

Evaluation of Fire Inspector Staffing Procedure in the Cambridge Fire Department

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CERTIFICATION STATEMENT

I hereby certify that the following statements are true:

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ABSTRACT

The Cambridge Fire Department (CFD) has seen an increase of 47 percent in requests for fire code enforcement inspections from 2010 to 2015. During this time, the department also received hundreds of complaints about the inspections. The chief complaints centered on inconsistencies within the offered service and the lack of tenure in the inspector's position.

The problem addressed in this research paper was the substandard performances of the fire inspections by not meeting national and local standards. Poor inspections could result in firefighter and civilian injury as well as the legal and funding concerns. The purpose of this study was to provide research-based information and data to the city's administration in order to assist them and the department in improving the performance of the fire inspection program and to recognize any necessary changes.

Two surveys were created and distributed to collect information. One survey was sent to nearby fire departments to compare tenure of both their inspector and their inspection activities in comparison to the CFD. The second survey was distributed to local business owners to assure their concerns and develop a customer-focused service. A literature review was performed to determine if national and local standards exist pertaining to recommendations on tenure of the inspector position and also to see how the department can improve upon current inspection activities. The recommendations of this research are to reclassify the inspector's position as an officer-level designation. Furthermore, the information collected will assist the CFD in creating an educational forum and evaluation process for businesses to provide feedback regarding department inspection procedures.

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INTRODUCTION

Statement of the Problem

The CFD became a full-time, paid 19-member department in 1947. After several devastating fires that occurred in the city's downtown district, the position of fire inspector was established in 1968 and classified as an entry-level position to the department. The Office of the Inspector is staffed by one person who reports directly to the chief on matters of fire code enforcement.

From 2010 through 2015, the request for fire safety inspections increased by 47 percent in five years (CFD records). Departmental records also indicated that 11 different personnel had filled the position during that period (CFD records). The increase did not include any plan review processes, life safety systems tests, or annual inspections of Cambridge City Schools, Southeastern Ohio Regional Medical Center, or numerous nursing homes within the primary coverage area. Instead, the Division of the State Fire Marshal–Inspection Division, performs inspections of these occupancies.

Per CFD records, from 2010 through 2015, the department received approximately 500 complaints on inspections. These complaints came from local business owners concerns about the department's inspection inconsistencies such as duplication of effort, missed scheduled appointments, lack of experience of the individual, and different personnel performing the re-inspections were logged as areas of concern per departmental records (CFD).

The problem this study addressed is the substandard performances of the fire inspection bureau by not meeting national and local standards that could result in firefighter and civilian injury and legal and funding concerns.

Purpose of the Study

“A firefighter’s ability to conduct inspections competently will improve with study, experience, and on the job training (Essentials of Firefighting, 2008, p. 966).” *The purpose of this study was to* provide research-based information and data to the city administration in order to assist them in improving the performance of the fire inspection program.

Research Questions

The research questions this study will investigate are:

1. What is the average number of years of experience of fire inspectors in similar sized departments and how many inspections and re-inspections are performed by each?
2. What perceptions do local business owners have of CFD fire inspection personnel and processes?
3. How can the inspection department performance be improved in executing inspections and re-inspections?
4. What legal ramifications to the city and to the department exist for not properly conducting fire inspections?

BACKGROUND AND SIGNIFICANCE

The CFD was organized in 1873 as a volunteer department. In 1947, the department became a full-time fire department. Currently, the CFD consists of 20 full-time personnel operating from one central station. This includes three shifts with six personnel, each working 24 hours on and 48 hours off. The subsequent two positions consist of the chief of the department and the fire inspector. The CFD protects the property of the City of Cambridge and Cambridge Township as well as its citizens, which encompasses 34.8 square miles and a population of 14,472 (2010 Census).

Today, funding for the department consists of three separate fire levies in the City of Cambridge and one fire levy in Cambridge Township. These fire levies consist of 81 percent of the department's budget. The remaining 19 percent comes from city income tax. Currently, the city's income tax is established at 2 percent. According to the City of Cambridge's Auditor's Office, 0.5 percent of the city's income tax is devoted to fire department operations. This averages out to \$395,000 per year. Of the overall department budget, the inspection bureau does not receive a certain percentage, and the needs of the office are based on budgetary requests made by the various inspectors and chief of the department.

The position of fire inspector was created in 1968. It was structured as a 40-hour a week job classification and designated as an entry-level position. Departmental policies indicate that this individual will remain in this position until an available slot opens within a crew. Personnel would then be given the choice to either stay in the inspector's position or elect to transfer to a crew position. Since 1998, 100 percent of personnel decided to transfer to the traditional 24/48 work cycle when a firefighter position became available (CFD records). The cycle would then start over again with any new personnel hired.

Records specify that over the past 47 years, there have been 23 different personnel who have filled the role of fire inspector. The longest tenure of the same fire inspector was from 1982 to 1993. From 2010 to 2015, the longest tenure of the inspector was 14 months before transferring to a crew position. With the inspector's position being entry-level, departmental records signify that past chiefs would pull the individual from the role of inspecting and laterally transfer to crew duties when funding restrictions were a concern. By doing this, overtime costs would be minimized. During this time, inspections would be delegated to each inspector assigned to that crew. According to interdepartmental records, 43 percent of the complaints received were logged during these times (CFD records).

From 2010 to 2015, the average tenure of an individual in the inspector's office is 2.2 years as compared to departmental officers which stands at 9.67 years. Research revealed that 34 percent of newly-hired CFD personnel leave the department within the first five years of employment (CFD records). There are no exit interviews administered and because of budgetary shortfalls, the inspector's position can remain vacant for long periods of time. Forced transfers to line positions compounds fire prevention efforts causing high turnover and dissatisfaction among personnel. Corbett expressed this in stating "A smooth running and competent fire prevention organization needs an experienced, well trained, and self-motivated individual to provide consistency and continuity so that it will be maintained (Fire Chiefs Handbook, 2003, p. 1,047)."

