999	2	3.3	5	8.3	34	56.7	19	31.7	60	100.0
100,000 to 249,999	3	1.4	21	9.5	107	48.4	90	40.7	221	100.0
50,000 to 99,999	3	0.8	9	2.5	170	47.2	179	49.7	360	100.0
Total	8	1.1	40	5.5	206	49.1	306	44.0	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 27
(For communities with egress requirements and/or occupancy limits for nightclubs) Did requirements change after 2003 (year of The Station nightclub fire)? [Q.17f]

Size of community	Yes Requirements Changed		No Requirements Did Not Change		Total	
	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	55	100.0	55	100.0
250,000 to 499,999	25	41.7	35	58.3	60	100.0
100,000 to 249,999	27	12.2	194	87.8	221	100.0
50,000 to 99,999	35	9.7	325	90.3	360	100.0
Total	86	12.3	610	87.7	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 28
Does the community use NFPA 1221 in the operation, installation, and maintenance of public emergency services communication systems? [Q.20]

Size of community	Yes Number Depts	Yes Percent	No Number Depts	No Percent	Total Number Depts	Total Percent
500,000 or more	39	70.9	16	29.1	55	100.0
250,000 to 499,999	31	51.7	29	48.3	60	100.0
100,000 to 249,999	114	51.6	107	48.4	221	100.0
50,000 to 99,999	199	55.3	161	44.7	360	100.0
Total	383	55.0	313	45.0	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 29
Did the department's use of NFPA 1221 change after 2003 (the year of The Station nightclub fire)? [Q.20a]

Size of community	Yes Requirements Changed Number Depts	Yes Requirements Changed Percent	No Requirements Did Not Change Number Depts	No Requirements Did Not Change Percent	Total Number Depts	Total Percent
500,000 or more	8	14.5	47	85.5	55	100.0
250,000 to 499,999	19	34.5	41	74.5	60	100.0
100,000 to 249,999	30	13.6	191	86.4	221	100.0
50,000 to 99,999	42	11.7	318	88.3	360	100.0
Total	99	14.2	597	85.8	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 30
Does the community use an emergency services incident system that complies with the National Incident Emergency System (NIMS) or NFPA 1561? [Q.21]

Size of community	Yes Number Depts	Yes Percent	No Number Depts	No Percent	Total Number Depts	Total Percent
500,000 or more	50	90.9	5	9.1	55	100.0
250,000 to 499,999	57	95.0	3	5.0	60	100.0
100,000 to 249,999	201	90.9	20	9.1	221	100.0
50,000 to 99,999	345	95.8	15	4.2	360	100.0
Total	653	93.8	43	6.2	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013

Numbers may not add to totals due to rounding.

Table 31
Did the department's use of an emergency services incident system change after 2003 (the year of The Station nightclub fire)? [Q.21a]

Size of community	Yes Requirements Changed Number Depts	Yes Requirements Changed Percent	No Requirements Did Not Change Number Depts	No Requirements Did Not Change Percent	Total Number Depts	Total Percent
500,000 or more	12	21.8	43	78.2	55	100.0
250,000 to 499,999	12	20.0	48	80.0	60	100.0
100,000 to 249,999	40	18.1	181	81.9	221	100.0
50,000 to 99,999	42	11.7	318	88.3	360	100.0
Total	106	15.2	590	84.8	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 32
Does the community use NFPA 1710 (for career departments) or 1720 (for volunteer departments) in establishing organizational and deployment procedures? [Q.22]

	Yes		No		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	43	78.2	12	21.8	55	100.0
250,000 to 499,999	48	80.0	12	20.0	60	100.0
100,000 to 249,999	173	78.3	48	21.7	221	100.0
50,000 to 99,999	294	81.7	66	18.3	360	100.0
Total	558	80.2	138	19.8	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

Table 33
Did the department's use of NFPA 1710 or NFPA 1720 change after 2003 (the year of The Station nightclub fire)? [Q.22a]

	Yes Requirements Changed		No Requirements Did Not Change		Total	
Size of community	Number Depts	Percent	Number Depts	Percent	Number Depts	Percent
500,000 or more	0	0.0	55	100.0	55	100.0
250,000 to 499,999	12	20.0	48	80.0	60	100.0
100,000 to 249,999	34	15.4	187	84.6	221	100.0
50,000 to 99,999	41	11.4	319	88.6	360	100.0
Total	87	12.4	609	87.6	696	100.0

Source: NFPA Survey of Fire Department Practices Related to Nightclub Fire Safety, 2013.

Numbers may not add to totals due to rounding.

APPENDIX A

NATIONAL FIRE PROTECTION ASSOCIATION
SURVEY OF FIRE DEPARTMENT PRACTICES
RELATED TO NIGHTCLUB FIRE SAFETY

PART I. IDENTIFYING INFORMATION

Name of person completing form:_____ Date:_____
Title of person completing form:_____
Non-emergency phone number: ( ) _____ Fax: ( ) _____
e-mail address: _____
Population (Number of permanent residents your department has primary responsibility to protect, excluding mutual aid areas) _____

Please use enclosed postpaid envelope to return form to:
Fire Analysis & Research, NFPA, 1 Batterymarch Park, Quincy, MA 02269-9101
OR reduce form to 8½" x 11" and fax us the form at (617) 984-7478
OR e-mail us at fcsurvey@nfpa.org that you would like to respond electronically. We will send you an electronic form, which you can complete, save and submit to fcsurvey@nfpa.org.
Thank you for your participation!