The hourly rate of pay for the role of inspector is equivalent to a firefighter who is on a crew working an average of 56-hours per work week. Being an entry-level position to the department carries a 10 percent reduction in hourly rate until successful completion of his/her probationary year. Once completed, the rate of pay is increased comparatively to a non-probationary

firefighter. This hourly rate is comparable to that of a firefighter, who also has inspector certification, on a 24/48-hour cycle and who is averaging 56 hours a week.

The required duties of the inspector consist of scheduling and performance of fire code enforcement. Violations noted are based on the Ohio Fire Code and Ohio Building Code. Upon arrival at various businesses, the inspector introduces himself/herself and, with the business owner/representative's permission, begins to perform required duties of the office. Egress paths, exit lights, fire extinguisher inspections, sprinkler systems, and housekeeping concerns are examined within each respective building. Upon finding a fire code violation, the inspector notes the violation and moves throughout the building continuing the inspection process. Upon completion, the inspector reviews his/her findings and gives the building occupant, on average, a thirty-day window to remedy the violation. Current policy states, "That if more severe violations are noted, the inspector has the authority to shorten the time to clear the violation (CFD Policies and Procedures, 2015, p. 13)."

The process of a re-inspection consists of returning to the business to check the status of the correction of the violation. If the violation is not completed, the inspector then schedules a return visit. Current policy within the department states that if no correction is completed or if no progress is seen by the inspector, the state fire inspector is notified after the second visit. As of this time, the City of Cambridge has no recourse in place to enforce the fire code violation in terms of monetary penalties.

In 2015, a total of 515 of the 687 inspections conducted showed that a re-inspection would be needed. Of these, 37 percent were executed by different personnel from those that performed the initial inspection. According to internal records, 25 percent of the 37 percent received complaints from business owners. Of these 64 complaints, 30 percent pertained to

inconsistencies with different inspector's violations. Furthermore, looking over a five-year period (2010 to 2015), 11 employees filled the role of fire inspector and in each year, all indicated five to seven different violations for the same business when performing an inspection.

In reviewing violation notices from 2010 up to 2016, records showed 3,563 inspections were performed. Thirty-seven percent (1,193) of the violations pertained to Rule 6, Building System and Services and Rule 10, Means of Egress contained in the Ohio Fire Code. Twenty-five percent (890) were associated in Rule 9, Fire Protection Systems. Twenty-one percent (748) were referenced in Rule 5, Fire Service Features. Seventeen percent (605) noted violations of Rule 3, General Requirements of the Ohio Fire Code.

Literature on fire code enforcement, plans review, and certificate of occupancies are also used to further promulgate overall fire safety. To receive a plan review or certificate of occupancy permit, the Muskingum County Building Authority (adjacent to Guernsey County) has jurisdiction over issuing such documentation. Each permit allows a business to open to the public. Currently, no plans review or certificate of occupancy requirements are addressed within the CFD fire inspection bureau.

In 2012, department leaders instituted a quality control program in order to streamline the issues that the fire code office was experiencing. A weekly meeting with the current inspector was established with the chief to discuss violations documented and complaints received. Business owners would be contacted to discuss all their concerns and attempt to come to a mutually agreed upon solution. This practice eventually dissolved due to the scheduling of business owners.

Also established was an inspection cycle for businesses within the City of Cambridge. The inspector must complete certain target areas within the city during a 12-month rotation cycle

according to departmental policies and city ordinances. Records revealed that target areas have been on an 18-month inspection cycle. Also noted was that re-inspections for these same areas were not completed due to inconsistencies with different inspectors performing the inspections. Chief officers reviewing the reasons determined the inconsistencies included lack of knowledge, experience, prearranged agreements to fix violations, and fear of city administration actions from complaints received from business owners.

With the fire inspector position being filled by the newest employee, there are no performance evaluations in practice. City policy states that during the individual's first year of employment with the department, the said individual can be dismissed at any point. Once the individual receives their permanent appointment, the majority elect to join the local union to be afforded job protection. A current local bargaining agreement is in place with articles referencing the position of fire inspector and is classified as part of the bargaining unit; therefore, any changes to the position would need to be negotiated between the city and the bargaining unit.

From 2006 to 2016, a total of 17 commercial fires occurred in the downtown area (CFD records). Ninety-five percent of Wheeling Avenue (the city's main thoroughfare) is deemed ordinary construction. This consists of load bearing side walls with front and rear walls of the structure being false façade. The same percentage of downtown structures have apartments located on all floors above the first—up to four stories. Fire investigation reports from the State of Ohio investigator revealed 14 of these fires were classified as high life safety and were of economic importance to the community. Based on these facts, these locations should have been subjected to yearly fire code enforcement, per the recommended standard. Upon reviewing these fires, each one occurred in structures that were inspected on an 18-month rotation, with 97 percent of these structures requiring a re-inspection. Two of the primary fire code violations

include Rule 6: Building System and Services and Rule 10: Means of Egress of the 2011 edition of the Ohio Fire Code (CFD records). Departmental records also indicate that five different personnel have inspected properties in high value areas within the past five years, with each documenting different violations. As another example, records indicate that three high hazard businesses were inspected on a total of three separate occasions within a six-month period by three separate CFD personnel. In the report, everyone wrote violations that did not mirror what the others found upon their inspection. During this time, the fire inspector was transferred to shift duties to assist in overtime expenses.

The placing of the newest individual into the inspector's position was previously discussed and scrutinized among previous chiefs. Organizational past practices and collective bargaining agreements all played a role into the previous CFD chiefs not initiating a change in rank of the local fire inspector or to seek this service via an outside the department.

The significance of this project will assist the current chief in determining whether the entry-level position of fire inspector should be re-evaluated and changed to an officer level position as well as provide an external customer evaluation of the inspection process.

The potential impact this study could have on the Cambridge Fire Department is the development of a quality control management program for the inspection bureau. This would encompass the reorganization of department's rank structure to distinguish a suggested route forward for the administration to maintain stability and longevity in the position.

LITERATURE REVIEW

The Ohio Fire Code 101.2 authorizes the fire code official or designee to conduct inspections as often as necessary in order to assess life safety threats, verify permit conditions, ensure fire protection features are in place and operational, correct hazards, and issue violation notices. In

2003, Barr and Eversole went so far as to emphasize “A smooth-running and competent fire inspection organization needs a cadre of experienced, well-trained, and self-motivated individuals to maintain consistency and continuity (The Fire Chiefs Handbook, 2003, p. 1,047).” Ruckriegel expressed his thoughts by stating “The foundation of a fire inspector’s job is built on knowledge, skills, and experience (Fire Engineering, 2013, p. 1).”

Modern fire prevention practices have changed greatly over the past 200 years. To better understand where we are today requires a brief history of the early fire prevention efforts. Benjamin Franklin is quoted as saying, “An ounce of prevention is worth a pound of cure (Poor Richard’s Almanac).” Fire regulations in the early years primarily focused on the construction, height, and maintenance of chimneys. In 1873, the National Association of Fire Engineers came out with eight fire safety concerns that dealt with the prevention of fires. In 1971, the National Fire Protection Association (NFPA) began to develop a fire prevention code, NFPA 1, covering all aspects of prevention.

Despite early fire prevention efforts and code development, the United States still experienced major loss of life. For instance, the Iroquois Theatre Fire of 1903 saw the loss of 602 lives; the Cocoanut Grove Nightclub in 1942 claimed 492 persons; the Beverly Hills Supper Club in 1977 led to the deaths of 172; and more recently, the Station Nightclub in 2003 claimed the lives of 100 individuals. Experts theorize that all these deaths are centered around inadequate exits. Coffman (2013) explained, “Without trained and knowledgeable personnel out in the field performing inspections, these tragedies will continue to happen (Fire Engineering, 2013, pp. 14-27).”

The United States Fire Administration (2017) reported the leading causes of fires in nonresidential buildings subjected to fire inspections from 2006 through 2015 are:

- Cooking: 29,000 fires
- Other, unintentional, careless: 10,000 fires
- Heating: 9,000 fires
- Intentional: 8,800 fires

Upon reviewing data from the United States Fire Administration (2017) trends in leading fire causes for the 10-year period for nonresidential structures from 2005 to 2014 show:

- Cooking as the leading reported cause of nonresidential building fires
- A 9 percent increase in nonresidential cooking fires
- A 24 percent rise in nonresidential other, unintentionally, or carelessly set fires
- A 0.7 percent increase in nonresidential heating fires
- A 25 percent decrease in nonresidential intentionally set fires

Peak times of day for fires in occupancies that are subjected to fire code inspections is between noon and 2 p.m.

In 1978, Hall reported that four to eight percent of fires were caused by hazards that could be seen and corrected prior to the direct actions of inspectors (Fire Code Inspections and Fire Prevention: What Methods Lead to Success, 1978). Hall (1978) also noted that jurisdictions with inspection programs had lower fire losses. Fast forward to 2006, Flynn reported that 20.3 million people, or 7 percent of the population, live in communities where no one conducts fire code inspections (Measuring Code Compliance Effectiveness for Fire-Related Portions of Codes, 2008). Both reports signify that fires in non-residential properties are increasing and that fire code enforcement must be emphasized.

Code enforcement is the process of ensuring compliance with all codes, ordinances, laws, and other regulations. Diamantes (2005) describes the inspection process as being the backbone of

any fire prevention activities. Corbett (2003) supports this by stating, “Fire prevention efforts are the most important non-fire suppression activity a fire department can undertake (Fire Chiefs Handbook, p. 1,037).” A principal method in which a fire prevention bureau employs to promote fire safety, and perhaps the most common method, is the adoption and enforcement of building and fire prevention codes. In 1973, the National Commission on Fire Prevention and Control published a report titled, *America Burning*. The report determines, “Local governments should make fire prevention activities at least equal to suppression in the planning of fire department priorities (America Burning, 1973, p. 18).”

The Ohio Fire Code (2014) constitutes the minimum standard for safeguarding life and property from fire and explosion. The purpose of the code is to establish minimum requirements consistent with nationally-recognized practices for providing a reasonable level of life safety and property protection from the hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises to provide safety to fire fighters and emergency responders during emergency operations. These minimum standards are to be enforced by the local fire inspector. Per the Ohio Revised Code (2016) §102.2.2, “Regardless of whether a political subdivision adopts a local fire code, the State code remains in effect and is enforceable at all locations in the state in accordance with the applicable provisions of the Revised Code.” Model codes adopted by governmental bodies specify that the fire chief is responsible for ensuring that commercial buildings are inspected. The fire chief then delegates this authority to the actual fire prevention officer. Of the 1,144 registered fire departments in the State of Ohio, 66.78 percent reported specialized services in fire code enforcement.

The National Fire Protection Agency (NFPA) 1031 is the standard on which fire departments can certify personnel to be fire inspector. This organization recognizes that once an individual

successfully passes both the job performance requirements and the state testing, then that individual is permitted to perform fire inspection activities. NFPA 1031 also establishes three different levels of fire inspector. Each level increases what the individual can perform when it comes to code enforcement job requirements (Appendix 1).

NFPA 1730 is the Standard on Organization and Deployment of Fire Inspection and Code Enforcement, Plans Review, Investigation, and Public Education Operations. Specifically, §4.8.1 states, “Fire Prevention Officer (FPO) shall maintain competency to execute all responsibilities of effectively, efficiently, and safely conducting inspections (NFPA 1730, p. 10).” The standard also recommends the inspection period to complete as referenced in table 6.7 (Appendix 2). NFPA 1730 only suggests what the minimum frequency should be, leading many departments to decide on their own inspection frequency. Flynn (2008) suggested that when communities decide their own inspection frequency, these are usually developed on outdated laws and/or local catastrophic events. The missing pieces that are needed demonstrate how important the causation factor and data collection instruments can be. Providing reliable figures will assist in determining what the core deficiencies are when determining inspection frequency. Behn (2005) points out that neither the act of measuring performance nor the resulting data accomplishes anything in itself; only when someone uses these measures in some way do they accomplish something.