PART II. NIGHTCLUBS IN YOUR COMMUNITY

1. How many nightclubs are in your community? ☐ None [*No need to go further; please return form*]
   ☐ 1 ☐ 2-5 ☐ 6-10 ☐ More than 10

PART III. BUILDING AND FIRE CODES APPLIED TO NIGHTCLUBS

2. What code applies to newly constructed nightclubs in your community? (check all that apply)
   ☐a. NFPA 101, *Life Safety Code* (which edition (year)? _____)
   ☐b. International Building Code (which edition (year)? _____)
   ☐c. Local code not based on model ☐d. Other model code (please specify _____)
   ☐e. No code

3. What code applies to existing nightclubs in your community? (check all that apply)
   ☐a. NFPA 1 (which edition (year)? _____) ☐b. NFPA 101 not as part of adoption of NFPA 1
   ☐c. International Fire Code (which edition (year)? _____) ☐d. Local code not based on model
   ☐e. Other model code (please specify _____) ☐f. No code

4. Are there any local amendments or other requirements applicable to nightclubs? (check one)
   ☐Yes, changed after 2003 ☐Yes, not changed after 2003 ☐No

5. How are inspections used for enforcement? (check all that apply) ☐a. No inspections conducted
   ☐b. Building code inspections for new buildings ☐c. Fire code inspections at least annually
   ☐d. Regular fire code inspections less often than annual ☐e. Inspections in response to complaints

PART IV. SPRINKLERS IN NIGHTCLUBS

6. Are sprinklers required in nightclubs in your community? (check one) ☐Yes, regardless of occupancy
   ☐Yes, occupancy 50 or more ☐Yes, occupancy 100 or more ☐Yes, occupancy 200 or more
   ☐No (*Go to Q.9.*)

   a. If you said yes, did your sprinkler requirements change after the Station nightclub fire in 2003?
      ☐Yes ☐No

7. Do you conduct inspections just to check compliance with sprinkler requirements? ☐Yes ☐No

8. How many nightclubs do you think are in compliance with your sprinkler requirements? (check one)
   ☐All ☐Most ☐Half ☐Some ☐None ☐Don't know

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PART V. INTERIOR FINISH IN NIGHTCLUBS

9. Do you have interior finish requirements for nightclubs? (check all that apply)
   □a. Yes, from International Building Code □b. Yes, from NFPA 101, *Life Safety Code*
   □c. Yes, from NFPA 1 □d. Yes, from International Fire Code
   □e. Yes, from other model code (please specify _____)
   □f. Yes, local requirements not based on model □g. No requirements (*Go to Q.14.*)
   h. If you have requirements, did they change after The Station nightclub fire in 2003? □Yes □No

10. Do these requirements reference a standard test for product and material fire performance (e.g., NFPA 286, NFPA 255, ASTM E84)? □Yes □No

11. How do inspectors check for compliance? (check all that apply)
    □a. Visual inspection only □b. Routine testing of materials □c. Testing based on visual screening
    □d. Review of specification sheets and technical data for materials

12. Do you conduct some inspections where the only purpose is to check compliance with these requirements? □Yes □No

13. How many nightclubs do you think are in compliance with your interior finish requirements? (check one) □All □Most □Half □Some □None □Don't know

PART VI. INDOOR USE OF PYROTECHNICS IN NIGHTCLUBS

14. Do you have restrictions on indoor use of pyrotechnics by nightclubs? (check all that apply)
    □a. Yes, from NFPA 1126 □b. Yes, from other model code (please specify _____)
    □c. Yes, local restrictions not based on model □d. No restrictions (*Go to Q.17.*)
    e. If you have restrictions, did they change after The Station nightclub fire in 2003? □Yes □No

15. Do you conduct inspections just to check compliance with these restrictions? (check all that apply)
    □a. Yes, at events (including inspections only for specific events or types of acts)
    □b. Yes, with managers in advance of event
    □c. Yes, based on complaints, concerns or requests received before or during event □d. No

16. How many nightclubs do you think are in compliance with your indoor use of pyrotechnics restrictions? (check one) □All □Most □Half □Some □None □Don't know

PART VII. OCCUPANCY LIMITS AND EMERGENCY EGRESS

17. Do you have egress requirements and/or occupancy limits for nightclubs? (check all that apply)
    □a. Yes, from International Building Code □b. Yes, from NFPA 101, *Life Safety Code*
    □c. Yes, from other model code (please specify _____)
    □d. Yes, local requirements not based on model □e. No requirements (*Go to Q.20.*)
    f. If you have requirements, did they change after The Station nightclub fire in 2003? □Yes □No

18. Do you conduct special inspections, more frequent than your fire code inspections, just to check compliance with these requirements? (check one)
    □Yes, roughly every evening clubs are open □Yes, at least weekly □Yes, but not weekly
    □No

19. How many nightclubs do you think are in compliance with your occupancy and egress requirements? (check one) □All □Most □Half □Some □None □Don't know

PART VIII. EMERGENCY RESPONSE STANDARDS

20. Do you use NFPA 1221 in the operation, installation, and maintenance of public emergency services communications systems within your jurisdiction? □Yes □No

    a. Did your use of this Standard change after The Station nightclub fire in 2003? □Yes □No

21. Do you use an emergency services incident management system that complies with the National Incident Emergency System (NIMS) or NFPA 1561? □Yes □No

    a. Did your use of an emergency services incident management system change after The Station nightclub fire in 2003? □Yes □No

22. Do you use NFPA 1710 (for career departments) or 1720 (for volunteer departments) in establishing organizational, operational and deployment procedures? □Yes □No

    a. Did your use of these documents change after The Station nightclub fire in 2003?
       □Yes □No