To better understand NFPA 1730, two community fire inspection cycles were studied. Gwinnett County, Georgia, put the inspection process in the hands of local business owners. This program collaborated with business owners in developing a one-page checklist and a two-page explanation sheet. Once the owner completes an evaluation of their business, it is sent back to the fire department for evaluation. The local fire code official randomly selects businesses to

confirm the official document. Business owners are warned that any falsification could result in a higher insurance classification for the business. If a fire occurs and is deemed attributable to bad housekeeping, business owners could be fined. Early reports indicate that the inspection process created better relations with local business owners and has seen a significant decrease in the number of fires in businesses. Hall (2008) explained that the Mountain View Fire Department located in California created a list of every kind of occupancy and assigned a numerical category. This numerical rating determined which commercial properties were inspected on an annual, bi-annual, or tri-annual cycle. Results exhibited a decrease in inspection inconsistencies and have proven to be a reliable method.

Time management and accurate record keeping is crucial for fire code enforcement. When time management is not followed, deficiencies within the bureau are revealed. Carter (1989) suggested that the components of time management should be:

1. Setting priorities based on importance and urgency
2. Prepare list to schedule
3. Schedule workloads to optimize time available
4. Establish measurable goals

Based upon these findings, fire inspection personnel must be diligent in all aspects of performing their duties, including organizational attributes. Corbett (1989) states, "Placing the proper individual in the organization is an important goal of any fire prevention activity (Fire Chief Handbook, p. 1,046)." He maintains that fire prevention activities have become much more technical and, as a result, have demanded the inspector to be qualified. Crawford (2006) emphasizes that fire inspection personnel should be task-oriented and highly knowledgeable in complex codes. Because of this complexity, understanding them takes time.

According to the United States Fire Administration student manual, “To enforce code, the inspector must have the ability to explain the intent of what is being required rather than stating that it is required by code (USFA Student Manual, 2013, pp. 1-14).” Further research suggests that a large portion of the public relations sector of the fire department is to develop programs that address the fire dangers and become a partner with local business owners. Robertson (2005) points out that when inspections are sold to the customer, compliance will become more efficient because the customer has bought into the fire safety inspection. By having the presence of educating and not enforcing, a more solid relationship could be built in preventing future discrepancies and possible litigation issues.

Often when budgetary constraints are anticipated, departments first look at the fire prevention bureau for cutbacks. This is reiterated in the published report entitled, *America Burning*, where it states, “95 cents of every dollar spent on the fire services is used to extinguish fires; only about 5 cents is spent on efforts—mostly fire prevention inspections and public education programs—to prevent fires from starting (America Burning, 1973, p. 7).” This philosophy was based on current indications at the time, but still plays a large part today. Crawford (2011) echoes this statement in that the fire prevention bureau is usually the first to see cutbacks when necessary. This was seen in 2015 when the CFD inspector was transferred to crew duties to assist in overtime expenditures. Crawford (2011) stresses that there are different ways to show if the fire inspection program is still producing results when departments are facing shortfalls. By looking at workload in terms of efficiency and effectiveness, an organization can determine if the program is producing the desired results.

Diamantes (2005) suggests an alternative to single person inspection as fire companies and suppression forces have been utilized for many years to supplement fire inspections. For many

communities, this tactic has been successful. Jones (2012) emphasizes that the increased visibility among the public and firefighter safety are among the most advantageous benefits to performing such a program. For this to succeed, Diamantes (2005) advises that there needs to be a buy-in from all personnel and the workloads should be reasonable. Also, proper training is imperative if departments decide to undertake such a program. This will assist in the perception of a well-organized asset to the community.

With the lack of evaluation criteria within the inspection division, research was sought on performance objectives. According to Jones (2012), “The goal of any service is to connect your tangible item as a reminder of the superior value (Chief Officer Principles and Practices, p. 168).” By doing this, the customer will remember the experience. In conjunction with this, Flynn (2008) demonstrates that when evaluating performance, it is important to compare current performance to past performance, and most importantly, target goals.

An internal audit conducted by the State of Ohio (2012) on the fire inspection bureau, showed that an effective quality assurance program should include some type of policy and procedure guidelines. Within the scope of these policies and procedures, a systematic approach is described for handling customer complaints. Bowling Green Fire Department (BGFD, 2014) created an inspection customer satisfaction survey to be returned when inspection services were completed. Once the survey was received, department personnel were tasked with recording answers to develop a template on the value of their fire inspection program. Both organizations followed recommended protocols for improvement to assist in curtailing future issues.

The Latin proverb, “rex non protest peccare” means the king can do no wrong, but in today’s society this has changed. Municipal governments no longer have the immunity they once had. Fire code enforcement personnel are also not immune either, especially, when it comes to

negligent inspections. According to Jones (2012), for negligence to be upheld, four criteria must be met: 1) Responsible person owed a duty to care, 2) Breaching the duty to care, 3) Proximate cause, and 4) Actual injury. Callahan expressed a different viewpoint saying, “There can be no liability for a mere failure to be an instrument of good (Callahan, 1995, p. 166).

Liability concerns can also fall under the Freedom of Information Act. This act recognizes the right of any member of the public to request documents maintained by public agencies. Coffman (2013) explains that inspection reports are not exempted from this and failure to turn over reports could produce imposed penalties.

Fire inspection divisions and chief officers will have to weigh each decision made when it comes to code enforcement and try and find common ground. To assist with this, Coffman (2013) recommends managing a successful fire inspection program by allowing inspectors to possess an effective resource management process that includes reliable informational resources, provide public access to information if it does not violate any privacy laws, develop and practice effective communication between fire code enforcement personnel and external customers, and lastly, develop an organizational mindset to support the goals of the organization.

Literature cited shows evidence that CFD fire inspection program is stagnant in providing the community’s fire protection needs. Evidence and reports from the various sources of literature provide recommendations relating to the staffing procedure currently used within the department as well as the external customer’s perception of the inspection bureau.

Insight was provided when looking at local and national staffing procedures. Much of the research for this project confirmed that fire inspection duties are performed at some level, but at the same time, is given low priority value. The literature review was a starting point in

determining what questions will be answered in the survey and helped ascertain the value that local business owners have towards the department's inspection process.

PROCEDURES

The procedures this research project began with included a review of previously written research papers from the OFE program, books pertaining to the research topic, the Executive Fire Officer (EFO) program dealing with fire code enforcement, and numerous online databases. By reviewing these papers, clarification was given to the author in understanding the departments fire inspection procedures. A literature review was conducted to gather information with the intent to improve upon the department's fire inspection program. Internal reports, specifically the fire code enforcement office, were examined in detail to identify the deficiencies reported. Inconsistencies internally, as compared to national statistics from accredited institutions, were scrutinized to better understand the importance of code enforcement, especially in today's legal environment. The significance of this information identifies national standards relating to NFPA 1031 (Appendix 1) qualifications as required for the fire inspector as compared to what the CFD does locally.

An online survey produced on www.surveymonkey.com was utilized for this research paper. Survey questions were sent to 50 fire departments of similar size and demographics (Appendix 3). The survey was intended to create a snapshot of current fire code enforcement practices and it included questions pertaining to current rank structure of their fire inspector, average number of years performing these duties, and any quality control measures currently in place. Results from this survey helped to develop an organizational snapshot to determine any correlation to the fire inspector rank and to recommend any needed adjustments to the fire inspection bureau.

The author also wanted to gauge the local business owners concerns with the current fire inspection practices. Based upon predetermined target hazards within the City of Cambridge and looking at previous complaint records, 50 businesses in the target hazard areas received questionnaires asking their opinion on how the fire prevention bureau was perceived when inspections were conducted (Appendix 4). Questions focused on the customer's overall satisfaction of the inspection and inspection personnel. The results from both surveys will assist in determining if departmental restructuring needs to be considered and presented to city administrators for consideration.

Limitations of the Study

The surveys disseminated hinged on the willingness of an individual respondent to set aside the opportunity to accumulate and give precise data. Also taken into consideration, were any possible cultural and economic factors that might have influenced the way the respondents answered the survey.

Personal delivery of the questionnaire assisted with response rate but also may have led to inaccurate responses since these were hand-delivered and the business owner possibly feeling pressured to quickly submit the questionnaire.

RESULTS

To compare the CFD fire code enforcement bureau with other inspection bureaus, a survey was sent out to 20 fire departments (Appendix 3). Fourteen (70%) departments responded to the survey. Of these 14 departments, nine (64%) are career departments with no part-time employees, three (21%) are career and part-time fire departments, and two (15%) are volunteer fire departments that perform inspection duties as requested.

As a measure on current CFD inspection procedures within the community, a second survey was distributed to local business owners to assist with this research project (Appendix 4). Fifty surveys were hand-delivered with 38 businesses (or 76 percent) returning their surveys.

Both surveys were used to determine best practices within fire department inspection processes and business community views on the inspection process. The results were used to obtain a clearer understanding on answering the four research questions.

Research Question 1 – What is the average number of years of experience of fire inspectors in similar sized departments and how many inspections and re-inspections are performed by each?

Experience when performing inspection activities does indicate a high rate within each of the departments. Sixty four percent of the surveys returned, showed a 6 to 10-year time in grade for their inspectors. The correlation between this statistic and 43 percent holding a Captains designation demonstrates the inspector position as tenured position within each department (Crawford, 2006).

The number of inspections and re-inspections performed in survey showed the highest at 399 inspections per year with the departments that responded. CFD yearly inspection for 2015 showed 687 inspections performed.

The departments that received the survey were comparable to the City of Cambridge and the Cambridge Fire Department. The difference between the inspection numbers that responded and that of Cambridge indicate a significant difference between the number of inspections. Because of the complexity of fire codes, understanding them takes time. NFPA 1730 recommends that the inspectors responsibility is to include time to perform inspections in an efficiently and effective manner. The literature reviewed showed that

frequency of fire code inspections should focus more on the hazards presented by the occupancy and past inspection records.

Research Question 2 – What perceptions do local business owners have of CFD inspection personnel and processes?

The main function of inspections is to prevent fires before they happen. Often, the only time that business owners has any communications with the fire department is through the inspection process. Inspectors who are customer friendly and task-oriented assists in creating a reliable inspection experience (Crawford, 2006).

The survey showed a slightly higher than 55 percent approval rating in terms of knowledge of the fire code and helpfulness of resolving any issues, but when explaining the need for the fire inspection, business owners indicated only a 53 percent understanding of why it is needed. The literature showed that fire code inspections need to be sold to the customer (Robertson, 2005). To accomplish this, educating the business owner in the importance of the fire inspections will show the superior value of the departments tangible item (Jones, 2012). By taking an approach of educating and not enforcing, there is a better chance in achieving compliance.

Research Question 3 – How can the inspection department performance be improved in executing inspections and re-inspections?

With the high turnover rate within the inspector's rank, the CFD experienced difficulties in providing a reliable service to the community. Missed appointments and duplication of effort is a result of this high turnover rate. The fire inspection survey revealed a 63 percent ranking, neither high nor low, on the quality of the inspection. In terms of overall satisfaction with the inspection, 32 percent indicated a slightly satisfied ranking.

Time management skills and accurate record keeping is an important aspect of the departments inspection services. Setting priorities, establish measurable goals, and optimizing the time available can assist in providing a reliable, well organized program (Carter, 1989). Part of this organized service should include some form of evaluation of the inspector and the inspection that was done.

The BGFDD delivers post inspection surveys by the department to gauge the value of the inspection and or the inspector. The research done also revealed that the individual plays a major part in demonstrating a valued service. Personal traits out in the field and those they exhibit when entering the information, assists with providing a valuable service to the community.

Research Question 4 – What legal ramifications to the city and to the department exist for not properly conducting fire inspection?

The literature reviewed revealed that no entity or individual is immune from civil liability. Negligent inspections must meet 4 criteria: absence of duty to care, breaching of duty to care, causation, and actual injury. The first survey question that was asked revealed that CFD did just over 1-1/2 times the number of inspections that was performed by the highest rank given from the departments that responded. Because of the technical nature of inspections, whoever fills that role needs to be qualified.

Organizational record keeping will also play a role if departmental records were requested. CFD organizational tendencies, as seen in the background of this research paper, exhibits less than desirable traits. Tracking and abating these issues will assist in protecting the department against any possible litigation.

DISCUSSION

The intent of this descriptive research paper was to assist in determining if the current fire inspector position should be revised into a senior role within the CFD. The evaluations and/or interpretations from the surveys will assist in presenting the city administrators information regarding the possible benefits of restructuring the current inspector's position and will help to develop a consistent policy for the inspection process.

The survey distributed to the fire departments showed that all performed fire code enforcement within their jurisdictions. Corbett (2011) explains that placing the proper individual in the organization is an important goal of any fire prevention activity. Next to the fire chief, the fire inspector is the face of the department and performs the functions of the inspector as outlined in the Ohio Fire Code. Sending personnel to inspector school for two weeks and then requiring that individual to perform the duties expected counteracts the potential positives of providing a quality fire code enforcement service to the community. The survey conducted revealed that 64 percent of the participating departments ranked their inspector at an officer level designation and the average tenure of the inspector is 6 to 10 years. Compare this with CFD average tenure of 2.2 years in the inspectors position and the data identifies that experience and knowledge is an important aspect that many departments find desirable for their fire inspectors.

Past chiefs within CFD focused more on quantity rather than quality. This was seen in the survey where CFD inspections that was completed showed a 1-1/2 times greater completion rate than the highest answer indicated on the survey. The question is why is this number higher? Whether it was budgetary constraints or lack of knowledge, the department did not provide a valuable service. The literature did indicate the importance of a thorough inspection far outweighs the necessity of inspecting every commercial building within a community.

Crawford (2011) suggests that looking at workloads in terms of efficiency and effectiveness, an organization can determine if the inspection program is producing the desired results. Current CFD fire inspection process has never been measured on performance, thus taking Behn's (2005) point of view of why improvements are not seen. Without someone actively studying the results and numbers of the inspection, no definitive answers will be seen. As an example, CFD has never measured the frequency at which commercial structures should be inspected depending on fire load and building classification. NFPA 1730 suggests only what the minimum frequency should be, leading many departments to decide on their own inspection frequencies. Reviewing the fire loads, building classifications, and past inspection reports within the jurisdiction may reveal that some buildings may need to be inspected on a more frequent basis.

Departments that perform crew inspections do show positive attributes when performed, but there is a cost. Adding more employees to the inspection process may become more of a hindrance rather than a benefit if no clear-cut policies are in place. To add to this, Diamantes (2005) wrote that everyone who may perform inspections needs to understand the importance of the inspection process. Current viewpoints from the survey suggest that 6 to 10 employees from the departments surveyed hold the fire inspector certification but an overwhelming 89 percent of the same department's inspector hours work a 40 hour a week work cycle. This factor demonstrates that each department has one main inspector who performs their fire inspections and that individual holds at least an officer level designation.

Crawford (2006) describes how the complexity of fire codes is a daunting task. Changes implemented through the revision process require individuals to be task oriented and highly organized. With deficient inspection policies in place, these fundamentals are difficult for an

individual just coming out of inspector school who tend to be unsure of their role and unfamiliar with organizational structure. These same deficiencies have been logged as areas of concern with CFD fire inspection activities.

The public is also a great tool for assessing the performance of inspectors. The results of the questionnaire revealed the department's need to focus more on an educational foundation rather than an enforcement type of approach. This is seen where only 32 percent were slightly satisfied with the overall satisfaction with the inspection. There is merit in not describing the service as enforcement because the term "enforcement" signifies that the business owner does not have options. Robertson (2005) describes fire prevention as a time for education, not enforcement, leading this author to believe that an inspector who both documents well and educates business owners about hazards, leaves behind a better image about the importance of fire inspections as well as the quality of a tangible service provided by the CFD. Altering this concept by presenting educational options and by creating an inspection customer satisfaction survey will have a positive impact with business owners.

Improvements in the inspection process needs to be thought of as Jones (2012) describes, providing an efficient tangible service that will help increase the value to your customers. Meaningful performance evaluation is a tactic that was used by the BGFDD to gain some type of feedback from the business community in the service provided. Many departments might fear this type of critique of services rendered, but by seeing our strengths and weaknesses, actionable insight will be brought to provide a better customer experience and a valued service. Included in this evaluation would be the inspector. The literature revealed that employee performance is a critical indicator of services provided.

Litigation is always a concern when it pertains to fire code enforcement, especially when injury or fatality is involved. Records and personnel are subpoenaed, and the department's credibility is ultimately questioned. This could prove less than appealing to voters who ultimately decide the outcome of future fire levies.

RECOMMENDATIONS

The predicament this study addresses allowed the CFD to evaluate the fire inspector staffing procedures. Calls for inspections have continued to increase in demand over the past five years. A high rate of turnover and significant inconsistencies within the inspection division has also steadily increased. For the CFD to provide proactive fire inspections, these matters must be addressed. The recommendations are as follows:

- City administrators should negotiate a reconfiguration of the inspector's position with the local bargaining unit. The negotiated rank should add a fourth captain to the department. This classification would align with other department's inspection divisions and assist with maintaining tenure in that position. Hours would remain at 40 hours per week. Salary should be comparable to a captain who is on an average 56-hour work week. As an alternative, the city should study bidding requirements for the inspectors position based on experience and training.
- CFD senior members and city administrators should develop an Inspection Hazard Assessment of businesses located within city limits. By developing a numerical hazard assessment of commercial structures based on high life and economic importance, many inconsistencies in fire inspection will be reduced or eliminated.
- Update current policies on inspection procedures based on well-noted resources and established goals. Develop an evaluation process for the inspector position on a bi-

annual basis based upon their job description and accurate departmental data collected as well as organizational tendencies. Additional training will be vital in keeping up-to-date on current issues and trends.

- Development of informational literature and community forums to focus on the value of fire inspections. This can be assisted with the local Chamber of Commerce, community improvement organizations, city administrators, business leaders, and the fire department.
- Development of a customer evaluation survey after inspection services is rendered should be developed and implemented. This will assist in strengthening current inspection services and produce continuous improvements.

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APPENDIX 1 – NFPA 1031 FIRE INSPECTOR CLASSIFICATION

Fire Inspector I:

- Conduct fire safety programs.
- Instill a working knowledge of methods for fire prevention and fire systems.
- Determine occupancy loads for single use buildings
- Participate in legal proceedings
- Identify exits, egress, and evacuation requirements
- Interpret codes and standards

Fire Inspector II (all the above and addition):

- Conduct research
- Interpret codes
- Review and evaluate the installation of fire protection systems
- Understand the local plans review process
- Analyze and recommend modifications to local codes

Fire Inspector III (all the above and addition):

- Ability to apply knowledge to laws and ordinances with reference to code development, enforcement, and administration
- Bachelor's degree in fire science and public administration. Masters preferred.
- Ten years' experience as full-time employee with a career department

APPENDIX 2 – NFPA 1730 INSPECTION FREQUENCY

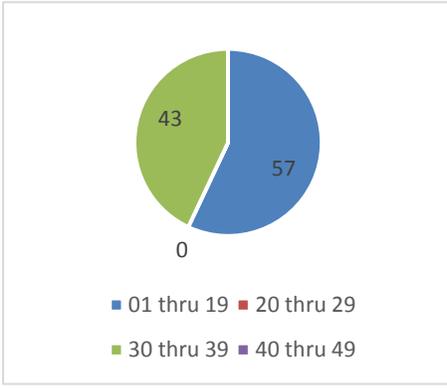
<u>Occupancy Risk Classification</u>	<u>Frequency</u>
High	Annually
Moderate	Bi-annually
Low	Tri-annually
Critical Infrastructure	Per AHJ

APPENDIX 3 – FIRE INSPECTOR DEMOGRAPHICS

Survey Question 1:

Including part time personnel, how many employees are at your department?

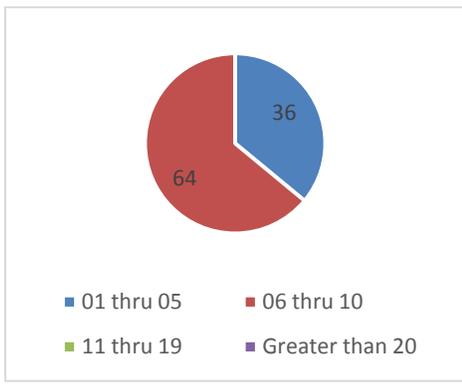
In order to obtain realistic data, the question was asked to get similar department characteristics. The result of this question indicated that 57 percent of the departments showed 1-19 employees within their department, while 43 percent revealed that their department had a workforce of 40-59 employees.



Survey Question 2:

How many employees hold the certification of fire inspector?

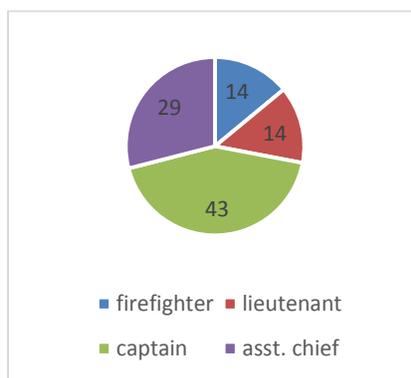
Sixty-four percent indicated that 6-10 employees held a fire inspection certification, while 36 percent noted 1-5 employees held fire inspector certification.



Survey Question 3:

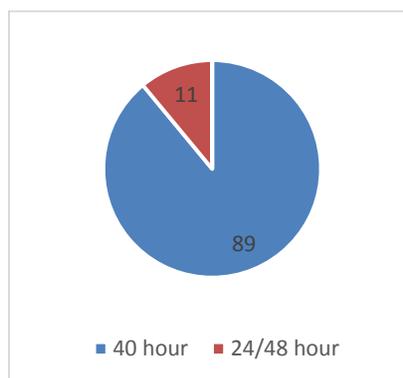
What is the current inspector's rank within the department?

The results revealed that 43 percent held the rank of Captain, 29 percent marked their inspector at the Assistant Chief level, and 14 percent each was indicated by Lieutenant/Inspector and Firefighter/Inspector.

**Survey Question 4:**

What work cycle does your inspector currently have?

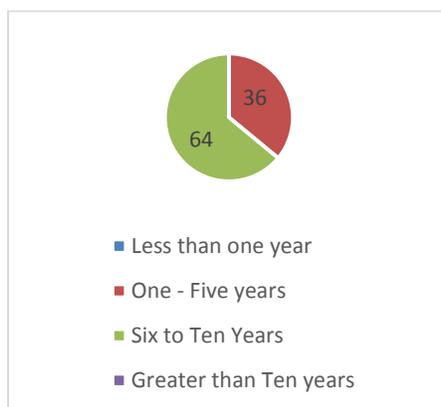
Eighty-nine percent of the respondents classified their inspector as a 40-hour employee while 11 percent showed a 24/48 work schedule.



Survey Question 5:

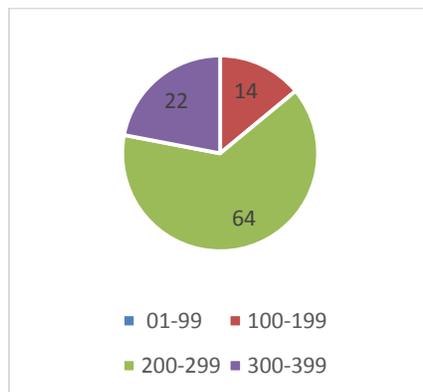
What is the number of years of experience in the fire inspector position?

Sixty-four percent showed a length of 6 to 10 years and 36 percent indicated 1 to 5 years in the position. None of the departments showed a length of experience of less than one year or more than 10 years.

**Survey Question 6:**

What is the number of yearly inspections and re-inspections performed by respondents?

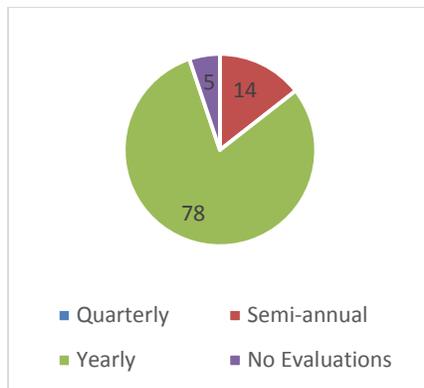
Sixty-four percent indicated 200 to 299 yearly inspections performed, 22 percent showed 300 to 399 inspections completed, and 14 percent showed 100 to 199 inspections achieved. No responses were indicated in the 1 to 99 category or greater than 400.



Survey Question 7:

How often does your department assess the fire inspector's job performance?

Seventy-eight percent conduct yearly evaluations, 14 percent showed semi-annual evaluations, and 5 percent indicated no evaluations are performed.

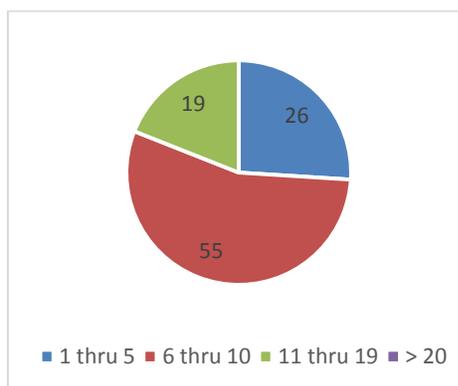


APPENDIX 4 – FIRE INSPECTION SURVEY

Survey Question 1:

How long have you owned or managed the business on Main Street?

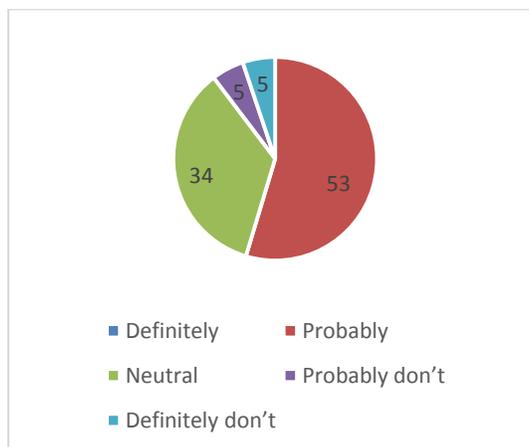
Fifty-five percent marked 6 to 10 years, 26 percent indicated 1 to 5 years, and 19 percent specified 11 to 20 years.



Survey Question 2:

When you think of fire inspections, do you think it is something you need or do not need?

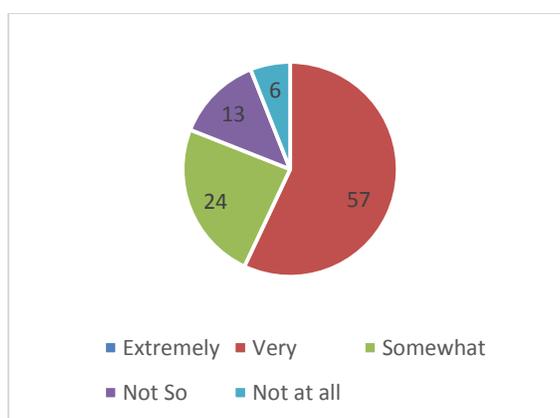
Fifty-three percent indicated a need. Thirty-four percent marked neutral on the issue of inspections, 5 percent each, respectively, on probably “do not need” and “definitely need,” and 2 percent indicated definitely need.



Survey Question 3:

How knowledgeable did the inspector seem to you about fire inspections?

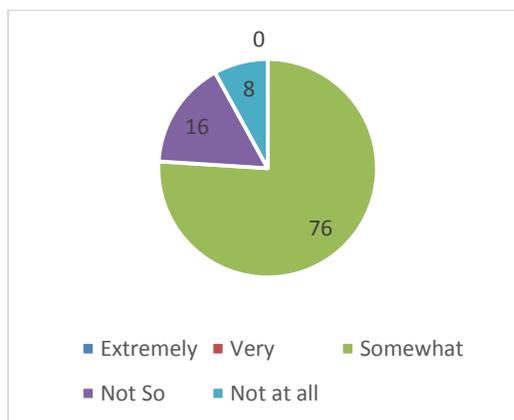
Upon reviewing these results, 57 percent (22 respondents) marked that the inspector was knowledgeable. Twenty-four percent indicated the inspector was somewhat knowledgeable. Thirteen percent showed not so knowledgeable, while five percent indicated not knowledgeable at all.

**Survey Question 4:**

How helpful was the inspector in resolving any violations found?

Seventy-six percent of the respondents indicated the inspector was somewhat helpful.

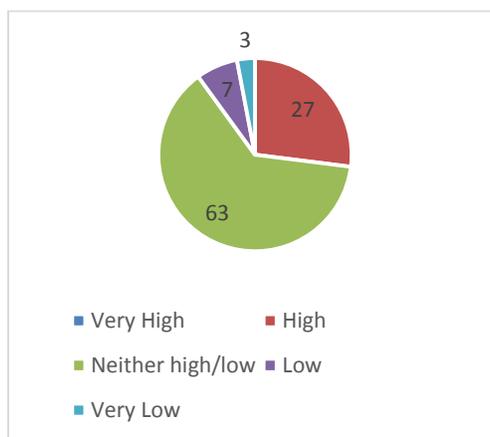
Sixteen percent noted not very helpful and eight percent showed not helpful at all.



Research Question 5:

How would you rate the quality of the fire inspection?

Twenty-seven percent rated the quality of the fire inspection at high quality, while 63 percent indicated neither high nor low quality. Seven percent showed a high-quality inspection and three percent showed a low-quality inspection.

**Research Question 6:**

What was your overall satisfaction with the fire inspection?

Thirty-two percent indicated a slightly satisfied ranking. Twenty-six percent marked that they were neither satisfied nor dissatisfied. Nineteen percent indicated a moderately satisfied rating, 17 percent marked the dissatisfied category, and six percent marked that they were moderately dissatisfied with the inspection.

